

# Shop Manual

MOBILE CRUSHER

**GALEO**

**BR380JG-1E0**

SERIAL NUMBERS

2001 and up

**ecot3**

**KOMATSU**



---

# **MOBILE CRUSHER**

## **BR380JG-1E0**

<b>Machine model</b>	<b>Serial number</b>
BR380JG-1E0	2001 and up

---

## **00 Index and foreword**

### **Index**

---

---

Composition of shop manual .....	2
Table of contents .....	4

## Composition of shop manual

The contents of this shop manual are shown together with Form No. in a list.

Note 1: Always keep the latest version of this manual in accordance with this list and utilize accordingly.

The marks shown to the right of Form No. denote the following:

○: New issue (to be filed additionally) ●: Revision (to be replaced for each Form No.)

Note 2: This shop manual can be supplied for each Form No.

Note 3: To file this shop manual in the special binder for management, handle it as follows:

- Place a divider on the top of each section in the file after matching the Tub No. with No. indicated next to each Section Name shown in the table below:
- File overview and other materials in sections in the order shown below and utilize them accordingly.

Section Title	Form Number
Shop Manual, contents binder, binder label and tabs	SEN01341-03
00 Index and foreword	SEN01342-03
Index	SEN01343-03 ●
Foreword and general information	SEN01344-00
01 Specification	SEN01345-00
Specification and technical data	SEN01346-00
10 Structure, function and maintenance standard	SEN01347-00
Engine and cooling system	SEN01348-00
Power train	SEN01349-00
Undercarriage and frame	SEN01350-00
Hydraulic system, Part 1	SEN01351-00
Hydraulic system, Part 2	SEN01352-00
Hydraulic system, Part 3	SEN01353-00
Work equipment	SEN01354-00
Electrical system	SEN01355-00
20 Standard value table	SEN01356-00
Standard service value table	SEN02288-00
30 Testing and adjusting	SEN01357-01
Testing and adjusting, Part 1	SEN02303-00
Testing and adjusting, Part 2	SEN02304-00
Testing and adjusting, Part 3	SEN02305-01 ●
40 Troubleshooting	SEN01358-02
Failure code table and fuse locations	SEN02088-00
General information on troubleshooting	SEN02089-01
Troubleshooting by failure code, Part 1	SEN02090-00
Troubleshooting by failure code, Part 2	SEN02091-00
Troubleshooting by failure code, Part 3	SEN02092-00
Troubleshooting by failure code, Part 4	SEN02093-00
Troubleshooting by failure code, Part 5	SEN02094-00
Troubleshooting of electrical system (E-mode)	SEN02095-00

---

Troubleshooting of hydraulic and mechanical system (H-mode)	SEN02306-01
Troubleshooting of engine (S-mode)	SEN02307-00
50 Disassembly and assembly	SEN01359-00
General information on disassembly and assembly	SEN02737-00 ○
Work equipment	SEN02738-00 ○
90 Diagrams and drawings	SEN01360-01
Hydraulic diagrams and drawings	SEN01361-00
Electrical diagrams and drawings	SEN01362-01

## Table of contents

00 Index and foreword	
Index	SEN01343-03
Composition of shop manual.....	2
Table of contents .....	4
Foreword and general information	SEN01344-00
Safety notice.....	2
How to read the shop manual .....	7
Explanation of terms for maintenance standard.....	9
Handling electric equipment and hydraulic component.....	11
How to read electric wire code .....	23
Precautions when carrying out operation .....	26
Method of disassembling and connecting push-pull type coupler .....	29
Standard tightening torque table .....	32
Conversion table .....	36
01 Specification	
Specification and technical data	SEN01346-00
Specification dimension drawings .....	2
Specifications .....	3
Weight table .....	5
Table of fuel, coolant and lubricants .....	6
10 Structure, function and maintenance standard	
Engine and cooling system	SEN01348-00
Engine mount, damper .....	2
Radiator, oil cooler and aftercooler.....	3
Power train	SEN01349-00
Power train .....	2
Drive system for components.....	3
Final drive.....	4
Sprocket .....	6
Undercarriage and frame	SEN01350-00
Track frame and recoil spring.....	2
Idler .....	4
Carrier roller .....	6
Track roller.....	7
Track shoe.....	8
Hydraulic system, Part 1	SEN01351-00
Hydraulic piping drawing .....	2
Hydraulic tank and hydraulic oil filter.....	3
Hydraulic pump .....	4
Hydraulic system, Part 2	SEN01352-00
Control valve .....	2
Self pressure reducing valve .....	10
CLSS .....	15
Functions and operation by valve.....	19

Hydraulic system, Part 3	SEN01353-00
Crusher motor .....	2
Grizzly feeder motor .....	6
Conveyor motor .....	7
Travel motor .....	8
Valve control .....	16
Solenoid valve .....	26
EPC valve .....	28
Electromagnetic selector valve .....	32
Hydraulic cylinder .....	34
Work equipment	SEN01354-00
Grizzly feeder semiautomatic system .....	2
Abnormal load stop system .....	3
Primary belt conveyor .....	4
Grizzly feeder .....	8
Crusher .....	9
Crusher tooth tip adjustment system .....	14
Vibrator .....	17
Electrical system	SEN01355-00
Engine control .....	2
Work equipment and pump controller .....	12
Electronic control system .....	15
Machine monitor system .....	28
Sensor .....	54
20 Standard value table	
Standard service value table	SEN02288-00
Standard value table for engine .....	2
Standard value table for chassis .....	3
30 Testing and adjusting	
Testing and adjusting, Part 1	SEN02303-00
Tools for testing, adjusting, and troubleshooting .....	3
Measuring engine speed .....	6
Measuring intake air pressure (boost pressure) .....	7
Checking exhaust gas color .....	8
Adjusting valve clearance .....	9
Measuring compression pressure .....	11
Measuring blow-by pressure .....	13
Measuring engine oil pressure .....	14
Handling fuel system parts .....	15
Releasing residual pressure from fuel system .....	15
Measuring fuel pressure .....	16
Measuring fuel return rate and leakage .....	18
Bleeding air from fuel circuit .....	20
Checking fuel circuit for leakage .....	22
Checking and adjusting track shoe tension .....	23
Measuring and adjusting oil pressure in work equipment and travel circuits .....	25
Measuring control circuit basic pressure .....	29
Measuring and adjusting oil pressure in pump PC control circuit .....	30
Measuring and adjusting oil pressure in pump LS control circuit .....	33
Measuring solenoid valve output pressure .....	37
Measuring PPC valve output pressure .....	40
Measuring oil leakage .....	41
Bleeding air from each part .....	42
Testing travel deviation .....	45
Adjusting mirrors .....	46

Testing and adjusting, Part 2	SEN02304-00
Special functions of machine monitor .....	2
Testing and adjusting, Part 3	SEN02305-01
Check and adjustment of jaw crusher .....	2
Check and adjustment of outlet clearance .....	4
Adjusting tension of crusher drive V-belt .....	37
Check and adjustment of primary conveyor .....	38
Inspection and maintenance of magnetic separator .....	44
Check and adjustment of muck discharge conveyor .....	46
List of companies which handles radio controllers .....	48
Handling voltage circuit of engine controller .....	49
Procedure for turning on KOMTRAX terminal .....	50
KOMTRAX terminal lamp indications .....	53
Preparation work for troubleshooting for electrical system .....	56
Procedure for testing diodes .....	60
40 Troubleshooting	
Failure code table and fuse locations	SEN02088-00
Failure code table .....	2
Fuse locations .....	6
General information on troubleshooting	SEN02089-01
Points to remember when troubleshooting .....	2
Sequence of events in troubleshooting .....	3
Checks before troubleshooting .....	4
Classification and procedures of troubleshooting .....	6
Contents of troubleshooting table .....	10
Wiring table for connector pin numbers .....	12
T-adapter box and T-adapter table .....	45
Troubleshooting by failure code, Part 1	SEN02090-00
Failure code [7RC1KB] Short circuit conveyor ON switch .....	4
Failure code [7RC2KA] Disconnection in conveyor OFF switch .....	6
Failure code [7RC5KB] Short circuit in feeder ON switch .....	8
Failure code [7RD2KB] Short circuit in conveyor reverse relay .....	10
Failure code [7RD2KZ] Disconnection or short circuit in conveyor reverse relay .....	12
Failure code [7RE1KB] Short circuit in crusher ON switch .....	14
Failure code [7RE2KA] Disconnection in crusher OFF switch .....	16
Failure code [7RE6KB] Short circuit in muck discharge conveyor ON switch .....	18
Failure code [7RE7KA] Disconnection in muck discharge conveyor OFF switch .....	20
Failure code [7RE8KB] Short circuit in magnetic separator ON switch .....	22
Failure code [7RE9KA] Disconnection in magnetic separator OFF switch .....	24
Failure code [7REAKB] Short circuit in accessory input circuit .....	26
Failure code [7REDMA] Abnormality in primary conveyor pressure sensor .....	28
Failure code [7REEMA] Abnormality in muck conveyor pressure sensor .....	30
Failure code [7RENKZ] Abnormality in clearance potentiometer .....	32
Failure code [7REPKA] Disconnection in feeder OFF switch .....	34
Failure code [7RESKB] Short circuit in one-touch start switch .....	36
Failure code [7RETKA] Disconnection in one-touch stop switch .....	38
Failure code [7RF2KA] Disconnection in crusher forward EPC valve .....	40
Failure code [7RF2KB] Short circuit in crusher forward EPC valve .....	41
Failure code [7RF2KY] Short circuit in crusher forward EPC valve .....	42
Failure code [7RF3KA] Disconnection in crusher reverse EPC valve .....	43
Failure code [7RF3KB] Short circuit in crusher reverse EPC valve .....	44
Failure code [7RF3KY] Short circuit in crusher reverse EPC valve .....	45
Failure code [7RF4KA] Disconnection in feeder forward EPC valve .....	46
Failure code [7RF4KB] Short circuit in feeder forward EPC valve .....	47
Failure code [7RF4KY] Short circuit in feeder forward EPC valve .....	48



Troubleshooting by failure code, Part 2	SEN02091-00
Failure code [7RFAKY] Short circuit in engine stop relay .....	4
Failure code [7RFAKZ] Disconnection or short circuit in engine stop relay .....	6
Failure code [7RFBKB] Short circuit in muck conveyor solenoid .....	8
Failure code [7RFBKZ] Disconnection or short circuit in muck conveyor solenoid .....	9
Failure code [7RFCKA] Disconnection in magnetic separator solenoid.....	10
Failure code [7RFCKB] Short circuit in magnetic separator solenoid .....	11
Failure code [7RFCKY] Short circuit in magnetic separator solenoid .....	12
Failure code [7RFHKB] Short circuit in conveyor forward relay .....	14
Failure code [7RFHKY] Short circuit in conveyor forward relay .....	16
Failure code [7RFKKB] Short circuit in lock cylinder pull relay .....	18
Failure code [7RFKKY] Short circuit in lock cylinder pull relay .....	20
Failure code [7RFLKA] Disconnection in accessory EPC solenoid .....	22
Failure code [7RFLKB] Short circuit in accessory EPC solenoid .....	23
Failure code [7RFLKY] Short circuit in accessory EPC solenoid .....	24
Failure code [7RFMKY] Short circuit in abnormal pressure relay .....	26
Failure code [7RFMKZ] Disconnection or short circuit in abnormal pressure relay .....	28
Failure code [7RFNKA] Disconnection in lock cylinder unlock solenoid valve.....	30
Failure code [7RFNKB] Short circuit in lock cylinder unlock solenoid valve .....	31
Failure code [7RFNKY] Short circuit in lock cylinder unlock solenoid valve .....	32
Failure code [7RFPKB] Short circuit in lock cylinder push relay .....	34
Failure code [7RFPKY] Short circuit in lock cylinder push relay .....	36
Failure code [7RGAMA] Abnormality in 2nd conveyor pressure sensor .....	38
Failure code [7RJAKA] Disconnection in travel lock EPC solenoid valve .....	40
Failure code [7RJAKB] Short circuit in travel lock EPC solenoid valve.....	42
Failure code [7RJAKY] Short circuit in travel lock EPC solenoid valve.....	44
Failure code [7RJMMW] Lock cylinder slipping .....	45
Failure code [7RJNMA] Abnormality in vibratory screen pressure sensor.....	46
Failure code [7RJPKB] Short circuit in radio control work-mode switch .....	48
Failure code [7RJQKB] Short circuit in radio control travel-mode switch.....	49
Failure code [7RJRKB] Short circuit on travel signal .....	50
Failure code [7RJSMA] Abnormality in magnetic separator pressure sensor .....	52
Failure code [AA10NX] Air cleaner Clogging .....	54
Failure code [AB00KE] Charge voltage too low .....	56
Troubleshooting by failure code, Part 3	SEN02092-00
Failure code [B@BAZG] Engine oil pressure too low .....	4
Failure code [B@BAZK] Engine oil level reduction .....	6
Failure code [B@BCNS] Radiator coolant overheat .....	7
Failure code [B@BCZK] Radiator coolant level reduction .....	8
Failure code [B@HANS] Hydraulic oil overheat.....	10
Failure code [CA111] Abnormality in engine controller.....	10
Failure code [CA115] Abnormality in engine NE and Bkup speed sensors.....	11
Failure code [CA122] Charge pressure sensor too high .....	12
Failure code [CA123] Charge pressure sensor too low .....	14
Failure code [CA131] Throttle sensor too high.....	16
Failure code [CA132] Throttle sensor too low .....	18
Failure code [CA144] Coolant temperature sensor too high .....	20
Failure code [CA145] Coolant temperature sensor too low .....	22
Failure code [CA153] Charge temperature sensor too high.....	24
Failure code [CA154] Charge temperature sensor too low .....	26
Failure code [CA155] Charge temperature too high and engine speed derated.....	28
Failure code [CA187] Sensor power source 2 too low .....	30
Failure code [CA221] Ambient pressure sensor too high.....	32
Failure code [CA222] Ambient pressure sensor too low .....	34
Failure code [CA227] Sensor power source 2 too high.....	36
Failure code [CA234] Engine overspeed .....	37
Failure code [CA238] Abnormal power source for Ne speed sensor .....	38
Failure code [CA271] Short circuit in fuel pump actuator .....	39

Failure code [CA272] Disconnection in fuel pump actuator .....	40
Failure code [CA322] Disconnection or short circuit in injector No.1 .....	42
Failure code [CA323] Disconnection or short circuit in injector No.5 .....	44
Failure code [CA324] Disconnection or short circuit in injector No.3 .....	46
Failure code [CA325] Disconnection or short circuit in injector No.6 .....	48
Failure code [CA331] Disconnection or short circuit in injector No.2 .....	50
Failure code [CA332] Disconnection or short circuit in injector No.4 .....	52
Troubleshooting by failure code, Part 4 .....	SEN02093-00
Failure code [CA342] Abnormality in engine controller data consistency .....	3
Failure code [CA351] Abnormality in injector drive circuit .....	4
Failure code [CA352] Sensor power source 1 too low .....	6
Failure code [CA386] Sensor power source 1 too high .....	8
Failure code [CA428] Water detection sensor too high .....	10
Failure code [CA429] Water detection sensor too low .....	12
Failure code [CA435] Abnormality in engine oil pressure switch .....	14
Failure code [CA441] Power source voltage too low .....	16
Failure code [CA442] Power source voltage too high .....	18
Failure code [CA449] Common rail pressure sensor too high (2) .....	20
Failure code [CA451] Common rail pressure sensor too high .....	22
Failure code [CA452] Common rail pressure sensor too low .....	24
Failure code [CA488] Charge temperature too high and torque derated .....	26
Failure code [CA553] Common rail pressure sensor too high (1) .....	26
Failure code [CA559] Supply pump no pressure .....	27
Failure code [CA689] Abnormality in engine Ne speed sensor .....	28
Failure code [CA731] Abnormal phase in engine Bkup speed sensor .....	30
Failure code [CA757] Loss of all engine controller data .....	32
Failure code [CA778] Abnormality in engine Bkup speed sensor .....	34
Failure code [CA1633] CAN communication error (engine controller) .....	36
Failure code [CA2185] Throttle pedal sensor power source too high .....	38
Failure code [CA2186] Throttle pedal sensor power source too low .....	39
Failure code [CA2249] Supply pump no pressure (2) .....	40
Failure code [CA2311] Abnormal resistance in pump regulator valve .....	42
Failure code [CA2555] Disconnection in air intake heater relay .....	44
Failure code [CA2556] Short circuit in air intake heater relay .....	46
Troubleshooting by failure code, Part 5 .....	SEN02094-00
Failure code [D162KY] Short circuit in horn relay .....	4
Failure code [D162KZ] Disconnection or short circuit in horn relay .....	6
Failure code [DA22KK] Solenoid power source too low .....	8
Failure code [DA25KP] Abnormality in pressure sensor power source .....	10
Failure code [DA2RMC] CAN communication error (work equipment and pump controller) .....	14
Failure code [DA2SKQ] Abnormality in model code input .....	16
Failure code [DAFRMC] CAN communication error (monitor controller) .....	18
Failure code [DDA6KA] Disconnection in engine stop switch .....	20
Failure code [DGH2KB] Short circuit in hydraulic oil temperature sensor .....	22
Failure code [DHPAMA] Abnormality in F pump pressure sensor .....	24
Failure code [DHPBMA] Abnormality in R pump pressure sensor .....	26
Failure code [DUB0KY] Short circuit in beacon solid state relay .....	28
Failure code [DUB0KZ] Disconnection or short circuit in beacon solid state relay .....	30
Failure code [DXA0KA] Disconnection in PC-EPC Solenoid .....	32
Failure code [DXA0KB] Short circuit in PC-EPC Solenoid .....	33
Failure code [DXA0KY] Short circuit in PC-EPC Solenoid .....	34
Failure code [DXE0KA] Disconnection in LS-EPC solenoid .....	35
Failure code [DXE0KB] Short circuit in LS-EPC solenoid .....	36
Failure code [DXE0KY] Short circuit in LS-EPC solenoid .....	37
Troubleshooting of electrical system (E-mode) .....	SEN02095-00
Information in troubleshooting table .....	3
E-1 Engine does not start (Engine does not turn) .....	4
E-2 The engine stops while it is running .....	8

E-3 The automatic warm-up function does not work .....	10
E-4 Preheater does not operate .....	12
E-5 The whole work equipment stops suddenly .....	14
E-6 The red mark of emergency stop is indicated just after the engine is started .....	16
E-7 The machine monitor does not display any item .....	20
E-8 Some items are not displayed on the machine monitor .....	22
E-9 Contents of display by machine monitor are different from applicable machine .....	22
E-10 Fuel level monitor was lighted in red while engine running .....	23
E-11 Engine coolant temperature gauge does not indicate normally .....	24
E-12 The fuel level gauge does not display normally .....	26
E-13 The hydraulic oil temperature gauge does not display normally .....	27
E-14 The travel, work, and inspection modes do not change .....	28
E-15 The crusher clearance adjustment mode does not change .....	30
E-16 The crusher rotation direction does not change .....	32
E-17 Machine does not travel .....	34
E-18 Travel cannot be controlled by radio control .....	36
E-19 The feeder cannot be turned ON and OFF by radio control .....	40
E-20 One-touch start, stop switch cannot be operated by radio control .....	44
E-21 The monitor switches do not work .....	47
E-22 The crusher cannot be operated with the crusher manual FORWARD/REVERSE switch on the monitor .....	48
E-23 The conveyor cannot be operated with the conveyor manual FORWARD/REVERSE switch on the monitor .....	49
E-24 KOMTRAX system does not operate normally .....	50
Troubleshooting of hydraulic and mechanical system (H-mode) .....	SEN02306-01
System chart for hydraulic and mechanical systems .....	4
Information contained in troubleshooting table .....	6
H-1 The speed or power of the whole work equipment and travel is low .....	8
H-2 The engine speed lowers extremely or the engine stalls .....	10
H-3 The work equipment and travel systems do not work .....	11
H-4 Abnormal sound comes out from around the hydraulic pump .....	11
H-5 Fine control performance or response is low .....	12
H-6 The conveyor does not operate .....	13
H-7 The speed or power of the conveyor is low .....	14
H-8 The crusher does not operate .....	15
H-9 The speed or power of crusher is low .....	16
H-10 The feeder does not operate .....	16
H-11 The feeder does not feed smoothly (Vibration frequency is low) .....	17
H-12 The magnetic separator does not operate .....	17
H-13 The speed of magnetic separator belt is low .....	18
H-14 The side conveyor does not operate .....	18
H-15 The speed or power of the side conveyor is low .....	19
H-16 The primary conveyor and the side conveyor do not move up and down .....	20
H-17 The machine deviates during travel .....	21
H-18 The travel speed is low .....	23
H-19 The machine is not steered well or steering power is low .....	25
H-20 The travel motor does not work (only one side) .....	26
H-21 When the travel switch of the radio controller is depressed, the machine does not travel .....	26
H-22 The crusher clearance cannot be adjusted .....	27
Troubleshooting of engine (S-mode) .....	SEN02307-00
Method of using troubleshooting chart .....	3
S-1 Starting performance is poor .....	6
S-2 Engine does not start .....	7
S-3 Engine does not pick up smoothly .....	10
S-4 Engine stops during operations .....	11
S-5 Engine does not rotate smoothly .....	12
S-6 Engine lack output (or lacks power) .....	13
S-7 Exhaust smoke is black (incomplete combustion) .....	14

S-8 Oil consumption is excessive (or exhaust smoke is blue) .....	15
S-9 Oil becomes contaminated quickly .....	16
S-10 Fuel consumption is excessive .....	17
S-11 Oil is in coolant (or coolant spurts back or coolant level goes down).....	18
S-12 Oil pressure drops .....	19
S-13 Oil level rises (Entry of coolant/fuel) .....	20
S-14 Coolant temperature becomes too high (overheating) .....	21
S-15 Abnormal noise is made .....	22
S-16 Vibration is excessive .....	23
50 Disassembly and assembly	
General information on disassembly and assembly .....	SEN02737-00
How to read this manual.....	2
Coating materials list .....	4
Work equipment .....	SEN02738-00
Disassembly and assembly of crusher .....	2
Replacing cheek plates .....	3
Turning over and replacing fixed jaw plate .....	4
Turning over and replacing swing jaw plate .....	5
Replacing toggle plate .....	7
Replacing toggle seats .....	10
Disassembly and assembly of lock cylinder .....	11
Removal and installation of primary conveyor assembly .....	15
Replacement of belt .....	18
Replacement procedure for primary belt conveyor motor .....	20
Replacement procedure for primary belt conveyor head pulley frame .....	22
Procedure for folding engine front cover .....	31
90 Diagrams and drawings	
Hydraulic diagrams and drawings .....	SEN01361-00
Hydraulic circuit diagram (1/2).....	3
Hydraulic circuit diagram (2/2).....	5
Electrical diagrams and drawings .....	SEN01362-01
Electrical circuit diagram (1/4) .....	3
Electrical circuit diagram (2/4) .....	5
Electrical circuit diagram (3/4) .....	7
Electrical circuit diagram (4/4) .....	9
Connector arrangement diagram (1/2) .....	11
Connector arrangement diagram (2/2) .....	13



BR380JG-1E0 Mobile crusher

---

Form No. SEN01343-03

© 2007 KOMATSU  
All Rights Reserved  
Printed in Japan 02-07 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

## 00 Index and foreword

### Foreword and general information

---

Safety notice .....	2
How to read the shop manual .....	7
Explanation of terms for maintenance standard .....	9
Handling electric equipment and hydraulic component .....	11
How to read electric wire code .....	23
Precautions when carrying out operation .....	26
Method of disassembling and connecting push-pull type coupler .....	29
Standard tightening torque table .....	32
Conversion table .....	36

## Safety notice

(Rev. 2006/09)

### Important safety notice

Proper service and repair are extremely important for safe machine operation. The service and repair techniques recommended by Komatsu and described in this manual are both effective and safe. Some of these techniques require the use of tools specially designed by Komatsu for the specific purpose.

To prevent injury to workers, the symbol **▲** is used to mark safety precautions in this manual. The cautions accompanying these symbols should always be followed carefully. If any dangerous situation arises or may possibly arise, first consider safety, and take the necessary actions to deal with the situation.

### 1. General precautions

**▲ Mistakes in operation are extremely dangerous. Read the Operation and Maintenance Manual carefully before operating the machine.**

- 1) Before carrying out any greasing or repairs, read all the safety plates stuck to the machine. For the locations of the safety plates and detailed explanation of precautions, see the Operation and Maintenance Manual.
- 2) Decide a place in the repair workshop to keep tools and removed parts. Always keep the tools and parts in their correct places. Always keep the work area clean and make sure that there is no dirt, water, or oil on the floor. Smoke only in the areas provided for smoking. Never smoke while working.
- 3) When carrying out any operation, always wear safety shoes and helmet. Do not wear loose work clothes, or clothes with buttons missing.
  - Always wear safety glasses when hitting parts with a hammer.
  - Always wear safety glasses when grinding parts with a grinder, etc.
- 4) When carrying out any operation with 2 or more workers, always agree on the operating procedure before starting. Always inform your fellow workers before starting any step of the operation. Before starting work, hang UNDER REPAIR warning signs in the operator's compartment.
- 5) Only qualified workers must carry out work and operation which require license or qualification.
- 6) Keep all tools in good condition, learn the correct way to use them, and use the proper ones of them. Before starting work, thoroughly check the tools, machine, fork-lift, service car, etc.
- 7) If welding repairs are needed, always have a trained and experienced welder carry out the work. When carrying out welding work, always wear welding gloves, apron, shielding goggles, cap and other clothes suited for welding work.
- 8) Before starting work, warm up your body thoroughly to start work under good condition.

### Safety points

1	Good arrangement
2	Correct work clothes
3	Following work standard
4	Making and checking signs
5	Prohibition of operation and handling by unlicensed workers
6	Safety check before starting work
7	Wearing protective goggles (for cleaning or grinding work)
8	Wearing shielding goggles and protectors (for welding work)
9	Good physical condition and preparation
10	Precautions against work which you are not used to or you are used to too much

### 2. Preparations for work

- 1) Before adding oil or making any repairs, park the machine on hard and level ground, and apply the parking brake and block the wheels or tracks to prevent the machine from moving.
- 2) Before starting work, lower the work equipment (blade, ripper, bucket, etc.) to the ground. If this is not possible, insert the lock pin or use blocks to prevent the work equipment from falling. In addition, be sure to lock all the control levers and hang warning signs on them.



- 3) When disassembling or assembling, support the machine with blocks, jacks, or stands before starting work.
- 4) Remove all mud and oil from the steps or other places used to get on and off the machine. Always use the handrails, ladders or steps when getting on or off the machine. Never jump on or off the machine. If it is impossible to use the handrails, ladders or steps, use a stand to provide safe footing.

### 3. Precautions during work

- 1) Before disconnecting or removing components of the oil, water, or air circuits, first release the pressure completely from the circuit. When removing the oil filler cap, a drain plug, or an oil pressure pickup plug, loosen it slowly to prevent the oil from spurting out.
- 2) The coolant and oil in the circuits are hot when the engine is stopped, so be careful not to get scalded. Wait for the oil and coolant to cool before carrying out any work on the oil or water circuits.
- 3) Before starting work, stop the engine. When working on or around a rotating part, in particular, stop the engine. When checking the machine without stopping the engine (measuring oil pressure, revolving speed, temperature, etc.), take extreme care not to get rolled or caught in rotating parts or moving parts.
- 4) Before starting work, remove the leads from the battery. Always remove the lead from the negative (–) terminal first.
- 5) When raising a heavy component (heavier than 25 kg), use a hoist or crane. Before starting work, check that the slings (wire ropes, chains, and hooks) are free from damage. Always use slings which have ample capacity and install them to proper places. Operate the hoist or crane slowly to prevent the component from hitting any other part. Do not work with any part still raised by the hoist or crane.
- 6) When removing a cover which is under internal pressure or under pressure from a spring, always leave 2 bolts in diagonal positions. Loosen those bolts gradually and alternately to release the pressure, and then remove the cover.
- 7) When removing components, be careful not to break or damage the electrical wiring. Damaged wiring may cause electrical fires.
- 8) When removing piping, stop the fuel or oil from spilling out. If any fuel or oil drips onto the floor, wipe it up immediately. Fuel or oil on the floor can cause you to slip and can even start fires.
- 9) As a general rule, do not use gasoline to wash parts. Do not use it to clean electrical parts, in particular.
- 10) Be sure to assemble all parts again in their original places. Replace any damaged parts and parts which must not be reused with new parts. When installing hoses and wires, be sure that they will not be damaged by contact with other parts when the machine is operated.
- 11) When installing high pressure hoses, make sure that they are not twisted. Damaged tubes are dangerous, so be extremely careful when installing tubes for high pressure circuits. In addition, check that connecting parts are correctly installed.
- 12) When assembling or installing parts, always tighten them to the specified torques. When installing protective parts such as guards, or parts which vibrate violently or rotate at high speed, be particularly careful to check that they are installed correctly.
- 13) When aligning 2 holes, never insert your fingers or hand. Be careful not to get your fingers caught in a hole.
- 14) When measuring hydraulic pressure, check that the measuring tools are correctly assembled.
- 15) Take care when removing or installing the tracks of track-type machines. When removing the track, the track separates suddenly, so never let anyone stand at either end of the track.
- 16) If the engine is operated for a long time in a place which is not ventilated well, you may suffer from gas poisoning. Accordingly, open the windows and doors to ventilate well.

**4. Precautions for sling work and making signs**

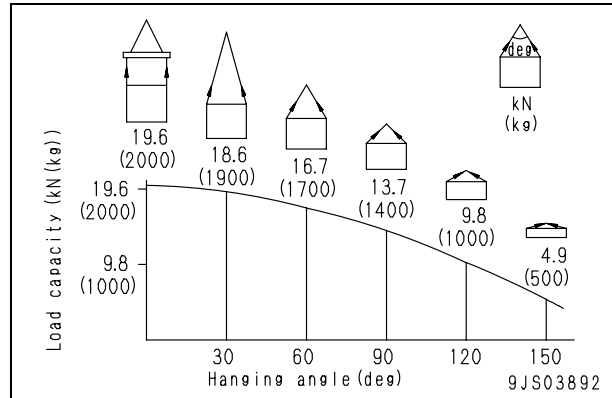
1) Only one appointed worker must make signs and co-workers must communicate with each other frequently. The appointed sign maker must make specified signs clearly at a place where he is seen well from the operator's seat and where he can see the working condition easily. The sign maker must always stand in front of the load and guide the operator safely.

- Do not stand under the load.
- Do not step on the load.

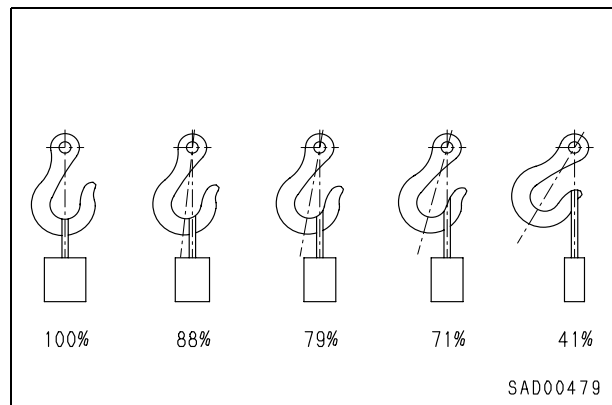
- 2) Check the slings before starting sling work.
- 3) Keep putting on gloves during sling work. (Put on leather gloves, if available.)
- 4) Measure the weight of the load by the eye and check its center of gravity.
- 5) Use proper sling according to the weight of the load and method of slinging. If too thick wire ropes are used to sling a light load, the load may slip and fall.
- 6) Do not sling a load with 1 wire rope alone. If it is slung so, it may rotate and may slip out of the rope. Install 2 or more wire ropes symmetrically.

**⚠ Slinging with 1 rope may cause turning of the load during hoisting, untwisting of the rope, or slipping of the rope from its original winding position on the load, which can result in a dangerous accident.**

- 7) Limit the hanging angle to 60°, as a rule. Do not sling a heavy load with ropes forming a wide hanging angle from the hook. When hoisting a load with 2 or more ropes, the force subjected to each rope will increase with the hanging angle. The table below shows the variation of allowable load in kN {kg} when hoisting is made with 2 ropes, each of which is allowed to sling up to 9.8 kN {1,000 kg} vertically, at various hanging angles. When the 2 ropes sling a load vertically, up to 19.6 kN {2,000 kg} of total weight can be suspended. This weight is reduced to 9.8 kN {1,000 kg} when the 2 ropes make a hanging angle of 120°. If the 2 ropes sling a 19.6 kN {2,000 kg} load at a lifting angle of 150°, each of them is subjected to a force as large as 39.2 kN {4,000 kg}.



- 8) When installing wire ropes to an angular load, apply pads to protect the wire ropes. If the load is slippery, apply proper material to prevent the wire rope from slipping.
- 9) Use the specified eyebolts and fix wire ropes, chains, etc. to them with shackles, etc.
- 10) Apply wire ropes to the middle portion of the hook.
  - Slinging near the tip of the hook may cause the rope to slip off the hook during hoisting. The hook has the maximum strength at the middle portion.




- 11) Do not use twisted or kinked wire ropes.
- 12) When lifting up a load, observe the following.
  - Wind in the crane slowly until wire ropes are stretched. When settling the wire ropes with the hand, do not grasp them but press them from above. If you grasp them, your fingers may be caught.
  - After the wire ropes are stretched, stop the crane and check the condition of the slung load, wire ropes, and pads.

- If the load is unstable or the wire rope or chains are twisted, lower the load and lift it up again.
  - Do not lift up the load slantingly.
- 13) When lifting down a load, observe the following.
- When lifting down a load, stop it temporarily at 30 cm above the floor, and then lower it slowly.
  - Check that the load is stable, and then remove the sling.
  - Remove kinks and dirt from the wire ropes and chains used for the sling work, and put them in the specified place.

#### 5. Precautions for using mobile crane

- ★ Read the Operation and Maintenance Manual of the crane carefully in advance and operate the crane safely.

#### 6. Precautions for using overhead hoist crane

**▲ When raising a heavy part (heavier than 25 kg), use a hoist, etc. In Disassembly and assembly, the weight of a part heavier than 25 kg is indicated after the mark of .**

- 1) Before starting work, inspect the wire ropes, brake, clutch, controller, rails, over wind stop device, electric shock prevention earth leakage breaker, crane collision prevention device, and power application warning lamp, and check safety.
- 2) Observe the signs for sling work.
- 3) Operate the hoist at a safe place.
- 4) Check the direction indicator plates (east, west, south, and north) and the directions of the control buttons without fail.
- 5) Do not sling a load slantingly. Do not move the crane while the slung load is swinging.
- 6) Do not raise or lower a load while the crane is moving longitudinally or laterally.
- 7) Do not drag a sling.
- 8) When lifting up a load, stop it just after it leaves the ground and check safety, and then lift it up.
- 9) Consider the travel route in advance and lift up a load to a safe height.
- 10) Place the control switch on a position where it will not be an obstacle to work and passage.
- 11) After operating the hoist, do not swing the control switch.
- 12) Remember the position of the main switch so that you can turn off the power immediately in an emergency.

- 13) If the hoist stops because of a power failure, turn the power switch OFF. When turning on a switch which was turned OFF by the electric shock prevention earth leakage breaker, check that the devices related to that switch are not in operation state.
- 14) If you find an obstacle around the hoist, stop the operation.
- 15) After finishing the work, stop the hoist at the specified position and raise the hook to at least 2 m above the floor. Do not leave the sling installed to the hook.

#### 7. Selecting wire ropes

- 1) Select adequate ropes depending on the weight of parts to be hoisted, referring to the table below.

Wire ropes  
(Standard "Z" twist ropes without galvanizing)  
(JIS G3525, No. 6, Type 6X37-A)

Nominal diameter of rope mm	Allowable load	
	kN	ton
10	8.8	0.9
12	12.7	1.3
14	17.3	1.7
16	22.6	2.3
18	28.6	2.9
20	35.3	3.6
25	55.3	5.6
30	79.6	8.1
40	141.6	14.4
50	221.6	22.6
60	318.3	32.4

- ★ The allowable load is one-sixth of the breaking strength of the rope used (Safety coefficient: 6).

## 8. Precautions for disconnecting and connecting hoses and tubes in air conditioner circuit

### 1) Disconnection

⚠ **Collect the air conditioner refrigerant gas (R134a).**

⚠ **If the refrigerant gas (R134a) gets in your eyes, you may lose your sight. Accordingly, when collecting or adding it, you must be qualified for handling the refrigerant and put on protective goggles.**

### 2) Connection

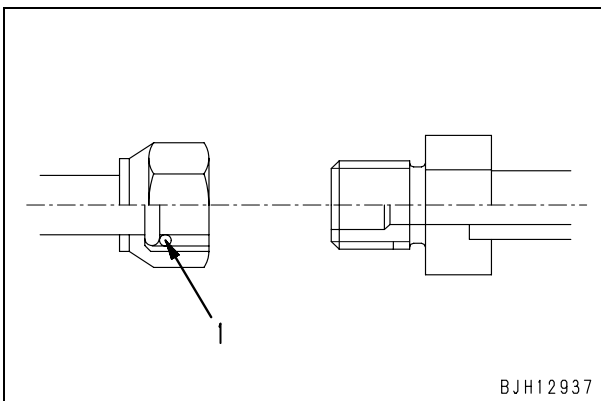
1] When installing the air conditioner circuit hoses and tubes, take care that dirt, dust, water, etc. will not enter them.

2] When connecting the air conditioner hoses and tubes, check that O-rings (1) are fitted to their joints.

3] Check that each O-ring is not damaged or deteriorated.

4] When connecting the refrigerant piping, apply compressor oil for refrigerant (R134a) (**DENSO: ND-OIL8, ZEXEL: ZXL100PG (equivalent to PAG46)**) to its O-rings.

★ Example of O-ring (Fitted to every joint of hoses and tubes)



★ For tightening torque, see the precautions for installation in each section of "Disassembly and assembly".

## How to read the shop manual

- Some attachments and optional parts in this shop manual may not be delivered to certain areas. If one of them is required, consult KOMATSU distributors.
- Materials and specifications are subject to change without notice.
- Shop manuals are divided into the “Chassis volume” and “Engine volume”. For the engine unit, see the engine volume of the engine model mounted on the machine.

### 1. Composition of shop manual

This shop manual contains the necessary technical information for services performed in a workshop. For ease of understanding, the manual is divided into the following sections.

#### 00. Index and foreword

This section explains the shop manuals list, table of contents, safety, and basic information.

#### 01. Specification

This section explains the specifications of the machine.

#### 10. Structure, function and maintenance standard

This section explains the structure, function, and maintenance standard values of each component. The structure and function sub-section explains the structure and function of each component. It serves not only to give an understanding of the structure, but also serves as reference material for troubleshooting. The maintenance standard sub-section explains the criteria and remedies for disassembly and service.

#### 20. Standard value table

This section explains the standard values for new machine and judgement criteria for testing, adjusting, and troubleshooting. This standard value table is used to check the standard values in testing and adjusting and to judge parts in troubleshooting.

#### 30. Testing and adjusting

This section explains measuring instruments and measuring methods for testing and adjusting, and method of adjusting each part. The standard values and judgement criteria for testing and adjusting are explained in Testing and adjusting.

#### 40. Troubleshooting

This section explains how to find out failed parts and how to repair them. The troubleshooting is divided by failure modes. The “S mode” of the troubleshooting related to the engine may be also explained in the Chassis volume and Engine volume. In this case, see the Chassis volume.

#### 50. Disassembly and assembly

This section explains the special tools and procedures for removing, installing, disassembling, and assembling each component, as well as precautions for them. In addition, tightening torque and quantity and weight of coating material, oil, grease, and coolant necessary for the work are also explained.

#### 90. Diagrams and drawings (chassis volume)/Repair and replacement of parts (engine volume)

- Chassis volume  
This section gives hydraulic circuit diagrams and electrical circuit diagrams.
- Engine volume  
This section explains the method of reproducing, repairing, and replacing parts.

### 2. Revision and distribution

Any additions, revisions, or other change of notices will be sent to KOMATSU distributors. Get the most up-to-date information before you start any work.

### 3. Filing method

File by the brochures in the correct order of the form number printed in the shop manual composition table.

- **Revised edition mark**








When a manual is revised, the ones and tens digits of the form number of each brochure is increased by 1. (Example: 00, 01, 02 ...)

- **Revisions**

Revised brochures are shown in the shop manual composition table.

### 4. Symbols

Important safety and quality portions are marked with the following symbols so that the shop manual will be used practically.

Symbol	Item	Remarks
	Safety	Special safety precautions are necessary when performing work.
	Caution	Special technical precautions or other precautions for preserving standards are necessary when performing work.
	Weight	Weight of parts of component or parts. Caution necessary when selecting hoisting wire, or when working posture is important, etc.
	Tightening torque	Places that require special attention for tightening torque during assembly.
	Coat	Places to be coated with adhesives, etc. during assembly.
	Oil, coolant	Places where oil, etc. must be added, and capacity.
	Drain	Places where oil, etc. must be drained, and quantity to be drained.

### 5. Units

In this shop manual, the units are indicated with International System of units (SI). For reference, conventionally used Gravitational System of units is indicated in parentheses { }.

## Explanation of terms for maintenance standard

The maintenance standard values necessary for judgment of products and parts are described by the following terms.

### 1. Standard size and tolerance

- To be accurate, the finishing size of parts is a little different from one to another.
- To specify a finishing size of a part, a temporary standard size is set and an allowable difference from that size is indicated.
- The above size set temporarily is called the “standard size” and the range of difference from the standard size is called the “tolerance”.
- The tolerance with the symbols of + or – is indicated on the right side of the standard size.

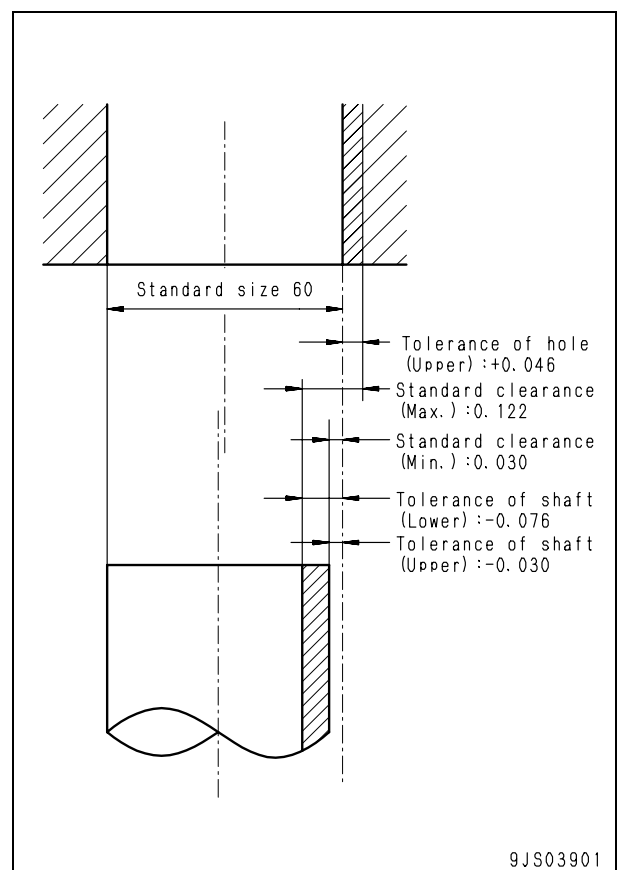
Example:

Standard size	Tolerance
120	–0.022 –0.126

- ★ The tolerance may be indicated in the text and a table as [standard size (upper limit of tolerance/lower limit of tolerance)].  
Example) 120 (–0.022/–0.126)
- Usually, the size of a hole and the size of the shaft to be fitted to that hole are indicated by the same standard size and different tolerances of the hole and shaft. The tightness of fit is decided by the tolerance.
- Indication of size of rotating shaft and hole and relationship drawing of them

Example:

Standard size	Tolerance	
	Shaft	Hole
60	–0.030 –0.076	+0.046 0



**2. Standard clearance and standard value**

- The clearance made when new parts are assembled is called the "standard clearance", which is indicated by the range from the minimum clearance to the maximum clearance.
- When some parts are repaired, the clearance is generally adjusted to the standard clearance.
- A value of performance and function of new products or equivalent is called the "standard value", which is indicated by a range or a target value.
- When some parts are repaired, the value of performance/function is set to the standard value.

**3. Standard interference**

- When the diameter of a hole of a part shown in the given standard size and tolerance table is smaller than that of the mating shaft, the difference between those diameters is called the "interference".
- The range (A – B) from the difference (A) between the minimum size of the shaft and the maximum size of the hole to the difference (B) between the maximum size of the shaft and the minimum size of the hole is the "standard interference".
- After repairing or replacing some parts, measure the size of their hole and shaft and check that the interference is in the standard range.

**4. Repair limit and allowable value**

- The size of a part changes because of wear and deformation while it is used. The limit of changed size is called the "repair limit".
- If a part is worn to the repair limit must be replaced or repaired.
- The performance and function of a product lowers while it is used. A value below which the product can be used without causing a problem is called the "allowable value".
- If a product is worn to the allowable value, it must be checked or repaired. Since the permissible value is estimated from various tests or experiences in most cases, however, it must be judged after considering the operating condition and customer's requirement.

**5. Clearance limit**

- Parts can be used until the clearance between them is increased to a certain limit. The limit at which those parts cannot be used is called the "clearance limit".
- If the clearance between the parts exceeds the clearance limit, they must be replaced or repaired.

**6. Interference limit**

- The allowable maximum interference between the hole of a part and the shaft of another part to be assembled is called the "interference limit".
- The interference limit shows the repair limit of the part of smaller tolerance.
- If the interference between the parts exceeds the interference limit, they must be replaced or repaired.



## Handling electric equipment and hydraulic component

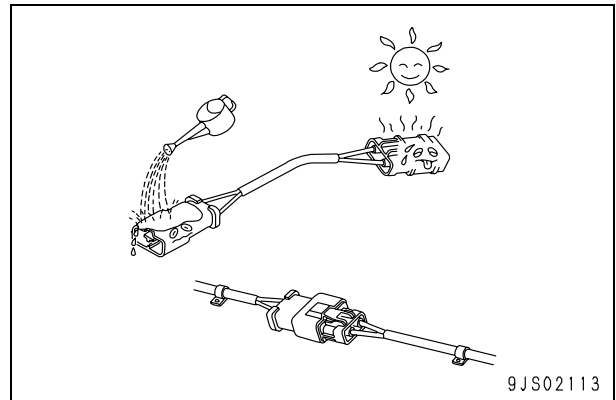
To maintain the performance of the machine over a long period, and to prevent failures or other troubles before they occur, correct “operation”, “maintenance and inspection”, “troubleshooting”, and “repairs” must be carried out. This section deals particularly with correct repair procedures for mechatronics and is aimed at improving the quality of repairs. For this purpose, it gives sections on “Handling electric equipment” and “Handling hydraulic equipment” (particularly gear oil and hydraulic oil).

### Points to remember when handling electric equipment

#### 1. Handling wiring harnesses and connectors

Wiring harnesses consist of wiring connecting one component to another component, connectors used for connecting and disconnecting one wire from another wire, and protectors or tubes used for protecting the wiring.

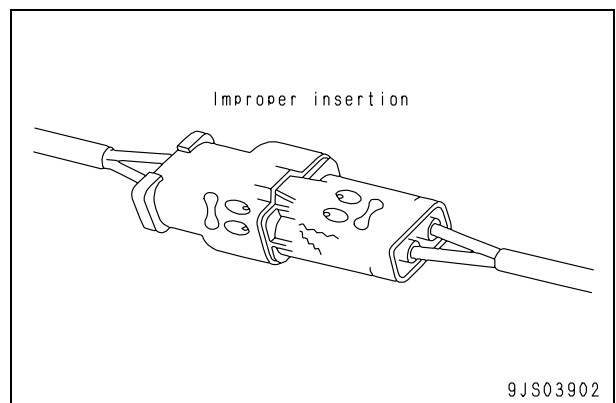
Compared with other electrical components fitted in boxes or cases, wiring harnesses are more likely to be affected by the direct effects of rain, water, heat, or vibration. Furthermore, during inspection and repair operations, they are frequently removed and installed again, so they are likely to suffer deformation or damage. For this reason, it is necessary to be extremely careful when handling wiring harnesses.



#### 2. Main failures occurring in wiring harness

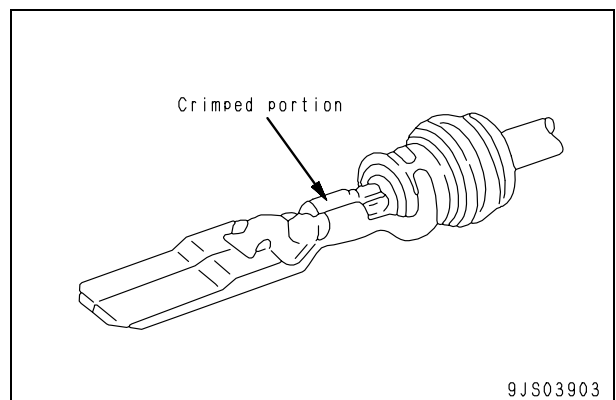
##### 1) Defective contact of connectors (defective contact between male and female)

Problems with defective contact are likely to occur because the male connector is not properly inserted into the female connector, or because one or both of the connectors is deformed or the position is not correctly aligned, or because there is corrosion or oxidization of the contact surfaces. The corroded or oxidized contact surfaces may become shiny again (and contact may become normal) by connecting and disconnecting the connector about 10 times.



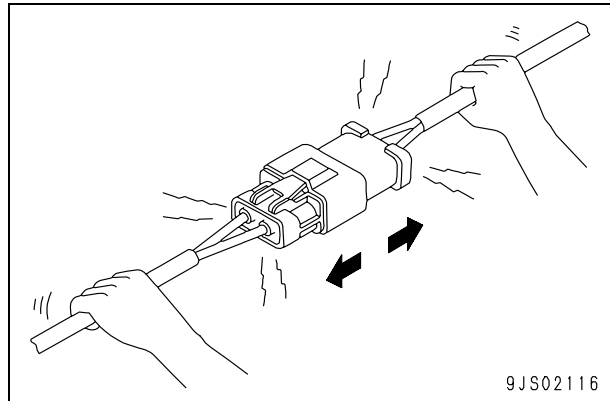
##### 2) Defective crimping or soldering of connectors

The pins of the male and female connectors are in contact at the crimped terminal or soldered portion, but if there is excessive force brought to bear on the wiring, the plating at the joint will peel and cause improper connection or breakage.

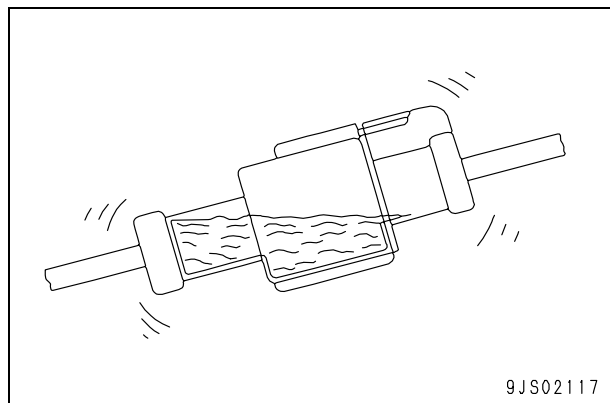


## 3) Disconnections in wiring

If the wiring is held and the connectors are pulled apart, or components are lifted with a crane with the wiring still connected, or a heavy object hits the wiring, the crimping of the connector may separate, or the soldering may be damaged, or the wiring may be broken.



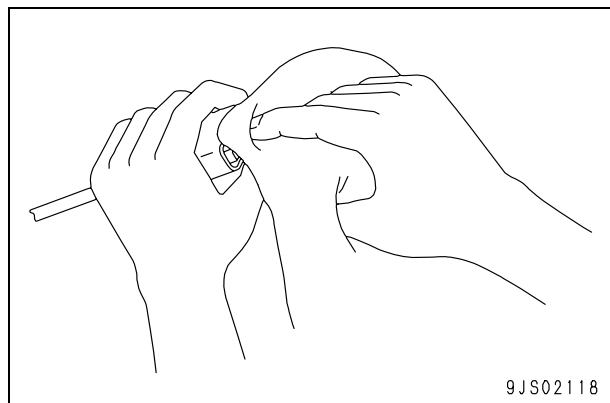
- 4) High-pressure water entering connector  
The connector is designed to make it difficult for water to enter (drip-proof structure), but if high-pressure water is sprayed directly on the connector, water may enter the connector, depending on the direction of the water jet. Accordingly, take care not to splash water over the connector. The connector is designed to prevent water from entering, but at the same time, if water does enter, it is difficult for it to be drained. Therefore, if water should get into the connector, the pins will be short-circuited by the water, so if any water gets in, immediately dry the connector or take other appropriate action before passing electricity through it.



## 5) Oil or dirt stuck to connector

If oil or grease are stuck to the connector and an oil film is formed on the mating surface between the male and female pins, the oil will not let the electricity pass, so there will be defective contact. If there is oil or grease stuck to the connector, wipe it off with a dry cloth or blow it dry with compressed air and spray it with a contact restorer.

- ★ When wiping the mating portion of the connector, be careful not to use excessive force or deform the pins.
- ★ If there is oil or water in the compressed air, the contacts will become even dirtier, so remove the oil and water from the compressed air completely before cleaning with compressed air.



### 3. Removing, installing, and drying connectors and wiring harnesses

#### 1) Disconnecting connectors

- 1] Hold the connectors when disconnecting.

When disconnecting the connectors, hold the connectors. For connectors held by a screw, loosen the screw fully, then hold the male and female connectors in each hand and pull apart. For connectors which have a lock stopper, press down the stopper with your thumb and pull the connectors apart.

- ★ Never pull with one hand.

- 2] When removing from clips

- Both of the connector and clip have stoppers, which are engaged with each other when the connector is installed.

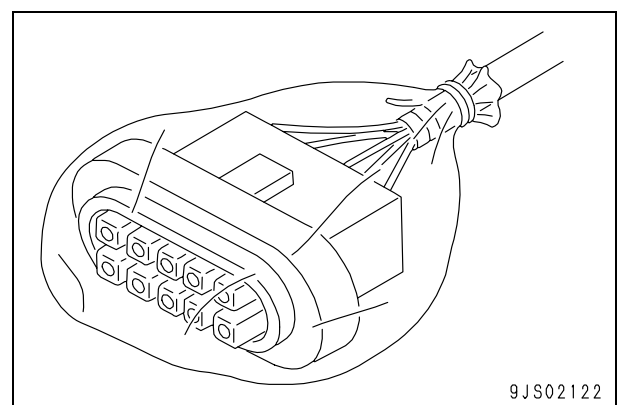
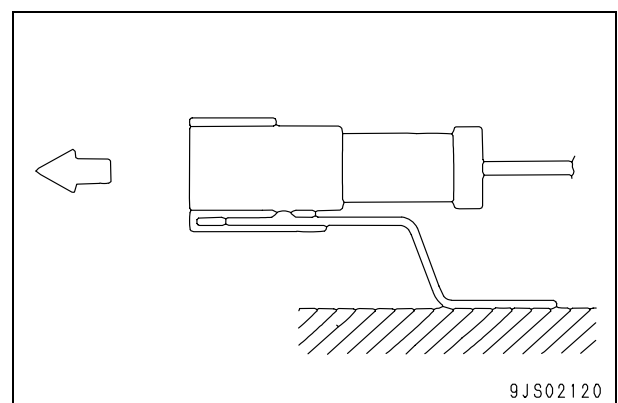
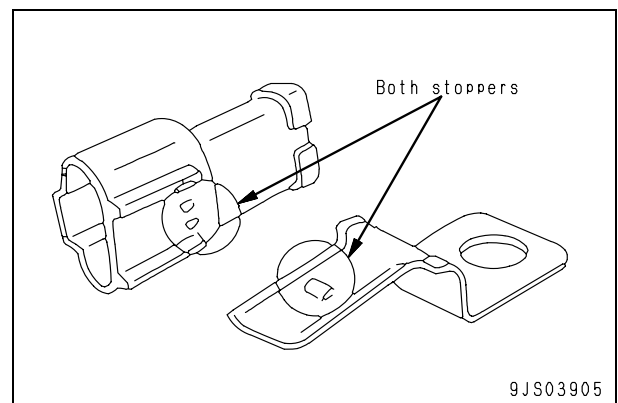
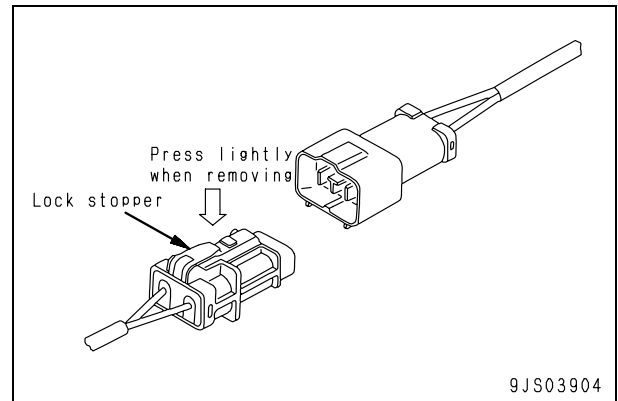
- When removing a connector from a clip, pull the connector in a parallel direction to the clip for removing stoppers.

- ★ If the connector is twisted up and down or to the left or right, the housing may break.

- 3] Action to take after removing connectors

After removing any connector, cover it with a vinyl bag to prevent any dust, dirt, oil, or water from getting in the connector portion.

- ★ If the machine is left disassembled for a long time, it is particularly easy for improper contact to occur, so always cover the connector.



## 2) Connecting connectors

## 1] Check the connector visually.

Check that there is no oil, dirt, or water stuck to the connector pins (mating portion).

Check that there is no deformation, defective contact, corrosion, or damage to the connector pins.

Check that there is no damage or breakage to the outside of the connector.

★ If there is any oil, water, or dirt stuck to the connector, wipe it off with a dry cloth. If any water has got inside the connector, warm the inside of the wiring with a dryer, but be careful not to make it too hot as this will cause short circuits.

★ If there is any damage or breakage, replace the connector.

## 2] Fix the connector securely.

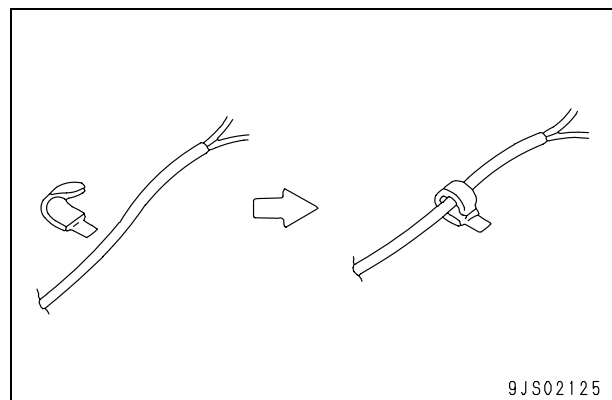
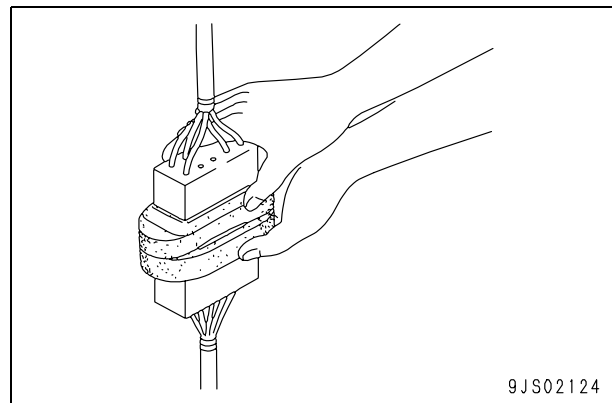
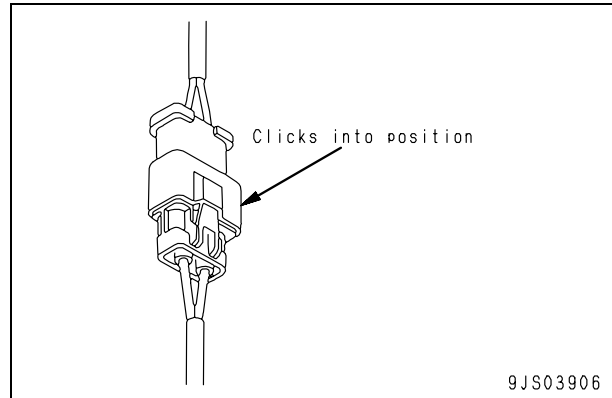
Align the position of the connector correctly, and then insert it securely. For connectors with the lock stopper, push in the connector until the stopper clicks into position.

## 3] Correct any protrusion of the boot and any misalignment of the wiring harness.

For connectors fitted with boots, correct any protrusion of the boot. In addition, if the wiring harness is misaligned, or the clamp is out of position, adjust it to its correct position.

★ If the connector cannot be corrected easily, remove the clamp and adjust the position.

● If the connector clamp has been removed, be sure to return it to its original position. Check also that there are no loose clamps.



- 3) Heavy duty wire connector (DT 8-pole, 12-pole)

Disconnection (Left of figure)

While pressing both sides of locks (a) and (b), pull out female connector (2).

Connection (Right of figure)

- 1] Push in female connector (2) horizontally until the lock clicks.

Arrow: 1)

- 2] Since locks (a) and (b) may not be set completely, push in female connector (2) while moving it up and down until the locks are set normally.

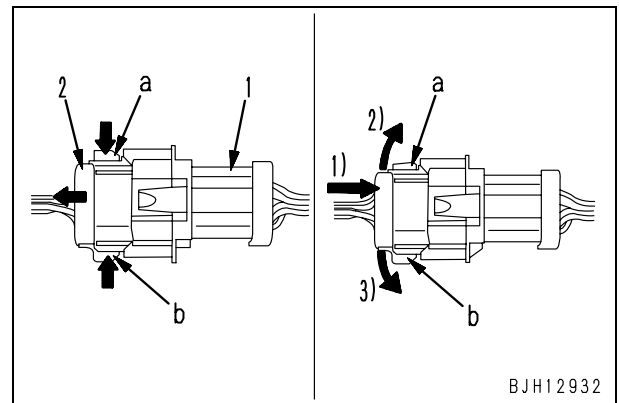
Arrow: 1), 2), 3)

- ★ Right of figure: Lock (a) is pulled down (not set completely) and lock (b) is set completely.

- (1): Male connector  
 (2): Female connector  
 (a), (b): Locks

- Disconnection

- Connection (Example of incomplete setting of (a))



4) Drying wiring harness

If there is any oil or dirt on the wiring harness, wipe it off with a dry cloth. Avoid washing it in water or using steam. If the connector must be washed in water, do not use high-pressure water or steam directly on the wiring harness. If water gets directly on the connector, do as follows.

1] Disconnect the connector and wipe off the water with a dry cloth.

★ If the connector is blown dry with compressed air, there is the risk that oil in the air may cause defective contact, so remove all oil and water from the compressed air before blowing with air.

2] Dry the inside of the connector with a dryer.

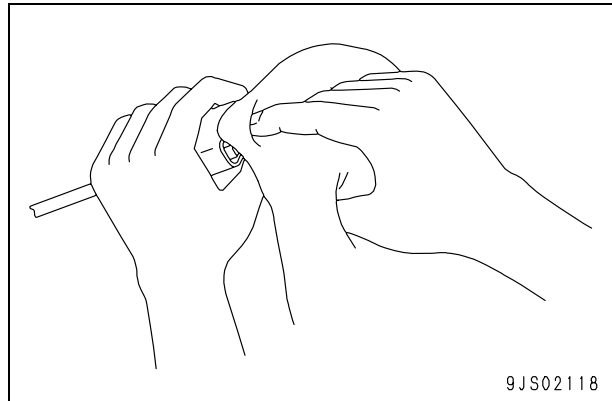
If water gets inside the connector, use a dryer to dry the connector.

★ Hot air from the dryer can be used, but regulate the time that the hot air is used in order not to make the connector or related parts too hot, as this will cause deformation or damage to the connector.

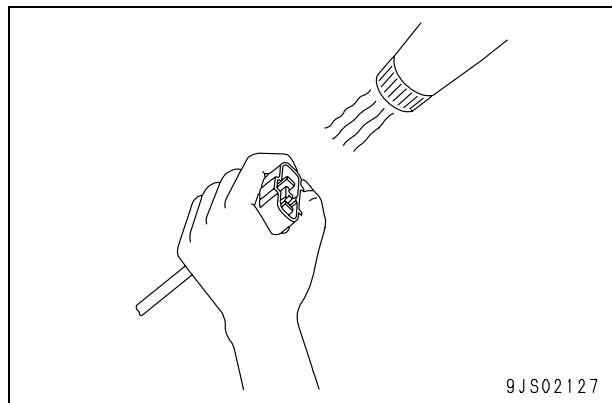
3] Carry out a continuity test on the connector.

After drying, leave the wiring harness disconnected and carry out a continuity test to check for any short circuits between pins caused by water.

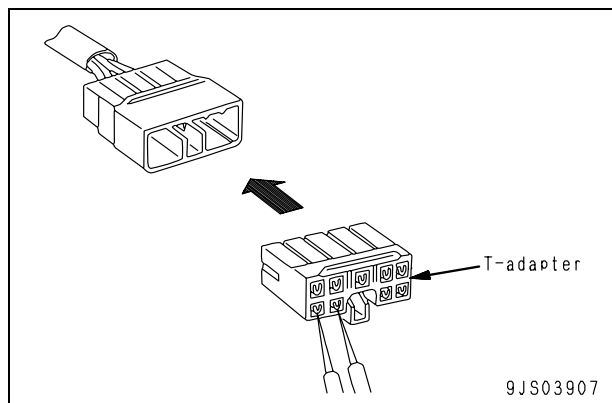
★ After completely drying the connector, blow it with contact restorer and reassemble.



9JS02118



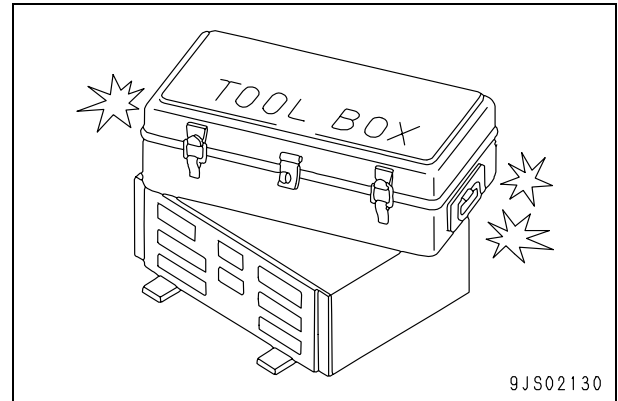
9JS02127



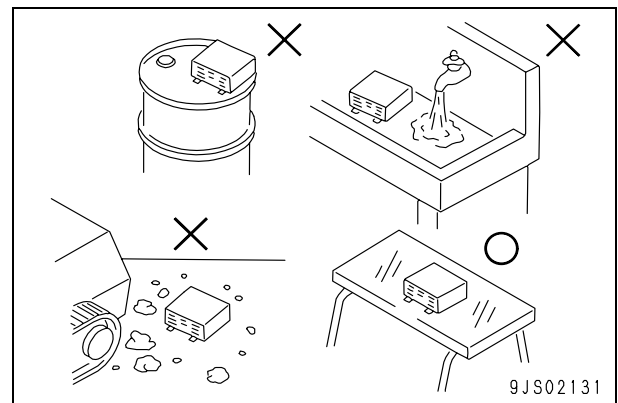
9JS03907

#### 4. Handling controller

- 1) The controller contains a microcomputer and electronic control circuits. These control all of the electronic circuits on the machine, so be extremely careful when handling the controller.
- 2) Do not place objects on top of the controller.
- 3) Cover the control connectors with tape or a vinyl bag. Never touch the connector contacts with your hand.
- 4) During rainy weather, do not leave the controller in a place where it is exposed to rain.
- 5) Do not place the controller on oil, water, or soil, or in any hot place, even for a short time. (Place it on a suitable dry stand).
- 6) Precautions when carrying out arc welding  
When carrying out arc welding on the body, disconnect all wiring harness connectors connected to the controller. Fit an arc welding ground close to the welding point.



9JS02130



9JS02131

#### 5. Points to remember when troubleshooting electric circuits

- 1) Always turn the power OFF before disconnecting or connecting connectors.
- 2) Before carrying out troubleshooting, check that all the related connectors are properly inserted.
  - ★ Disconnect and connect the related connectors several times to check.
- 3) Always connect any disconnected connectors before going on to the next step.
  - ★ If the power is turned ON with the connectors still disconnected, unnecessary abnormality displays will be generated.
- 4) When carrying out troubleshooting of circuits (measuring the voltage, resistance, continuity, or current), move the related wiring and connectors several times and check that there is no change in the reading of the tester.
  - ★ If there is any change, there is probably defective contact in that circuit.

### Points to remember when handling hydraulic equipment

With the increase in pressure and precision of hydraulic equipment, the most common cause of failure is dirt (foreign material) in the hydraulic circuit. When adding hydraulic oil, or when disassembling or assembling hydraulic equipment, it is necessary to be particularly careful.

#### 1. Be careful of the operating environment.

Avoid adding hydraulic oil, replacing filters, or repairing the machine in rain or high winds, or places where there is a lot of dust.

#### 2. Disassembly and maintenance work in the field

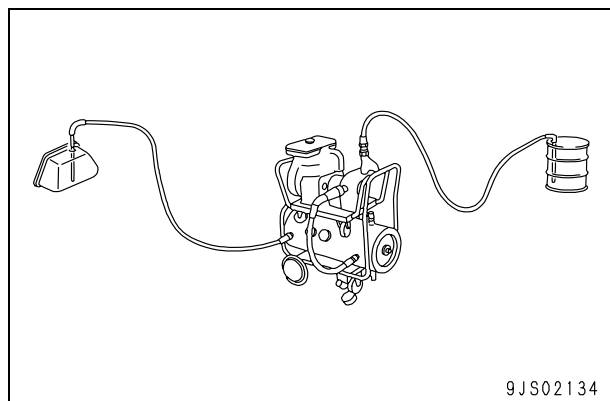
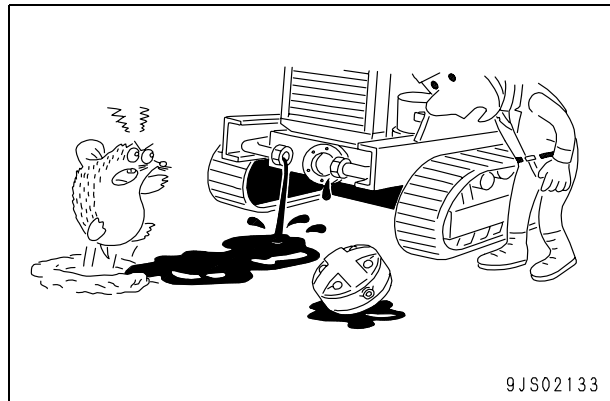
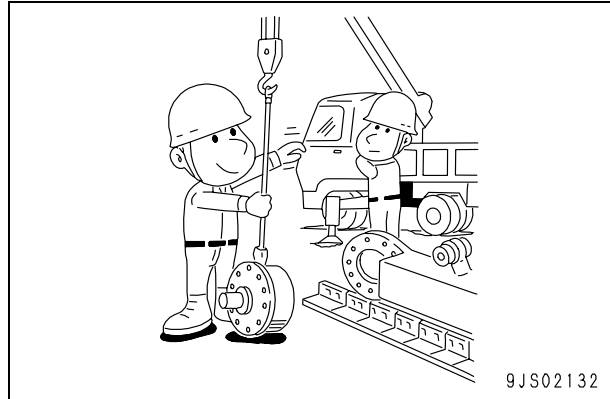
If disassembly or maintenance work is carried out on hydraulic equipment in the field, there is danger of dust entering the equipment. It is also difficult to check the performance after repairs, so it is desirable to use unit exchange. Disassembly and maintenance of hydraulic equipment should be carried out in a specially prepared dustproof workshop, and the performance should be checked with special test equipment.

#### 3. Sealing openings

After any piping or equipment is removed, the openings should be sealed with caps, tapes, or vinyl bags to prevent any dirt or dust from entering. If the opening is left open or is blocked with a rag, there is danger of dirt entering or of the surrounding area being made dirty by leaking oil so never do this. Do not simply drain oil out onto the ground, but collect it and ask the customer to dispose of it, or take it back with you for disposal.

#### 4. Do not let any dirt or dust get in during refilling operations

Be careful not to let any dirt or dust get in when refilling with hydraulic oil. Always keep the oil filler and the area around it clean, and also use clean pumps and oil containers. If an oil cleaning device is used, it is possible to filter out the dirt that has collected during storage, so this is an even more effective method.



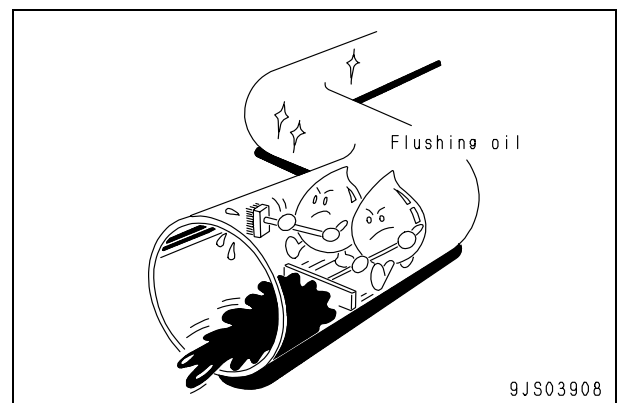


### 5. Change hydraulic oil when the temperature is high

When hydraulic oil or other oil is warm, it flows easily. In addition, the sludge can also be drained out easily from the circuit together with the oil, so it is best to change the oil when it is still warm. When changing the oil, as much as possible of the old hydraulic oil must be drained out. (Drain the oil from the hydraulic tank; also drain the oil from the filter and from the drain plug in the circuit.) If any old oil is left, the contaminants and sludge in it will mix with the new oil and will shorten the life of the hydraulic oil.

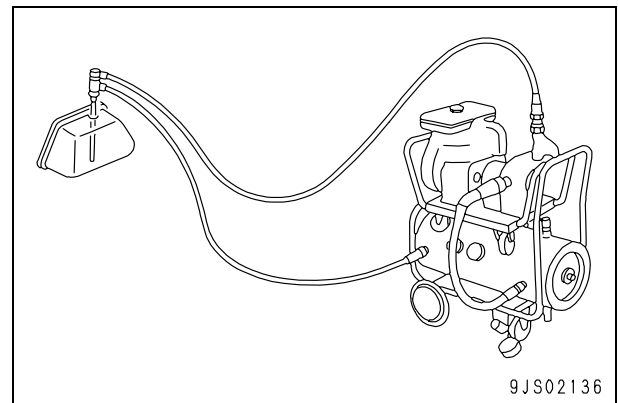
### 6. Flushing operations

After disassembling and assembling the equipment, or changing the oil, use flushing oil to remove the contaminants, sludge, and old oil from the hydraulic circuit. Normally, flushing is carried out twice: primary flushing is carried out with flushing oil, and secondary flushing is carried out with the specified hydraulic oil.



### 7. Cleaning operations

After repairing the hydraulic equipment (pump, control valve, etc.) or when running the machine, carry out oil cleaning to remove the sludge or contaminants in the hydraulic oil circuit. The oil cleaning equipment is used to remove the ultra fine (about 3  $\mu$ ) particles that the filter built in the hydraulic equipment cannot remove, so it is an extremely effective device.



**Connectors newly used for Tier 3 engines**

**1. Slide lock type**

**(FRAMATOME-3, FRAMATOME-2)**

- 107 – 170, 12V140 engines
  - Various pressure sensors and NE speed sensor

Examples)

Intake air pressure in intake manifold:

PIM (125, 170, 12V140 engines)

Oil pressure sensor: POIL  
(125, 170, 12V140 engines)

Oil pressure switch  
(107, 114 engines)

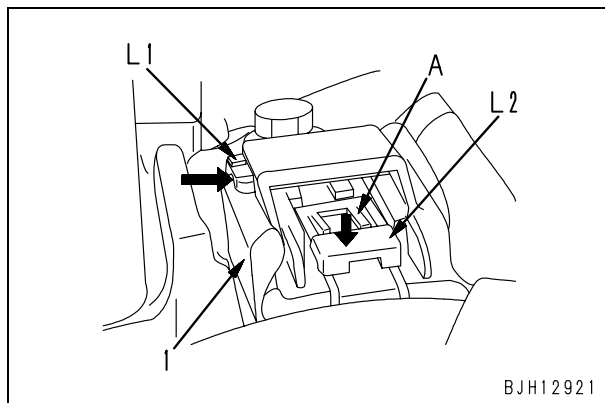
Ne speed sensor of flywheel housing:  
NE (107 – 170, 12V140 engines)

Ambient pressure sensor: PAMB  
(125, 170, 12V140 engines)

Disconnect connector (1) according to the following procedure.

- 1) Slide lock (L1) to the right.
- 2) While pressing lock (L2), pull out connector (1) toward you.

★ Even if lock (L2) is pressed, connector (1) cannot be pulled out toward you, if part A does not float. In this case, float part A with a small screwdriver while press lock (L2), and then pull out connector (1) toward you.



**2. Pull lock type (PACKARD-2)**

- 107 – 170, 12V140 engine
  - Various temperature sensors

Example)

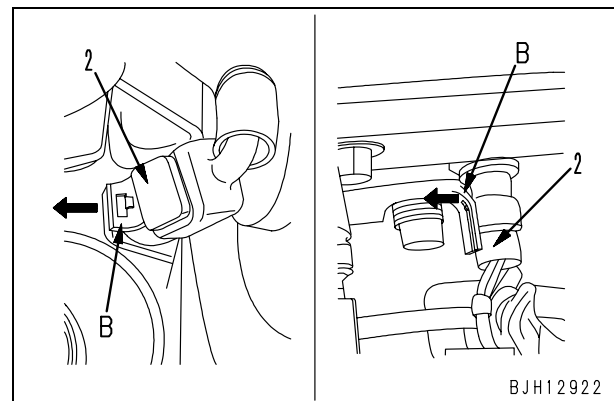
Intake air temperature sensor in intake manifold: TIM

Fuel temperature sensor: TFUEL

Oil temperature sensor: TOIL

Coolant temperature sensor: TWTR, etc.

Disconnect the connector by pulling lock (B) (on the wiring harness side) of connector (2) outward.



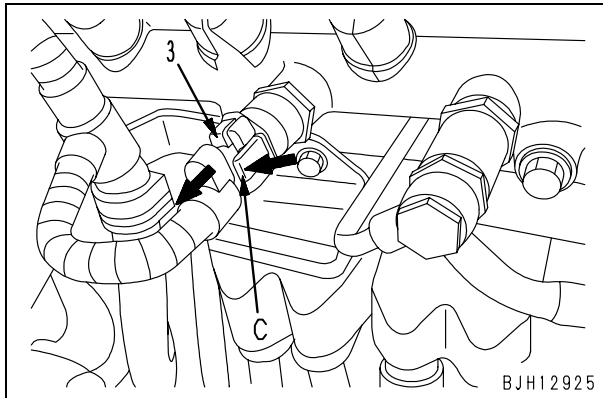
### 3. Push lock type

- 107, 114 engines  
Example)  
Fuel pressure sensor in common rail  
(**BOSCH-03**)

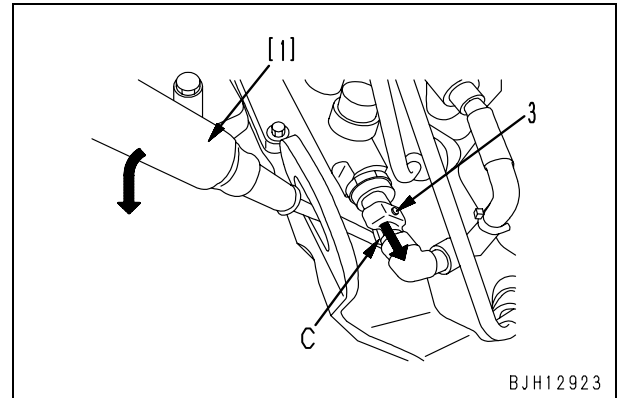
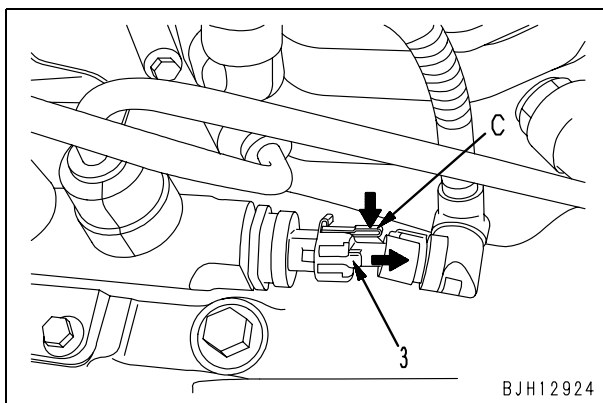
Disconnect connector (3) according to the following procedure.

- 1) While pressing lock (C), pull out connector (3) in the direction of the arrow.

- 114 engine

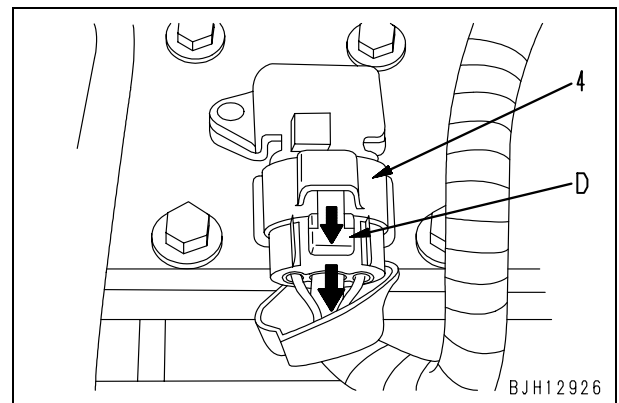


- 107 engine



- 107, 114 engine  
Example)  
Intake air pressure/temperature sensor in intake manifold  
(**SUMITOMO-04**)

- 3) While pressing lock (D), pull out connector (4) in the direction of the arrow.

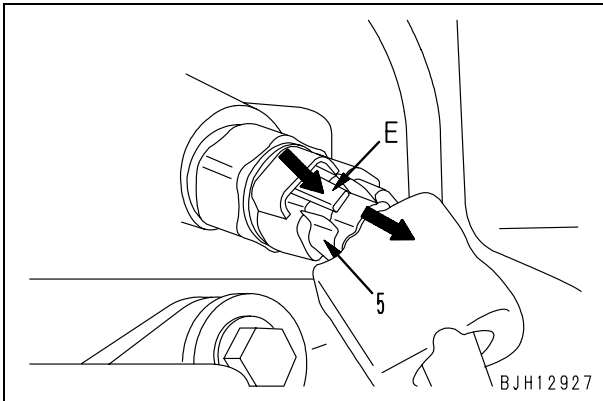


- ★ If the lock is on the underside, use flat-head screwdriver [1] since you cannot insert your fingers.

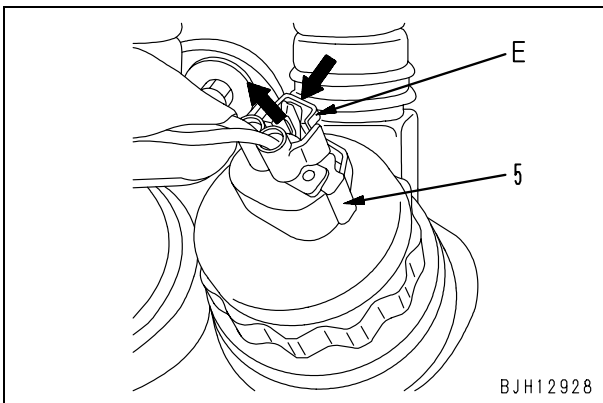
- 2) While pressing up lock (C) of the connector with flat-head screwdriver [1], pull out connector (3) in the direction of the arrow.

- 125 – 170, 12V140 engine
- 4) While pressing lock (E) of the connector, pullout connector (5) in the direction of the arrow.

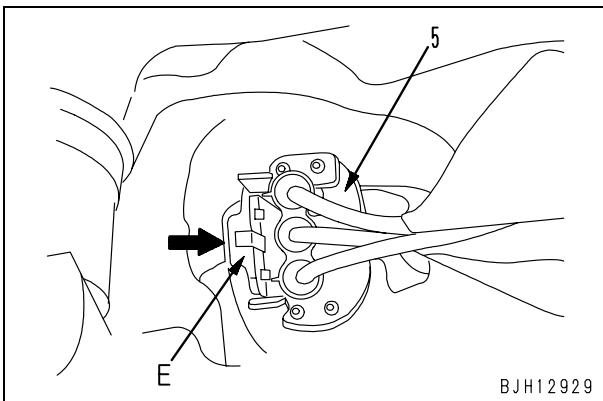
Example)  
 Fuel pressure in common rail: PFUEL etc.  
**(AMP-3)**



Example)  
 Injection pressure control valve of fuel supply pump: PCV **(SUMITOMO-2)**



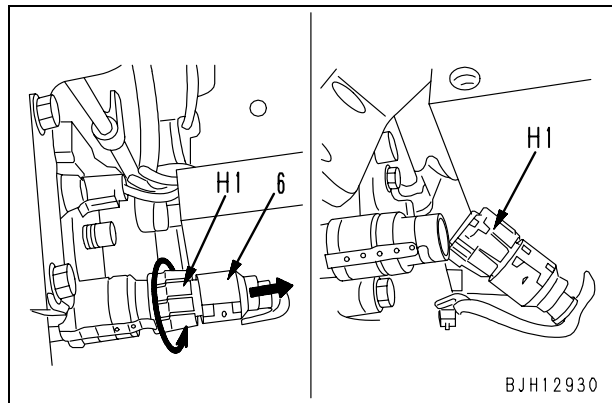
Example)  
 Speed sensor of fuel supply pump:  
**G (SUMITOMO-3)**  
 ★ Pull the connector straight up.



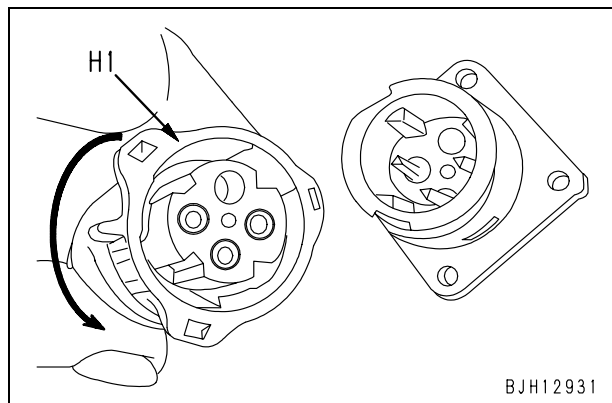
**4. Turn-housing type (Round green connector)**

- 140 engine  
 Example)  
 Intake air pressure sensor in intake manifold (CANNON-04): PIM etc.

- 1) Disconnect connector (6) according to the following procedure.
- 1] Turn housing (H1) in the direction of the arrow.  
 ★ When connector is unlocked, housing (H1) becomes heavy to turn.
  - 2] Pull out housing (H1) in the direction of the arrow.  
 ★ Housing (H1) is left on the wiring harness side.



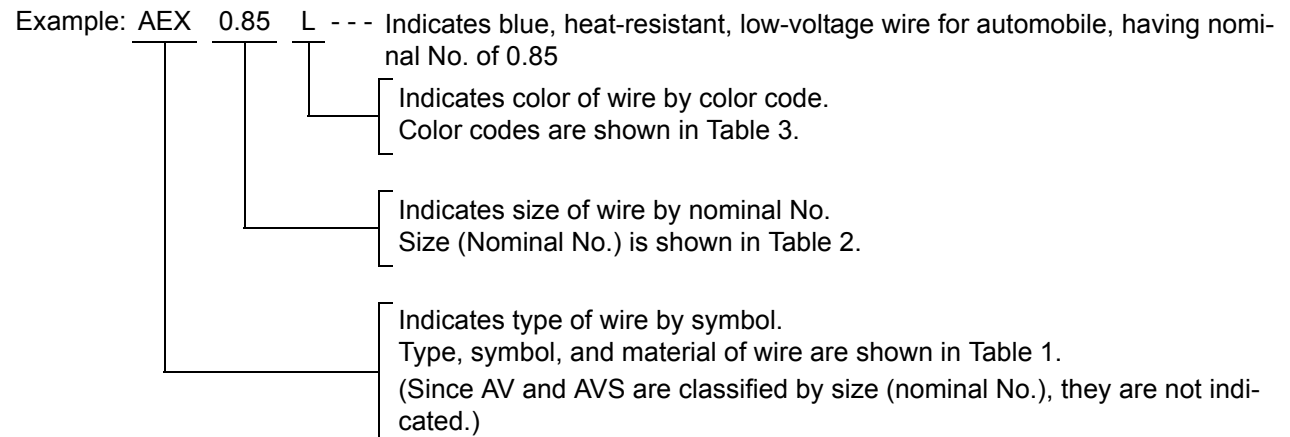
- 2) Connect the connector according to the following procedure.
- 1] Insert the connector to the end, while setting its groove.
  - 2] Turn housing (H1) in the direction of the arrow until it “clicks”.



## How to read electric wire code

- ★ The information about the wires unique to each machine model is described in Troubleshooting section, Relational information of troubleshooting.

In the electric circuit diagram, the material, thickness, and color of each electric wire are indicated by symbols. The electric wire code is helpful in understanding the electric circuit diagram.



### 1. Type, symbol, and material

AV and AVS are different in only thickness and outside diameter of the cover. AEX is similar to AV in thickness and outside diameter of AEX and different from AV and AVS in material of the cover.

(Table 1)

Type	Sym- bol	Material		Using temperature range (°C)	Example of use
Low-voltage wire for automobile	AV	Conduc- tor	Annealed copper for elec- tric appliance	-30 to +60	General wiring (Nominal No. 5 and above)
		Insulator	Soft polyvinyl chloride		
Thin-cover low-voltage wire for automobile	AVS	Conduc- tor	Annealed copper for elec- tric appliance		
		Insulator	Soft polyvinyl chloride		
Heat-resis- tant low-volt- age wire for automobile	AEX	Conduc- tor	Annealed copper for elec- tric appliance	-50 to +110	General wiring in extremely cold district, wiring at high-tem- perature place
		Insulator	Heat-resistant crosslinked polyethylene		

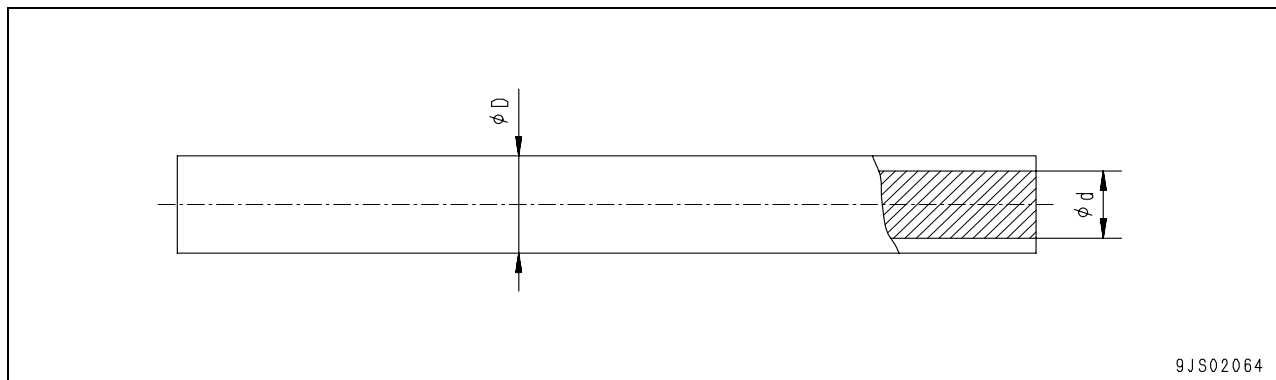
2. Dimensions

(Table 2)

Nominal No.		0.5f	(0.5)	0.75f	(0.85)	1.25f	(1.25)	2f	2	3f	3	5
Conductor	Number of strands/Diameter of strand	20/0.18	7/0.32	30/0.18	11/0.32	50/0.18	16/0.32	37/0.26	26/0.32	58/0.26	41/0.32	65/0.32
	Sectional area (mm <sup>2</sup> )	0.51	0.56	0.76	0.88	1.27	1.29	1.96	2.09	3.08	3.30	5.23
	d (approx.)	1.0		1.2		1.5		1.9	1.9	2.3	2.4	3.0
Cover D	AVS Standard	2.0		2.2		2.5		2.9	2.9	3.5	3.6	–
	AV Standard	–		–		–		–	–	–	–	4.6
	AEX Standard	2.0		2.2		2.7		3.0	3.1	–	3.8	4.6

Nominal No.		8	15	20	30	40	50	60	85	100
Conductor	Number of strands/Diameter of strand	50/0.45	84/0.45	41/0.80	70/0.80	85/0.80	108/0.80	127/0.80	169/0.80	217/0.80
	Sectional area (mm <sup>2</sup> )	7.95	13.36	20.61	35.19	42.73	54.29	63.84	84.96	109.1
	d (approx.)	3.7	4.8	6.0	8.0	8.6	9.8	10.4	12.0	13.6
Cover D	AVS Standard	–	–	–	–	–	–	–	–	–
	AV Standard	5.5	7.0	8.2	10.8	11.4	13.0	13.6	16.0	17.6
	AEX Standard	5.3	7.0	8.2	10.8	11.4	13.0	13.6	16.0	17.6

“f” of nominal No. denotes flexible”.



9JS02064

### 3. Color codes table

(Table 3)

Color Code	Color of wire	Color Code	Color of wire
B	Black	LgW	Light green & White
Br	Brown	LgY	Light green & Yellow
BrB	Brown & Black	LR	Blue & Red
BrR	Brown & Red	LW	Blue & White
BrW	Brown & White	LY	Blue & Yellow
BrY	Brown & Yellow	O	Orange
Ch	Charcoal	P	Pink
Dg	Dark green	R	Red
G	Green	RB	Red & Black
GB	Green & Black	RG	Red & Green
GL	Green & Blue	RL	Red & Blue
Gr	Gray	RW	Red & White
GR	Green & Red	RY	Red & Yellow
GW	Green & White	Sb	Sky Blue
GY	Green & Yellow	Y	Yellow
L	Blue	YB	Yellow & Black
LB	Blue & Black	YG	Yellow & Green
Lg	Light green	YL	Yellow & Blue
LgB	Light green & Black	YR	Yellow & Red
LgR	Light green & Red	YW	Yellow & White

Remarks: In a color code consisting of 2 colors, the first color is the color of the background and the second color is the color of the marking.

Example: "GW" means that the background is Green and marking is White.

### 4. Types of circuits and color codes

(Table 4)

Type of wire	AVS or AV						AEX		
Type of circuit	Charge	R	WG	-	-	-	-	R	-
	Ground	B	-	-	-	-	-	B	-
	Start	R	-	-	-	-	-	R	-
	Light	RW	RB	RY	RG	RL	-	D	-
	Instrument	Y	YR	YB	YG	YL	YW	Y	Gr
	Signal	G	GW	GR	GY	GB	GL	G	Br
	Others	L	LW	LR	LY	LB	-	L	-
		Br	BrW	BrR	BrY	BrB	-	-	-
		Lg	LgR	LgY	LgB	LgW	-	-	-
		O	-	-	-	-	-	-	-
		Gr	-	-	-	-	-	-	-
		P	-	-	-	-	-	-	-
		Sb	-	-	-	-	-	-	-
Dg	-	-	-	-	-	-	-	-	
Ch	-	-	-	-	-	-	-	-	

## Precautions when carrying out operation

[When carrying out removal or installation (disassembly or assembly) of units, be sure to follow the general precautions given below when carrying out the operation.]

### 1. Precautions when carrying out removal work

- If the coolant contains antifreeze, dispose of it correctly.
- After disconnecting hoses or tubes, cover them or fit plugs to prevent dirt or dust from entering.
- When draining oil, prepare a container of adequate size to catch the oil.
- Confirm the match marks showing the installation position, and make match marks in the necessary places before removal to prevent any mistake when assembling.
- To prevent any excessive force from being applied to the wiring, always hold the connectors when disconnecting the connectors. Do not pull the wires.
- Fit wires and hoses with tags to show their installation position to prevent any mistake when installing.
- Check the number and thickness of the shims, and keep in a safe place.
- When raising components, be sure to use lifting equipment of ample strength.
- When using forcing screws to remove any components, tighten the forcing screws uniformly in turn.
- Before removing any unit, clean the surrounding area and fit a cover to prevent any dust or dirt from entering after removal.

### ★ Precautions when handling piping during disassembly

Fit the following plugs into the piping after disconnecting it during disassembly operations.

#### 1) Face seal type hoses and tubes

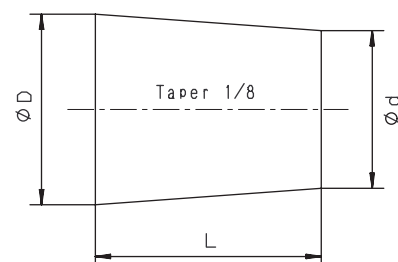
Nominal number	Plug (nut end)	Sleeve nut (elbow end)
02	07376-70210	02789-20210
03	07376-70315	02789-20315
04	07376-70422	02789-20422
05	07376-70522	02789-20522
06	07376-70628	02789-20628
10	07376-71034	07221-21034
12	07376-71234	07221-21234

#### 2) Split flange type hoses and tubes

Nominal number	Flange (hose end)	Sleeve head (tube end)	Split flange
04	07379-00400	07378-10400	07371-30400
05	07379-00500	07378-10500	07371-30500

#### 3) If the part is not under hydraulic pressure, the following corks can be used.

Nominal number	Part Number	Dimensions		
		D	d	L
06	07049-00608	6	5	8
08	07049-00811	8	6.5	11
10	07049-01012	10	8.5	12
12	07049-01215	12	10	15
14	07049-01418	14	11.5	18
16	07049-01620	16	13.5	20
18	07049-01822	18	15	22
20	07049-02025	20	17	25
22	07049-02228	22	18.5	28
24	07049-02430	24	20	30
27	07049-02734	27	22.5	34



DEW00401



## 2. Precautions when carrying out installation work

- Tighten all bolts and nuts (sleeve nuts) to the specified (KES) torque.
  - Install the hoses without twisting or interference and fix them with intermediate clamps, if there are any.
  - Replace all gaskets, O-rings, cotter pins, and lock plates with new parts.
  - Bend the cotter pins and lock plates securely.
  - When coating with adhesive, clean the part and remove all oil and grease, then coat the threaded portion with 2 – 3 drops of adhesive.
  - When coating with gasket sealant, clean the surface and remove all oil and grease, check that there is no dirt or damage, then coat uniformly with gasket sealant.
  - Clean all parts, and correct any damage, dents, burrs, or rust.
  - Coat rotating parts and sliding parts with engine oil.
  - When press fitting parts, coat the surface with anti-friction compound (LM-P).
  - After fitting snap rings, check that the snap ring is fitted securely in the ring groove.
  - When connecting wiring connectors, clean the connector to remove all oil, dirt, or water, then connect securely.
  - When using eyebolts, check that there is no deformation or deterioration, screw them in fully, and align the direction of the hook.
  - When tightening split flanges, tighten uniformly in turn to prevent excessive tightening on one side.
- ★ When operating the hydraulic cylinders for the first time after reassembling cylinders, pumps and other hydraulic equipment removed for repair, always bleed the air as follows:
- 1) Start the engine and run at low idle.
  - 2) Operate the work equipment control lever to operate the hydraulic cylinder 4 – 5 times, stopping the cylinder 100 mm from the end of its stroke.
  - 3) Next, operate the hydraulic cylinder 3 – 4 times to the end of its stroke.
  - 4) After doing this, run the engine at normal speed.
- ★ When using the machine for the first time after repair or long storage, follow the same procedure.

## 3. Precautions when completing the operation

- 1) Refilling with coolant, oil and grease
  - If the coolant has been drained, tighten the drain valve, and add coolant to the specified level. Run the engine to circulate the coolant through the system. Then check the coolant level again.
  - If the hydraulic equipment has been removed and installed again, add engine oil to the specified level. Run the engine to circulate the oil through the system. Then check the oil level again.
  - If the piping or hydraulic equipment have been removed, always bleed the air from the system after reassembling the parts.
    - ★ For details, see Testing and adjusting, “Bleeding air”.
  - Add the specified amount of grease (molybdenum disulphide grease) to the work equipment parts.
- 2) Checking cylinder head and manifolds for looseness

Check the cylinder head and intake and exhaust manifold for looseness.  
If any part is loosened, retighten it.

  - For the tightening torque, see “Disassembly and assembly”.
- 3) Checking engine piping for damage and looseness

Intake and exhaust system

Check the piping for damage, the mounting bolts and nuts for looseness, and the joints for air suction and exhaust gas leakage.  
If any part is loosened or damaged, retighten or repair it.

Cooling system

Check the piping for damage, the mounting bolts and nuts for looseness, and the joints for coolant leakage.  
If any part is loosened or damaged, retighten or repair it.

Fuel system

Check the piping for damage, the mounting bolts and nuts for looseness, and the joints for fuel leakage.  
If any part is loosened or damaged, retighten or repair it.

- 4) Checking muffler and exhaust pipe for damage and looseness
  - 1] Visually check the muffler, exhaust pipe and their mounting parts for a crack and damage.  
If any part is damaged, replace it.
  - 2] Check the mounting bolts and nuts of the muffler, exhaust pipe and their mounting parts for looseness.  
If any bolt or nut is loosened, retighten it.
- 5) Checking muffler function  
Check the muffler for abnormal sound and sound different from that of a new muffler.  
If any abnormal sound is heard, repair the muffler, referring to "Troubleshooting" and "Disassembly and assembly".

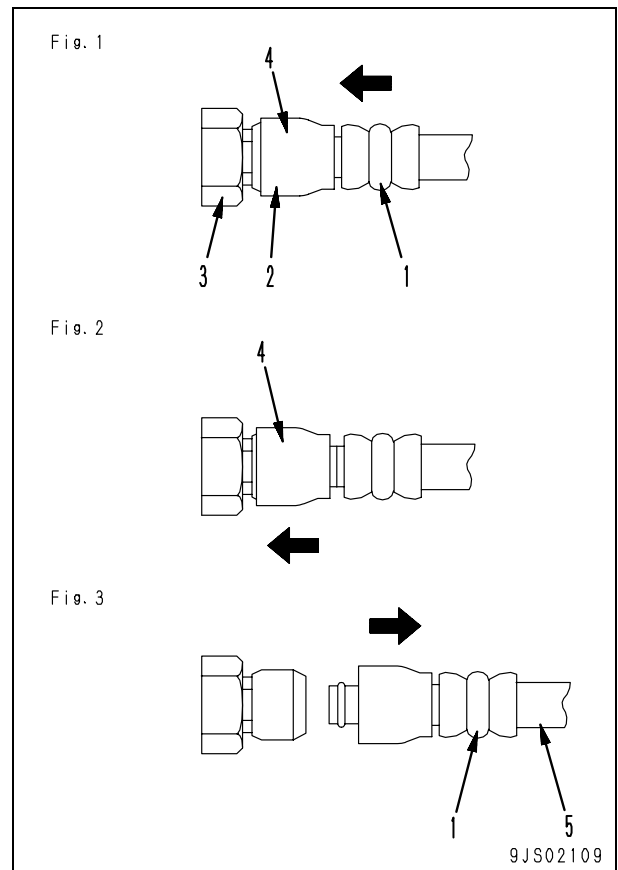
## Method of disassembling and connecting push-pull type coupler

- ⚠ Before carrying out the following work, loosen the oil filler cap of the hydraulic tank gradually to release the residual pressure from the hydraulic tank.
- ⚠ Even if the residual pressure is released from the hydraulic tank, some hydraulic oil flows out when the hose is disconnected. Accordingly, prepare an oil receiving container.

### Type 1

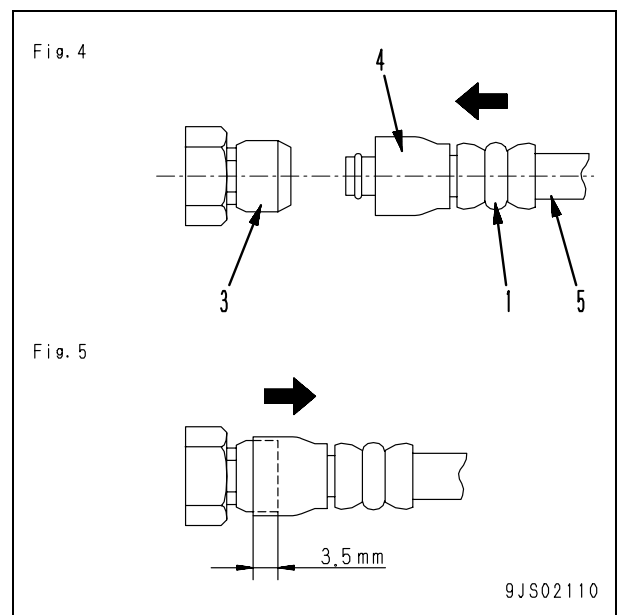
#### 1. Disconnection

- 1) Hold adapter (1) and push hose joint (2) into mating adapter (3). (Fig. 1)
  - ★ The adapter can be pushed in about 3.5 mm.
  - ★ Do not hold rubber cap portion (4).
- 2) After hose joint (2) is pushed into adapter (3), press rubber cap portion (4) against adapter (3) until it clicks. (Fig. 2)
- 3) Hold hose adapter (1) or hose (5) and pull it out. (Fig. 3)
  - ★ Since some hydraulic oil flows out, prepare an oil receiving container.



#### 2. Connection

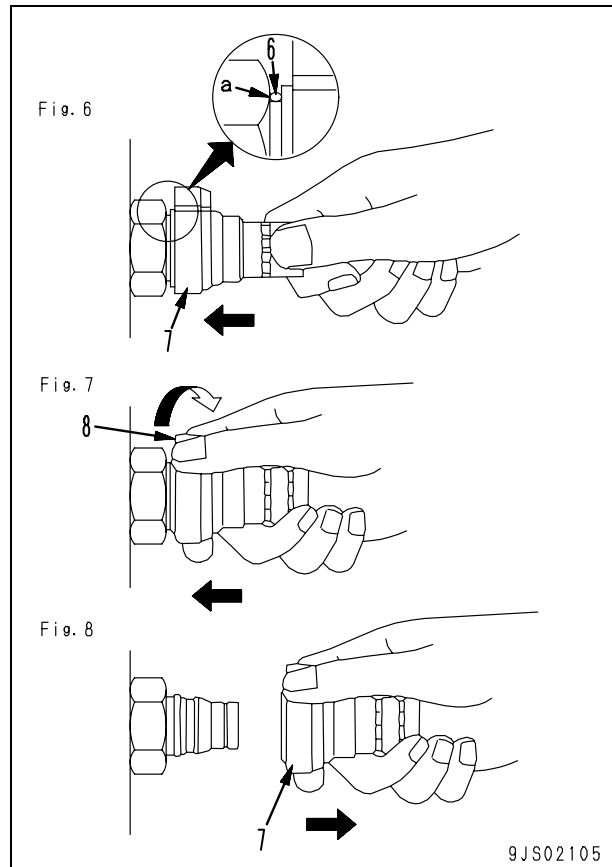
- 1) Hold hose adapter (1) or hose (5) and insert it in mating adapter (3), aligning them with each other. (Fig. 4)
  - ★ Do not hold rubber cap portion (4).
- 2) After inserting the hose in the mating adapter perfectly, pull it back to check its connecting condition. (Fig. 5)
  - ★ When the hose is pulled back, the rubber cap portion moves toward the hose about 3.5 mm. This does not indicate abnormality, however.



## Type 2

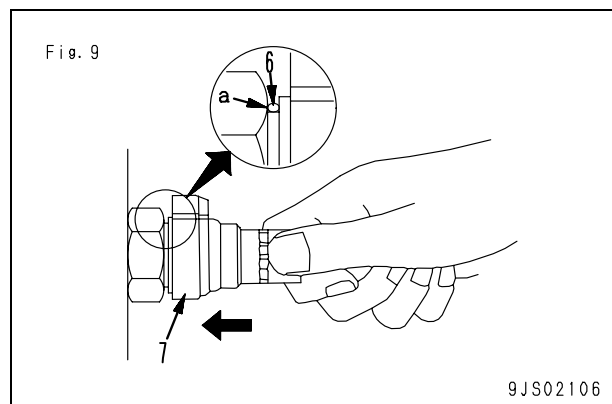
## 1. Disconnection

- 1) Hold the tightening portion and push body (7) straight until sliding prevention ring (6) contacts contact surface (a) of the hexagonal portion at the male end. (Fig. 6)
- 2) While holding the condition of Step 1, turn lever (8) to the right (clockwise). (Fig. 7)
- 3) While holding the condition of Steps 1) and 2), pull out whole body (7) to disconnect it. (Fig. 8)



## 2. Connection

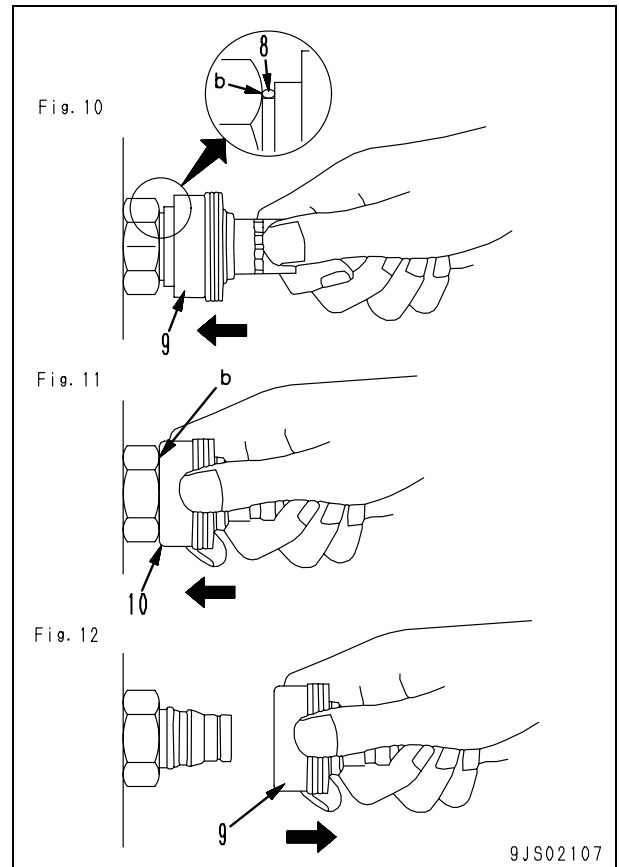
- Hold the tightening portion and push body (7) straight until sliding prevention ring (6) contacts contact surface (a) of the hexagonal portion at the male end. (Fig. 9)



## Type 3

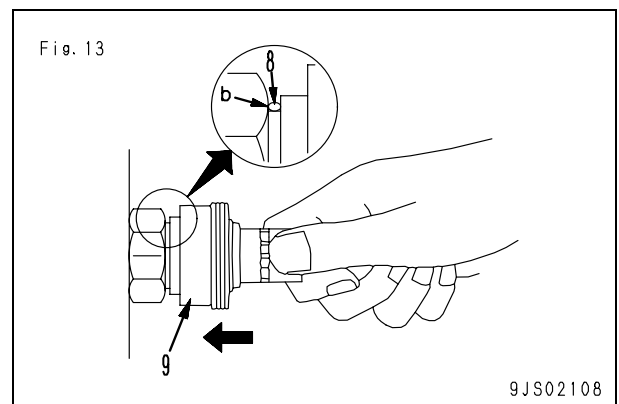
## 1. Disconnection

- 1) Hold the tightening portion and push body (9) straight until sliding prevention ring (8) contacts contact surface (b) of the hexagonal portion at the male end. (Fig. 10)
- 2) While holding the condition of Step 1, push cover (10) straight until it contacts contact surface (b) of the hexagonal portion at the male end. (Fig. 11)
- 3) While holding the condition of Steps 1) and 2), pull out whole body (9) to disconnect it. (Fig. 12)



## 2. Connection

- Hold the tightening portion and push body (9) straight until the sliding prevention ring contacts contact surface (b) of the hexagonal portion at the male end. (Fig. 13)



### Standard tightening torque table

1. Table of tightening torques for bolts and nuts

★ Unless there are special instructions, tighten metric nuts and bolts to the torque below. (When using torque wrench)

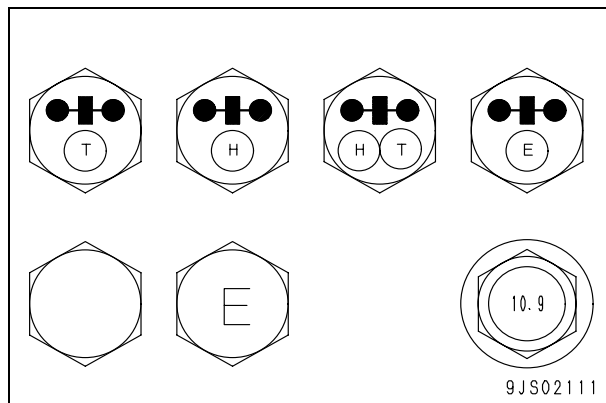
★ The following table corresponds to the bolts in Fig. A.

Thread diameter of bolt mm	Width across flats mm	Tightening torque	
		Nm	kgm
6	10	11.8 – 14.7	1.2 – 1.5
8	13	27 – 34	2.8 – 3.5
10	17	59 – 74	6.0 – 7.5
12	19	98 – 123	10.0 – 12.5
14	22	153 – 190	15.5 – 19.5
16	24	235 – 285	23.5 – 29.5
18	27	320 – 400	33.0 – 41.0
20	30	455 – 565	46.5 – 58.0
22	32	610 – 765	62.5 – 78.0
24	36	785 – 980	80.0 – 100.0
27	41	1,150 – 1,440	118 – 147
30	46	1,520 – 1,910	155 – 195
33	50	1,960 – 2,450	200 – 250
36	55	2,450 – 3,040	250 – 310
39	60	2,890 – 3,630	295 – 370

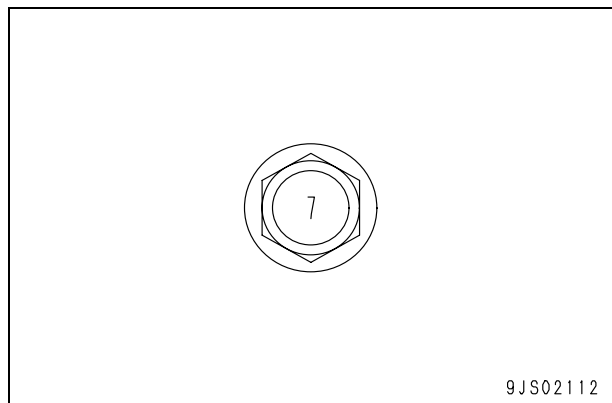
★ The following table corresponds to the bolts in Fig. B.

Thread diameter of bolt mm	Width across flats mm	Tightening torque	
		Nm	kgm
6	10	5.9 – 9.8	0.6 – 1.0
8	13	13.7 – 23.5	1.4 – 2.4
10	14	34.3 – 46.1	3.5 – 4.7
12	27	74.5 – 90.2	7.6 – 9.2

★ Fig. A



★ Fig. B



**2. Table of tightening torques for split flange bolts**

★ Unless there are special instructions, tighten split flange bolts to the torque below.

Thread diameter of bolt mm	Width across flats mm	Tightening torque	
		Nm	kgm
10	14	59 – 74	6.0 – 7.5
12	17	98 – 123	10.0 – 12.5
16	22	235 – 285	23.5 – 29.5

**3. Table of tightening torques for O-ring boss piping joints**

★ Unless there are special instructions, tighten O-ring boss piping joints to the torque below.

Nominal No.	Thread diameter mm	Width across flats mm	Tightening torque Nm {kgm}	
			Range	Target
02	14	Varies depending on type of connec- tor.	35 – 63 { 3.5 – 6.5}	44 { 4.5}
03,04	20		84 – 132 { 8.5 – 13.5}	103 {10.5}
05,06	24		128 – 186 {13.0 – 19.0}	157 {16.0}
10,12	33		363 – 480 {37.0 – 49.0}	422 {43.0}
14	42		746 – 1,010 {76.0 – 103}	883 {90.0}

**4. Table of tightening torques for O-ring boss plugs**

★ Unless there are special instructions, tighten O-ring boss plugs to the torque below.

Nominal No.	Thread diameter mm	Width across flats mm	Tightening torque Nm {kgm}	
			Range	Target
08	8	14	5.88 – 8.82 {0.6 – 0.9}	7.35 {0.75}
10	10	17	9.81 – 12.74 {1.0 – 1.3}	11.27 {1.15}
12	12	19	14.7 – 19.6 {1.5 – 2.0}	17.64 {1.8}
14	14	22	19.6 – 24.5 {2.0 – 2.5}	22.54 {2.3}
16	16	24	24.5 – 34.3 {2.5 – 3.5}	29.4 {3.0}
18	18	27	34.3 – 44.1 {3.5 – 4.5}	39.2 {4.0}
20	20	30	44.1 – 53.9 {4.5 – 5.5}	49.0 {5.0}
24	24	32	58.8 – 78.4 {6.0 – 8.0}	68.6 {7.0}
30	30	32	93.1 – 122.5 { 9.5 – 12.5}	107.8 {11.0}
33	33	–	107.8 – 147.0 {11.0 – 15.0}	127.4 {13.0}
36	36	36	127.4 – 176.4 {13.0 – 18.0}	151.9 {15.5}
42	42	–	181.3 – 240.1 {18.5 – 24.5}	210.7 {21.5}
52	52	–	274.4 – 367.5 {28.0 – 37.5}	323.4 {33.0}

**5. Table of tightening torques for hoses (taper seal type and face seal type)**

- ★ Unless there are special instructions, tighten the hoses (taper seal type and face seal type) to the torque below.
- ★ Apply the following torque when the threads are coated (wet) with engine oil.

Nominal No. of hose	Width across flats	Tightening torque Nm {kgm}		Taper seal Thread size (mm)	Face seal	
		Range	Target		Nominal No. - Number of threads, type of thread	Thread diameter (mm) (Reference)
02	19	34 – 54 { 3.5 – 5.5 }	44 { 4.5 }	–	9/16-18UN	14.3
		34 – 63 { 3.5 – 6.5 }		14	–	–
03	22	54 – 93 { 5.5 – 9.5 }	74 { 7.5 }	–	11/16-16UN	17.5
	24	59 – 98 { 6.0 – 10.0 }	78 { 8.0 }	18	–	–
04	27	84 – 132 { 8.5 – 13.5 }	103 { 10.5 }	22	13/16-16UN	20.6
05	32	128 – 186 { 13.0 – 19.0 }	157 { 16.0 }	24	1-14UNS	25.4
06	36	177 – 245 { 18.0 – 25.0 }	216 { 22.0 }	30	1-3/16-12UN	30.2
(10)	41	177 – 245 { 18.0 – 25.0 }	216 { 22.0 }	33	–	–
(12)	46	197 – 294 { 20.0 – 30.0 }	245 { 25.0 }	36	–	–
(14)	55	246 – 343 { 25.0 – 35.0 }	294 { 30.0 }	42	–	–

**6. Table of tightening torques for 102, 107 and 114 engine series (Bolts and nuts)**

- ★ Unless there are special instructions, tighten the metric bolts and nuts of the 102, 107 and 114 engine series to the torque below.

Thread size mm	Tightening torque	
	Bolts and nuts	
	Nm	kgm
6	10 ± 2	1.02 ± 0.20
8	24 ± 4	2.45 ± 0.41
10	43 ± 6	4.38 ± 0.61
12	77 ± 12	7.85 ± 1.22
14	—	—

**7. Table of tightening torques for 102, 107 and 114 engine series (Eye joints)**

- ★ Unless there are special instructions, tighten the metric eye joints of the 102, 107 and 114 engine series to the torque below.

Thread size mm	Tightening torque	
	Nm	kgm
	6	8 ± 2
8	10 ± 2	1.02 ± 0.20
10	12 ± 2	1.22 ± 0.20
12	24 ± 4	2.45 ± 0.41
14	36 ± 5	3.67 ± 0.51



**8. Table of tightening torques for 102, 107 and 114 engine series (Taper screws)**

- ★ Unless there are special instructions, tighten the taper screws (unit: inch) of the 102, 107 and 114 engine series to the torque below.

Thread size	Tightening torque	
	Nm	kgm
inch		
1/16	$3 \pm 1$	$0.31 \pm 0.10$
1/8	$8 \pm 2$	$0.81 \pm 0.20$
1/4	$12 \pm 2$	$1.22 \pm 0.20$
3/8	$15 \pm 2$	$1.53 \pm 0.20$
1/2	$24 \pm 4$	$2.45 \pm 0.41$
3/4	$36 \pm 5$	$3.67 \pm 0.51$
1	$60 \pm 9$	$6.12 \pm 0.92$

## Conversion table

### Method of using the conversion table

The conversion table in this section is provided to enable simple conversion of figures. For details of the method of using the conversion table, see the example given below.

Example: Method of using the conversion table to convert from millimeters to inches

#### 1. Convert 55 mm into inches.

- 1) Locate the number 50 in the vertical column at the left side, take this as (A), and then draw a horizontal line from (A).
- 2) Locate the number 5 in the row across the top, take this as (B), then draw a perpendicular line down from (B).
- 3) Take the point where the 2 lines cross as (C). This point (C) gives the value when converting from millimeters to inches. Therefore, 55 mm = 2.165 inches.

#### 2. Convert 550 mm into inches.

- 1) The number 550 does not appear in the table, so divide it by 10 (move the decimal point one place to the left) to convert it to 55 mm.
- 2) Carry out the same procedure as above to convert 55 mm to 2.165 inches.
- 3) The original value (550 mm) was divided by 10, so multiply 2.165 inches by 10 (move the decimal point one place to the right) to return to the original value. This gives 550 mm = 21.65 inches.

Millimeters to inches

(B)

1 mm = 0.03937 in

	0	1	2	3	4	5	6	7	8	9
0	0	0.039	0.079	0.118	0.157	0.197	0.236	0.276	0.315	0.354
10	0.394	0.433	0.472	0.512	0.551	0.591	0.630	0.669	0.709	0.748
20	0.787	0.827	0.866	0.906	0.945	0.984	1.024	1.063	1.102	1.142
30	1.181	1.220	1.260	1.299	1.339	1.378	1.417	1.457	1.496	1.536
40	1.575	1.614	1.654	1.693	1.732	1.772	1.811	1.850	1.890	1.929
(A) 50	1.969	2.008	2.047	2.087	2.126	2.165	2.205	2.244	2.283	2.323
60	2.362	2.402	2.441	2.480	2.520	2.559	2.598	2.638	2.677	2.717
70	2.756	2.795	2.835	2.874	2.913	2.953	2.992	3.032	3.071	3.110
80	3.150	3.189	3.228	3.268	3.307	3.346	3.386	3.425	3.465	3.504
90	3.543	3.583	3.622	3.661	3.701	3.740	3.780	3.819	3.858	3.898

**Millimeters to inches**

1 mm = 0.03937 in

	0	1	2	3	4	5	6	7	8	9
0	0	0.039	0.079	0.118	0.157	0.197	0.236	0.276	0.315	0.354
10	0.394	0.433	0.472	0.512	0.551	0.591	0.630	0.669	0.709	0.748
20	0.787	0.827	0.866	0.906	0.945	0.984	1.024	1.063	1.102	1.142
30	1.181	1.220	1.260	1.299	1.339	1.378	1.417	1.457	1.496	1.536
40	1.575	1.614	1.654	1.693	1.732	1.772	1.811	1.850	1.890	1.929
50	1.969	2.008	2.047	2.087	2.126	2.165	2.205	2.244	2.283	2.323
60	2.362	2.402	2.441	2.480	2.520	2.559	2.598	2.638	2.677	2.717
70	2.756	2.795	2.835	2.874	2.913	2.953	2.992	3.032	3.071	3.110
80	3.150	3.189	3.228	3.268	3.307	3.346	3.386	3.425	3.465	3.504
90	3.543	3.583	3.622	3.661	3.701	3.740	3.780	3.819	3.858	3.898

**Kilogram to pound**

1 kg = 2.2046 lb

	0	1	2	3	4	5	6	7	8	9
0	0	2.20	4.41	6.61	8.82	11.02	13.23	15.43	17.64	19.84
10	22.05	24.25	26.46	28.66	30.86	33.07	35.27	37.48	39.68	41.89
20	44.09	46.30	48.50	50.71	51.91	55.12	57.32	59.53	61.73	63.93
30	66.14	68.34	70.55	72.75	74.96	77.16	79.37	81.57	83.78	85.98
40	88.18	90.39	92.59	94.80	97.00	99.21	101.41	103.62	105.82	108.03
50	110.23	112.44	114.64	116.85	119.05	121.25	123.46	125.66	127.87	130.07
60	132.28	134.48	136.69	138.89	141.10	143.30	145.51	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.76	171.96	174.17
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.01	196.21
90	198.42	200.62	202.83	205.03	207.24	209.44	211.64	213.85	216.05	218.26

**Liters to U.S. Gallons**

1 ℓ = 0.2642 U.S. Gal

	0	1	2	3	4	5	6	7	8	9
0	0	0.264	0.528	0.793	1.057	1.321	1.585	1.849	2.113	2.378
10	2.642	2.906	3.170	3.434	3.698	3.963	4.227	4.491	4.755	5.019
20	5.283	5.548	5.812	6.076	6.340	6.604	6.869	7.133	7.397	7.661
30	7.925	8.189	8.454	8.718	8.982	9.246	9.510	9.774	10.039	10.303
40	10.567	10.831	11.095	11.359	11.624	11.888	12.152	12.416	12.680	12.944
50	13.209	13.473	13.737	14.001	14.265	14.529	14.795	15.058	15.322	15.586
60	15.850	16.115	16.379	16.643	16.907	17.171	17.435	17.700	17.964	18.228
70	18.492	18.756	19.020	19.285	19.549	19.813	20.077	20.341	20.605	20.870
80	21.134	21.398	21.662	21.926	22.190	22.455	22.719	22.983	23.247	23.511
90	23.775	24.040	24.304	24.568	24.832	25.096	25.361	25.625	25.889	26.153

**Liters to U.K. Gallons**

1 ℓ = 0.21997 U.K.Gal

	0	1	2	3	4	5	6	7	8	9
0	0	0.220	0.440	0.660	0.880	1.100	1.320	1.540	1.760	1.980
10	2.200	2.420	2.640	2.860	3.080	3.300	3.520	3.740	3.950	4.179
20	4.399	4.619	4.839	5.059	5.279	5.499	5.719	5.939	6.159	6.379
30	6.599	6.819	7.039	7.259	7.479	7.699	7.919	8.139	8.359	8.579
40	8.799	9.019	9.239	9.459	9.679	9.899	10.119	10.339	10.559	10.778
50	10.998	11.281	11.438	11.658	11.878	12.098	12.318	12.528	12.758	12.978
60	13.198	13.418	13.638	13.858	14.078	14.298	14.518	14.738	14.958	15.178
70	15.398	15.618	15.838	16.058	16.278	16.498	16.718	16.938	17.158	17.378
80	17.598	17.818	18.037	18.257	18.477	18.697	18.917	19.137	19.357	19.577
90	19.797	20.017	20.237	20.457	20.677	20.897	21.117	21.337	21.557	21.777

**kgm to ft.lb**

1 kgm = 7.233 ft.lb

	0	1	2	3	4	5	6	7	8	9
0	0	7.2	14.5	21.7	28.9	36.2	43.4	50.6	57.9	65.1
10	72.3	79.6	86.8	94.0	101.3	108.5	115.7	123.0	130.2	137.4
20	144.7	151.9	159.1	166.4	173.6	180.8	188.1	195.3	202.5	209.8
30	217.0	224.2	231.5	238.7	245.9	253.2	260.4	267.6	274.9	282.1
40	289.3	296.6	303.8	311.0	318.3	325.5	332.7	340.0	347.2	354.4
50	361.7	368.9	376.1	383.4	390.6	397.8	405.1	412.3	419.5	426.8
60	434.0	441.2	448.5	455.7	462.9	470.2	477.4	484.6	491.8	499.1
70	506.3	513.5	520.8	528.0	535.2	542.5	549.7	556.9	564.2	571.4
80	578.6	585.9	593.1	600.3	607.6	614.8	622.0	629.3	636.5	643.7
90	651.0	658.2	665.4	672.7	679.9	687.1	694.4	701.6	708.8	716.1
100	723.3	730.5	737.8	745.0	752.2	759.5	766.7	773.9	781.2	788.4
110	795.6	802.9	810.1	817.3	824.6	831.8	839.0	846.3	853.5	860.7
120	868.0	875.2	882.4	889.7	896.9	904.1	911.4	918.6	925.8	933.1
130	940.3	947.5	954.8	962.0	969.2	976.5	983.7	990.9	998.2	1005.4
140	1012.6	1019.9	1027.1	1034.3	1041.5	1048.8	1056.0	1063.2	1070.5	1077.7
150	1084.9	1092.2	1099.4	1106.6	1113.9	1121.1	1128.3	1135.6	1142.8	1150.0
160	1157.3	1164.5	1171.7	1179.0	1186.2	1193.4	1200.7	1207.9	1215.1	1222.4
170	1129.6	1236.8	1244.1	1251.3	1258.5	1265.8	1273.0	1280.1	1287.5	1294.7
180	1301.9	1309.2	1316.4	1323.6	1330.9	1338.1	1345.3	1352.6	1359.8	1367.0
190	1374.3	1381.5	1388.7	1396.0	1403.2	1410.4	1417.7	1424.9	1432.1	1439.4

kg/cm<sup>2</sup> to lb/in<sup>2</sup>1 kg/cm<sup>2</sup> = 14.2233 lb/in<sup>2</sup>

	0	1	2	3	4	5	6	7	8	9
0	0	14.2	28.4	42.7	56.9	71.1	85.3	99.6	113.8	128.0
10	142.2	156.5	170.7	184.9	199.1	213.4	227.6	241.8	256.0	270.2
20	284.5	298.7	312.9	327.1	341.4	355.6	369.8	384.0	398.3	412.5
30	426.7	440.9	455.1	469.4	483.6	497.8	512.0	526.3	540.5	554.7
40	568.9	583.2	597.4	611.6	625.8	640.1	654.3	668.5	682.7	696.9
50	711.2	725.4	739.6	753.8	768.1	782.3	796.5	810.7	825.0	839.2
60	853.4	867.6	881.8	896.1	910.3	924.5	938.7	953.0	967.2	981.4
70	995.6	1,010	1,024	1,038	1,053	1,067	1,081	1,095	1,109	1,124
80	1,138	1,152	1,166	1,181	1,195	1,209	1,223	1,237	1,252	1,266
90	1,280	1,294	1,309	1,323	1,337	1,351	1,365	1,380	1,394	1,408
100	1,422	1,437	1,451	1,465	1,479	1,493	1,508	1,522	1,536	1,550
110	1,565	1,579	1,593	1,607	1,621	1,636	1,650	1,664	1,678	1,693
120	1,707	1,721	1,735	1,749	1,764	1,778	1,792	1,806	1,821	1,835
130	1,849	1,863	1,877	1,892	1,906	1,920	1,934	1,949	1,963	1,977
140	1,991	2,005	2,020	2,034	2,048	2,062	2,077	2,091	2,105	2,119
150	2,134	2,148	2,162	2,176	2,190	2,205	2,219	2,233	2,247	2,262
160	2,276	2,290	2,304	2,318	2,333	2,347	2,361	2,375	2,389	2,404
170	2,418	2,432	2,446	2,460	2,475	2,489	2,503	2,518	2,532	2,546
180	2,560	2,574	2,589	2,603	2,617	2,631	2,646	2,660	2,674	2,688
190	2,702	2,717	2,731	2,745	2,759	2,773	2,788	2,802	2,816	2,830
200	2,845	2,859	2,873	2,887	2,901	2,916	2,930	2,944	2,958	2,973
210	2,987	3,001	3,015	3,030	3,044	3,058	3,072	3,086	3,101	3,115
220	3,129	3,143	3,158	3,172	3,186	3,200	3,214	3,229	3,243	3,257
230	3,271	3,286	3,300	3,314	3,328	3,343	3,357	3,371	3,385	3,399
240	3,414	3,428	3,442	3,456	3,470	3,485	3,499	3,513	3,527	3,542

Temperature

Fahrenheit-Centigrade conversion: A simple way to convert a Fahrenheit temperature reading into a Centigrade temperature reading or vice versa is to enter the accompanying table in the center (boldface column) of figures. These figures refer to the temperature in either Fahrenheit or Centigrade degrees. When convert from Fahrenheit to Centigrade degrees, consider the center column to be a table of Fahrenheit temperatures and read the corresponding Centigrade temperature in the column at the left. When convert from Centigrade to Fahrenheit degrees, consider the center column to be a table of Centigrade values, and read the corresponding Fahrenheit temperature on the right.

1°C = 33.8°F

°C		°F	°C		°F	°C		°F	°C		°F
-40.4	<b>-40</b>	-40.0	-11.7	<b>11</b>	51.8	7.8	<b>46</b>	114.8	27.2	<b>81</b>	177.8
-37.2	<b>-35</b>	-31.0	-11.1	<b>12</b>	53.6	8.3	<b>47</b>	116.6	27.8	<b>82</b>	179.6
-34.4	<b>-30</b>	-22.0	-10.6	<b>13</b>	55.4	8.9	<b>48</b>	118.4	28.3	<b>83</b>	181.4
-31.7	<b>-25</b>	-13.0	-10.0	<b>14</b>	57.2	9.4	<b>49</b>	120.2	28.9	<b>84</b>	183.2
-28.9	<b>-20</b>	-4.0	-9.4	<b>15</b>	59.0	10.0	<b>50</b>	122.0	29.4	<b>85</b>	185.0
-28.3	<b>-19</b>	-2.2	-8.9	<b>16</b>	60.8	10.6	<b>51</b>	123.8	30.0	<b>86</b>	186.8
-27.8	<b>-18</b>	-0.4	-8.3	<b>17</b>	62.6	11.1	<b>52</b>	125.6	30.6	<b>87</b>	188.6
-27.2	<b>-17</b>	1.4	-7.8	<b>18</b>	64.4	11.7	<b>53</b>	127.4	31.1	<b>88</b>	190.4
-26.7	<b>-16</b>	3.2	-7.2	<b>19</b>	66.2	12.2	<b>54</b>	129.2	31.7	<b>89</b>	192.2
-26.1	<b>-15</b>	5.0	-6.7	<b>20</b>	68.0	12.8	<b>55</b>	131.0	32.2	<b>90</b>	194.0
-25.6	<b>-14</b>	6.8	-6.1	<b>21</b>	69.8	13.3	<b>56</b>	132.8	32.8	<b>91</b>	195.8
-25.0	<b>-13</b>	8.6	-5.6	<b>22</b>	71.6	13.9	<b>57</b>	134.6	33.3	<b>92</b>	197.6
-24.4	<b>-12</b>	10.4	-5.0	<b>23</b>	73.4	14.4	<b>58</b>	136.4	33.9	<b>93</b>	199.4
-23.9	<b>-11</b>	12.2	-4.4	<b>24</b>	75.2	15.0	<b>59</b>	138.2	34.4	<b>94</b>	201.2
-23.3	<b>-10</b>	14.0	-3.9	<b>25</b>	77.0	15.6	<b>60</b>	140.0	35.0	<b>95</b>	203.0
-22.8	<b>-9</b>	15.8	-3.3	<b>26</b>	78.8	16.1	<b>61</b>	141.8	35.6	<b>96</b>	204.8
-22.2	<b>-8</b>	17.6	-2.8	<b>27</b>	80.6	16.7	<b>62</b>	143.6	36.1	<b>97</b>	206.6
-21.7	<b>-7</b>	19.4	-2.2	<b>28</b>	82.4	17.2	<b>63</b>	145.4	36.7	<b>98</b>	208.4
-21.1	<b>-6</b>	21.2	-1.7	<b>29</b>	84.2	17.8	<b>64</b>	147.2	37.2	<b>99</b>	210.2
-20.6	<b>-5</b>	23.0	-1.1	<b>30</b>	86.0	18.3	<b>65</b>	149.0	37.8	<b>100</b>	212.0
-20.0	<b>-4</b>	24.8	-0.6	<b>31</b>	87.8	18.9	<b>66</b>	150.8	40.6	<b>105</b>	221.0
-19.4	<b>-3</b>	26.6	0	<b>32</b>	89.6	19.4	<b>67</b>	152.6	43.3	<b>110</b>	230.0
-18.9	<b>-2</b>	28.4	0.6	<b>33</b>	91.4	20.0	<b>68</b>	154.4	46.1	<b>115</b>	239.0
-18.3	<b>-1</b>	30.2	1.1	<b>34</b>	93.2	20.6	<b>69</b>	156.2	48.9	<b>120</b>	248.0
-17.8	<b>0</b>	32.0	1.7	<b>35</b>	95.0	21.1	<b>70</b>	158.0	51.7	<b>125</b>	257.0
-17.2	<b>1</b>	33.8	2.2	<b>36</b>	96.8	21.7	<b>71</b>	159.8	54.4	<b>130</b>	266.0
-16.7	<b>2</b>	35.6	2.8	<b>37</b>	98.6	22.2	<b>72</b>	161.6	57.2	<b>135</b>	275.0
-16.1	<b>3</b>	37.4	3.3	<b>38</b>	100.4	22.8	<b>73</b>	163.4	60.0	<b>140</b>	284.0
-15.6	<b>4</b>	39.2	3.9	<b>39</b>	102.2	23.3	<b>74</b>	165.2	62.7	<b>145</b>	293.0
-15.0	<b>5</b>	41.0	4.4	<b>40</b>	104.0	23.9	<b>75</b>	167.0	65.6	<b>150</b>	302.0
-14.4	<b>6</b>	42.8	5.0	<b>41</b>	105.8	24.4	<b>76</b>	168.8	68.3	<b>155</b>	311.0
-13.9	<b>7</b>	44.6	5.6	<b>42</b>	107.6	25.0	<b>77</b>	170.6	71.1	<b>160</b>	320.0
-13.3	<b>8</b>	46.4	6.1	<b>43</b>	109.4	25.6	<b>78</b>	172.4	73.9	<b>165</b>	329.0
-12.8	<b>9</b>	48.2	6.7	<b>44</b>	111.2	26.1	<b>79</b>	174.2	76.7	<b>170</b>	338.0
-12.2	<b>10</b>	50.0	7.2	<b>45</b>	113.0	26.7	<b>80</b>	176.0	79.4	<b>175</b>	347.0

BR380JG-1E0 Mobile crusher

Form No. SEN01344-00

---

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

## 01 Specification

### Specification and technical data

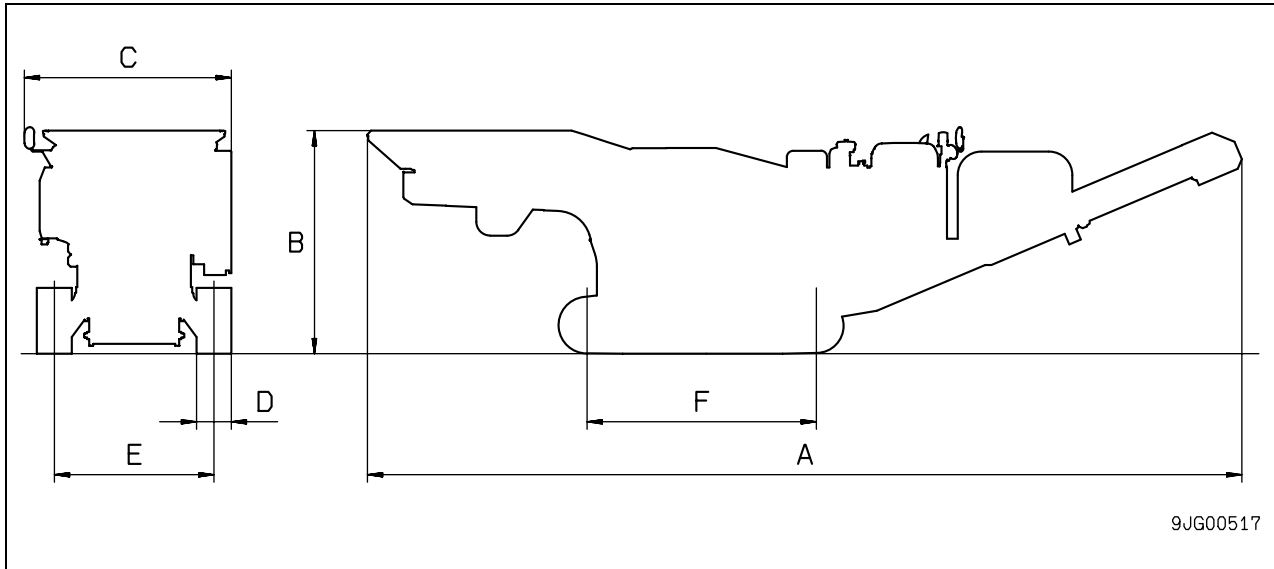
---

Specification dimension drawings .....	2
Specifications .....	3
Weight table .....	5
Table of fuel, coolant and lubricants.....	6



### Specification dimension drawings

#### Dimensions



Unit: mm

<b>A</b>	Overall length	12,500
<b>B</b>	Overall height	3,200
<b>C</b>	Overall width (when transporting)	2,870 (2,810)
<b>D</b>	Width of track	500
<b>E</b>	Tread	2,280
<b>F</b>	Length of track on ground	3,275

## Specifications

Machine model			BR380JG-1E0	
Serial Number			2001 and up	
Operating weight		kg	34,000	
Performance	Maximum feed-in material dimensions (Concrete)		mm	
	Maximum feed-in material dimensions (Stone)		mm	
	Travel speed		km/h	
	Gradeability		deg.	
	Ground pressure		kPa {kg/cm <sup>2</sup> }	
			1,000 × 900 × 475	
			425 × 425 × 425	
			Lo: 0.8, Mi: 2.3, Hi: 3.0	
			25	
			101.8 {1.04}	
Dimensions	Overall length		mm	
	Overall width	(During work)	mm	
		(During transportation)	mm	
	Overall width of track		mm	
	Overall height (Including grouser)		mm	
	Minimum ground clearance	(During work)	mm	
		(During travel)	mm	
Length of track on ground		mm		
Track gauge		mm		
			12,500	
			2,870	
			2,810	
			2,780	
			3,200	
			100 / 200	
			300	
			3,275	
			2,280	
Engine	Name		–	
	Type		–	
	Number of cylinders – Bore × Stroke		mm	
	Total displacement		ℓ {cc}	
	Performance	Rated output		kW/rpm {HP/rpm}
		Max. torque		Nm/rpm {kgm/rpm}
		Max. speed at no load		rpm
		Min. speed at no load		rpm
		Min. fuel consumption		g/kWh {g/HP}
				SAA6D107E-1
			4-stroke, water-cooled, vertical, direct injection type with turbocharger and aftercooler	
			6 – 107 × 124	
			6.69 {6,690}	
			140 / 2,050 {187 / 2,050}	
			721 / 1,500 {73.6 / 1,500}	
			2,330	
			1,050	
			227 {167}	
Starting motor		–	24 V, 5.5 kW	
Alternator		–	24V, 35 A	
Battery		–	12 V, 110 Ah × 2	
Type of radiator		–	Aluminum wave type, 4 rows	
Undercarriage	Number of rollers	Carrier roller (Each side)	piece	
		Track roller (Each side)	piece	
	Track	Type of track shoe		–
		Shoe width	mm	–
		Tension adjuster	–	–
Type of travel brake		–	–	
			2	
			5	
			Assembly-type triple grouser, 45 pieces on each side	
			500	
			Grease cylinder type (With cushion spring)	
			Hydraulic lock	
Crusher	Model name and type		–	
	Nominal dimensions		mm	
	Speed		rpm	
	Drive method		–	
			KCJ4222 single toggle jaw crusher	
			1,065 × 550	
			170 – 330 (If equipped 150 – 290)	
			Hydraulic motor V-belt drive	

Machine model			BR380JG-1E0		
Serial Number			2001 and up		
Feeder	Type	–	Grizzly feeder with 2-level deck and speed controller		
	Type of vibrator	–	Horizontal double shaft type		
	Dimensions of trough	mm	1,000 x 3,220		
	Vibration frequency	c.p.m	Variable, 1,000 (Rating)		
Drive method		–	Direct coupling with hydraulic motor		
Hopper	Type	–	Fixed hopper		
	Capacity	Overall capacity Capacity above trough	m <sup>3</sup> m <sup>3</sup>	3.7 1.9	
Hydraulic pump	Type and number of units	–	HPV 95 + 95, variable displacement piston type x 2		
	Delivery Set pressure	ℓ/min MPa {kg/cm <sup>2</sup> }	212 x 2 37.2 {380}		
Hydraulic equipment (For travel and work)	Control valve	Type and number of units Operating method	– –	8-spool valve (10-spool valve, if equipped) Hydraulic	
	Hydraulic motor	Travel motor	–	HMV110ADT-2, piston type x 2 (With brake valve and shaft brake)	
		Crusher motor	–	KMF125B-5, piston type (With safety valve) x 1	
		Feeder motor	–	MSF-53, gear type x 1	
		Conveyor motor	–	MSE02-2-123-R02-1240-K000, piston type x 1	
		Magnetic separator motor	–	S-280AD2S-K2875 x 1	
	Side conveyor motor (If equipped)	–	2-200AS2S-E3343		
Hydraulic cylinder	Section	–	Conveyor elevator (Standard)	Crusher outlet adjuster (Standard)	Side conveyor telescopic (If equipped)
	Type	–	Double acting type	Double acting, bear lock type	Double acting type
	Cylinder bore	mm	35	130	50
	Piston rod diameter	mm	20	90	25
	Stroke	mm	220	480	270
	Max. distance between pins Min. distance between pins	mm	620 400	1,798 (To rod end) 1,318 (To rod end)	740 470
Hydraulic tank		–	Enclosed box type		
Hydraulic oil filter		–	Return side of tank		
Hydraulic oil cooler		–	Air-cooled		

## Weight table

**⚠ This weight table is a reference for handling and transportation of components.**

Unit: kg

Machine model	BR380JG-1E0
Serial Number	2001 and up
Engine assembly	751
• Engine	591
• Damper	6
• Hydraulic pump	154
Radiator and oil cooler assembly	123
Hydraulic tank and filter assembly (Excluding hydraulic oil)	135
Fuel tank assembly (Excluding fuel)	136
Main frame	418
Rear cover	118
Control valve	251
Travel motor	93 x 2
Crusher motor	53
Primary conveyor motor assembly	21
Grizzly feeder motor	17
Track frame assembly	5,476
• Track frame	3,938
• Idler	100 x 2
• Idler cushion	124 x 2
• Carrier roller	14 x 4
• Track roller	36 x 10
• Final drive (Including travel motor)	337 x 2
Track shoe assembly	
• Standard triple shoe (500 mm)	2,310
Hopper	1,395
Grizzly feeder assembly	2,459
Crusher assembly	13,520
Primary conveyor assembly	2,321
Magnetic separator assembly	1,130

### Table of fuel, coolant and lubricants

★ For details of the notes (Note 1, Note 2...) in the table, see Operation and Maintenance Manual.

Reservoir	Fluid Type	Ambient Temperature, degrees Celsius										Recommended Komatsu Fluids	
		-22	-4	14	32	50	68	86	104	122°F			
		-30	-20	-10	0	10	20	30	40	50°C			
Engine oil pan	Engine oil	(Note.1)										Komatsu EOS0W30	
		(Note.1)										Komatsu EOS5W40	
		(Note.1)										Komatsu EO10W30-DH	
		(Note.1)										Komatsu EO15W40-DH	
		(Note.1)										Komatsu EO30-DH	
Jaw crusher motor bearing case Grizzly feeder vibrator case Final drive case Damper case	Powertrain oil (Note.2)	(Note.2)										TO30	
Hydraulic system	Powertrain oil	(Note.2)										TO10	
	Hydraulic oil	(Note.2)										HO46-HM	
Grease fitting	Hyper grease (Note.3)	(Note.3)										G2-T, G2-TE	
	Lithium EP grease	(Note.3)										G2-LI	
Cooling system	Supercoolant AF-NAC (Note.4)	(Note.4)										AF-NAC	
Fuel tank	Diesel fuel	(Note.4)										ASTM Grade No.1-D S15 ASTM Grade No.1-D S500 ASTM Grade No.2-D S15 ASTM Grade No.2-D S500	

Unit: ℓ

Reservoir	BR380JG-1E0	
	Specified (ℓ)	Refill (ℓ)
Engine oil pan	25.4	24
Damper case	0.8	—
Jaw crusher motor bearing case	4.7	4.7
Final drive case (each)	3.5	3.3
Grizzly feeder vibrator case	15	15
Hydraulic system	209	112
Fuel tank	400	—
Cooling system	20.6	—

BR380JG-1E0 Mobile crusher

---

Form No. SEN01346-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# **MOBILE CRUSHER**

## **BR380JG-1E0**

<b>Machine model</b>	<b>Serial number</b>
BR380JG-1E0	2001 and up

---

# **10 Structure, function and maintenance standard**

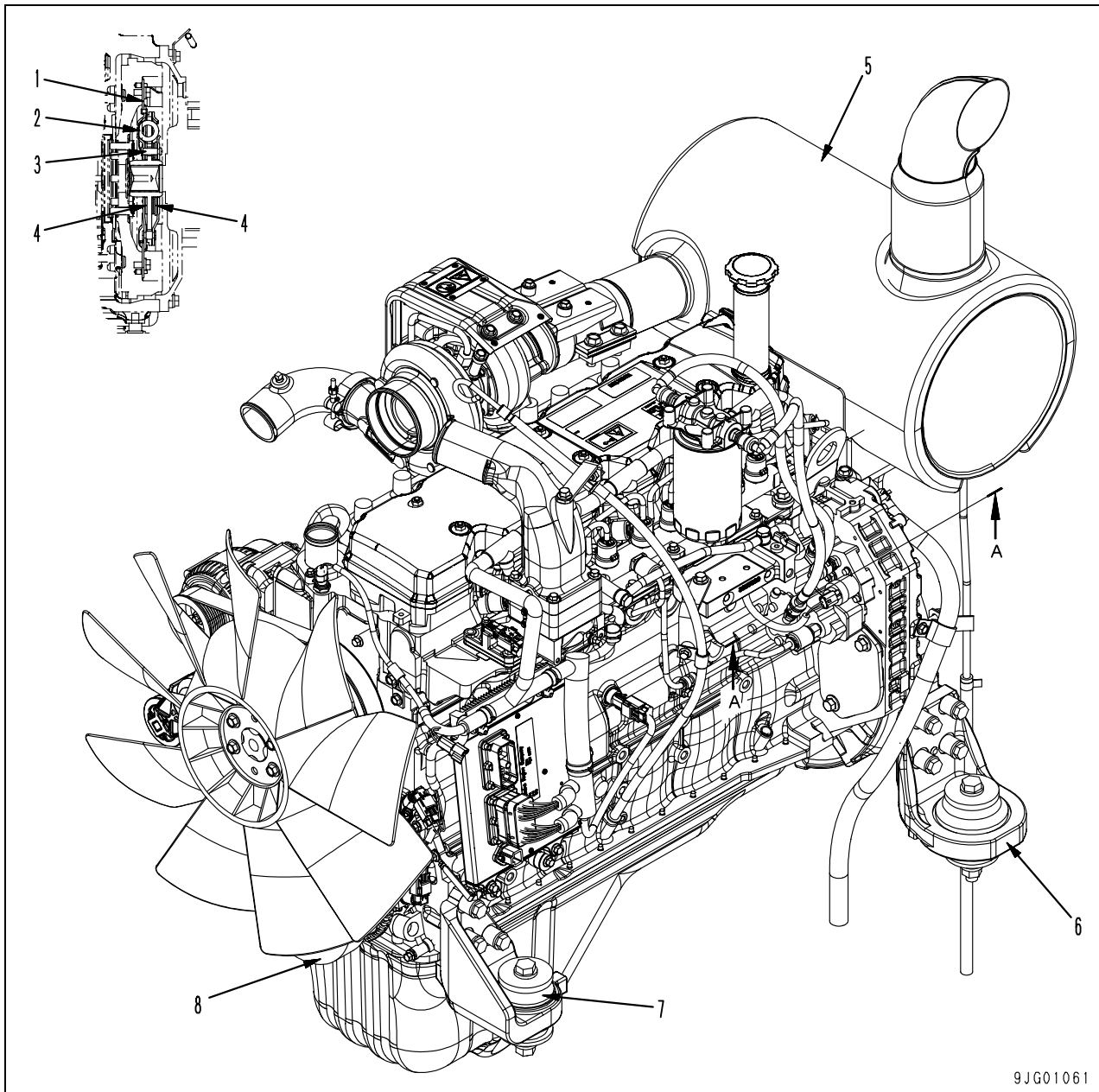
## **Engine and cooling system**

---

Engine mount, damper.....	2
Radiator, oil cooler and aftercooler .....	3



## Engine mount, damper

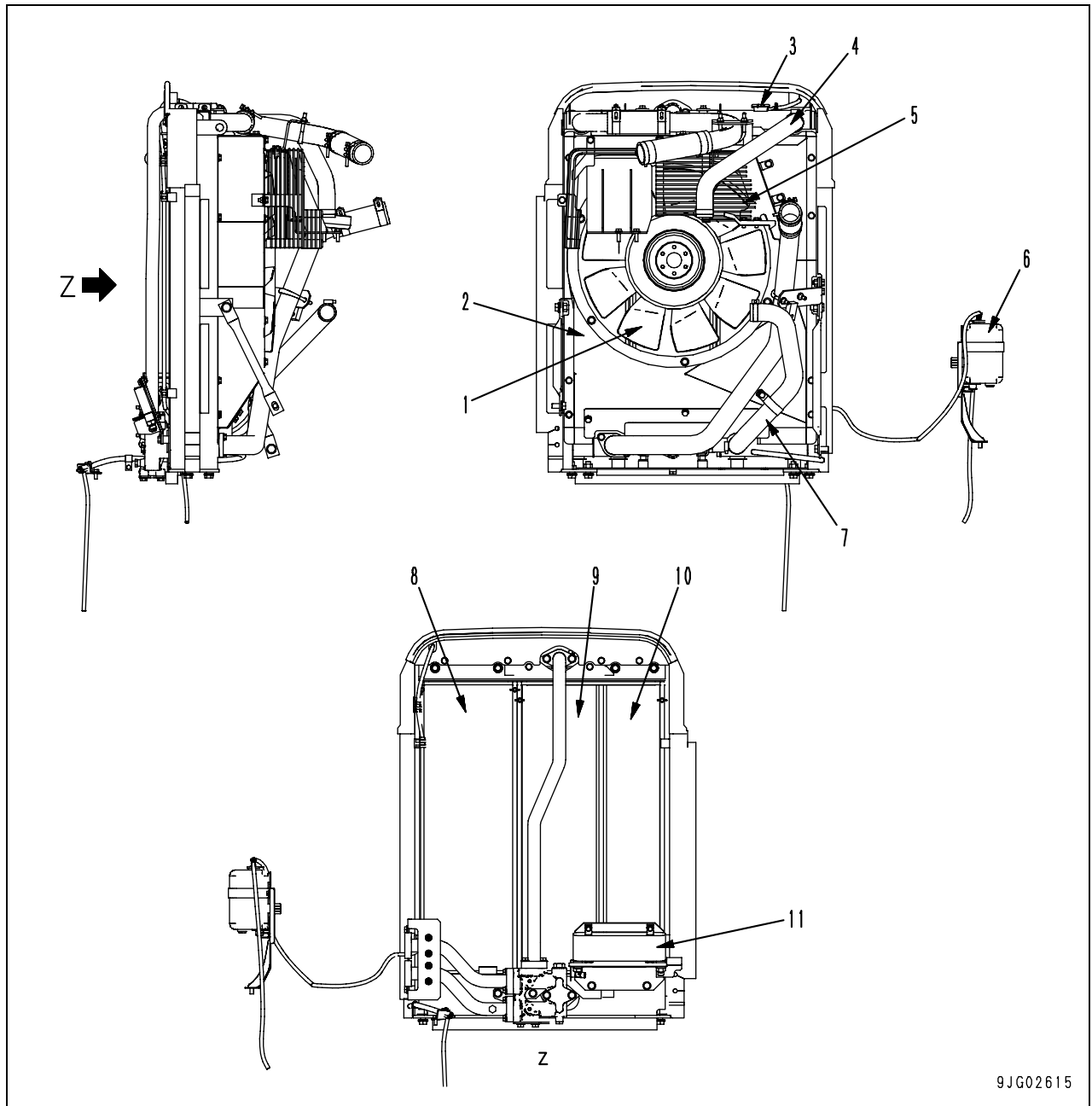


- |                   |                       |
|-------------------|-----------------------|
| 1. Drive plate    | 5. Muffler            |
| 2. Torsion spring | 6. Rear engine mount  |
| 3. Stopper pin    | 7. Front engine mount |
| 4. Friction plate | 8. Damper assembly    |

### Outline

The damper assembly is a wet type.  
Oil capacity: 0.8 ℓ

### Radiator, oil cooler and aftercooler



9JG02615

- |                        |                         |
|------------------------|-------------------------|
| 1. Fan                 | 7. Radiator outlet hose |
| 2. Shroud              | 8. Radiator             |
| 3. Radiator cap        | 9. Oil cooler           |
| 4. Radiator inlet hose | 10. Aftercooler         |
| 5. Net                 | 11. Fuel cooler         |
| 6. Reservoir tank      |                         |

**Outline**

Radiator : Aluminum wave type, 4 rows  
 Oil cooler : CF40-1

BR380JG-1E0 Mobile crusher

---

Form No. SEN01348-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

<b>Machine model</b>	<b>Serial number</b>
BR380JG-1E0	2001 and up

---

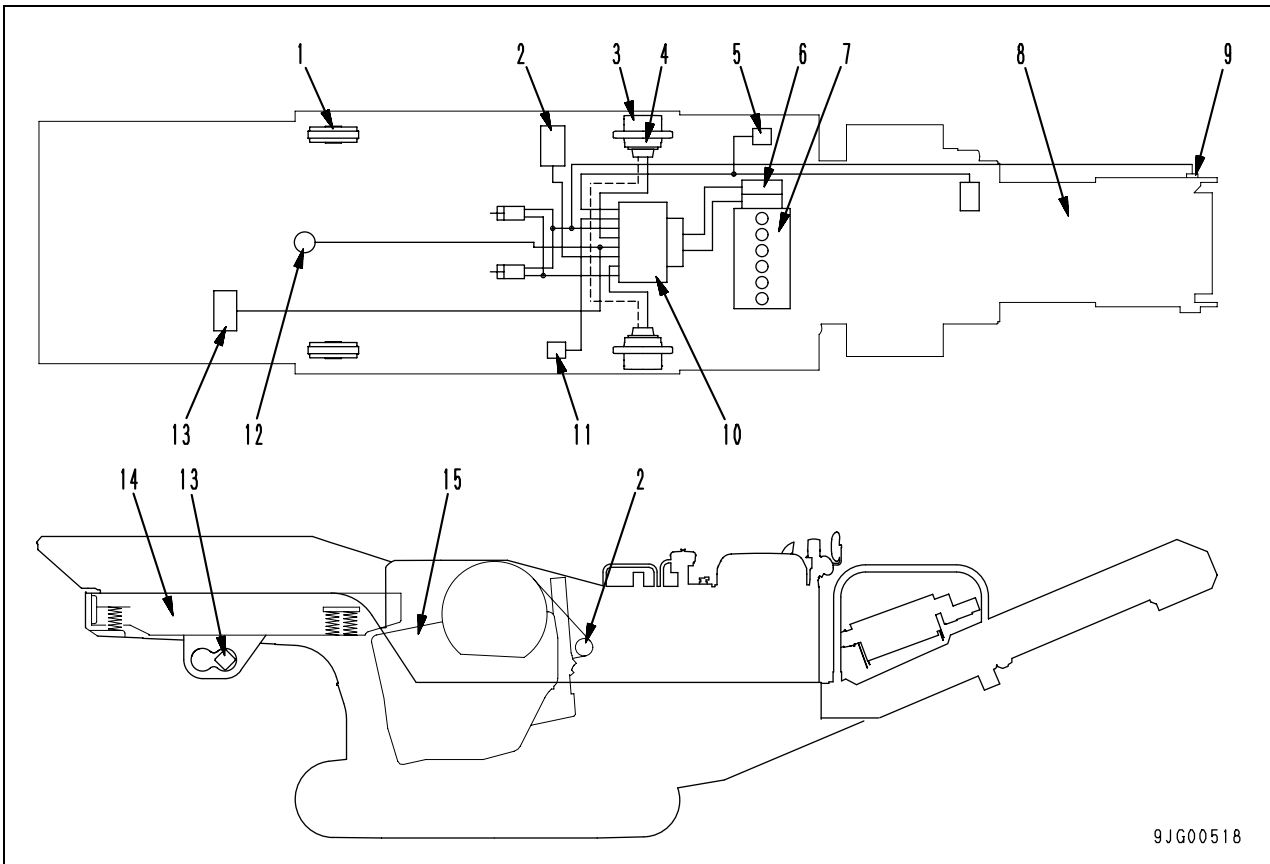
# 10 Structure, function and maintenance standard

## Power train

---

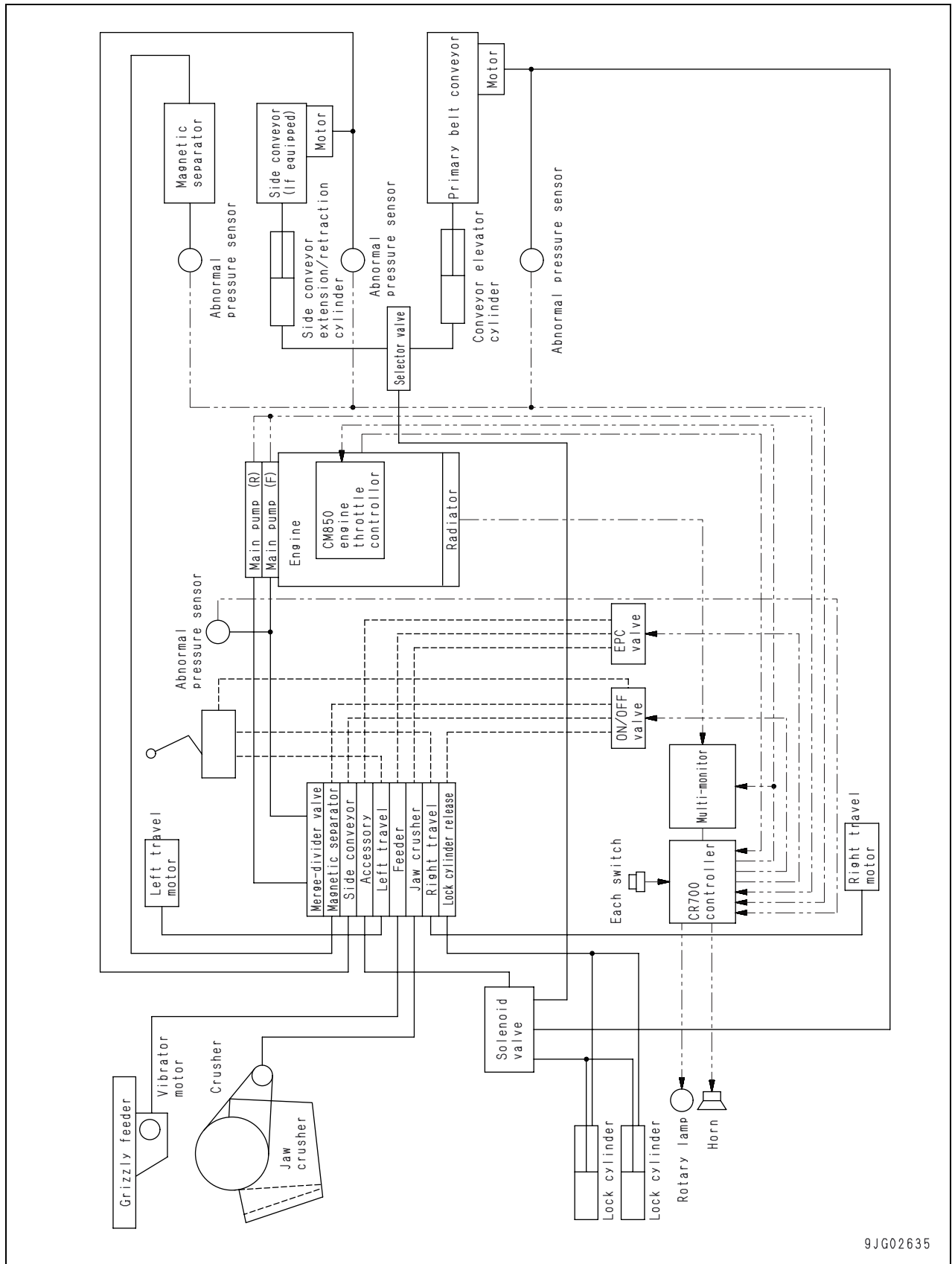
Power train .....	2
Drive system for components .....	3
Final drive .....	4
Sprocket .....	6

**Power train**



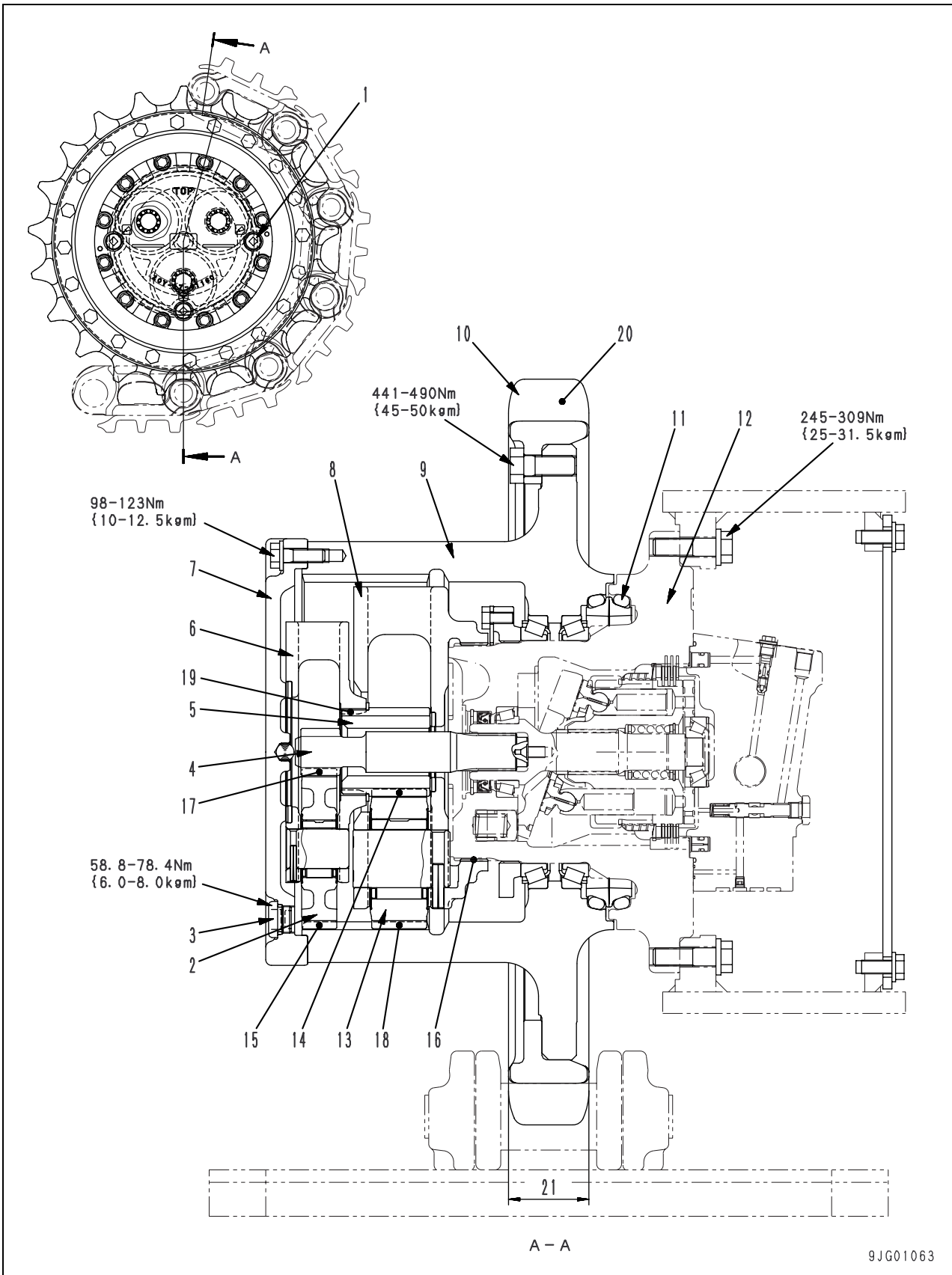
- |  |   |
|--|---|
| 1. Idler                                       | 9. Primary belt conveyor motor<br>(MSE02-2-123-R02-1240-K000) |
| 2. Jaw crusher motor (KFM125B-5)               | 10. Control valve   |
| 3. Final drive                                 | 11. Option connection port (side conveyor)                    |
| 4. Travel motor (HVM110ADT-2)                  | 12. Primary belt conveyor lift cylinder                       |
| 5. Option connection port (magnetic separator) | 13. Grizzly feeder motor (MSF-53)                             |
| 6. Hydraulic pump                              | 14. Grizzly feeder  |
| 7. Engine                                      | 15. Jaw crusher   |
| 8. Primary belt conveyor                       |   |

### Drive system for components



9JG02635

Final drive



1. Level plug
2. No. 1 planetary gear (Number of teeth: 42)
3. Drain plug
4. No. 1 sun gear (Number of teeth: 10)
5. No. 2 sun gear (Number of teeth: 21)
6. No. 1 planetary carrier
7. Cover
8. No. 2 planetary carrier
9. Ring gear (Number of teeth: 95)
10. Sprocket
11. Floating seal
12. Travel motor
13. No. 2 planetary gear (Number of teeth: 36)

### Specifications

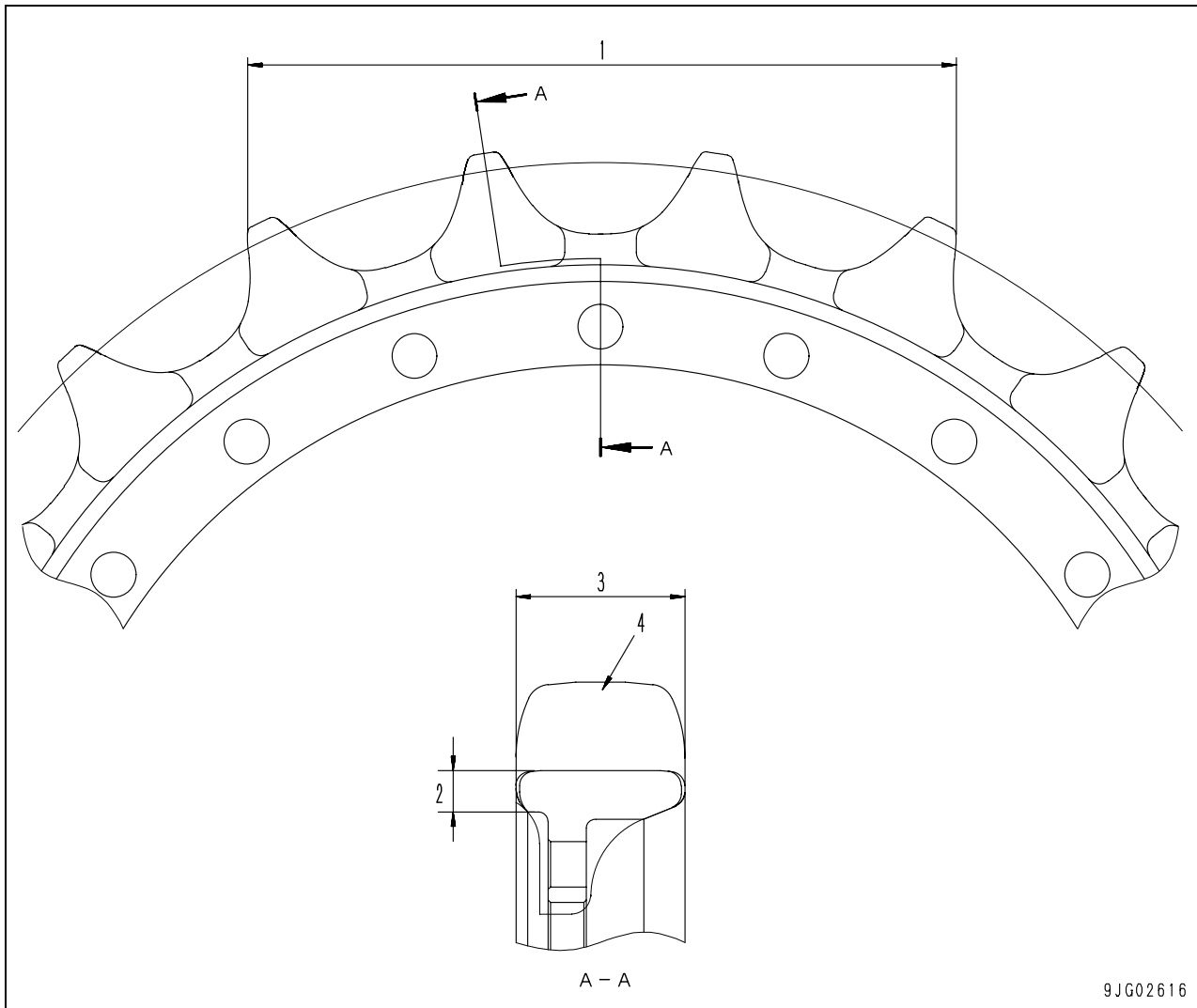
Reduction ratio:  $-\left(\frac{10 + 95}{10}\right) \times \left(\frac{21 + 95}{21}\right) + 1 = -57.000$

Unit: mm

No.	Check Item	Criteria		Remedy
		Standard clearance	Clearance limit	
14	Backlash between No. 2 sun gear and No. 2 planetary gear	0.13 – 0.47	1.00	Replace
		0.17 – 0.57	1.10	
15	Backlash between No. 1 planetary gear and ring gear	0.06 – 0.25	—	
16	Backlash between No. 2 planetary carrier and motor	0.14 – 0.46	1.00	
17	Backlash between No. 1 sun gear and No. 1 planetary gear	0.16 – 0.56	1.10	
18	Backlash between No. 2 planetary gear and ring gear	0.38 – 0.66	1.00	
19	Backlash between No. 1 planetary carrier and No. 2 sun gear	Repair limit: 6		Repair hard chrome plating or replace
20	Wear of tooth profile of sprocket	Standard size	Repair limit	
		71	68	
21	Tooth width of sprocket			



### Sprocket

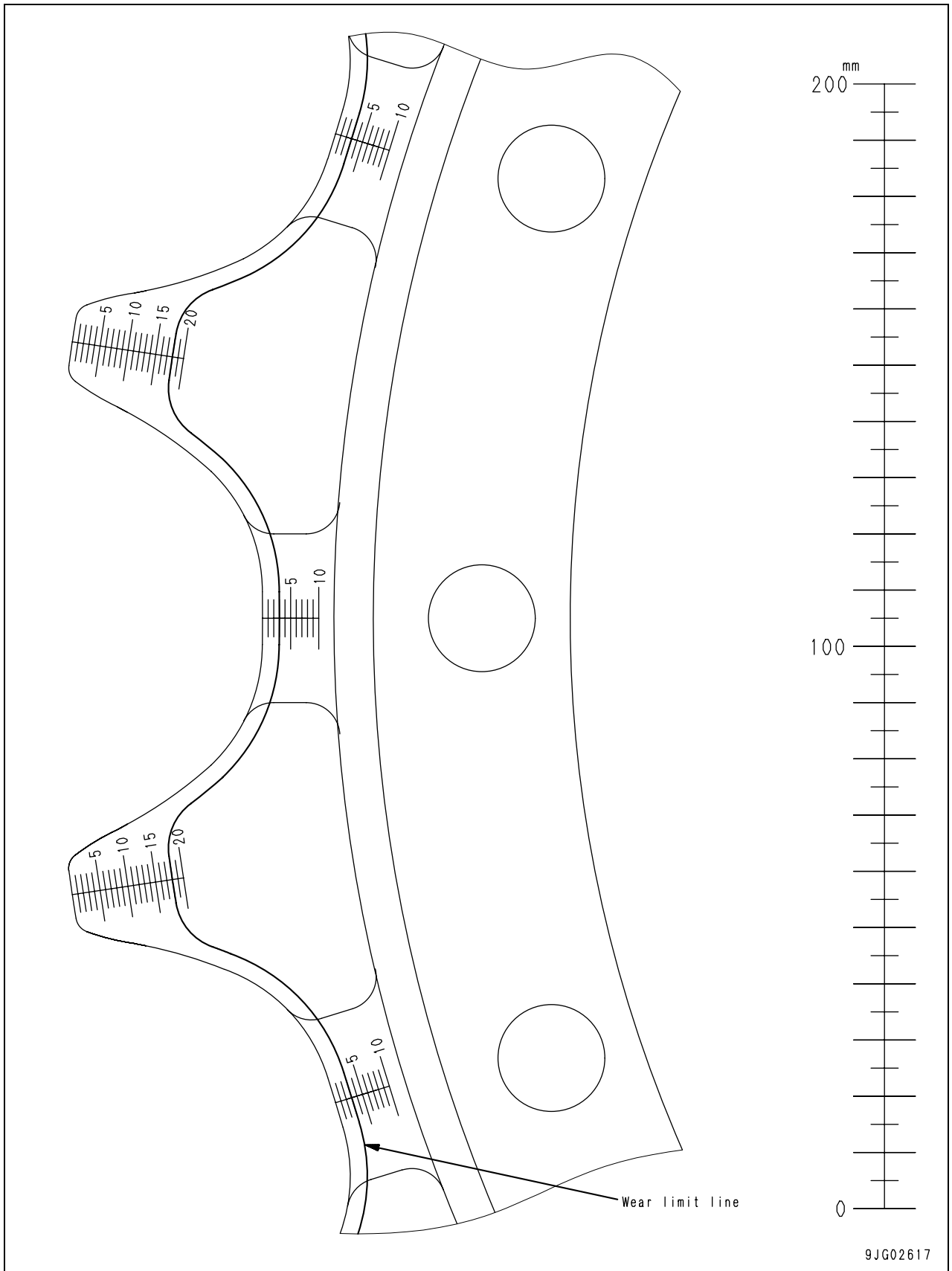


9JG02616

Unit: mm

No.	Check Item	Criteria		Remedy
		Standard size	Repair limit	
1	Wear of tooth tip	294.5	282.5	Build-up welding for rebuilding or replace
2	Thickness of tooth root	17	11	
3	Width of tooth	71	68	
4	Wear of tooth shape	Repair limit: 6 (measure with the full-size drawing of sprocket tooth shape)		

Full-size drawing of sprocket tooth shape



BR380JG-1E0 Mobile crusher

---

Form No. SEN01349-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# **MOBILE CRUSHER**

## **BR380JG-1E0**

<b>Machine model</b>	<b>Serial number</b>
BR380JG-1E0	2001 and up

---

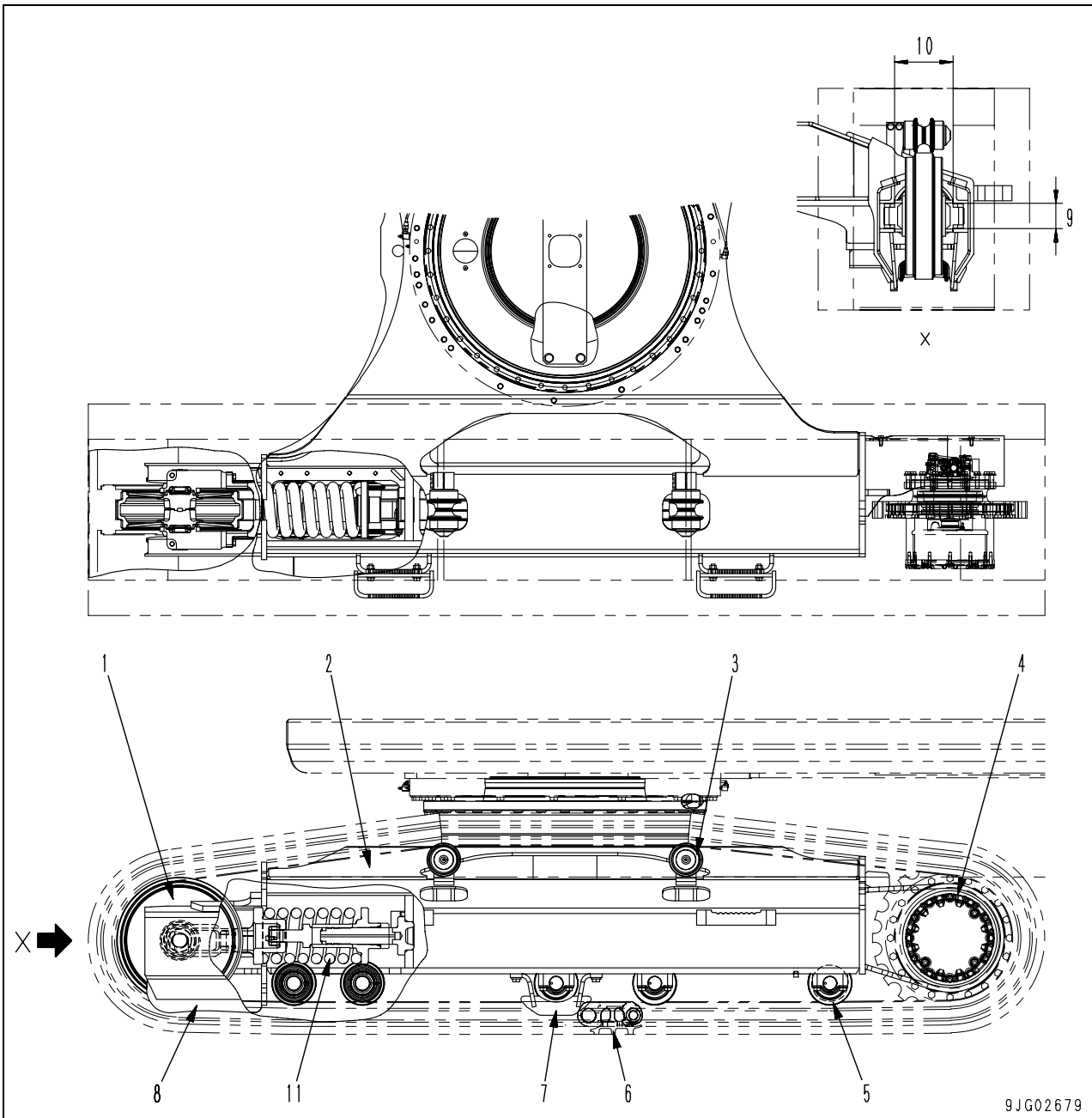
# **10 Structure, function and maintenance standard**

## **Undercarriage and frame**

---

Track frame and recoil spring.....	2
Idler .....	4
Carrier roller .....	6
Track roller .....	7
Track shoe .....	8

### Track frame and recoil spring



9JG02679

- 1. Idler
- 2. Track frame
- 3. Carrier roller
- 4. Final drive
- 5. Track roller
- 6. Track shoe
- 7. Center guard
- 8. Front guard

Standard shoe  
 Shoe width: 500 mm  
 Link pitch: 190 mm  
 Number of shoes (Each side): 45

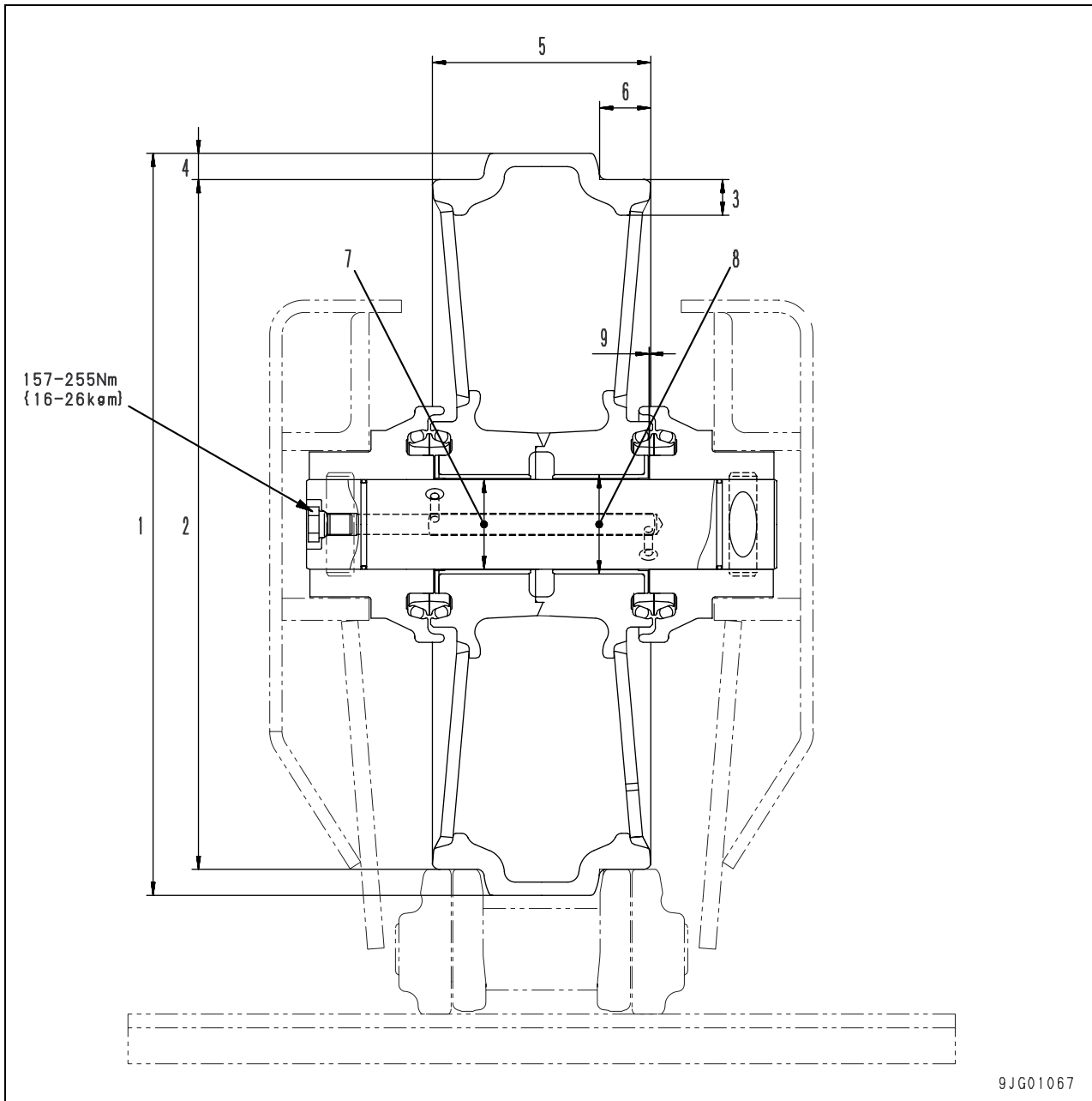
#### Specifications

Number of track rollers: 5 (Each side)

Unit: mm

No.	Check item	Criteria				Remedy
		Standard size		Tolerance	Repair limit	
9	Vertical width of idler guide	Standard size		Tolerance	Repair limit	Repair by build-up welding or replace
	Track frame	107	—	—		
	Idler support	105	—	—		
10	Lateral width of idler guide	Standard size		Tolerance	Repair limit	
	Track frame	250	—	—		
	Idler support	247.4	—	—		
11	Recoil spring	Standard size			Repair limit	
		Free length x Outside diameter	Installed length	Installed load	Free length	Installed load
		558 x 238	417	109.3 kN {11,150 kg}	531.4	87.4 kN {8,920 kg}

### Idler

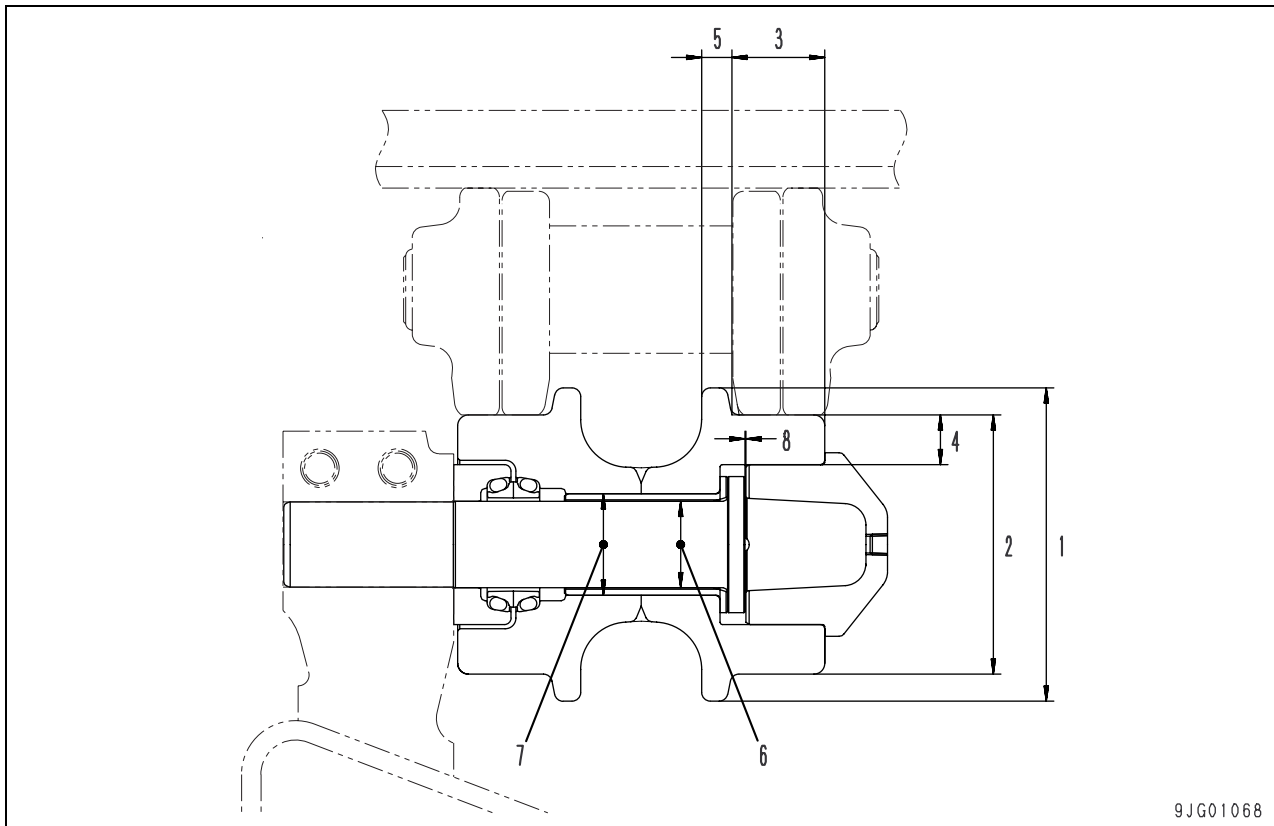


Unit: mm

No.	Check item	Criteria				Remedy
1	Outside diameter of protruding	Standard size		Repair limit		Rebuild or replace
		538		—		
2	Outside diameter of tread	500		488		
3	Thickness of tread	26		20		
4	Step measurement of tread	19		25		
5	Total width	159		—		
6	Width of tread	37.5		—		
7	Clearance between shaft and bushing	Standard size	Tolerance		Standard clearance	Clearance limit
			Shaft	Hole		
		65	-0.250 -0.350	+0.164 -0.074	0.176 – 0.514	—
8	Interference between idler and bushing	Standard size	Tolerance		Standard Interference	Interference limit
			Shaft	Hole		
		72	+0.108 +0.008	-0.032 -0.062	0.040 – 0.170	—
9	Clearance between bushing and support	0.5 – 1.0		—		Replace bushing



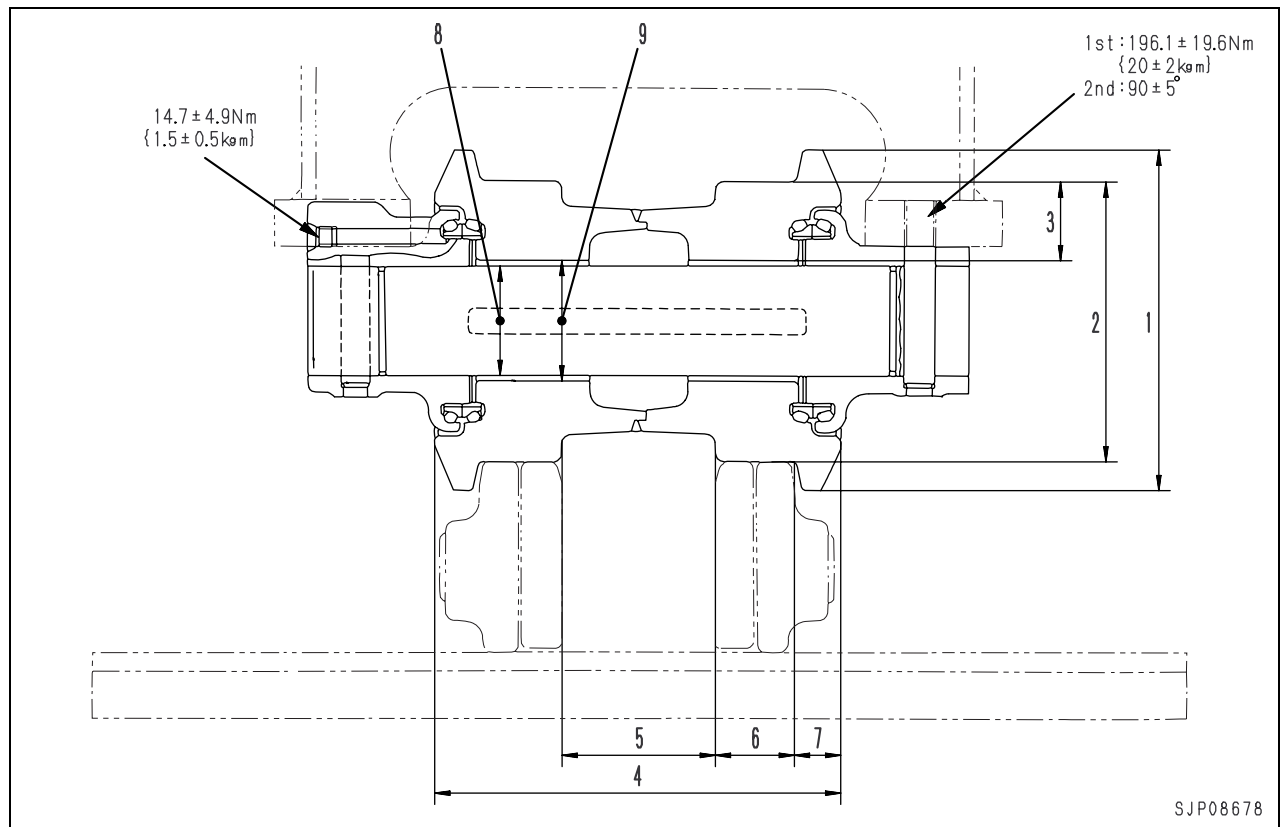
Carrier roller



Unit: mm

No.	Check item	Criteria				Remedy	
		Standard size		Repair limit			
1	Outside diameter of flange	145		—			
2	Outside diameter of tread	120		106			
3	Width of tread	43		—			
4	Thickness of tread	23		16			
5	Width of flange	14		—			
6	Clearance between shaft and bushing	Standard size	Tolerance		Standard clearance 0.338 – 0.491	Clearance limit —	Replace
		40	Shaft -0.170 -0.190	Hole +0.301 -0.168			
7	Interference between roller and bushing	Standard size	Tolerance		Standard interference 0.016 – 0.101	Interference limit —	
		47	Shaft +0.061 +0.016	Hole 0 -0.040			
8	Axial clearance of roller	Standard clearance		Clearance limit			
		0.44 – 0.76		—			

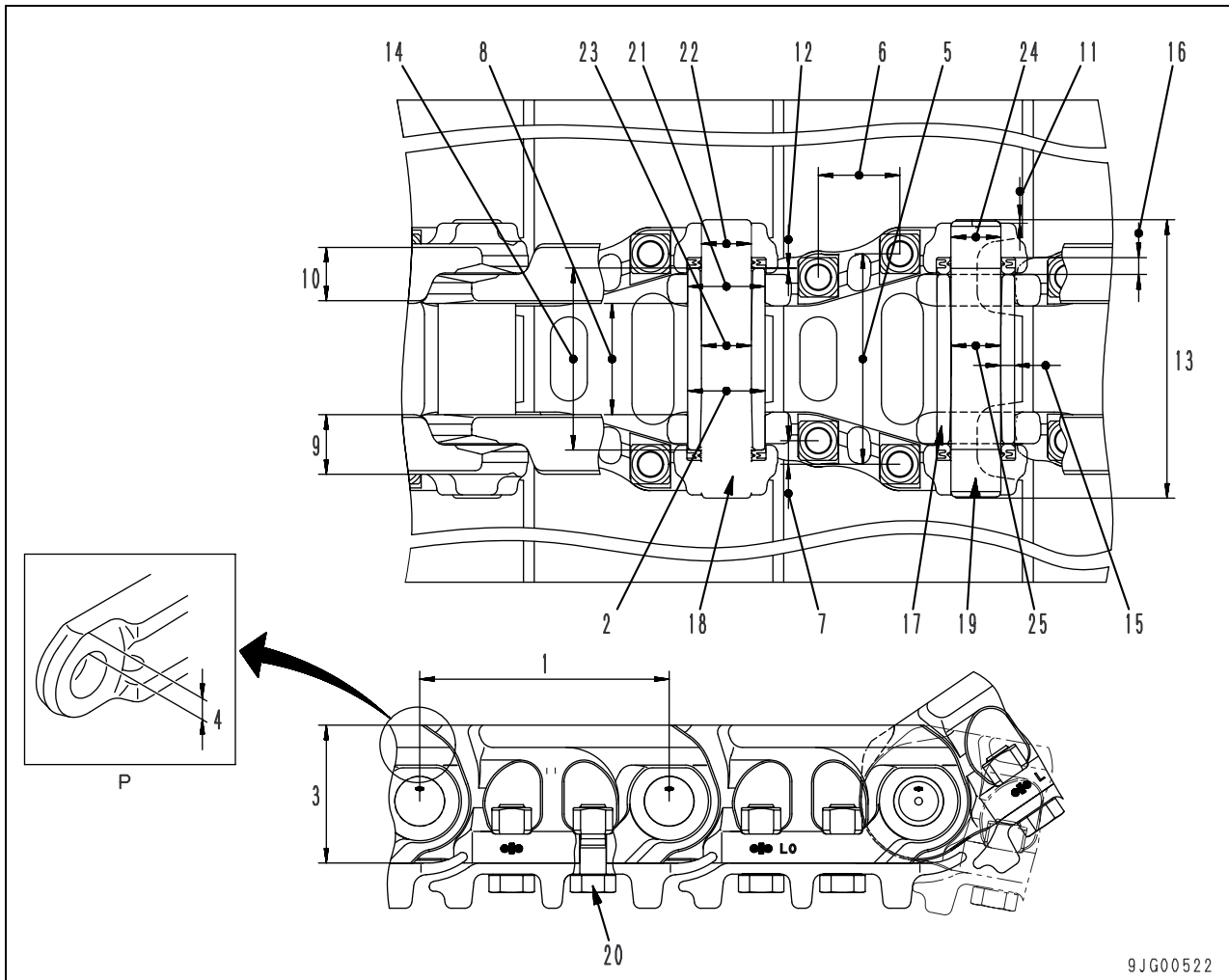
Track roller



Unit: mm

No.	Check item	Criteria				Remedy
		Standard size		Repair limit		
1	Outside diameter of flange	188		—		Rebuild or replace
2	Outside diameter of tread	156		144		
3	Thickness of tread	44.5		38.5		
4	Overall width	225		—		
5	Inside width	85		—		
6	Width of tread	44.5		—		
7	Width of flange	25.5		—		
8	Clearance between shaft and bushing	Standard size	Tolerance		Standard clearance	Clearance limit
		60	Shaft	Hole		
			-0.215	+0.195	0.215 – 0.510	1.5
			-0.315	0		
9	Interference between roller and bushing	Standard size	Tolerance		Standard interference	Interference limit
		67	Shaft	Hole		
			+0.153	+0.030	0.023 – 0.153	—
			+0.053	0		

### Track shoe



★ P portion shows the link of bushing press fitting end.

Unit: mm

No.	Check item		Criteria		Remedy	
1	Link pitch		Standard size	Repair limit		
			190.25	193.25		
2	Bushing outside diameter		Standard size	When turned		Reverse or replace
				Normal load	Impact load	
			59	—	54	
3	Link height		Standard size	Repair limit	Repair or replace	
			104	96		
4	Thickness of link metal (bushing press-fitting portion)		27.5	19.5		
5			160.4		Adjust or replace	
6	Shoe bolt pitch		62			
7			18			
8	Link	Inside width	82.8			
9		Overall width	42.7			
10		Tread width	36.9			
11	Protrusion of pin	Regular	2.5			
		Master	2.5			
12	Protrusion of bushing	Regular	3.75			
		Master	0.0			
13	Overall length of pin	Regular	212			
		Master	212			
14	Overall length of bushing	Regular	137.5			
		Master	129.2			
15	Thickness of bushing metal	Standard	10.2		Reverse or replace	
		When turned / Impact Load	5.2			
16	Thickness of spacer		—		—	
17	Press-fitting force	Bushing	88.2 – 245 kN {9 – 25 ton}			
18		Regular pin	127.4 – 274.4 kN {13 – 28 ton}			
*19		Master pin	78.4 – 147 kN {8 – 15 ton}			

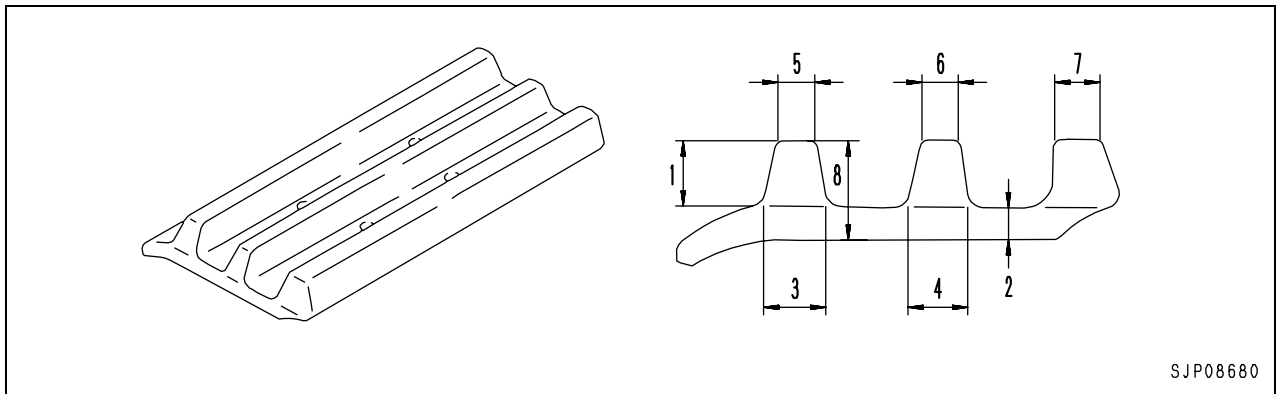
\*: Dry type track link

Unit: mm

No.	Check item		Criteria			Remedy
20	Shoe bolt	a. Regular link	Tightening torque (Nm {kgm})		Additional tightening angle (deg.)	Retighten
			Triple shoe	490 ± 49 {50 ± 5}	120 ± 10	
		b. Master link	Tightening torque (Nm {kgm})	Additional tightening angle (deg.)	Lower limit torque (Nm {kgm})	
			—	—	—	
No. of shoes (each side)		45			—	
21	Interference between bushing and link		Standard size	Tolerance		Standard interference
				Shaft	Hole	
			59	+0.250 0.000	-0.160 -0.230	0.160 – 0.390
22	Interference between regular pin and link		38	+0.100 0.000	-0.230 -0.280	0.230 – 0.380
23	Clearance between regular pin and bushing		Standard size	Tolerance		Standard clearance
				Shaft	Hole	
			38	+0.100 0.000	+0.200 -0.300	0.200 – 0.400
*24	Interference between master pin and bushing		Standard size	Tolerance		Standard interference
				Shaft	Hole	
			37.8	-0.100 -0.200	+0.030 -0.080	0.02 – 0.17
*25	Clearance between master pin and bushing		Standard size	Tolerance		Standard clearance
				Shaft	Hole	
			38	-0.300 -0.400	+1.200 +0.700	1.00 – 1.60
—	Height of grouser	Triple-grouser	Standard size		Repair limit	
			26		16	

\*: Dry type track link

Triple grouser shoe



Unit: mm

No.	Check item	Criteria		Remedy
		Standard size	Repair limit	
1	Height	Standard size	Repair limit	Rebuild or replace
		26	16	
2	Thickness	8.5		
3	Length of base	26		
4		19		
5	Length at tip	20		
6		14		
7		19		
8	Thickness	Standard size	Repair limit	
		34.5	24.5	

BR380JG-1E0 Mobile crusher

---

Form No. SEN01350-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# **MOBILE CRUSHER**

## **BR380JG-1E0**

<b>Machine model</b>	<b>Serial number</b>
BR380JG-1E0	2001 and up

---

# **10 Structure, function and maintenance standard**

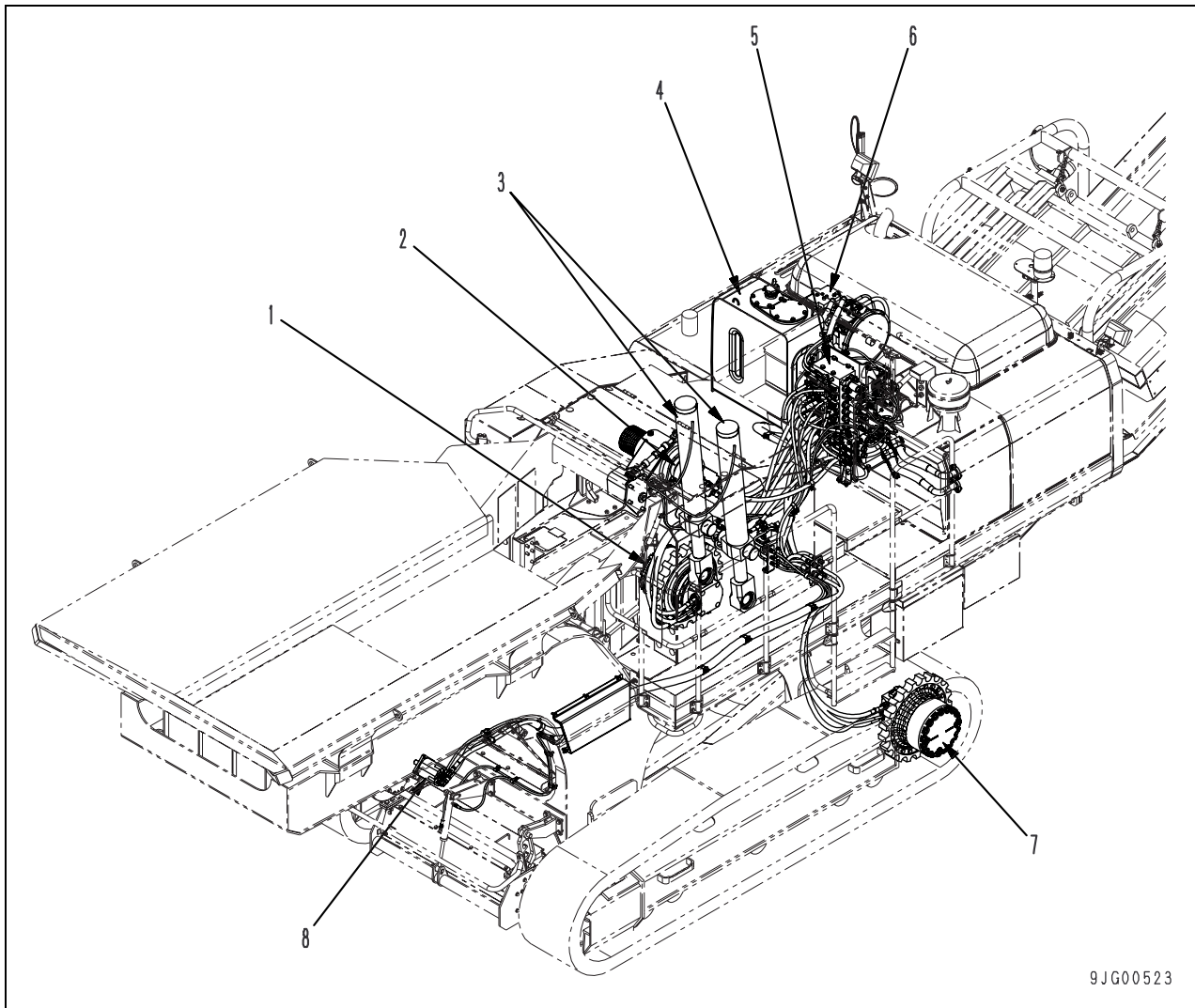
## **Hydraulic system, Part 1**

---

Hydraulic piping drawing .....	2
Hydraulic tank and hydraulic oil filter .....	3
Hydraulic pump .....	4

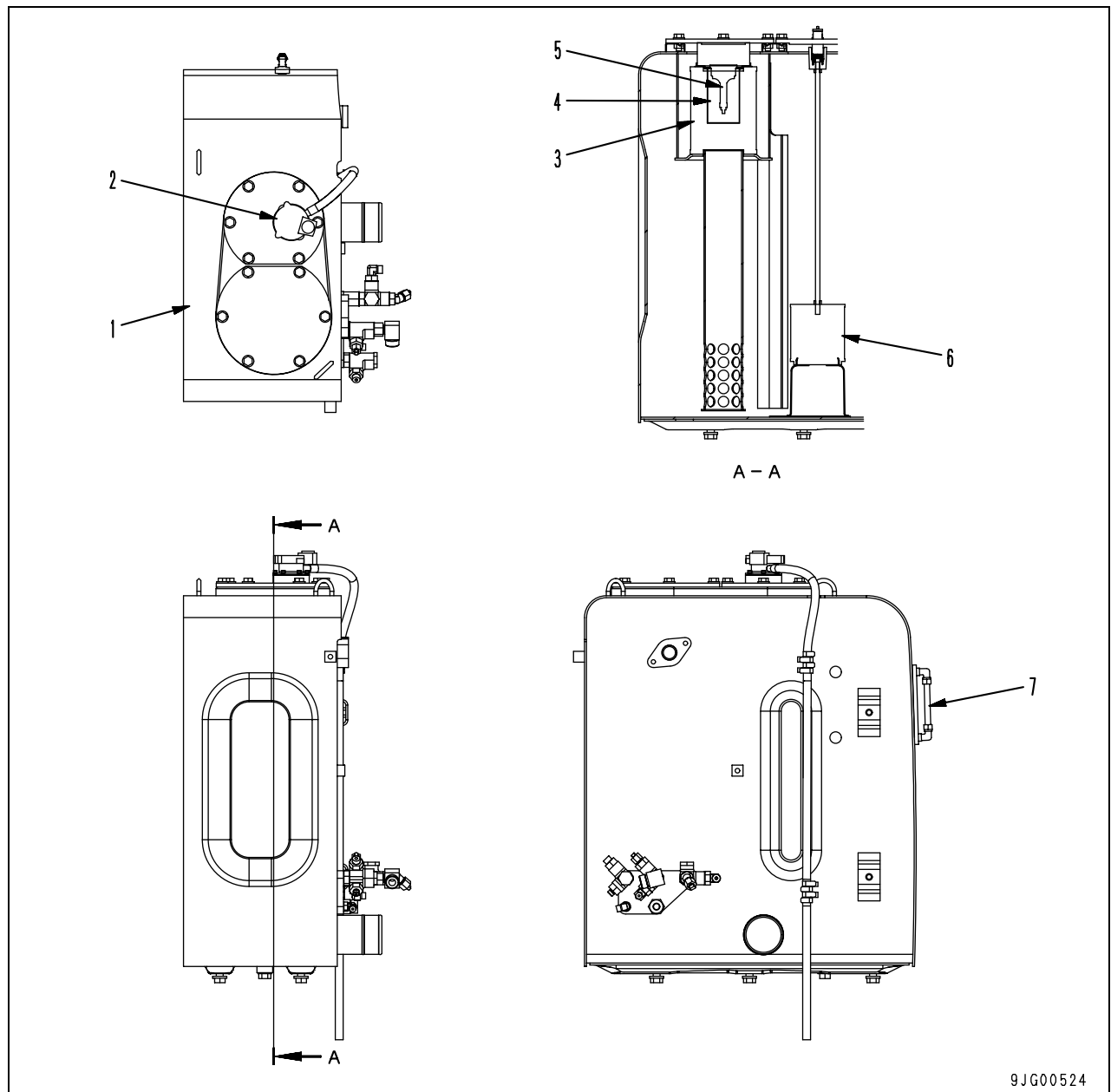


## Hydraulic piping drawing



1. Left travel motor
2. Crusher motor
3. Lock cylinder
4. Hydraulic tank
5. Control valve
6. Hydraulic pump
7. Right travel motor
8. Feeder motor

## Hydraulic tank and hydraulic oil filter



1. Hydraulic tank
2. Oil filler cap
3. Filter element
4. Strainer
5. Bypass valve
6. Suction strainer
7. Sight gauge

### Specifications

Tank capacity: 200 l

Amount of oil inside tank: 143 l

Pressure valve

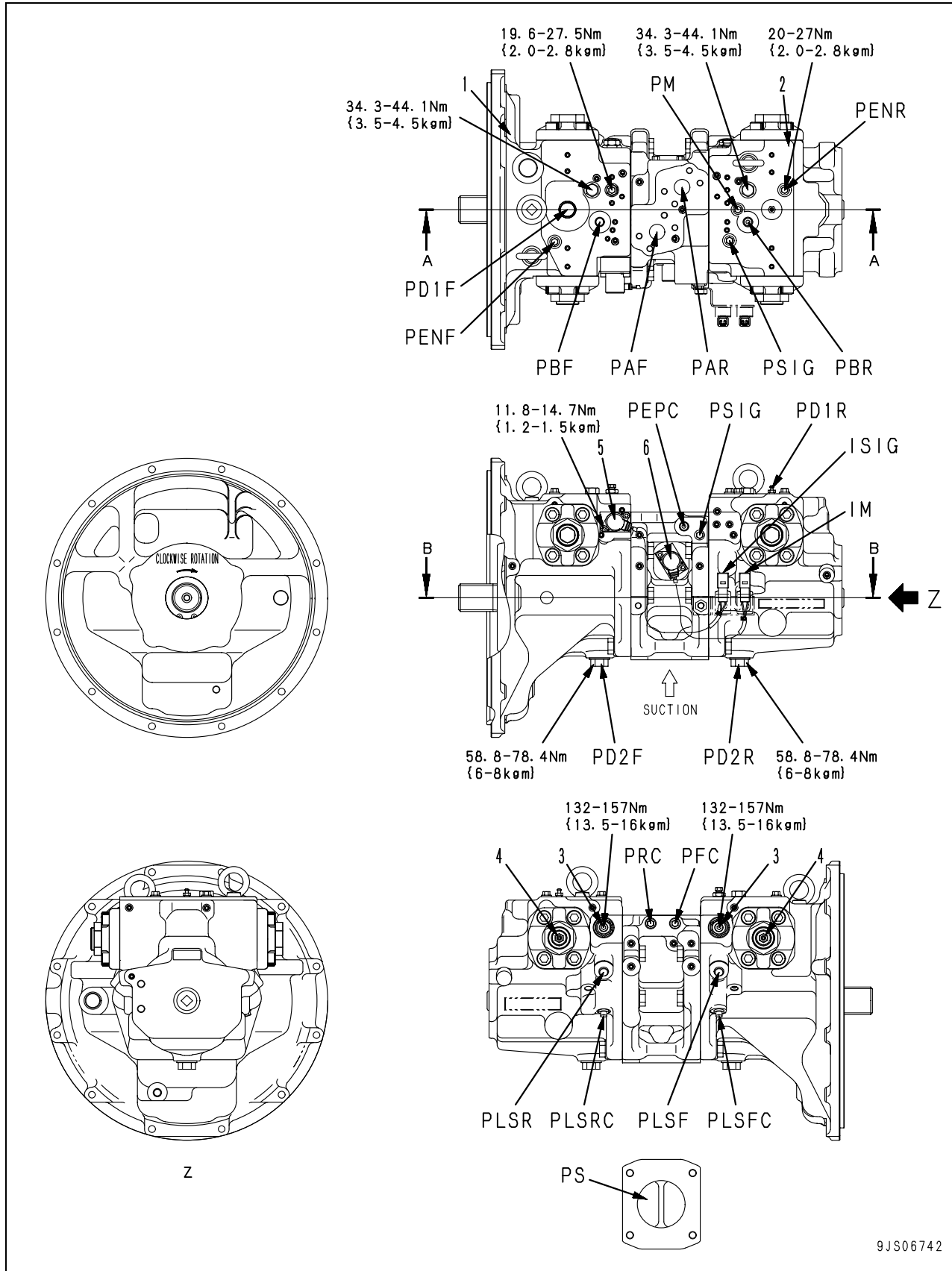
Relief cracking pressure:  $16.7 \pm 6.9$  kPa  
 $\{0.17 \pm 0.07$  kg/cm<sup>2</sup>

Suction cracking pressure:  $0 - 0.49$  kPa  
 $\{0 - 0.005$  kg/cm<sup>2</sup>

Bypass valve set pressure:  $150 \pm 30$  kPa  
 $\{1.5 \pm 0.3$  kg/cm<sup>2</sup>

# Hydraulic pump

## HPV95 + 95



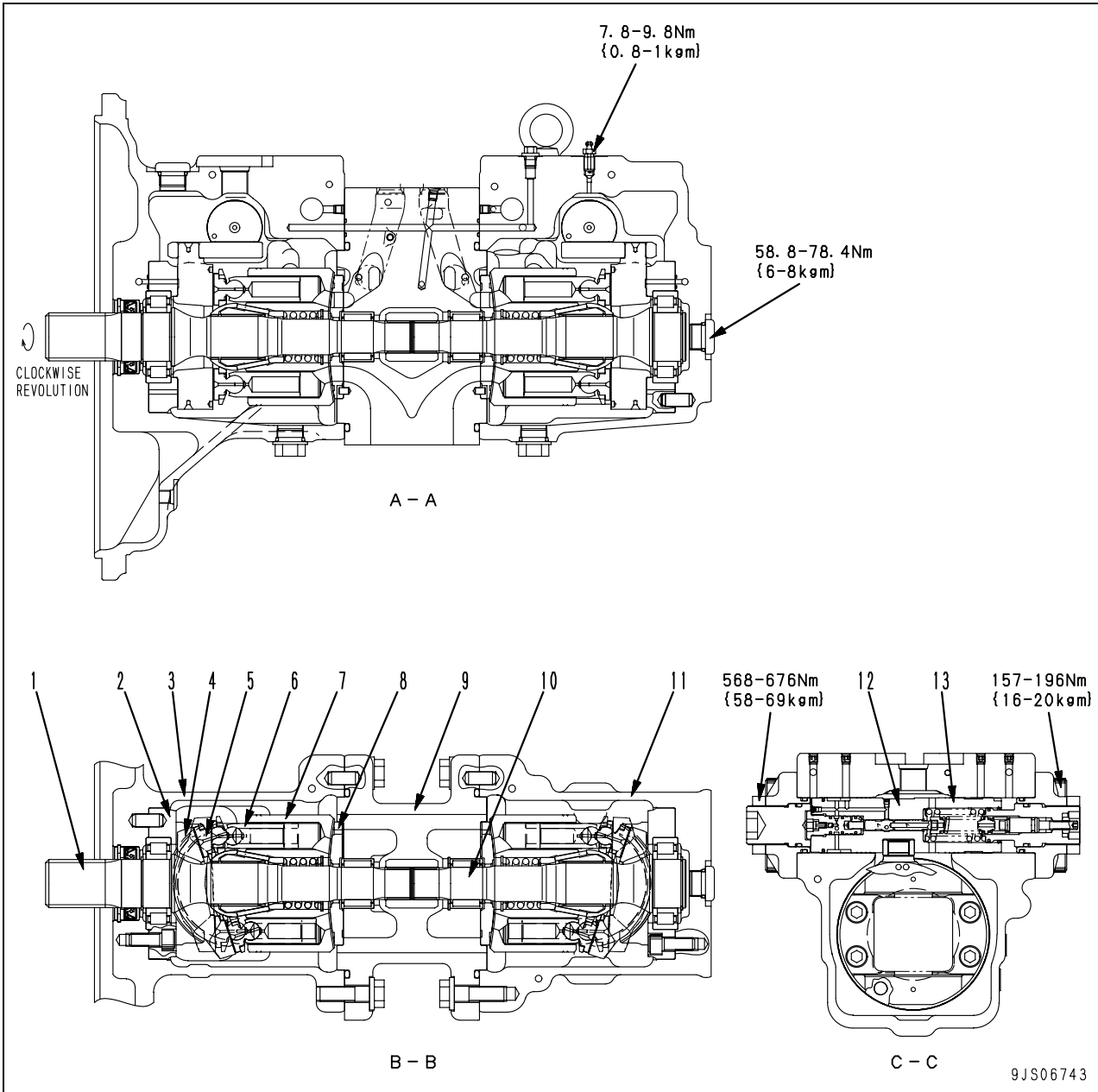
9JS06742

**Outline**

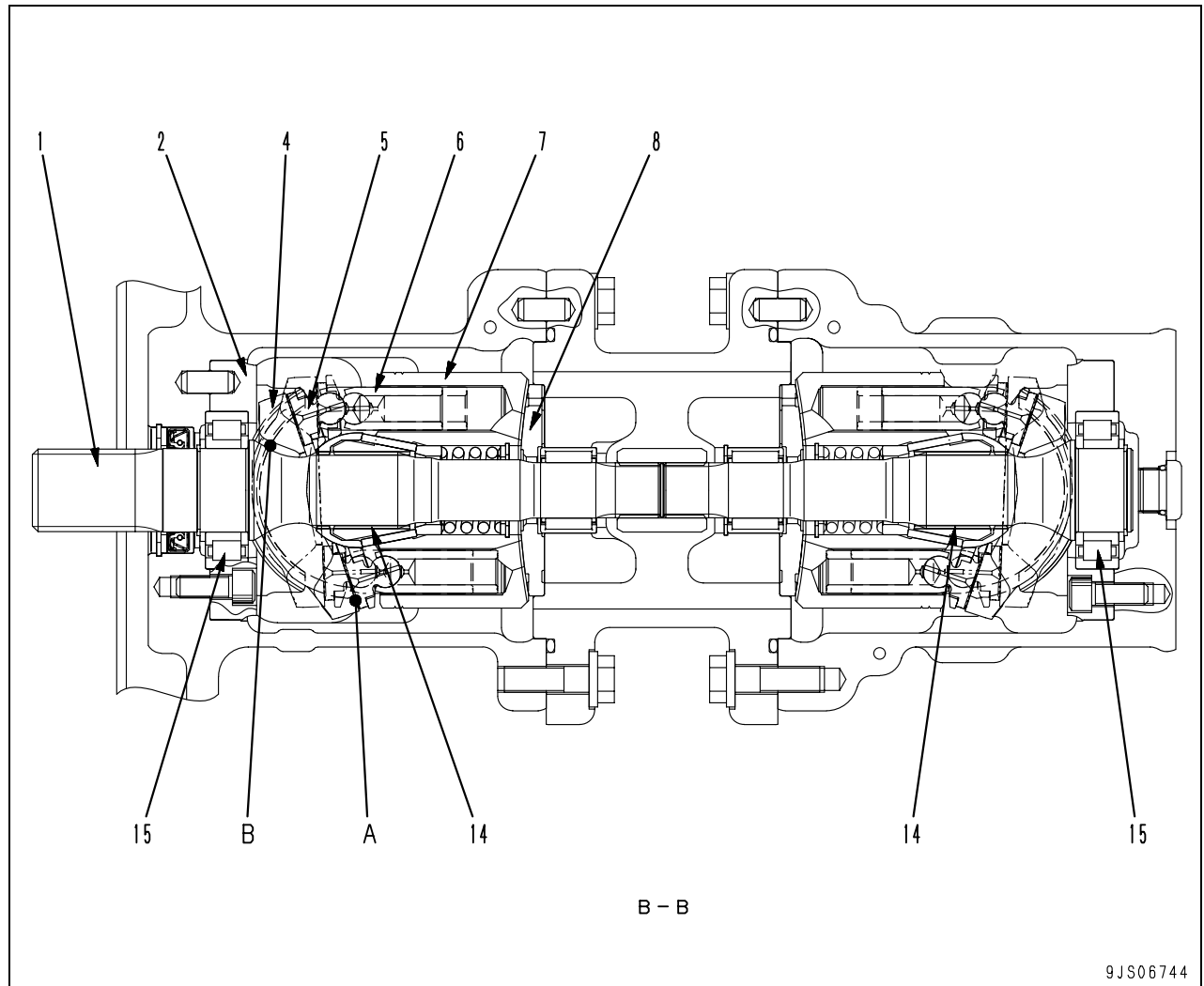
- This pump consists of 2 variable capacity swash plate piston pumps, PC valve, LS valve, and EPC valve.

IM: PC mode selector current  
ISIG: LS set selector current  
PAF: Front pump delivery port  
PAR: Rear pump delivery port  
PBF: Front pump pressure input port  
PBR: Rear pump pressure input port  
PD1F: Case drain port  
PD1R: Air bleeder  
PD2F: Drain port  
PD2R: Drain port  
PENF: Front pump control pressure detection port  
PENR: Control pressure detection port  
PEPC: EPC basic pressure input port  
PFC: Front pump delivery pressure detection port  
PLSF: Load pressure input port  
PLSFC: Load pressure detection port  
PLSR: Load pressure input port  
PLSRC: Load pressure detection port  
PM: PC mode selector pressure detection port  
PRC: Rear pump delivery pressure detection port  
PS: Pump suction port  
PSIG: LS set selector pressure detection port

1. Front pump
2. Rear pump
3. LS valve
4. PC valve
5. LS-EPC valve
6. PC-EPC valve



1. Front shaft
2. Cradle
3. Front case
4. Rocker cam
5. Shoe
6. Piston
7. Cylinder block
8. Valve plate
9. End cap
10. Rear shaft
11. Rear case
12. Servo piston
13. PC valve



### Function

- The pump converts the engine rotation and torque transmitted to its shaft to oil pressure and delivers pressurized oil corresponding to the load.
- It is possible to change the discharge amount by changing the swash plate angle.

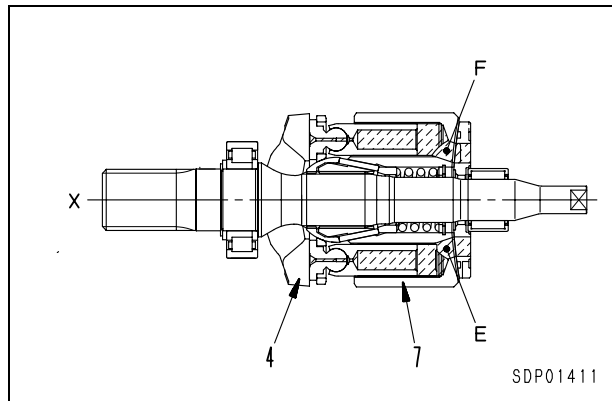
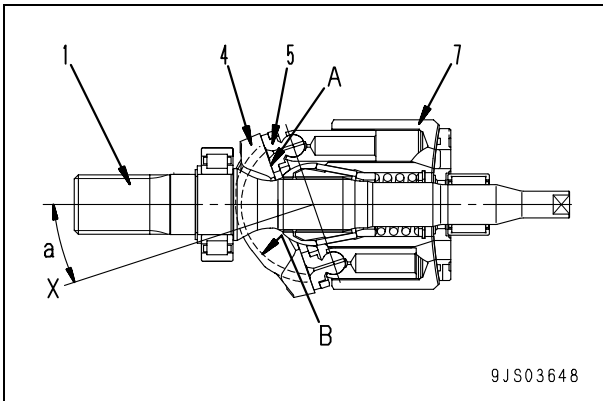
### Structure

- Cylinder block (7) is supported to shaft (1) by spline (14).
- Shaft (1) is supported by front and rear bearings (15).
- Tip of piston (6) is shaped as a concave ball and shoe (5) is caulked to it to form one unit.
- Piston (6) and shoe (5) constitute the spherical bearing.
- Rocker cam (4) has flat surface (A), and shoe (5) is always pressed against this surface while sliding in a circular movement.
- Rocker cam (4) conducts high pressure oil to the cylinder surface (B) with cradle (2), which is secured to the case, and forms a static pressure bearing when it slides.
- Piston (6) carries out relative movement in the axial direction inside each cylinder chamber of cylinder block (7).
- Cylinder block (7) seals the pressurized oil to valve plate (8) and carries out relative rotation.
- This surface is designed so that the oil pressure balance is maintained at a suitable level.
- The oil inside the respective cylinder chambers of cylinder block (7) is suctioned and discharged through valve plate (8).

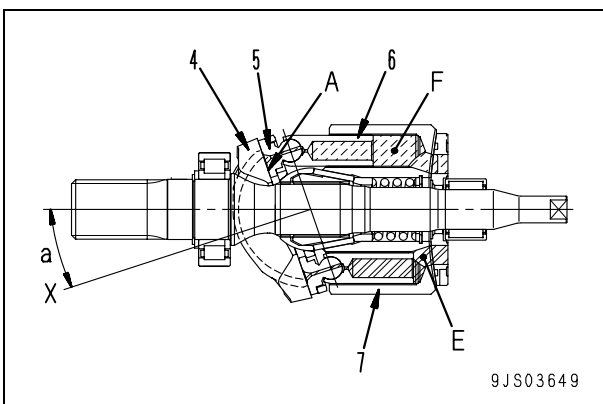
**Operation of pump**

- Cylinder block (7) rotates together with shaft (1), and shoe (5) slides on flat surface (A).
- When this happens, rocker cam (4) moves along cylindrical surface (B), so angle (a) between center line (X) of rocker cam (4) and the axial direction of cylinder block (7) changes.
- (a) is named the swash plate angle.

- As center line (X) of rocker cam (4) matches the axial direction of cylinder block (7) (swash plate angle (a) = 0), the difference between volumes (E) and (F) inside cylinder block (7) becomes 0.
- Suction and discharge of pressurized oil is not carried out in this state. Namely pumping action is not performed. (Actually, however, the swash plate angle is not set to 0)

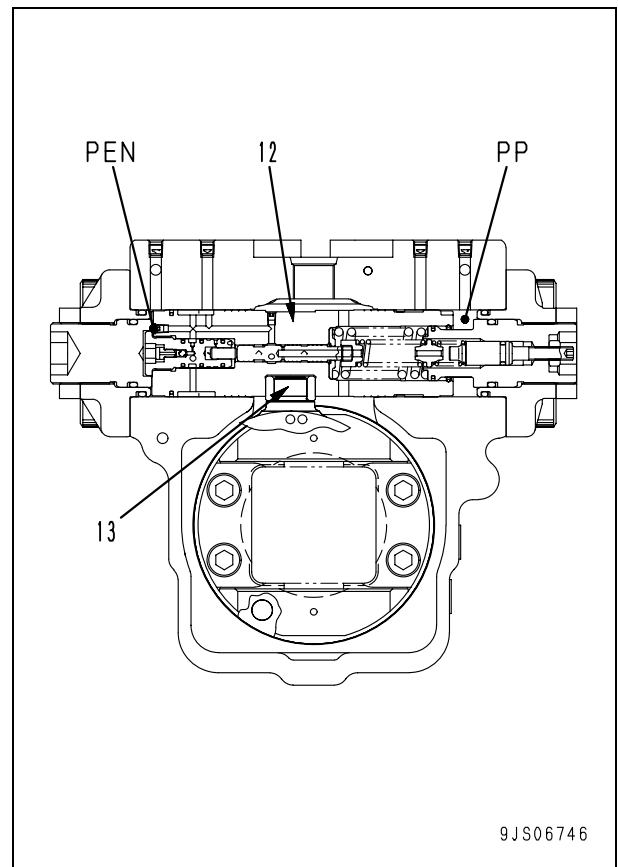
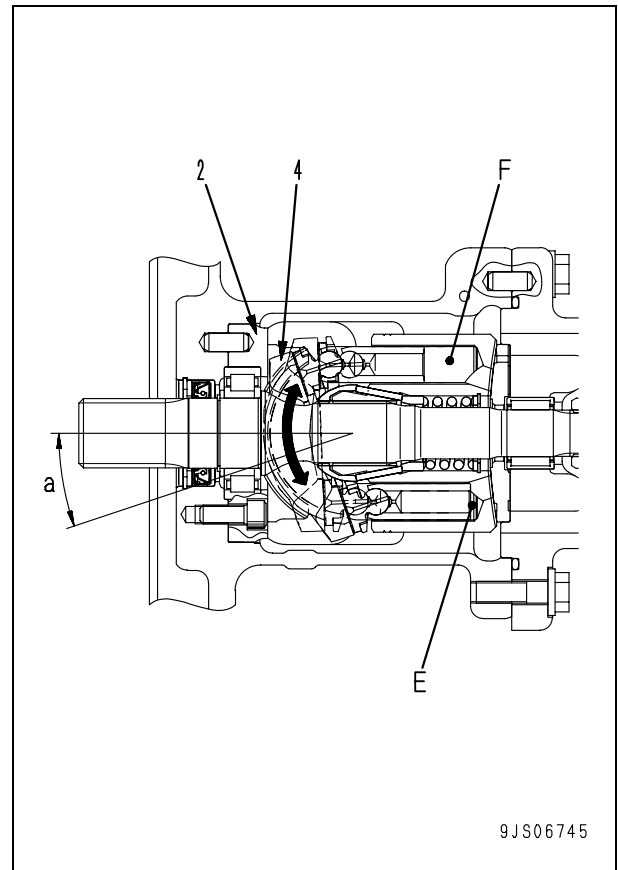


- With center line (X) of rocker cam (4) at a swash plate angle (a) in relation to the axial direction of cylinder block (7), flat surface (A) acts as a cam in relation to shoe (5).
- In this way, piston (6) slides on the inside of cylinder block (7), so a difference between volumes (E) and (F) is created inside cylinder block (7).
- A single piston (6) suctions and discharges the oil by the amount (F) – (E).
- As cylinder block (7) rotates and the volume of chamber (E) becomes smaller, the pressurized oil is discharged.
- On the other hand, the volume of chamber (F) grows larger and, in this process, the oil is suctioned.



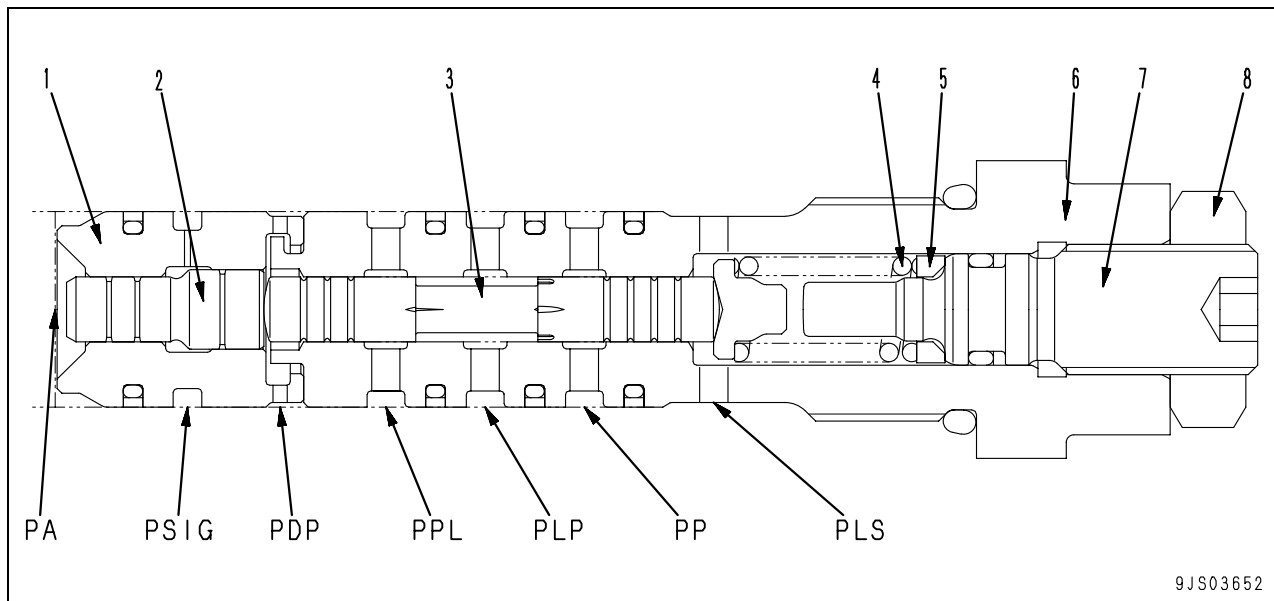
**Control of delivery**

- If the swash plate angle (a) becomes larger, the difference between volumes (E) and (F) becomes larger and pump delivery (Q) increases.
- Servo piston (12) is used for changing swash plate angle (a).
- Servo piston (12) carries out linear reciprocal movement according to the signal pressure from the PC and LS valves.
- This linear movement is transmitted to rocker cam (4) via slider (13).
- Being supported by cradle (2) on the cylindrical surface, rocker cam (4) slides on the surface while continuing revolving movement.
- Space of the pressure receiving area of servo piston (12) are not identical on the left side and right side. Main pump discharge pressure (self pressure) (PP) is always brought to the pressure chamber of the small diameter piston side.
- Output pressure (PEN) of the LS valve is brought to the chamber receiving the pressure at the large diameter piston end.
- The relationship in the size of pressure (PP) at the small diameter piston end and pressure (PEN) at the large diameter piston end, and the ratio between the area receiving the pressure of the small diameter piston and the large diameter piston controls the movement of servo piston (12).





1. LS valve



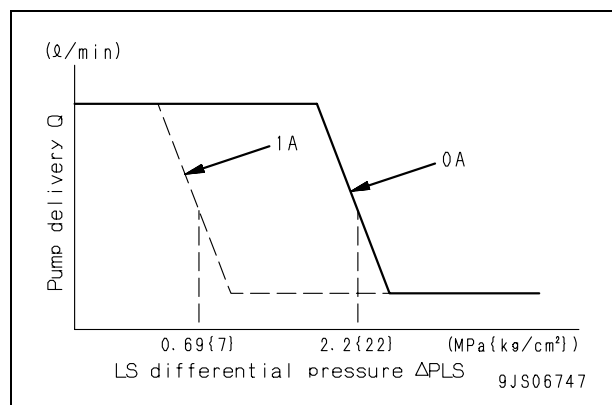
9JS03652

- PA : Pump port
- PDP : Drain port
- PLP : LS control pressure output port
- PLS : LS pressure input port
- PP : Pump port
- PPL : Control pressure input port
- PSIG : LS mode selector pilot port

- 1. Sleeve
- 2. Piston
- 3. Spool
- 4. Spring
- 5. Sheet
- 6. Sleeve
- 7. Plug
- 8. Locknut

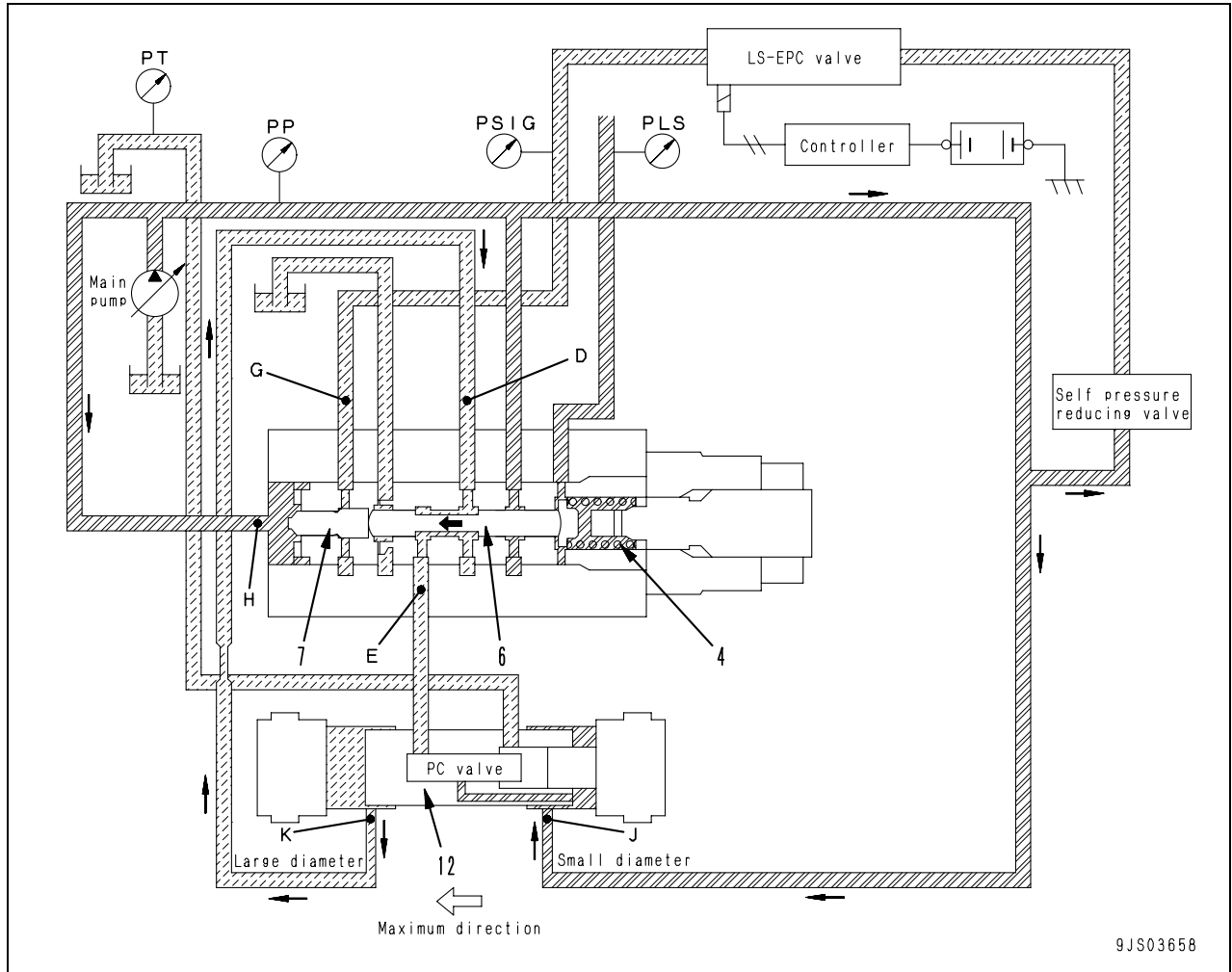
Function

- The LS (load sensing) valve detects the load and controls the discharge amount.
- This valve controls pump delivery (Q) according to differential pressure ( $\Delta PLS$ ) [= PP – PLS], called the LS differential pressure (the difference between pump discharge pressure PP and control valve outlet port pressure PLS).
- Pump discharge pressure (PP), pressure (PLS) (called the LS pressure) coming from the control valve output, and pressure (PSIG) (called the LS selector pressure) from the proportional solenoid valve enter this valve.
- The relationship between the LS differential pressure between the pump discharge pressure (PP) and LS pressure (PLS) ( $\Delta PLS$ ) [= (PP) – (PLS)] and pump delivery (Q) changes as shown in the diagram according to LS selector current (ISIG) of the LS-EPC valve.
- If (ISIG) changes from 0 to 1A, setting force the spring changes, too. As the result, the specified median of the pump delivery volume switching point changes as shown in the diagram. It will change in the range of 0.69 to 2.2 MPa {in the range of 7 to 22 kg/cm<sup>2</sup>}.

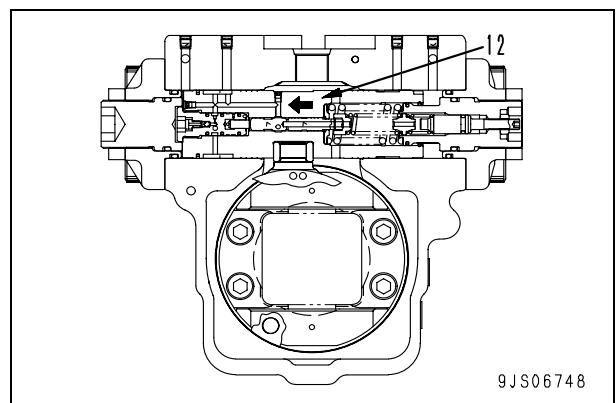


Operation

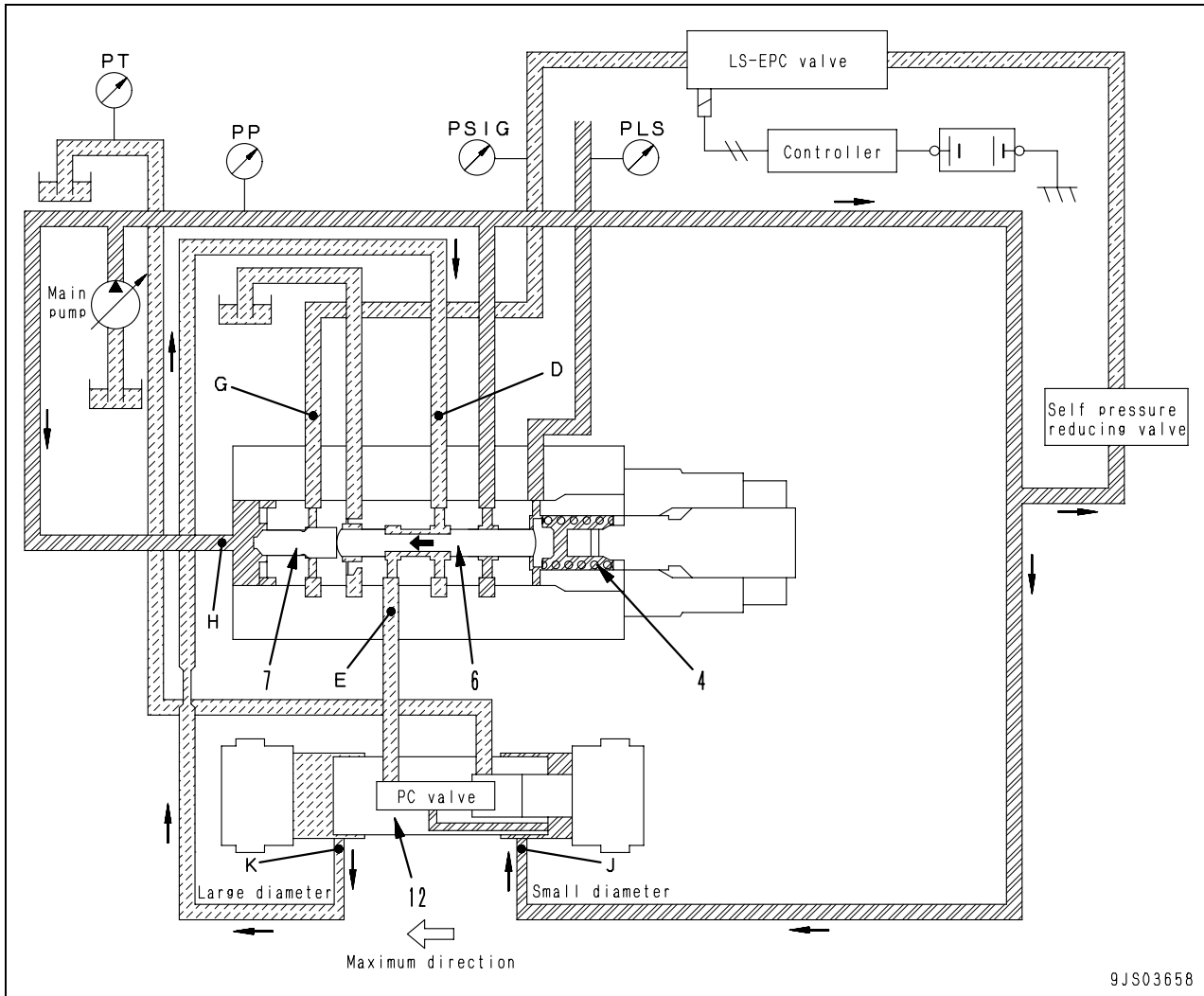
1) When the control valve is situated at neutral



- The LS valve is a 3-way selector valve, with pressure (PLS) (LS pressure) from the outlet port of the control valve brought to spring chamber (B), and main pump discharge pressure (PP) brought to port (H) of sleeve (8).
- Magnitude of the force resulting from this LS pressure (PLS), force of spring (4) and the pump delivery pressure (self pressure) (PP) determine the position of spool (6).
- However, magnitude of the output pressure (PSIG) (called the LS selector pressure) of the EPC valve for the LS valve entering port (G) also changes the position of spool (6). (Setting force of the spring is changed)
- Before the engine is started, servo piston (12) is pushed to the left. (See the figure)
- If the control lever is at the neutral position when the engine is started, LS pressure (PLS) will be set to 0 MPa {0 kg/cm<sup>2</sup>}. (It is interconnected to the drain circuit via the control valve spool)
- Spool (6) is pushed to the right, and port (C) and port (D) will be connected.
- Pump pressure (PP) is conducted to the larger diameter end from the port (K).
- The same pump pressure (PP) is conducted to the smaller diameter end from the port (J).
- According to the difference in the areas on servo piston (12), the pressure moves in such that the swash plate angle may be minimized.

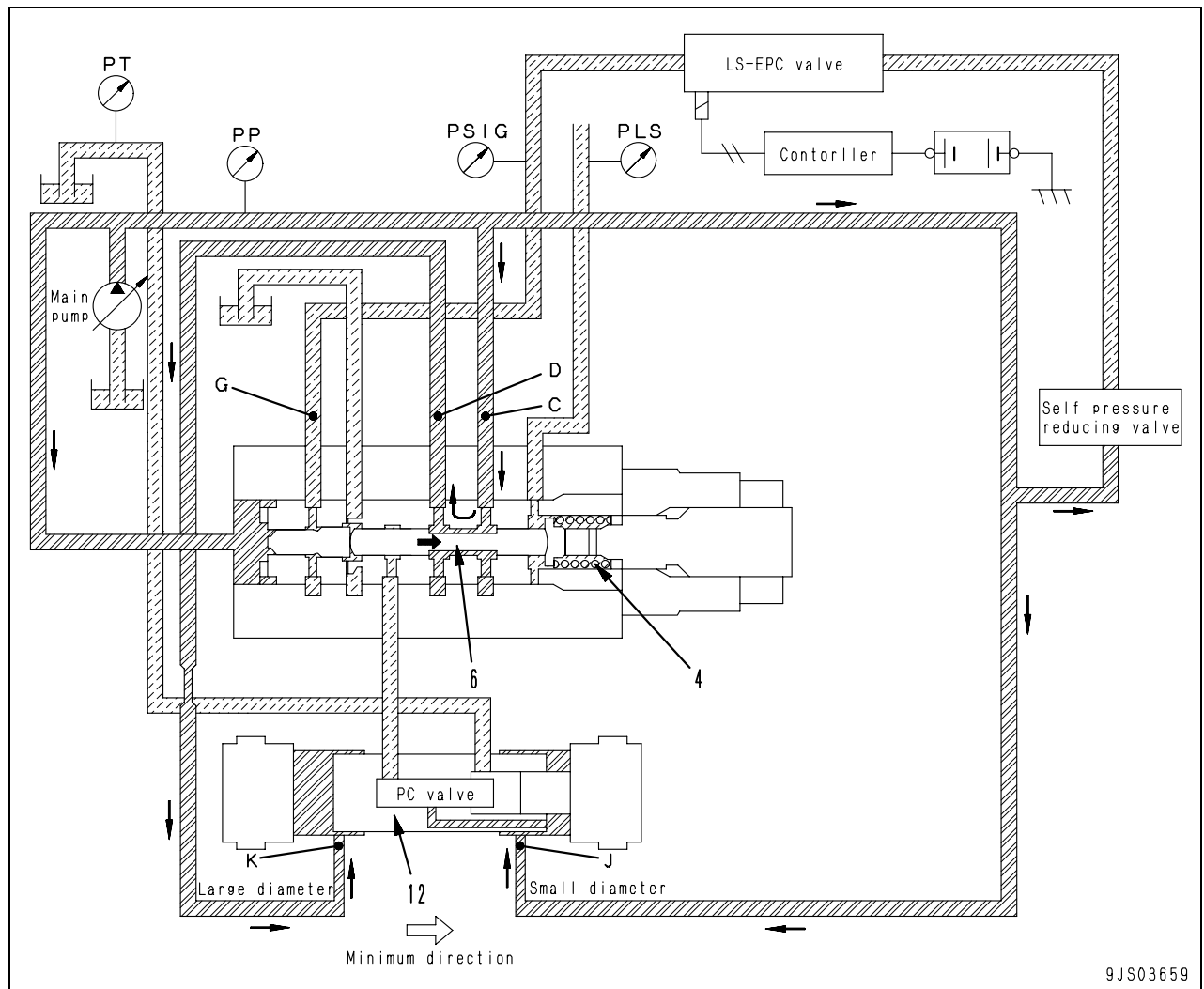


2) Action for the direction of maximizing the pump delivery



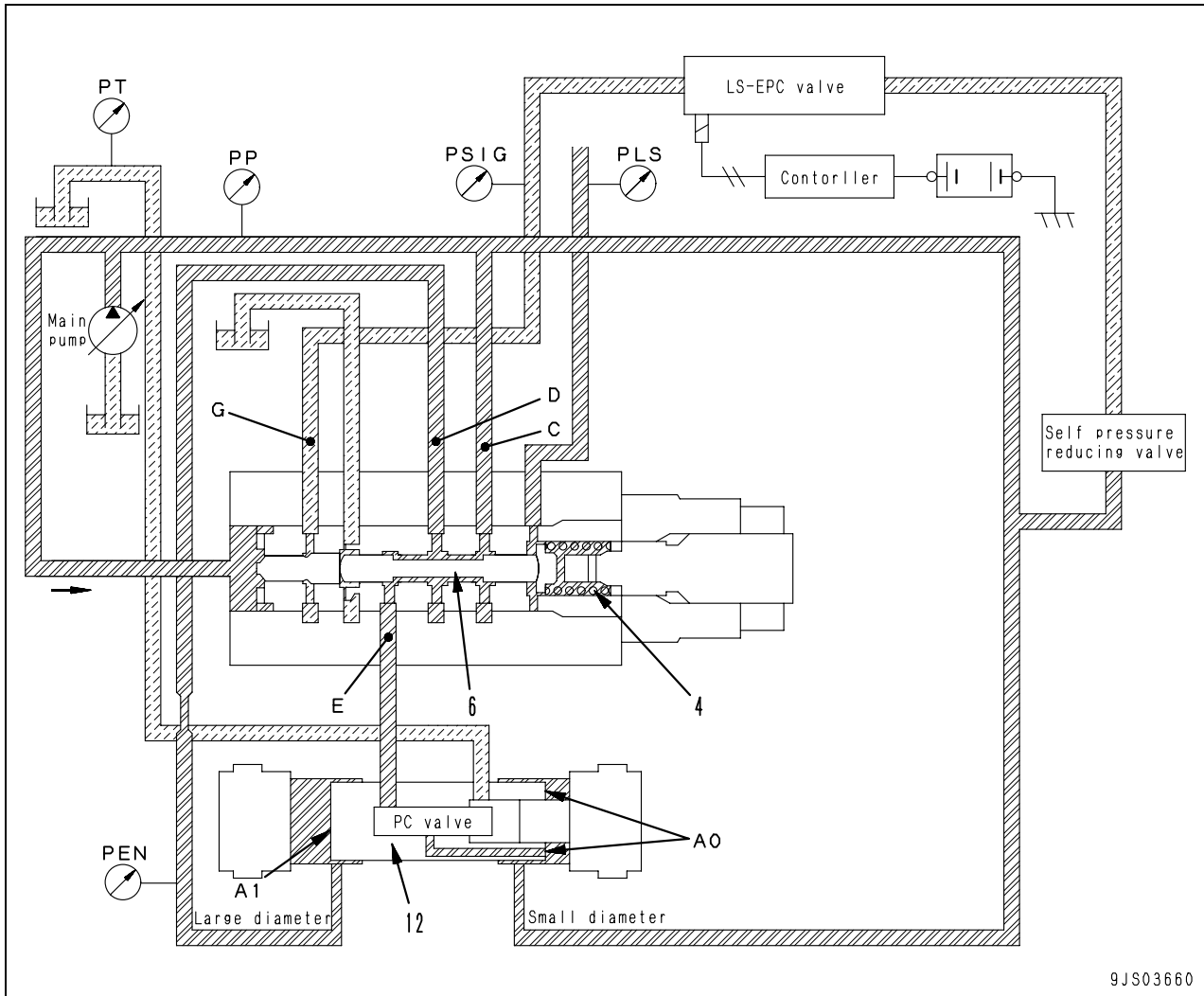
- When the difference between pump discharge pressure (PP) and LS pressure (PLS), in other words, LS differential pressure ( $\Delta PLS$ ) becomes smaller (for example, when the area of opening of the control valve becomes larger and pump pressure PP drops), spool (6) is pushed to the left by the combined force of LS pressure (PLS) and the force of spring (4).
- When spool (6) moves, port (D) and port (E) are interconnected and connected to the PC valve.
- The PC valve is connected to the drain port, so the pressure across circuits (D) and (K) becomes drain pressure (PT). (The operation of the PC valve is explained later.)
- The pressure at the large diameter end of servo piston (12) becomes drain pressure (PT), and pump pressure (PP) enters port (J) at the small diameter end, so servo piston (12) is pushed to the left side. Therefore, the swash plate is moved in the direction to make the discharge amount larger.
- If the output pressure of the EPC valve for the LS valve enters port (G), rightward force is generated on piston (7).
- If piston (7) is pushed to the right, setting force of spring (4) is weakened, changing the LS differential pressure ( $\Delta PLS$ ) [Difference between oil pressures (PLS) and (PP)] when ports (D) and (E) of spool (6) are connected.

## 3) Action for the direction of minimizing the pump delivery



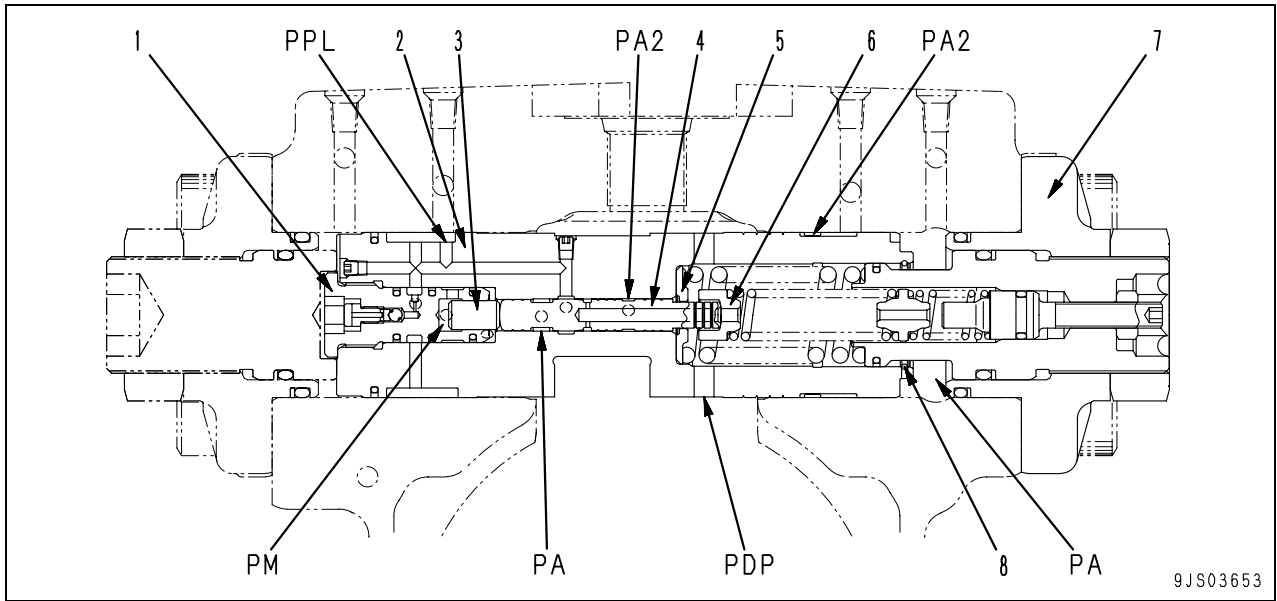
- When LS differential pressure ( $\Delta PLS$ ) becomes larger (for example, when the area of opening of the control valve becomes smaller and pump pressure (PP) rises) because of the rightward move (it reduces discharge amount) of servo piston (12), pump pressure (PP) pushes spool (6) to the right.
- When spool (6) moves, pump pressure (PP) flows from port (C) to port (D) and from port (K), it enters the large diameter end of the piston.
- Pump pressure (PP) also enters port (J) of the small diameter end of the piston, but because of the difference in area between the large diameter end and the small diameter end on servo piston (12), it is pushed to the right. As the result, the servo piston (12) moves into the direction of reducing the swash plate angle.
- As LS selector pressure (PSIG) is input to port (G), setting force of spring (4) is reduced.

4) When servo piston is balanced



- Let us take the area receiving the pressure at the large diameter end of the piston as (A1), the area receiving the pressure at the small diameter end as (A0), and the pressure flowing into the large diameter end of the piston as (PEN).
- If the main pump pressure (PP) of the LS valve and the combined force of spring (4) and LS pressure (PLS) are balanced, and the relationship is  $(A0) \times (PP) = (A1) \times (PEN)$ , servo piston (12) will stop in that position.
- The swash plate of the pump will be held at the intermediate position. [Spool (6) will be stopped at a position where the distance of the opening from port (D) to port (E) and the distance from port (C) to port (D) is almost the same.]
- At this point, the relationship between the pressure receiving areas across servo piston (12) is  $(A0) : (A1) = 3 : 5$ , so the pressure applied across the piston when it is balanced becomes  $(PP) : (PEN) \cong 5 : 3$ .
- Force of spring (4) is adjusted in such that the position of the balanced stop of this spool (6) may be determined when  $(PP) - (PLS) = 1.7 \text{ MPa} \{17.75 \text{ kg/cm}^2\}$  at the median of the specified value.
- If (PSIG) [Output pressure of LS-EPC valve, 0 to 2.9 MPa {0 to 30 kg/cm<sup>2</sup>}] is input to port (G), the position of the balanced stop is changed in the range of  $(PP) - (PLS) = 2.2 \text{ to } 0.69 \text{ MPa} \{22 \text{ to } 7 \text{ kg/cm}^2\}$  in proportion to (PSIG) pressure.

2. PC valve



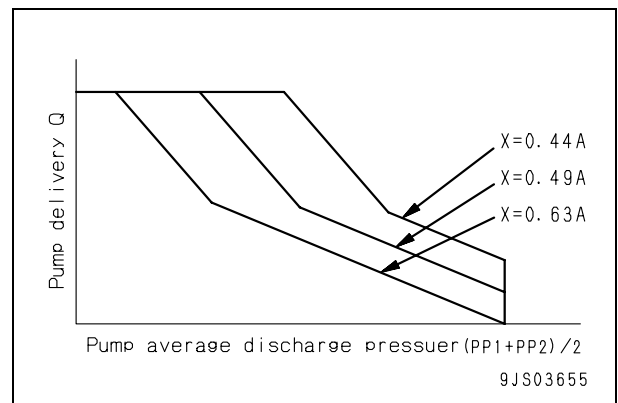
- PA : Pump port
- PA2 : Pump pressure pilot port
- PDP : Drain port
- PM : Mode selector pressure pilot port
- PPL : Control pressure output port (to LS valve)

1. Plug
2. Servo piston assembly
3. Pin
4. Spool
5. Retainer
6. Sheet
7. Cover
8. Wiring

Function

- When the pump discharge pressure (PP1) (self-pressure) and (PP2) (other pump pressure) are high, the PC valve controls the pump so that the volume of oil beyond the discharge pressure-based specific flowrate may not be conducted however you may increase the control valve stroke. Namely it is intended at controlling the horse power for the pumps so that it may not exceed the engine hose power.
- If the pump discharge pressure increases due to increased load during operation, this valve decreases the pump delivery.
- And if the pump delivery pressure goes low, it increases the pump delivery.
- In this case, relation between the mean discharge pressure of the front and rear pumps  $[(PP1) + (PP2)]/2$  and the pump delivery (Q) will become as shown in the diagram if the relation is represented as the parameter the current value (X) to be given to PC-EPC valve solenoid.
- The controller continues counting the actual engine speed.
- If the engine speed is slowed down due to increased load, the controller reduces the pump delivery to recover the speed.

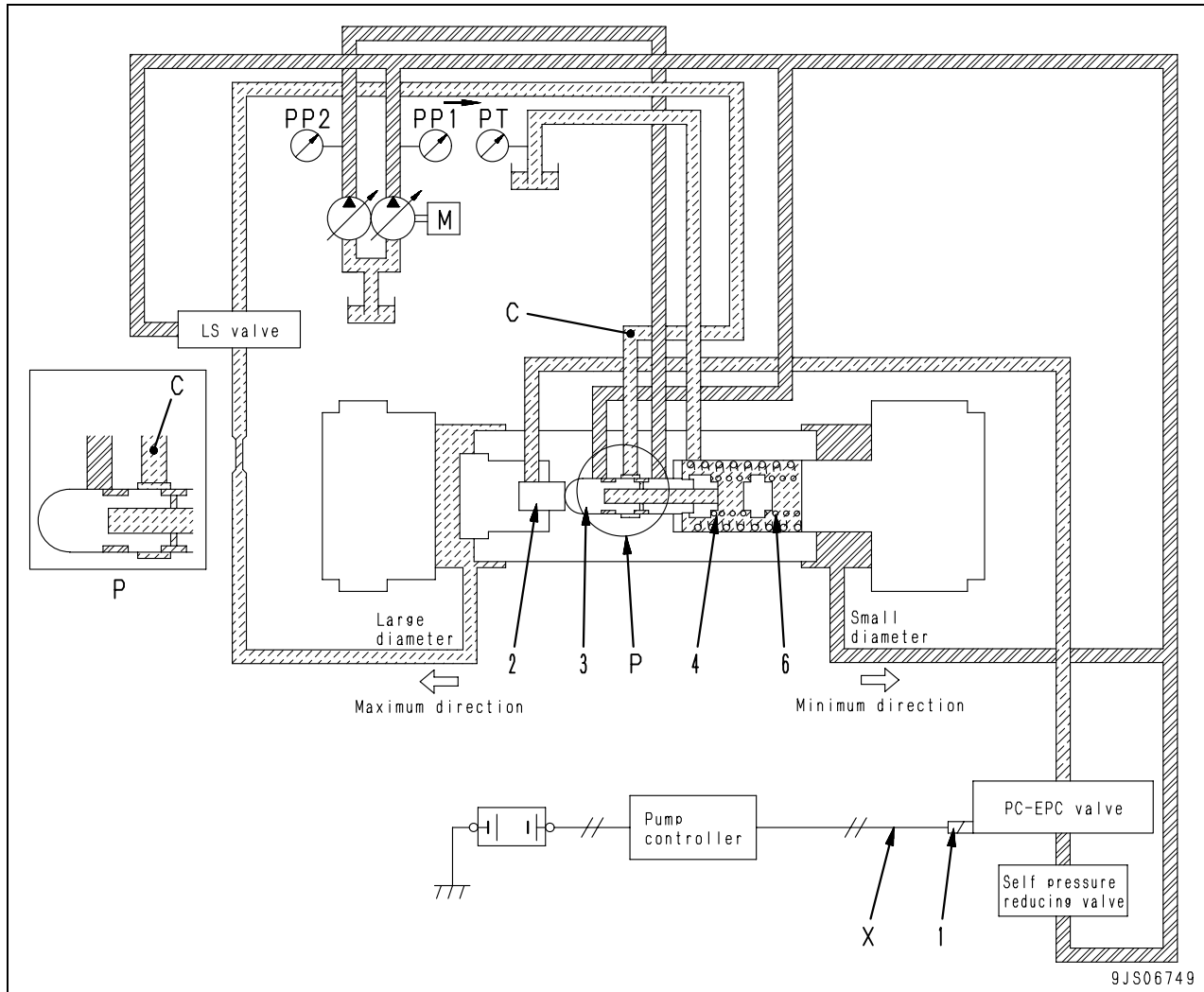
- If the engine speed goes below the specified value because of increased load, the controller sends a command current to PC-EPC valve solenoid in order to reduce the slope angle in proportion to reduction in the engine speed.



## Operation

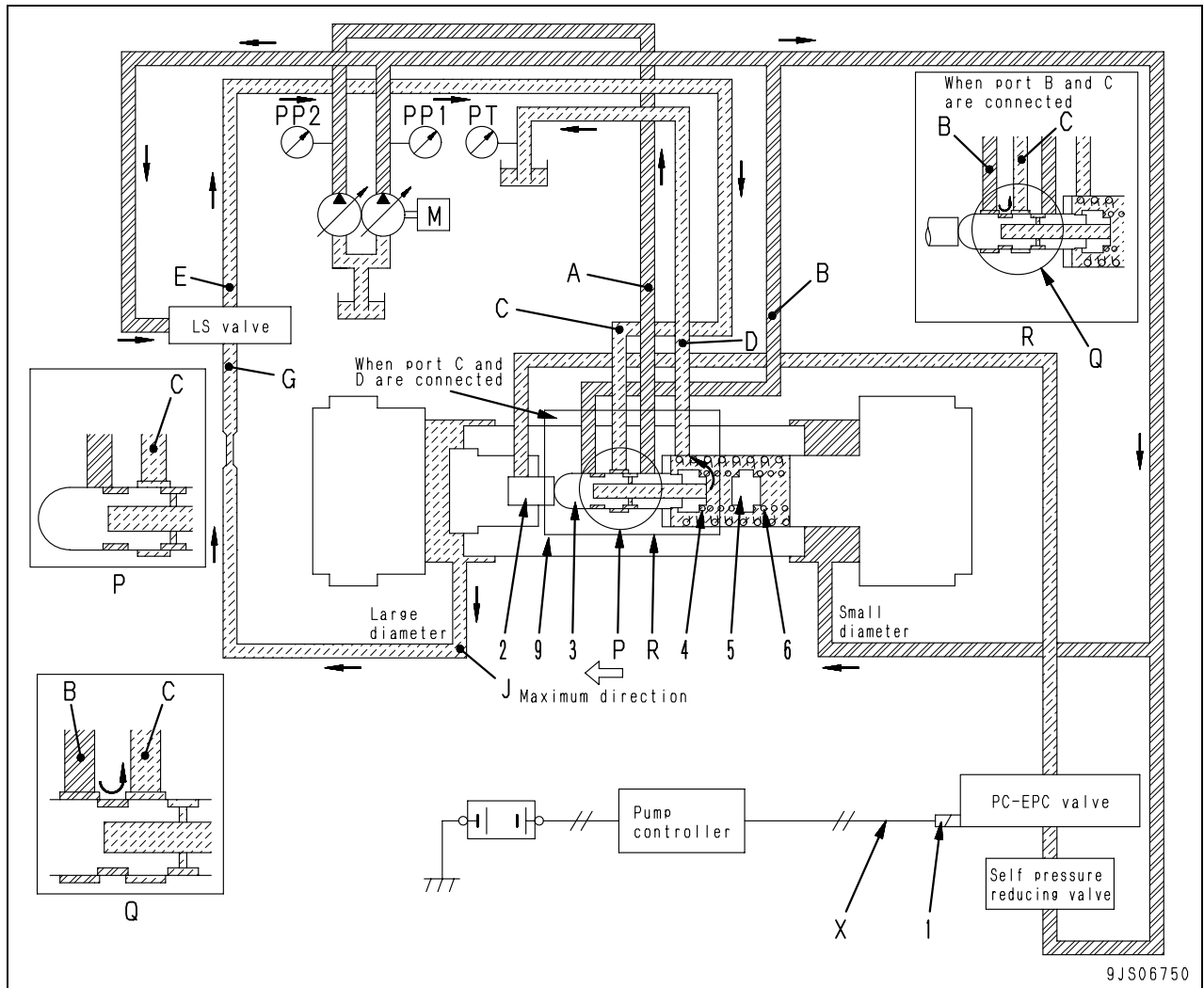
## 1) When pump controller is normal

(1) When the load on the actuator is small and pump discharge pressures (PP1) and (PP2) are low



## Action of PC-EPC valve solenoid (1)

- Command current (X) is being sent to PC-EPC valve solenoid (1) from the pump controller.
  - This command current acts on PC-EPC valve to output the signal pressure in order to modify the force pushing piston (2).
  - Spool (3) stops at a position where the combined spool-pushing force is balanced by the setting force of springs (4) and (6) as well as the pump pressures (PP1) (self-pressure) and (PP2) (another pump's pressure).
  - The pressure [port (C) pressure] output from PC valve is changed depending on the above position.
  - The size of command current (X) is determined by the nature of the operation (lever operation), the selected working mode, and the set value and actual value of the engine speed.
- ★ Other pump's pressure denotes the pressure of the pump situated on the opposite side. For the front pump pressure, the other pump's pressure is that of the rear pump. And for the rear pump pressure, the other pump's pressure is that of the front pump.



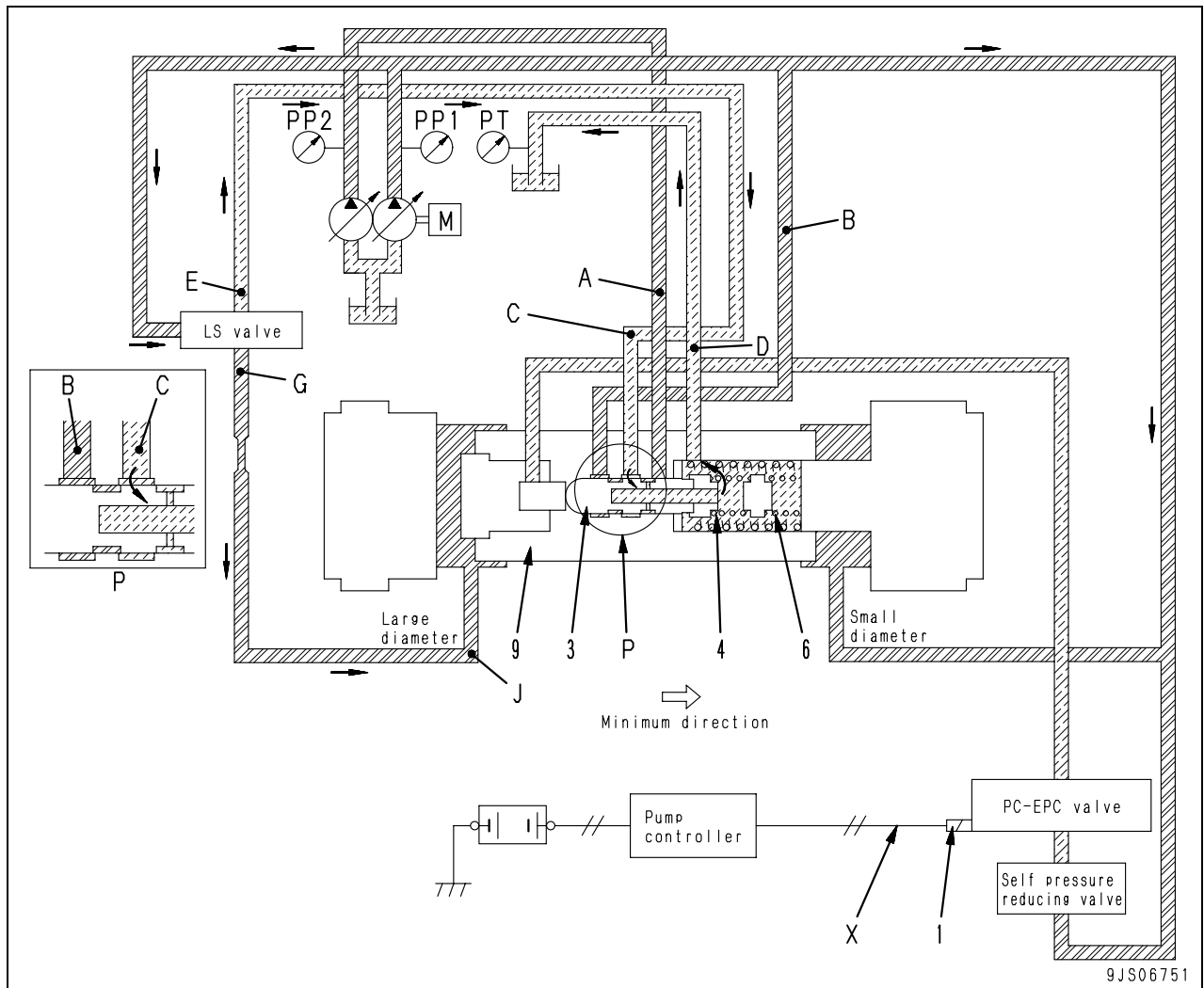
### Action of spring

- Load of springs (4) and (6) on the PC valve is determined by the swash plate position.
- As servo piston (9) moves to right, spring (6) is retracted.
- If the servo piston moves further, it will be contacted again seat (5) and spring (6) will be fixed.
- After that, spring (4) alone will operate.
- The spring load is changed by servo piston (9) as it extends or compresses springs (4) and (6).  
The spring load changes as the servo piston (9) extends and contracts the springs (4) and (6).
- If the command current (X) to PC-EPC valve solenoid (1) changes, so does the force pushing piston (2).
- Spring load of springs (4) and (6) is also affected by the command current (X) to PC-EPC valve solenoid.
- Port (C) of the PC valve is connected to port (E) of the LS valve.
- Self pressure (PP1) enters port (B) and the small diameter end of servo piston (9), and other pump pressure (PP2) enters port (A).
- When pump pressures (PP1) and (PP2) are small, spool (3) will be positioned in the left side.
- Port (C) and (D) are connected, and the pressure entering the LS valve becomes drain pressure (PT).
- If port (E) and port (G) of the LS valve are connected, the pressure entering the large diameter end of the piston from port (J) becomes drain pressure (PT), and servo piston (9) moves to the left side.
- The pump delivery will be set to the increasing trend.
- Accompanied with move of servo piston (9), springs (4) and (6) will be expanded and the spring force becomes weaker.



- As the spring force is weakened, spool (3) moves to the right, the connecting between port (C) and port (D) is shut off and the pump discharge pressure ports (B) and (C) are connected.
- As a result, the pressure on port (C) rises and the pressure on the large diameter end of the piston also rises. Thus, the leftward move of servo piston (9) is stopped.
- Servo piston (9) stop position (= Pump delivery) is decided by the position where the pushing force generated from the pressures (PP1) and (PP2) applied to spool (3), the pushing force of the solenoid in PC-EPC valve generates and the pushing force of springs (4) and (6) are balanced.

(2) When load on actuator is large and pump discharge pressure is high



### Outline

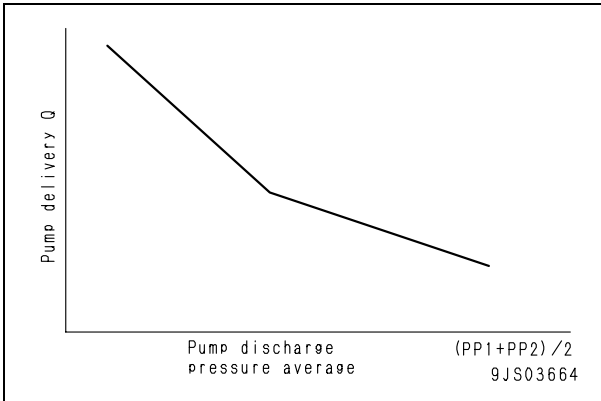
- When the load is large and pump discharge pressures (PP1) and (PP2) are high, the force pushing spool (3) to the right becomes larger and spool (3) will be moved to the position shown in above figure.
- Part of the pressure to be conducted from port (C) to LS valve flows from port (B) to port (C) and (D) via LS valve. At the end this flow, level of this pressure becomes approximately half of pump pressure (PP2).

### Operation

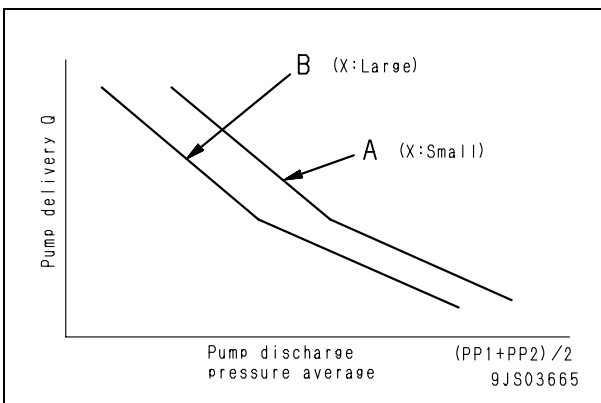
- When port (E) and port (G) of the LS valve are connected, this pressure from port (J) enters the large diameter end of servo piston (9), stopping servo piston (9).
- If pump pressure (PP2) increases further and spool (3) moves further to the right, pump pressure (PP1) flows to port (C) and acts to make the pump delivery the minimum.

- When servo piston (9) moves to the right, springs (4) and (6) are compressed and push back spool (3).
- When spool (3) moves to the left, the opening of port (C) and port (D) becomes larger.
- As a result, the pressure on port (C) (= J) is decreased and the rightward move servo piston (9) is stopped.
- The position in which servo piston (9) stops at this time is further to the right than the position when pump pressures (PP1) and (PP2) are low.

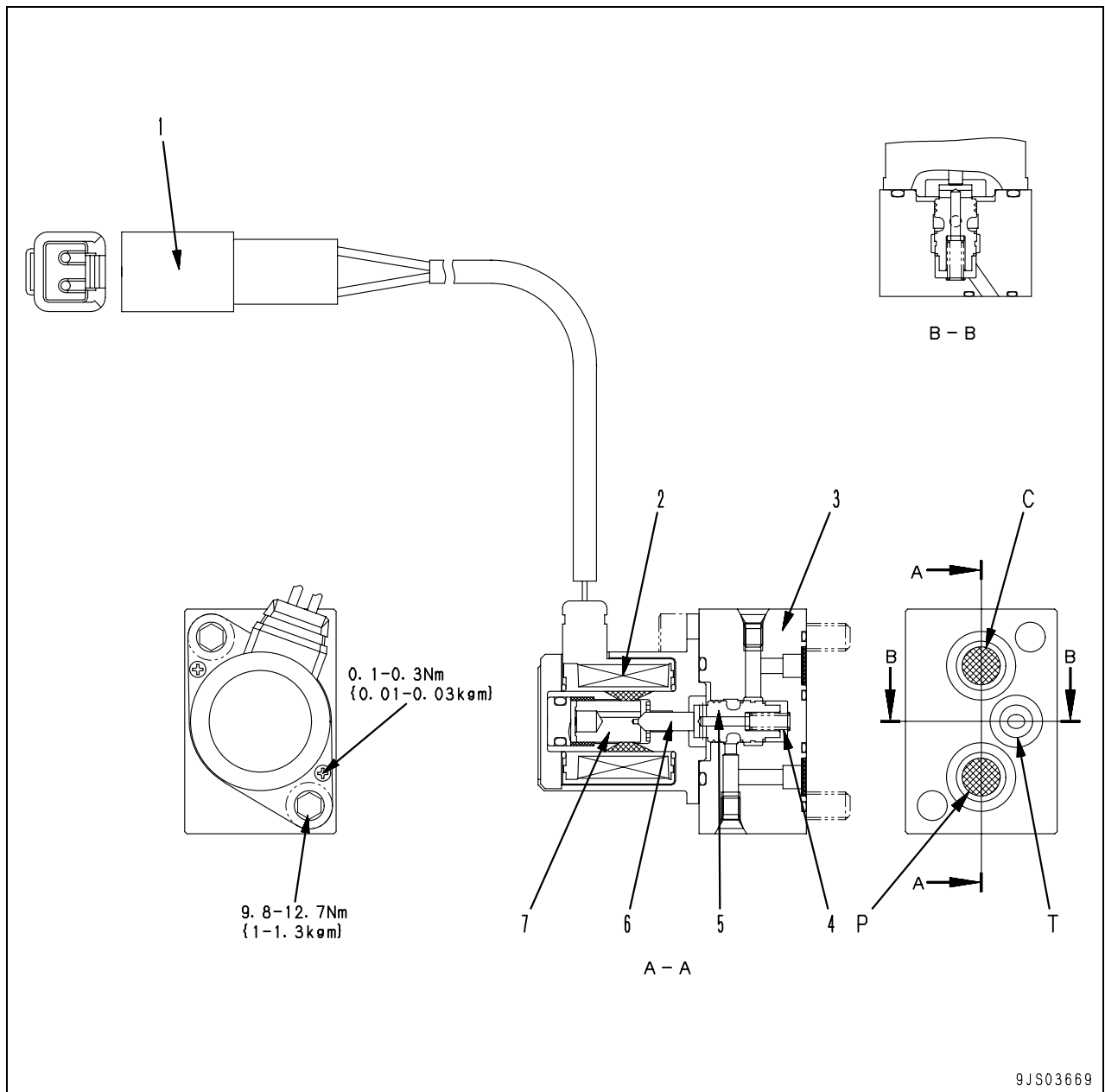
- The relationship between the average pump pressure  $(PP1 + PP2)/2$  and servo piston (9) in terms of their positions can be represented by the broken line in the figure springs (4) and (6) form the double springs.
- The relationship between the average pump pressure  $(PP1 + PP2)/2$  and average pump delivery (Q) becomes as shown below.



- If command voltage (X) sent to PC-EPC valve solenoid (1) increases further, the relationship between average pump pressure  $(PP1 + PP2)/2$ , and pump delivery (Q) is proportional to the force of the PC-EPC valve solenoid and moves in parallel.
- Namely, the force of PC-EPC valve solenoid (1) is added to the pushing force to the right because of the pump pressure applied to the spool (3), so the relationship between the average pump pressure  $(PP1 + PP2)/2$  and the pump delivery (Q) moves from (A) to (B) as the command current (X) is increased.



3. LS (PC)-EPC valve

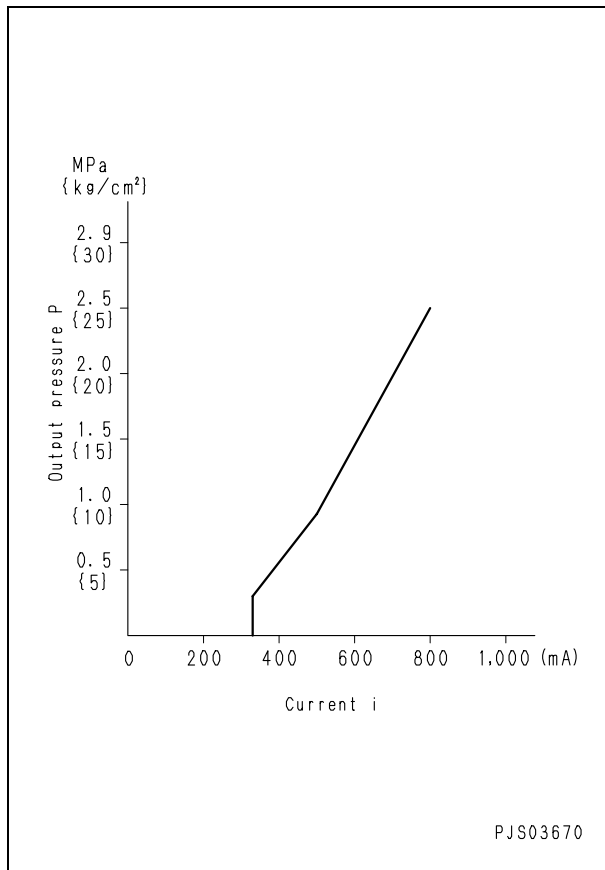


C : To LS (PC) valve  
 P : From self pressure reducing valve  
 T : To tank

1. Connector
2. Coil
3. Body
4. Spring
5. Spool
6. Rod
7. Plunger

### Function

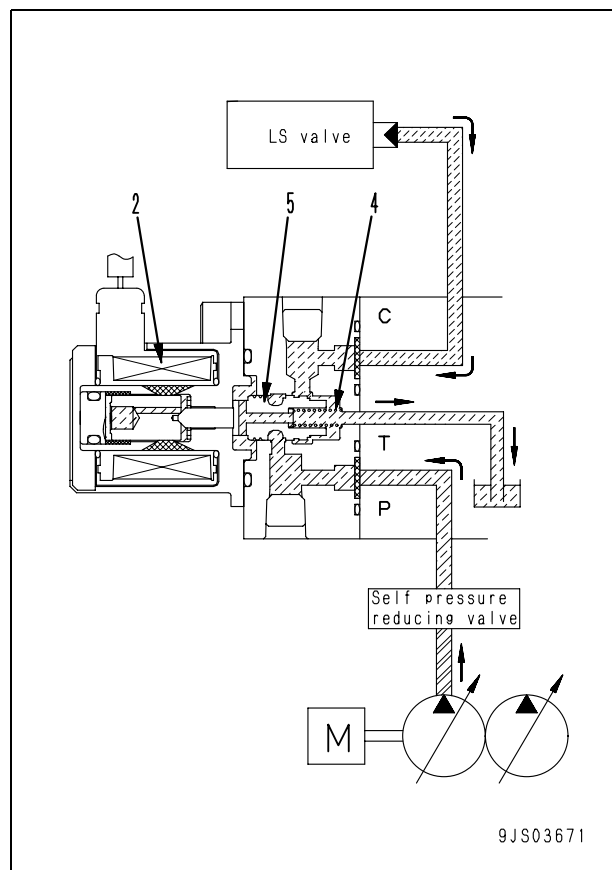
- The EPC valve consists of the proportional solenoid portion and the hydraulic valve portion.
- When it receives signal current (i) from the controller, it generates the EPC output pressure in proportion to the size of the signal, and outputs it to the LS (PC) valve.



### Operation

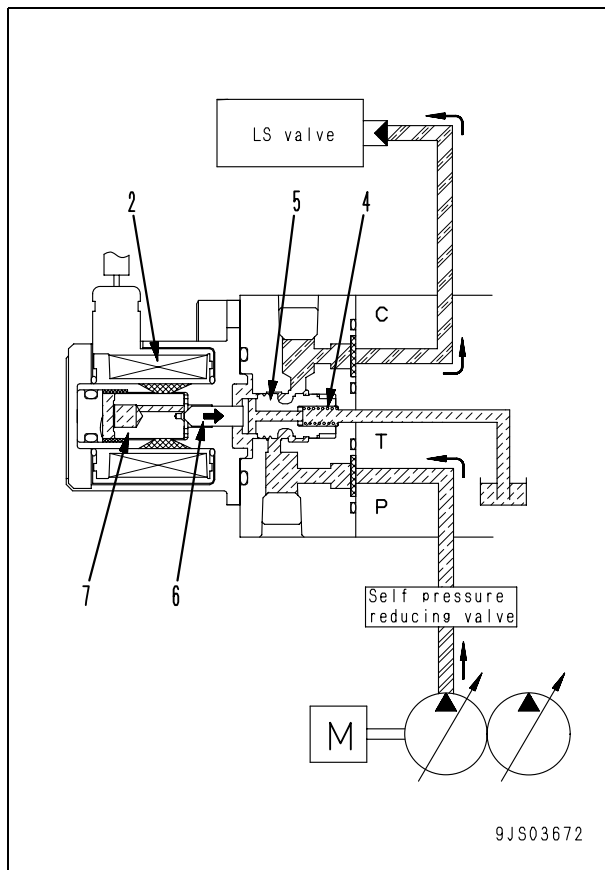
#### 1) When signal current is 0 (coil is de-energized)

- When there is no signal current flowing from the controller to coil (2), coil (2) is de-energized.
- Spool (5) is pushed to the left by spring (4).
- Port (P) closes and the pressurized oil from the self pressure reducing valve does not flow to the LS (PC) valve.
- The pressurized oil from the LS (PC) valve is drained to the tank via port (C) and port (T).



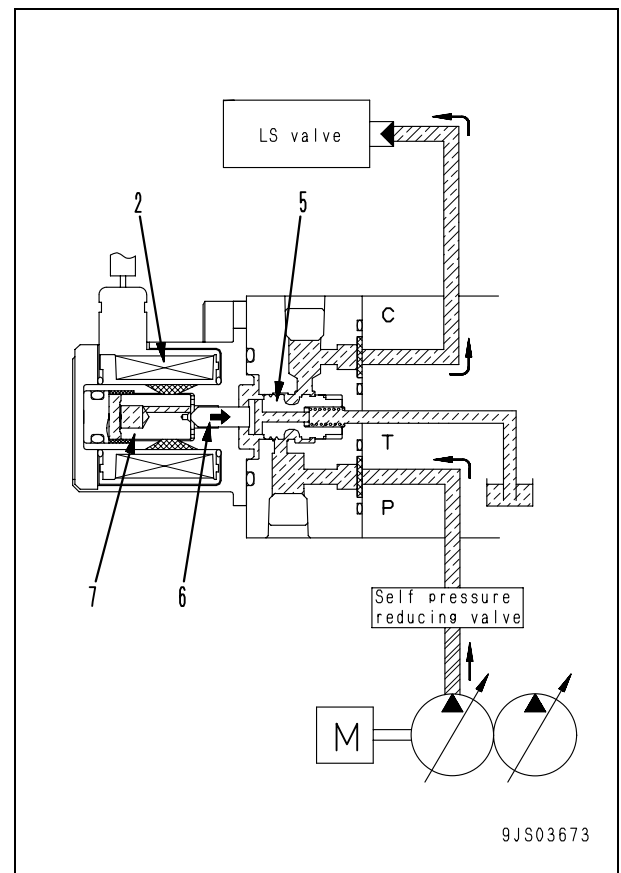
## 2) When signal current is very small (coil is energized)

- When a very small signal current flows to coil (2), coil (2) is energized, and a propulsion force is generated on the right side of plunger (7).
- Rod (6) pushes spool (5) to the right, and pressurized oil flows from port (P) to port (C).
- Pressures on port (C) increases and the force to act on spool (5) surface and the spring load on spring (4) become larger than the propulsion force of plunger (7).
- Spool (5) is pushed to the left, and port (P) is shut off from port (C).
- Port (C) and port (T) are connected.
- Spool (5) moves up and down so that the propulsion force of plunger (7) may be balanced with pressure of port (C) + spring load of spring (4).
- The circuit pressure between the EPC valve and the LS (PC) valve is controlled in proportion to the size of the signal current.



## 3) When signal current is maximum (coil is energized)

- As the signal current flows to coil (2), coil (2) is energized.
- When this happens, the signal current is at its maximum, so the propulsion force of plunger (7) is also at its maximum.
- Spool (5) is pushed toward right side by rod (6).
- The maximum volume of pressurized oil is conducted from port (P) to port (C), increasing the circuit pressure across EPC valve and LS (PC) valve to the maximum level.
- Since port (T) is closed, pressurized oil does not flow to the tank.



BR380JG-1E0 Mobile crusher

---

Form No. SEN01351-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

# 10 Structure, function and maintenance standard

## Hydraulic system, Part 2

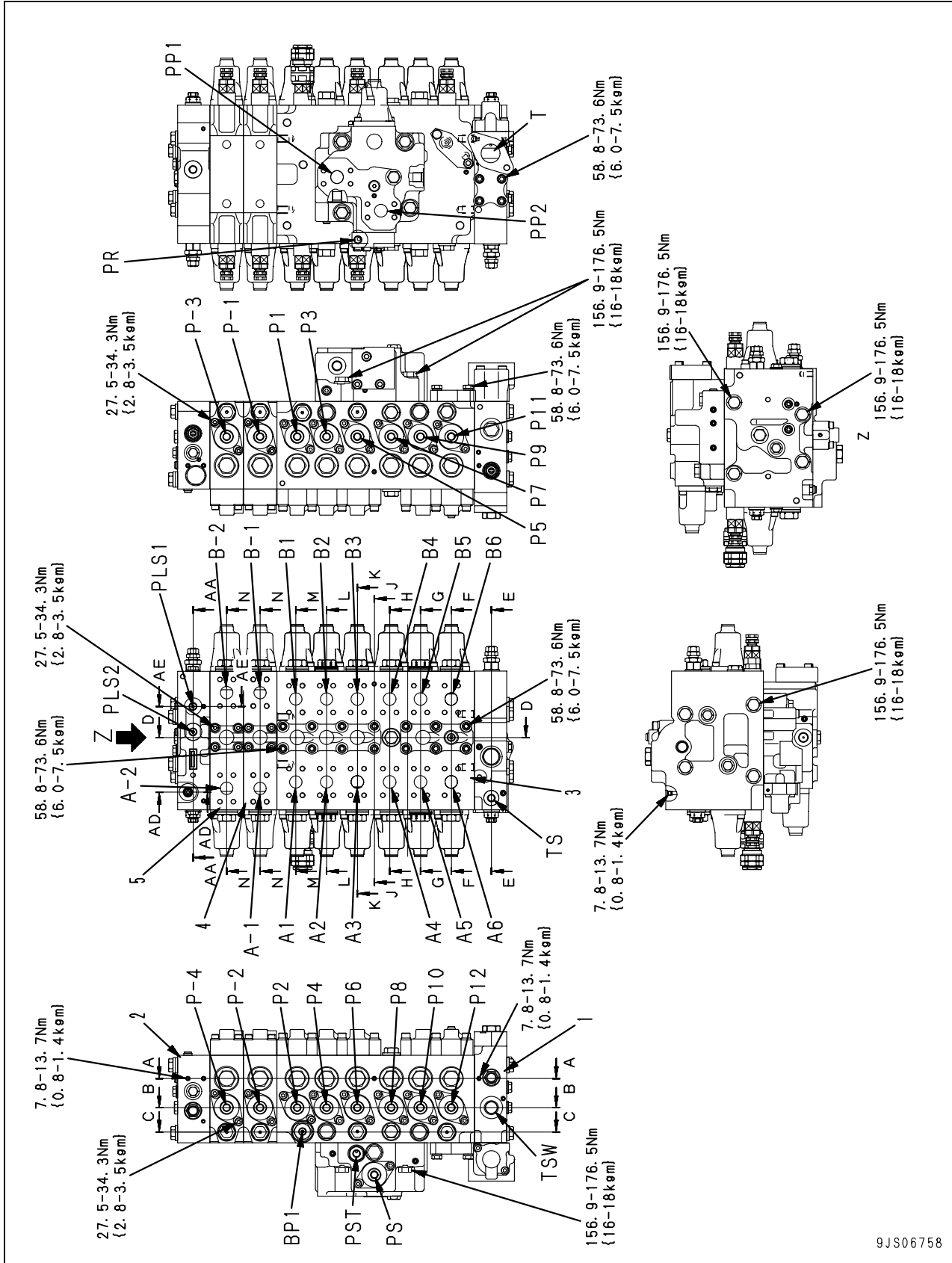
---

Control valve .....	2
Self pressure reducing valve .....	10
CLSS .....	15
Functions and operation by valve .....	19
Functions and operation by valve .....	19



Control valve

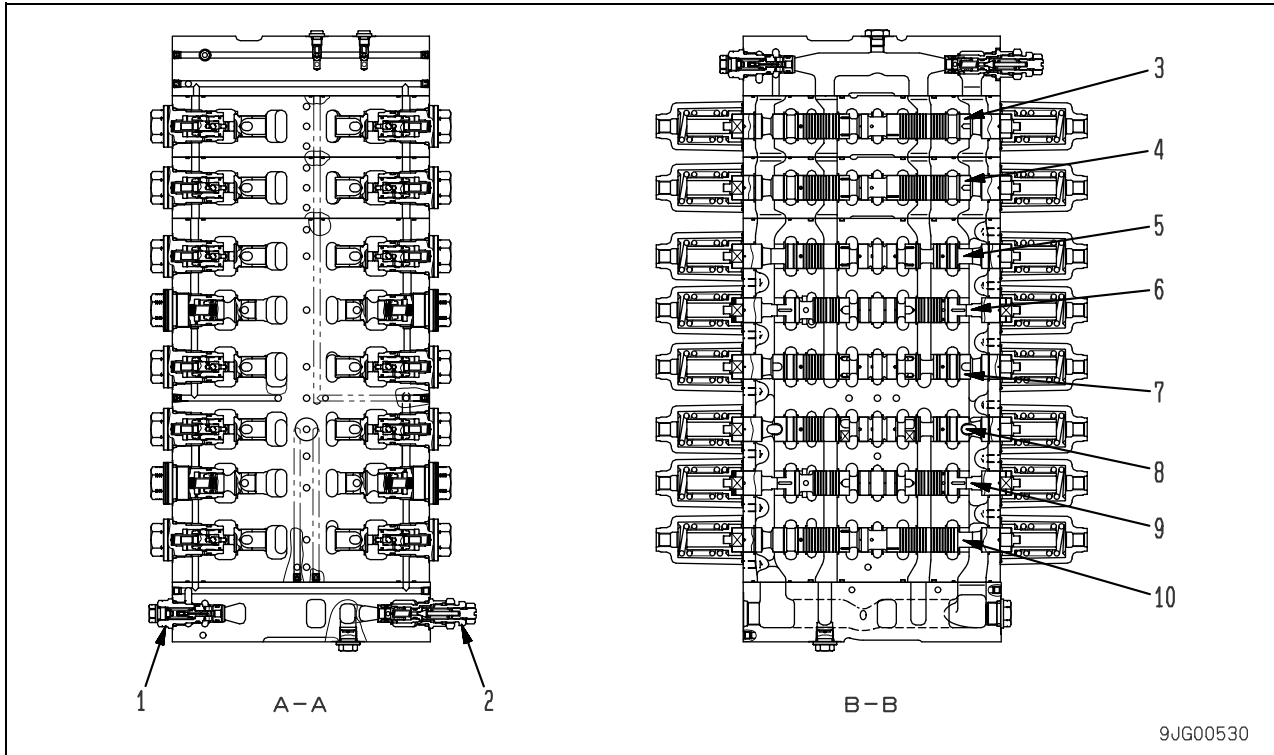
8-spool valve



9JS06758

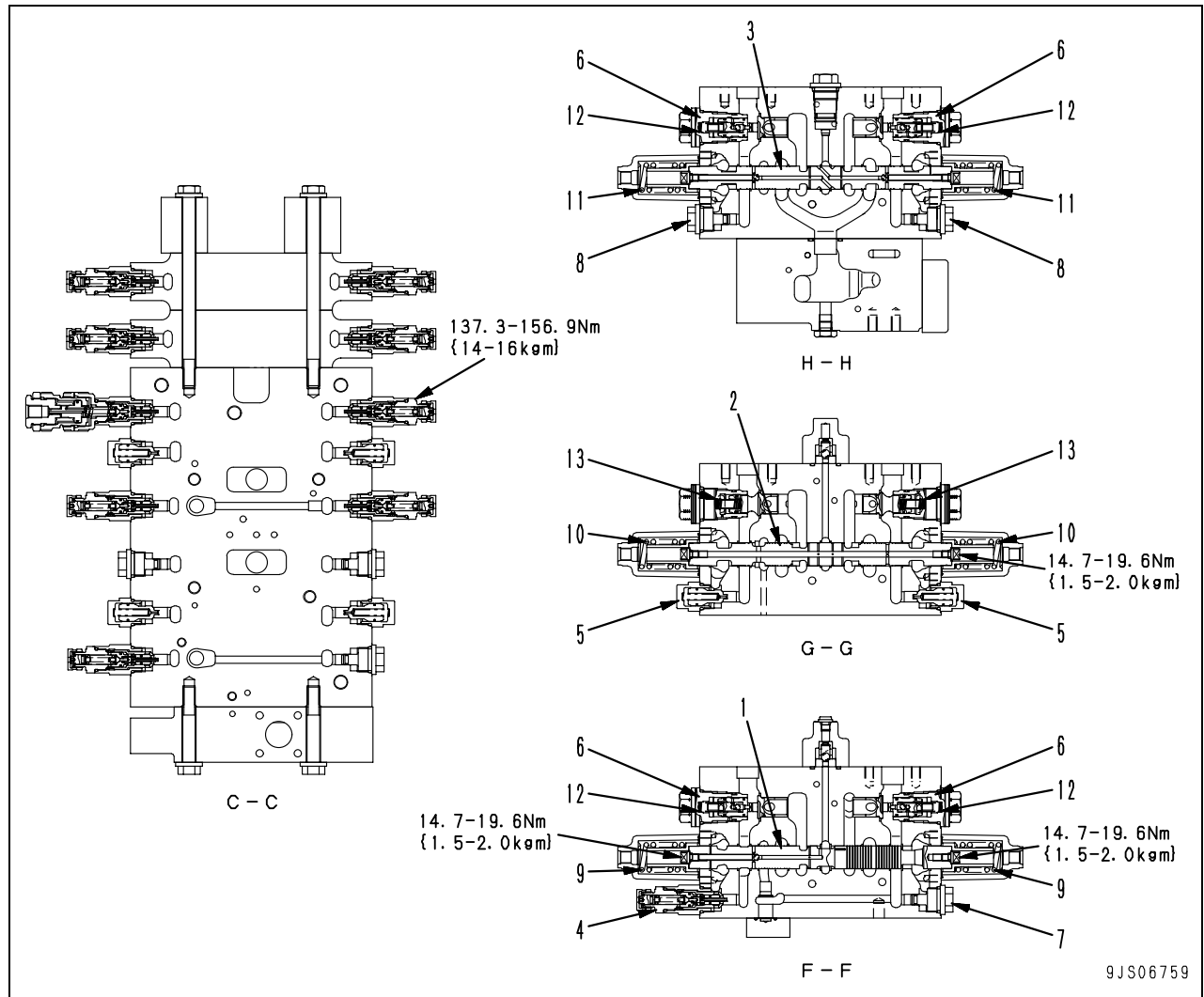
**Outline**

- This control valve consists of a 6-spool valve and 2 service valves and is equipped with a merge-divider valve.
  - The component valves are assembled into 1 unit with bolts and the paths are connected internally.
- A1. To conveyor motor and cylinder solenoid selector valve
  - A2. To left travel motor port PA
  - A3. To grizzly feeder motor
  - A4. To crusher motor port MA
  - A5. To right travel motor port PB
  - A6. To bear lock cylinder
  - A-1. To side conveyor motor
  - A-2. To magnetic separator motor
  - B1. To conveyor motor and cylinder solenoid selector valve
  - B2. To left travel motor port PB
  - B3. To grizzly feeder motor
  - B4. To crusher motor port MB
  - B5. To right travel motor port PA
  - B6. Plug
  - B-1. To side conveyor motor
  - B-2. To magnetic separator motor
  - BP1. From 5-spool ON/OFF valve
  - P1. From 4-spool EPC valve
  - P2. To hydraulic tank
  - P3. From travel PPC valve
  - P4. From travel PPC valve
  - P5. From 4-spool EPC valve
  - P6. To hydraulic tank
  - P7. From 4-spool EPC valve
  - P8. From 4-spool EPC valve
  - P9. From travel PPC valve
  - P10. From travel PPC valve
  - P11. From 5-spool ON/OFF valve
  - P12. To hydraulic tank
  - P-1. From 5-spool ON/OFF valve
  - P-2. To hydraulic tank
  - P-3. From 5-spool ON/OFF valve
  - P-4. To hydraulic tank
  - PLS1. To rear pump control
  - PLS2. To front pump control
  - PP1. From self pressure reducing valve
  - PP2. From rear pump
  - PR. From self pressure reducing valve
  - PS. From self pressure reducing valve
  - PST. From 5-spool ON/OFF valve
  - T. To oil cooler
  - TS. To hydraulic tank
  - TSW To crusher motor
- 1. Cover 1
  - 2. Cover 2
  - 3. 6-spool valve  
(Lock cylinder reset valve, right travel valve, crusher motor valve, feeder motor valve, left travel valve, accessory valve)
  - 4. Service valve (Side conveyor motor valve)
  - 5. Service valve (Magnetic separator motor valve)



- 1. Unload valve
- 2. Main relief valve
- 3. Magnetic separator spool
- 4. Side conveyor spool
- 5. Accessory spool

- 6. Left travel spool
- 7. Grizzly feeder spool
- 8. Crusher spool
- 9. Right travel spool
- 10. Lock cylinder reset spool

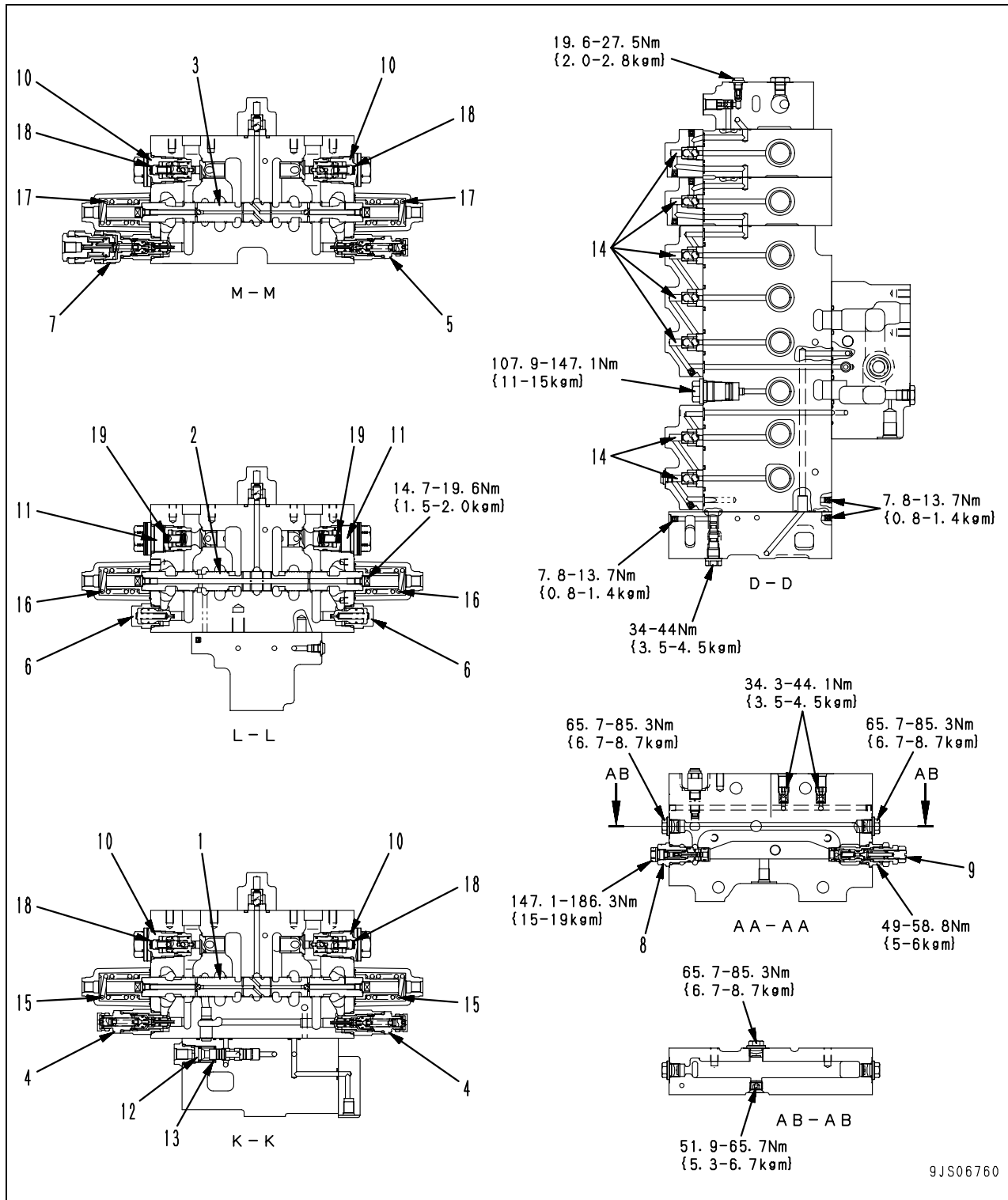


- 1. Lock cylinder reset spool
- 2. Right travel spool
- 3. Crusher spool
- 4. Safety-suction valve

- 5. Suction valve
- 6. Pressure compensation valve
- 7. Pressure compensation valve
- 8. Plug

Unit: mm

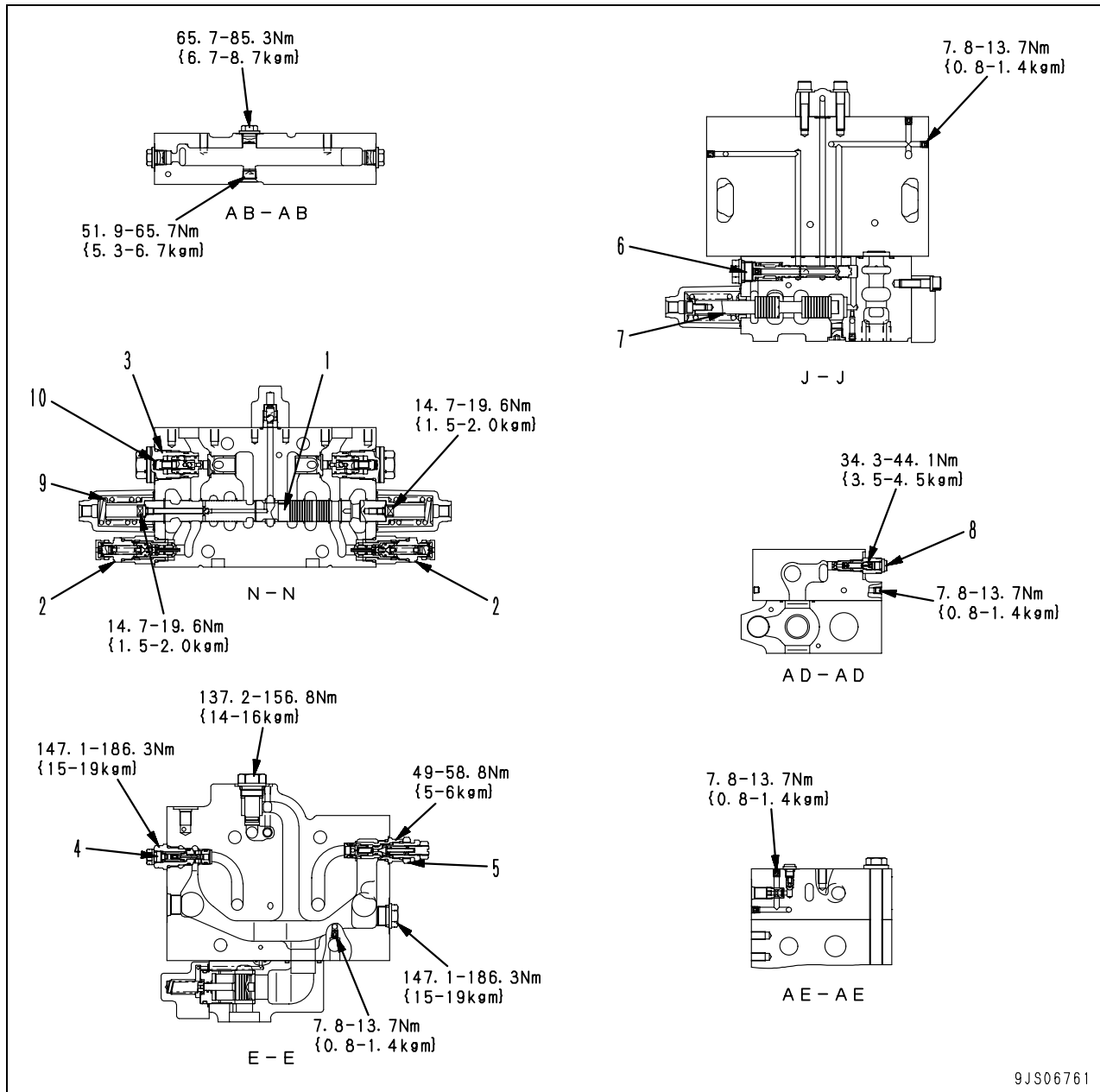
No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
		Free length x Outside diameter	Installed length	Installed load	Free length	Installed load	
9	Spool return spring	54.5 x 34.8	53.5	120.6 N {12.3 kg}	—	96.5 N {9.8 kg}	If spring is damaged or deformed, replace it.
10	Spool return spring	54.6 x 34.8	53.5	139.3 N {14.2 kg}	—	111.4 N {11.4 kg}	
11	Spool return spring	54.2 x 34.8	53.5	94.1 N {9.6 kg}	—	75.3 N {7.7 kg}	
12	Spool return spring	48.1 x 10.8	28.0	17.5 N {1.78 kg}	—	13.9 N {1.42 kg}	
13	Spool return spring	36.9 x 11.1	28.0	29.4 N {3.0 kg}	—	23.5 N {2.4 kg}	



- |                         |   |
|-------------------------|---|
| 1. Feeder spool         | 8. Unload valve                                 |
| 2. Left travel spool    | 9. Main relief valve                            |
| 3. Accessory spool      | 10. Pressure compensation valve                 |
| 4. Safety-suction valve | 11. Pressure compensation valve                 |
| 5. Safety-suction valve | 12. Merge-divider valve (Travel junction valve) |
| 6. Suction valve        | 13. Return spring                               |
| 7. Safety-suction valve | 14. LS shuttle valve                            |

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
		Free length x Outside diameter	Installed length	Installed load	Free length	Installed load	
15	Spool return spring	54.2 x 34.8	53.5	94.1 N {9.6 kg}	—	75.3 N {7.7 kg}	If spring is damaged or deformed, replace it.
16	Spool return spring	54.6 x 34.8	53.5	139.3 N {14.2 kg}	—	111.4 N {11.4 kg}	
17	Spool return spring	54.5 x 34.8	53.5	120.6 N {12.3 kg}	—	96.5 N {9.8 kg}	
18	Spool return spring	48.1 x 10.8	28.0	17.5 N {1.78 kg}	—	13.9 N {1.42 kg}	
19	Spool return spring	36.9 x 11.1	28.0	29.4 N {3.0 kg}	—	23.5 N {2.4 kg}	

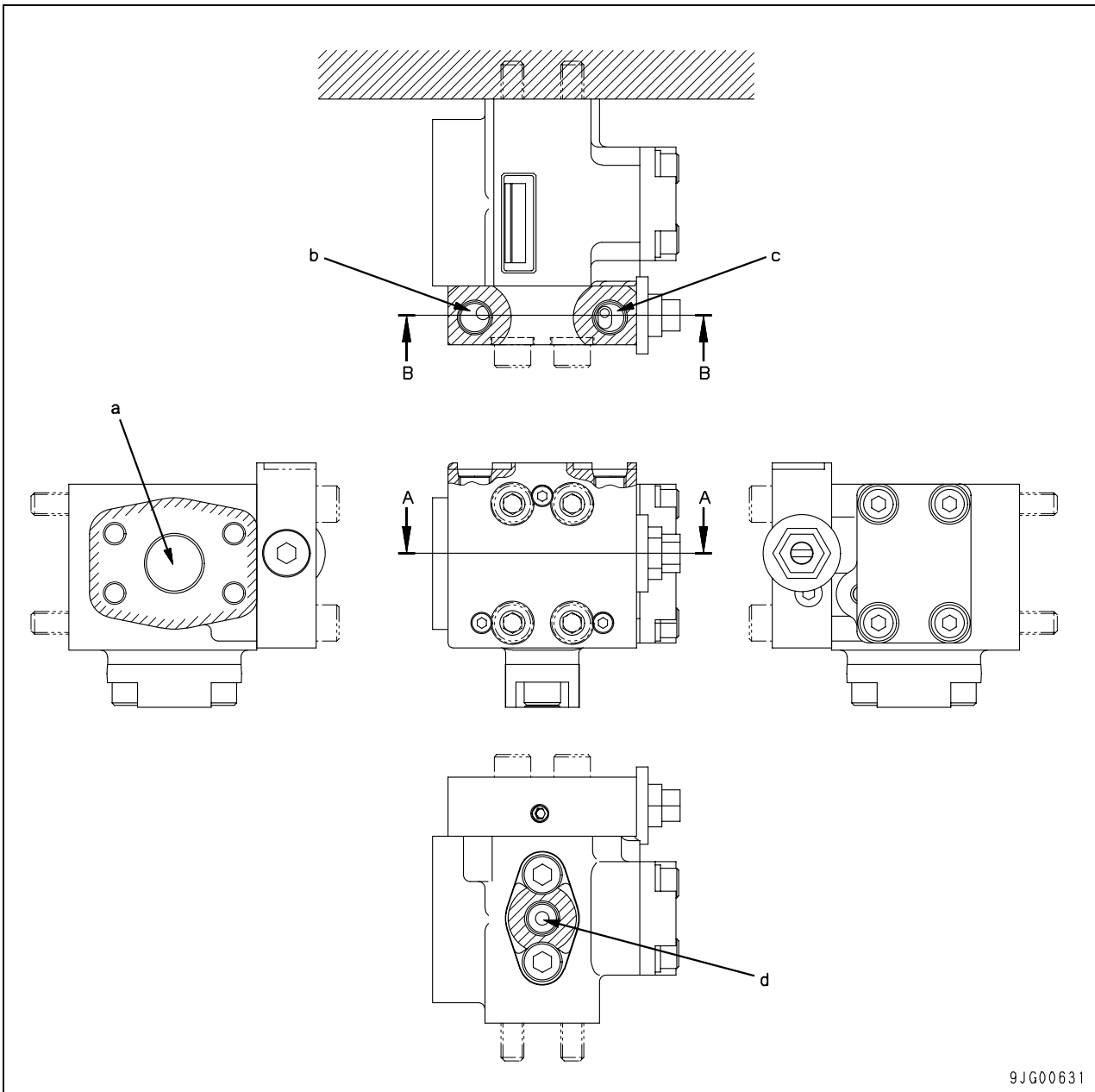


- 1. Side conveyor and magnetic separator spool
- 2. Safety-suction valve
- 3. Pressure compensation valve
- 4. Unload valve
- 5. Main relief valve
- 6. Merge-divider valve (For LS)
- 7. Merge-divider valve (Main)
- 8. LS bypass valve

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
9	Spool return spring	Free length x Outside diameter	Installed length	Installed load	Free length	Installed load	If spring is damaged or deformed, replace it.
		54.2 x 34.8	53.5	120.6 N {12.3 kg}	—	96.5 N {9.8 kg}	
10	Spool return spring	48.1 x 10.8	28.0	17.5 N {1.78 kg}	—	13.9 N {1.42 kg}	

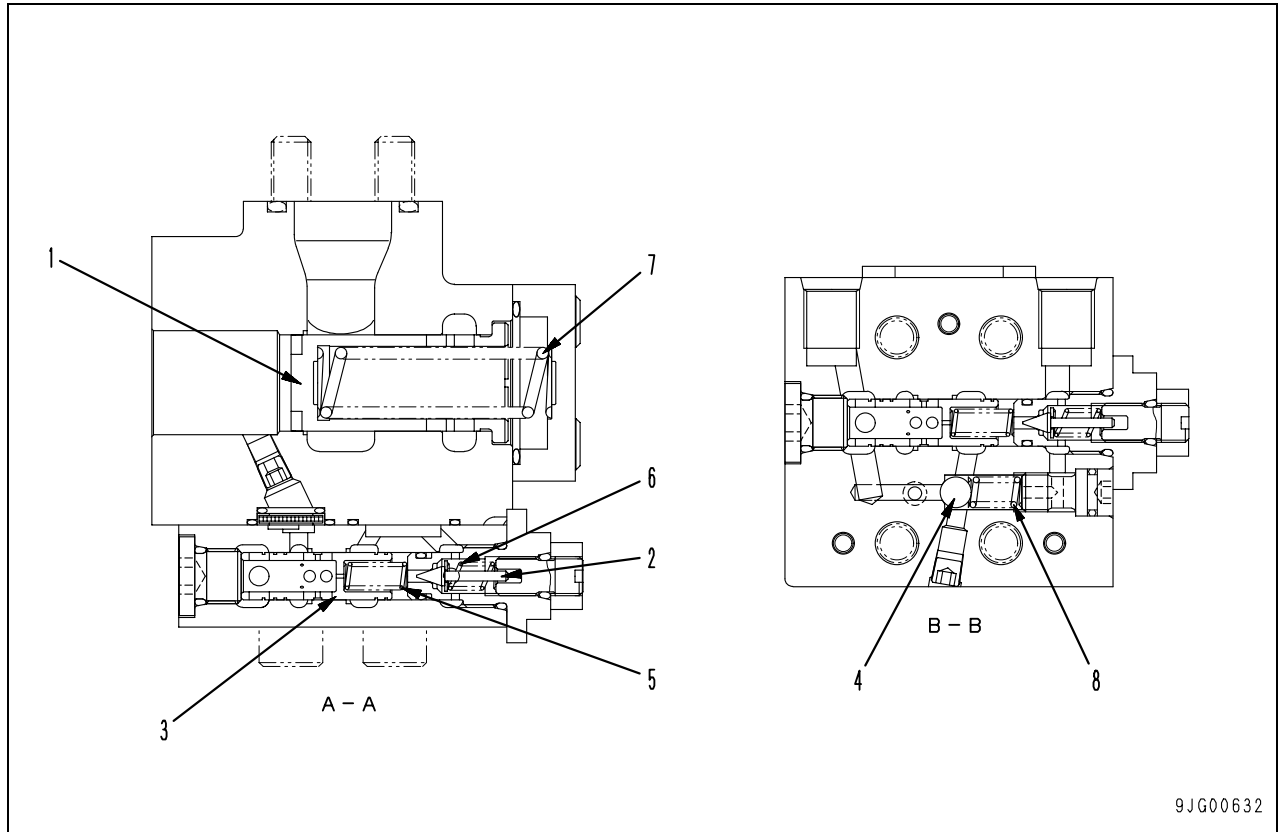
## Self pressure reducing valve



9JG00631

- a. Port (P1) (from front pump)
- b. Port (PR) (supply to electromagnetic valve, PPC valve, EPC valve)
- c. Port (T) (to hydraulic tank)
- d. Port (PC) (to front pump LS valve)





- 1. Sequence valve
- 2. Poppet
- 3. Pressure reducing valve
- 4. Ball

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
		Free length x Outside diameter	Installed length	Installed load	Free length	Installed load	
5	Spring (pressure reducing valve, main)	19.2 x 7.2	16.1	19.6 N {2 kg}	—	17.7 N {1.8 kg}	Replace spring if any damages or deformations are found.
6	Spring (pressure reducing valve, main)	16.5 x 7.2	12.7	20.6 N {2.1 kg}	—	18.6 N {1.9 kg}	
7	Spring	71 x 18	59	199.8 N {20.4 kg}	—	186.2 N {19 kg}	
8	Spring (safety valve)	16.1 x 7.8	13.4	61.7 N {6.3 kg}	—	58.8 N {6 kg}	

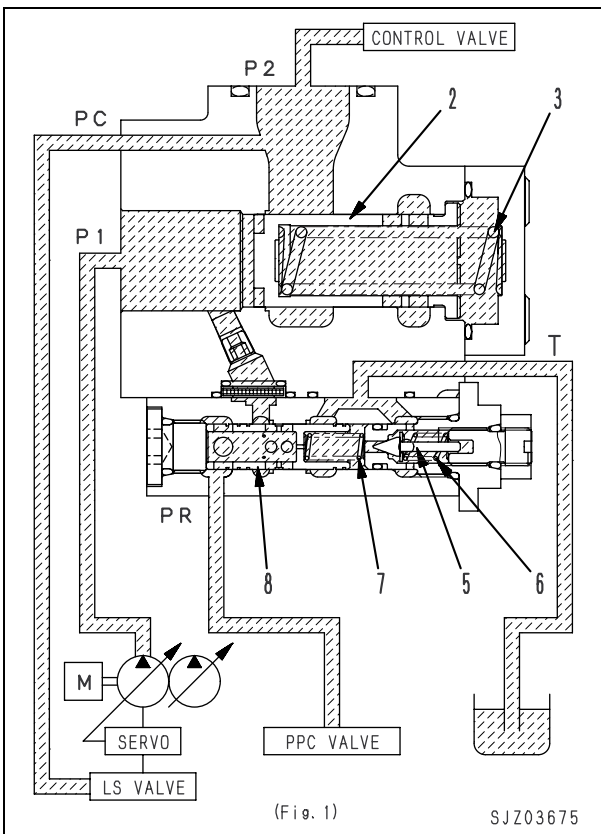
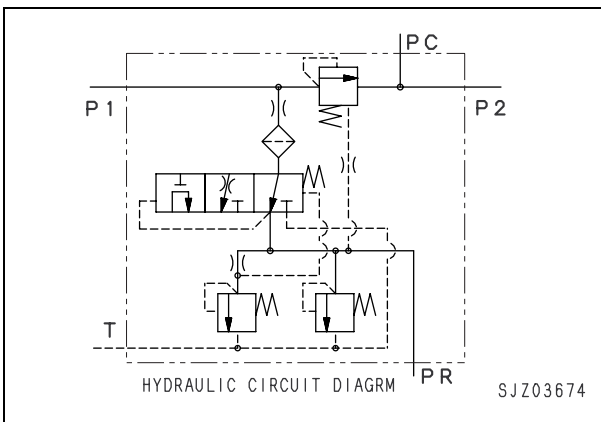
**Function**

- This valve reduces the discharge pressure of the main pump and supplies it as the control pressure for the solenoid valve and PPC valve.

**Operation**

**1. When engine is stopped.**

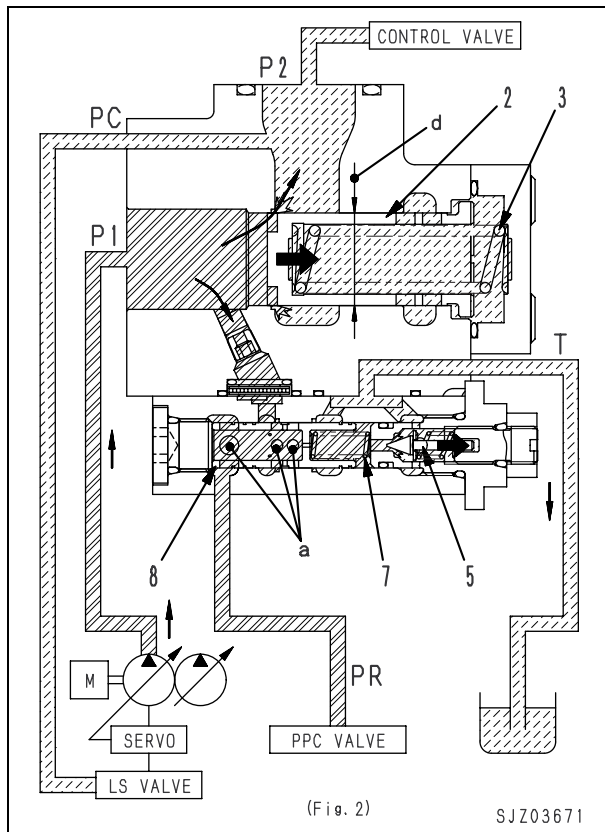
- Poppet (5) is pushed against the seat by spring (6), and the passage from port (PR) → (T) is closed.
- Valve (8) is pushed to the left by spring (7), and the passage from port (P1) → (PR) is open.
- Valve (2) is pushed to the left by spring (3), so the passage between port (P1) → (P2) is closed.



**2. At hold and when load pressure (P2) is low.**

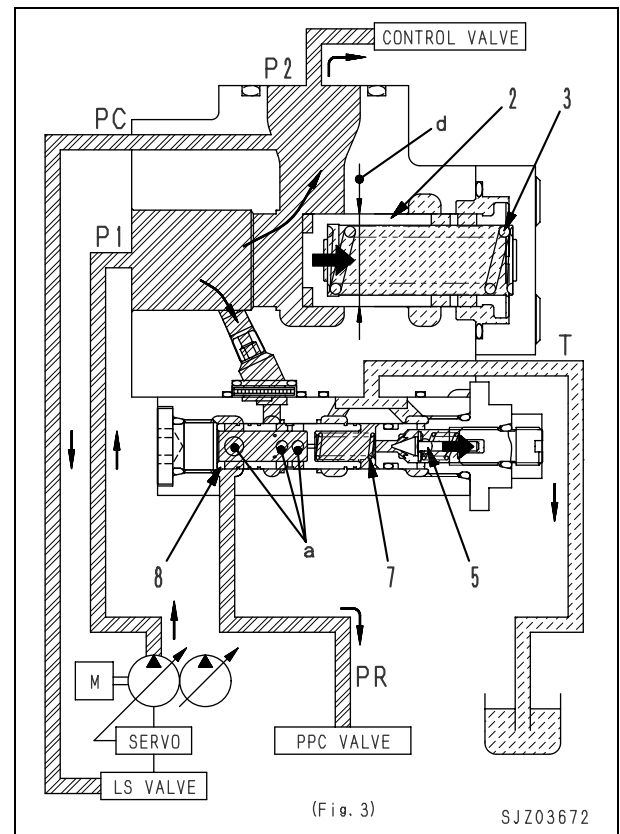
NOTE: When load pressure (P2) is lower than output pressure (PR) of the self pressure reducing valve.

- Valve (2) receives force in the direction to close the passage from port (P1) → (P2) from spring (3) and pressure (PR) (when the engine is stopped, the pressure is 0 MPa {0 kg/cm<sup>2</sup>}).
- However, when hydraulic oil flows in from port (P1), the pressure is balanced so that pressure (P1) = force of spring (7) + (area (Ød) x pressure (PR)), and the opening from port (P1) → (P2) is adjusted so that pressure (P1) is kept at a certain value above pressure (PR).
- When pressure (PR) goes above the set pressure, poppet (5) opens, and the hydraulic oil flows in the following circuit: port (PR) → hole (a) inside spool (8) → opening of poppet (5) → tank port (T).
- As a result, a pressure difference is created on both sides of hole (a) inside spool (8), so spool (8) moves in the direction to close the opening from port (P1) → (PR). Pressure (P1) is reduced to a certain pressure (set pressure) by the amount of opening at this point, and is supplied as pressure (PR). (See Fig. 2)



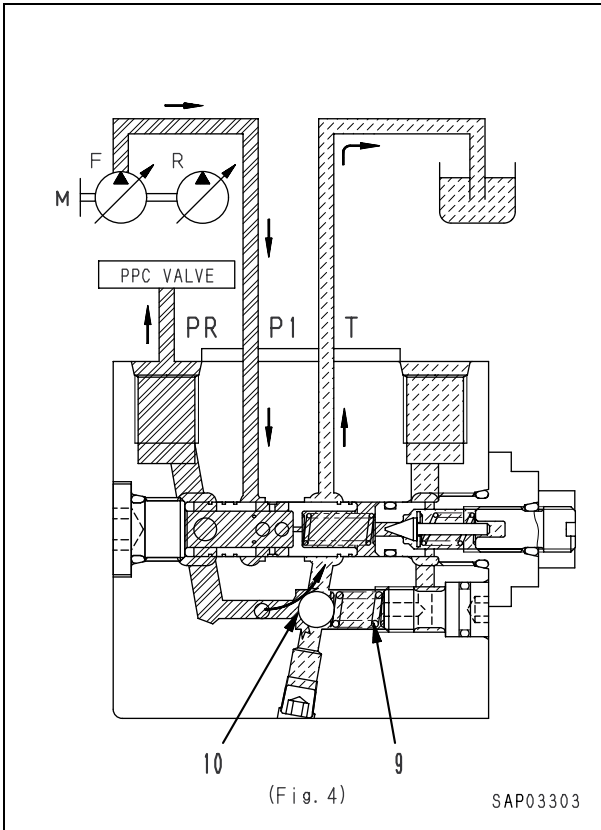
**3. When load pressure (P2) is high.**

- If load pressure (P2) increases and the pump discharge amount also increases because of operations, pressure (P1) also increases (pressure (P1) > force of spring (7) + (area (Ød) x pressure (PR))), so valve (2) moves to the right to the end of the stroke.
- As a result, the amount of opening from port (P1) → (P2) increases and the resistance in the passage is reduced, so the loss of engine horsepower is reduced.
- If pressure (PR) goes above the set pressure, poppet (5) opens and the hydraulic oil flows in the following circuit: port (PR) → hole (a) inside spool (8) → opening of poppet (5) → tank port (T).
- As a result, a pressure difference is created on both sides of hole (a) inside spool (8), so spool (8) moves in the direction to close the opening from port (P1) → (PR). Pressure (P1) is reduced to a certain pressure (set pressure) by the amount of opening at this point, and is supplied as pressure (PR). (See Fig. 3)



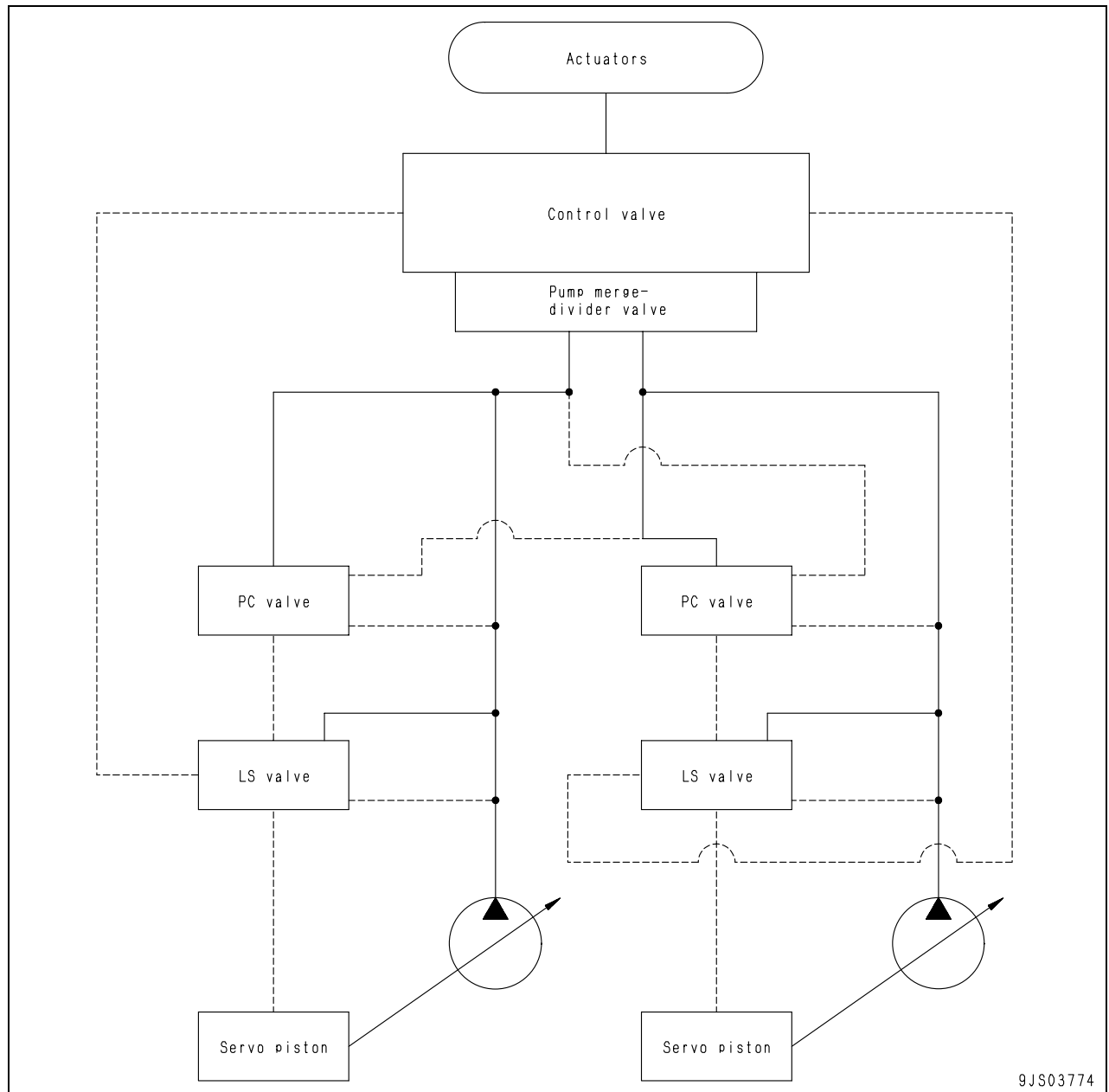
**4. When there is abnormally high pressure.**

- When pressure (PR) of the self pressure reducing valve becomes abnormally high, ball (10) pushes against the force of spring (9), separates from the seat, and allows hydraulic oil to flow from output port (PR) → (T), so pressure (PR) goes down. This action protects the equipment at the destination for the hydraulic pressure supply (PPC valve, electromagnetic pressure valve, etc.) from abnormally high pressure. (See Fig. 4)



## CLSS

### Outline of CLSS



#### Features

CLSS stands for Closed center Load Sensing System, which has the following characteristics:

- Fine control not influenced by load
- Controllability enabling operation even with fine control
- Ease of compound operation ensured by flow divider function using area of opening of spool during compound operations
- Energy saving using variable pump control

#### Configuration

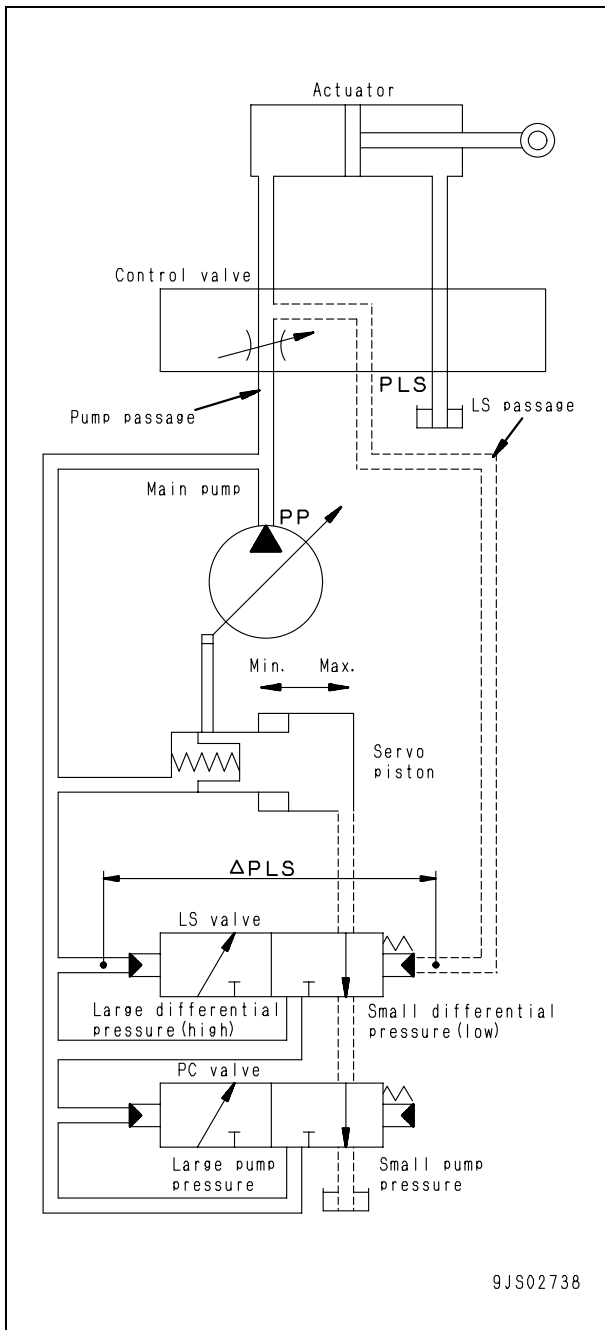
- CLSS is configured with variable capacity piston pumps, control valves, and respective actuators.
- The hydraulic pump is configured with pump body, PC valve and LS valve.

**Basic principle**

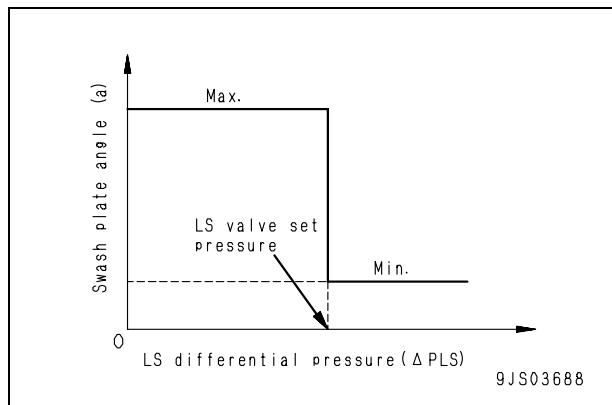
**1. Pump swash plate angle control**

- The pump swash plate angle (pump delivery) is controlled so that LS differential pressure ( $\Delta PLS$ ) (the difference between pump pressure PP and control valve outlet port LS pressure PLS) (load pressure of actuator) is constant.
- [ $LS\ differential\ pressure\ (\Delta PLS) = Pump\ discharge\ pressure\ (PP) - LS\ pressure\ (PLS)$ ]

- The pump swash plate angle shifts toward the maximum position if LS differential pressure ( $\Delta PLS$ ) is lower than the set pressure of the LS valve (when the actuator load pressure is high).
- If it becomes higher than the set pressure (when the actuator load pressure is low), the pump swash plate angle shifts toward the minimum position.

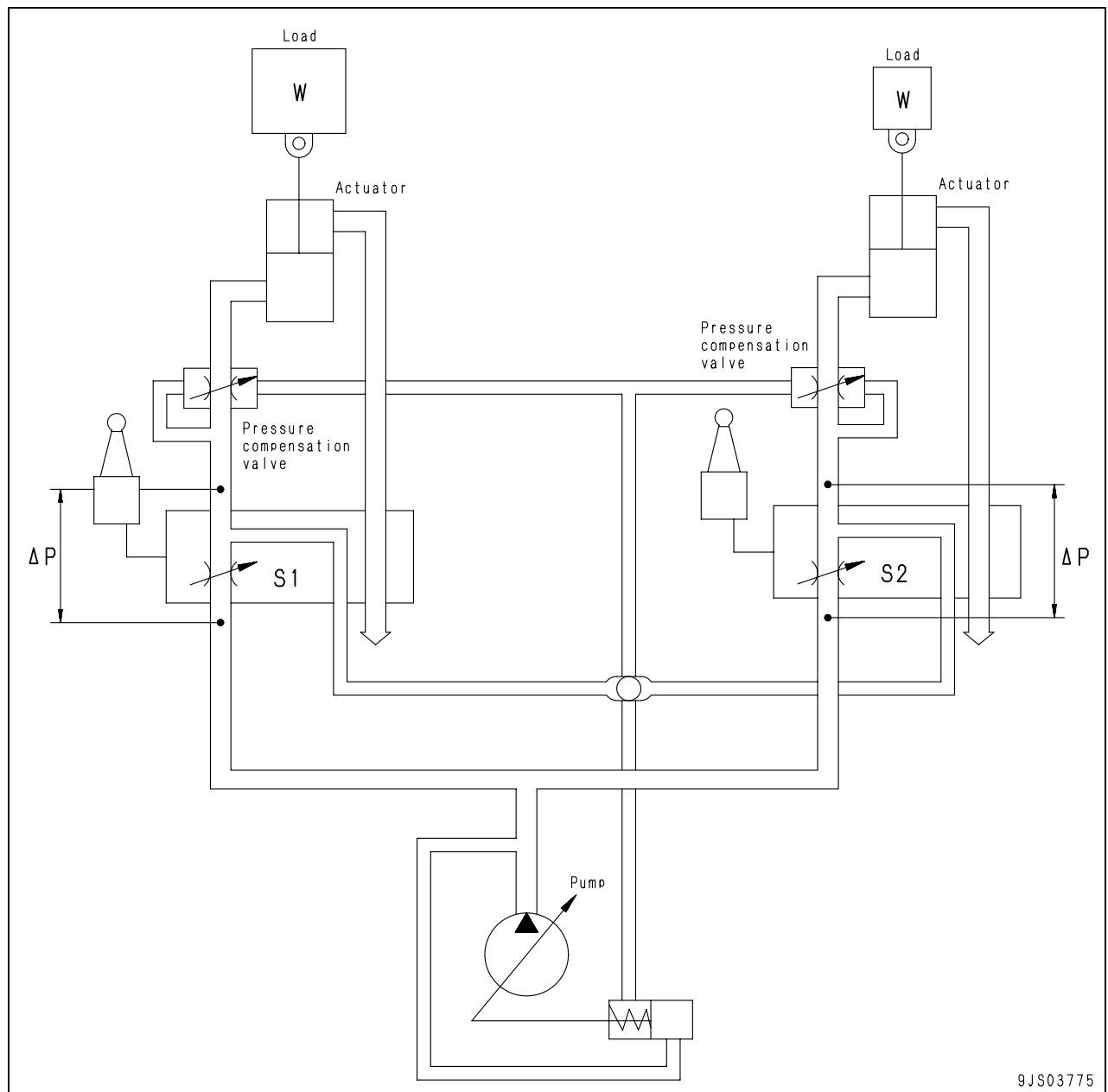


**LS differential pressure ( $\Delta PLS$ ) and pump swash plate angle**



★ For details of functions, see the “Hydraulic pump” paragraph.

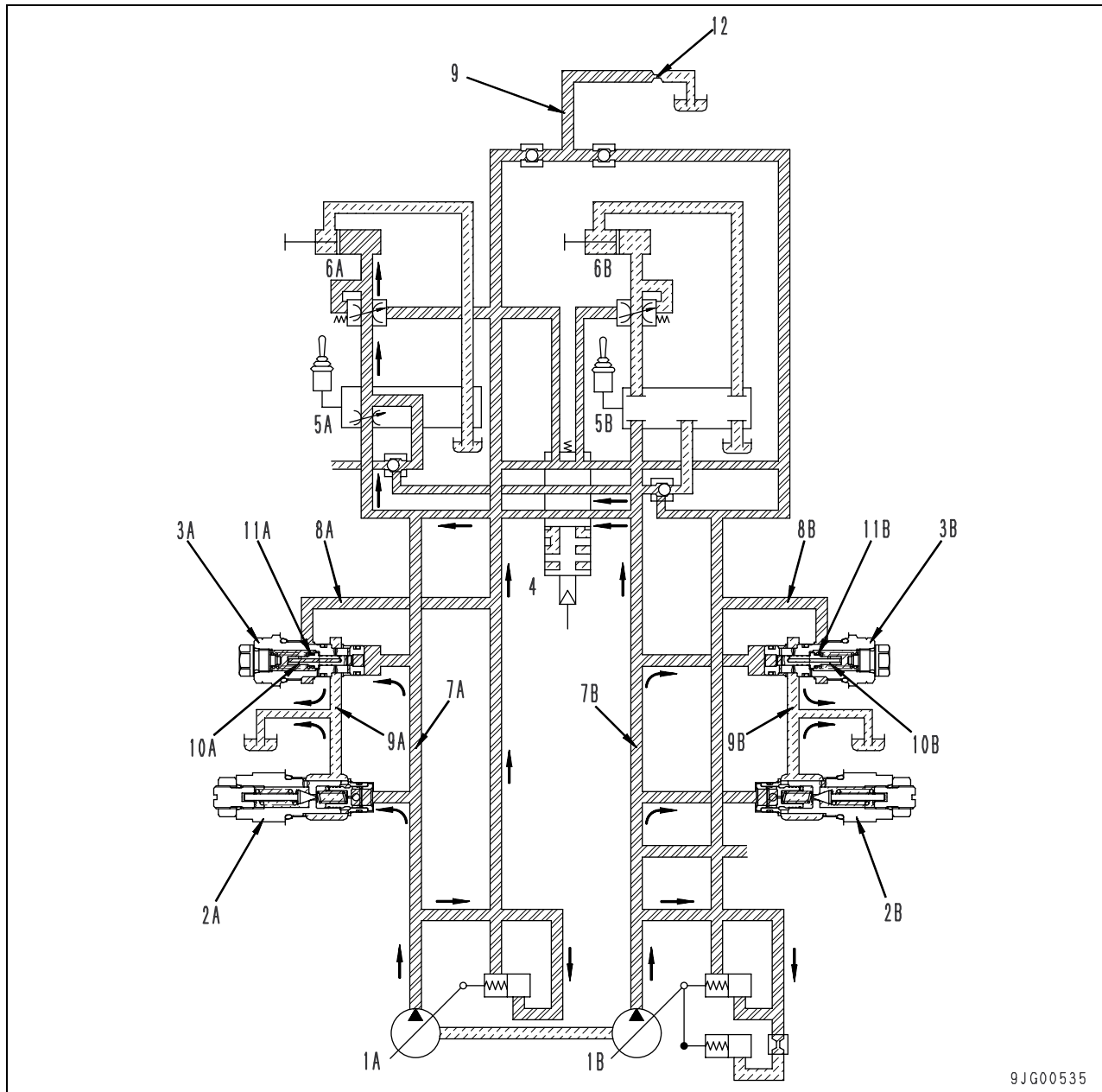
## 2. Pressure compensation control



- A pressure compensation valve is installed to the outlet port side of the control valve to balance the load.
- When actuators are operated together, the pressure difference ( $\Delta P$ ) between the upstream (inlet port) and downstream (outlet port) of the spool of each valve becomes the same regardless the size of the load (pressure).
- The flow of oil from the pump is divided (compensated) in proportion to the area of opening (S1) and (S2) of each valve.

**3. System diagram**

★ This shows actuator (6A) at stroke end relief in the merge mode (on the BR380JG-1E0, this is always in the divide mode).



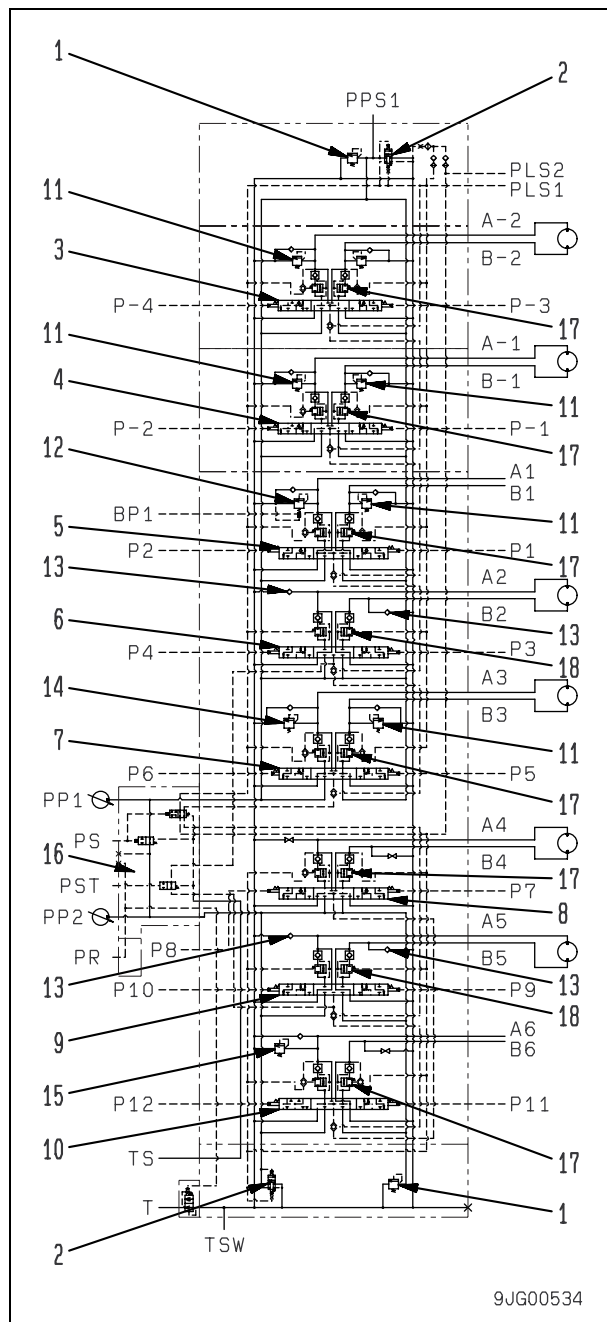
9JG00535

- |                        |                   |                     |
|------------------------|-------------------|---------------------|
| 1A. Main pump          | 5A. Control valve | 9A. Tank passage    |
| 1B. Main pump          | 5B. Control valve | 9B. Tank passage    |
| 2A. Main relief valve  | 6A. Actuator      | 10A. Valve          |
| 2B. Main relief valve  | 6B. Actuator      | 10B. Valve          |
| 3A. Unload valve       | 7A. Pump passage  | 11A. Spring         |
| 3B. Unload valve       | 7B. Pump passage  | 11B. Spring         |
| 4. Merge-divider valve | 8A. LS circuit    | 12. LS bypass valve |
|                        | 8B. LS circuit    |                     |



## Functions and operation by valve

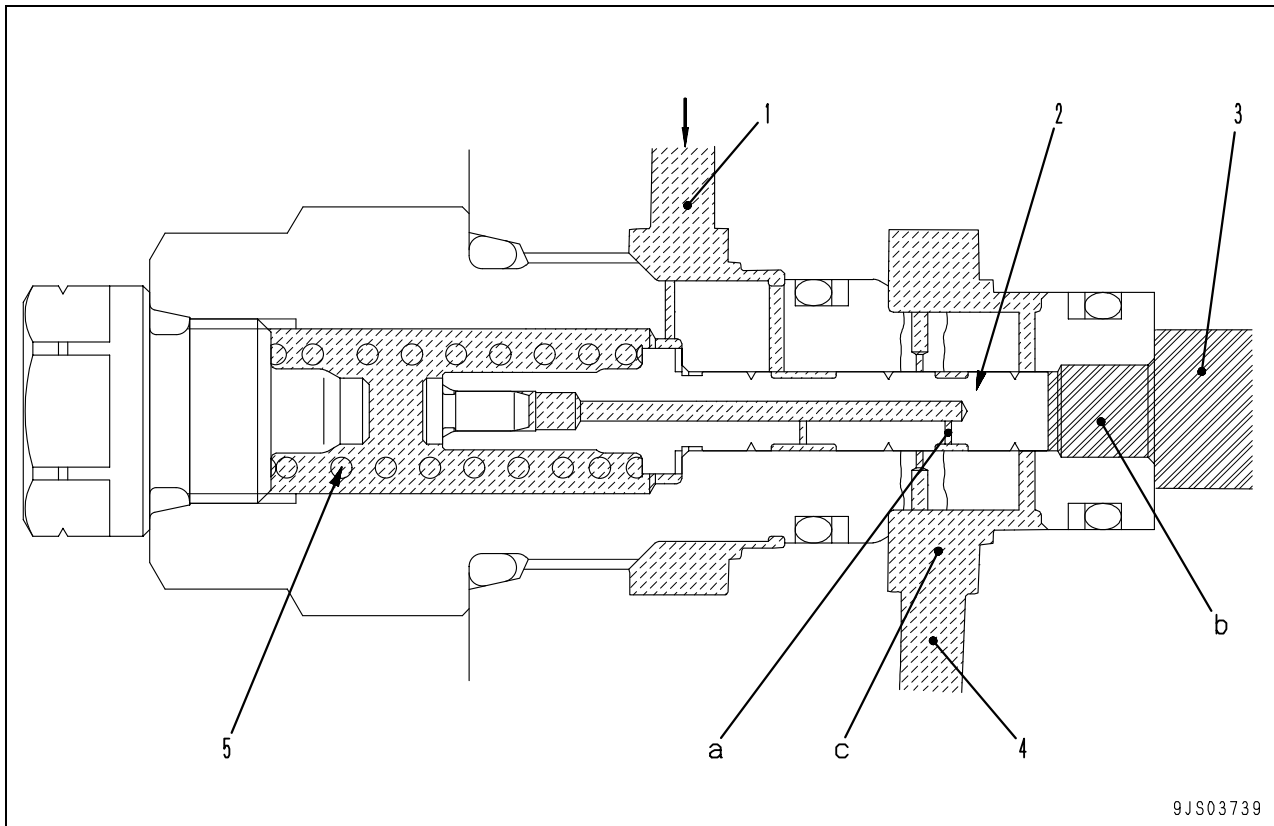
### Hydraulic circuit diagram and the name of valves



1. Relief valve  
(Set pressure:  $37.2 \pm 0.5$  MPa { $380 \pm 5$  kg/cm<sup>2</sup>})
2. Unload valve  
(Cracking pressure:  $2.9 \pm 0.5$  MPa { $30 \pm 5$  kg/cm<sup>2</sup>})
3. Magnetic separator spool
4. Side conveyor spool
5. Accessory spool
6. Left travel spool
7. Grizzly feeder spool
8. Crusher spool
9. Right travel spool
10. Lock cylinder reset spool
11. Safety-suction valve  
( $13.7 \pm 0.5$  MPa { $140 \pm 5$  kg/cm<sup>2</sup>})
12. Safety-suction valve  
(When normal:  $20.6 \pm 0.5$  MPa { $210 \pm 5$  kg/cm<sup>2</sup>},  
when pilot pressure is applied:  
 $10.8 \pm 0.5$  MPa { $110 \pm 5$  kg/cm<sup>2</sup>})
13. Suction valve
14. Safety-suction valve  
( $17.2 \pm 0.5$  MPa { $175 \pm 5$  kg/cm<sup>2</sup>})
15. Safety-suction valve  
( $31.4 \pm 0.5$  MPa { $320 \pm 5$  kg/cm<sup>2</sup>})
16. Merge-diverter valve
17. Pressure compensation valve
18. Pressure compensation valve

## Unload valve

### 1. When the unload valve is actuating



1. LS circuit
2. Valve
3. Pump circuit

4. Tank circuit
5. Spring

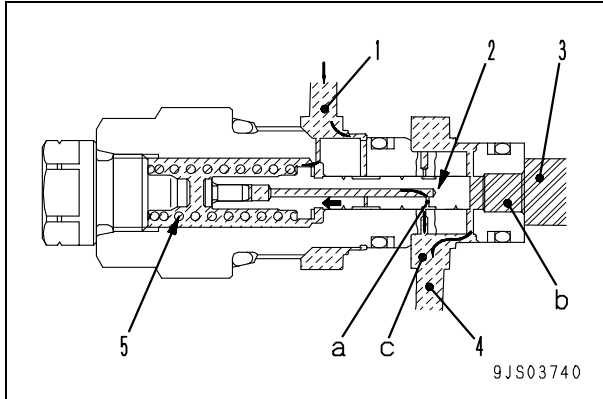
#### Function

- Drains an oil discharge for the portion of the minimum pump swash plate angle while all control valves are in the holding.
- The pump pressure will correspond to a set load of spring (5) inside the valve (this pressure will be  $P_1$ ).
- Since LS pressure is drained from the LS bypass valve, LS pressure  $\approx$  tank pressure  $\approx$  0 MPa{0 kg/cm<sup>2</sup>}.

#### Operation

- Pressure of pump circuit (3) is received by the end of valve (2).
- Since the control valve is in neutral position, pressure of LS circuit (1) is 0 MPa{0 kg/cm<sup>2</sup>}.
- Pressurized oil of pump circuit (3) stops at valve (2), and the pressure rises as no relief is available.
- When this pressure becomes larger than the force of spring (5), valve (2) moves to the left.
- Ports (b) and (c) are interconnected and the pump pressure flows to tank circuit (4).
- The pressurized oil of LS circuit (1) passes from orifice (a) through port (c) and is drained to the tank circuit (4).
- When actuated, LS pressure  $\approx$  tank pressure.
- Since the pump discharge pressure – LS circuit pressure during unloading is larger than the pump LS control pressure, the signal is output to minimize the pump swash plate angle.

- During operation (a work within a scope of discharge by a minimum swash plate angle), the discharge pressure for the portion of minimum pump swash plate angle is set to LS pressure + P1 pressure.
- LS control differential pressure ( $\Delta PLS$ ) of discharge for the portion of minimum swash plate angle will be equal to P1 pressure.



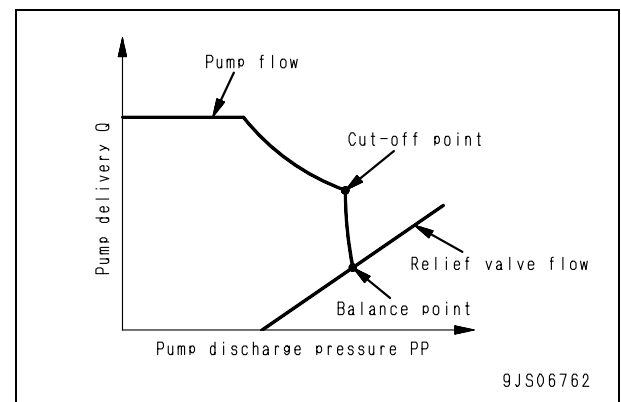
## 2. Operation of relief valve (Cut-off Control Actuated)

### Function

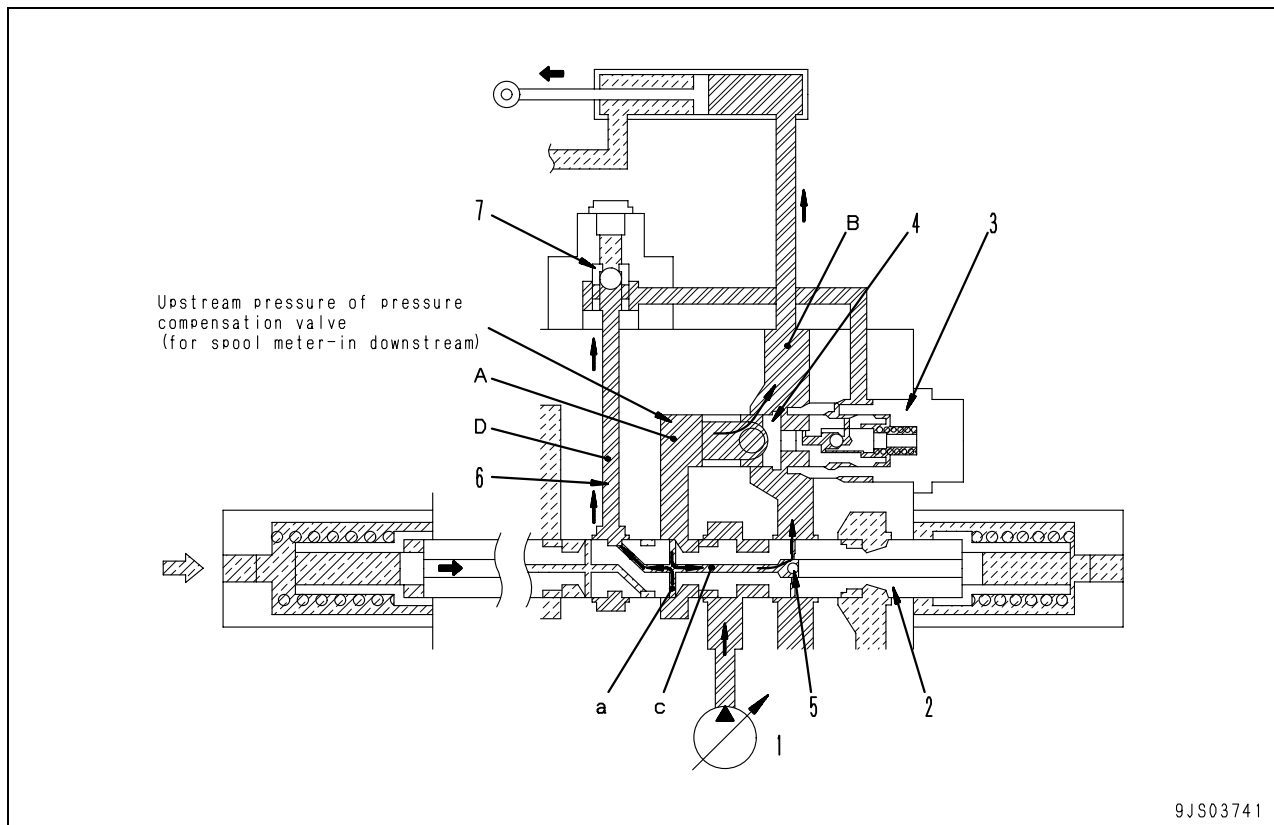
- When cut-off control is being carried out on the pump by the PC valve, the pump swash plate angle is at the minimum.
- The relief valve acts to relieve the oil flow when the pump is at the minimum swash plate angle in order to maintain the balance.

### Operation

- When the cylinder reaches the stroke end, the main relief valve opens.
- The pump delivery (Q) is relieved to the tank. (See the system diagram)
- When pump discharge pressure (PP) comes close to the relief pressure, the engine throttle and pump controller sends a signal to the solenoid of the PC valve.
- Carries out the cut-off function to make pump delivery (Q) the minimum.
- The pump discharge pressure (PP) and LS pressure (PLS) become approximately the same as each has not flow at the upstream and downstream of the spool, and LS differential pressure ( $\Delta PLS$ ) becomes 0 MPa{0 kg/cm<sup>2</sup>}.
- As LS differential pressure ( $\Delta PLS$ ) is lower than the LS set pressure of LS valve, LS valve is actuated to maximize the pump swash plate angle.
- Mechanically, operation of PC valve have the prevalence to that of LS valve.
- The pump is held at a minimum swash plate angle by the cut-off function of PC valve.



## Introduction of LS pressure



1. Hydraulic pump
2. Main spool
3. Pressure compensation valve
4. Valve
5. Check valve
6. LS circuit
7. LS shuttle valve

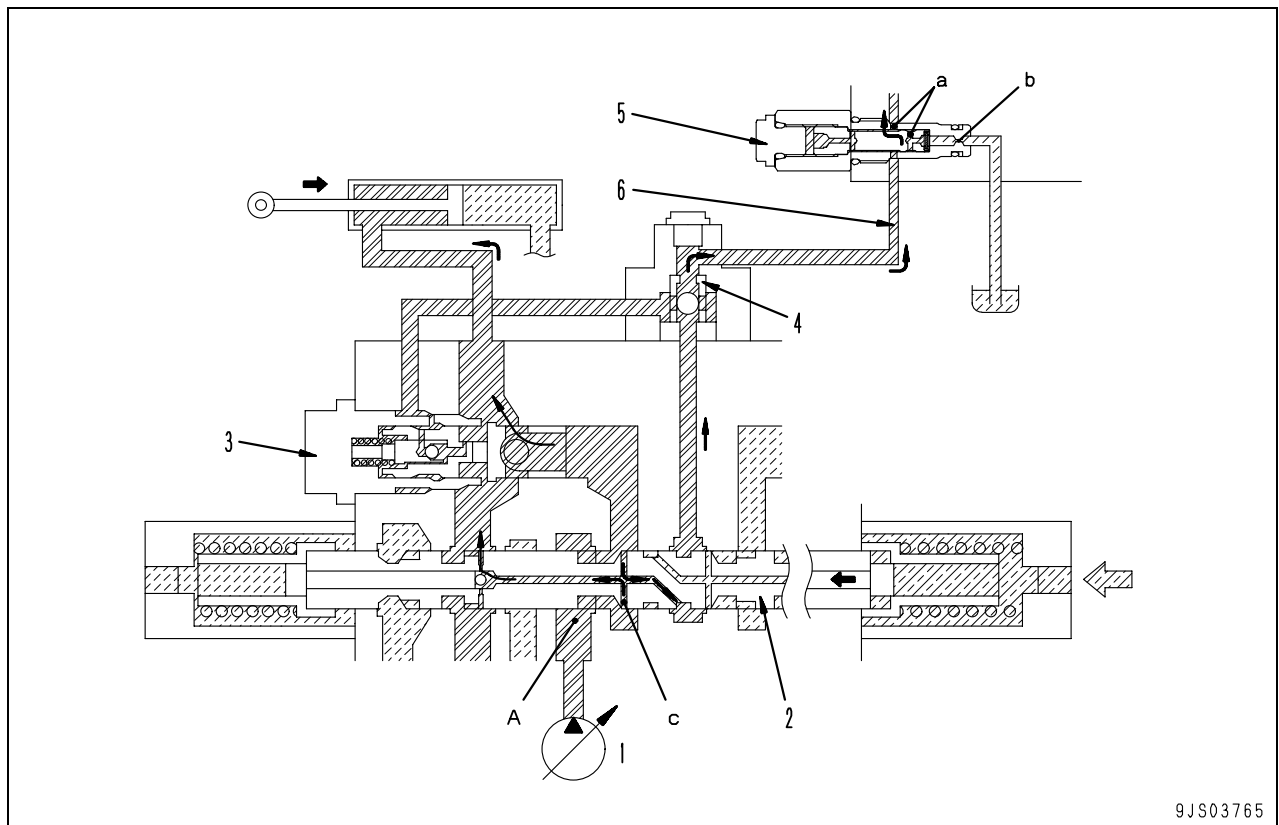
### Function

- Introduces the upstream pressure (downstream pressure of the spool meter-in) of pressure compensation valve (3) and leads to LS shuttle valve (7) as the LS pressure.
- Connected to actuator port (B) through valve (4), and makes LS pressure  $\approx$  actuator load pressure.
- Inlet pore (a) inside main spool (2) has a small diameter concurrently serving as a throttle.

### Operation

- When main spool (2) is operated, the pump pressure enters port (c) through inlet pore (a) and is led to the LS circuit.
- When the pump pressure rises to reach the load pressure of port (B), check valve (5) opens.

## LS bypass valve



9JS03765

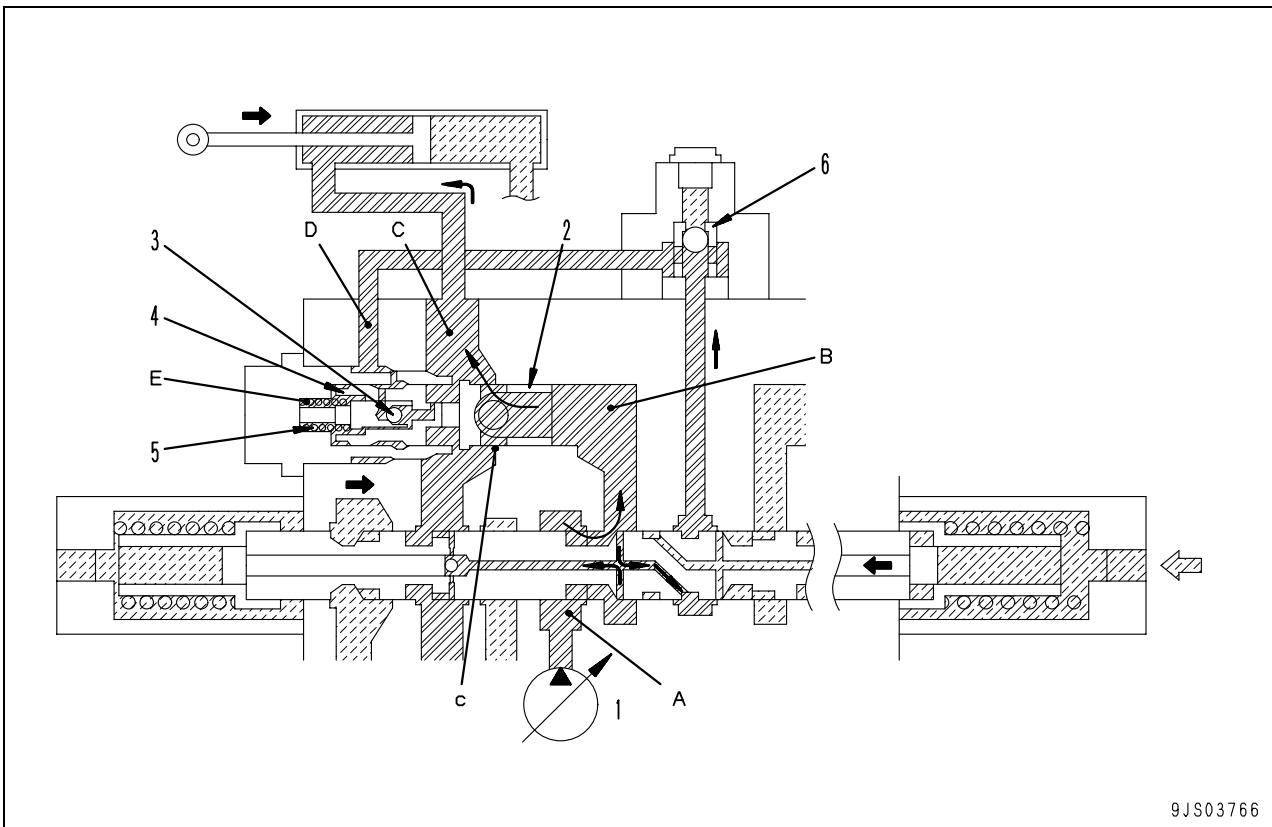
1. Hydraulic pump
2. Main spool
3. Pressure compensation valve
4. LS shuttle valve
5. LS bypass valve
6. LS circuit

### Function

- Releases the residual pressure in LS pressure circuit (6) from orifices (a) and (b).
- Slows down the rising rate of LS pressure to prevent a sudden change of hydraulic pressure.
- Bypass flow from LS bypass valve (5) causes a pressure loss to be generated due to the circuit resistance between throttle (c) of main spool (2) and LS shuttle valve (4).
- Effective LS differential pressure drops to improve a dynamic stability of the actuator.

**Pressure compensation valve**

- 1. During independent operation and under maximum load pressure  
(If the load pressure is higher than other work equipment during a combined operation)**



- |                   |                     |
|-------------------|---------------------|
| 1. Hydraulic pump | 4. Piston           |
| 2. Valve          | 5. Spring           |
| 3. Shuttle valve  | 6. LS shuttle valve |

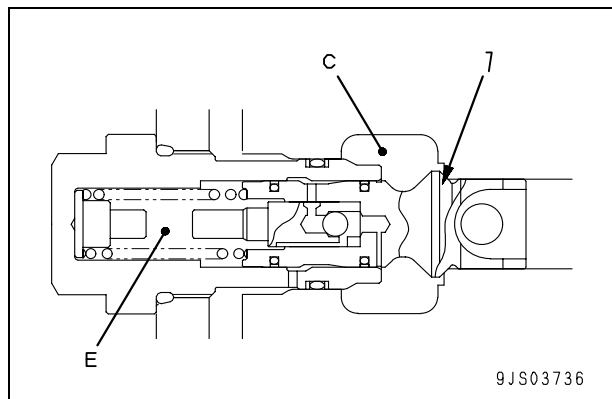
**Function**

- Pressure compensation valve works as the load check valve.
- If the pump pressure (LS pressure) is lower than the load at port (c), shuttle valve (3) in pressure compensation valve piston (4) interconnects spring chamber (E) and port (C).
- The force of spring (5) operates piston (4) and valve (2) to the closing direction.

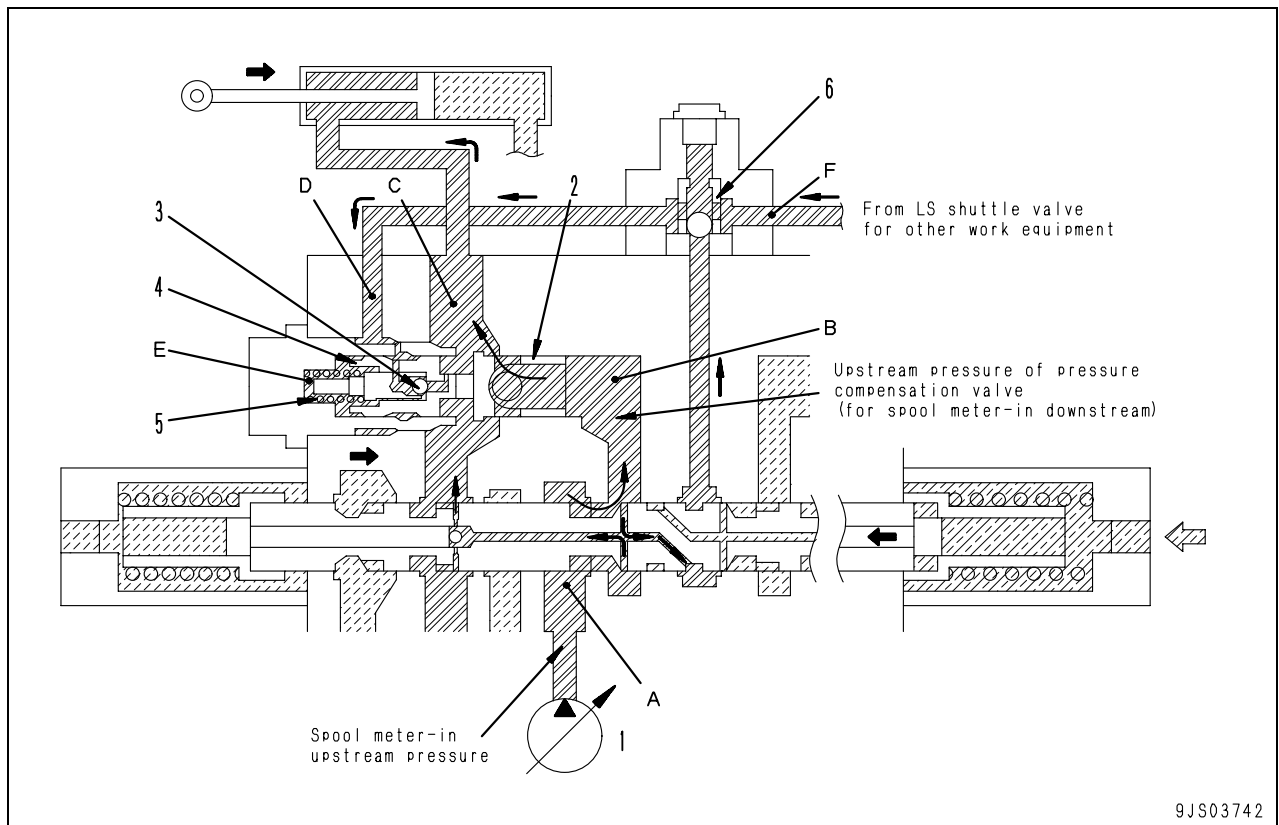
- As principle, port (C) and spring chamber (E) are not interconnected in an integrated pressure compensation valve.
- If high peak pressure is generated at port (C), valve (7) does not collide with the valve chamber.

**Integrated pressure compensation valve**

- High stress may occur when valve (2) collides with valve chamber seat portion (C) if a high peak pressure is generated in the actuator circuit or repetitive peak pressure occurs continuously (example: when using the breaker).
- To prevent this, a pressure compensation valve with integrated valve (2) and piston (4) is used.
- With the present machine, this device is adopted for travel valve.



## 2. When compensated (If the load pressure is lower than other work equipment during a combined operation)



9JS03742

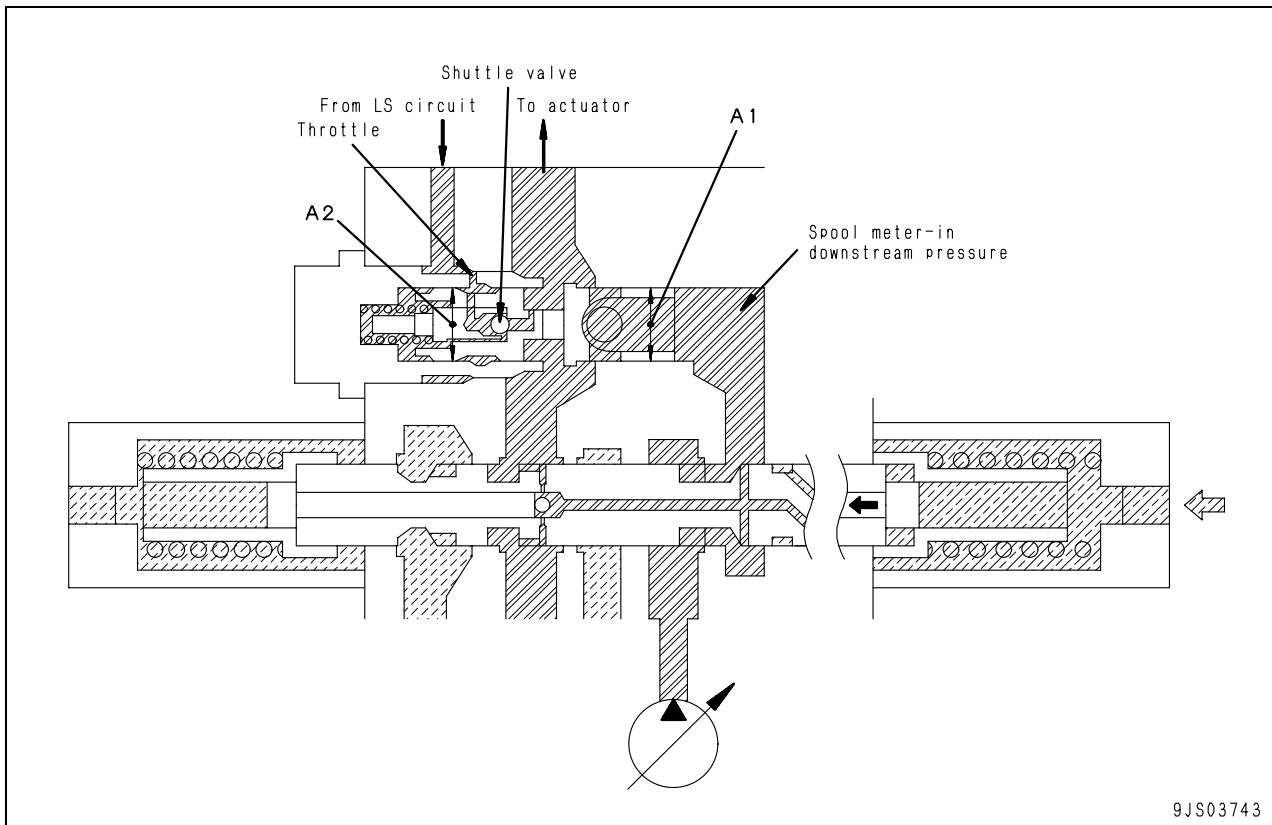
### Function

- The pressure compensation valve closes under LS pressure of port (D), and the spool meter-in downstream pressure of port (B) becomes equivalent to the maximum pressure of other work equipment.
- Since the spool meter-in upstream pressure of port (A) is the pump pressure, the spool meter-in differential pressure [upstream pressure [port (A) pressure] – downstream pressure [port (B) pressure]] becomes equivalent to all the spools in operation.
- Pump flow is divided according to the ratio of the meter-in opening area.

### Operation

- Spring chamber (E) is interconnected to port (D).
- Piston (4) and valve (2) operate in the closing direction (to the right) under the LS circuit pressure from other work equipment of port (F).
- Valve upstream pressure (= spool meter-in downstream pressure) of port (B) is controlled with LS pressure.

### 3. Pressure compensation valve area ratio



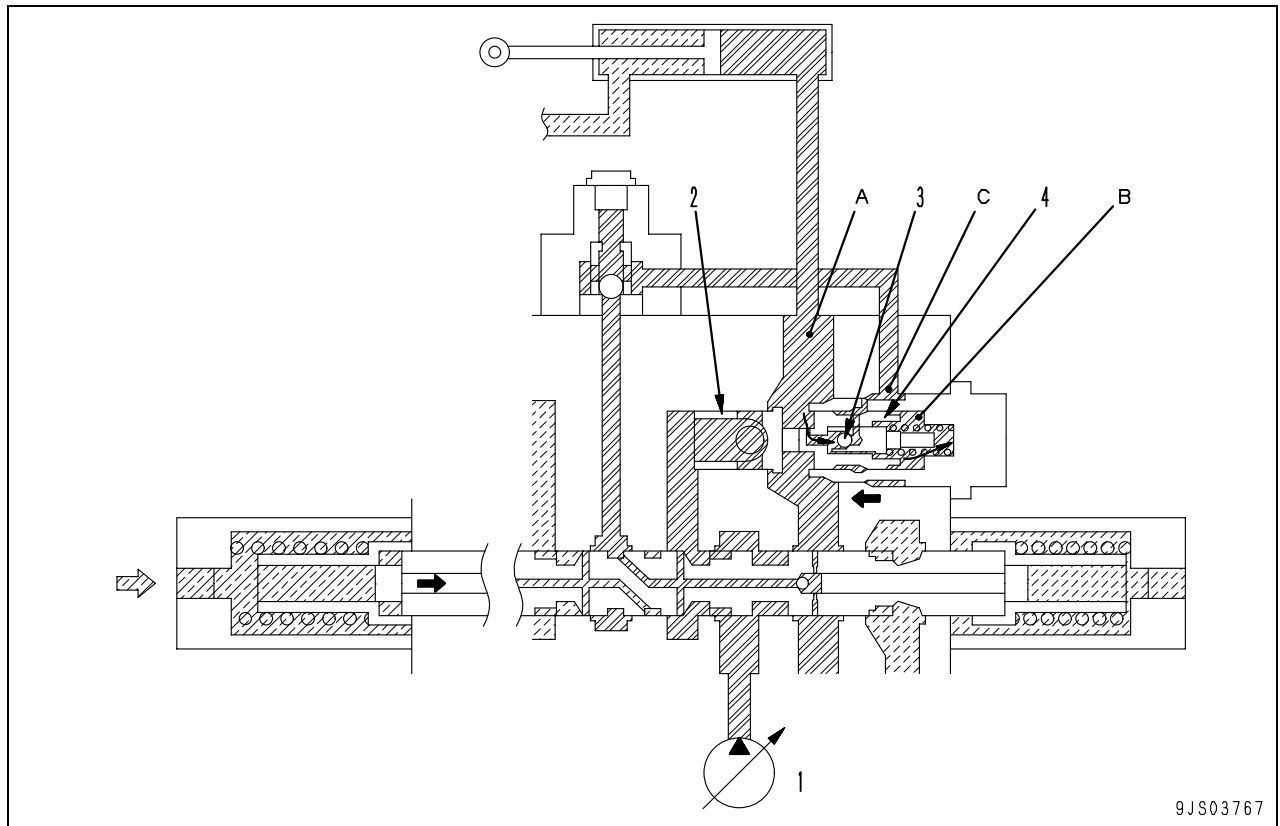
#### Function

- The state of division changes according to the area ratio of pressure compensation portion (A1) and (A2). Area ratio =  $(A2)/(A1)$
- If area ratio = 1 : The spool meter-in downstream pressure will be equal to the maximum load pressure, and the pressure will be divided according to the opening area ratio.
- If area ratio = 1 or over : The spool meter-in downstream pressure will be greater than the maximum load pressure, and the pressure will be divided smaller than the opening area ratio.
- If area ratio = 1 or under : The spool meter-in downstream pressure will be smaller than the maximum load pressure, and the pressure will be divided greater than the opening area ratio.



## Pressure compensation valve inner shuttle valve

### 1. If holding pressure at port (A) is larger than LS pressure in the springing chamber (B)

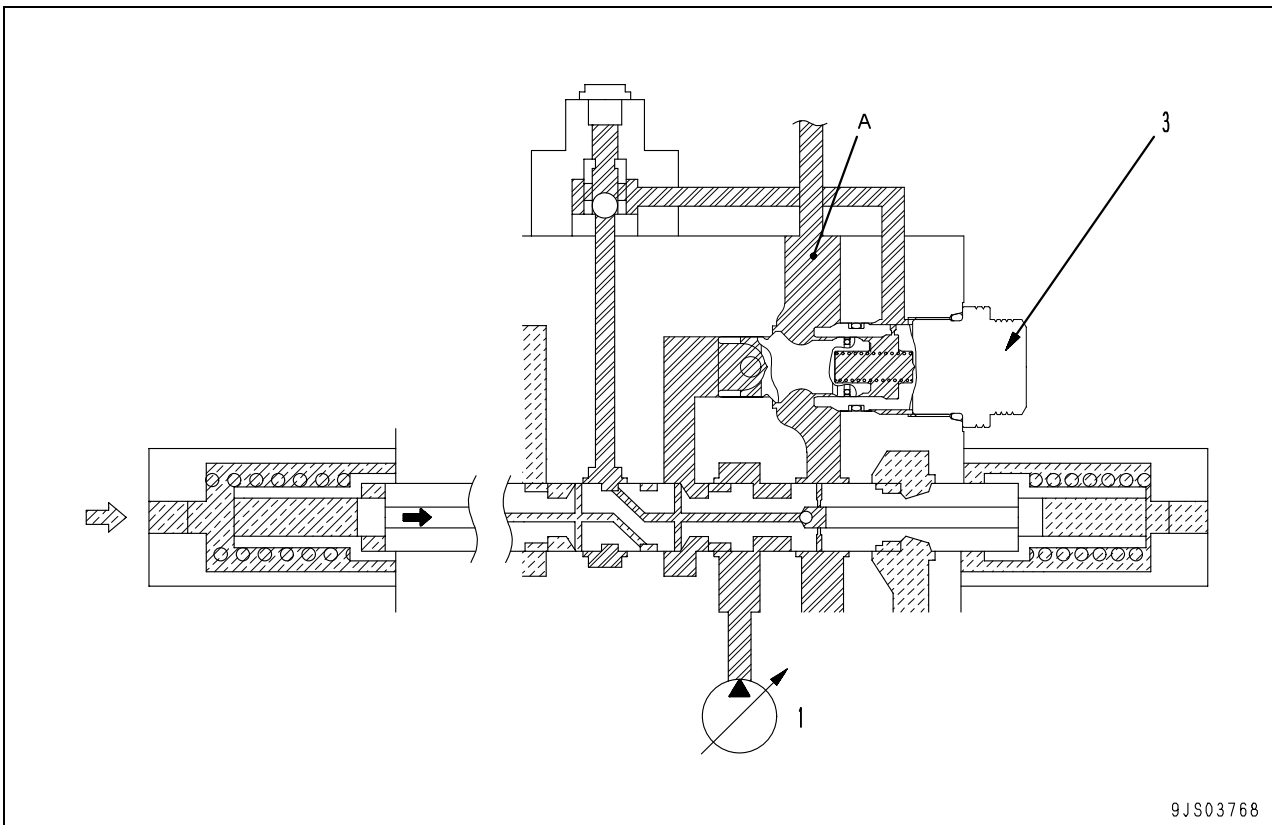


1. Hydraulic pump
2. Valve
3. Pressure compensation valve inner shuttle valve
4. Piston

#### Function

- Shuttle valve (3) is pushed to the right by port (A) pressure and cuts off interconnection between ports (A) and (C).
- Holding pressure at port (A) is led to the spring chamber (B) to push piston (4) to the left so that piston (4) and valve (2) will not be separated.

## 2. In the case of travel

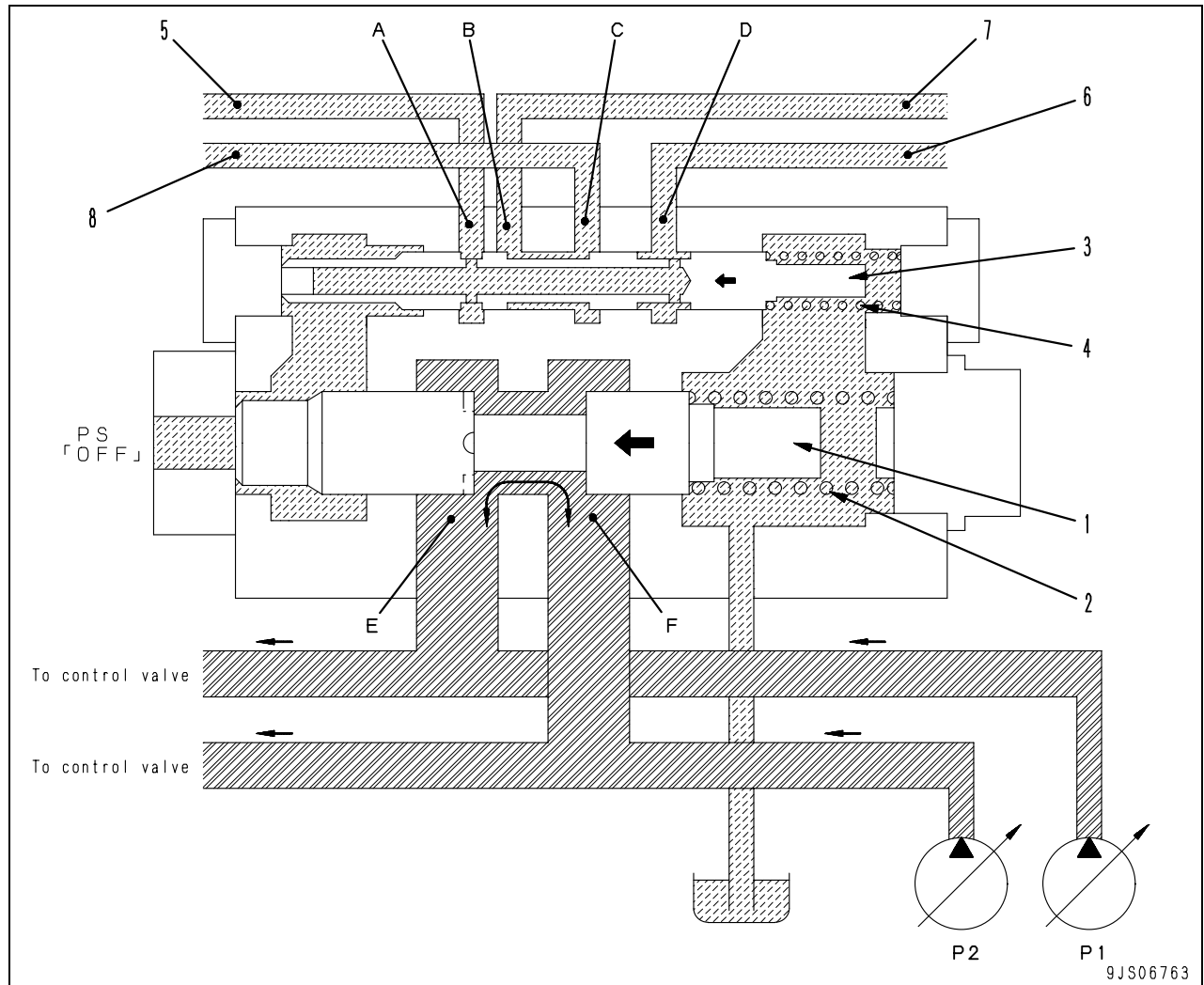


### Outline

- Since no holding pressure is generated at port (A) of the travel circuit, a pressure compensation valve without shuttle valve (3) is adopted.

## Merge-divider valve

### 1. When flows from the pumps merge [if pilot pressure (PS) is OFF]



★ On the BR380JG-1E0, pilot pressure (PS) is always ON and the flow is always divided.

- |               |   |
|---------------|---|
| 1. Main spool | 5. LS circuit (if equipped 4 side)        |
| 2. Spring     | 6. LS circuit (conveyor PAUSE/LOWER side) |
| 3. LS spool   | 7. LS circuit (conveyor PAUSE/LOWER side) |
| 4. Spring     | 8. LS circuit (if equipped 4 side)        |

#### Function

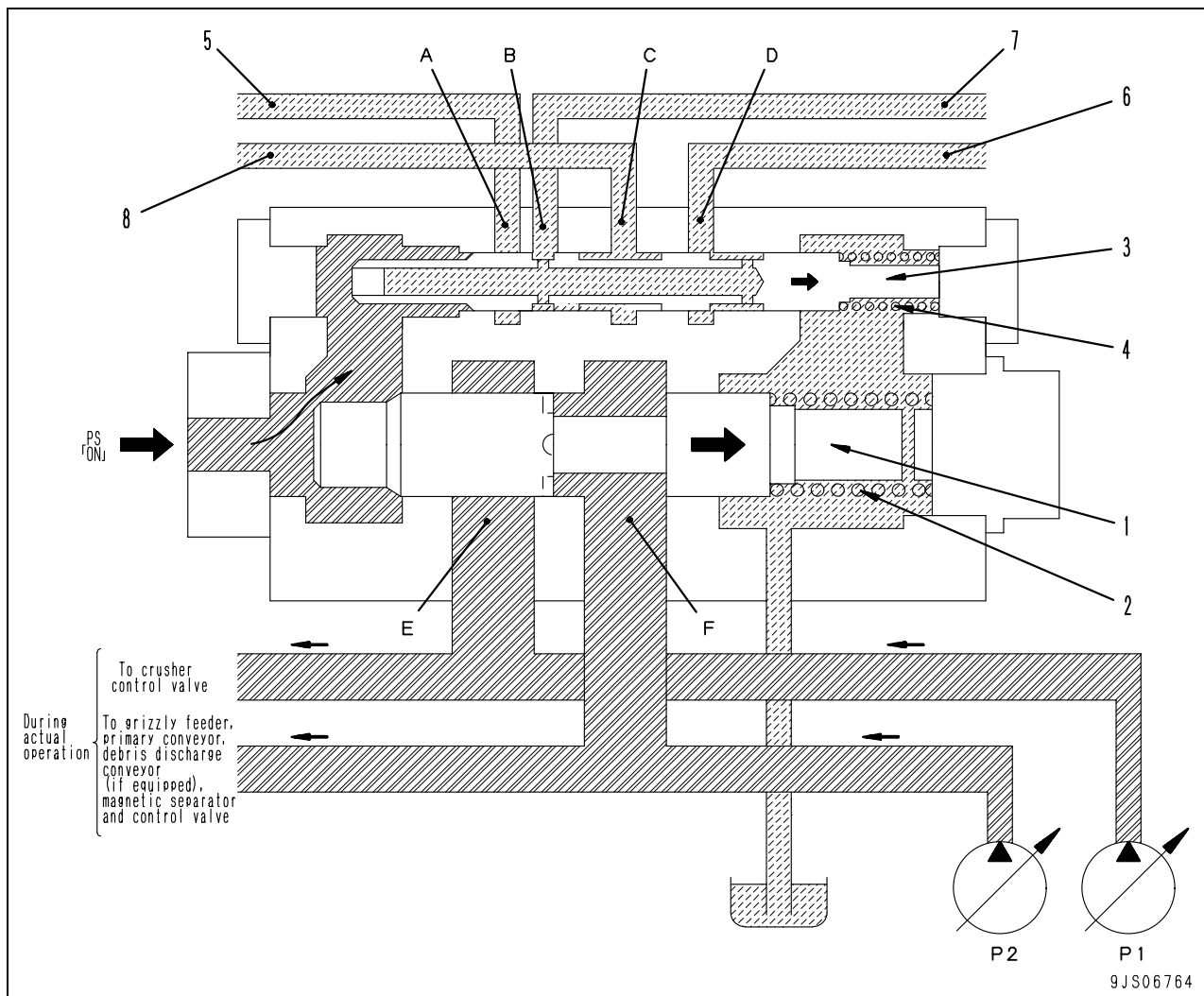
- Merges pressurized oil (P1) and (P2) discharged from the two pumps or divides (to respective control valve group).
- Merges and divides LS circuit pressure.

#### Operation

- Pilot pressure (PS) is OFF, so main spool (1) is pressed to the left by spring (2) and ports (E) and (F) are interconnected.
- Merges pressurized oil (P1) and (P2) discharged from the two pumps at ports (E) and (F) and sends to necessary control valve.

- Since pilot pressure (PS) is OFF for LS spool (3), it is pressed to the left by spring (4), and ports (A) – (D) and ports (B) – (C) are interconnected.
- Forwards LS pressure led from respective control valve spools to LS circuits (5), (6), (7) and (8) to all the pressure compensation valves.

## 2. When flows from the pumps divide [if pilot pressure (PS) is ON]

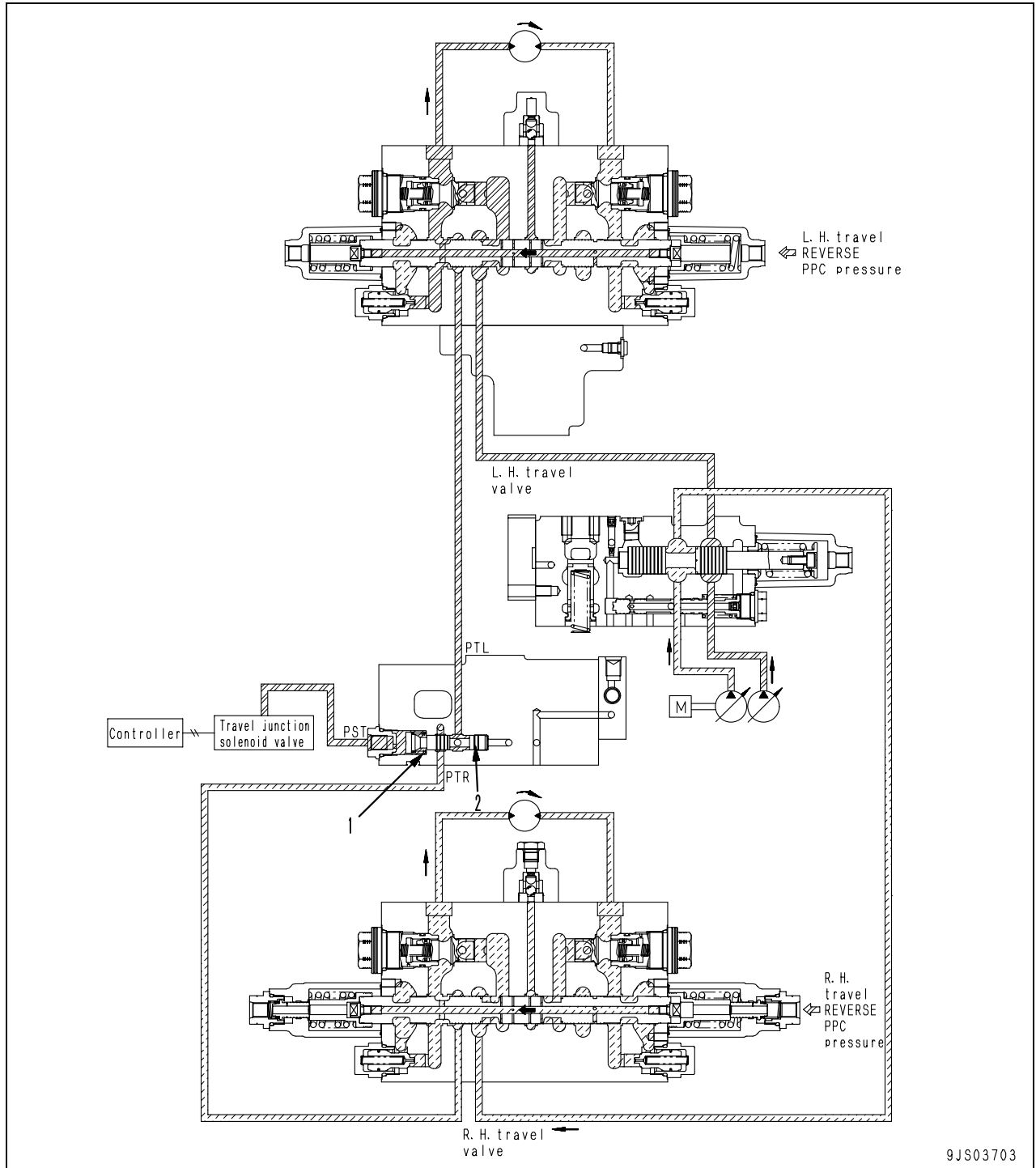


### Operation

- Pilot pressure (PS) turns ON, and shifts main spool (1) to the right, and ports (E) and (F) are divided.
- Pressurized oil discharged from the two pumps are sent to respective control valves.  
P1 pressure: To crusher  
P2 pressure: To grizzly feeder, primary conveyor, debris discharge conveyor, and magnetic separator.
- When pilot pressure (PS) is turned ON, LS spool (3) shifts to the right, interconnects ports (B) and (D) and divides other ports.
- Forwards LS pressure led from each control valve spool to LS circuits (5), (6), (7) and (8) to respective control valves.

## Travel junction valve

### 1. When pilot pressure is turned ON



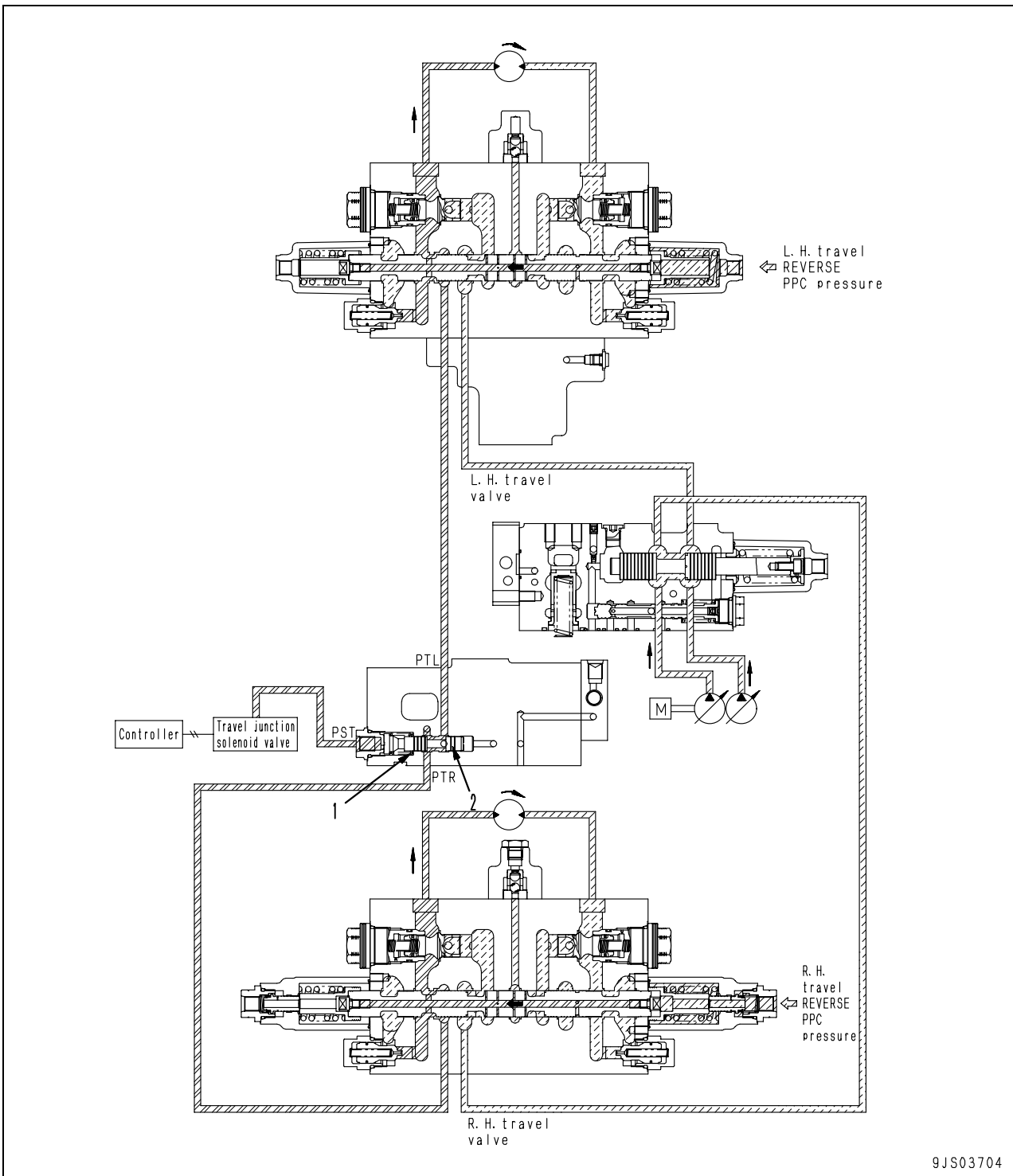
#### Function

- This valve connects the L.H. and R.H. travel circuits through travel junction valve so that the hydraulic oil will be supplied evenly to both travel motors to improve machine's straight travel performance.
- When the machine is steered, outside pilot pressure (PST) closes the travel junction valve to improve steering performance.

#### Operation

- Pilot pressure from the travel junction solenoid valve contracts spring (1), and travel junction spool (2) moves to the left to the stroke end.
- Junction circuit between port (PTL) (L.H. travel circuit) and port (PTR) (R.H. travel circuit) is closed.

2. When pilot pressure is turned OFF



Operation

- If pilot pressure (PST) from the solenoid valve is 0, travel junction spool (2) is pressed by the force of spring (1) against the right side and the pass between ports (PTL) and (PTR) is open.
- If the oil flow rates to the L.H. and R.H. travel valve motors become different from each other, the oil flows through the route between port (PTL), travel junction spool (2), and port (PTR) so that the oil flow rates to both motors will be equalized again.

BR380JG-1E0 Mobile crusher

---

Form No. SEN01352-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

**Machine model      Serial number**

BR380JG-1E0          2001 and up

---

# 10 Structure, function and maintenance standard

## Hydraulic system, Part 3

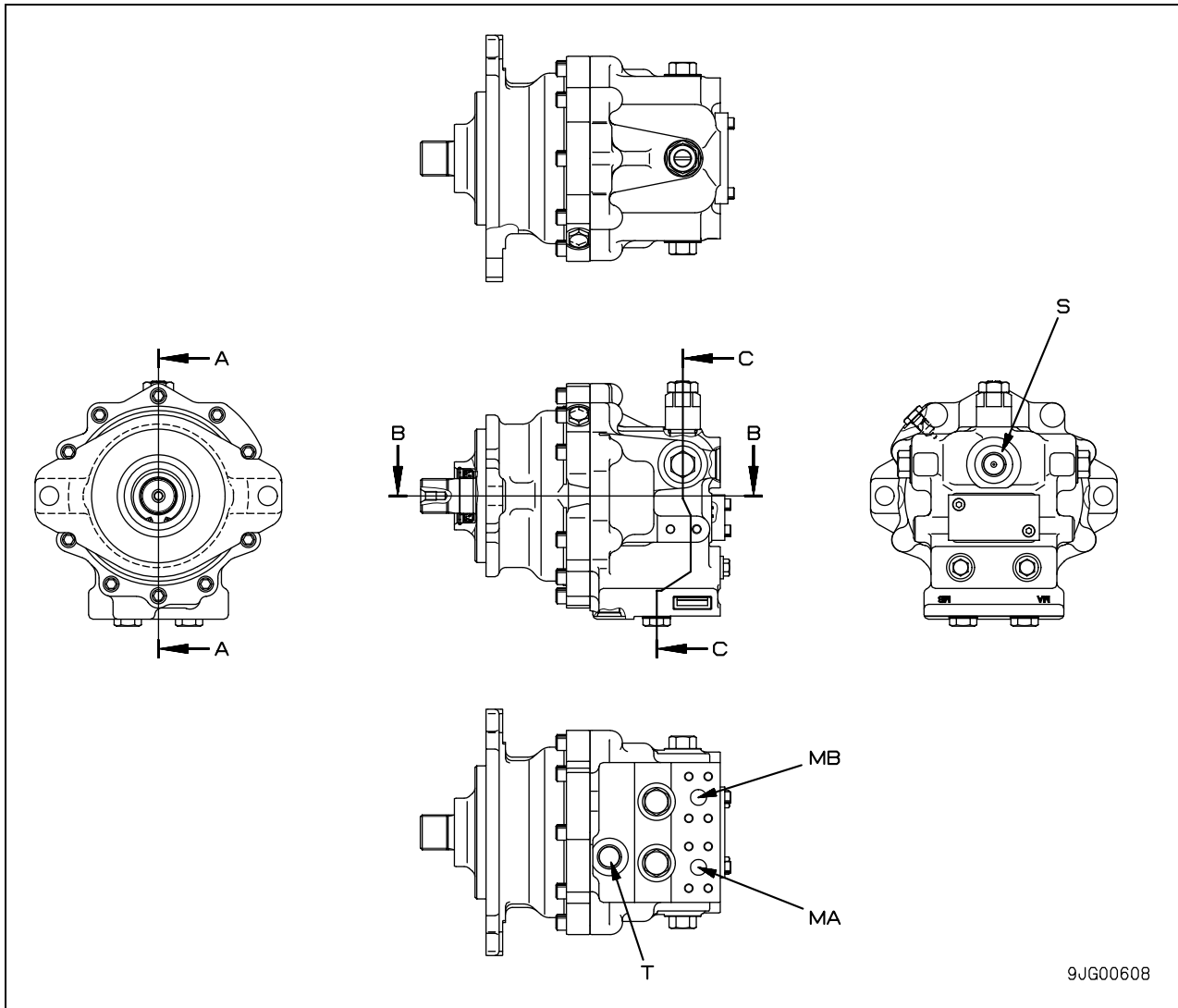
---

Crusher motor .....	2
Grizzly feeder motor.....	6
Conveyor motor .....	7
Travel motor .....	8
Valve control .....	16
Solenoid valve.....	26
EPC valve .....	28
Electromagnetic selector valve .....	32
Hydraulic cylinder.....	34



### Crusher motor

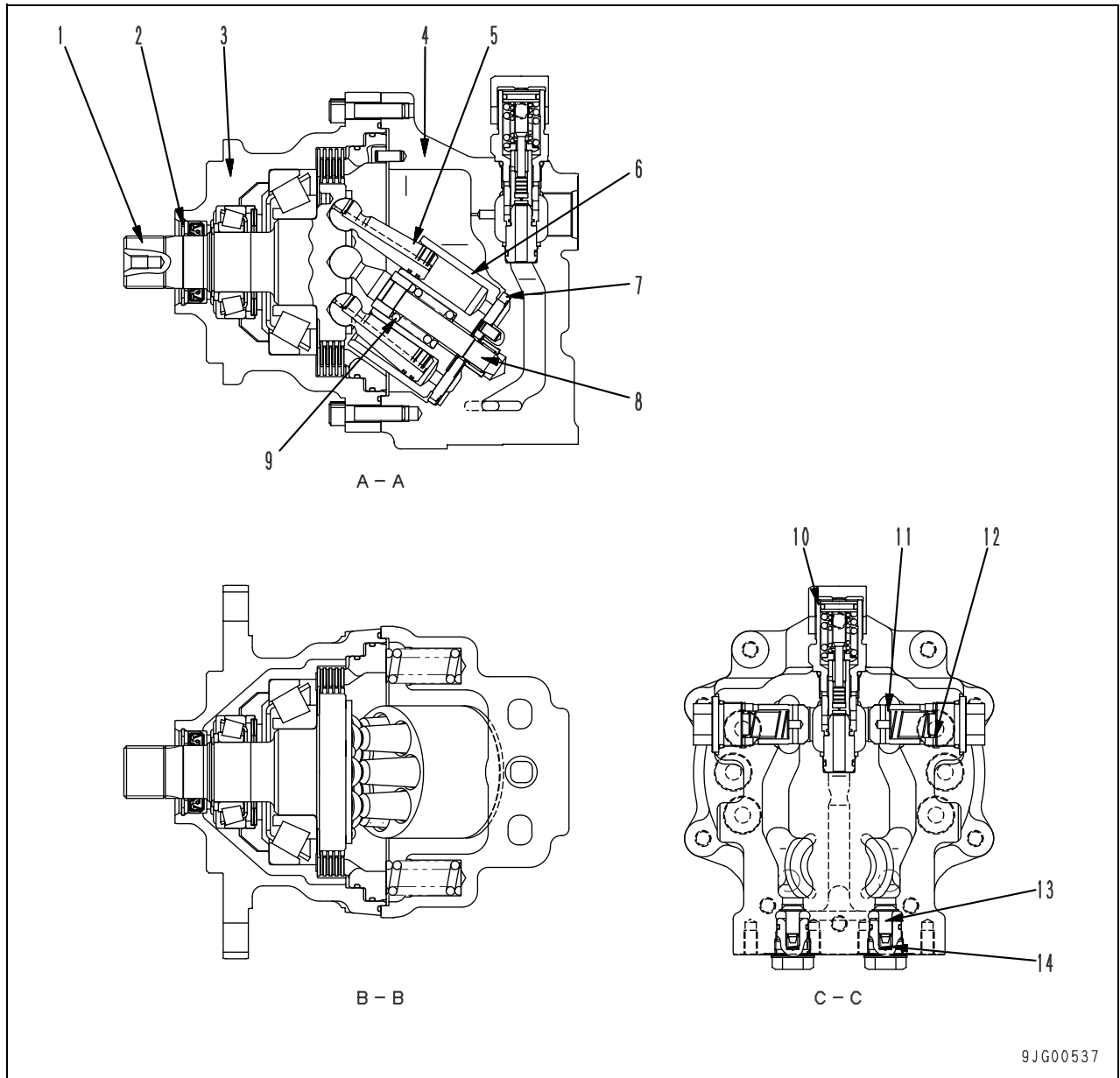
Type: KMF125B-5



- MA: From control valve
- MB: From control valve
- S: From back pressure compensation valve
- T: To tank

#### Specifications

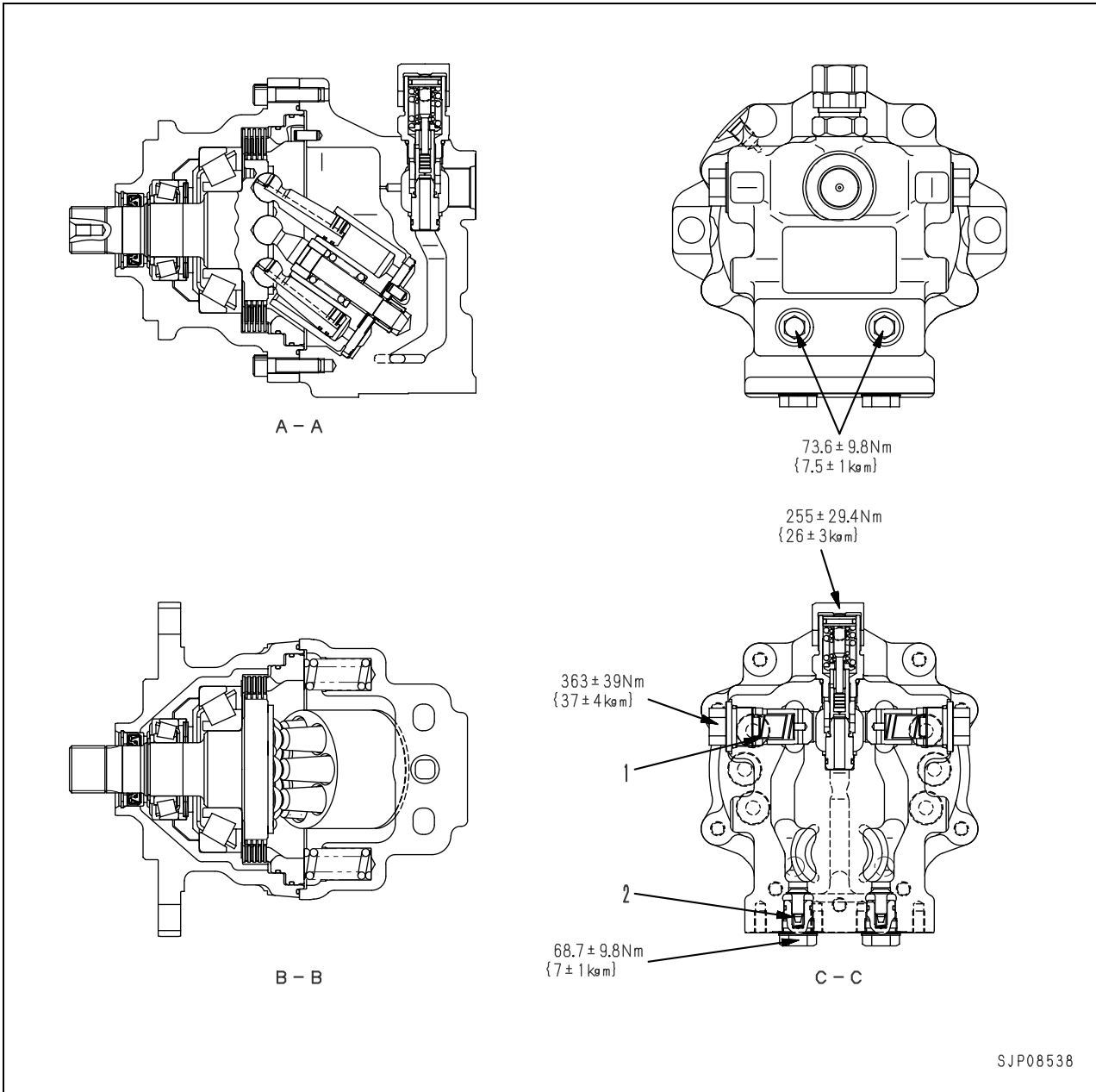
Model:	KMF125B-5
Theoretical delivery:	125.0 cm <sup>3</sup> /rev
Set pressure of safety valve:	36.7 MPa {375 kg/cm <sup>2</sup> }
Rated speed:	1,780 rpm



- 1. Drive shaft
- 2. Spacer
- 3. Case
- 4. Housing
- 5. Piston

- 6. Cylinder block
- 7. Valve plate
- 8. Center shaft
- 9. Center spring
- 10. Safety valve

- 11. Check valve
- 12. Check valve spring
- 13. Shuttle valve
- 14. Shuttle valve spring



Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
1	Check valve spring	Free length × Outside diameter	Installed length	Installed load	Free length	Installed load	If damaged or deformed, replace spring
		62.5 × 20.0	35.0	3.5 N {0.36 kg}	—	2.8 N {0.29 kg}	
2	Shuttle valve spring	16.4 × 8.9	11.5	13.7 N {1.4 kg}	—	10.8 N {1.1 kg}	

## Relief valve portion

### Outline

- The relief valve portion consists of check valves (2) and (3), shuttle valves (4) and (5), and relief valve (1).

### Function

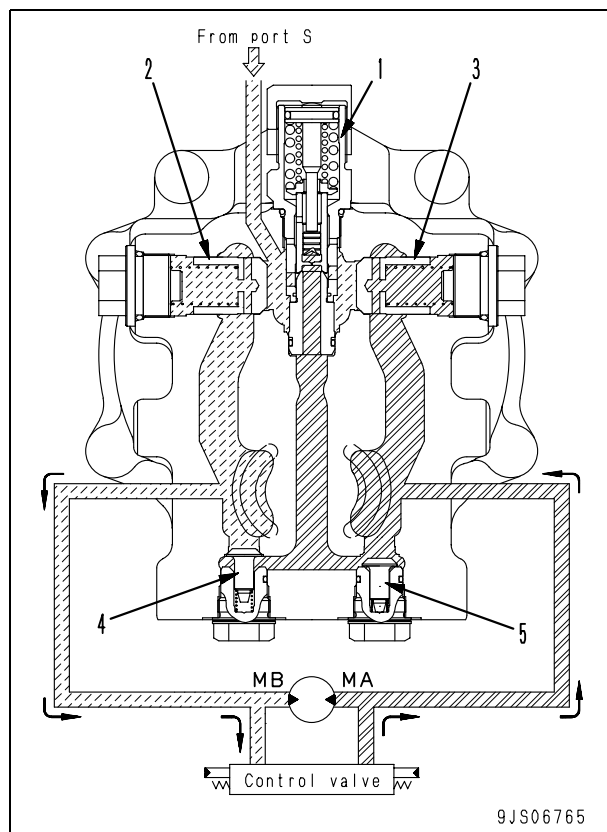
- When the crusher is stopped, the outlet port circuit of the motor from the control valve is closed, but the motor continues to rotate under inertia, so the pressure at the output side of the motor becomes abnormally high, and this may damage the motor.

To prevent this, the abnormally high pressure oil is relieved to port (S) from the outlet port of the motor (high-pressure side) to prevent any damage.

### Operation

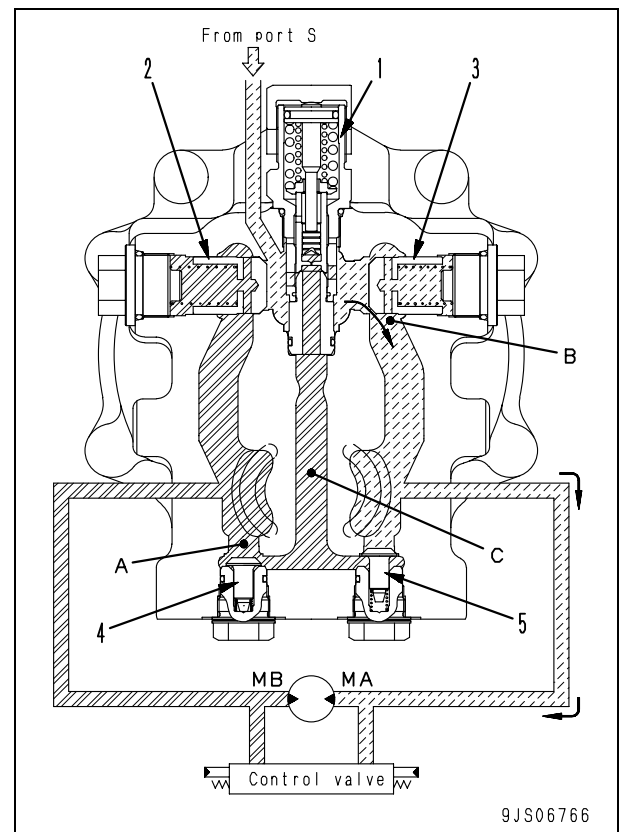
#### 1. When starting crusher

- When the crusher ON switch is pressed, the pressure oil from the pump passes through the control valve and is supplied to port (MA). As a result, the pressure at port (MA) rises, the starting torque is generated in the motor, and the motor starts to rotate. The oil from the outlet port of the motor passes from port (MB) through the control valve and returns to the tank.

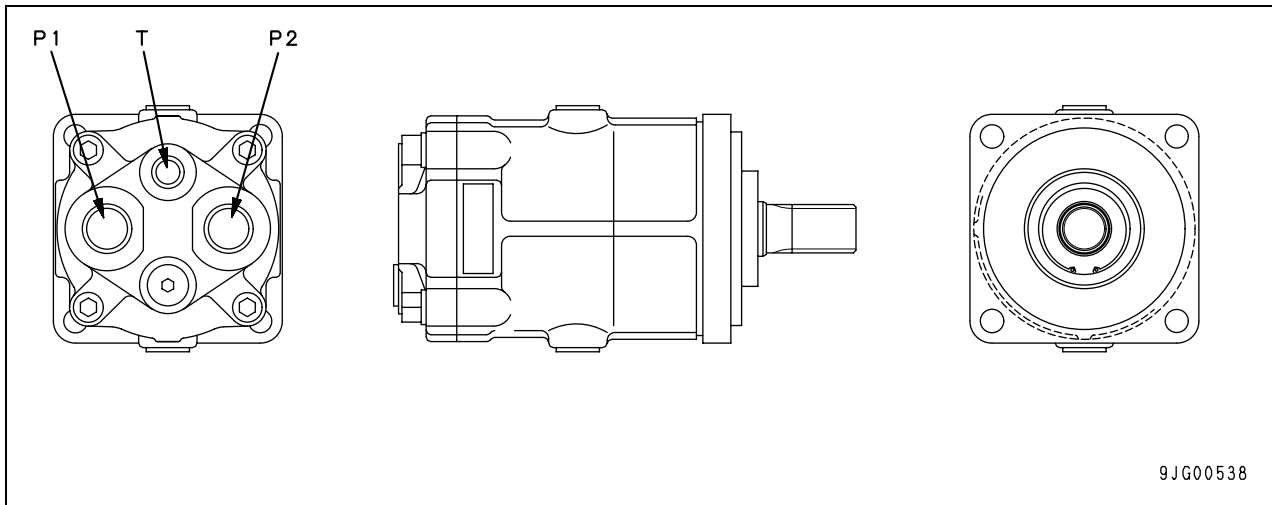


#### 2. When stopping crusher

- When the crusher OFF switch is pressed, the supply of pressure oil from the pump to port (MA) is stopped. With the oil from the outlet port of the motor, the return circuit to the tank is closed by the control valve, so the pressure at port (MB) rises. As a result, rotation resistance is generated in the motor, so the braking effect starts.
- If the pressure at port (MB) becomes higher than the pressure at port (MA), it pushes shuttle valve (A) (4) and chamber (C) becomes the same pressure as port (MB). The oil pressure rises further until it reaches the set pressure of relief valve (1). As a result, a high braking torque acts on the motor and stops the motor.
- When relief valve (1) is being actuated, the relief oil and the oil from port (S) passes through check valve (B) (3) and is supplied to port (MA). This prevents cavitation at port (MA).



## Grizzly feeder motor

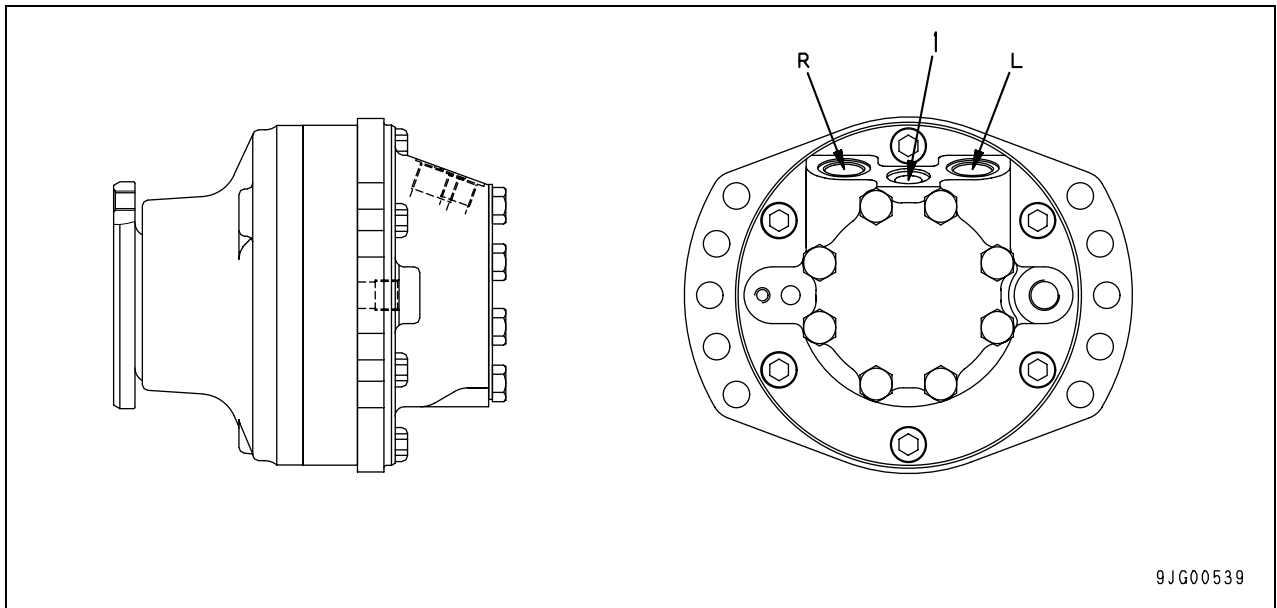


P1: From control valve  
P2: From control valve  
T: To hydraulic tank

### Specifications

Model: MSF-53  
Theoretical delivery: 53.4 cc/rev  
Rated pressure: 20.6 MPa {210 kg/cm<sup>2</sup>}  
Max. speed: 3,000 rpm

## Conveyor motor



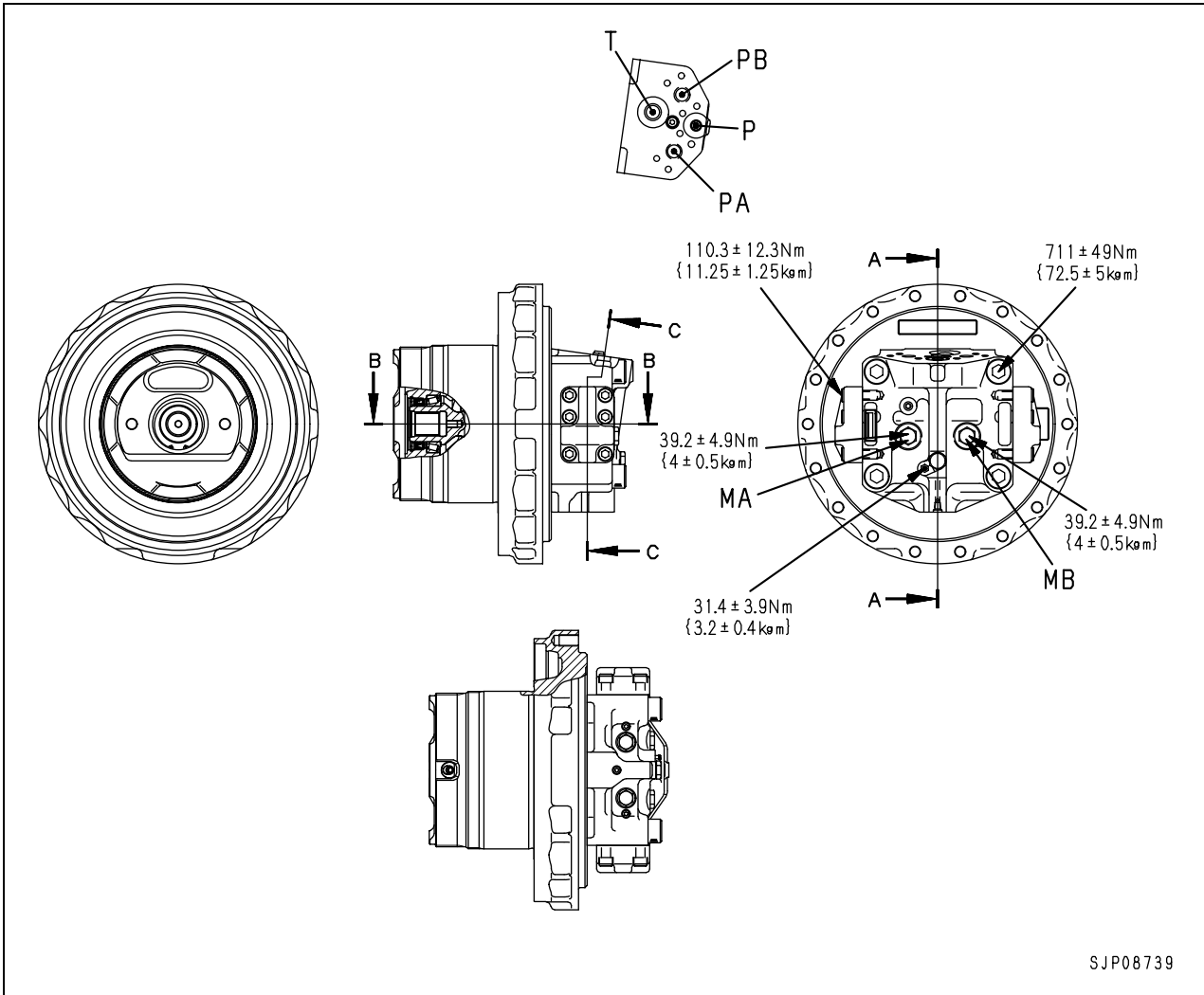
R: From control valve  
L: From control valve  
1: To hydraulic tank

### Specifications

Model: MSE02-2-123-R02-1240-K000  
Theoretical delivery: 398 cc/rev  
Max. pressure: 34.3 MPa {350 kg/cm<sup>2</sup>}  
Max. speed: 165 rpm

Travel motor

HMV110ADT-2

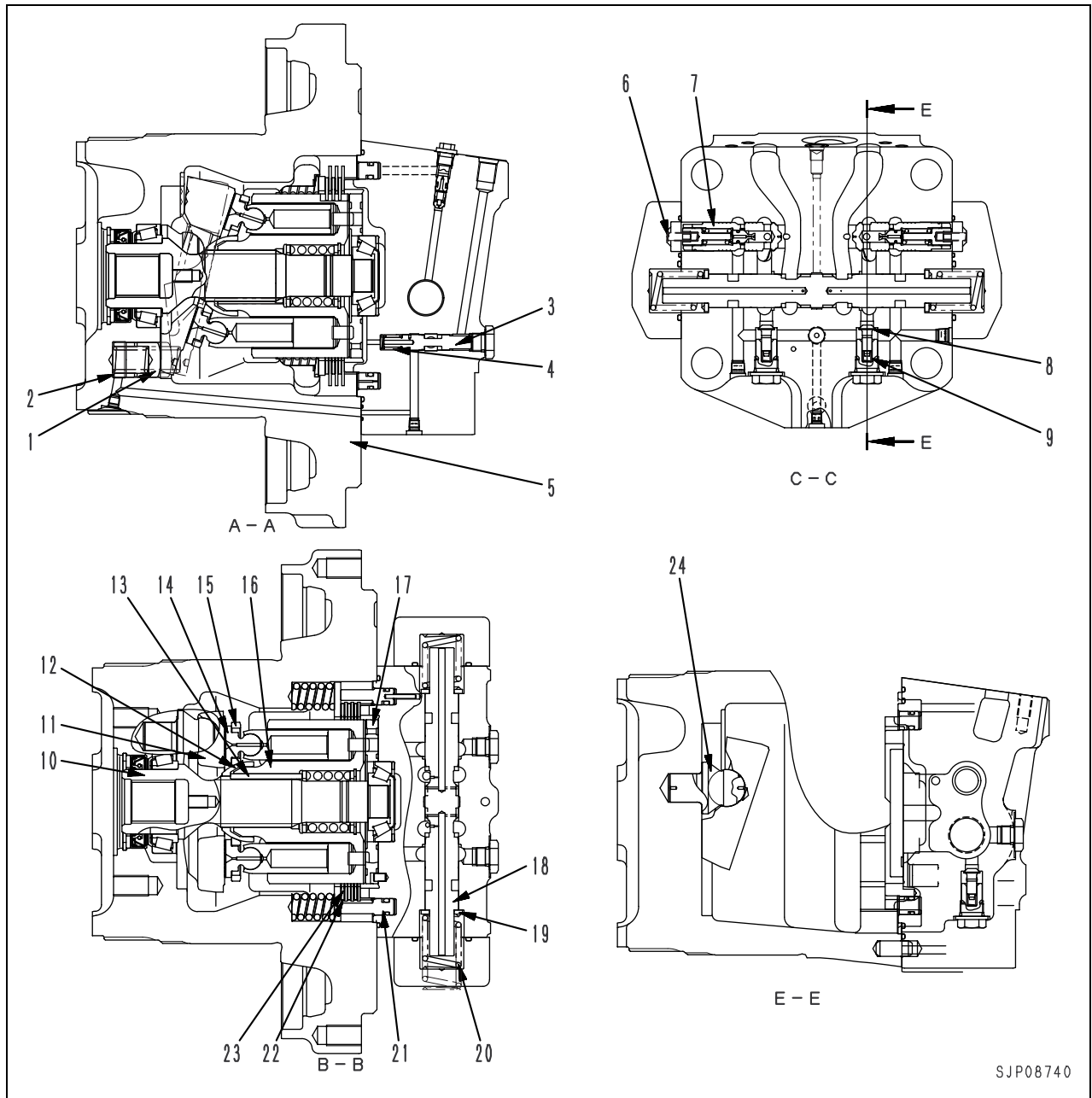


SJP08739

- MA. MA pressure pickup port
- MB. MB pressure pickup port
- P. From travel speed solenoid valve
- PA. From control valve
- PB. From control valve
- T. To tank

Specifications

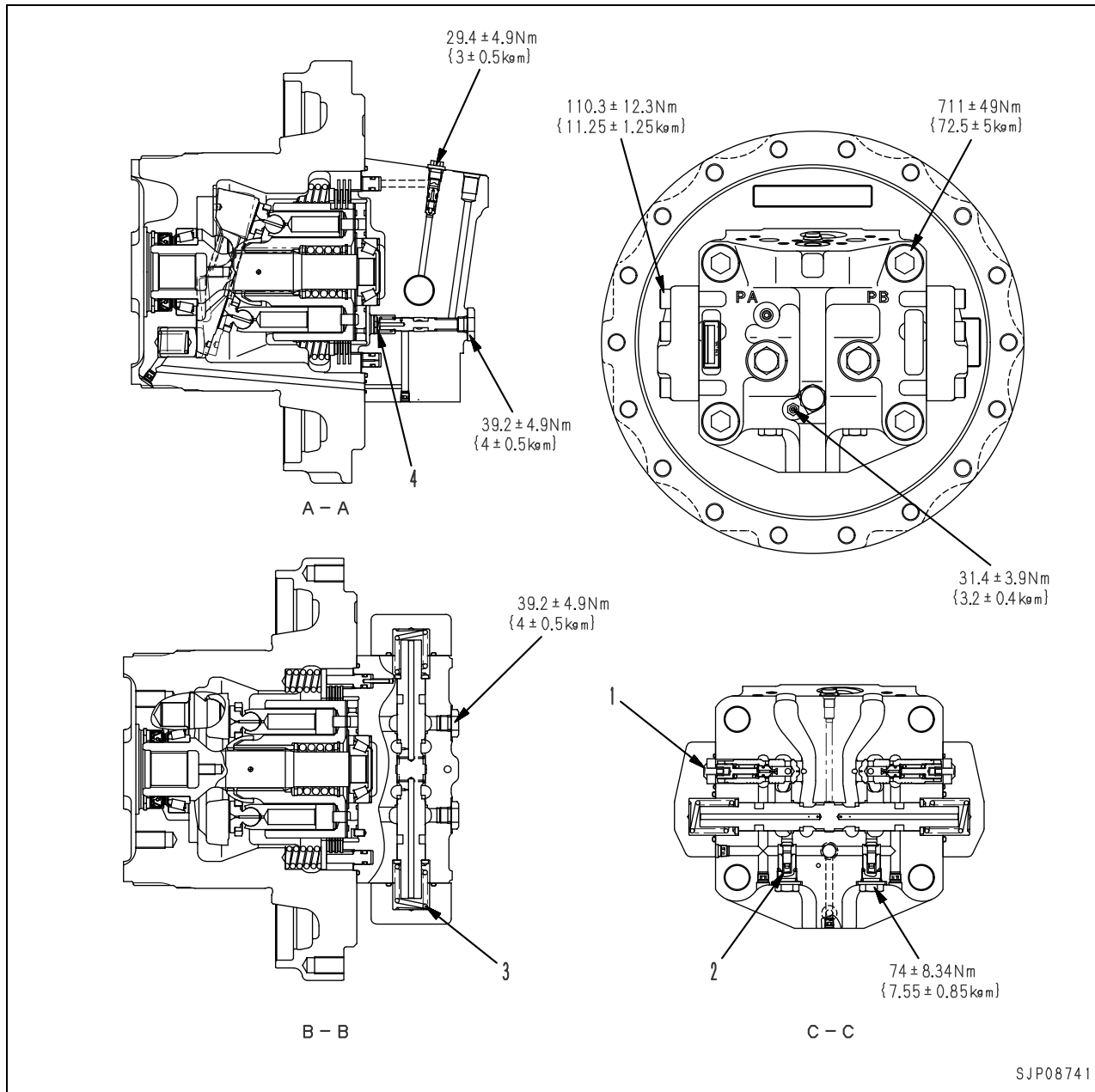
		Model
Item		BR380JG-1E0
Type		HMV110ADT-2
Theoretical delivery	Max.	106.2 cm <sup>3</sup> /rev
Set pressure		37.3 MPa {380 kg/cm <sup>2</sup> }
Rated speed	Max. capacity	1,842 rpm
Brake releasing pressure		1.2 MPa {12 kg/cm <sup>2</sup> }



SJP08740

- |                                |                       |                          |
|--------------------------------|-----------------------|--------------------------|
| 1. Regulator piston            | 9. Check valve spring | 17. Valve plate          |
| 2. Spring                      | 10. Output shaft      | 18. Counterbalance valve |
| 3. Regulator valve             | 11. Rocker cam        | 19. Ring                 |
| 4. Spring                      | 12. Retainer guide    | 20. Spool return spring  |
| 5. Motor case                  | 13. Pin               | 21. Brake piston         |
| 6. Suction-safety valve spring | 14. Piston            | 22. Plate                |
| 7. Suction-safety valve        | 15. Retainer          | 23. Disc                 |
| 8. Check valve                 | 16. Cylinder          | 24. Ball                 |





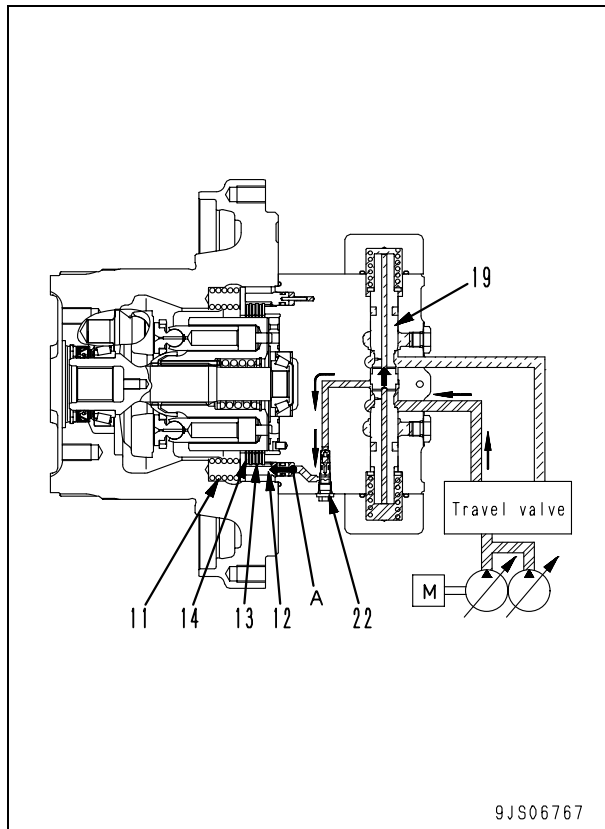
Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
		Free length x Outside diameter	Installed length	Installed load	Free length	Installed load	
1	Check valve spring	31.6 x 6.5	24.2	2.55 N {0.26 kg}	—	1.96 N {0.2 kg}	If damaged or deformed, replace spring
2	Check valve spring	13.0 x 6.5	9.5	1.96 N {0.2 kg}	—	1.57 N {0.16 kg}	
3	Return spring	58.43 x 30	42.6	411 N {41.9 kg}	—	329 N {33.5 kg}	
4	Regulator valve spring	21.5 x 11.1	17.1	55 N {5.6 kg}	—	44 N {4.5 kg}	

## Operation of parking brake

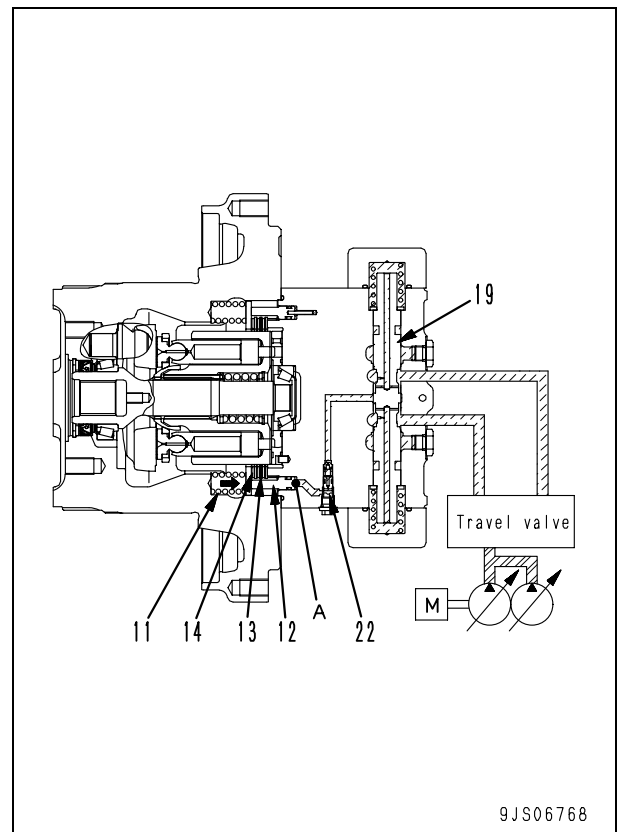
### 1. When starting to travel

- As the travel lever is operated, pressurized oil from the pump activates counterbalance valve spool (19), opening the parking brake circuit.
- The pressurized oil is conducted to chamber (A) of brake piston (12) and compresses spring (11), pushing piston (12) toward left.
- Since the pushing force to plate (13) and disc (14) disappears, plate (13) is separated from disc (14) and the brake is released.



### 2. When stopping travel

- As the travel lever is placed in neutral, counterbalance valve spool (19) returns to the neutral position and closing the parking brake circuit.
- The pressurized oil in chamber (A) of brake piston (12) passes through orifice of brake piston (12) and is drained to the motor case.
- Brake piston (12) is pushed to the right by spring (11).
- Plate (13) and disc (14) are pushed together, and the brake is applied.
- As brake piston (12) returns, flow of pressurized oil is reduced with slow return valve (22).
- The time delay will be set to activate the brake only after the machine has stopped.



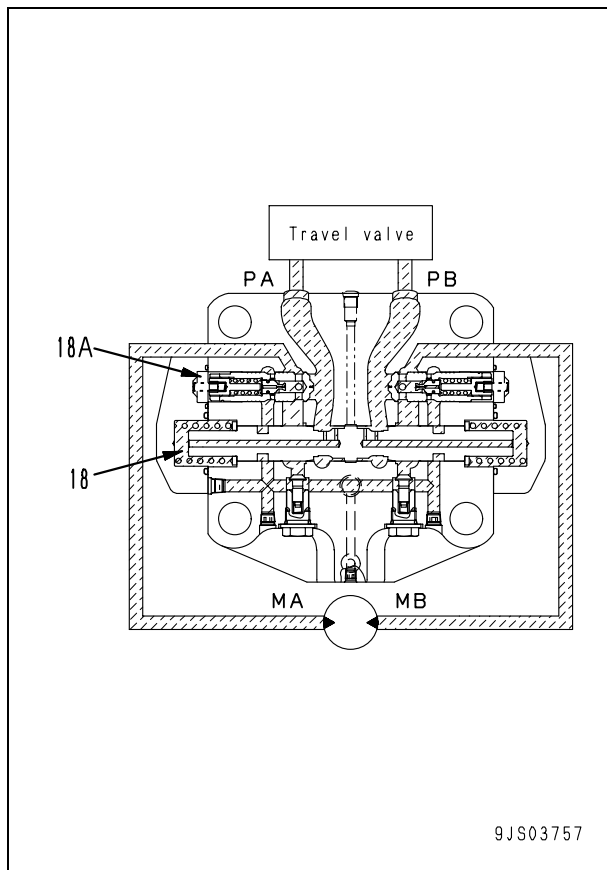
**Brake valve**

- The brake valve consists of suction safety valve (18A) and counterbalance valve (18).
- Functions and operations of respective components shall conform to the following.

**1) Counterbalance valve and check valve**

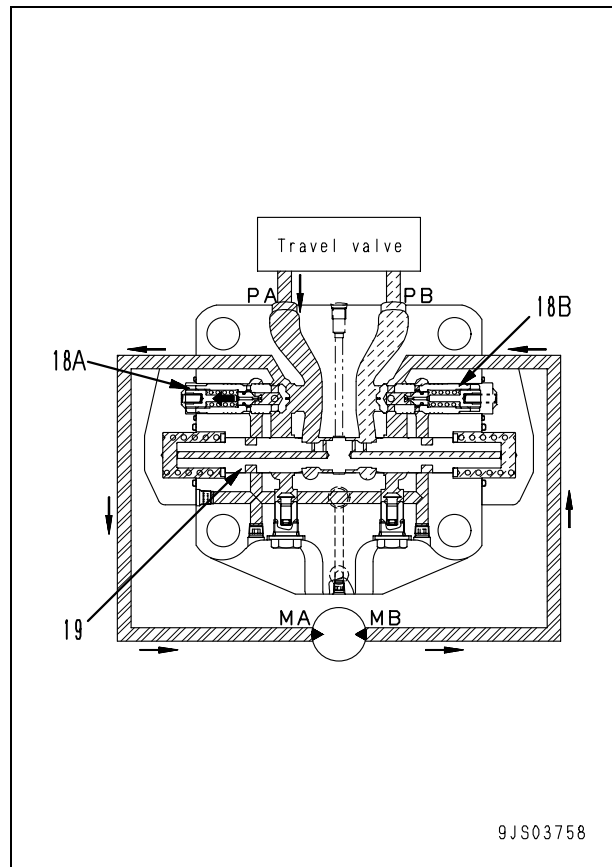
**Function**

- When traveling downhill, the machine travel speed tends to get faster than the motor (engine) speed because of the downward force generated from its own weight.
- If the machine travels with the engine at low speed, the motor may rotate without load, causing the machine to run away; resulting in a very dangerous situation.
- These valves are used to prevent above by controlling the machine to travel according to the engine speed (pump delivery).

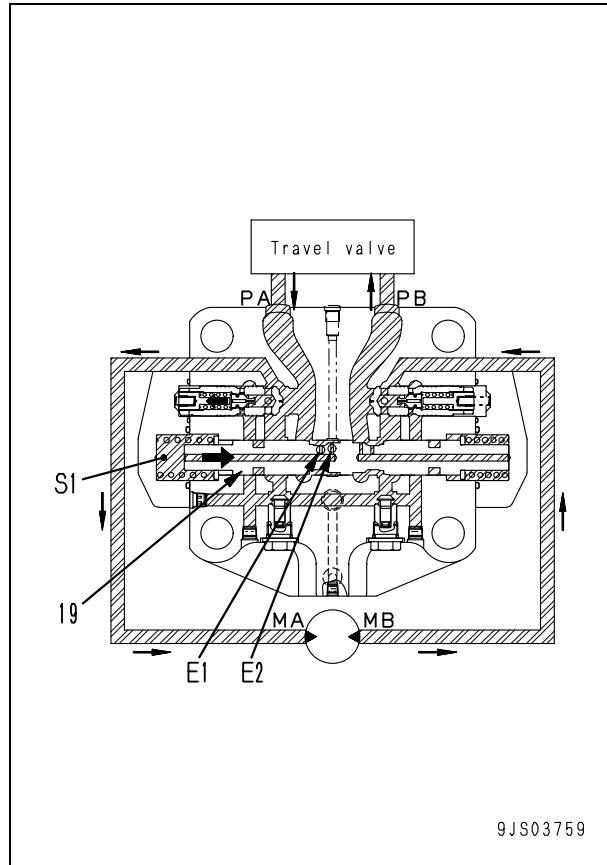


**Operation when pressurized oil is supplied**

- Operating the travel lever conducts the pressurized oil from the control valve to port (PA).
- The pressurized oil push-opens suction safety valve (18A) and then flows to motor outlet port (MB) via motor inlet port (MA).
- The motor outlet side is closed by suction safety valve (18B) and spool (19), so the pressure at the supply side rises.

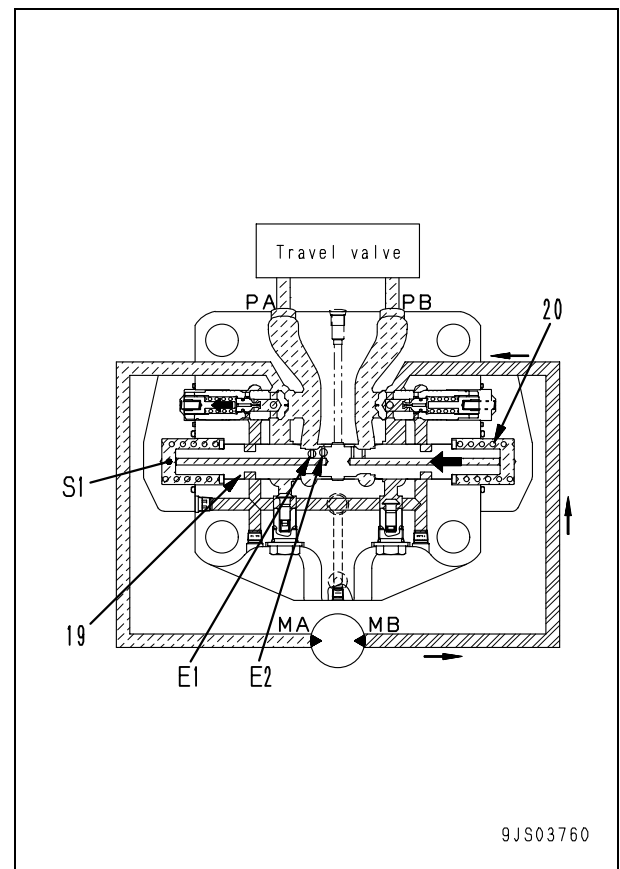


- The pressurized oil on the supply side flows to chamber (S1) via orifice (E1) and orifice (E2) of the spool (19).
- As the pressure in chamber (S1) goes above the spool selector pressure, spool (19) is pushed toward right.
- Port (MB) and port (PB) are connected, opening the motor outlet port side and starting the motor rotating.



#### Operation of brake during travelling downhill

- If indication of the machine runaway is sensed while travelling downhill, the motor will be caused to rotate without load to decrease the inlet side oil pressure.
- Pressure in chamber (S1) is released via orifices (E1) and (E2).
- As the pressure in chamber (S1) goes below the spool selector pressure, spool (19) is returned to the left by spring (20) and outlet port (MB) is throttled.
- The pressure at the outlet port side rises, generating rotation resistance on the motor to prevent the machine from running away.
- The spool moves to a position where the pressure on outlet port (MB) can be balanced against the machine's own weight and the inlet port pressure.
- Oil flow from the outlet circuit is reduced to ensure the travel speed corresponded to the pump delivery.



## 2) Safety valve

### Function

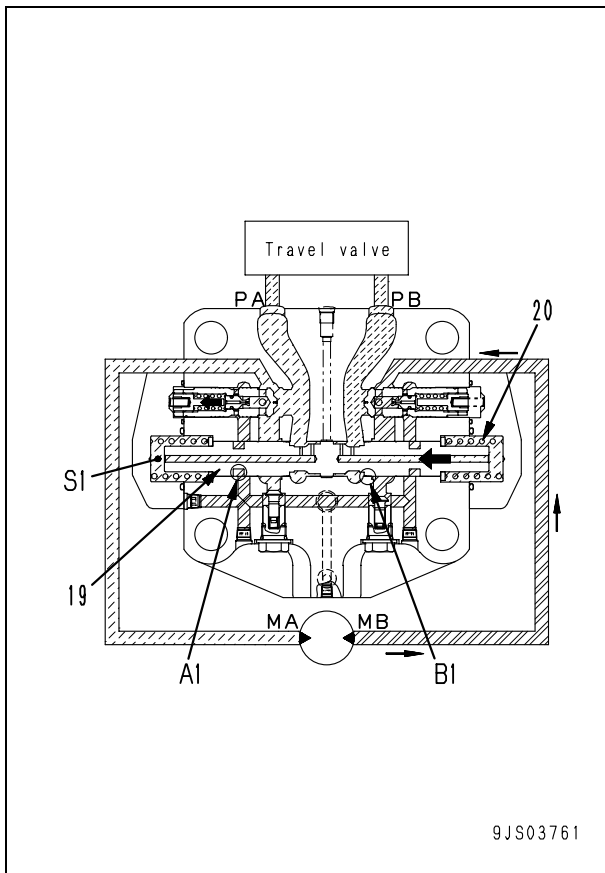
- As long as the machine travel is stopped (or it is travelling downhill), the counterbalance valve closes the inlet and outlet circuits of the motor.
- Since the motor is rotated by inertial force, pressure in the motor outlet port side is abnormally increased, potentially resulting in damages on the motor and piping.
- The safety valve releases this abnormal pressure to the inlet port side of the motor in order to prevent damages to the equipment.

### Operation

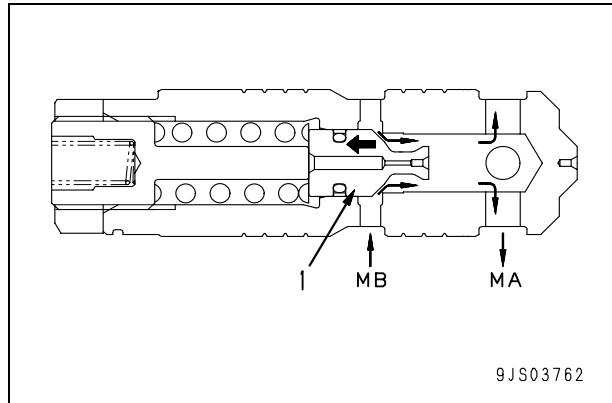
#### (1) When travel is stopped

(or when travelling downhill) (Clockwise rotation)

- Reduction of the pressure at motor inlet (PA) decreases the pressure in chamber (S1).
- When it drops beyond the spool switching pressure, spool (19) is returned to the left by spring (20), reducing the pressure at outlet passage (B1).
- The motor tries to continue rotation resorting to inertial force, thus pressure on the outlet port (MB) is increased.



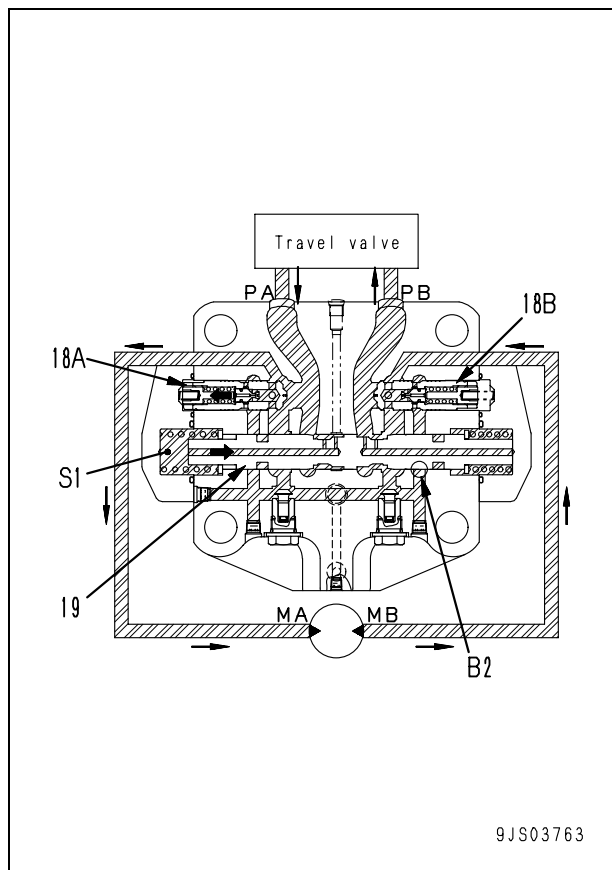
- When the pressure rises above the set pressure of the suction safety valve, poppet (1) opens.
- The pressurized oil passes through notch (A1) of spool (19) into chamber (MA) of the circuit at the opposite side.
- At the time of counterclockwise rotation, it makes reverse operation of clockwise rotation.



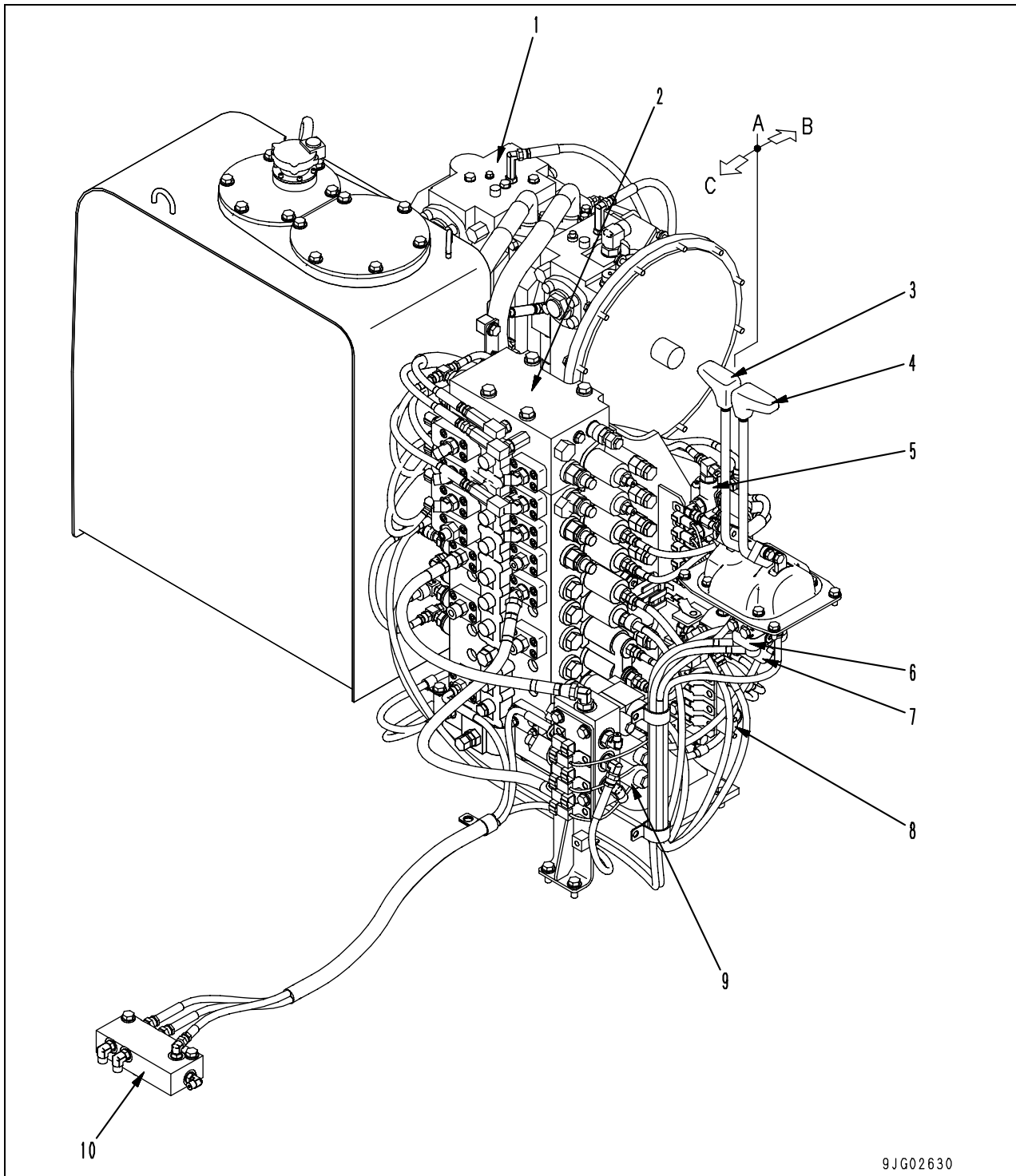
#### 3) When starting travel

(or when traveling at a constant speed)

- As the travel lever is operated, the pressurized oil from the pump moves spool (19) toward right.
- The passage to the suction safety valve functions as a circuit which passes through notch (B2) of spool (19), producing large differential pressure.
- The pump pressure rises, providing a large tractional force to the valve.



Valve control

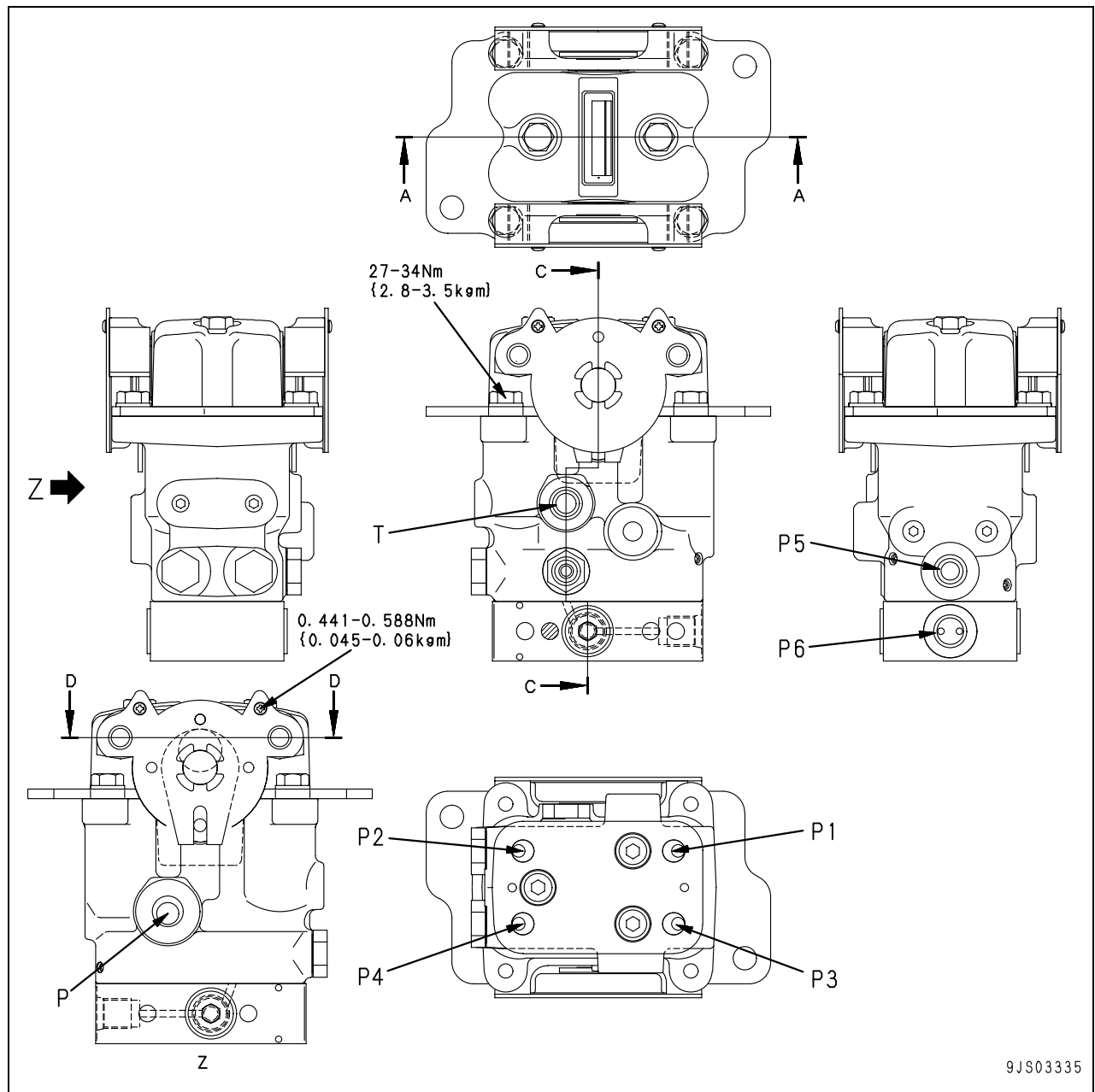


- 1. Hydraulic pump
- 2. Control valve
- 3. Left travel lever
- 4. Right travel lever
- 5. Solenoid valve

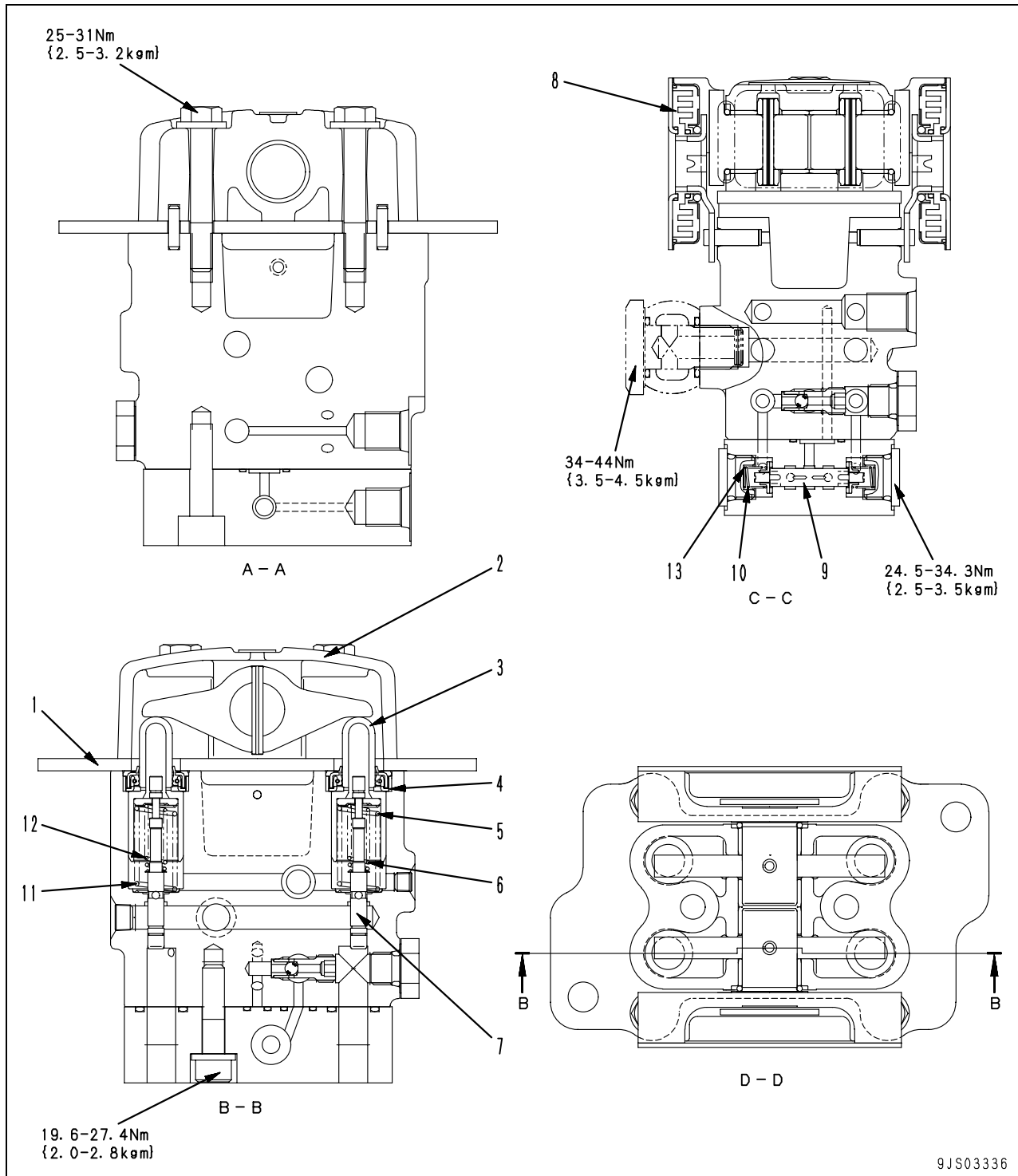
- 6. Travel PPC valve
- 7. Travel lock EPC valve
- 8. EPC valve
- 9. Solenoid selector valve
- 10. Hydraulic block

- Positions of lever**
- A. Neutral
  - B. Travel "Forward"
  - C. Travel "Reverse"

Travel PPC valve



- P: From self pressure reducing valve
- P1: L.H. reverse
- P2: L.H. forward
- P3: R.H. reverse
- P4: R.H. forward
- P5: Travel signal
- P6: Steering signal
- T: To tank





1. Plate
2. Body
3. Piston
4. Collar
5. Centering spring
6. Metering spring
7. Valve
8. Damper
9. Steering signal spool
10. Steering signal spool spring

Unit: mm

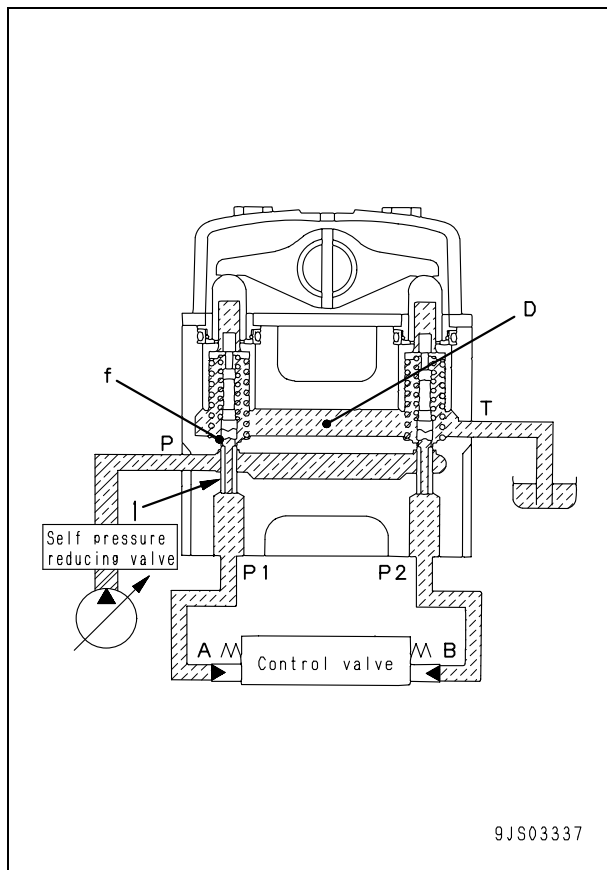
No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
		Free length x Outside diameter	Installation length	Installation load	Free length	Installation load	
11	Centering spring	47.6 x 15.5	32.5	108 N {11.0 kg}	—	86.3 N {8.8 kg}	If damaged or deformed, replace spring.
12	Metering spring	26.5 x 8.15	24.9	16.7 N {1.7 kg}	—	13.7 N {1.4 kg}	
13	Steering signal spring	12.8 x 7.3	8.5	8.8 N {0.9 kg}	—	7.1 N {0.72 kg}	

# 1. Pressure reducing valve function

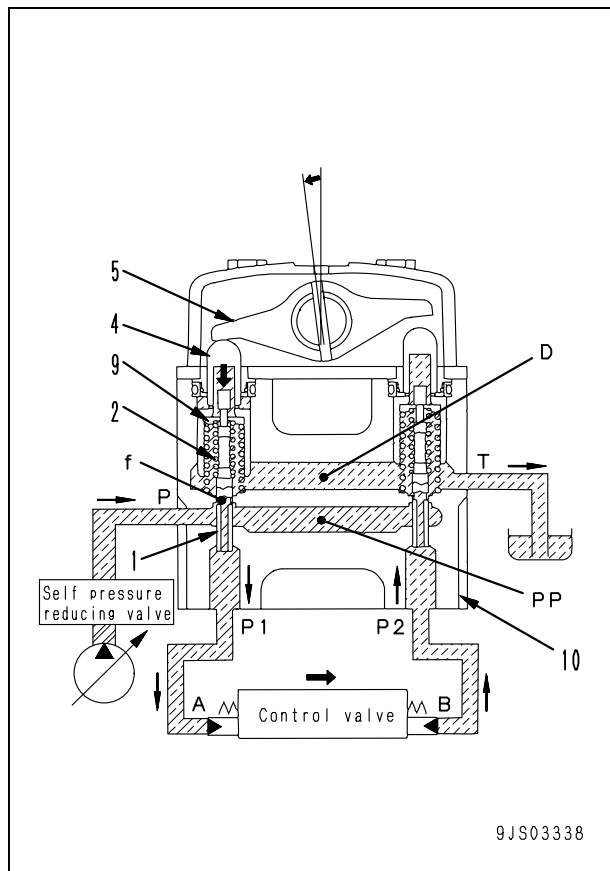
## Operation

### 1) When in neutral

- Ports (A) and (B) of the control valve and ports (P1) and (P2) of the PPC valve are connected to drain chamber (D) via fine control hole (f) in spool (1).



- The relationship of the position of spool (1) and body (10) [fine control hole (f) is in the middle between drain chamber (D) and pump pressure chamber (PP)] does not change until retainer (9) contacts spool (1).
- Metering spring (2) contracts in proportion to the stroke of the control lever.
- Pressure at port (P1) also rises in proportion to the stroke of the control lever.
- In this way, the control valve spool moves to a position where the pressure of chamber (A) (same as pressure at port (P1)) and the force of the return spring of the control valve spool are balanced.



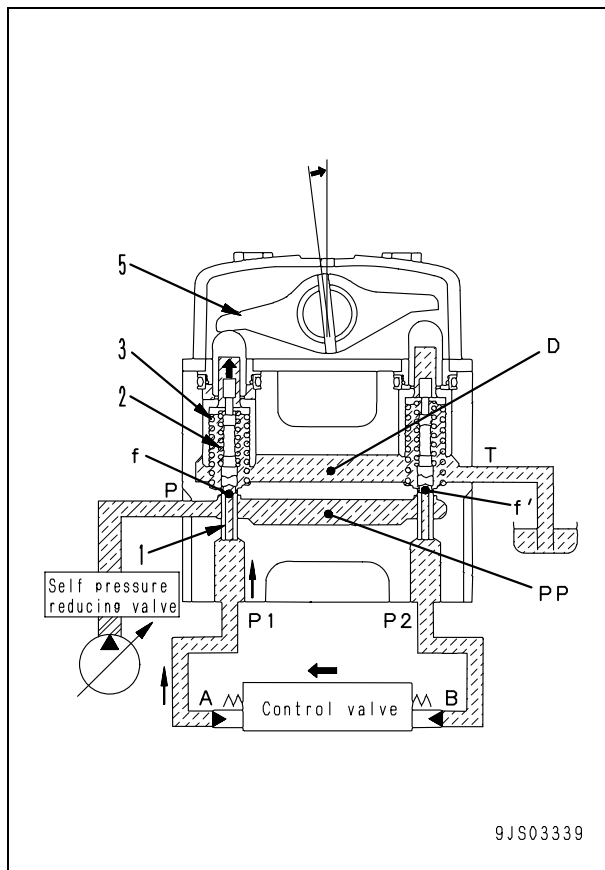
### 2) During fine control

#### (Neutral → fine control)

- When piston (4) is pushed by lever (5), retainer (9) is pushed, spool (1) is also pushed by metering spring (2), and moves down.
- When fine control hole (f) is shut off from drain chamber (D), it is almost simultaneously interconnected to pump pressure chamber (PP).
- Pilot pressurized oil of the control pump is led to port (A) from port (P1) via fine control hole (f).
- When the pressure at port (P1) becomes higher, spool (1) is pushed back and fine control hole (f) is shut off from pump pressure chamber (PP). At almost the same time, it is connected to drain chamber (D) to release the pressure at port (P1).
- As a result, spool (1) moves up and down until the force of metering spool (2) is balanced with the pressure at port (P1).

### 3) During fine control (When control lever is returned)

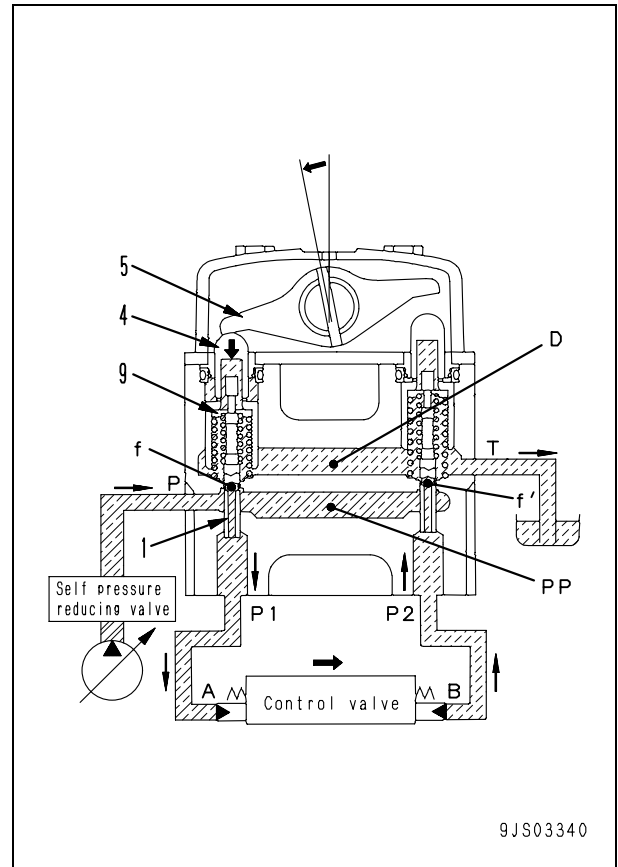
- When lever (5) starts to be returned, spool (1) is pushed up by the force of centering spring (3) and pressure at port (P1).
- Because of this, fine control hole (f) is connected to drain chamber (D), and the pressurized oil at port (P1) is released.
- If the pressure of port (P1) is lowered excessively, spool (1) is pushed down by metering spring (2).
- Fine control hole (f) is shut off from drain chamber (D), and it is almost simultaneously interconnected to pump pressure chamber (PP).
- Pump pressure is supplied until the pressure at port (P1) recovers to the level equivalent to the lever position.
- When the spool of the control valve returns, the oil in drain chamber (D) flows in from fine control hole (f') in the valve on the side that is not working. The oil passes through port (P2) and enters chamber (B) to replenish the chamber with pressurized oil.



### 4) At full stroke

- Lever (5) pushes down piston (4), and retainer (9) pushes down spool (1).
- Fine control hole (f) is shut off from drain chamber (D), and is interconnected to pump pressure chamber (PP).

- Therefore, the pilot pressure oil from the self pressure reducing valve passes through fine control hole (f) and flows to chamber (A) from port (P1) to push the control valve spool.
- The oil returning from chamber (B) passes from port (P2) through fine control hole (f') and flows to drain chamber (D).



## 2. Travel signal/Steering function

### Travel signal

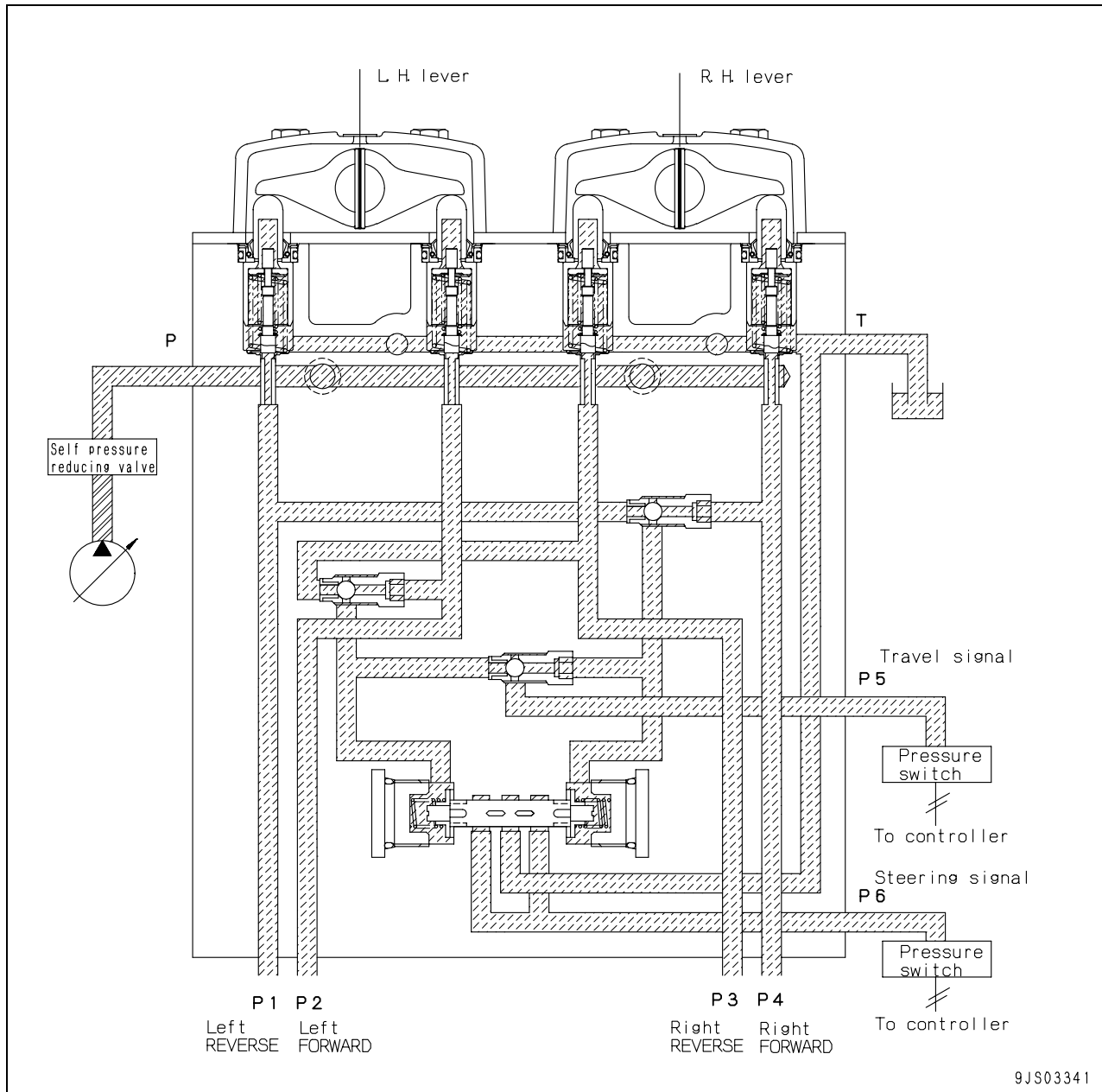
- If either of the L.H. or R.H. travel levers is operated, the higher PPC output pressure of both sides is output as the travel signal.
- Accordingly, whether the machine is travelling is judged by the signal of port (P5).

### Steering signal

- If the operation quantities of both levers are different from each other as in the steering operation, the higher one of the PPC output pressures of both sides is output as the steering signal.
- Any signal is not output from port (P6) while the machine is travelling straight (forward or reverse) or in neutral.
- Accordingly, whether the machine is being steered is judged by the signal of port (P6).

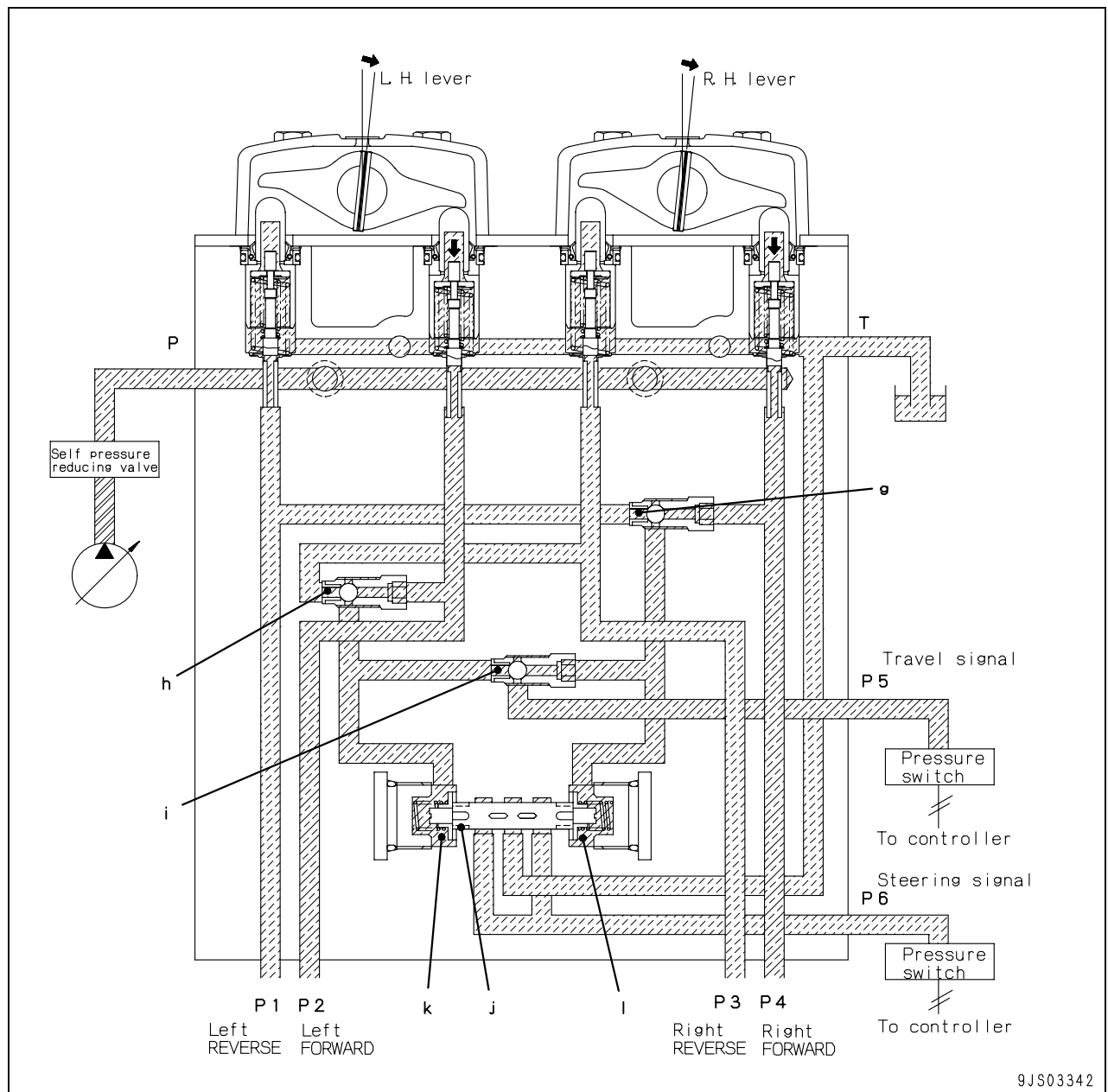
Operation

1) When in neutral



- No output is made from respective output ports [from (P1) to (P4)], travel signal [port (P5)] and steering signal [port (P6)].

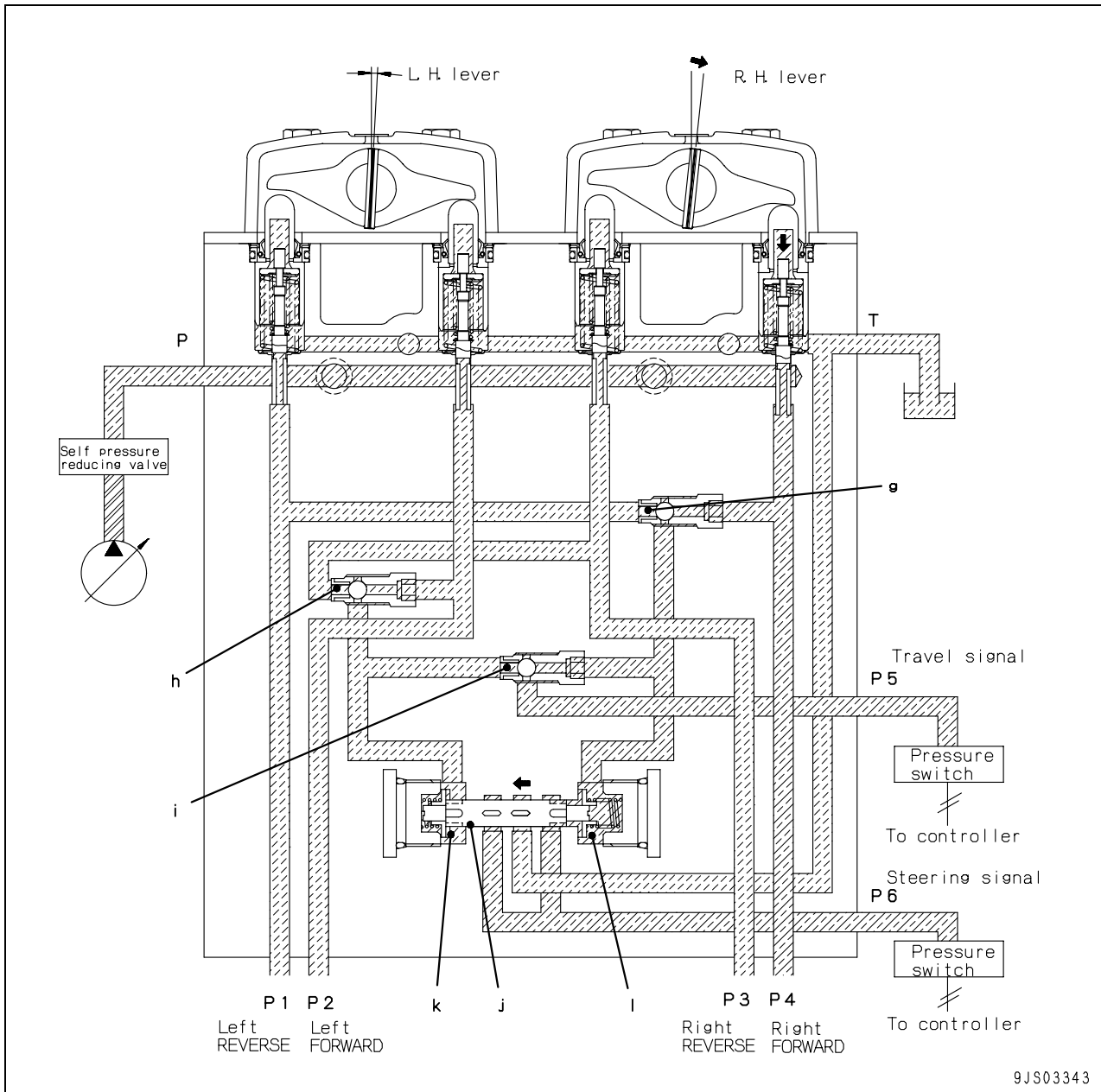
## 2) During straight travel



★ The Illustration shows the circuit for travelling straight forward.

- When operating L.H. motor forward [port (P2) output] and R.H. motor forward [port (P4) output], pressure of both L.H. spring chamber (k) and R.H. spring chamber (l) rises high.
- Steering signal spool (j) remains at neutral position and does not output a steering signal to port (P6).

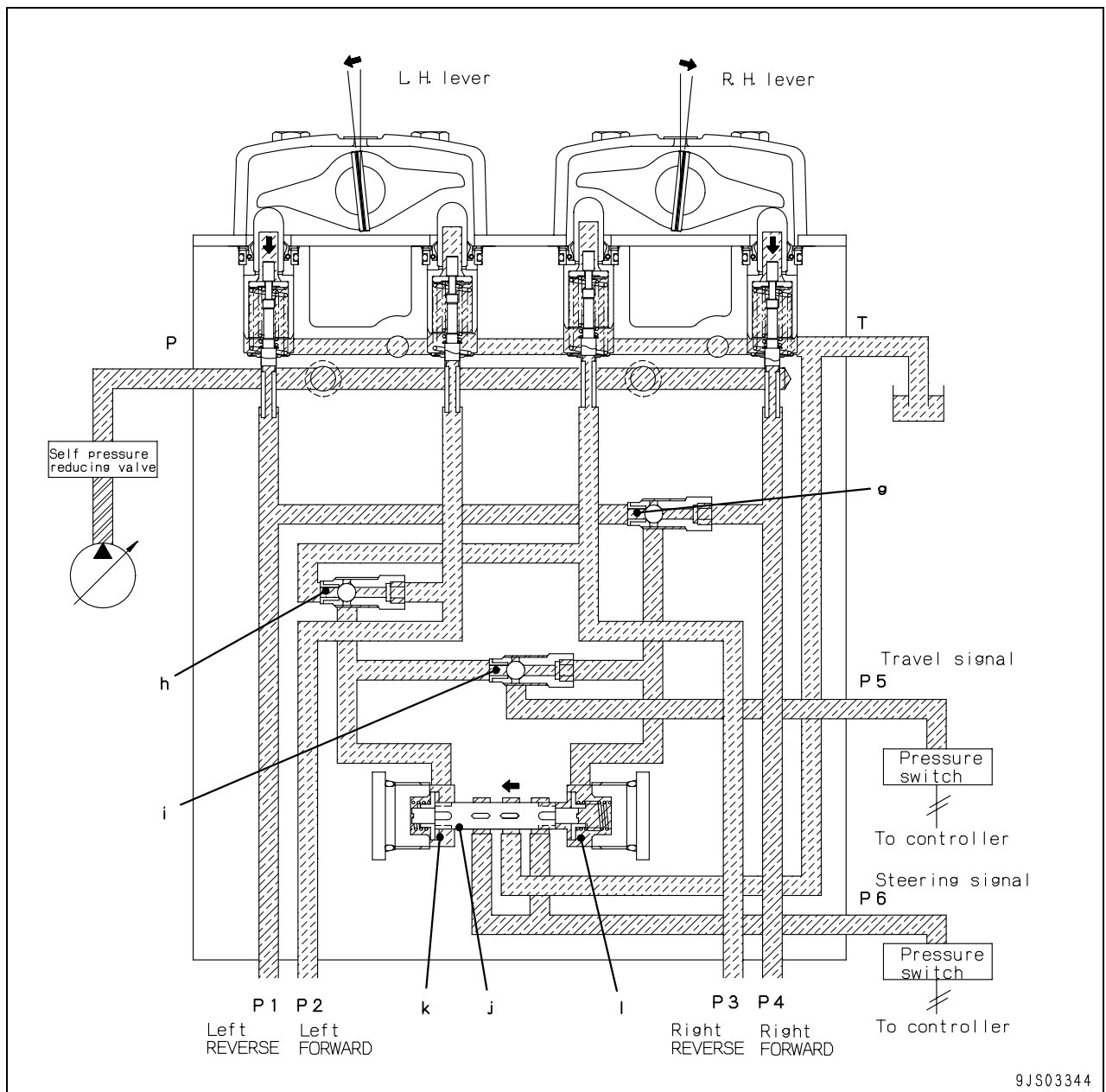
3) When steered or pivot-turned



★ The Illustration shows the circuit for travelling left forward (slow) and right forward (fast) operation.

- If the operation quantities of both levers are different from each other as in the steering operation (if the difference of the pilot pressure between both sides is higher than a certain level), the pilot pressure is output as the steering signal.
- The pressure in left spring chamber (k) of steering signal spool (j) is (P2).
- The pressure in right spring chamber (l) is (P4).
- When the pressure state reaches  $[(P4 - P2) \times (\text{Spool section}) > \text{Spring set load}]$ , the spool is switched to the direction of the arrow.
- Port (P4) pressure of the L.H. or R.H. PPC valves, whichever having a higher output pressure, is output to port (P6) as the steering signal.

## 4) When counter-rotated

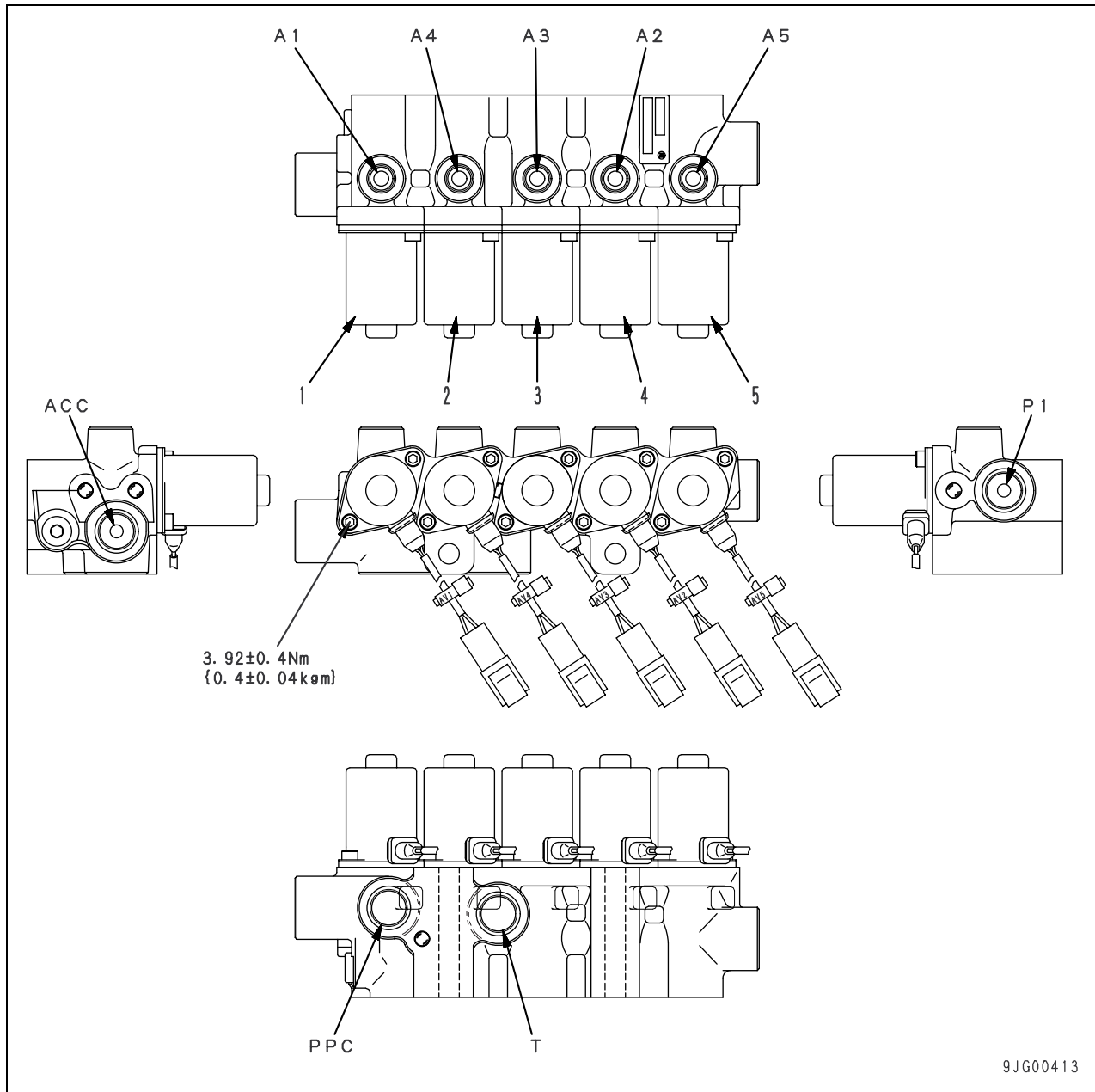


★ The illustration shows the circuit for travelling left reverse and right forward.

- When operating L.H. motor reverse [port (P1) output] and R.H. motor forward [port (P4) output], pressure of the R.H. spring chamber (l) only rises high.
- Steering signal spool (j) strokes to the left to output the steering signal to port (P6).

### Solenoid valve

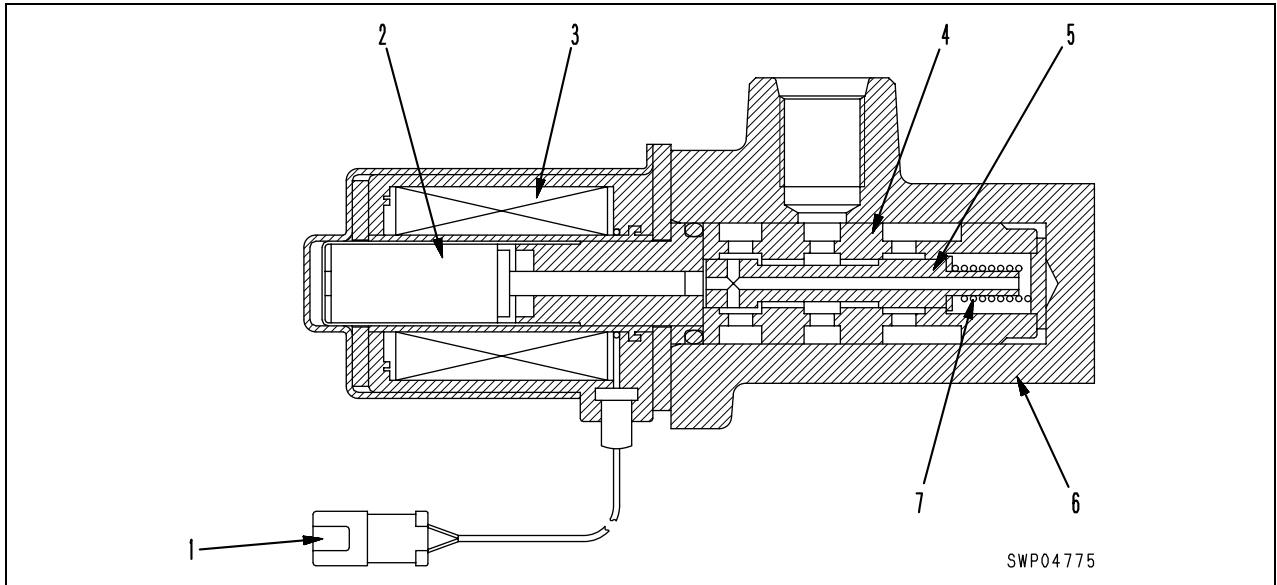
For straight travel and 2-stage relief, magnetic separator, side conveyor, bear lock reset, and travel lock



- 1. Straight travel and 2-stage relief
- 2. Magnetic separator
- 3. Side conveyor
- 4. Bear lock reset
- 5. Travel lock

- T. To tank
- A1. Control valve PST (Straight travel) (2-stage relief)
- A2. Control valve (Port P-3) (Magnetic separator)
- A3. Control valve (Port P-1) (Side conveyor)
- A4. Control valve (Port P11) (Bear lock reset)
- A5. To travel PPC port P
- P1. From self pressure reducing valve
- ACC. 2-spool ON/OFF valve
- PPC. To EPC valve



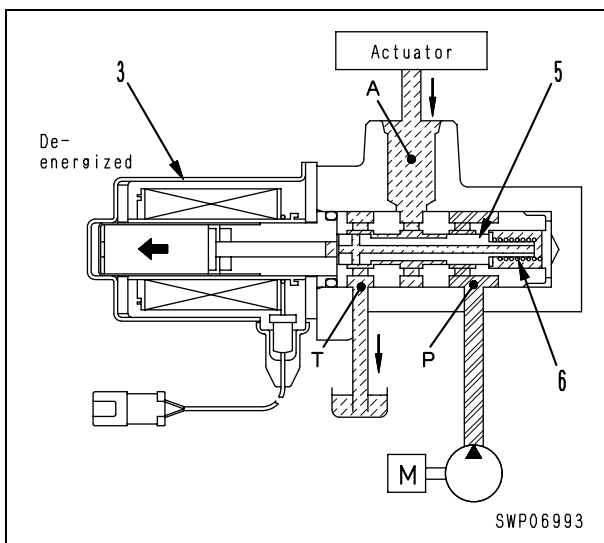


- |                 |           |
|-----------------|-----------|
| 1. Connector    | 5. Spool  |
| 2. Movable core | 6. Block  |
| 3. Coil         | 7. Spring |
| 4. Cage         |           |

**Operation**

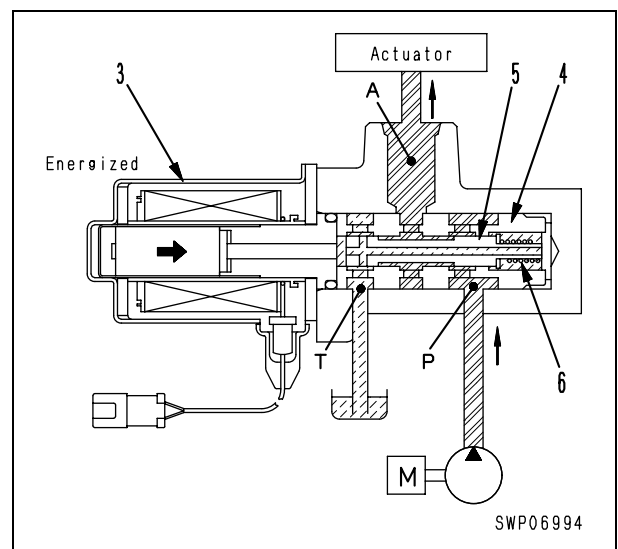
**When solenoid is de-energized**

- When the signal current does not flow from the controller, solenoid (3) is de-energized. For this reason, spool (5) is pushed fully to the left by spring (6). As a result, the circuit between ports (P) and (A) closes and the pressurized oil from the control pump does not flow to the actuator. At the same time, the pressurized oil from the actuator flows from port (A) to port (T), and is then drained to the tank.

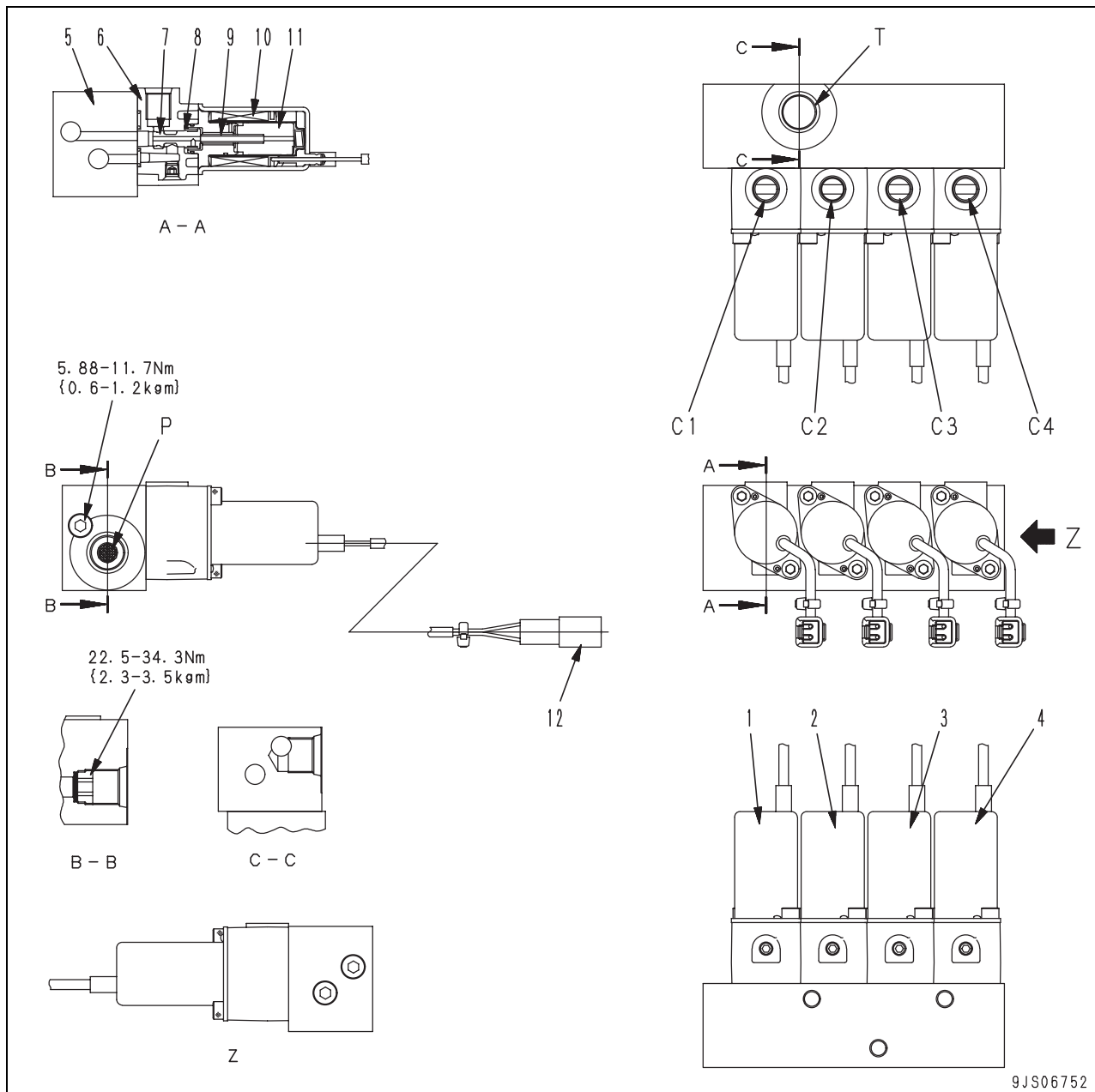


**When solenoid is energized**

- When the signal current flows from the controller to solenoid (3), solenoid (3) is energized. For this reason, spool (5) is pushed to the right in the direction of the arrow. As a result, the pressurized oil from the control pump flows from port (P) through the inside of spool (5) to port (A), and then flows to the actuator. At the same time, port (T) is closed, and this stops the oil from flowing to the tank.



EPC valve

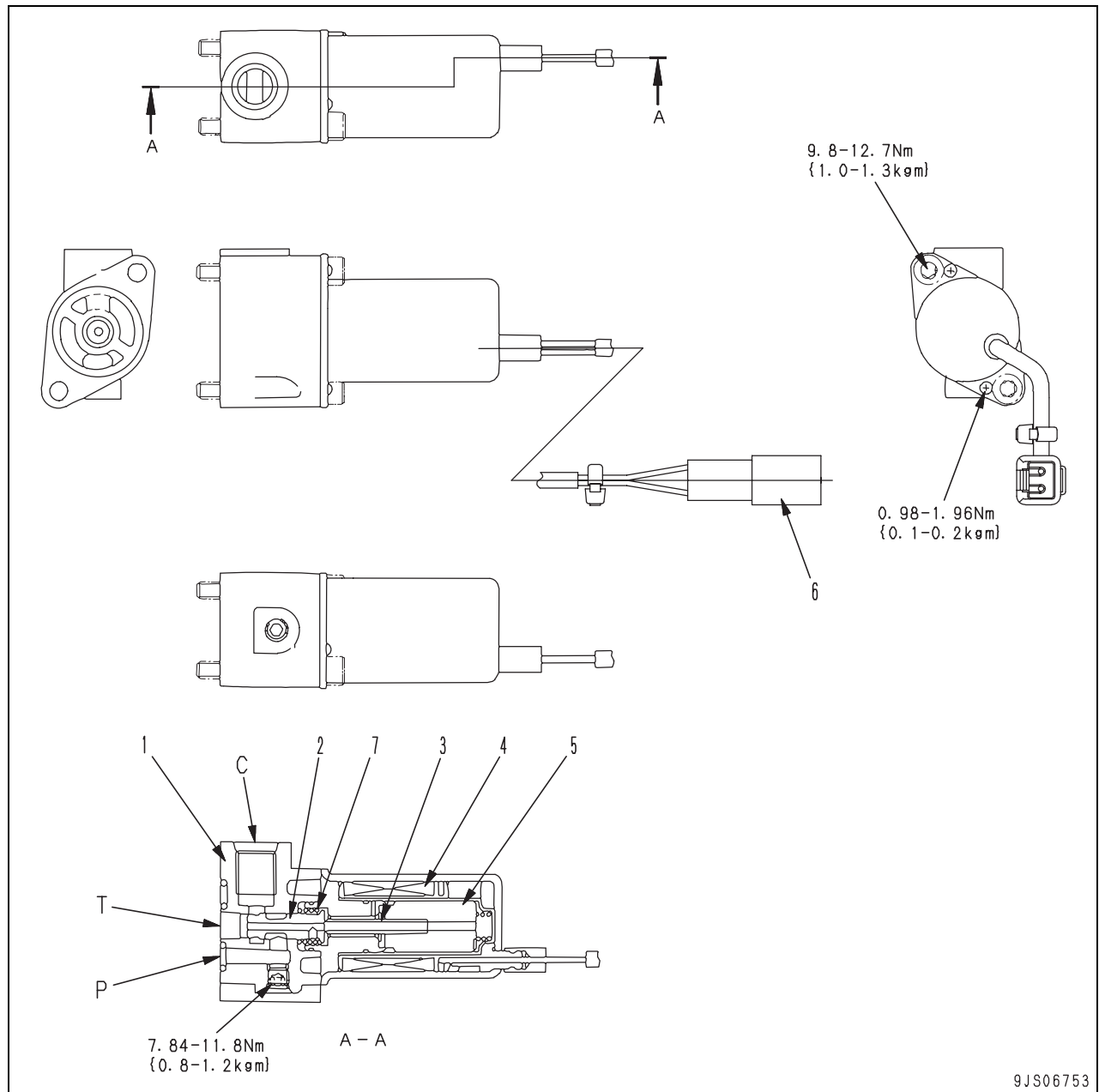


- 1. Accessory EPC valve
- 2. Feeder forward EPC valve
- 3. Crusher forward EPC valve
- 4. Crusher reverse EPC valve
- 5. Block
- 6. Body

- 7. Spool
- 8. Spring
- 9. Rod
- 10. Coil
- 11. Plunger
- 12. Connector

- T. To hydraulic tank
- C1. To control valve (Port P1)
- C2. To control valve (Port P5)
- C3. To control valve (Port P7)
- C4. To control valve (Port P8)
- P. From 5-spool ON/OFF valve

● Travel lock EPC valve



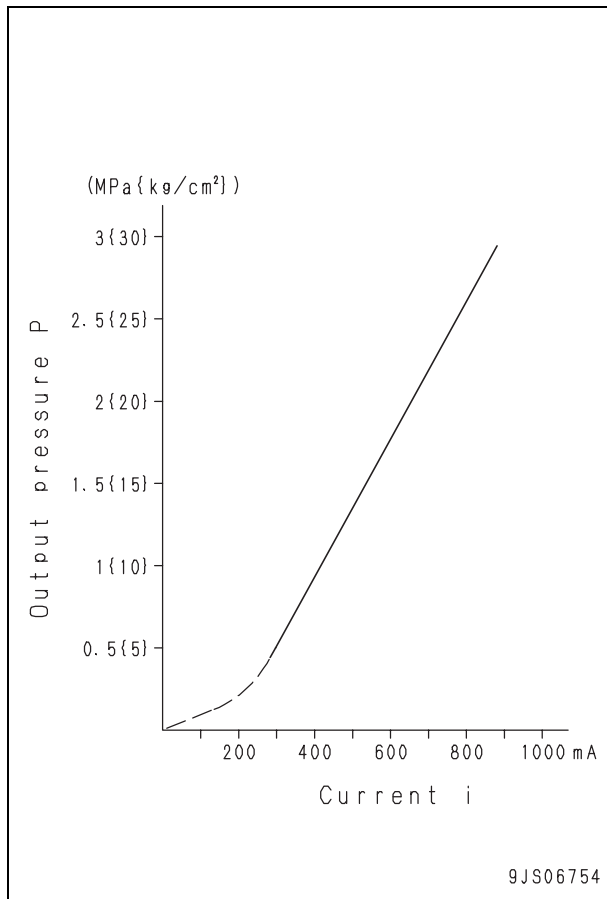
- 1. Body
- 2. Spool
- 3. Rod
- 4. Coil
- 5. Plunger
- 6. Connector
- C. To control valve
- P. From 5-spool ON/OFF valve
- T. To hydraulic tank

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
7	Return spring	Free length x	Installed length	Installed load	Free length	Installed load	Replace EPC valve assembly if there is damage or deformation
		Outside diameter			—		
		9.0	8.4	3.14 N {0.32 kg}	—	—	

**Function**

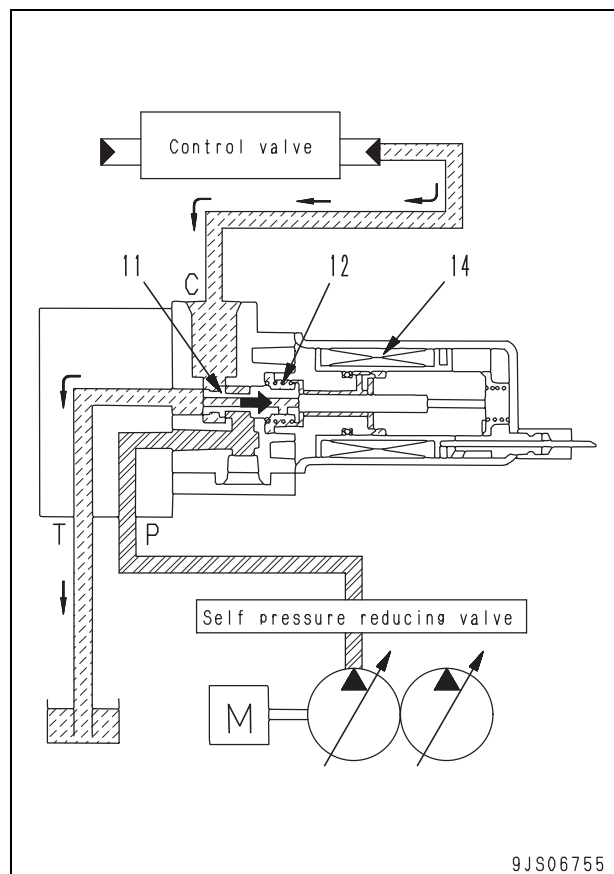
- The EPC valve consists of the proportional solenoid portion and the hydraulic valve portion.
- When it receives signal current (i) from the pump controller, it generates the EPC output pressure in proportion to the size of the signal, and outputs it to the control valve.



**Operation**

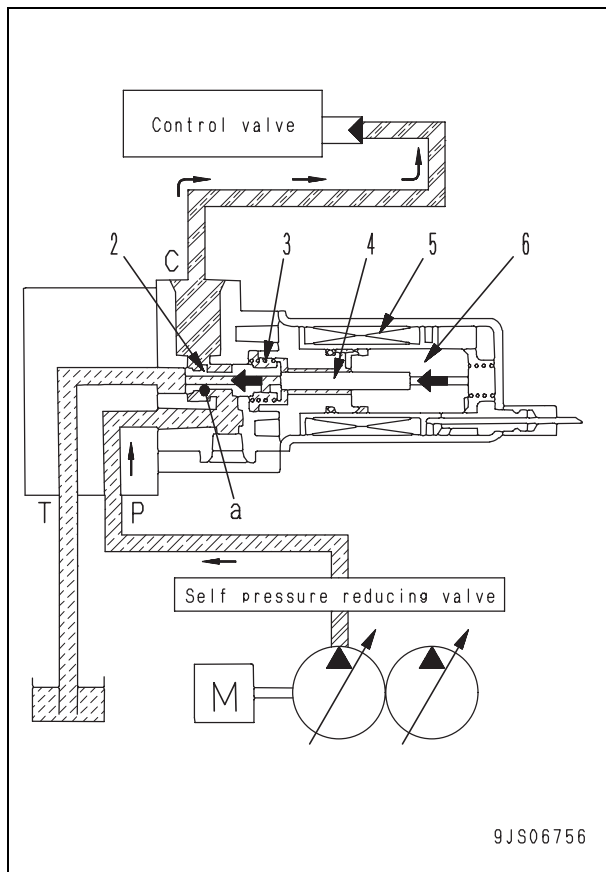
**1) When signal current is 0 (coil is de-energized)**

- When there is no signal current flowing from the controller to coil (14), coil (14) is de-energized.
- Spool (11) is pushed to the right by spring (12).
- Port (P) closes and the pressurized oil from the self pressure reducing valve does not flow to the control valve.
- The pressurized oil from the control valve is drained to the tank through port (C) and port (T).



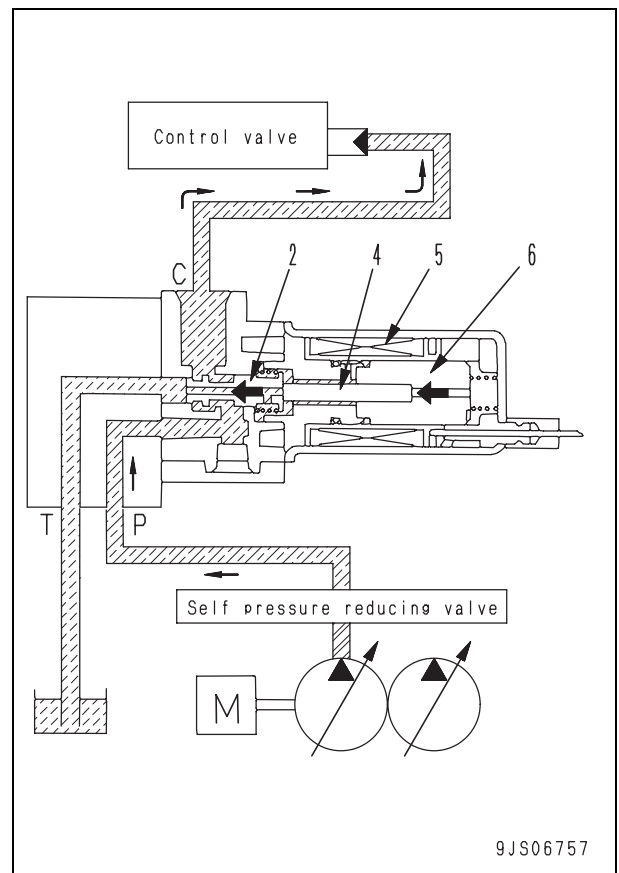
**2) When signal current is very small (coil is energized)**

- When a very small signal current flows to coil (5), coil (5) is energized, and a propulsion force is generated on the left side of plunger (6).
- Rod (4) pushes spool (2) to the left, and pressurized oil flows from port (P) to port (C).
- Pressures on port (C) increases and the force to act on surface (a) of spool (2) and the spring load on spring (3) become larger than the propulsion force of plunger (6).
- Spool (2) is pushed to the right, port (P) is shut off from port (C). Ports (C) and (T) are connected.
- Spool (2) moves up and down so that the propulsion force of plunger (6) may be balance with pressure of port (C) + spring load of spring (3).
- The circuit pressure between the EPC valve and the control valve is controlled in proportion to the size of the signal current.



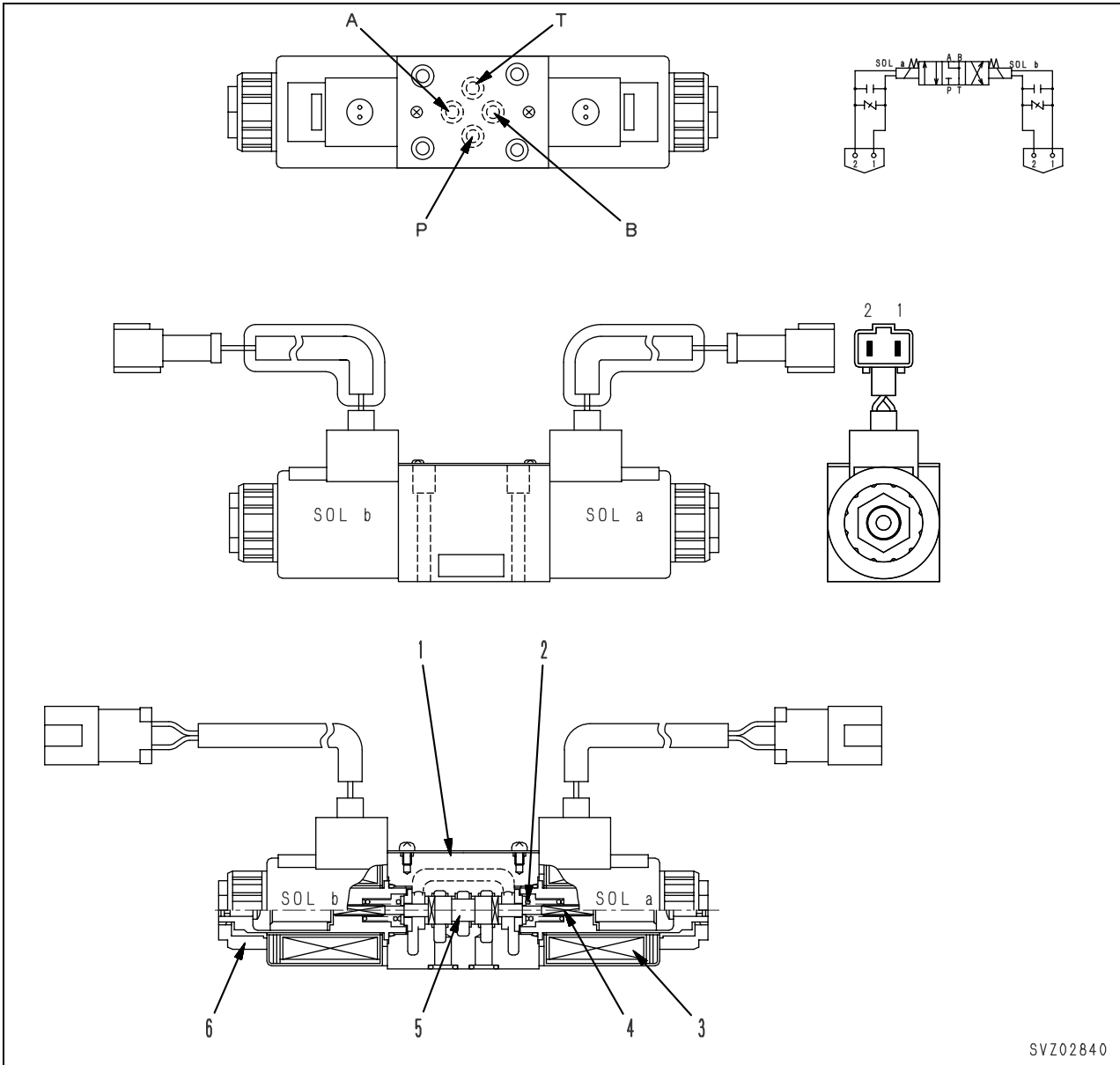
**3) When signal current is maximum (coil is energized)**

- As the signal current flows to coil (5), coil (5) is energized.
- When this happens, the signal current is at its maximum, so the propulsion force of plunger (6) is also at its maximum.
- Spool (2) is pushed to the left by rod (4).
- The maximum volume of pressurized oil is conducted from port (P) to port (C), increasing the circuit pressure across EPC valve and the control valve to the maximum level.
- Since port (T) is closed, pressurized oil does not flow to the hydraulic tank.



# Electromagnetic selector valve

For lock cylinder



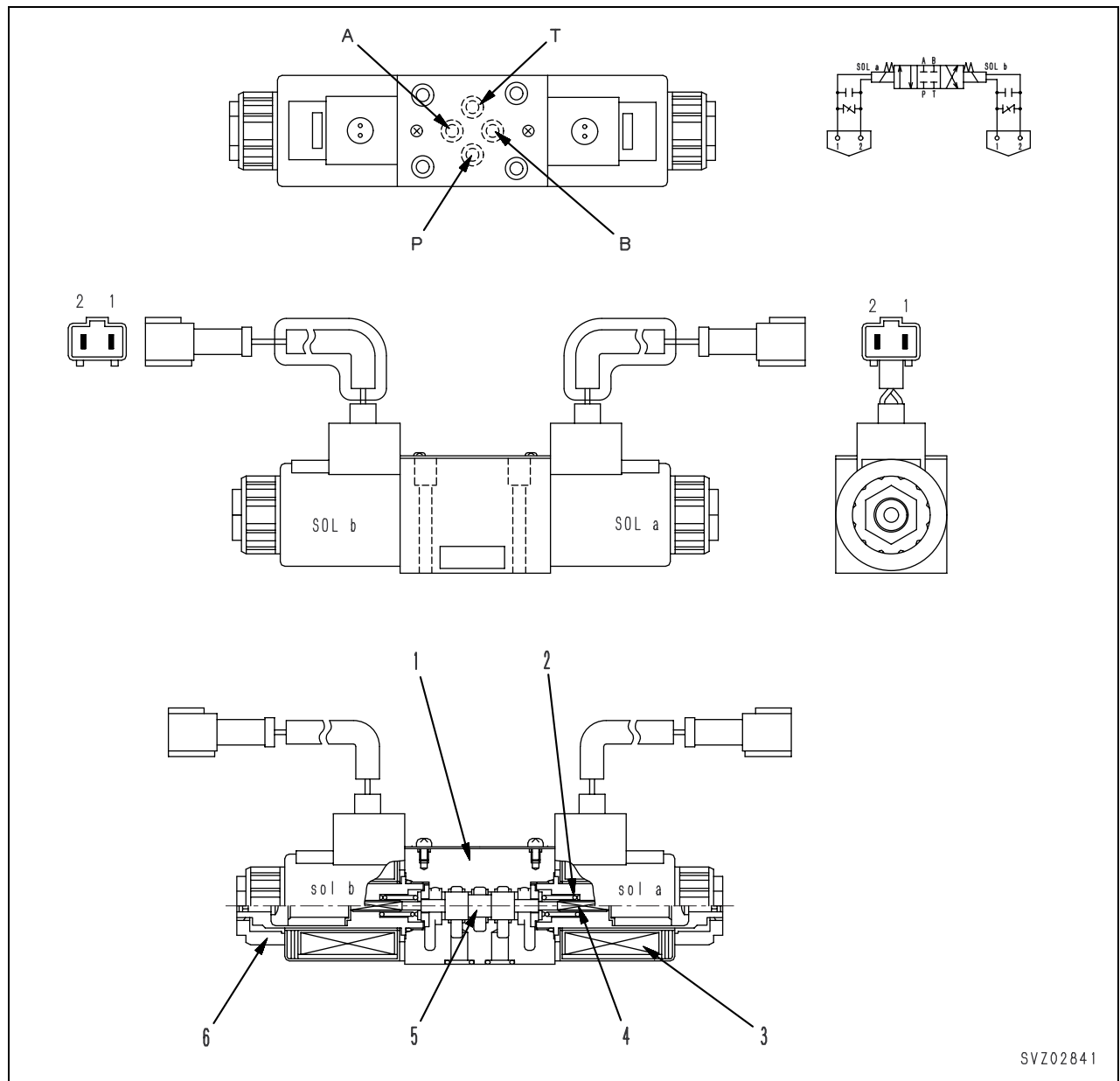
SVZ02840

- 1. Body
- 2. Spring
- 3. Coil assembly
- 4. Push pin
- 5. Spool
- 6. Cap nut
- 7.
- A. To lock cylinder head  
To conveyor RAISE/LOWER  
cylinder bottom
- B. To lock cylinder bottom  
To conveyor RAISE/LOWER  
cylinder head
- P. Control valve (from accessory port A1)
- T. To hydraulic tank

### Specifications

Model: DSG-01-3C4-D24  
 Rated pressure: 30.9 MPa {315 kg/cm<sup>2</sup>}  
 Rated oil flow: 40 l/min.  
 Voltage: DC 24 V

For Conveyor motor cylinder



SVZ02841

- 1. Body
- 2. Spring
- 3. Coil assembly
- 4. Push pin
- 5. Spool
- 6. Cap nut

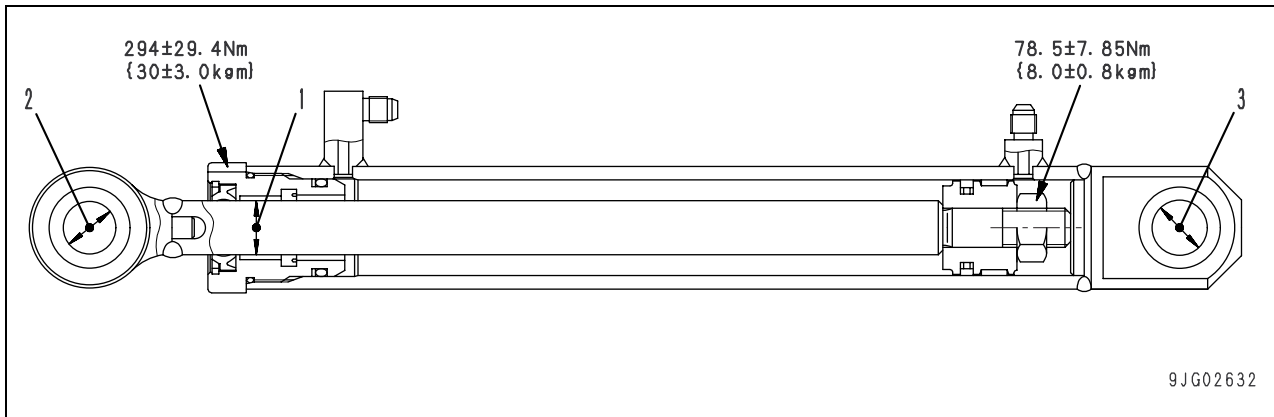
**Specifications**

Model: DSG-01-3C2-D24  
 Rated pressure: 30.9 MPa {315 kg/cm<sup>2</sup>}  
 Rated oil flow: 20 l/min.  
 Voltage: DC 24 V

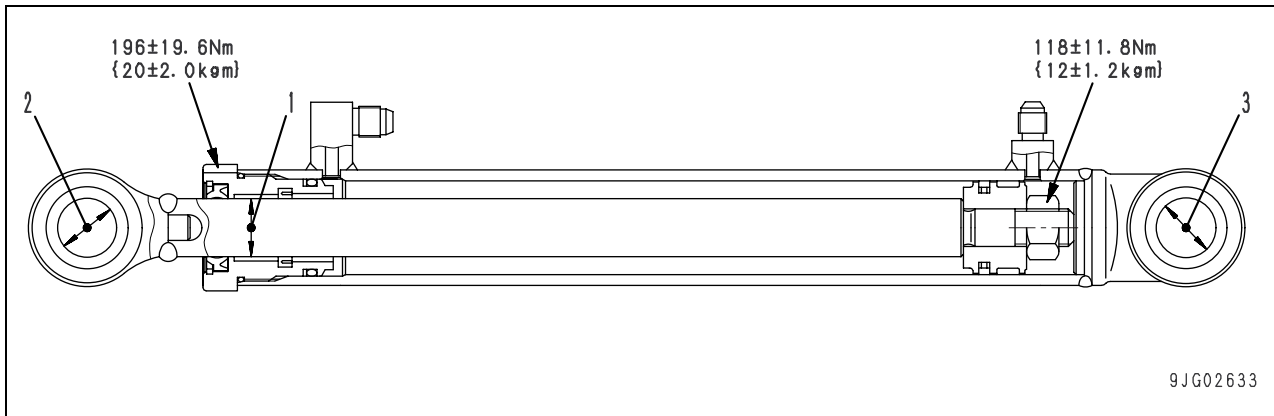
- A. To conveyor motor R
- B. To conveyor motor L
- P. Control valve  
(from accessory port B6)
- T. To hydraulic tank

### Hydraulic cylinder

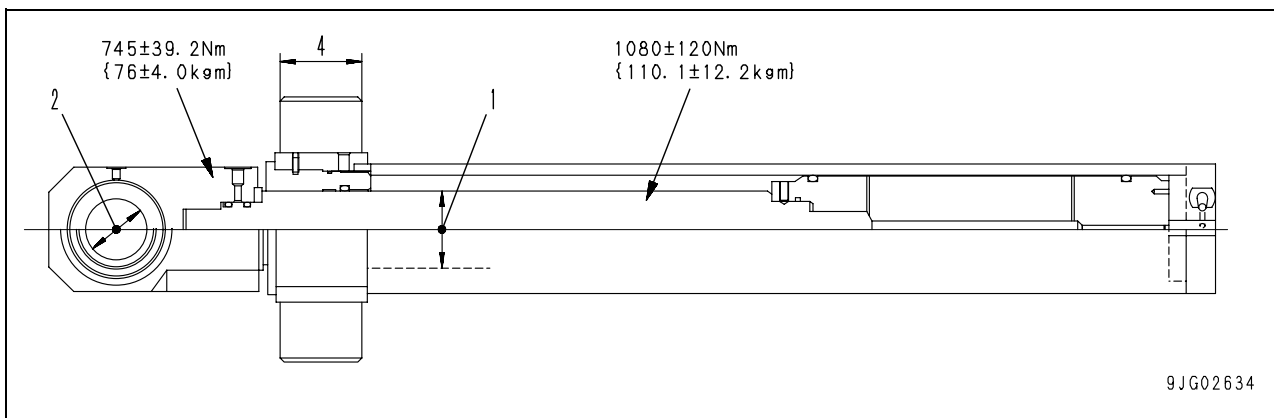
#### Conveyor elevation cylinder



#### Side conveyor cylinder



#### Lock cylinder





Unit: mm

No.	Check item	Name of cylinder	Standard size	Tolerance		Standard Clearance	Clearance limit	Remedy
				Shaft	Hole			
1	Clearance between piston rod and bushing	Conveyor elevation	20	-0.020 -0.072	+0.081 -0.009	0.011 – 0.153	0.487	Replace
		Side conveyor	25	-0.020 -0.072	+0.115 -0.003	0.017 – 0.187	0.487	
		Lock	90	—	—	—	—	
2	Clearance between piston rod support shaft and bushing	Conveyor elevation	20	-0.009 -0.013	+0.01 -0.02	0.07 – 0.14	1.0	
		Side conveyor	25	-0.009 -0.013	+0.122 +0.071	0.161 – 0.252	1.0	
		Lock	75	—	0 -0.015	—	1.0	
3	Clearance between cylinder bottom support shaft and bushing	Conveyor elevation	20	-0.009 -0.013	+0.01 -0.02	0.11 – 0.14	1.0	
		Side conveyor	25	-0.009 -0.013	+0.122 +0.071	0.161 – 0.252	1.0	
4	Clearance between cylinder support shaft and bushing	Lock	95	-0.036 -0.071	+0.122 0	0.036 – 0.106	1.0	

BR380JG-1E0 Mobile crusher

---

Form No. SEN01353-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

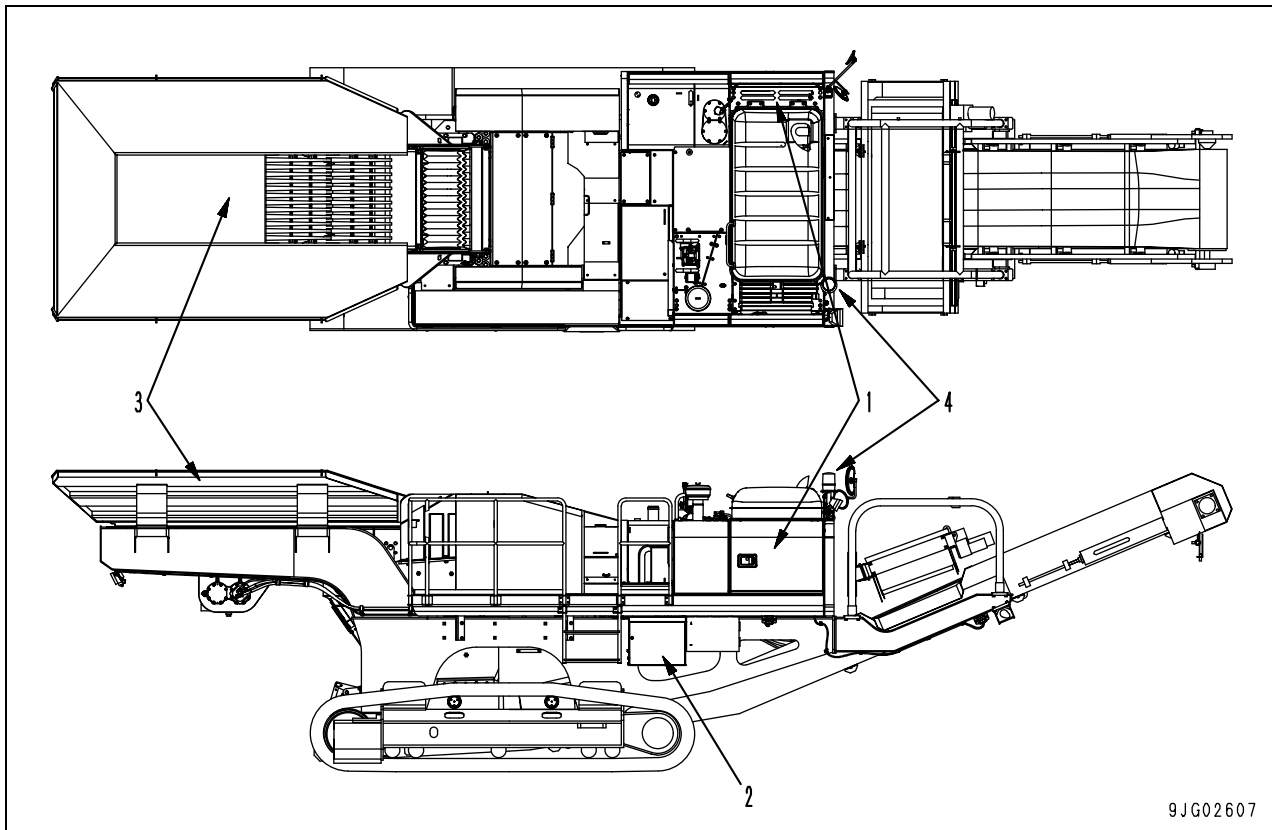
## 10 Structure, function and maintenance standard

### Work equipment

---

Grizzly feeder semiautomatic system .....	2
Abnormal load stop system.....	3
Primary belt conveyor .....	4
Grizzly feeder.....	8
Crusher .....	9
Crusher tooth tip adjustment system .....	14
Vibrator .....	17

## Grizzly feeder semiautomatic system



9JG02607

### Function

- This system receives the signal from the front pump pressure sensor installed to main pump outlet circuit (1) and inputs it to the CR710 controller in control box (2). If this system detects an overload on the crusher, it stops supplying material from grizzly feeder (3) to the crusher. If the front pump outlet pressure is kept above the set crusher load for 0.5 seconds, this system decreases the EPC current through the CR710 controller in control box (2) to reduce the speed of grizzly feeder (3) to the minimum.
- While this function is operating, the rotary lamp (red) (4) installed to the machine keeps lighting up. If the front pump outlet pressure is kept below the set crusher load for 0.3 seconds, the grizzly feeder is automatically reset to the speed in accordance with the feeder speed level of the machine monitor in control box (2).

Set pressure of pressure switch	Set crusher load
Crusher load	10.8 – 19.1 MPa {110 – 195 kg/cm <sup>2</sup> }

★ See “Function of setting crusher load.”

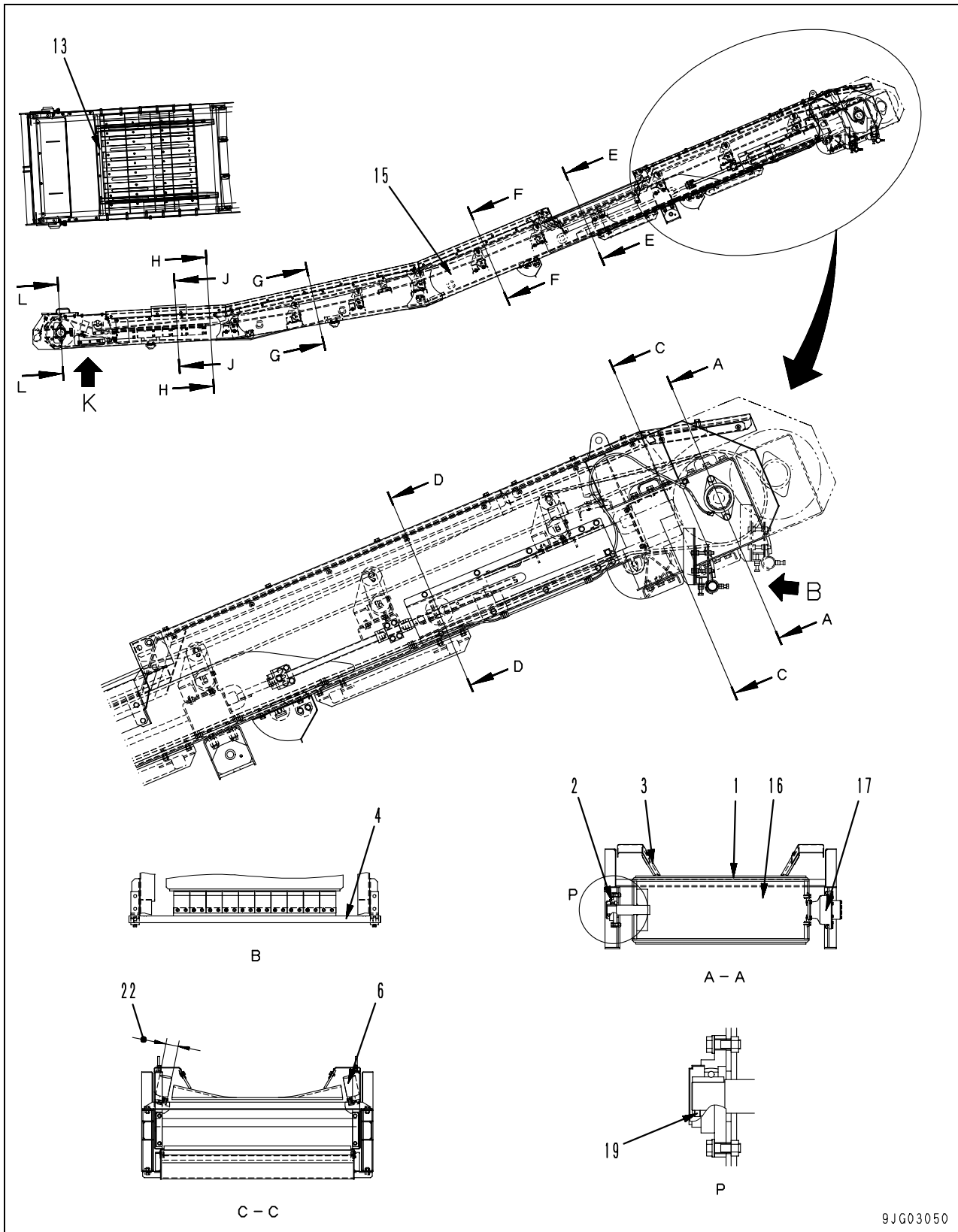
## Abnormal load stop system

### Function

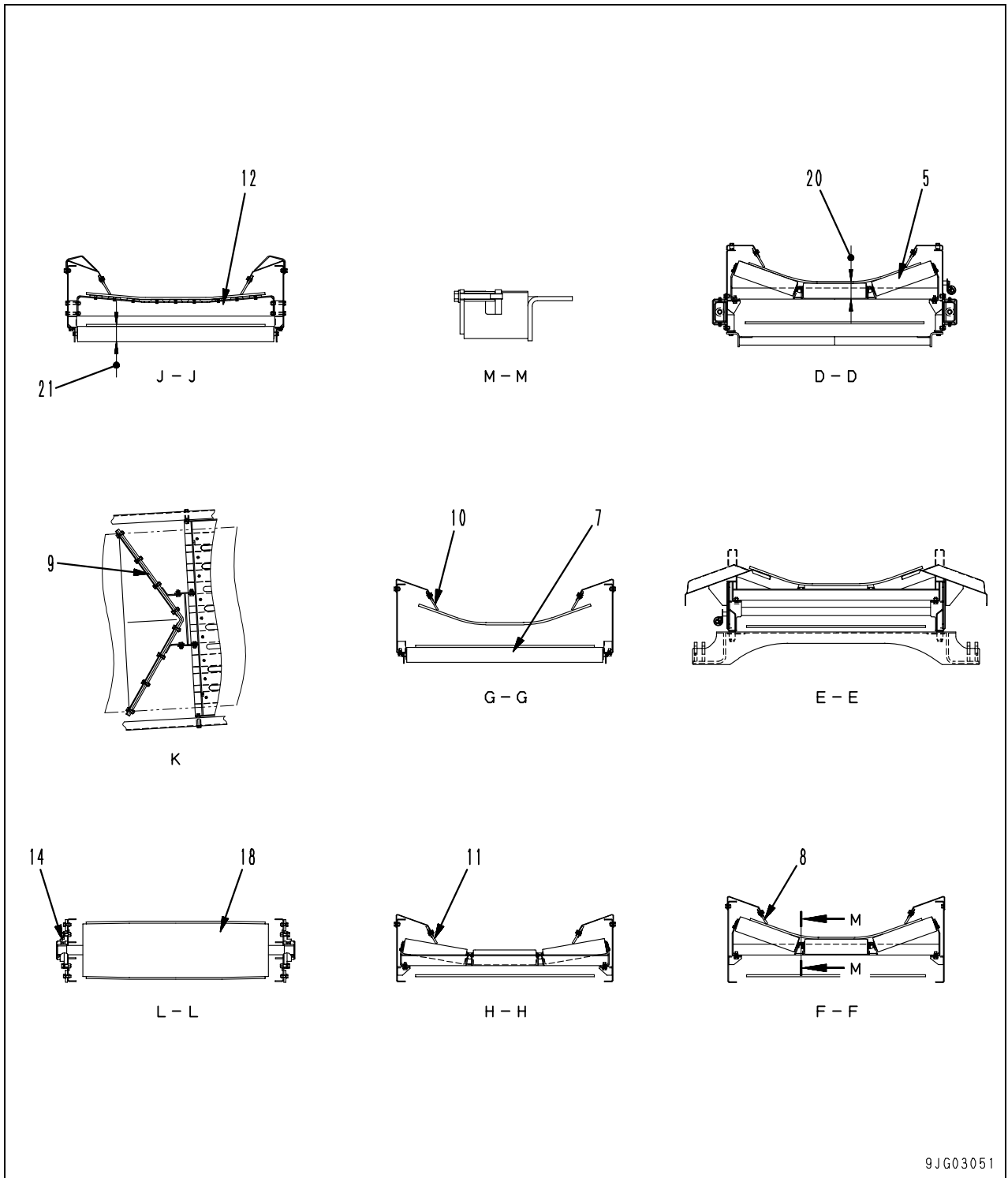
- This system receives the signal from the pressure sensor installed to the inlet circuit of each actuator and inputs it to the CR710 controller for control. If the inlet pressure of each actuator increases above the set pressure, the whole work equipment, excluding the engine and travel unit, stops immediately.
- If a steel block etc. is put in the crusher and the lock cylinder slips in the crusher clearance opening direction, the crusher stops immediately.
- ★ For slip of the lock cylinder, see “Crusher tooth tip adjustment system”, Judgment of slip of lock cylinder.
- If this function operates, the horn sounds for 5 seconds.
- After the work equipment is stopped by this function, the lamp to show the abnormal section lights up on the machine monitor.
- ★ For the lamp, see “Display of working mode”, Condition for turning work equipment lamp ON.

Contents of error	Set abnormal load pressure MPa {kg/cm <sup>2</sup> }
Abnormal pressure on primary conveyor	19.6 {200}
Abnormal pressure on side conveyor	12.3 {125}
Abnormal pressure on magnetic separator	12.3 {125}
Abnormal pressure on secondary conveyor	12.3 {125}
Abnormal pressure on vibratory screen	19.6 {200}

### Primary belt conveyor



9JG03050



9JG03051

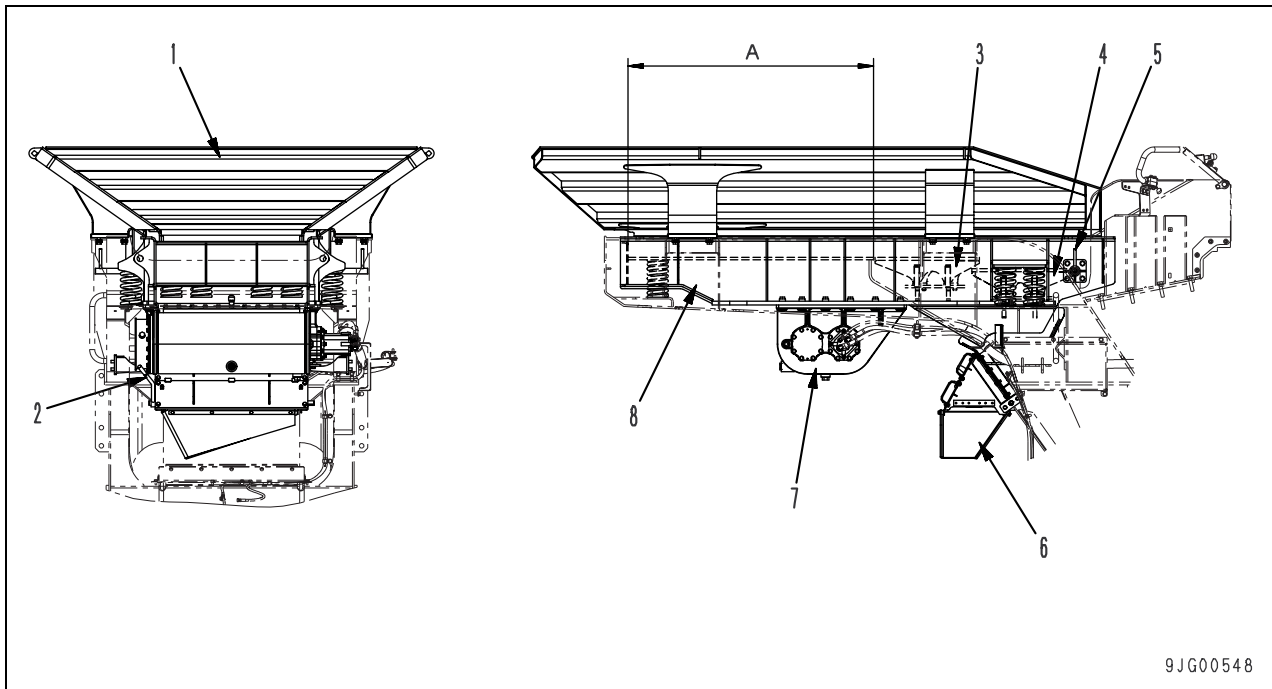
1. Conveyor belt
2. Bearing unit
3. Rubber
4. Belt cleaner
5. Carrier roller
6. Guide roller
7. Return roller (Outside)
8. Rubber
9. Scraper rubber
10. Rubber
11. Rubber
12. Slide plate
13. Rubber
14. Bearing
15. Frame
16. Head pulley
17. Primary conveyor motor
18. Tail pulley
19. Bearing stop screw

Unit: mm

No.	Check item	Criteria		Remedy
		Standard size	Repair limit	
20	Wear of carrier roller	89.1	84.5	Replace
			(Minimum diameter pat of roller)	
21	Wear of return roller	89.1	84.5 (Minimum diameter pat of roller)	
22	Wear of guide roller	76.3	71.7 (Minimum diameter pat of roller)	

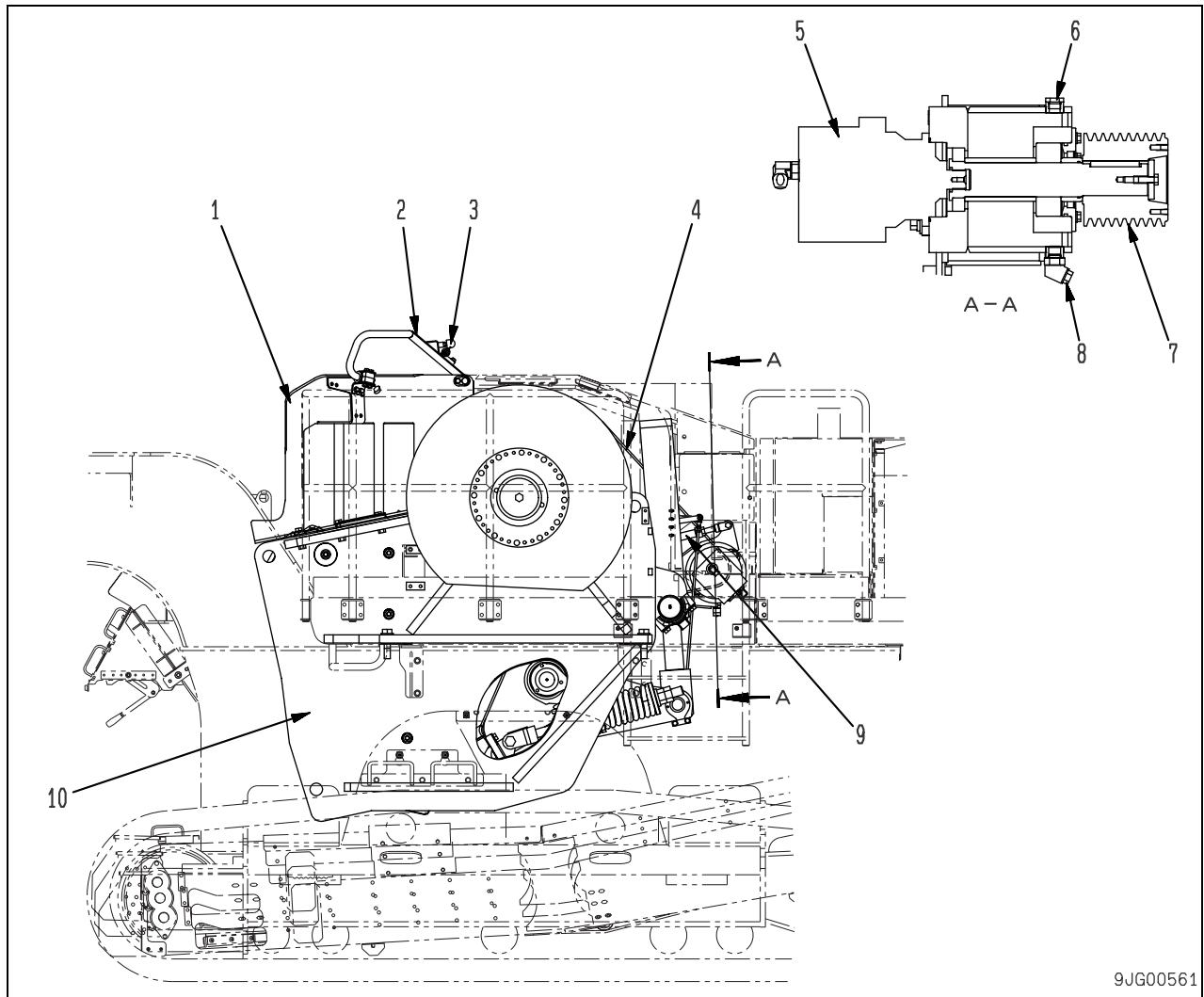


## Grizzly feeder



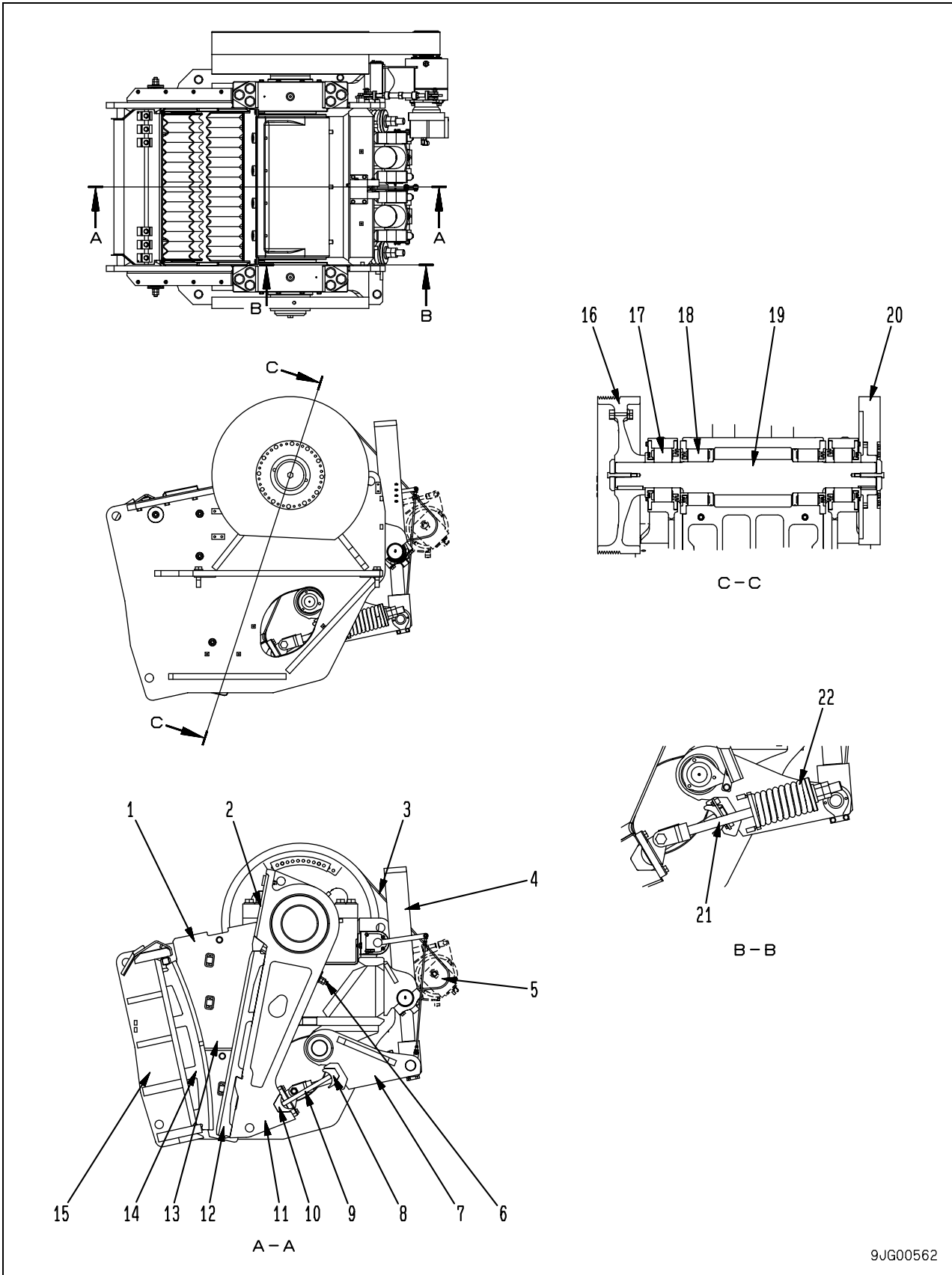
1. Hopper (Fixed type)
  2. M-type chute selector lever
  3. Upper grizzly bar
  4. Lower grizzly bar
  5. Feeder fixing pin (For transportation)
  6. M-type chute
  7. Vibrator
  8. Grizzly feeder
- A. Trough surface

# Crusher



9JG00561

- |                                |                      |
|--------------------------------|----------------------|
| 1. Supply opening guard        | 6. Oil filler plug   |
| 2. Scattering prevention guard | 7. V-sheave          |
| 3. Water sprinkler pipe        | 8. Drain plug        |
| 4. V-belt                      | 9. Turnbuckle        |
| 5. Crusher motor               | 10. Crusher assembly |

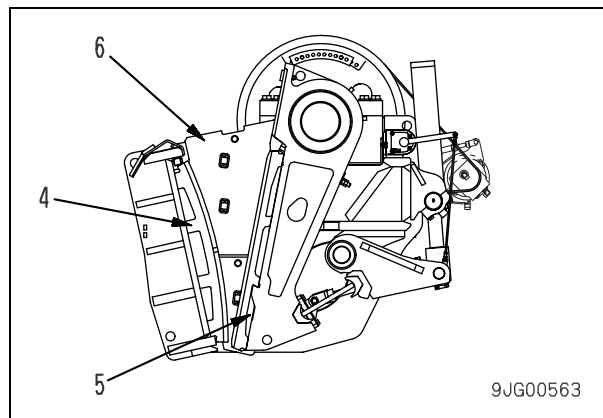
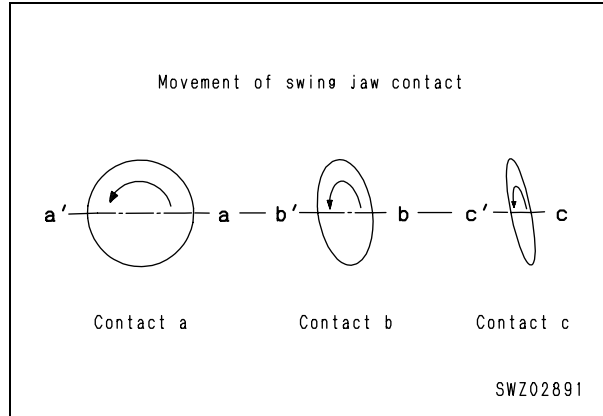
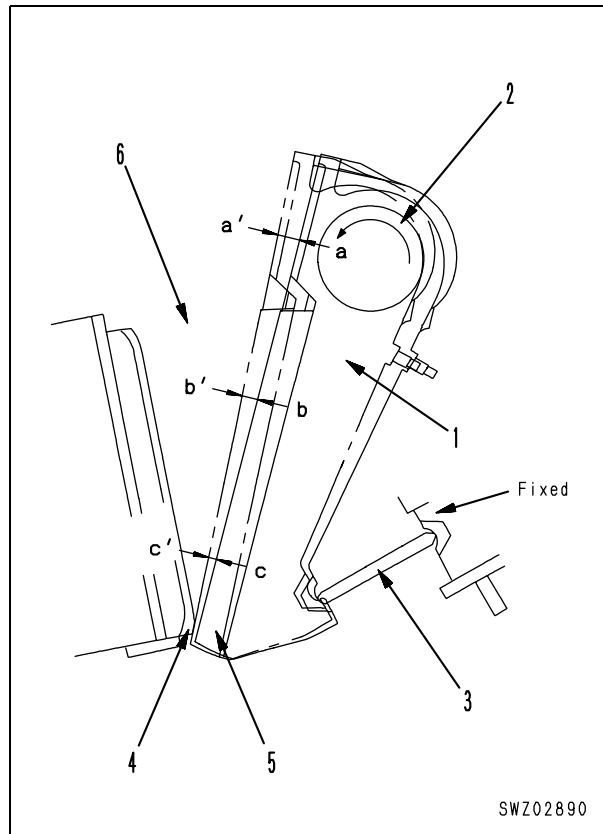


9JG00562

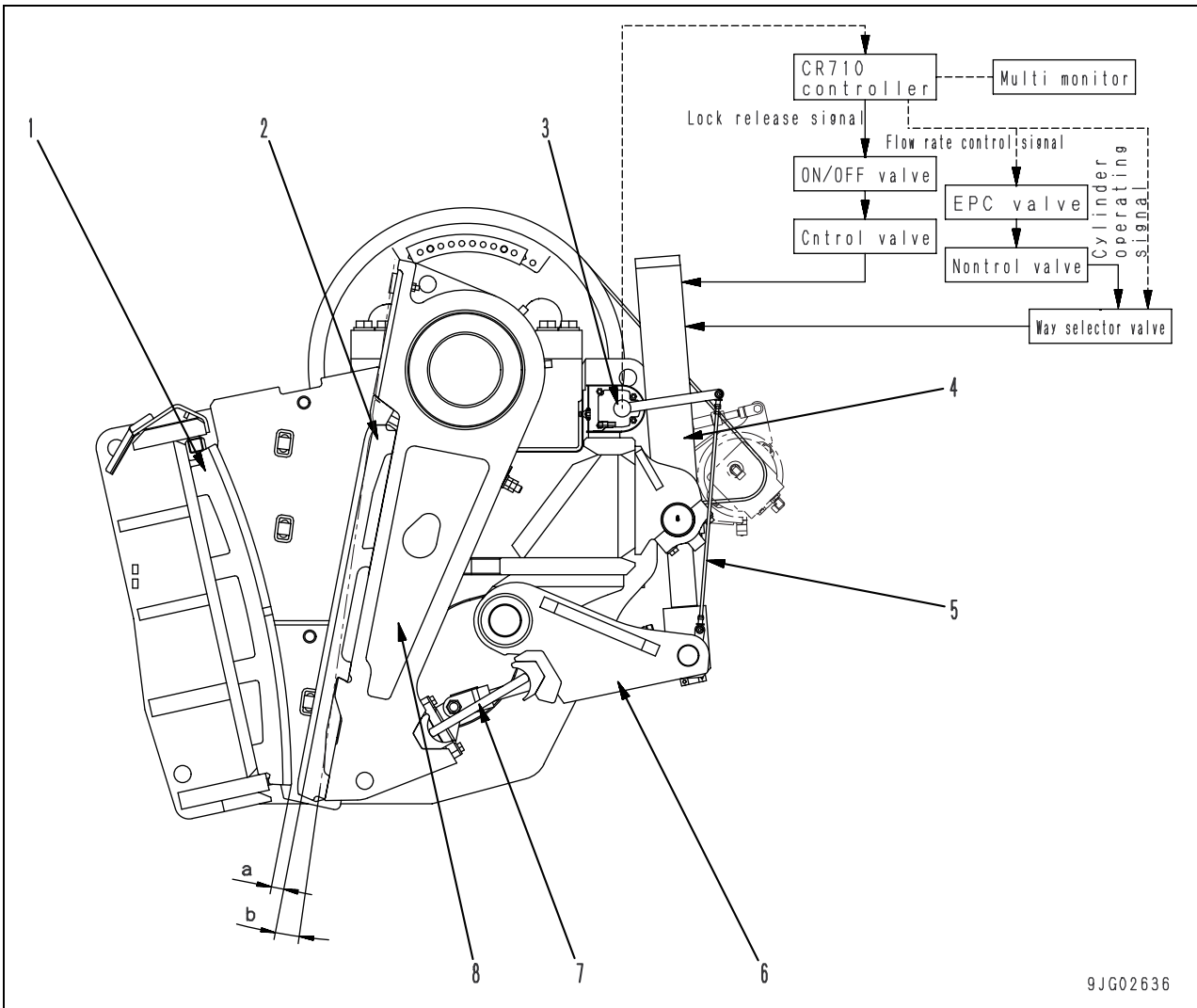
1. Cheek plate
2. Protector
3. V-belt
4. Lock cylinder
5. Crusher motor
6. Swing tooth wedge bolt
7. Fixing link
8. Toggle seat
9. Toggle plate
10. Toggle seat
11. Swing jaw
12. Swing tooth
13. Crusher chamber
14. Fixed tooth
15. Front frame
16. V-sheave
17. Bearing (Frame)
18. Bearing (Swing jaw)
19. Main shaft (Crankshaft)
20. Balance weight
21. Tension rod
22. Tension spring

**Principle of crushing**

- With the movement of swing jaw (1), contact (a) caused by the eccentricity of crankshaft (2) and the rocking motion of toggle plate (3) moves in a circle. The closer it comes to contact (c), the more it moves in a narrow oval movement.
- Movable jaw plate (5) installed to swing jaw (1) repeat the movement in Step 1 against fixed jaw plate (4). As a result, the rock or rubble loaded into crushing chamber (6) moves to the bottom of the crushing chamber, is subjected to a powerful compression force, and is crushed.
- If lumps of metal or other hard substances that cannot be crushed are loaded inside crushing chamber (6), toggle plate (3) functions to automatically change shape and protect the bearing of crankshaft (2) from any big impact load.
- The clearance of the discharged port of fixed jaw plate (4) and movable jaw plate (5) can be adjusted by changing the combination of shim plates, so it is possible to change the particle size of the crushed material.
- When fixed jaw plate (4) and movable jaw plate (5) become worn, it is possible to reverse the top and bottom. This operation can be carried out once only.
- The wear of fixed jaw plate (4) and movable jaw plate (5) differs according to the conditions and the material being crushed, but generally speaking, these parts wear more rapidly if the crushed material includes large amounts of sand or moisture. The speed of wear also increases if the clearance at the discharge port is made small.



### Crusher tooth tip adjustment system



9JG02636

- |                            |                 |
|----------------------------|-----------------|
| 1. Fixed tooth             | 5. Rod          |
| 2. Swing tooth             | 6. Fixing link  |
| 3. Revolution angle sensor | 7. Toggle plate |
| 4. Lock cylinder           | 8. Swing jaw    |

**Function**

Revolution angle sensor (3) senses tooth moving distance (b) through swing jaw (8), toggle plate (7), fixing link (6), and rod (5). The controller operate lock cylinder (4) so that tooth clearance (a) set by the machine monitor will be obtained.

**Crusher clearance adjustment mode****1. Manual adjustment**

When measuring and adjusting the tooth clearance simultaneously, adjust it in the "manual mode".

- ★ For the operation of the machine monitor, see "Machine monitor system", Inspection mode: Manual (M).

**2. Semiautomatic adjustment**

When adjusting the tooth clearance by setting a target moving distance, adjust it in the "semiautomatic mode".

- ★ For the operation of the machine monitor, see "Machine monitor system", Inspection mode: Semiautomatic (S).

**3. Automatic adjustment**

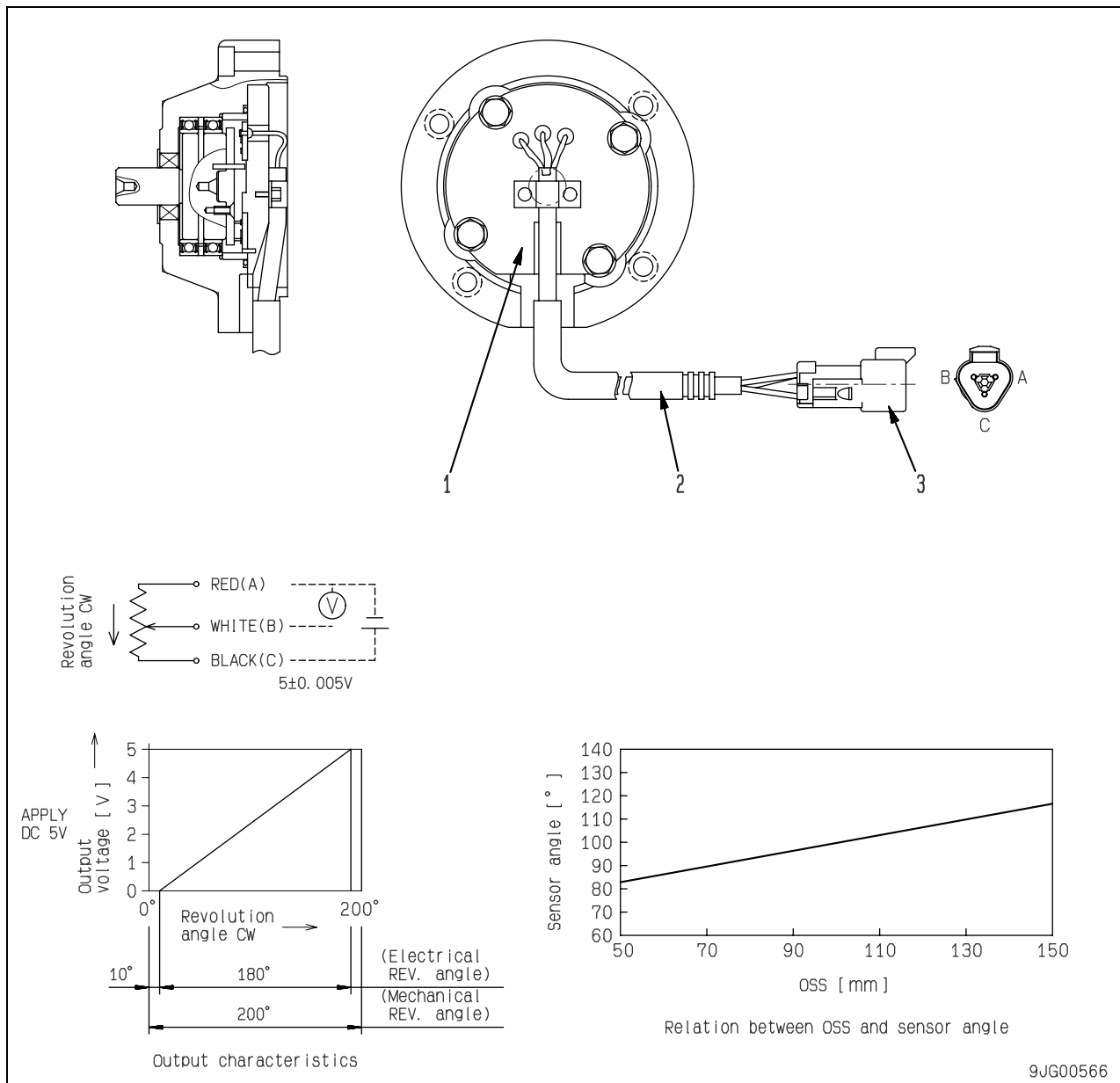
When adjusting the tooth clearance by setting a target tooth clearance, adjust it in the "automatic mode".

- ★ For the operation of the machine monitor, see "Machine monitor system", Inspection mode: Automatic (A).

**Judgment of slip of lock cylinder**

The crusher angle is measured at the moment when the inspection mode is changed last to another mode or when the starting switch is turned from the OFF position to the ON position. If the sensor angle increases more than 2° in the tooth clearance opening direction from this crusher angle, it is judged that the lock cylinder has slipped.

Revolution angle sensor



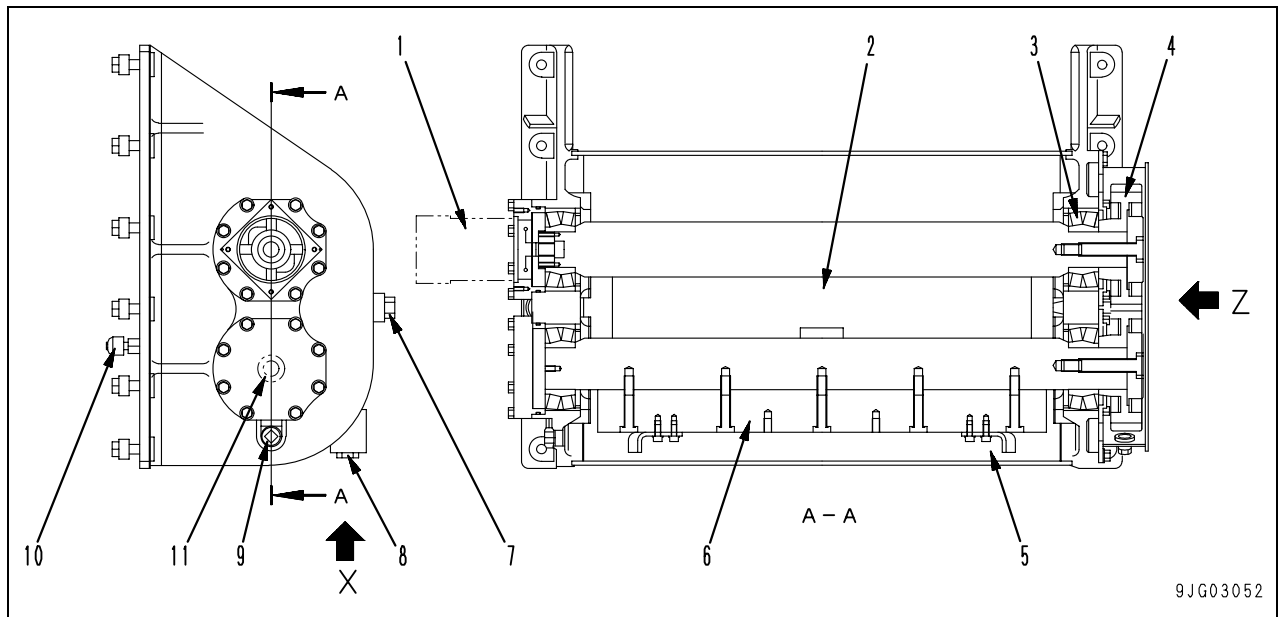
1. Revolution angle sensor
2. Wiring harness
3. Connector

Specifications

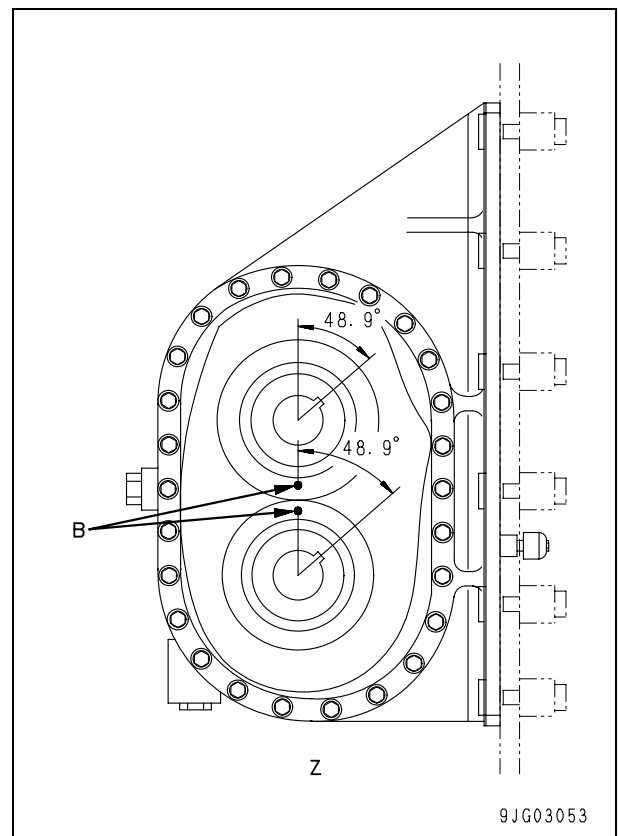
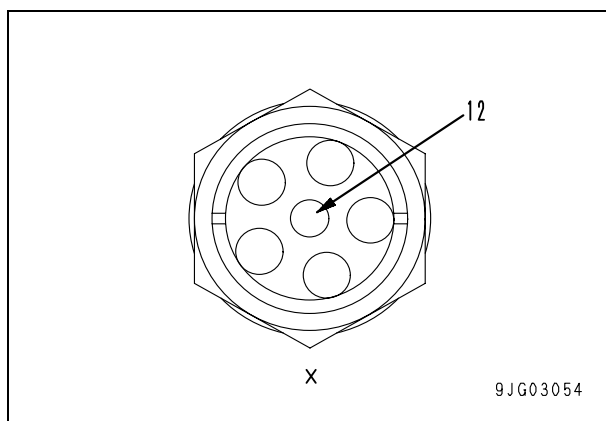
Type of sensor:	Resistance board type
Total resistance:	5 kΩ ± 20%
Mechanical revolution angle:	200° ± 4°
Electrical revolution angle:	180° ± 2°
Rated voltage:	0.5 W (25°C)



### Vibrator



- 1. Grizzly feeder motor
- 2. Shaft
- 3. Bearing
- 4. Gear
- 5. Housing
- 6. Unbalance weight
- 7. Drain plug
- 8. Oil level gauge
- 9. Filler plug
- 10. Breather
- 11. V-checker installation position (at maintenance)



Gear matches and unites two marks (B).

No.	Check item	Criteria		Remedy
11	Frequency (min.) confirmed by V checker	Standard value	Repair limit	Replace
		550 (cpm)	468 – 632	
	Frequency (max.) confirmed by V checker	1,050 (cpm)	1,000 – 1,100	
12	Vibrator case oil level	Center of level window	± 5 mm	Add oil

BR380JG-1E0 Mobile crusher

---

Form No. SEN01354-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# **MOBILE CRUSHER**

## **BR380JG-1E0**

<b>Machine model</b>	<b>Serial number</b>
<b>BR380JG-1E0</b>	<b>2001 and up</b>

---

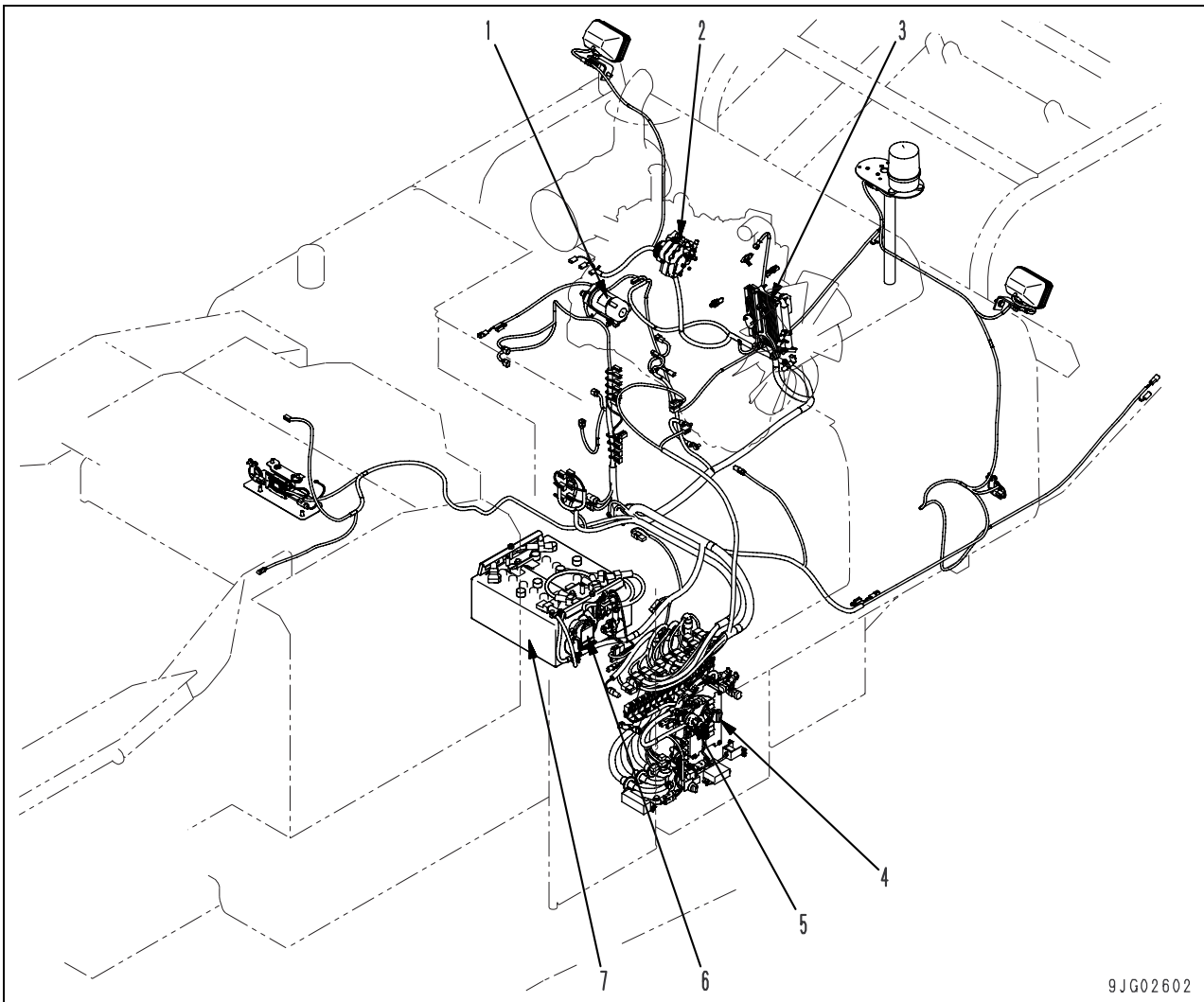
# **10 Structure, function and maintenance standard**

## **Electrical system**

---

Engine control .....	2
Work equipment and pump controller .....	12
Electronic control system .....	15
Machine monitor system .....	28
Sensor .....	54

## Engine control



1. Starting motor
2. Supply pump
3. Engine controller
4. Fuel control dial
5. Starting switch
6. Battery relay
7. Battery

### Outline

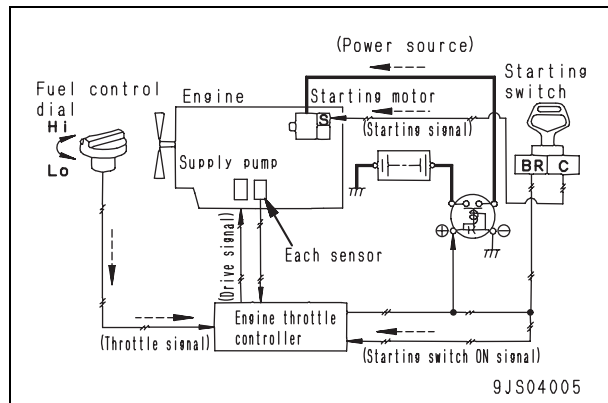
- The engine can be started and stopped with starting switch (5) only.
- The control signal of fuel control dial (4) is input to engine controller (3), which controls the output to the injector to control the engine speed.

### Operation of system

#### Starting engine

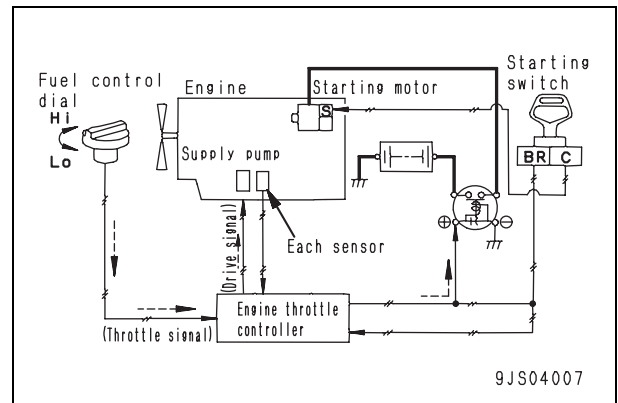
- When the starting switch is turned to the START position, the starting signal flows to the starting motor. Then, the starting motor turns to start the engine.

When it happens, the engine controller checks the signal voltage from the fuel control dial and sets the engine speed to the speed set by the fuel control dial.



#### Stopping engine

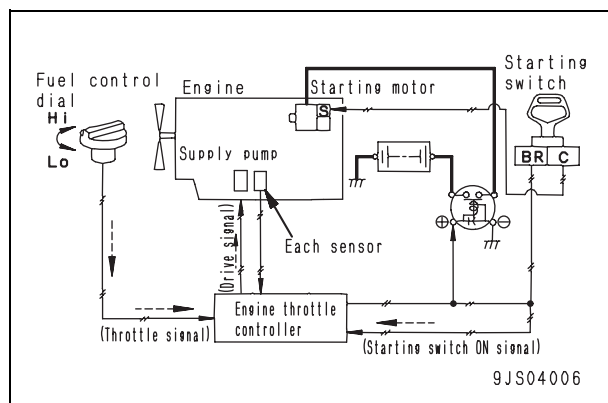
- When detecting that the starting switch is set to the "STOP" position, the engine controller cuts the signal of the supply pump drive solenoid to stop the engine.



#### Engine speed control

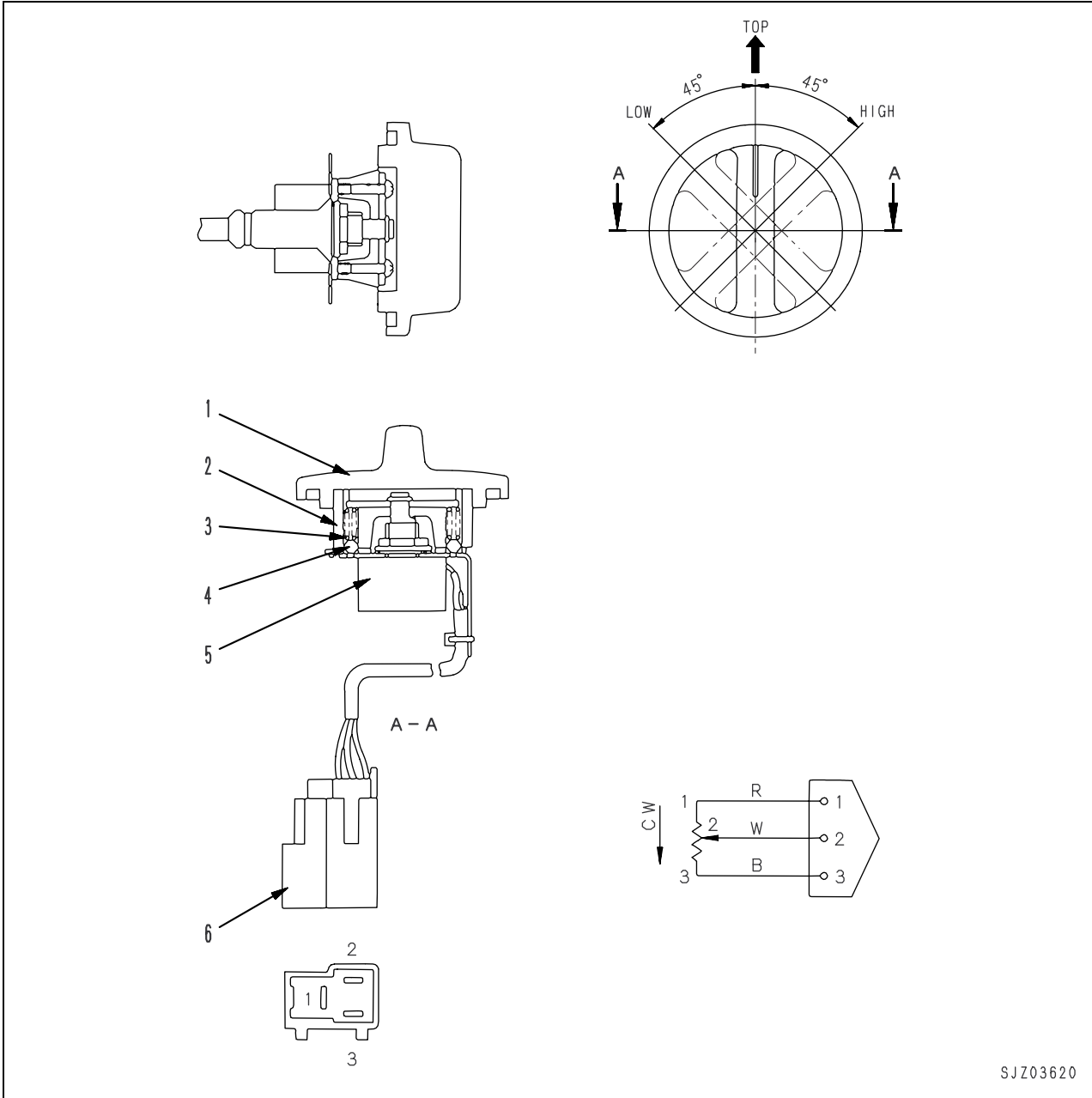
- The fuel control dial sends a signal voltage corresponding to the rotation angle to the engine controller.

The engine controller sends a driving signal to the supply pump depending on the signal voltage to control the fuel injection pump, and eventually controls the engine speed.



Component

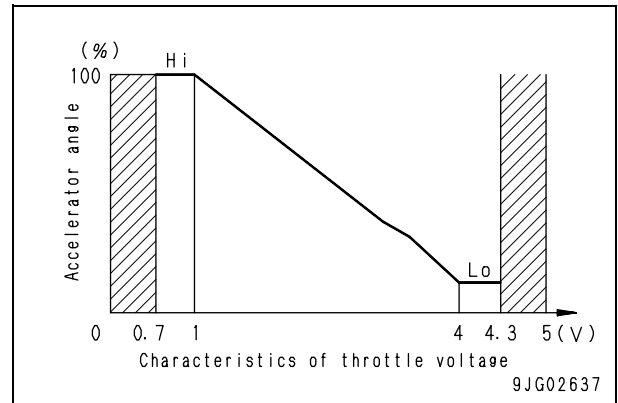
Fuel control dial



- 1. Knob
- 2. Dial
- 3. Spring
- 4. Ball
- 5. Potentiometer
- 6. Connector

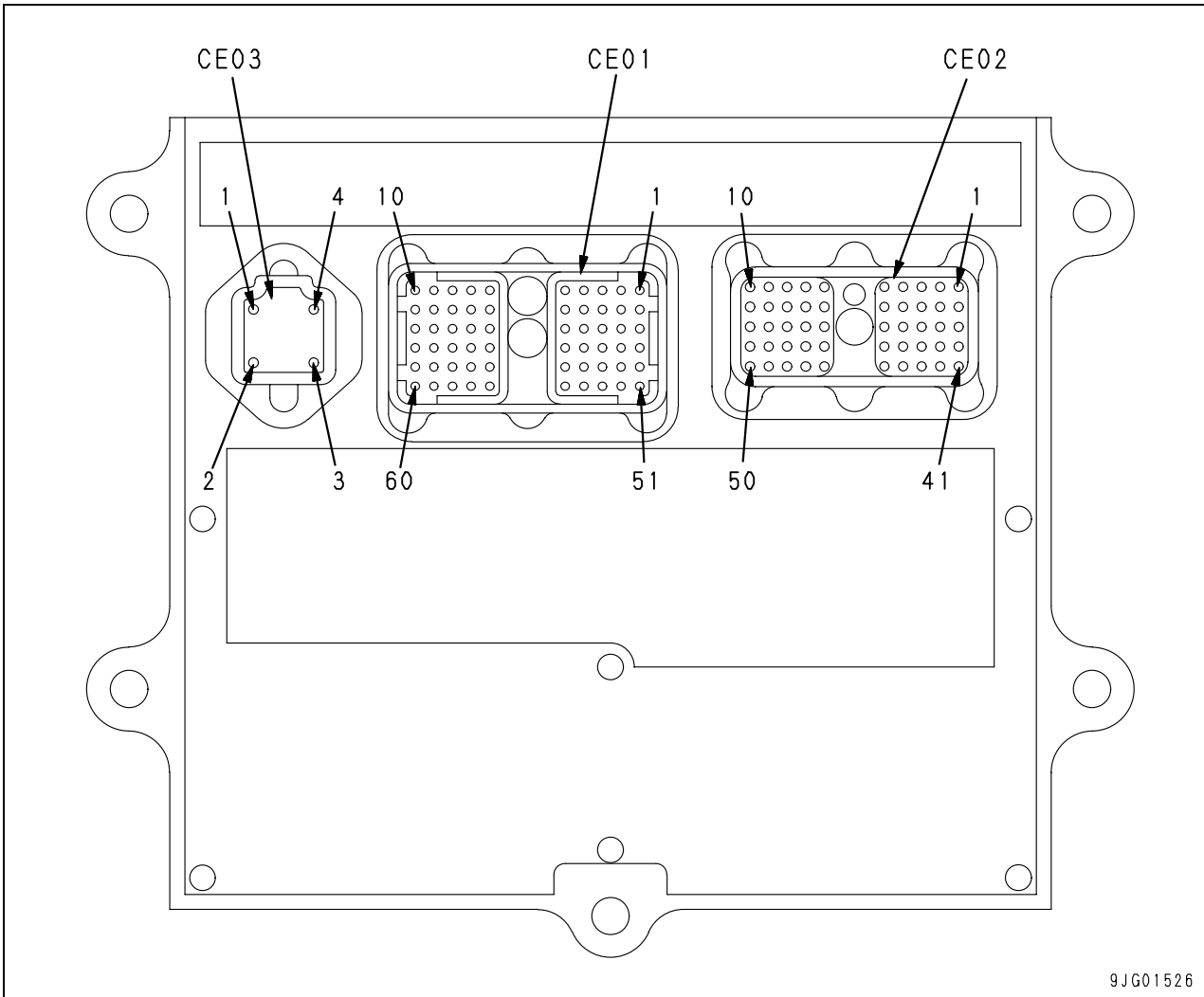
**Function**

- Turning knob (1) rotates the shaft of potentiometer (5).
- The rotation of the shaft changes the resistance of the variable resistor in potentiometer (5), sending any throttle signal to the engine controller.
- The hatched area in the right graph is the abnormality detection area. When the throttle voltage is within this area, the engine is running at low idle.





Engine controller



9JG01526

Input and output signals

- Meanings of signal classes in the terminal table shown below are as follows.

- A: Power
- B: Input
- C: Ground, shield, return
- D: Output
- E: Communication

CN-CE01

Pin No.	Signal name	Input/output
1	NC(*)	—
2	IMA PWM Output	D
3	Air pressure sensor	B
4	NC(*)	—
5	NC(*)	—
6	CAN(-)	E
7	NC(*)	—
8	CAN(+)	E
9	NC(*)	—
10	NC(*)	—

\*: Never connect to NC or malfunctions or failures will occur.

CN-CE01

Pin No.	Signal name	Input/output
11	NC(*)	—
12	NC(*)	—
13	NC(*)	B
14	WATER-IN-FUEL Input	B
15	Coolant temperature input	B
16	Sensor power (+5 V)	A
17	Oil pressure switch	B
18	NC(*)	—
19	NC(*)	—
20	NC(*)	—
21	NC(*)	—
22	NC(*)	D
23	Intake manifold temperature	B
24	NC(*)	—
25	Accumulator pressure signal	B
26	Engine position sensor signal	B
27	Engine speed sensor signal	B
28	NC(*)	—

\*: Never connect to NC or malfunctions or failures will occur.

**CN-CE01**

Pin No.	Signal name	Input/output
29	NC(*)	—
30	NC(*)	—
31	NC(*)	D
32	IMA PWM RETURN	C
33	Air pressure sensor supply	A
34	NC(*)	—
35	NC(*)	A
36	NC(*)	—
37	Engine position sensor supply	A
38	Air pressure sensor return	C
39	NC(*)	—
40	NC(*)	—
41	NC(*)	—
42	NC(*)	C
43	NC(*)	—
44	Boost pressure sensor	B
45	Injector #1 (+)	D
46	Injector #5 (+)	D
47	Engine position sensor return	C
48	Engine speed sensor return	C
49	NC(*)	—
50	NC(*)	—
51	Injector #2 (-)	C
52	Injector #3 (-)	C
53	Injector #1 (-)	C
54	Injector #2 (+)	D
55	Injector #3 (+)	D
56	Injector #4 (+)	D
57	Injector #6 (+)	D
58	Injector #4 (-)	C
59	Injector #6 (-)	C
60	Injector #5 (-)	C

\*: Never connect to NC or malfunctions or failures will occur.

**CN-CE02**

Pin No.	Signal name	Input/output
1	NC(*)	B
2	NC(*)	B
3	NC(*)	B
4	NC(*)	B
5	NC(*)	B
6	NC(*)	B
7	NC(*)	B
8	NC(*)	B
9	Fuel dial (+)	B
10	NC(*)	E
11	NC(*)	B
12	NC(*)	B
13	NC(*)	B

\*: Never connect to NC or malfunctions or failures will occur.

**CN-CE02**

Pin No.	Signal name	Input/output
14	NC(*)	B
15	NC(*)	B
16	NC(*)	B
17	NC(*)	B
18	NC(*)	B
19	NC(*)	B
20	NC(*)	E
21	NC(*)	A
22	Fuel dial (+5 V)	A
23	Fuel dial (-)	C
24	NC(*)	B
25	NC(*)	B
26	NC(*)	B
27	NC(*)	B
28	NC(*)	B
29	NC(*)	C
30	NC(*)	B
31	NC(*)	B
32	NC(*)	C
33	GND	C
34	NC(*)	C
35	NC(*)	B
36	NC(*)	B
37	NC(*)	C
38	NC(*)	D
39	Key switch (ACC)	B
40	Heater relay drive	D
41	NC(*)	D
42	Heater relay return	C
43	NC(*)	D
44	NC(*)	D
45	NC(*)	—
46	CAN (+)	E
47	CAN (-)	E
48	NC(*)	D
49	PWM OUTPUT	D
50	NC(*)	D

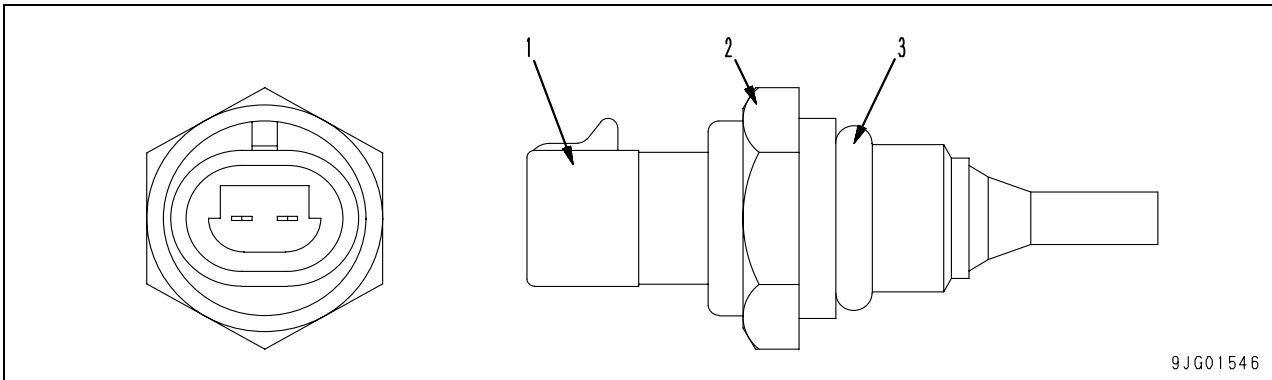
\*: Never connect to NC or malfunctions or failures will occur.

**CN-CE03**

Pin No.	Signal name	Input/output
1	GND	C
2	NC(*)	C
3	Power (+24 V)	A
4	NC(*)	A

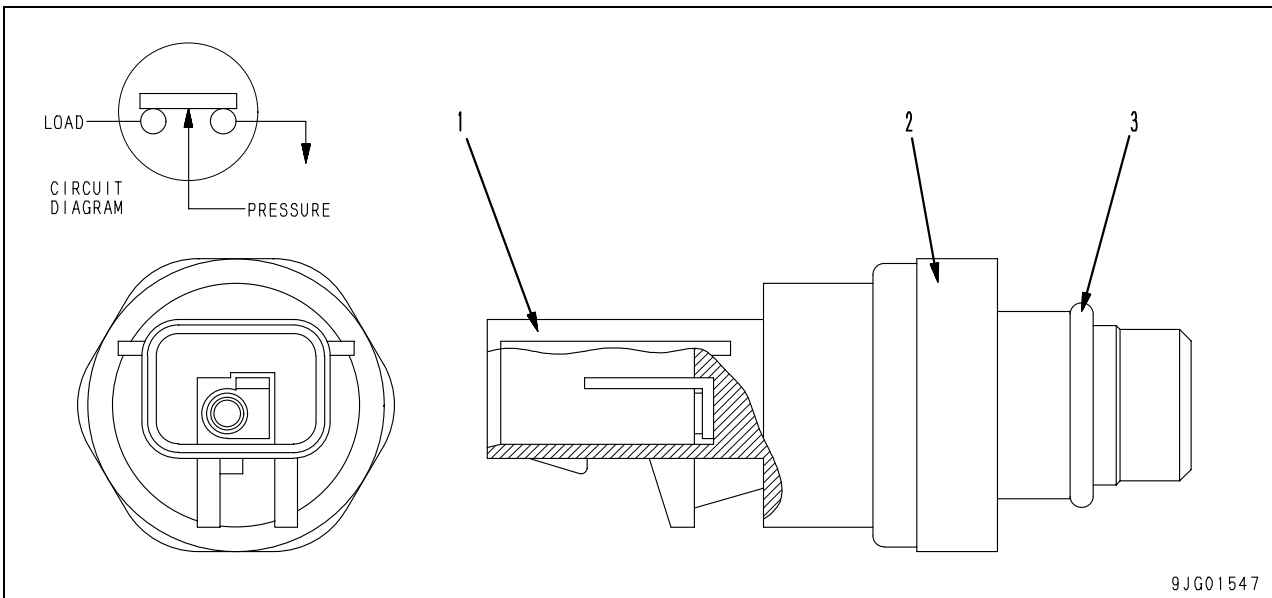
\*: Never connect to NC or malfunctions or failures will occur.

**Coolant temperature sensor**

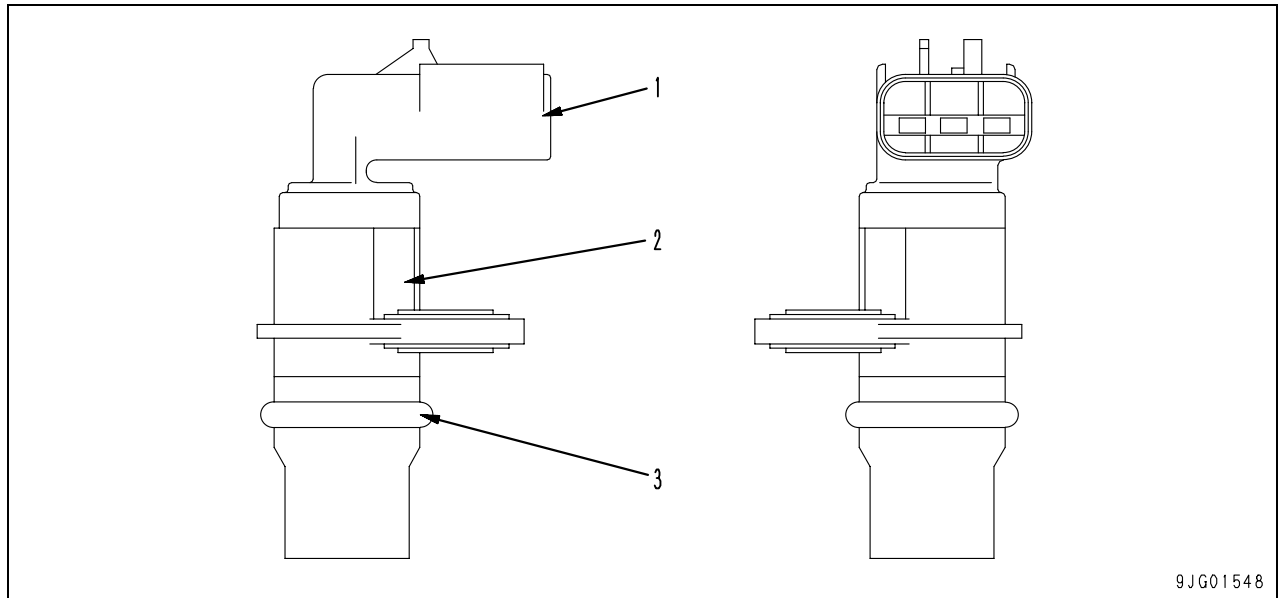


- 1. Connector
- 2. Sensor
- 3. O-ring

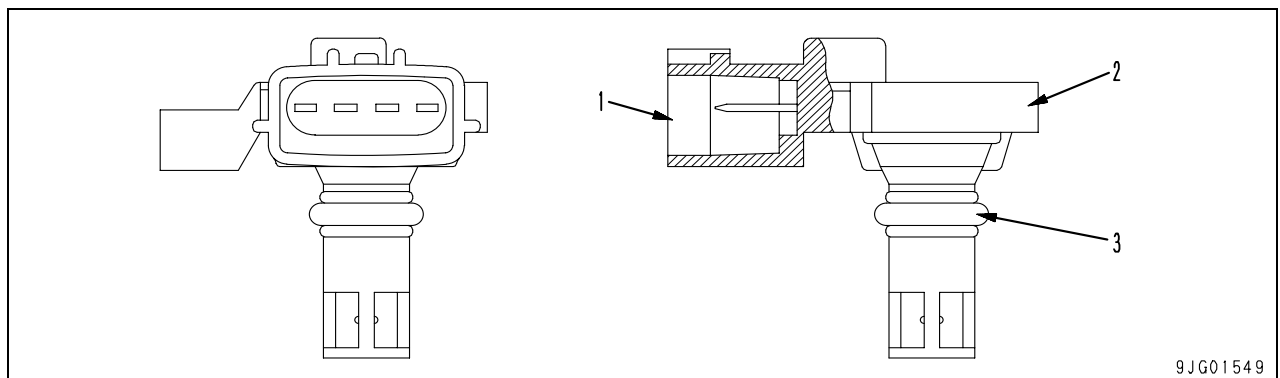
**Oil pressure switch**



- 1. Connector
- 2. Sensor
- 3. O-ring

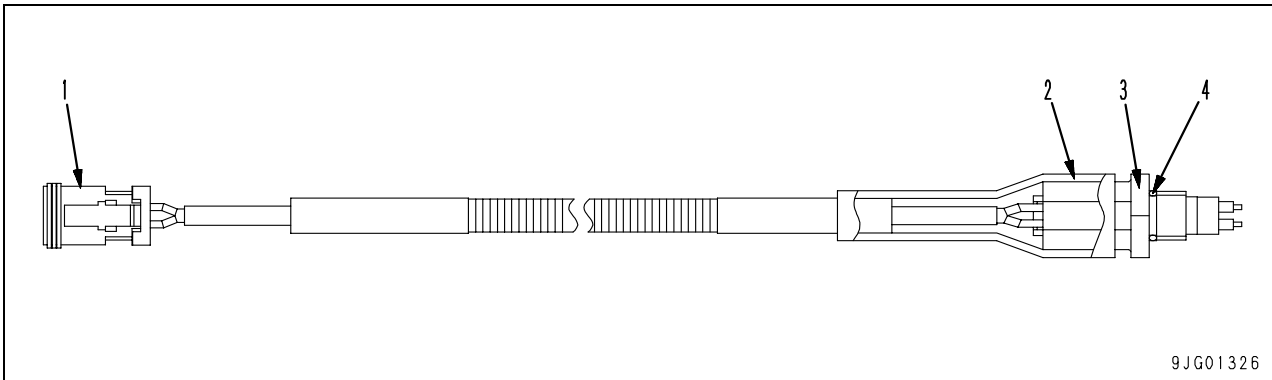
**Rotation sensor**

1. Connector
2. Sensor
3. O-ring

**Boost pressure and temperature sensor**

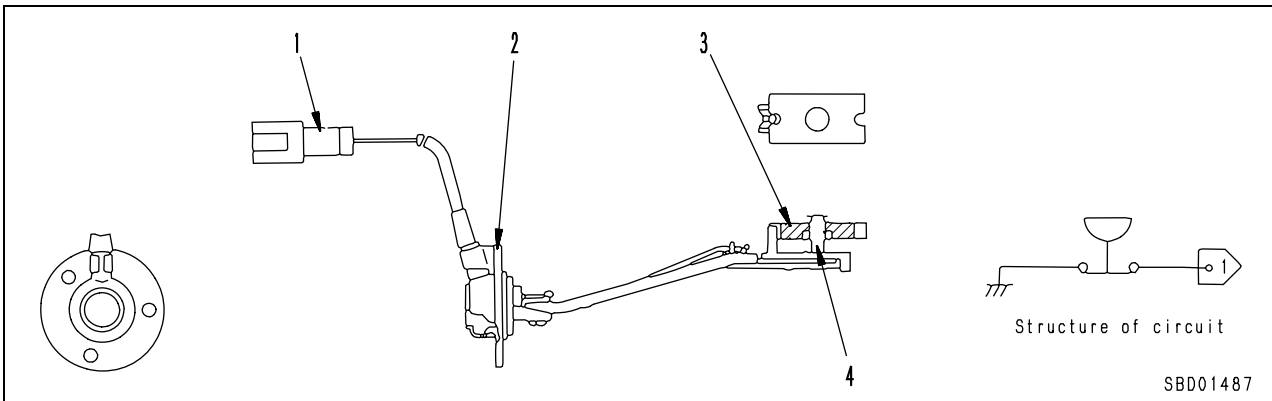
1. Connector
2. Sensor
3. O-ring

**WIF (water-in-fuel detection) sensor**



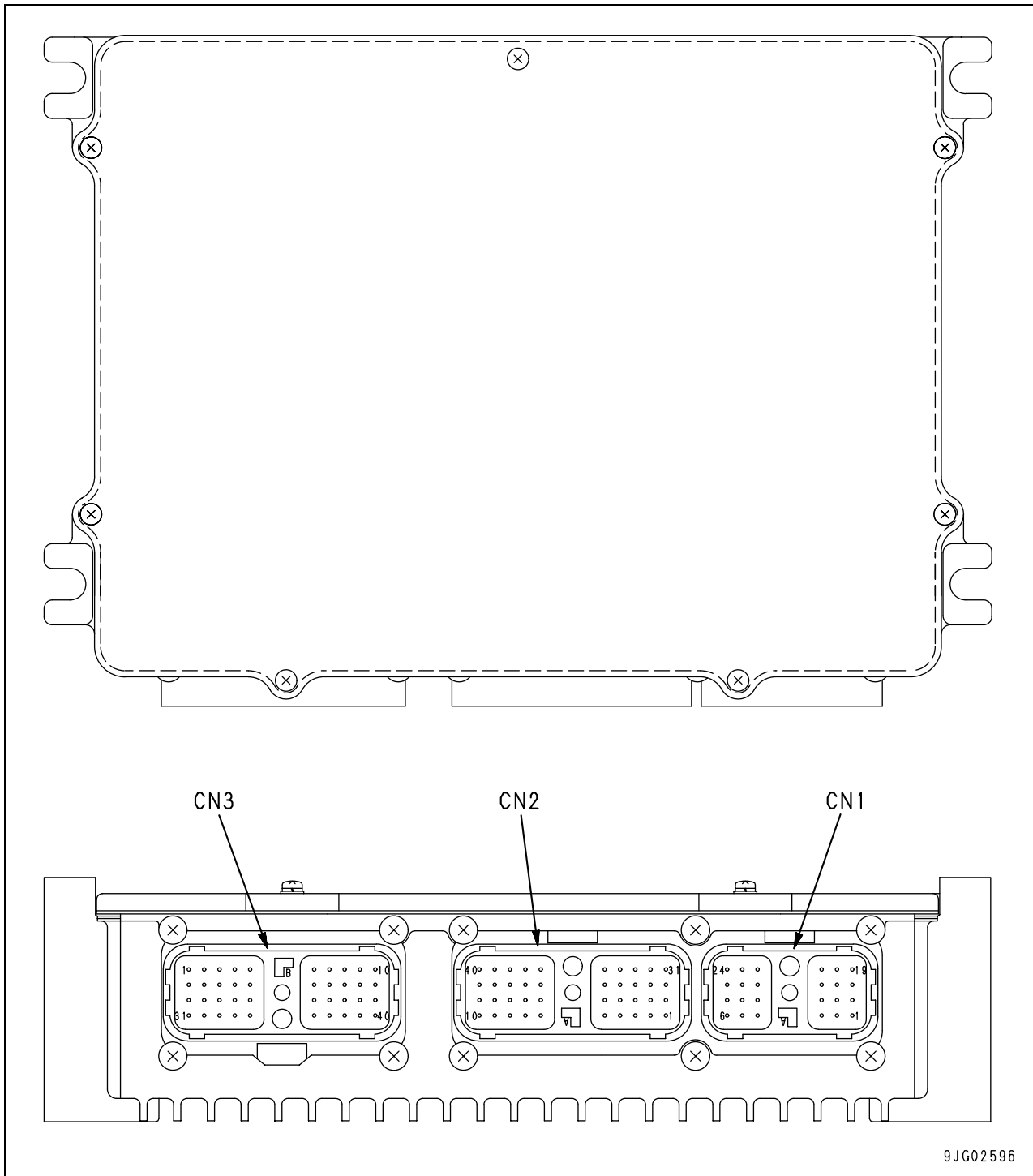
- 1. Connector
- 2. Tube
- 3. Sensor
- 4. O-ring

**Engine oil level sensor**



- 1. Connector
- 2. Bracket
- 3. Float
- 4. Switch

### Work equipment and pump controller



## Input and output signals

## CN-C1

Pin No.	Signal name	Input/Output
1	Secondary conveyor press. sensor	Input
2	R pump pressure sensor	Input
3	Vibrator screen press. sensor	Input
4	GND (SIG)	—
5	Mode select sw. (travel)	Input
6	NC	Input
7	Magnetic separator pressure sensor	Input
8	F pump pressure sensor	Input
9	NC	Input
10	GND (SIG)	—
11	Mode selector switch (Work)	Input
12	Accessory switch	Input
13	Muck discharge conveyor pressure sensor	Input
14	Clearance potentiometer signal	Input
15	Over feed sensor	Input
16	SENS_PWR	Output
17	Start switch (C)	Input
18	Engine stop switch	Input
19	Conveyor pressure sensor	Input
20	Conv. Mi position sensor	Input
21	GND_SIG_A	
22	POT_PWR0	Output
23	Start switch (ACC)	Input
24	Emergency switch	Input

\*: Never connect to NC or malfunctions or failures will occur.

## CN-C2

Pin No.	Signal name	Input/Output
1	NC	Output
2	Clearance setting mode select switch (Auto)	Input
3	Magnetic separator ON switch	Input
4	232C_RXD	Input
5	Conveyor OFF switch	Input
6	1-touch stop switch	Input
7	Machine select 2	Input
8	Engine stop relay drive	Output
9	Beacon lamp relay drive	Output
10	NC	Input
11	NC	Output
12	CAN_SH	
13	Conv. Hi position sensor	Input
14	232C_TXD	Output
15	Conveyor ON switch	Input
16	1-touch start switch	Input
17	Machine select 1	Input
18	Abnormal pressure relay drive	Output
19	Horn relay drive	Output
20	NC	Input
21	S_NET	Input/Output
22	CAN0_L	Input/Output
23	CAN1_L	Input/Output
24	PWR_CTR_EXT	Input
25	Travel speed select switch 2	Input
26	Muck discharge conveyor OFF switch	Input
27	Muck discharge conveyor prohibit switch	Input
28	Magnetic separator OFF switch	Input
29	GND_SIG_P	
30	NC	Input
31	GND (S_NET_GND)	
32	CAN0_H	Input/Output
33	CAN1_H	Input/Output
34	GND (232C_GND)	
35	Travel speed select switch	Input
36	Muck discharge conveyor ON switch	Input
37	Crusher FWD/REV select switch	Input
38	Clearance setting mode select switch (SEMI AUTO)	Input
39	GND_SIG_P	
40	NC	Input

\*: Never connect to NC or malfunctions or failures will occur.

**CN-C3**

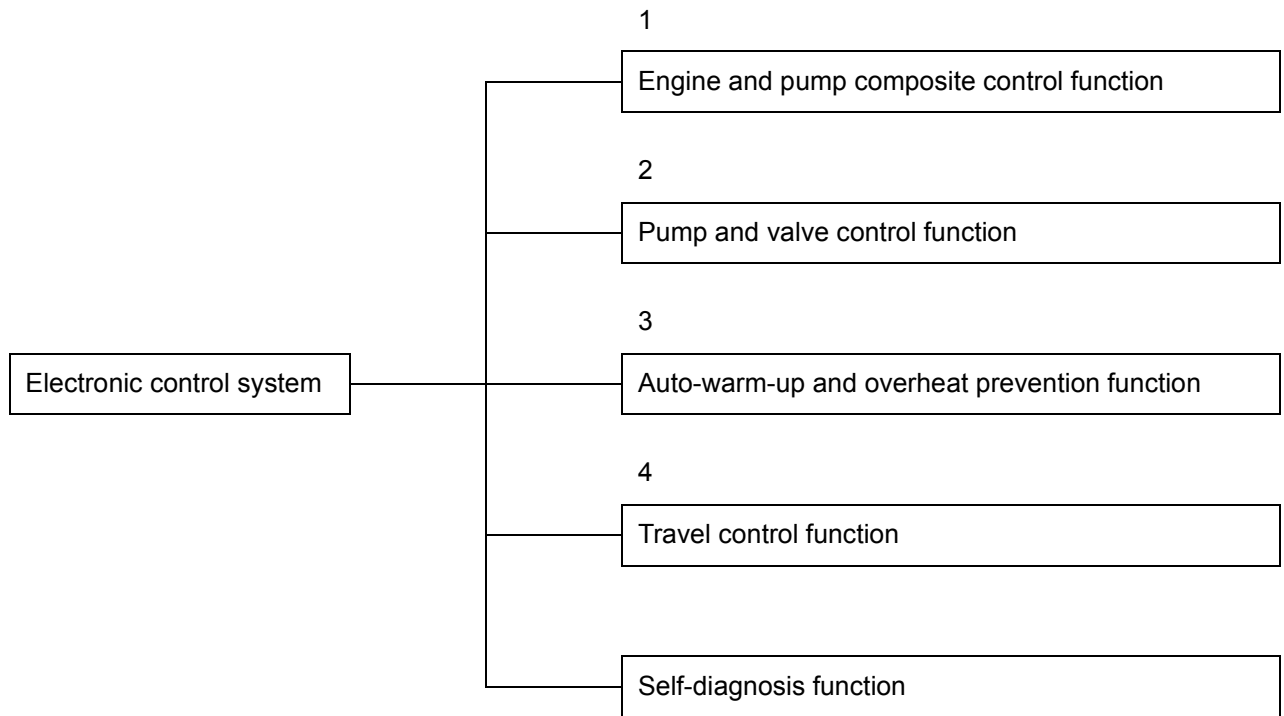
Pin No.	Signal name	Input/ Output
1	PWR_IN_BATT	Input
2	PWR_IN_BRY	Input
3	GND_ACT	—
4	NC	Output
5	Conveyor FWD. solenoid relay	Output
6	LS EPC	Output
7	NC	Output
8	Conveyor REV. solenoid relay	Output
9	Radio Ctrl work switch	Input
10	Feeder ON switch	Input
11	PWR_IN_BATT	Input
12	PWR_IN_BRY	Input
13	GND_ACT	—
14	KEY_SIG	Input
15	NC	Output
16	PC EPC	Output
17	Lock cyl. unlock solenoid	Output
18	Muck discharge conveyor solenoid	Output
19	Radio Ctrl travel switch	Input
20	Feeder OFF switch	Input
21	GND_PWR	—
22	PWR_IN_BRY	Input
23	GND_ACT	—
24	KEY_SIG	Input
25	Magnetic separator solenoid	Output
26	Crusher FWD. EPC	Output
27	Lock cyl. push relay	Output
28	Accessory EPC	Output
29	Radio Ctrl travel sig.	Input
30	Crusher ON switch	Input
31	GND_PWR	—
32	GND_PWR	—
33	GND_PWR	—
34	POT_PWR1	Output
35	Travel lock EPC	Output
36	Crusher REV. EPC	Output
37	Lock cyl. pull relay	Output
38	Feeder FWD. EPC	Output
39	Radio ctrl. select switch	Input
40	Crusher OFF switch	Input

\*: Never connect to NC or malfunctions or failures will occur.



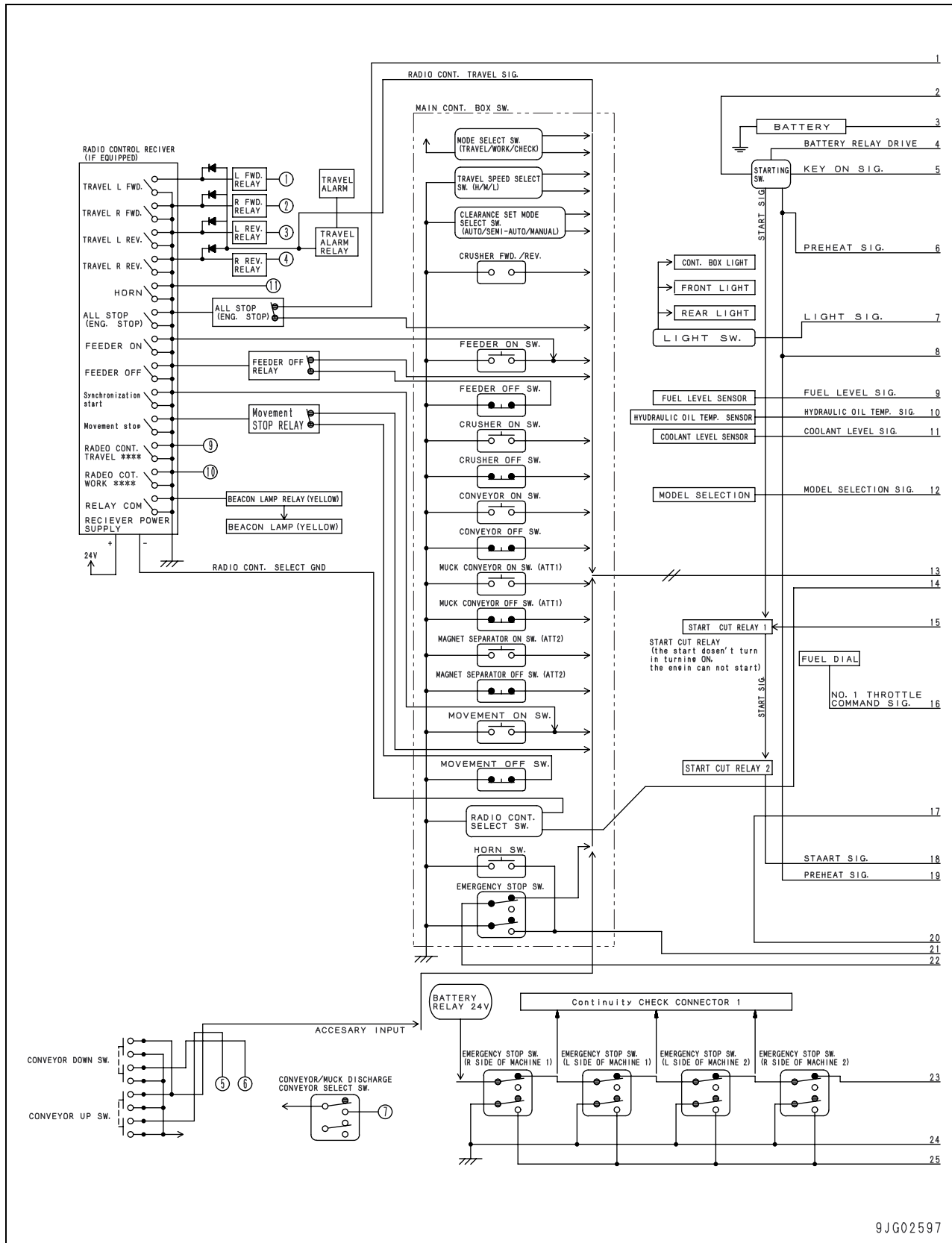
## Electronic control system

### Control function

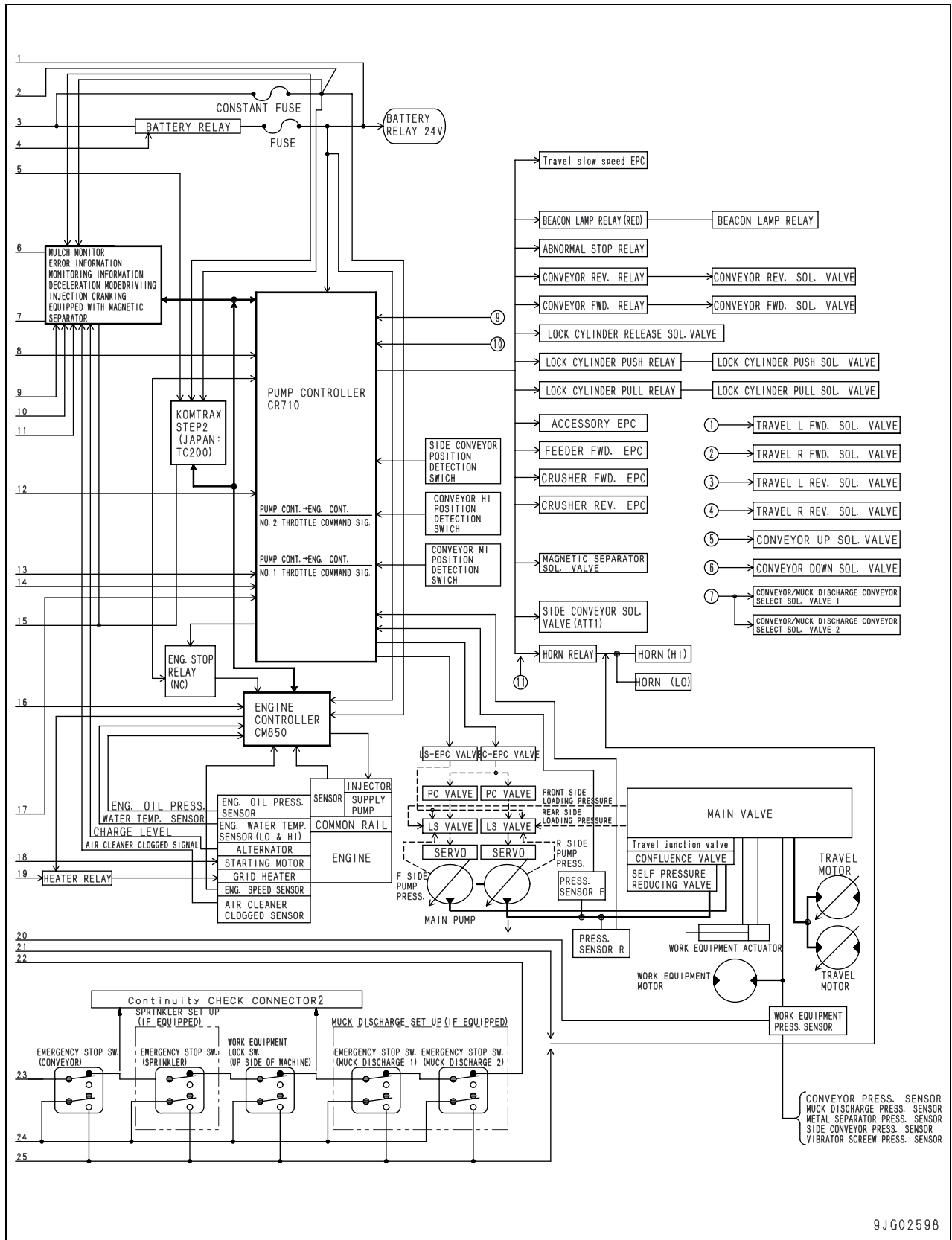


★ For the self-diagnosis function, see “Troubleshooting”.

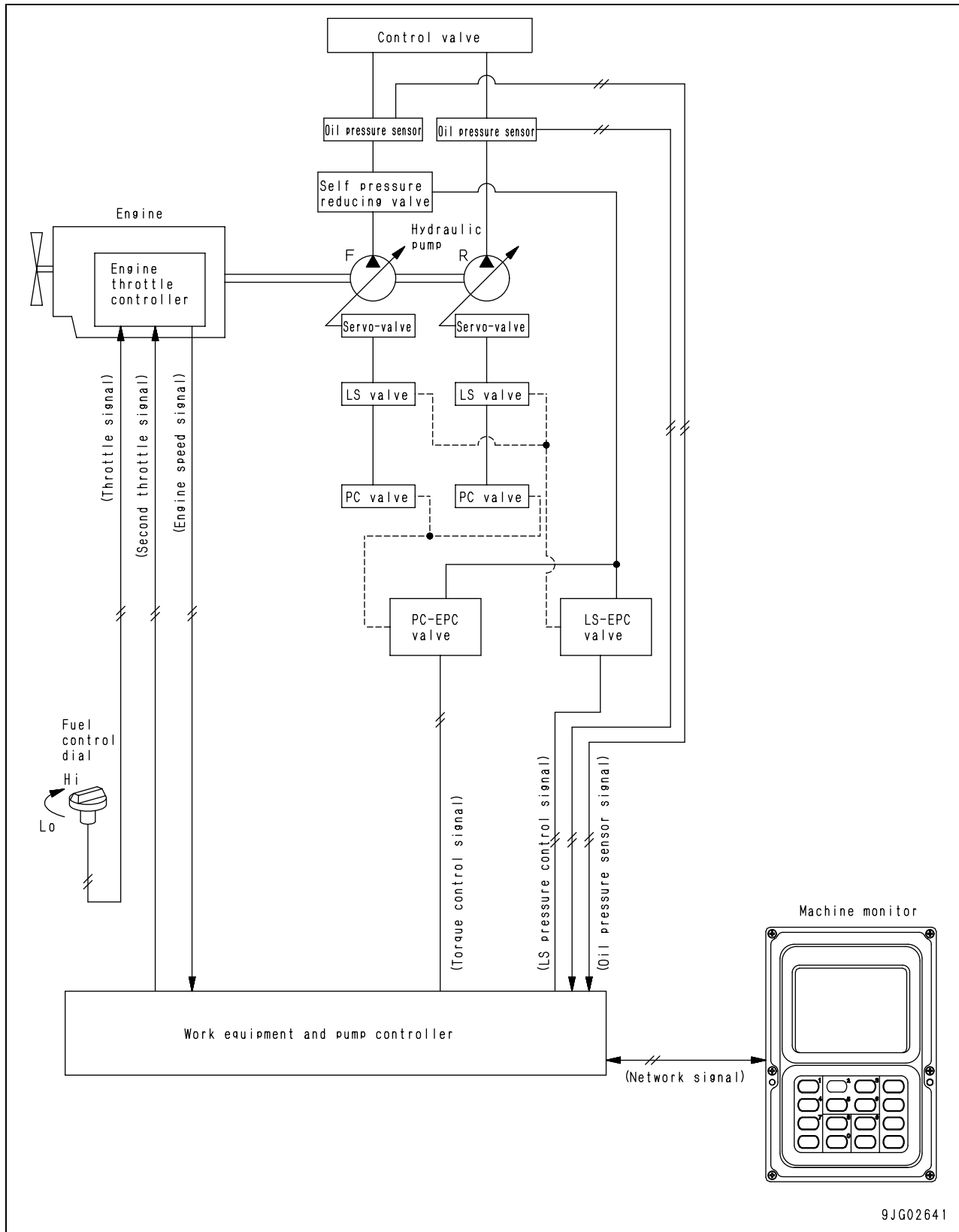
Travel control function



9JG02597



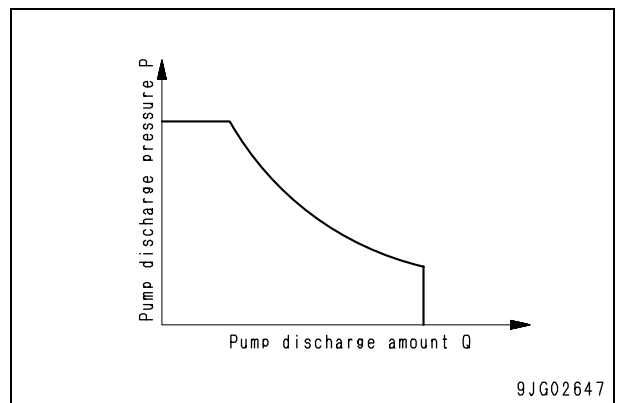
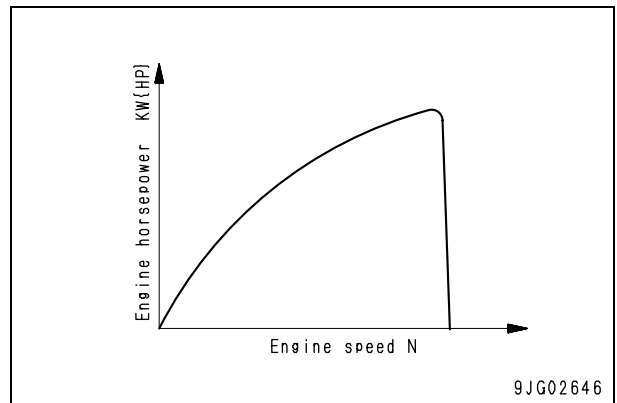
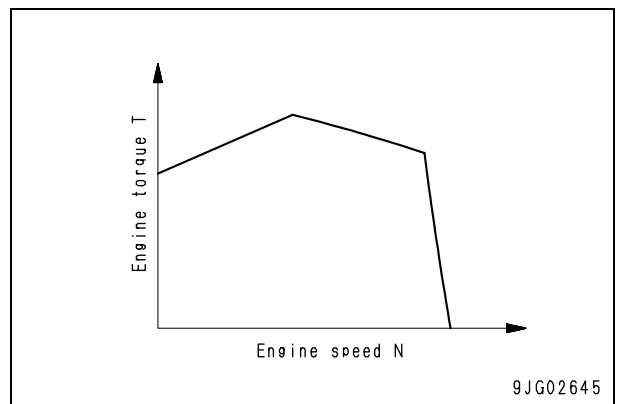
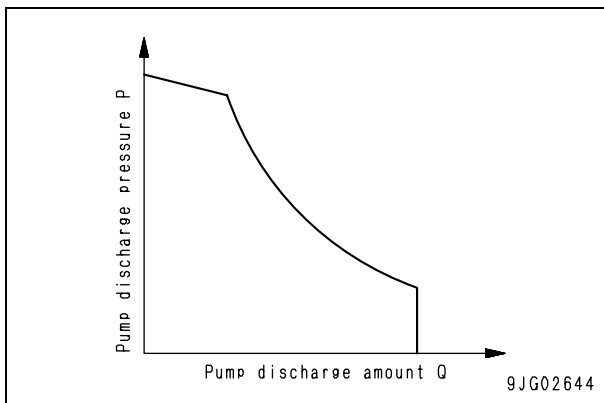
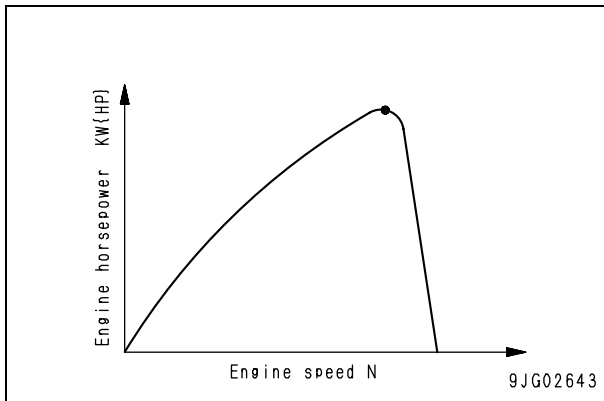
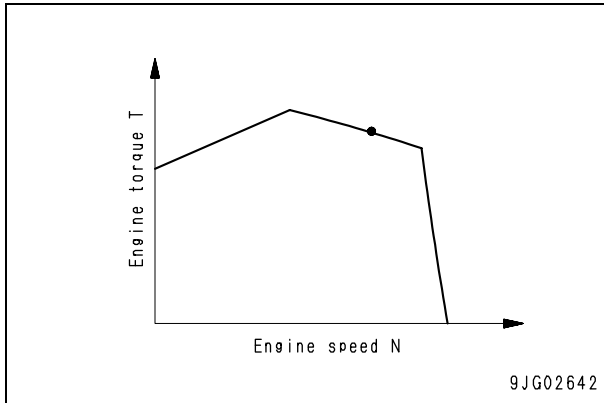
Engine and pump compound control function



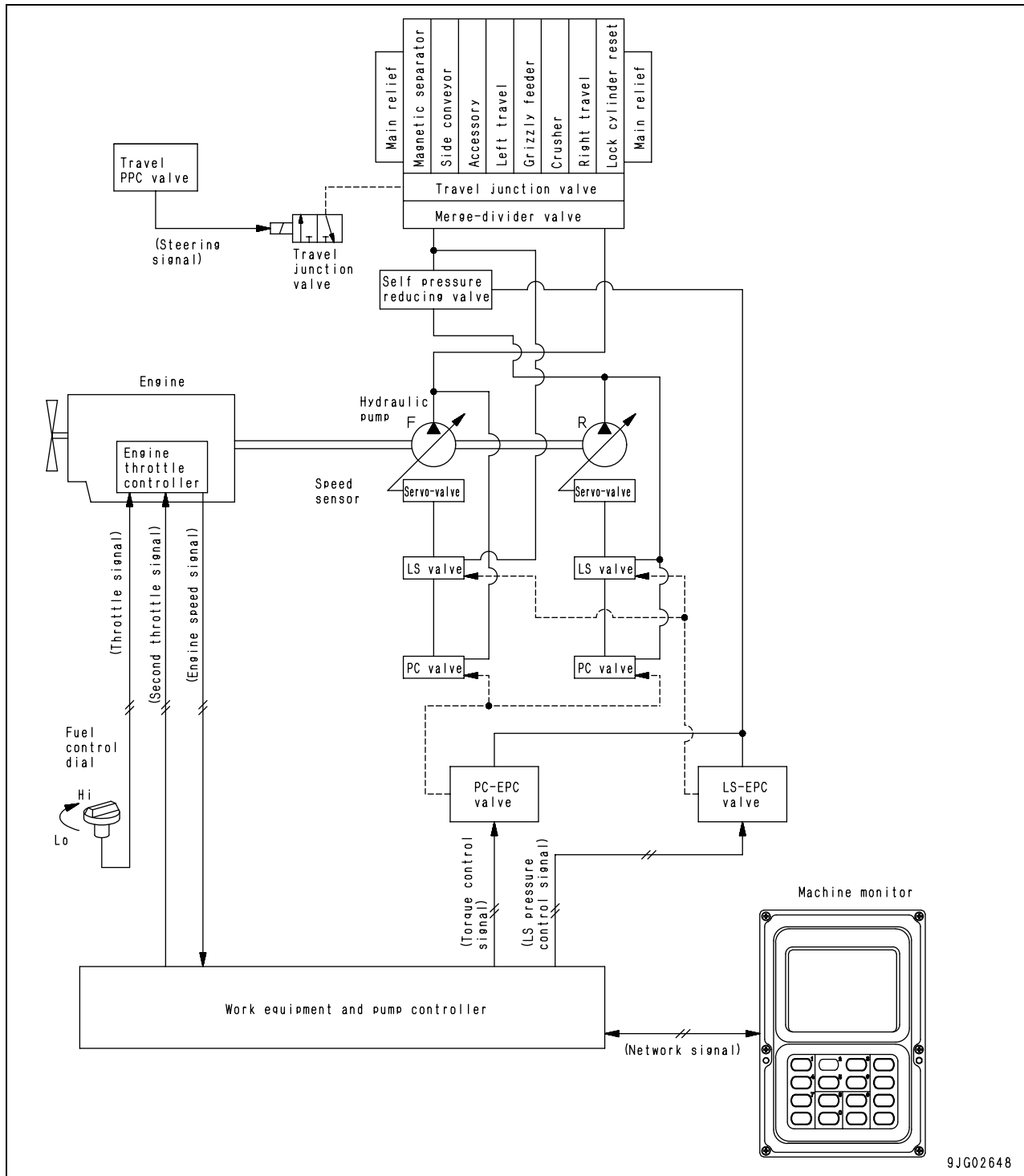
**Function**

- The work equipment and pump controller controls the pump so that it can absorb all the torque at the output points of the engine depending on the pump absorption torque specified beforehand, rotation set by the fuel control dial, and actual engine speed.

- Matching point:  
107.0 kW/1,800 rpm {143.5 HP/1,800 rpm}
- Engine speed is always controlled so that it is kept around the matching point specified beforehand.
- If the pump load increases and the pressure rises, engine speed (N) lowers. If it happens, the engine speed is increased to around the matching point, allowing the pump controller to decrease pump delivery (Q). On the contrary, the pump load decreases and the pressure lowers, the pump controller continues to increase pump delivery until the engine speed reaches around the matching point.



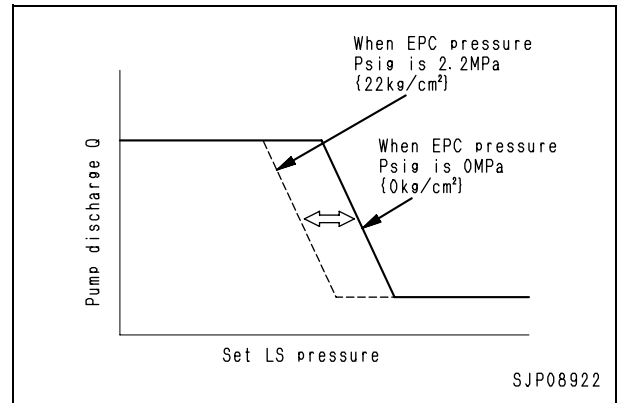
Pump and valve control function



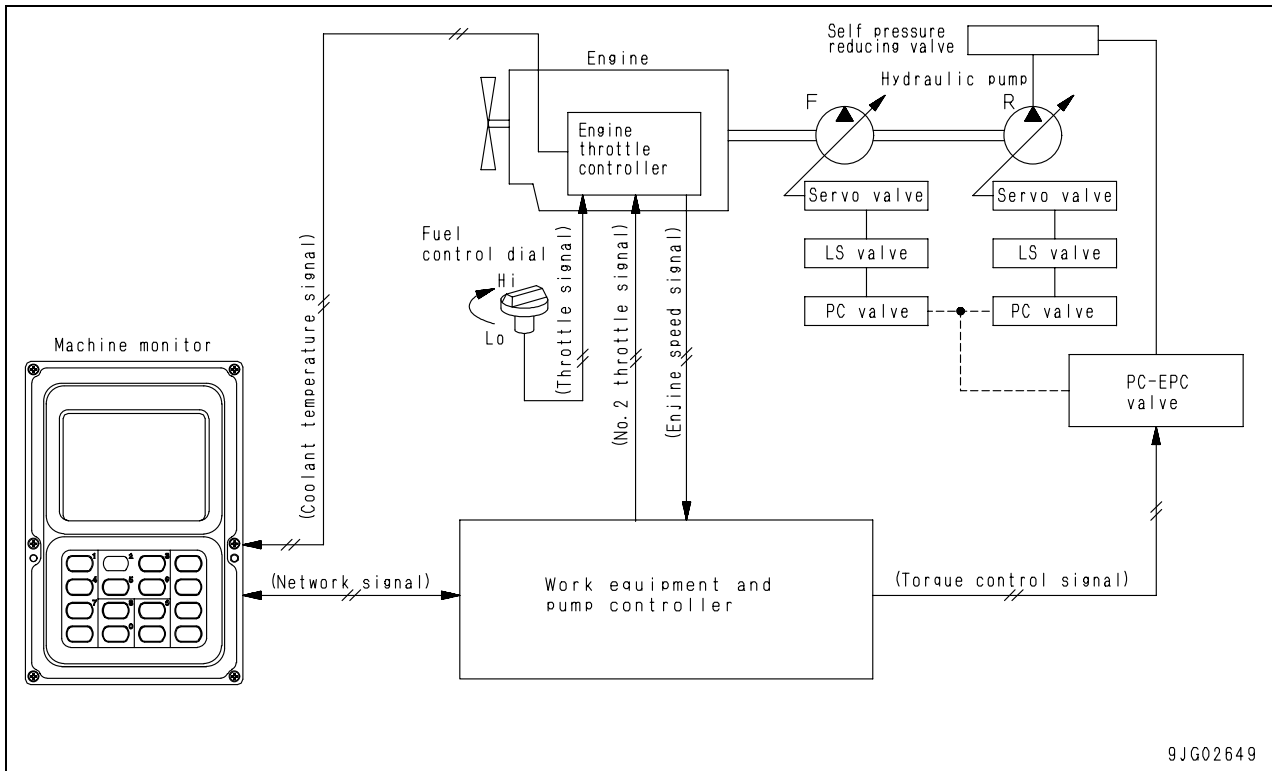
9JG02648

**LS control function**

- The change point (LS set differential pressure) of the pump discharge in the LS valve is changed by changing the output pressure from the LS-EPC valve to the LS valve according to the operating condition of the actuator.
- By this operation, the start-up time of the pump discharge is optimized and the composite operation and fine control performance is improved.



## Automatic engine warm-up and overheat prevention function



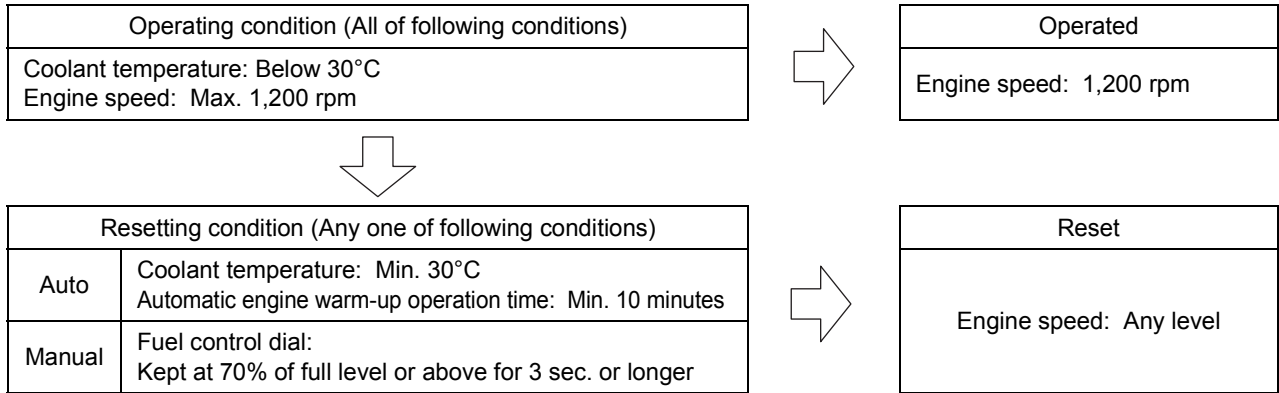
## Function

- The automatic engine warm-up function increases the engine speed to warm up the engine if coolant temperature is too low after the engine starts.
- The overheat prevention function reduces the pump load when coolant or hydraulic oil temperature is too high during operation to protect the engine from overheating.



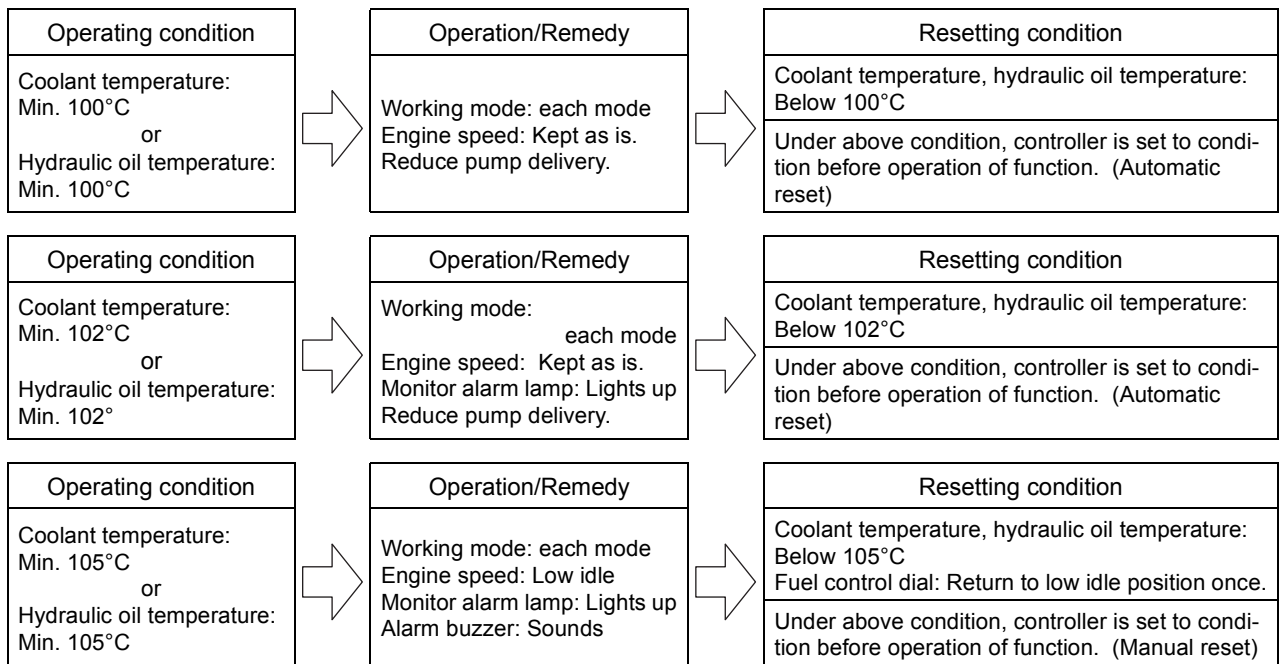
**1) Automatic engine warm-up function**

- After the engine is started, if the engine coolant temperature is low, the engine speed is raised automatically to warm up the engine.

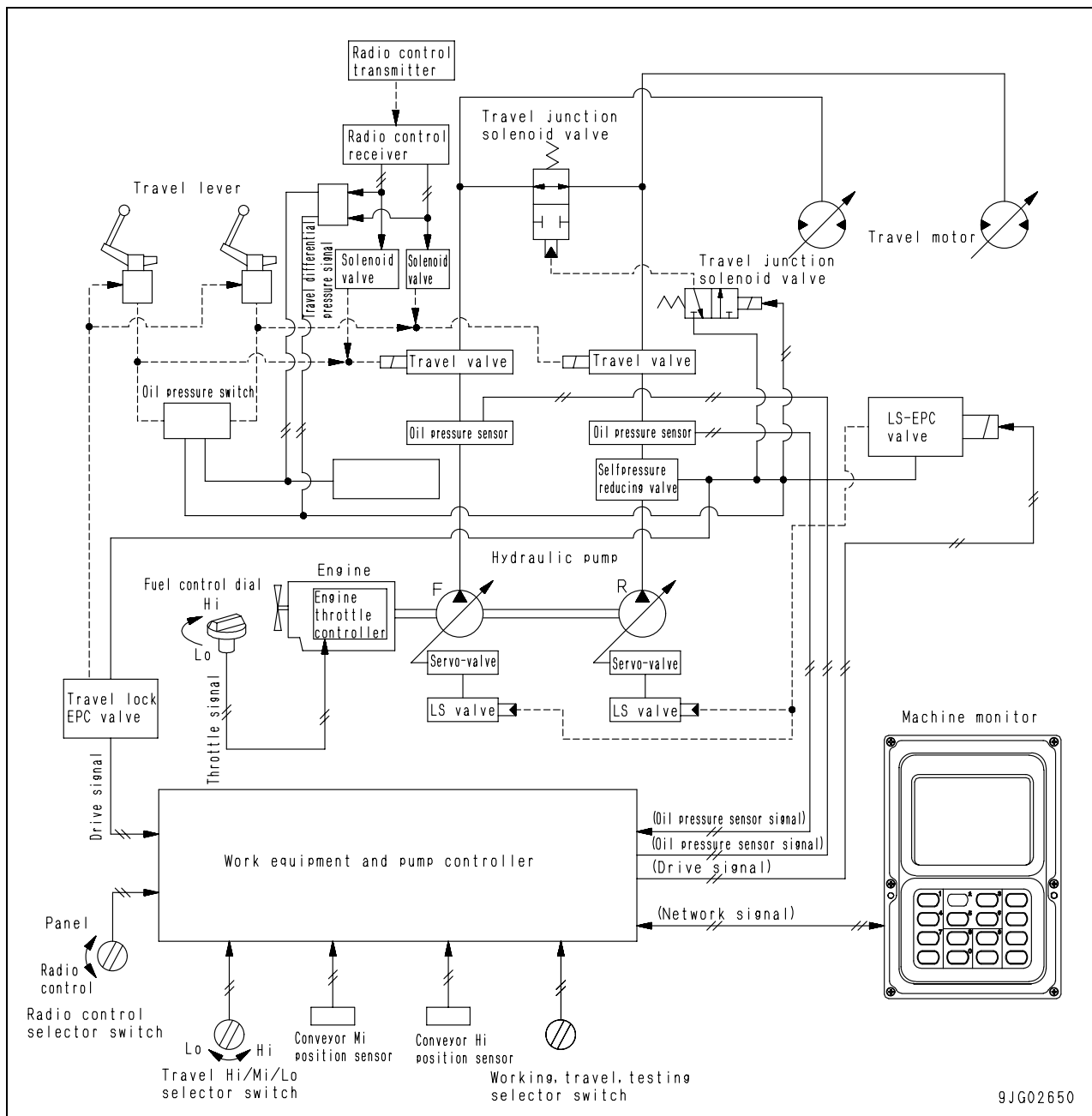


**2) Overheat prevention function**

- This function reduces the pump load and engine speed when coolant or hydraulic oil temperature is too high to protect the engine and hydraulic components from overheating.
- This function starts when coolant temperature or hydraulic oil temperature reaches 100°C.



Travel control function



Function

- This function is used to control the pump and select the manual or automatic travel speed change mode for travel performance matched to the contents of work and jobsite during travel.

**Travel speed change function**

## 1. Manual change with travel speed selector switch

If the travel speed selector switch is changed over Lo, Mi and Hi, the work equipment and pump controller controls the pump capacity at each gear speed as shown below to change the travel speed.

Travel speed selector switch	Lo	Mi	Hi
Pump capacity (%)	27	77	100
Travel motor capacity	Max.	Max.	Max.
Travel speed (km/h)	0.8	2.3	3.0

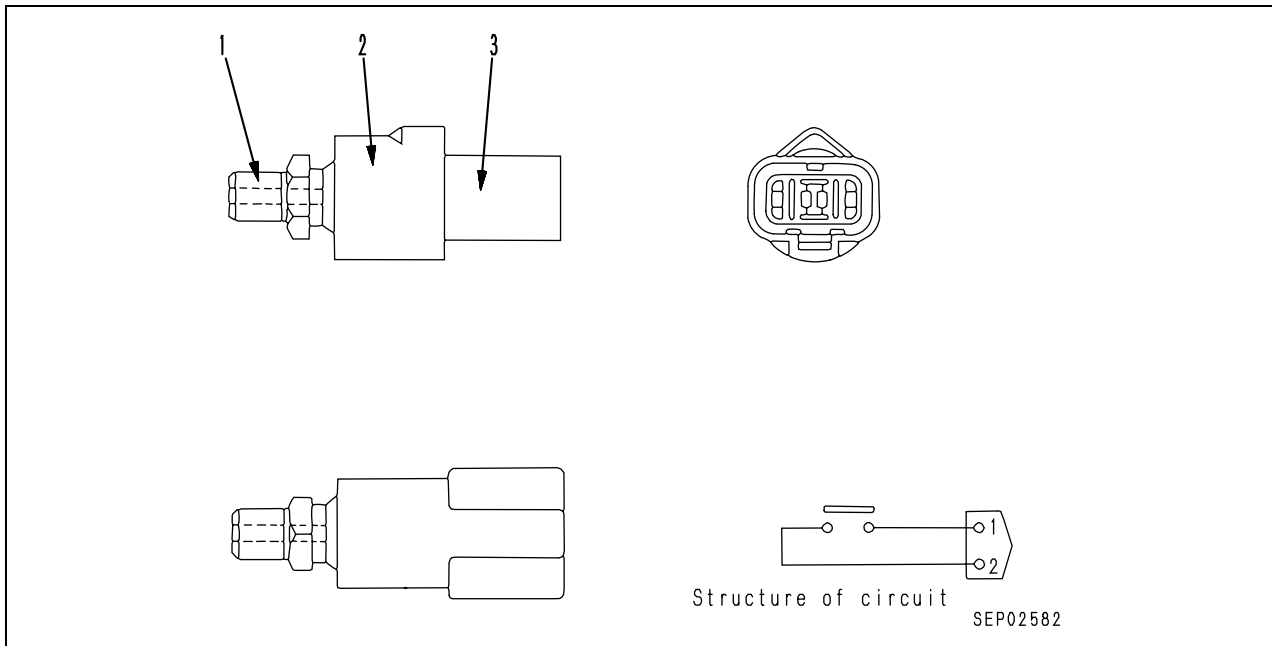
## 2. Automatic change by selecting conveyor position and radio control selection mode

- 1) The conveyor position is judged to be upper, middle or lower position by the conveyor upper position sensor and conveyor middle position sensor.
- 2) The position of the radio control selector switch is judged.
- 3) The position of the mode selector switch is judged.
- 4) The drive signals for the travel lock EPC valve and LS-EPC valve are output according to 1) – 3) and position of the travel speed switch to change the travel interlock and travel speed automatically.

×: Machine cannot travel.

Mode	Control method	Radio control selection	Travel speed selection	Position of conveyor		
				Upper	Middle	Lower
Travel	Lever	Panel	Hi	High speed	Middle speed	×
			Mi	Middle speed	Middle speed	×
			Lo	Low speed	Low speed	×
	Radio control	Radio control	—	×	×	×
			Panel	—	×	×
			Hi	High speed	Middle speed	×
			Mi	Middle speed	Middle speed	×
			Lo	Low speed	Low speed	×
Work	Lever	Panel	—	×	×	
		Radio control	—	×	×	
	Radio control	Radio control	Panel	—	×	×
			Hi	×	Middle speed	×
			Mi	×	Middle speed	×
			Lo	×	Low speed	×

**System component parts**



- 1. Plug
- 2. Switch
- 3. Connector

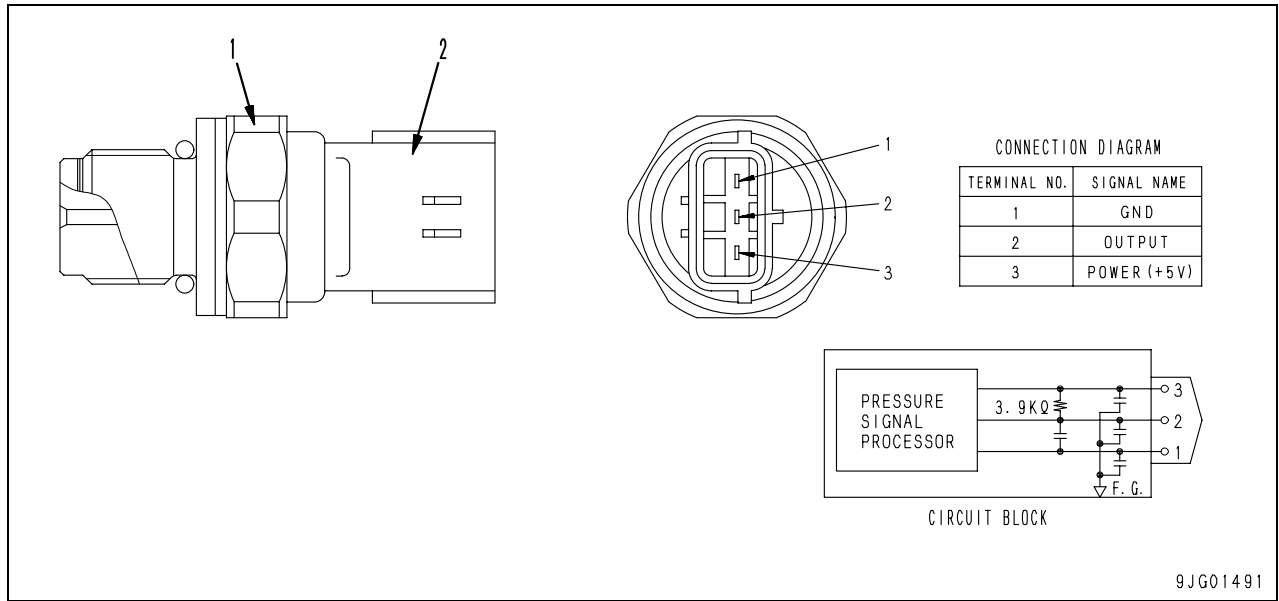
**Specifications**

Type of contacts: Normally open contacts  
 Operating (ON) pressure:  $0.5 \pm 0.1$  MPa  
    $\{5.0 \pm 1.0 \text{ kg/cm}^2\}$   
 Resetting (OFF) pressure:  $0.3 \pm 0.05$  MPa  
    $\{3.0 \pm 0.5 \text{ kg/cm}^2\}$

**Function**

- The travel PPC valve has 2 travel PPC oil pressure switches, which check the travel lever signal and travel differential pressure signal by the output difference of the travel lever and operate the travel alarm and travel junction valve selector solenoid valve.

**Pump pressure sensor**



- 1. Sensor
- 2. Connector

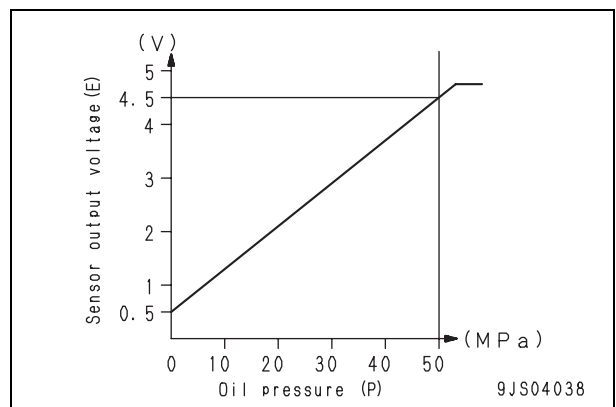
**Function**

- The pump pressure sensor is installed to the inlet circuit of the control valve. It converts the pump discharge pressure into voltage and sends it to the work equipment and pump controller.

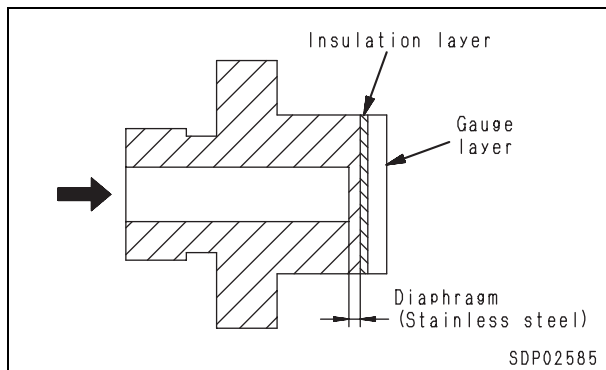
**Operation**

- The oil pressure is applied to the diaphragm of the oil pressure sensor from the pressure intake part, the diaphragm is deformed.
- The deformation in the diaphragm causes the resistance of the gauge to change. This causes a change in the output voltage, which is transmitted to the amplifier (voltage amplifier).

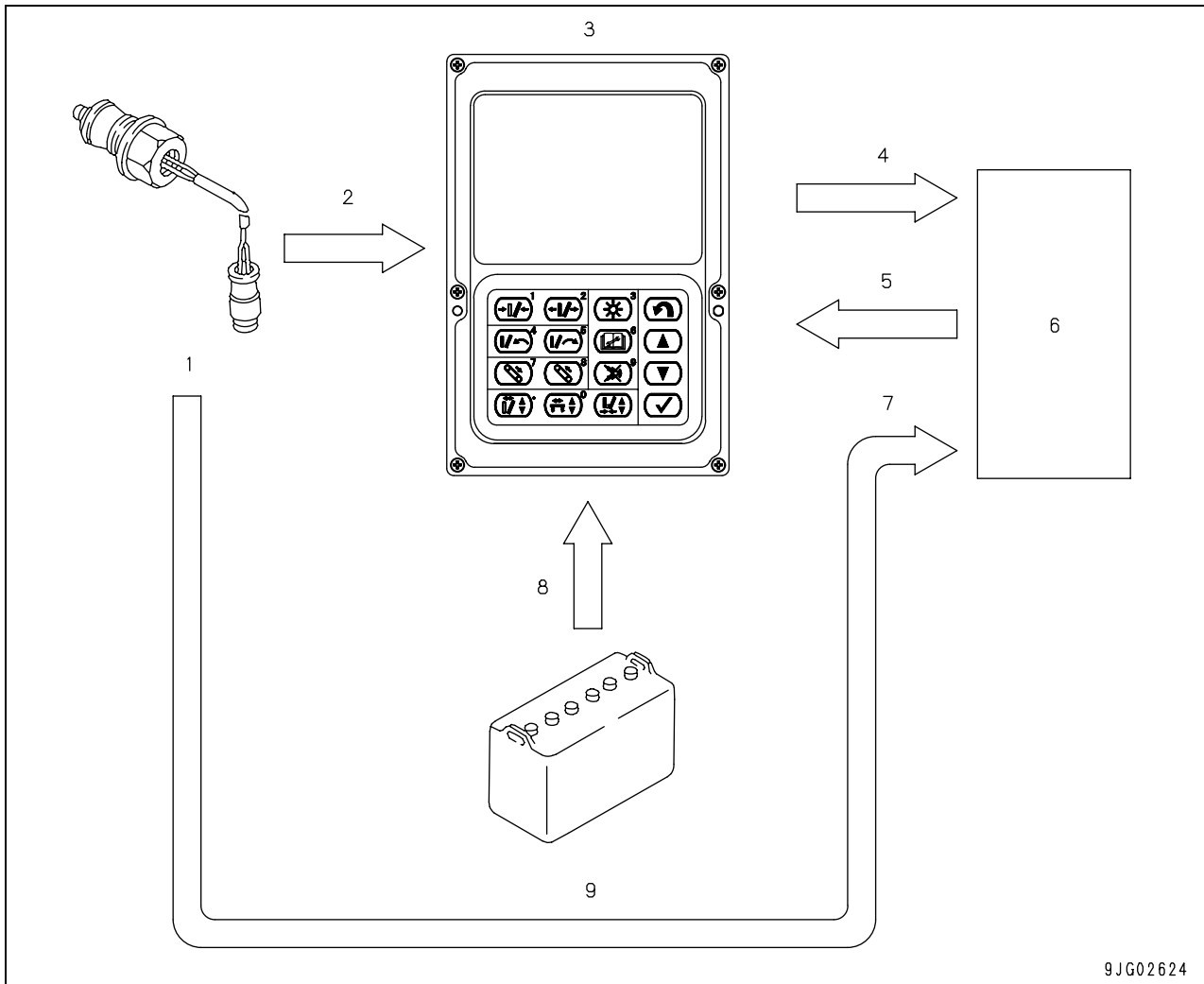
- The relationship between the pressure applied to sensors (P) and output voltage (E) is shown in the figure below.



- The amplifier magnifies output voltage (E) and transmits it to the pump controller.



### Machine monitor system



- |  |                                       |
|--|---------------------------------------|
| 1. Each sensor   | 5. Caution signal                     |
| 2. Coolant temperature, hydraulic oil temperature, fuel level signal | 6. Work equipment and pump controller |
| 3. Machine monitor   | 7. Sensor signal                      |
| 4. Switch  | 8. Power source                       |
|  | 9. Battery                            |

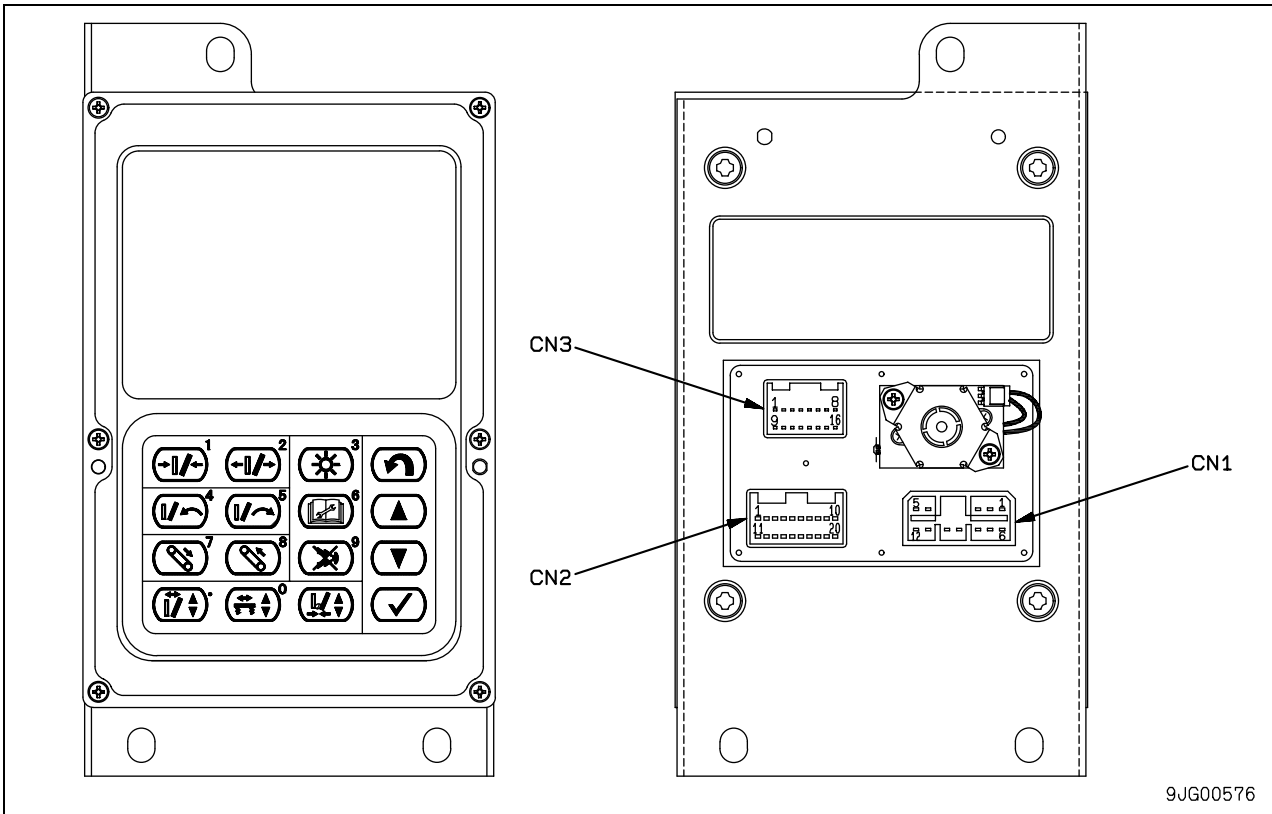
- The monitor system monitors the condition of the machine with sensors installed on various parts of the machine. It processes and immediately displays the obtained information on the machine monitors notifying the operator of the condition of the machine.

The panel is roughly divided as follows.

- Monitor section to output alarms when the machine has troubles
- Gauge section to display the condition constantly (Coolant temperature, hydraulic oil temperature, fuel level, etc.)

- The machine monitor also has various mode selector switches and functions to operate the machine control system.

**Machine monitor**



9JG00576

**Outline**

The machine monitor has the functions to display various items and the functions to select modes and electric parts.

The machine monitor has a CPU (Central Processing Unit) in it to process, display, and output the information.

The monitor display unit consists of LCD (Liquid Crystal Display). The switches are flat sheet switches.

## Input and output signals

CN 1

Pin No.	Signal name	Input/output
1	Key switch (Battery)	Input
2	Key switch (Battery)	Output
3	NC	—
4	Key switch (C)	Input
5	NC	—
6	GND	Output
7	GND	Output
8	VB + (24 V)	Output
9	NC	—
10	NC	—
11	NC	—
12	NC	—

CN 2

Pin No.	Signal name	Input/output
1	NC	—
2	Fuel level	Input
3	Coolant level	Input
4	NC	—
5	Air filter	Input
6	NC	—
7	NC	—
8	Engine oil level	Input
9	NC	—
10	NC	—
11	Charge	Input
12	Hydraulic oil temp. (a)	Input
13	NC	Input
14	Personal code relay	Input
15	NC	—
16	NC	—
17	Reserve	—
18	Pre-heating	Input
19	Light	Input
20	NC	—

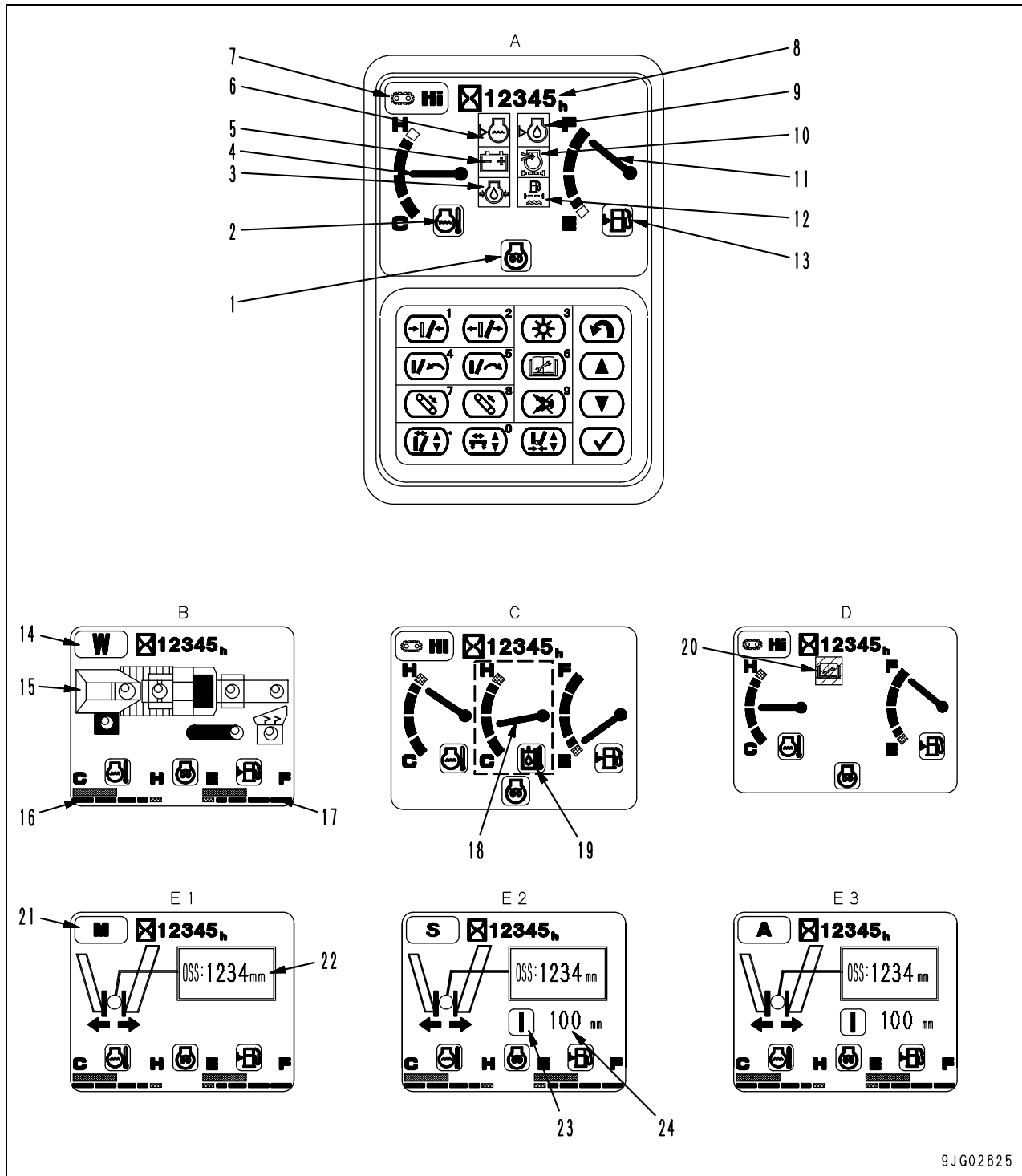
CN 3

Pin No.	Signal name	Input/output
1	NC	—
2	NC	—
3	NC	—
4	NC	—
5	NC	—
6	NC	—
7	NC	—
8	NC	—
9	NC	—
10	NC	—
11	NC	—
12	NC	—
13	NC	—
14	CAN_SHIELD	Input
15	CAN +	Input
16	CAN -	Input



Monitor display and operation section

Display section




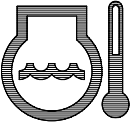

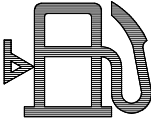
9JG02625

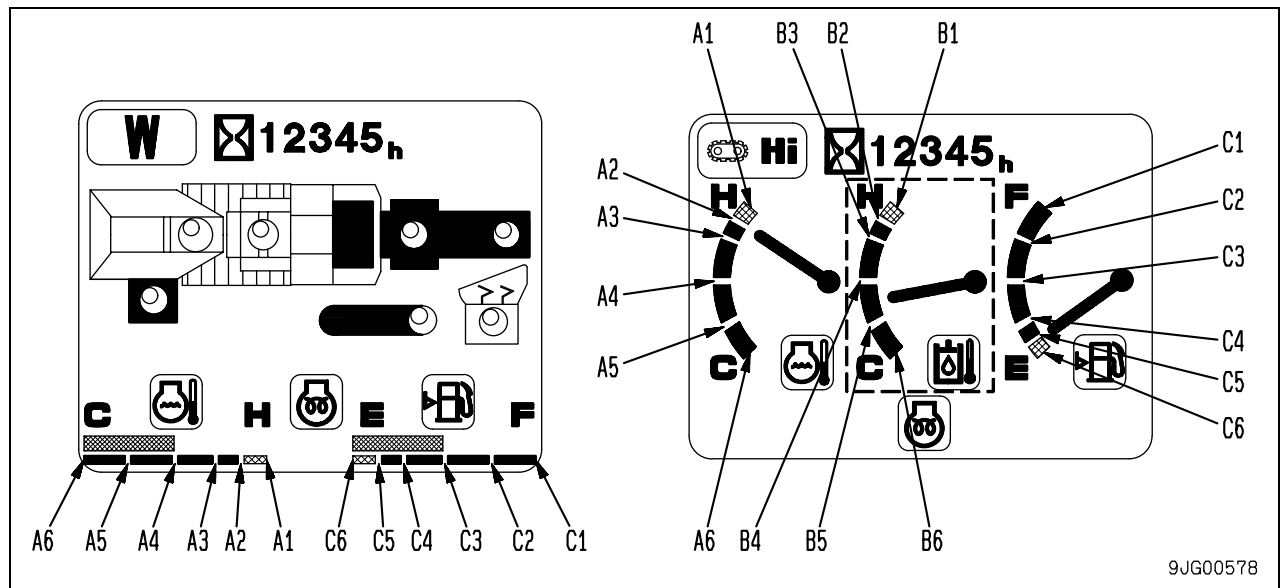
A : Screen of check before starting  
 B : Main screen of working mode  
 C : Main screen of travel mode  
 D : Screen of maintenance overtime

E1: Main screen of inspection mode (manual)  
 E2: Main screen of inspection mode (semi automatic)  
 E3: Main screen of inspection mode (automatic)

1. Preheating monitor
2. Engine coolant temperature monitor
3. Radiator coolant level caution
4. Engine coolant temperature gauge
5. Charge level caution
6. Engine oil pressure caution
7. Travel speed monitor
8. Service meter
9. Engine oil level caution
10. Air cleaner clogging
11. Fuel level gauge
12. Water separator
13. Fuel level monitor
14. Working mode monitor
15. Operating condition monitor
16. Engine coolant temperature gauge
17. Fuel level gauge
18. Hydraulic oil temperature gauge
19. Hydraulic oil temperature monitor
20. Maintenance time warning
21. Inspection mode monitor
22. Actual crusher clearance monitor
23. Clearance adjustment execution
24. Set crusher clearance monitor

**Monitor items and display**

Symbol	Display item	Display method									
 9JH09764	Preheating	<table border="1"> <thead> <tr> <th>Time to continue setting</th> <th>Condition of preheating monitor</th> </tr> </thead> <tbody> <tr> <td>Up to 30 sec</td> <td>Lighting</td> </tr> <tr> <td>30 sec – 40 sec</td> <td>Flashing</td> </tr> <tr> <td>After 40 sec</td> <td>OFF</td> </tr> </tbody> </table>		Time to continue setting	Condition of preheating monitor	Up to 30 sec	Lighting	30 sec – 40 sec	Flashing	After 40 sec	OFF
Time to continue setting	Condition of preheating monitor										
Up to 30 sec	Lighting										
30 sec – 40 sec	Flashing										
After 40 sec	OFF										
 SADO1482	Engine coolant temperature	See gauge display on the next page									
 9JG02440	Hydraulic oil temperature										
 SADO1486	Fuel level										



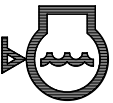
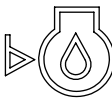


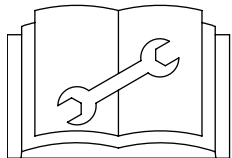


9JG00578

Gauge	Range	Temperature or volume	Indicator	Buzzer sound
Engine coolant temperature (°C)	A1	105	Red	○
	A2	102	Red	
	A3	100	Green	
	A4	80	Green	
	A5	60	Green	
	A6	30	White	
Hydraulic oil temperature (°C)	B1	105	Red	
	B2	102	Red	
	B3	100	Green	
	B4	80	Green	
	B5	40	Green	
	B6	20	White	
Fuel level (ℓ)	C1	289	Green	
	C2	244.5	Green	
	C3	200	Green	
	C4	100	Green	
	C5	60	Green	
	C6	41	Red	




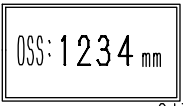

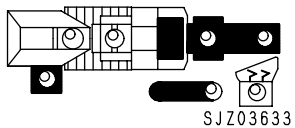
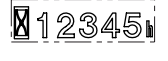
**When any item has exceeded the maintenance period when check before starting is performed (all caution lamps light up)**

When the check before starting is performed, if an item which has exceeded the maintenance period lights up, the hydraulic oil temperature gauge and hydraulic oil temperature monitor are turned OFF and the following cautions are displayed.

Symbol	Displayed item	Item checked by check before starting	While engine is stopped	While engine is running
 SAD01481	Engine oil pressure	●	—	Lamp lights up and buzzer sounds when abnormal.
 SAP00522	Battery charge	●	—	Lamp lights up when abnormal.
 SAD01479	Radiator coolant level	●	Lamp lights up when abnormal.	Lamp lights up and buzzer sounds when abnormal.
 SAP00523	Engine oil level	●	Lamp lights up when abnormal.	—
 SAP00521	Air cleaner clogging	●	—	Lamp lights up when abnormal.
 9JH09787	Water separator	●	Lamp lights up when abnormal.	Lamp lights up when abnormal.
 SJP08780	Maintenance			Lamp lights up when forecast/warning is given. Lamp lights up for only 30 seconds after key is turned ON, then goes off.

The cautions are displayed from the left upper corner in order of the time when they occurred. If the hydraulic oil temperature rises or lowers abnormally while the above cautions are displayed, only the symbol is displayed.

Hydraulic oil temperature	Colors of symbol
Low (Below B6 or equivalent)	Black on white background
Normal (B6 – B2)	Not displayed
High (Above B2)	White on red background

Display section	Symbol	Displayed item	Display range	Display method
Monitor	 SJZ03628	Working mode	In working mode	Set mode is displayed.
	 SJZ03629	Travel speed	In travel mode Lo, Mi, Hi	Set mode is displayed.
	 SJZ03630	Inspection mode	In inspection mode A, S, M	Set mode is displayed.
	 SJZ03631	Actual crusher clearance monitor	In inspection mode	Actual crusher clearance is displayed. (*1)
	 SJZ03632	Set crusher clearance monitor	In inspection mode (A, S)	Set crusher clearance is displayed. (*2)
	 SJZ03633	Condition of each device	Displayed in working mode	Condition of each device is displayed.
Service meter	 SJP08785	Service meter indicator	While service meter is in operation	Lights up while service meter is in operation.

\*1. The displayed clearance and the measured clearance may not be the same.

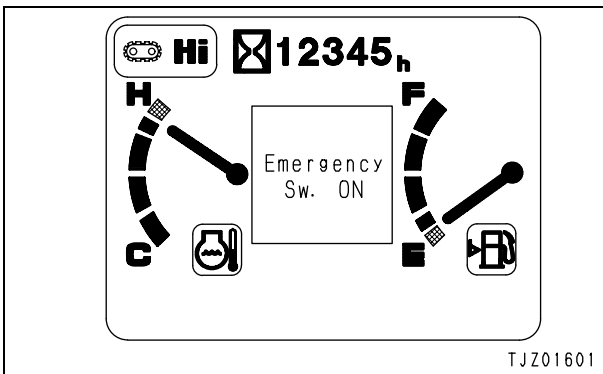
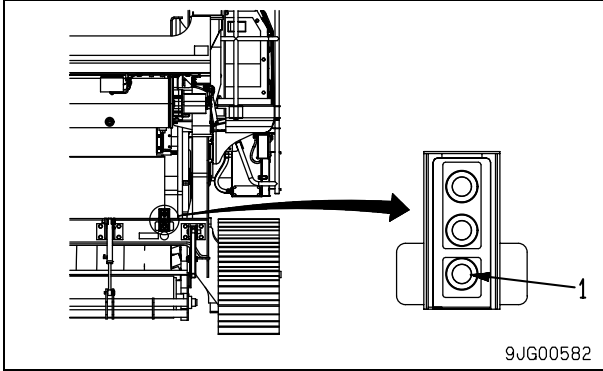
\*2. In the semiautomatic (S) mode, the quantity of adjustment of the clearance is displayed. If the clearance is set toward the + side (- side), it is increased (decreased).  
In the automatic (A) mode, the clearance to be set is displayed.

**When machine is stopped in emergency**

If the machine is stopped in an emergency, the following are displayed.

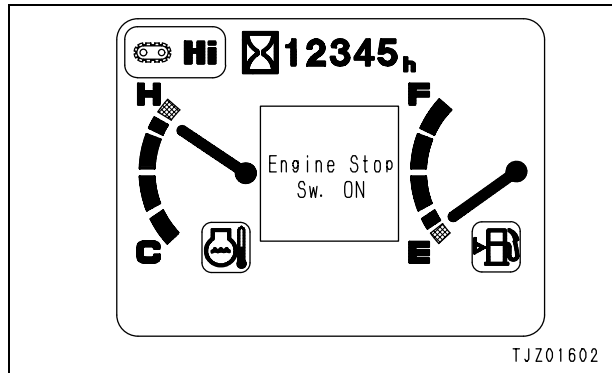
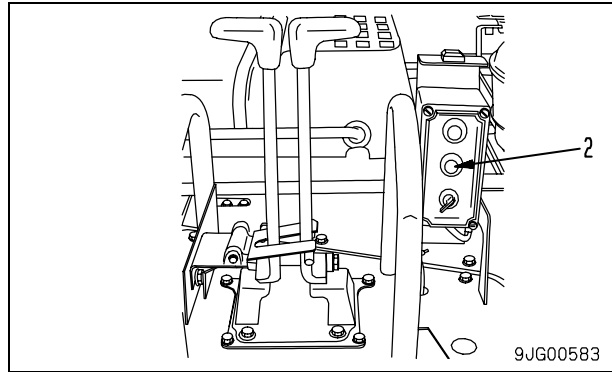
**Emergency stop switch ON warning**

If emergency stop switch (1) is depressed, the whole work equipment stops, the horn sounds, and the items shown below are displayed.

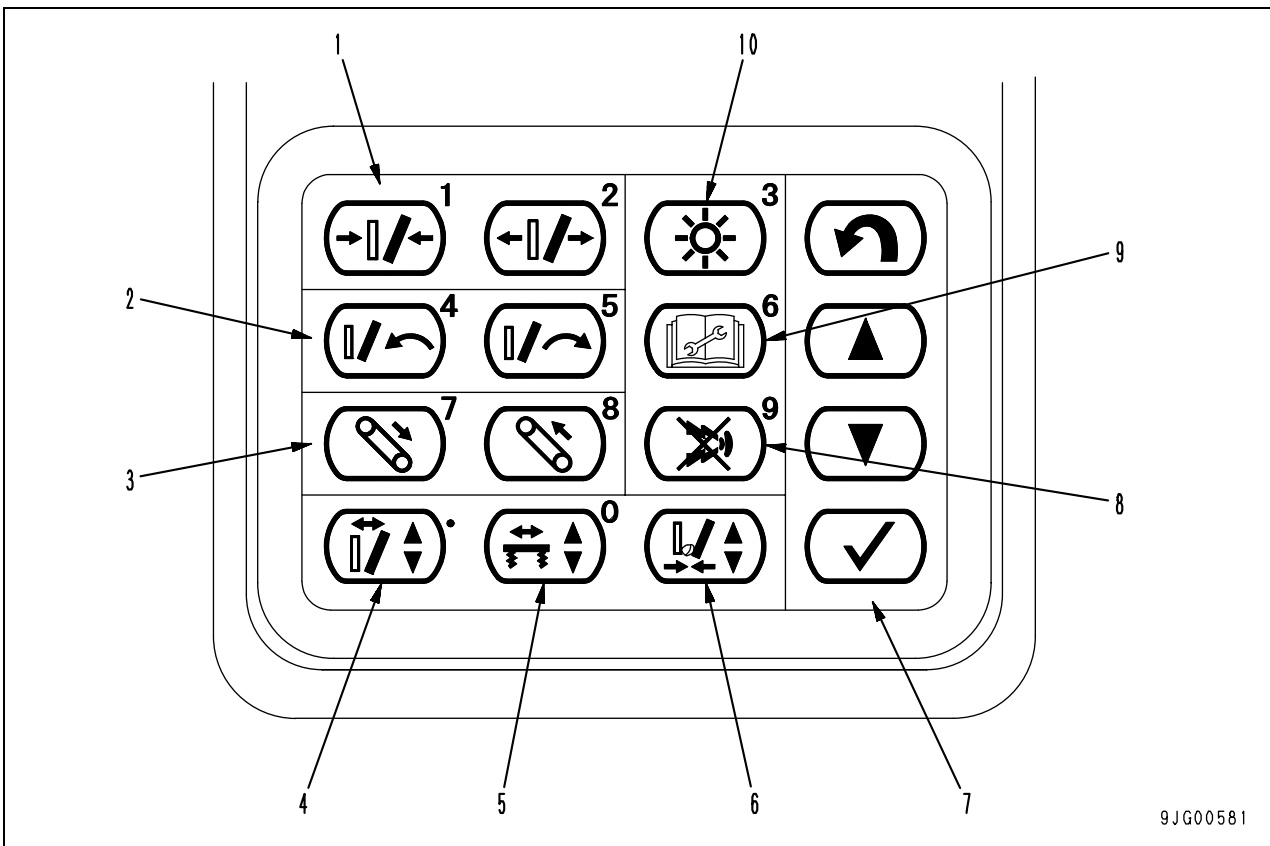


**Engine stop switch ON warning**

If engine stop switch (2) is depressed, the whole work equipment stops, the engine stops, the horn sounds, and the items shown below are displayed.



Operation section



9JG00581

1. Crusher clearance adjustment switch
2. Crusher manual rotation switch
3. Conveyor manual rotation switch
4. Crusher speed setting screen selector switch
5. Feeder speed setting screen selector switch
6. Crusher load setting screen selector switch
7. Operation switch
8. Buzzer cancel switch
9. Maintenance switch
10. Display brightness and contrast adjustment switch



- **Crusher clearance adjustment switch**

This switch is used to adjust the crusher clearance manually.  
This switch is effective when the manual adjustment mode (M mode) is selected in the inspection mode.
- **Crusher manual rotation switch**

This switch is used to rotate the crusher manually.  
This switch is effective when the crusher stops in the work/inspection mode.
- **Conveyor manual rotation switch**

This switch is used to rotate the conveyor manually.  
This switch is effective in the inspection mode.
- **Crusher speed setting screen selector switch**

This switch is used to set the crusher speed.  
If this switch is depressed, the speed setting screen appears and you can set the crusher speed.
- **Operation switch**

This switch is used to use various setting functions.  
(For details, see the section of each function.)
- **Buzzer cancel switch**

When the machine detects abnormality and the buzzer of the multi monitor sounds, stop the buzzer with this switch. The buzzer sounds when any of the following is detected.

  - Abnormal coolant level
  - Abnormal engine oil pressure
  - Overheating of engine coolant
  - Abnormality in fuel control dial potentiometer
  - Disconnection or short circuit in pump PC-EPC valve
  - Disconnection or short circuit in governor motor phase A or B
- **Maintenance switch**

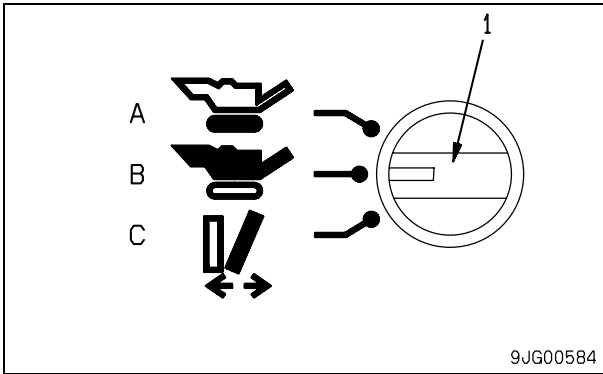
This switch is used to check the maintenance items.  
★ For the maintenance items, see Maintenance function.
- **Display brightness and contrast adjustment switch**

This switch is used to adjust the brightness and contrast of the display.

### Display and function of screen

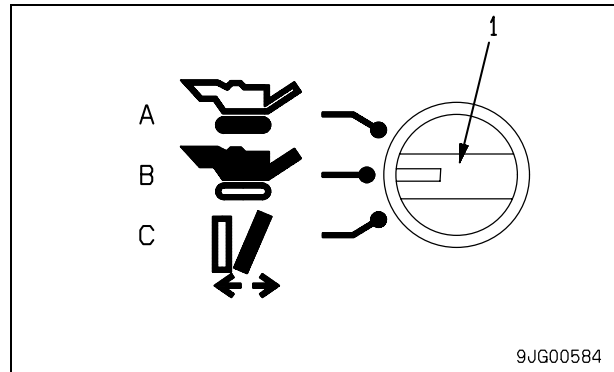
#### Travel mode/Work mode

- The monitor screen is set in the travel mode, work mode, or inspection mode with mode selector switch (1) on the control panel.



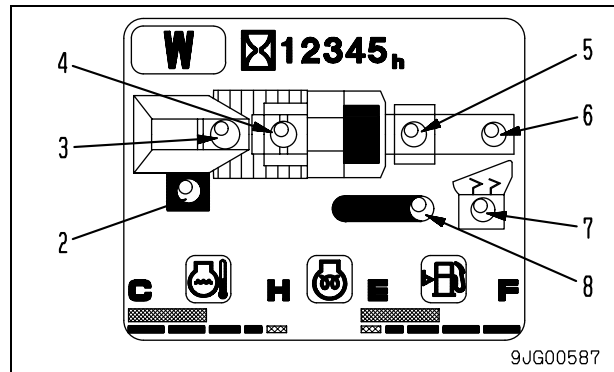
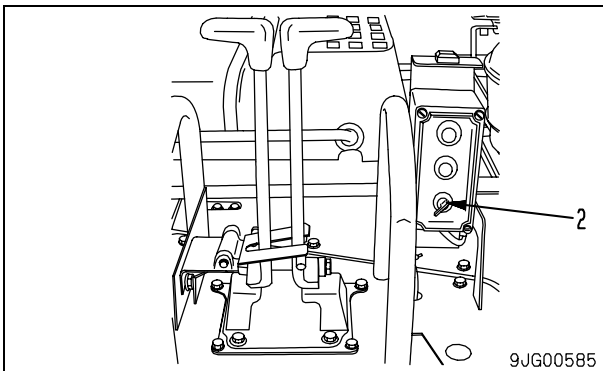
#### Work mode

If work mode (B) is selected with the mode selector switch (1), you can check the operating condition of each work equipment and find out the work equipment receiving an overload or abnormal load.

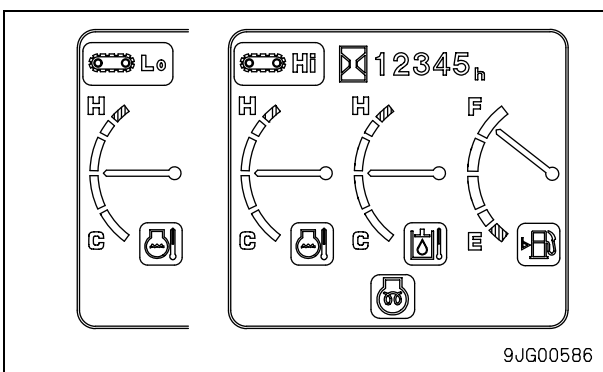


#### Travel mode

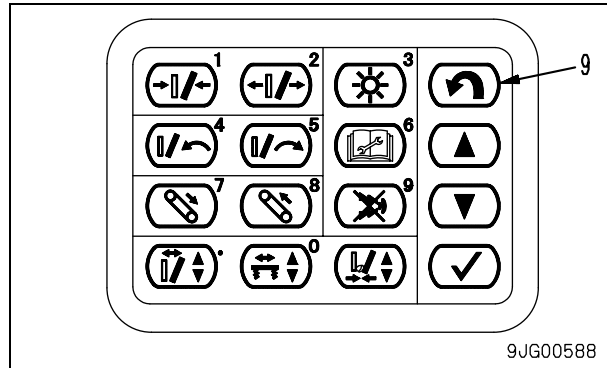
- If travel mode (A) is selected with mode selector switch (1) on the main panel and speed selector switch (2) on the upper control panel is changed, Lo (Low-speed travel) or Hi (Hi-speed travel) is displayed.



- Mode selector switch
- Side conveyor condition lamp
- Feeder condition lamp
- Crusher condition lamp
- Magnetic separator condition lamp
- Conveyor condition lamp
- Vibratory screen condition lamp
- Secondary conveyor condition lamp



- If an abnormal load is applied and a red lamp lights up (See the table on the next page), depress return switch (9) or restart the abnormally loaded work equipment, and the lamp is reset.



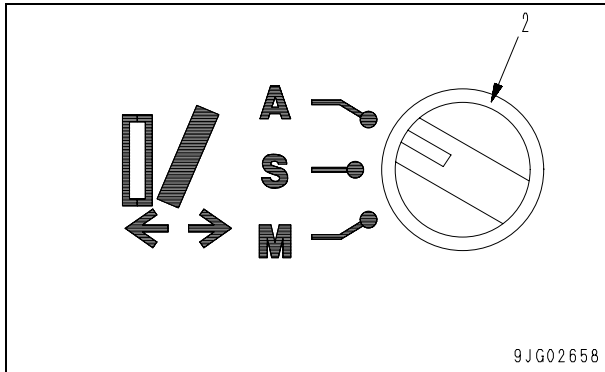
**Conditions for lighting work equipment lamp**

	Conveyor	Crusher	Feeder	Magnetic separator	Side conveyor (If equipped)	Secondary conveyor (If equipped)	Vibratory screen (If equipped)
Stop	White lamp lights up	White lamp lights up	White lamp lights up	Transparent	Transparent	Transparent	Transparent
Forward drive	White lamp lights up	White lamp lights up	White lamp lights up	Transparent	Transparent	Transparent	Transparent
Reverse drive	—	White lamp lights up	—	—	—	—	—
Overload	—	Red lamp flashes (*1)	—	—	—	—	—
Abnormal load	Red lamp lights up	Red lamp lights up (*2, 3)	—	Red lamp lights up	Red lamp lights up	Red lamp lights up	Red lamp lights up
Stopped under overload	—	—	Green lamp flashes	—	—	—	—

- \*1. An overload on the crusher means that an excessive pressure load is applied to the crusher.
- \*2. An abnormal load on the crusher means that the crusher lock cylinder slips in the clearance increasing direction or the swing tooth moves into the maximum crusher clearance range.
- \*3. A red lamp lighting because of an abnormal load is reset when "return" switch (9) is depressed or the abnormally loaded work equipment is restarted.

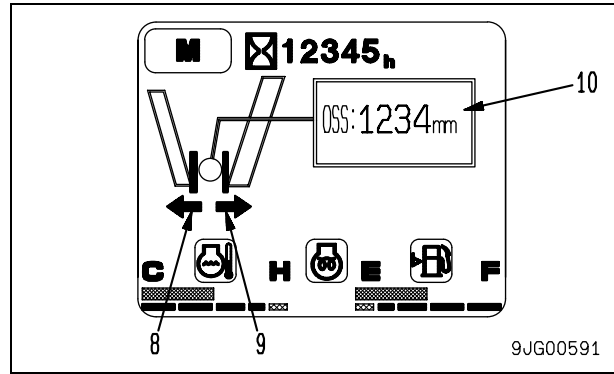
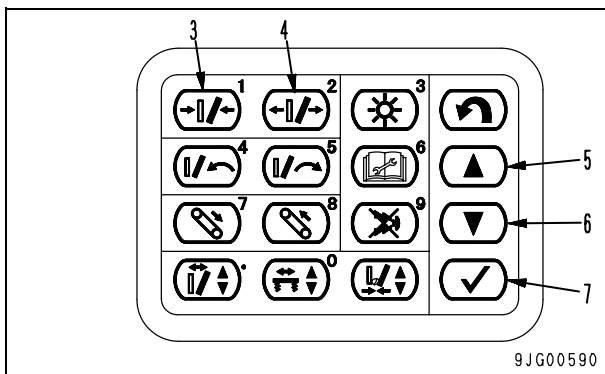
**Inspection mode**

- If work mode (B) is selected with the mode selector switch (2), you can check the operating condition of each work equipment and find out the work equipment receiving an overload or abnormal load.
- The inspection mode has the manual (M), semiautomatic (S), and automatic (A) modes, each which is selected by operating crusher clearance adjustment mode selector switch (2).



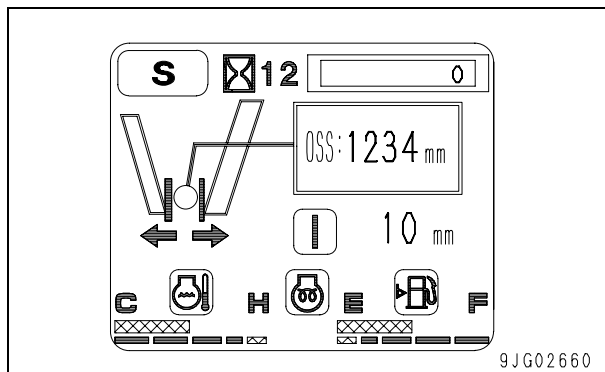
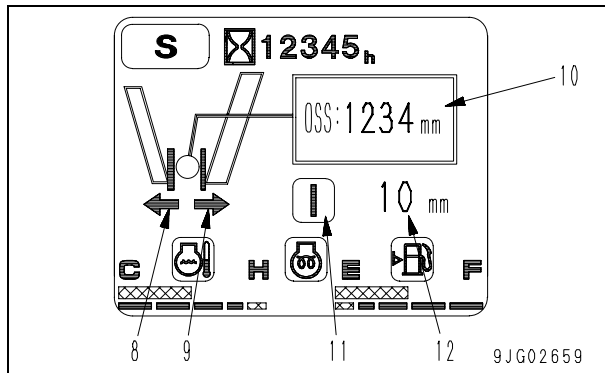
**1. Manual (M)**

- While clearance closing switch (3) of the monitor is depressed, clearance closing monitor (8) flashes and actual crusher clearance value (10) changes.
- While clearance opening switch (4) of the monitor is depressed, clearance opening monitor (9) flashes and actual crusher clearance value (10) changes.
- ★ If actual crusher clearance value (10) is smaller than 50 mm or larger than 150 mm, it lights up red.



**2. Semiautomatic (S)**

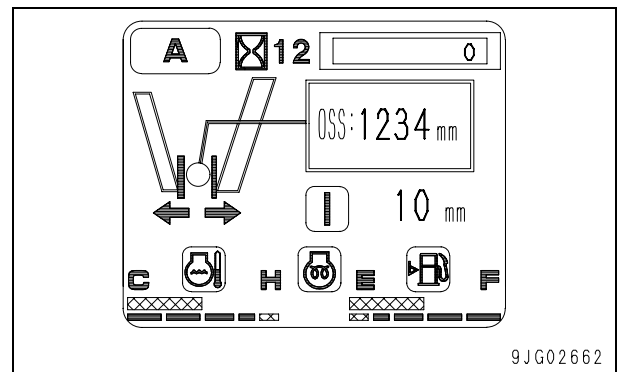
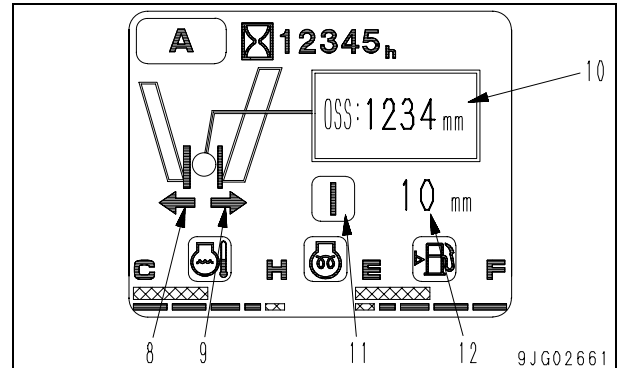
- 1) Just after this screen appears, the cursor is at clearance set settle monitor (11).
- 2) Depress UP switch (5) or DOWN switch (6) of the monitor to bring the cursor to crusher clearance set value monitor (12).
- 3) Depress settle switch (7), and clearance set value (12) lights up.
- 4) Depress UP switch (5) or DOWN switch (6) of the monitor to bring the cursor to the clearance set settle monitor and depress the settle switch (7).
- 5) Clearance set value (12) flashes and the clearance is increased or decreased as explained below.
  - When clearance set value (12) is +: The clearance is increased by the value of (12) from current actual crusher clearance (10).
  - When clearance set value (12) is -: The clearance is decreased by the value of (12) from current actual crusher clearance (11).
- 6) While the crusher clearance is increasing, (9) flashes. While the former is decreasing, (8) flashes.
  - ★ The input value to crusher clearance set value (12) is so limited that the actual crusher clearance will be in the effective using range of 50 – 150 mm. When crusher clearance set value (12) is increased or decreased and settle switch (7) is depressed, if the actual crusher clearance is out of the above range, the crusher clearance set value is returned to the former value.



### 3. Automatic (A)

- 1) Just after this screen appears, the cursor is at clearance set settle monitor (11).
- 2) Depress UP switch (5) or DOWN switch (6) of the monitor to bring the cursor to crusher clearance set value monitor (12).
- 3) Depress settle switch (7), and clearance set value (12) lights up.
- 4) Depress UP switch (5) or DOWN switch (6) of the monitor to bring the cursor to the clearance set settle monitor and depress the settle switch (7).
- 5) Clearance set value (12) flashes and the clearance is increased or decreased as explained below.
  - i The crusher clearance is decreased until the swing tooth touches the fixed tooth.
  - ii The crusher clearance is increased to crusher clearance set value (12).
  - iii When actual crusher clearance (10) becomes larger than crusher clearance set value (12), the automatic clearance adjustment is finished.
- 6) While the crusher clearance is increasing, (9) flashes. While the former is decreasing, (8) flashes.

- ★ The input range of crusher clearance set value (12) is 50 – 150 mm. When settle switch (7) is depressed, if the input value is out of the above range, it is returned to the former value.





**Crusher mode setting function**

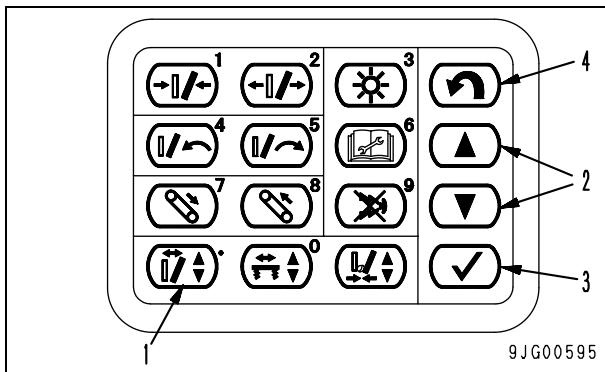
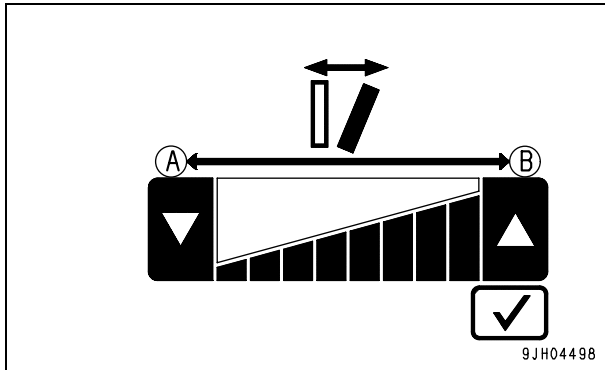
- This function is used to set the crusher speed.
- This function is used while the ordinary screen (travel mode, work mode, or inspection mode) is displayed.

**How to use**

- 1) Depress crusher speed set switch (1) of the monitor to display the adjustment screen.
- 2) Depress the operation switch (2) to select the crusher speed.

Operation switch	Operation
	Bar graph extends to right.
	Bar graph retract to left.

- 3) After selecting the level, depress input check switch (3). The selected crusher speed level is settled and the ordinary screen appears. At the same time, the crusher speed level changes.
- ★ The crusher speed does not change until the input check switch is depressed. If return switch (4) is depressed to return to the ordinary screen without depressing the input check switch, the original setting is maintained.





**Feeder speed setting function**

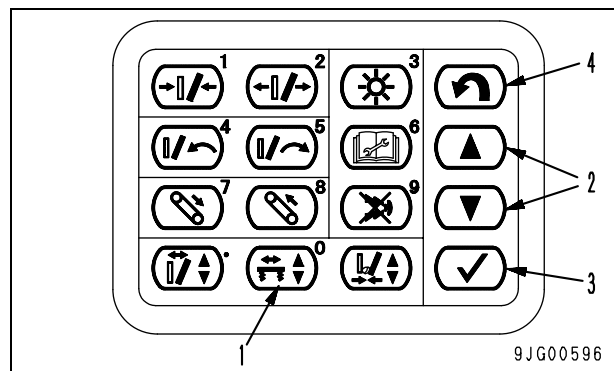
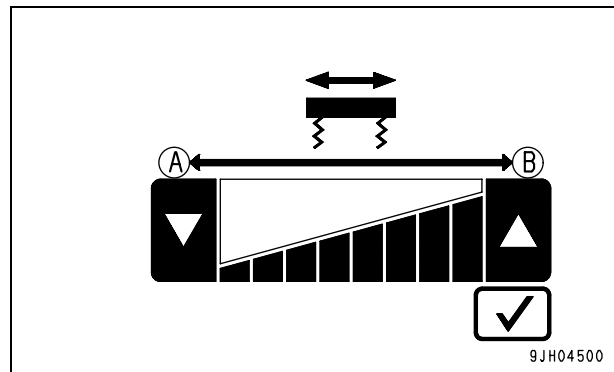
- This function is used to set the feeder speed. The material is sent to the crusher at a proper speed by selecting the feeder speed according to the contents of the work.
- This function is used while the ordinary screen (travel mode, work mode, or inspection mode) is displayed.

**How to use**

- 1) Depress feeder speed set switch (1) of the monitor to display the adjustment screen.
- 2) Depress the operation switch (2) to select the feeder speed.

Operation switch	Operation
	Bar graph extends to right.
	Bar graph retract to left.

- 3) After selecting the level, depress input check switch (3). The selected feeder speed level is settled and the ordinary screen appears. At the same time, the feeder speed changes.
- ★ The feeder speed does not change until the input check switch is depressed. If return switch (4) is depressed to return to the ordinary screen without depressing the input check switch, the original setting is maintained.





**Crusher load setting function**

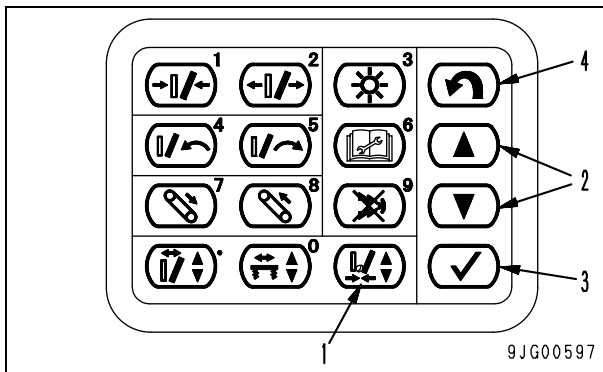
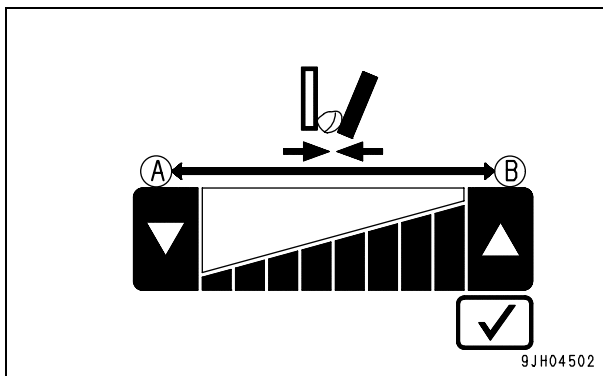
- This function is used to set the crusher load. The material is crushed properly, regardless of its type, by adjusting the crusher pressure switch in proportion to the load level.
- This function is used while the ordinary screen (travel mode, work mode, or inspection mode) is displayed.

**How to use**

- 1) Depress crusher load set switch (1) of the monitor to display the adjustment screen.
- 2) Depress the operation switch (2) to select the crusher load.

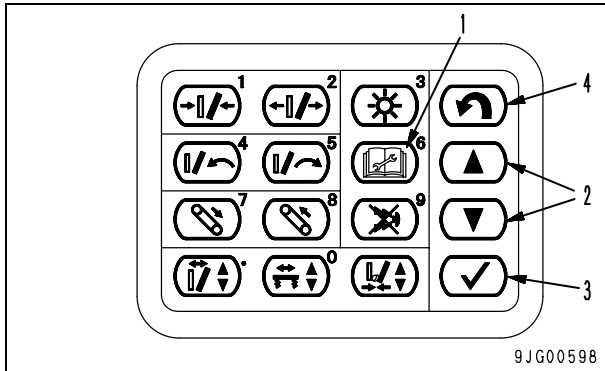
Operation switch	Operation
	Bar graph extends to right.
	Bar graph retract to left.

- 3) After selecting the level, depress input check switch (3). The selected crusher load level is settled and the ordinary screen appears. At the same time, the crusher load changes.
- ★ The crusher load does not change until the input check switch is depressed. If return switch (4) is depressed to return to the ordinary screen without depressing the input check switch, the original setting is maintained.



**Maintenance function**

When each of the 10 maintenance items approaches the time of maintenance such as replacement, inspection, addition, etc., if maintenance switch (1) is depressed, the caution lamp (yellow or red) lights up on the monitor display for 30 seconds after the key is turned ON to urge the operator to carry out the maintenance.



★ Maintenance items

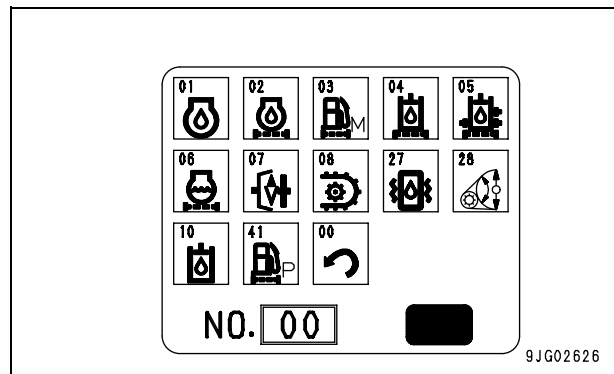
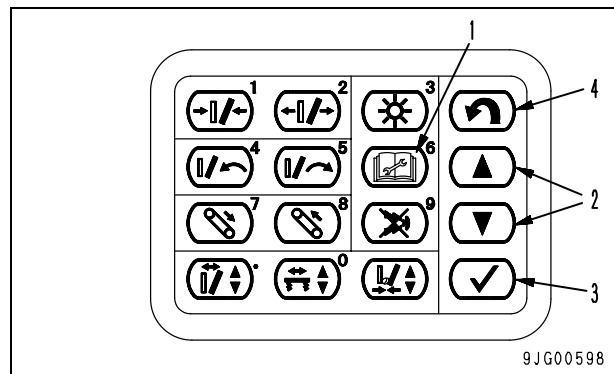
No.	Item	Replacement period (h)
01	Engine oil	500
02	Engine oil filter	500
03	Fuel filter	500
04	Hydraulic oil filter	1,000
05	Hydraulic tank breather	500
06	Corrosion resistor	1,000
07	Damper case oil	1,000
08	Final drive case oil	2,000
10	Hydraulic oil	5,000
27	Feeder vibrator oil	1,000
28	Crusher motor case oil	1,000
41	Fuel pre-filter	500

★ The above replacement period is set for each item and the remaining time before the maintenance is reduced as the machine is operated. The contents of the displayed caution depends on the remaining time as shown below.

Display	Condition
None	Remaining time before maintenance of every item is longer than 30 hours.
Forecast (Black symbol on yellow background)	Remaining time before maintenance of 1 or more items is shorter than 30 hours.
Warning (White symbol on red background)	Remaining time before maintenance of 1 or more items is shorter than 0 hour.

**Method of checking condition of maintenance items**

- ★ Perform the following while the operator screen is displayed.
1. Depress maintenance switch (1) to display the maintenance table screen.
    - ★ On this screen, the maintenance items are shown by symbols in a table.
  2. Select the No. of the item to be maintained with operation switch (2) or input it through the numeral keys.
    - ★ The cursor moves and the selected part is inverted.
    - ★ Similarly to the "relationship between the remaining time and display of caution" on the previous page, the items of remaining time shorter than 30 hours are indicated yellow and those of remaining time shorter than 0 hour are indicated red.



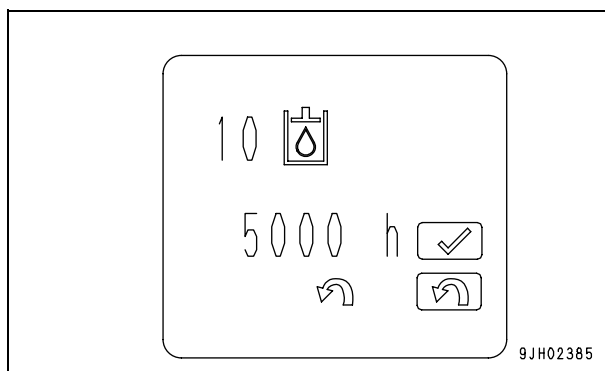
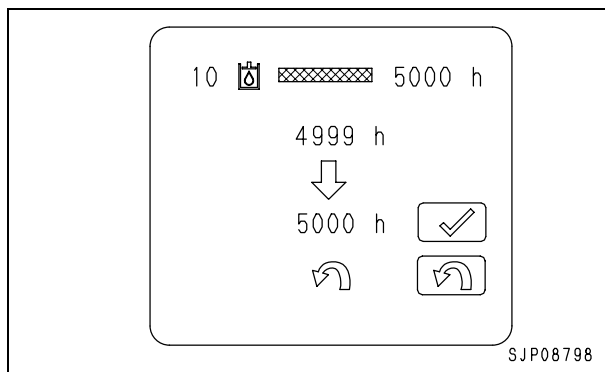


**Maintenance operation**

1. After selecting, depress input check switch (3), and the maintenance reset screen appears.
2. Check the contents of the maintenance reset screen. If there is no problem, depress input check switch (3) to display the check screen.

If you made a mistake in selecting the item, etc., depress return switch (4) to return to the maintenance table screen.

3. Check the contents of the check screen. If there is no problem, depress input check switch (3) to reset the maintenance time. After resetting is completed, the maintenance table screen appears again. When returning to the maintenance table screen to check the remaining time or when you selected a wrong item, depress return switch (4).
  - ★ On the check screen, the symbol and set time of the maintenance item are displayed in large size.
  - ★ If the maintenance time of an item is reset, the background of the symbol becomes the same as the background of the screen to show that the maintenance time has been reset.

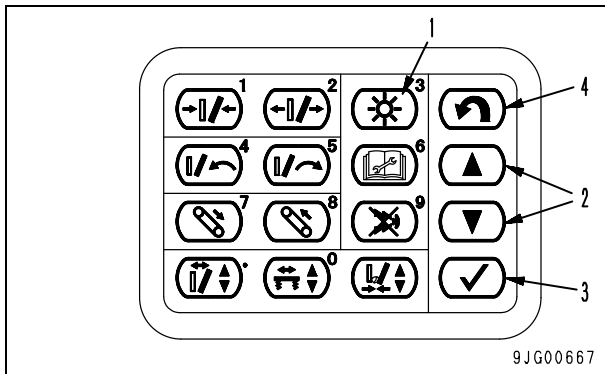


**Brightness, contrast adjustment function**

This function is used to adjust the brightness and contrast of the display.

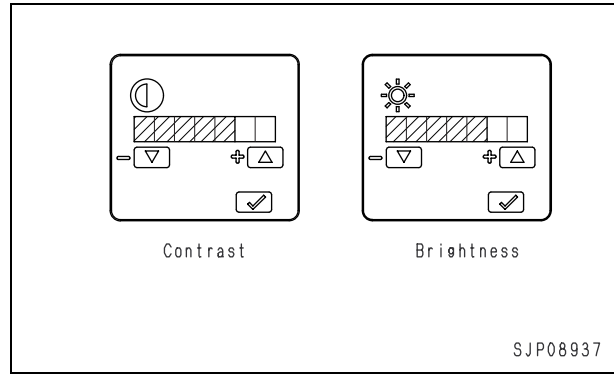
**Adjustment method**

- ★ Operate as follows when on the operator screen.
- 1) Press display brightness/contrast adjustment switch (1) and switch to the adjustment screen.



- 3) Press control switch (2) and adjust the brightness and contrast as desired.

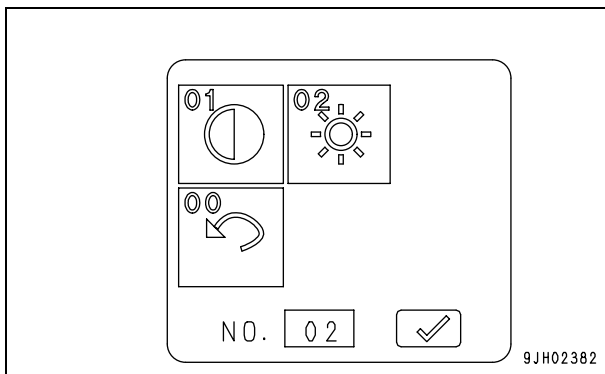
Control switch	Actuation
	Flow level bar graph extends to the right
	Flow level bar graph retracts to the left



★ Relationship between menu symbol and content.

No.	Symbol	Content
01	Return mark	Return
02	 SJP08935	Contrast
03	 SJP08936	Brightness

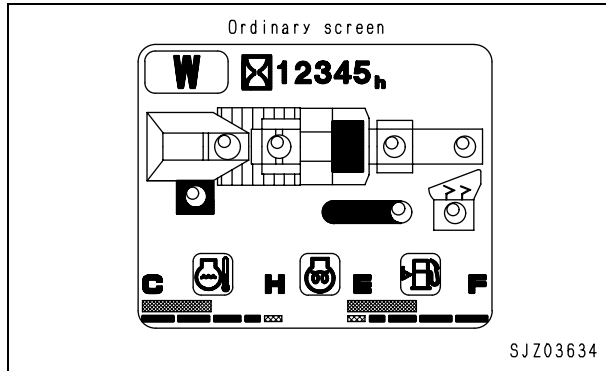
- 2) Press control switch (2), or use the 10-key pad to input the number (00 - 02) to select either contrast or brightness.  
After completing the selection, press input confirmation switch (3) and return to the adjustment screen.  
Then press return switch (4) or use the 10-key pad to set to [00] and press input confirmation switch (3) to return to the normal screen.



**Password function**

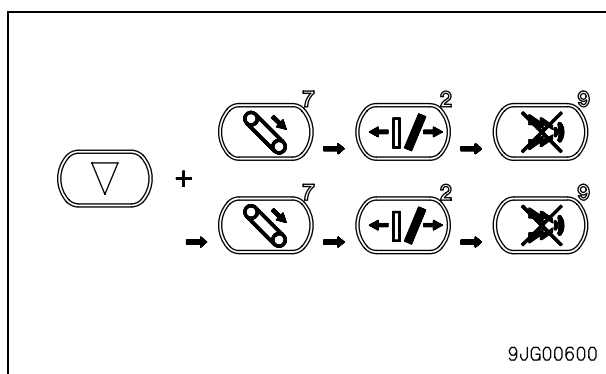
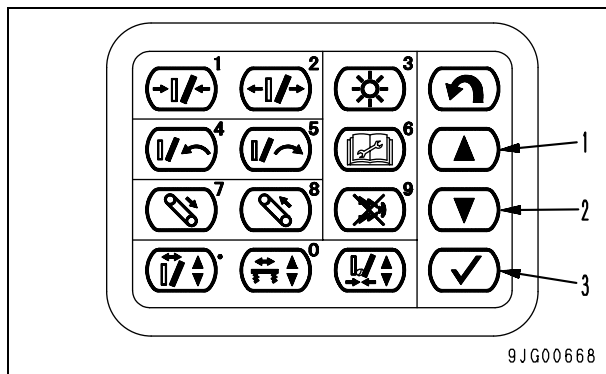
If a password is set in advance, the engine does not start unless the password is input.

When setting or changing the password, move to the set screen from the ordinary screen. This work cannot be carried out until 10 minutes pass after the starting switch is turned ON and the monitor screen changes to the ordinary screen.

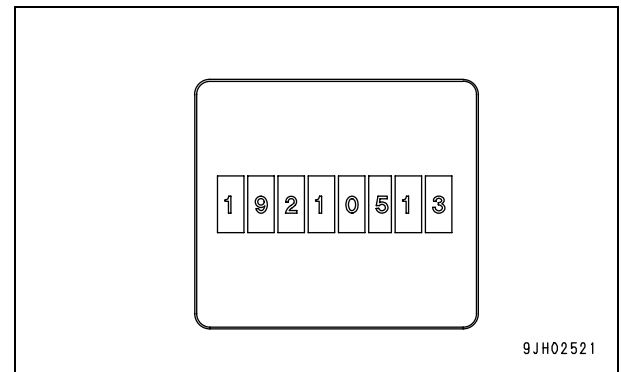


**Setting and changing method**

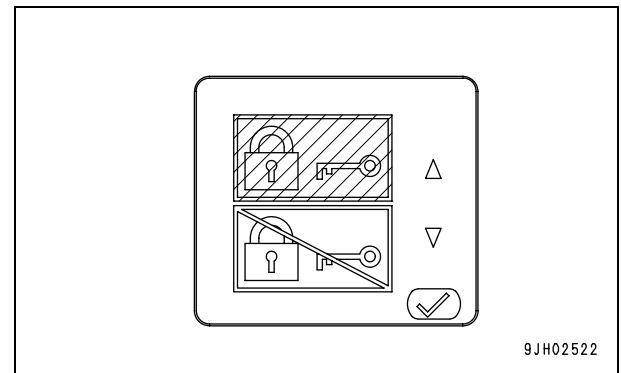
Turn the starting switch ON. While depressing operation switch (2), depress 7, 2, 9, 7, 2, and 9 keys on the numeral key pad in order, and the screen to input an 8-digit number appears.



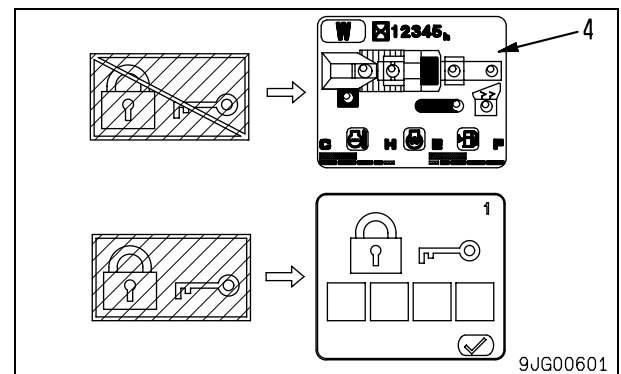
While the screen is waiting for an input, input the 8-digit number "19210513" with the numeral keys. After the last digit (3) is input, the screen to check valid/invalid of the password appears.



- Depress operation switch (1) or (2) to set valid/invalid of the password. In the figure at right, operation switch (1) is depressed to set "valid".

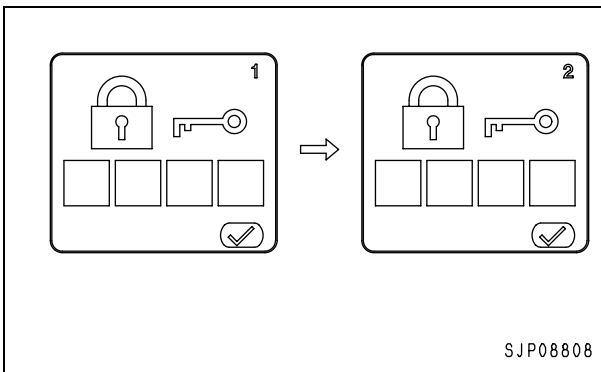


- If invalid is selected and input check switch (3) is depressed, the password function becomes invalid and ordinary screen (4) appears. If valid is selected and input check switch (3) is depressed, the password function becomes valid and the screen to input a 4-digit number appears.



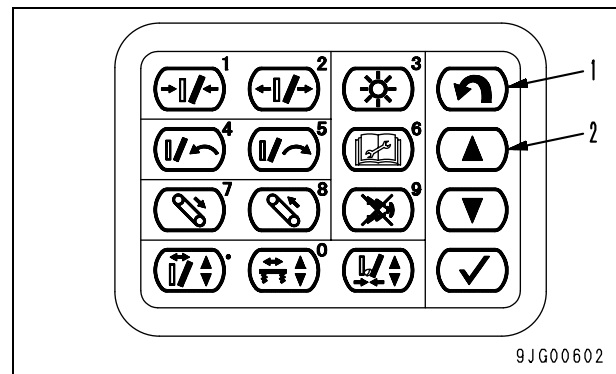
5. On the input screen (where symbols of a lock and a key are displayed), input a 4-digit number and depress input check switch (3). After the input check switch is depressed, the system urges you to input the same 4-digit number again for reconfirmation. Input the same 4-digit number and depress input check switch (3) to settle it. When inputting the number first time, "1" is displayed at the right top of the screen. When inputting the number second time, "2" is displayed.

★ If the number input first time is different from that input second time, the password is not settled but the screen to input the number first time appears again.



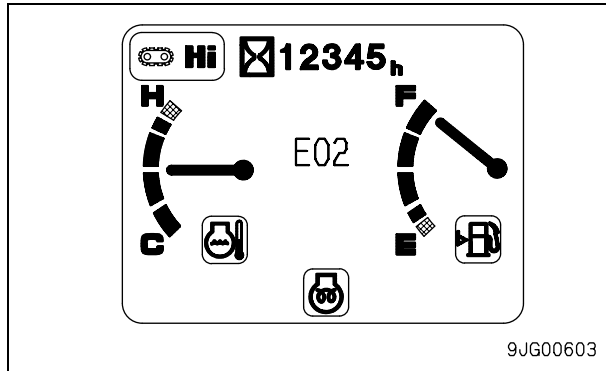
**Function of checking service meter**

- When the starting switch is turned OFF, if return switch (1) and operation switch (2) of the monitor are depressed and held simultaneously, the service meter is indicated on the display.
- If the switches are released, the service meter disappears. It takes 3 - 5 seconds to display the service meter after depressing the switches.

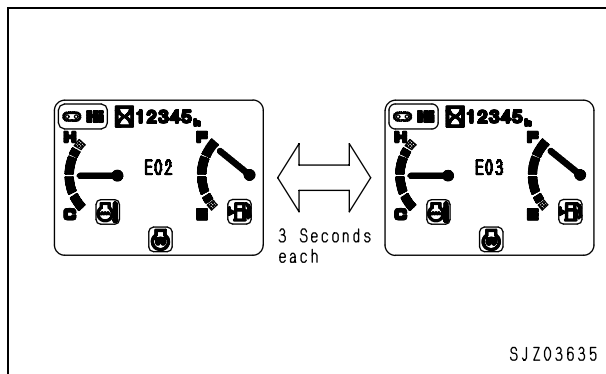


**Function of displaying user code**

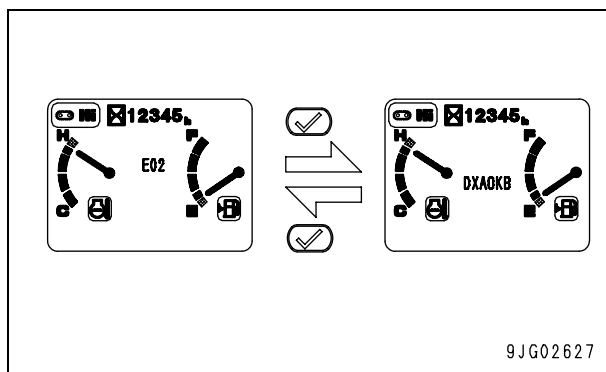
- If there is any trouble in operation of the machine, the user code is displayed on the monitor to urge the operator to take remedy.
- The ordinary screen (Travel, work, inspection) changes to the screen shown at right and the user code is indicated in the part of the hydraulic oil temperature gauge.



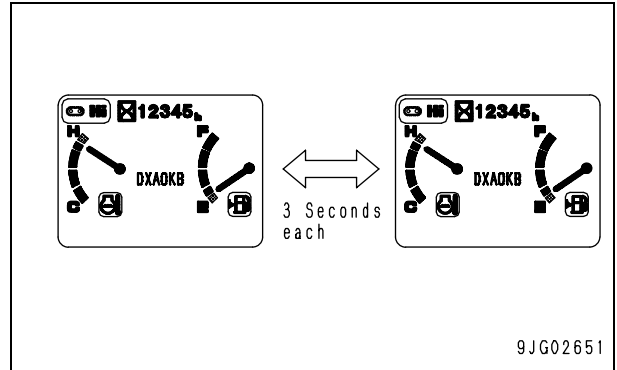
- If there are multiple troubles, the user codes are displayed alternately at intervals of 3 seconds.



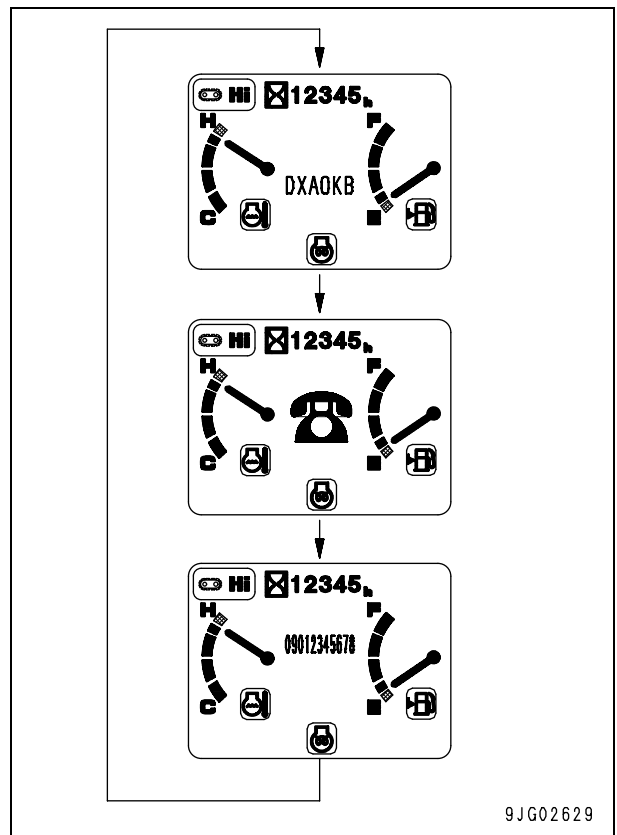
- While the user code is displayed, if the input check switch is depressed, the service code and failure code are displayed.



- If there are multiple service codes/failure codes which cause the service codes, all of them are displayed at intervals of 3 seconds. Even if there is a service code/failure code which does not cause any user code, it is not displayed by this function.



- If a phone number is set by using the phone number input function of the service menu, it and a phone symbol can be displayed instead of the service code/failure code. For the method of inputting and setting a phone number, see Testing and adjusting, Special functions of monitor panel.

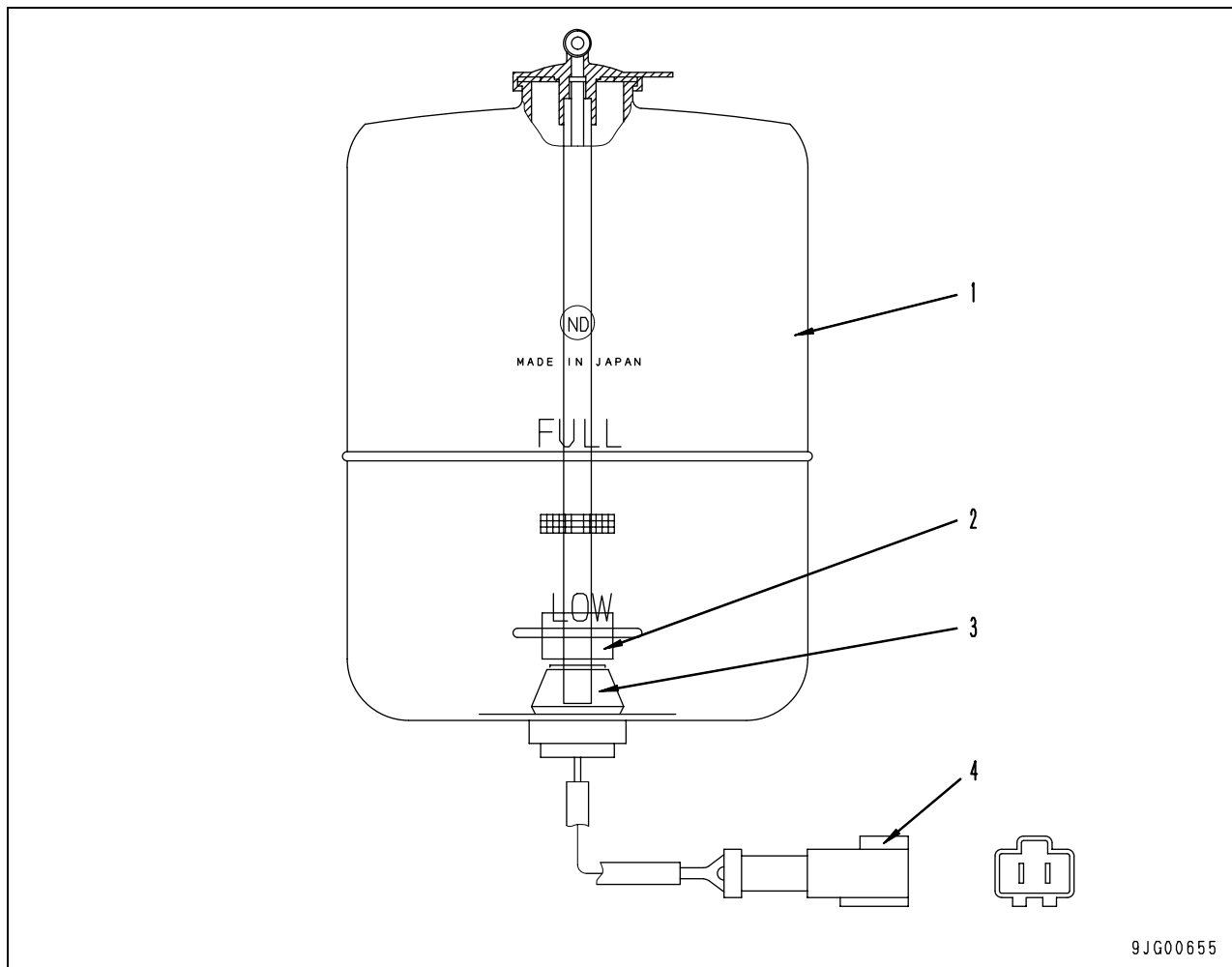


### Sensor

- The signals from the sensors are input to the panel directly. Either side of a sensor of contact type is always connected to the chassis ground.

Sensor name	Type of sensor	When normal	When abnormal
Engine oil level	Contact	ON (Closed)	OFF (Open)
Engine oil pressure	Contact	OFF (Open)	ON (Closed)
Hydraulic oil temperature	Resistance	—	—
Hydraulic oil level	Contact	ON (Closed)	OFF (Open)
Coolant temperature	Resistance	—	—
Coolant level	Contact	ON (Closed)	OFF (Open)
Fuel level	Resistance	—	—
Air cleaner clogging	Contact	OFF (Closed)	ON (Open)

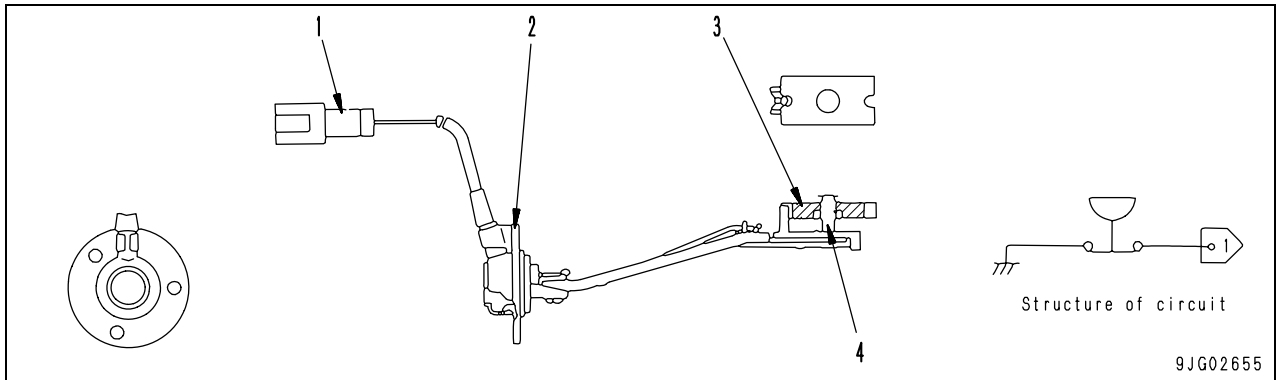
### Coolant level sensor



9JG00655

- Sub tank
- Float
- Sensor
- Connector

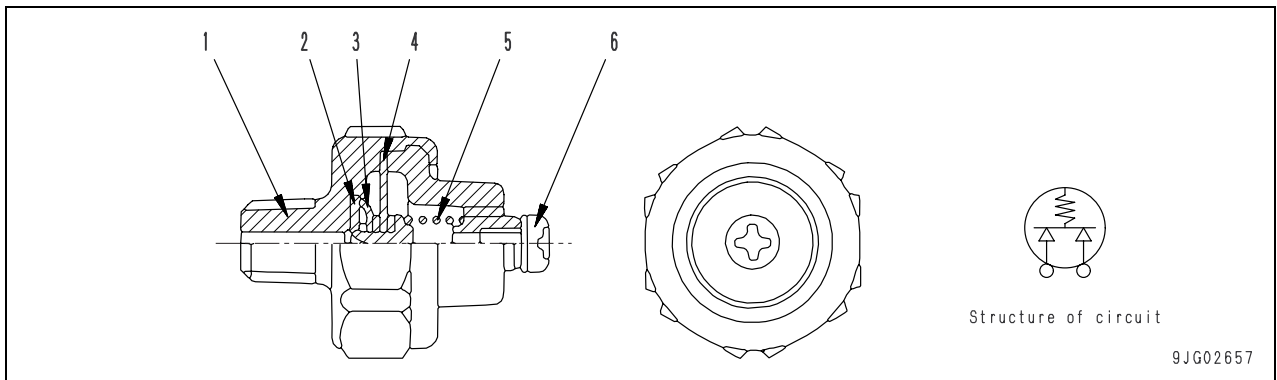
**Engine oil level sensor, Hydraulic oil level sensor**



- 1. Connector
- 2. Bracket

- 3. Float
- 4. Switch

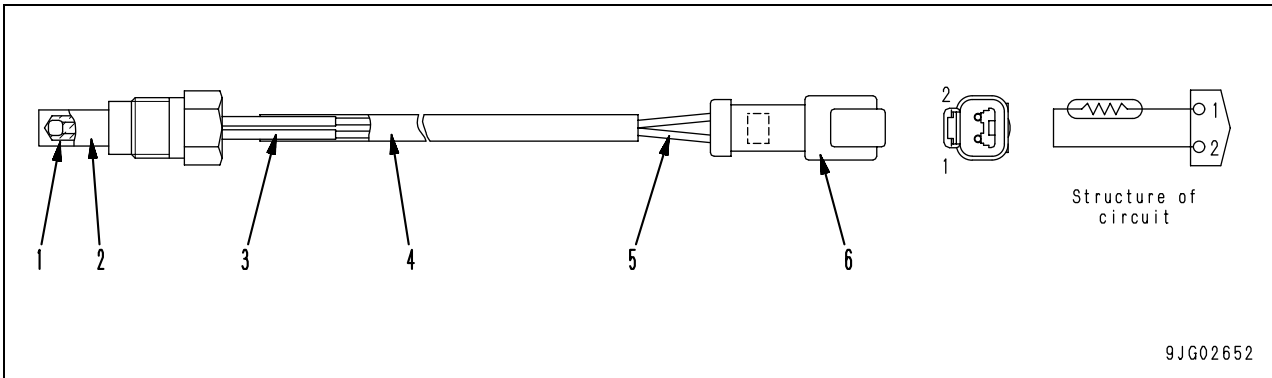
**Engine oil pressure sensor (For low pressure)**



- 1. Plug
- 2. Contact ring
- 3. Contact

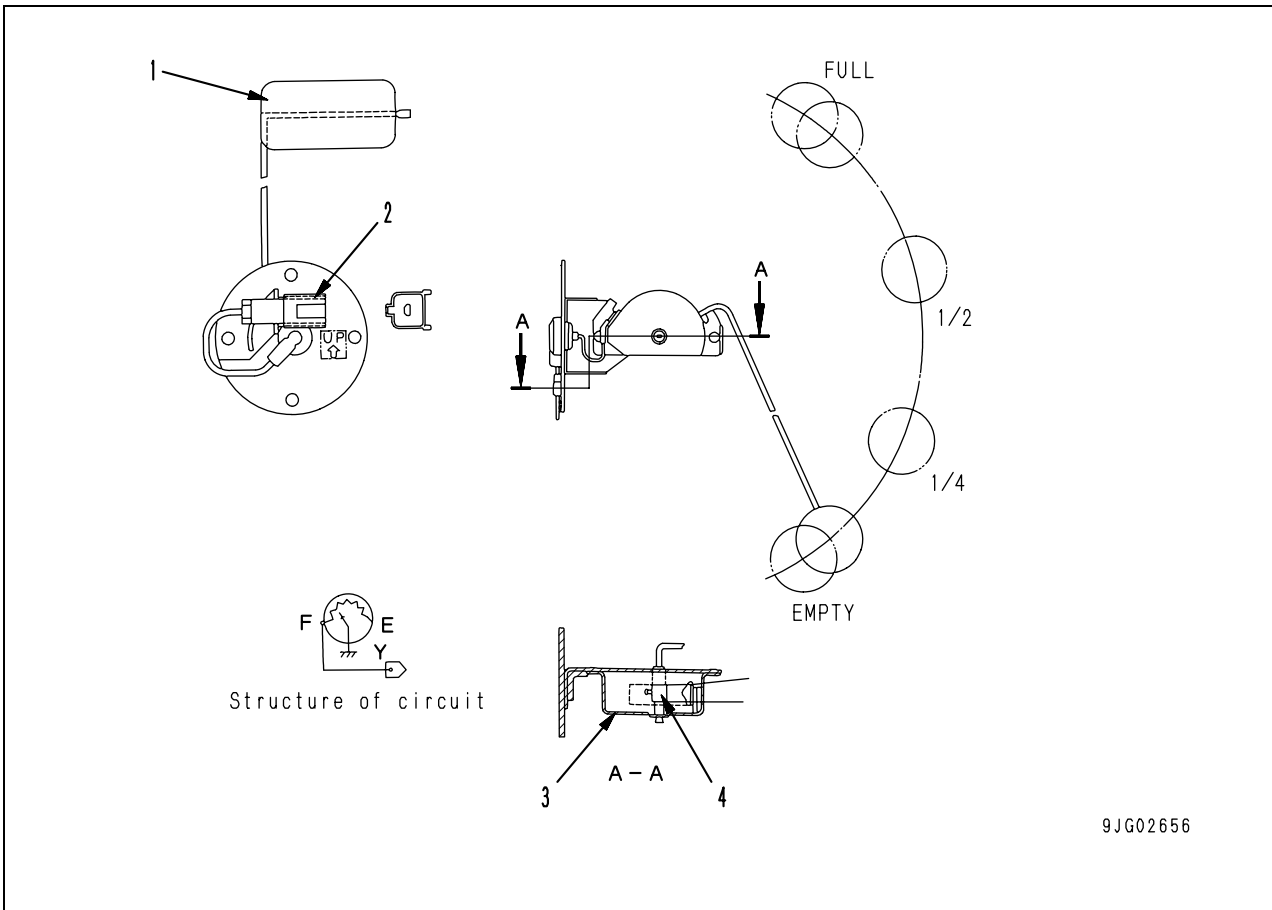
- 4. Diaphragm
- 5. Spring
- 6. Terminal

Coolant temperature sensor, Hydraulic oil temperature sensor



- |               |              |
|---------------|--------------|
| 1. Thermistor | 4. Tube      |
| 2. Body       | 5. Wire      |
| 3. Tube       | 6. Connector |

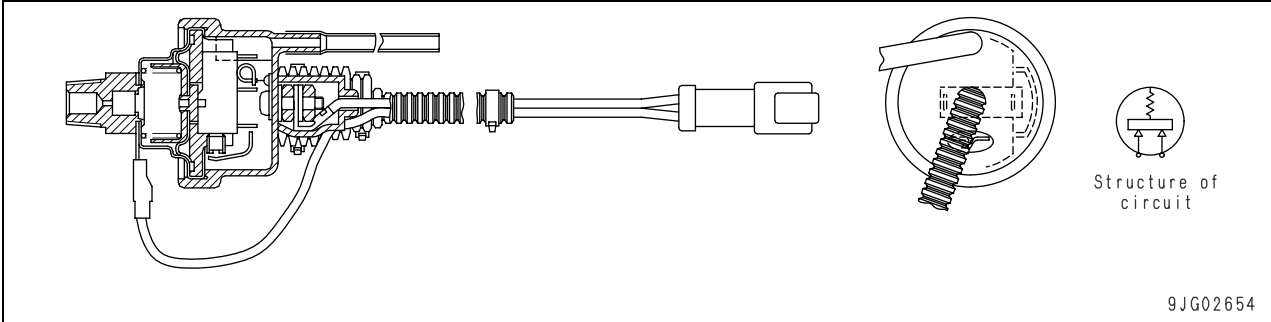
Fuel level sensor



- |                      |
|----------------------|
| 1. Float             |
| 2. Connector         |
| 3. Cover             |
| 4. Variable resistor |



**Air cleaner clogging sensor**



BR380JG-1E0 Mobile crusher

---

Form No. SEN01355-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# **MOBILE CRUSHER**

## **BR380JG-1E0**

<b>Machine model</b>	<b>Serial number</b>
BR380JG-1E0	2001 and up

---

## **20 Standard value table**

### **Standard service value table**

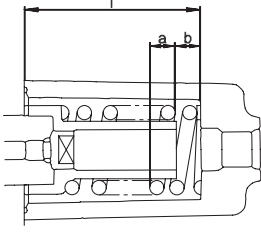
---

Standard value table for engine .....	2
Standard value table for chassis .....	3

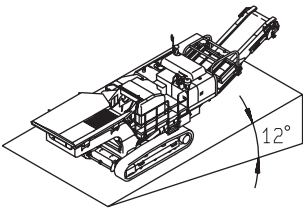
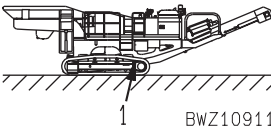
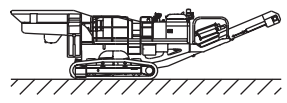
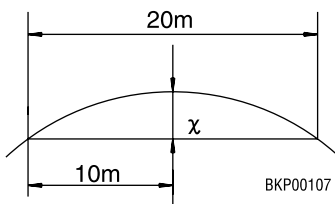
## Standard value table for engine

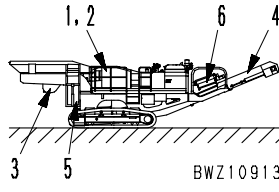
Applicable model			BR380JG-1E0		
Engine			SAA6D107E-1		
Item	Measurement condition		Unit	Standard value for new machine	Judgement criteria
Engine speed	• Coolant temperature: operating range	High idle	rpm	2,330 ± 50	2,330 ± 50
		Low idle	rpm	1,050 ± 25	1,050 ± 25
		Rated speed	rpm	2,050	2,050
Intake pressure (boost pressure)	• Coolant temperature: operating range • At rated output		kPa {mmHg}	Min. 147 {Min. 1,100}	120 {900}
Exhaust gas color	• Coolant temperature: operating range	At sudden acceleration	%	Max. 25	35
		At high idle	%	—	—
Valve clearance	• Normal temperature	Intake valve	mm	0.25	0.152 – 0.381
		Exhaust valve	mm	0.51	0.381 – 0.762
Compression pressure	• Oil temperature: 40 – 60°C	Compression pressure	MPa {kg/cm <sup>2</sup> }	Min. 2.41 {Min. 24.6}	1.69 {17.2}
		Engine speed	rpm	250 – 280	250 – 280
Blow-by pressure	• Coolant temperature: operating range • At rated output		kPa {mmH <sub>2</sub> O}	Max. 0.98 {Max. 100}	1.96 {200}
Oil pressure	• SAE0W30E0S, SAE5W40E0S, SAE10W30DH, SAE15W40DH, SAE30DH engine oil • Coolant temperature: operating range	High idle	MPa {kg/cm <sup>2</sup> }	Min. 0.29 {Min. 3.0}	0.25 {2.5}
		Low idle	MPa {kg/cm <sup>2</sup> }	Min. 0.10 {Min. 1.0}	0.07 {0.7}
Oil temperature	• Whole speed range (inside oil pan)		°C	80 – 110	120
Fan belt tension	• Between fan pulley and alternator pulley • Deflection when pressed with finger force of approx. 98 N{10 kg}		mm	8	6 – 10

## Standard value table for chassis

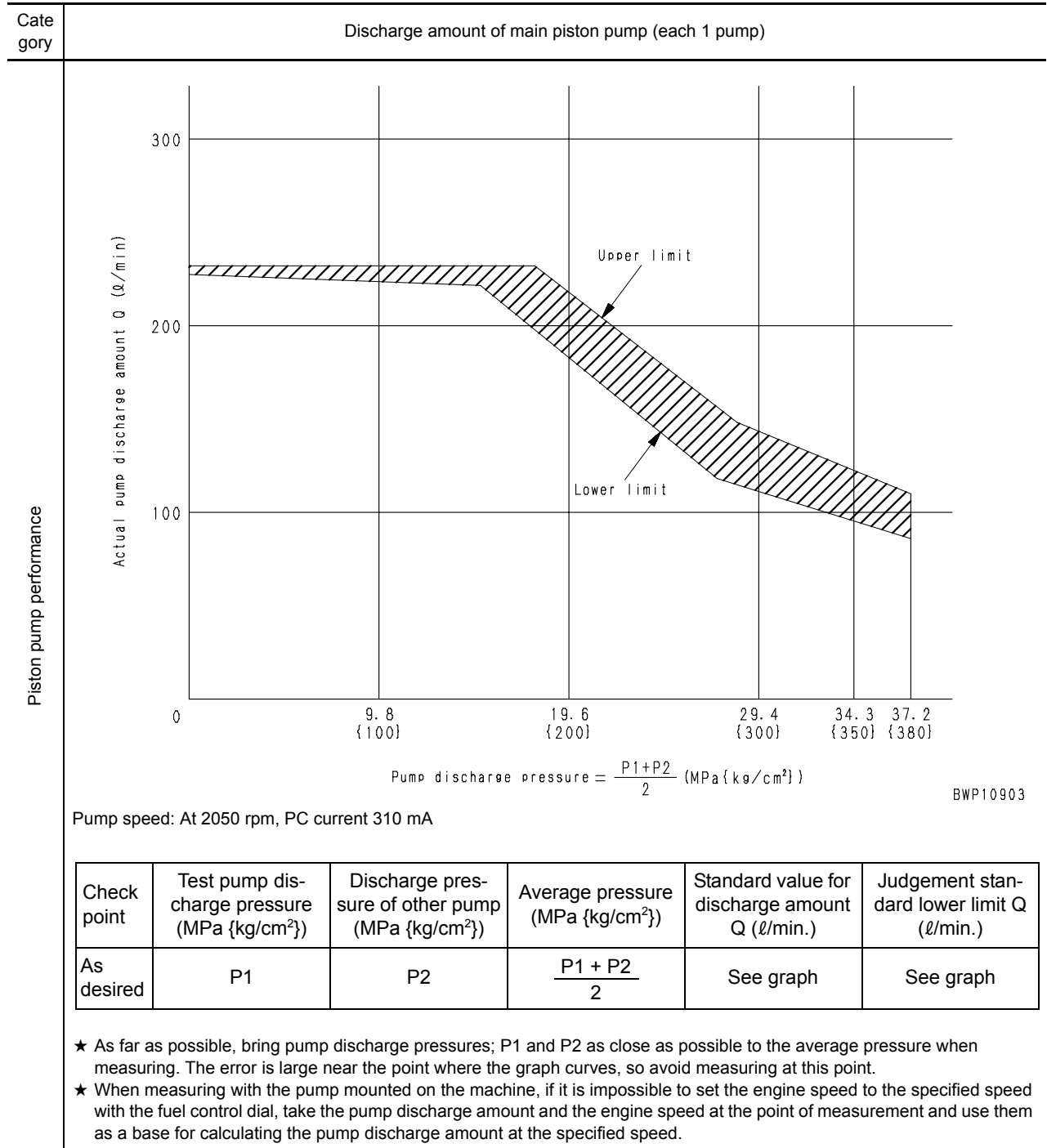
Applicable Model				BR380JG-1E0					
Category	Check Item	Measurement Condition	Unit	Standard value			Permissible value		
Engine revolution	2 pumps in relief condition	<ul style="list-style-type: none"> <li>Engine coolant temperature: To be within operating range</li> <li>Oil temperature: 45 – 55°C</li> <li>Engine running at full throttle</li> <li>Travel circuit in relief condition (locking track shoe)</li> </ul>	rpm	2,050 ± 100			2,050 ± 100		
Spool stroke	All spools	 BLP00101	mm	<i>ℓ</i>	a	b	<i>ℓ</i>	a	b
				—	9.5 ± 0.5	9.5 ± 0.5	—	9.5 ± 0.5	9.5 ± 0.5
Control lever	Stroke	<ul style="list-style-type: none"> <li>Grip the lever at its knob center</li> <li>Read out the max. value up to the stroke end</li> <li>Stop the engine</li> <li>Remove lever play at the neutral position</li> </ul>	mm	86 ± 9			86 ± 9		
	Play of control lever			Max. 15			Max. 23		
	Operating effort	Operating effort in travel	<ul style="list-style-type: none"> <li>Engine running at full throttle</li> <li>Oil temperature: 45 – 55°C</li> <li>Hook a push-pull scale to the center of the control lever knob and take measurement</li> <li>Read out the max. value up to the stroke end</li> </ul>	N {kg}	19.6 ± 3.9 {2.0 ± 0.4}			Max. 51.9 {Max. 5.3}	

Applicable Model				BR380JG-1E0			
Category	Check Item	Measurement Condition		Unit	Standard value	Permissible value	
Oil pressure	Unload pressure	<ul style="list-style-type: none"> <li>Oil temperature: 45 – 55°C</li> <li>Run engine at full throttle</li> <li>Set all levers in neutral</li> <li>Pump outlet pressure</li> </ul>		MPa {kg/cm <sup>2</sup> }	3.9 ± 1.0 {40 ± 10}	3.9 ± 1.0 {40 ± 10}	
	Crusher motor				Forward	38.7 ± 1.5 {395 ± 15}	38.7 ± 2.0 {395 ± 20}
					Reverse	38.7 ± 1.5 {395 ± 15}	38.7 ± 2.0 {395 ± 20}
	Belt conveyor motor				23.0 ± 1.0 {235 ± 10}	23.0 ± 1.5 {235 ± 15}	
	Feeder motor				21.0 ± 1.5 {215 ± 15}	21.0 ± 2.0 {215 ± 20}	
	Release of lock cylinder				32.3 ± 1.0 {330 ± 10}	32.3 ± 1.5 {330 ± 15}	
	Operation of lock cylinder (Extension, retraction)				11.8 ± 1.0 {120 ± 10}	11.8 ± 1.5 {120 ± 15}	
	Conveyor elevator cylinder	<ul style="list-style-type: none"> <li>Oil temperature: 45 – 55°C</li> <li>Run engine at full throttle</li> <li>Pump outlet pressure</li> <li>Relieve only circuit to be measured</li> </ul>			23.5 ± 1.0 {240 ± 10}	23.5 ± 1.5 {240 ± 15}	
	Side conveyor elevator cylinder				26.5 ± 1.0 {270 ± 10}	26.5 ± 1.5 {270 ± 15}	
	Side conveyor motor				14.7 ± 1.0 {150 ± 10}	14.7 ± 1.5 {150 ± 15}	
	Magnetic separator motor				19.6 ± 1.0 {200 ± 10}	19.6 ± 1.5 {200 ± 15}	
	Left travel				39.2 <sup>+1.0</sup> <sub>-1.5</sub> {400 <sup>+10</sup> <sub>-15</sub> }	39.2 <sup>+1.0</sup> <sub>-2.5</sub> {400 <sup>+10</sup> <sub>-25</sub> }	
	Right travel				39.2 <sup>+1.0</sup> <sub>-1.5</sub> {400 <sup>+10</sup> <sub>-15</sub> }	39.2 <sup>+1.0</sup> <sub>-2.5</sub> {400 <sup>+10</sup> <sub>-25</sub> }	
	Self pressure reducing valve				3.04 – 3.43 {31 – 35}	2.84 – 3.43 {29 – 35}	
LS differential pressure	<ul style="list-style-type: none"> <li>Oil temperature: 45 – 55°C</li> <li>Run engine at full throttle</li> <li>★ LS differential pressure = Pump outlet pressure – LS pressure</li> </ul>		Turn all work equipment switches OFF	3.9 ± 1.0 {40 ± 10}	3.9 ± 1.0 {40 ± 10}		
			Run all work equipment idle	0.98 ± 0.2 {10 ± 2}	0.98 ± 0.2 {10 ± 2}		

Applicable Model				BR380JG-1E0		
Category	Check Item	Measurement Condition	Unit	Standard value	Permissible value	
Travel	Hydraulic drift of travel	 <ul style="list-style-type: none"> <li>• Stop engine</li> <li>• Hydraulic oil temperature: 45 – 55°C</li> <li>• Stop machine on 12° slope with sprocket side up</li> <li>• Measure hydraulic drift of travel in 5 minutes</li> </ul>	mm	0	0	
	Leakage from travel motor	 <ul style="list-style-type: none"> <li>• Run engine at full throttle</li> <li>• Hydraulic oil temperature: 45 – 55°C</li> <li>• Lock shoe with lock pin (1) and relieve travel circuit</li> </ul>	l/mm	Max. 13.6	Max. 27.2	
	Travel speed	 <ul style="list-style-type: none"> <li>• Run engine at full throttle</li> <li>• Hydraulic oil temperature: 45 – 55°C</li> <li>• Set primary conveyor in travel posture</li> <li>• After approach run of at least 10 m on flat ground, measure time required to travel 20 m.</li> </ul>	Lo	Sec.	72.0 – 120.0	72.0 – 120.0
			Mi		27.2 – 36.8	27.2 – 36.8
Hi			20.9 – 28.2		20.9 – 28.2	
Travel deviation	<ul style="list-style-type: none"> <li>• Run engine at full throttle</li> <li>• Hydraulic oil temperature: 45 – 55°C</li> <li>• Set primary conveyor in travel posture</li> <li>• Travel at Hi</li> <li>• After approach run of at least 10 m on flat ground, measure travel deviation in travel of 20 m.</li> <li>★ Test on hard and level ground.</li> </ul>  <p>★ Measure dimension x.</p>	mm	Max. 200	Max. 300		

Applicable Model				BR380JG-1				
Category	Check Item		Measurement Condition	Unit	Standard value		Permissible value	
Work equipment speed	1) Crusher speed (Forward)	Standard pulley	 <p>BWZ10913</p> <ul style="list-style-type: none"> <li>• Run engine at full throttle</li> <li>• Hydraulic oil temperature: 45 – 55°C</li> </ul>	rpm	MAX	297 – 363	MAX	280 – 380
		Small (torque up) pulley			MIN	153 – 187	MIN	136 – 204
	2) Crusher speed (Reverse)	Standard pulley			MAX	261 – 319	MAX	246 – 334
		Small (torque up) pulley			MIN	135 – 165	MIN	120 – 180
	3) Feeder vibration				MAX	238 – 322	MAX	224 – 336
					MIN	144 – 196	MIN	136 – 204
	4) Primary conveyor belt speed				MAX	209 – 283	MAX	196 – 295
					MIN	127 – 173	MIN	120 – 180
	5) Side conveyor belt speed				MAX	1,000 – 1,100	MAX	950 – 1,150
					MIN	468 – 632	MIN	440 – 660
6) Magnetic separator belt speed					102 – 138		96 – 144	
				m/min	95 – 129		90 – 135	
					70 – 100		66 – 108	





BR380JG-1E0 Mobile crusher

---

Form No. SEN02288-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

# MOBILE CRUSHER

## BR380JG-1E0

<b>Machine model</b>	<b>Serial number</b>
BR380JG-1E0	2001 and up

---

## 30 Testing and adjusting

### Testing and adjusting, Part 1

---

Tools for testing, adjusting, and troubleshooting .....	3
Measuring engine speed .....	6
Measuring intake air pressure (boost pressure) .....	7
Checking exhaust gas color .....	8
Adjusting valve clearance .....	9
Measuring compression pressure .....	11
Measuring blow-by pressure .....	13
Measuring engine oil pressure .....	14
Handling fuel system parts .....	15
Releasing residual pressure from fuel system .....	15
Measuring fuel pressure .....	16
Measuring fuel return rate and leakage .....	18
Bleeding air from fuel circuit .....	20
Checking fuel circuit for leakage .....	22
Checking and adjusting track shoe tension .....	23
Measuring and adjusting oil pressure in work equipment and travel circuits .....	25

---

Measuring control circuit basic pressure.....	29
Measuring and adjusting oil pressure in pump PC control circuit .....	30
Measuring and adjusting oil pressure in pump LS control circuit.....	33
Measuring solenoid valve output pressure.....	37
Measuring PPC valve output pressure.....	40
Measuring oil leakage .....	41
Bleeding air from each part.....	42
Testing travel deviation.....	45
Adjusting mirrors .....	46

## Tools for testing, adjusting, and troubleshooting

Testing/Adjusting item	Sym- bol	Part No.	Part name	Qty	Remarks	
Measuring intake air pressure (boost pressure)	<b>A</b>	799-201-2202	Boost gauge kit	1	– 101 – 200 kPa {– 760 – 1,500 mmHg}	
Checking exhaust gas color	<b>B</b>	1	799-201-9001	Handy smoke checker	1	Bosch index: 0 – 9
		2	Commercially available	Smoke meter	1	
Adjusting valve clearance	<b>C</b>	1	795-799-1131	Gear	1	Intake: 0.25 mm, Exhaust: 0.51 mm
		2	Commercially available	Clearance gauge	1	
Measuring compression pressure	<b>D</b>	1	795-502-1590	Compression gauge	1	0 – 6.9 MPa {0 – 70 kg/cm <sup>2</sup> }
		2	795-799-6700	Puller	1	For 107E-1 engine
		3	795-790-4410	Adapter	1	For 107E-1 engine
			6754-11-3130	Gasket	1	For 107E-1 engine
Measuring blow-by pressure	<b>E</b>	1	799-201-1504	Blow-by checker	1	0 – 5 kPa {0 – 500 mmH <sub>2</sub> O}
		2	795-790-3300	Blow-by tool	1	For 107E-1 engine
Measuring engine oil pressure	<b>F</b>	1	799-101-5002	Hydraulic tester	1	Pressure gauge: 2.5, 5.9, 39.2, 58.8 MPa {25, 60, 400, 600 kg/cm <sup>2</sup> }
			790-261-1204	Digital hydraulic tester	1	Pressure gauge: 58.8 MPa {600 kg/cm <sup>2</sup> }
		2	799-401-2320	Hydraulic gauge	1	Pressure gauge: 0.98 MPa {10 kg/cm <sup>2</sup> }
Measuring fuel pressure	<b>G</b>	1	799-101-5002	Hydraulic tester	1	Pressure gauge: 2.5, 5.9, 39.2, 58.8 MPa {25, 60, 400, 600 kg/cm <sup>2</sup> }
			790-261-1204	Digital hydraulic tester	1	Pressure gauge: 58.8 MPa {600 kg/cm <sup>2</sup> }
		2	6732-81-3170	Adapter	1	10 × 1.0 mm → R1/8
			6215-81-9710	O-ring	1	
		3	799-401-2320	Hydraulic gauge	1	Pressure gauge: 0.98 MPa {10 kg/cm <sup>2</sup> }
Measuring fuel return rate and leakage	<b>H</b>	1	795-790-4700	Tester kit	1	
		2	795-790-6700	Adapter	1	
		3	6754-71-5340	Connector	1	
			6754-71-5350	Washer	1	
		4	Commercially available	Measuring cylinder	1	
		5	Commercially available	Stopwatch	1	
Measuring and adjusting oil pressure in work equipment, swing, and travel circuits	<b>J</b>	1	799-101-5002	Hydraulic tester	1	Pressure gauge: 2.5, 5.9, 39.2, 58.8 MPa {25, 60, 400, 600 kg/cm <sup>2</sup> }
			790-261-1204	Digital hydraulic tester	1	Pressure gauge: 58.8 MPa {600 kg/cm <sup>2</sup> }
		2	799-101-5220	Nipple	2	Size: 10 × 1.25 mm
			07002-11023	O-ring	2	

Testing/Adjusting item	Sym- bol	Part No.	Part name	Qty	Remarks	
Measuring basic pressure of control circuit	K	1	799-101-5002	Hydraulic tester	1	Pressure gauge: 2.5, 5.9, 39.2, 58.8 MPa {25, 60, 400, 600 kg/cm <sup>2</sup> }
			790-261-1204	Digital hydraulic tester	1	Pressure gauge: 58.8 MPa {600 kg/cm <sup>2</sup> }
	2	799-401-3100	Adapter	1	Size: 02	
		07002-11023	O-ring	1		
Measuring and adjusting oil pressure in pump PC control circuit	L	1	799-101-5002	Hydraulic tester	1	Pressure gauge: 2.5, 5.9, 39.2, 58.8 MPa {25, 60, 400, 600 kg/cm <sup>2</sup> }
			790-261-1204	Digital hydraulic tester	1	Pressure gauge: 58.8 MPa {600 kg/cm <sup>2</sup> }
	2	799-101-5220	Nipple	4	Size: 10 × 1.25 mm	
		07002-11023	O-ring	4		
Measuring and adjusting oil pressure in pump LS control circuit	M	1	799-101-5002	Hydraulic tester	1	Pressure gauge: 2.5, 5.9, 39.2, 58.8 MPa {25, 60, 400, 600 kg/cm <sup>2</sup> }
			790-261-1204	Digital hydraulic tester	1	Pressure gauge: 58.8 MPa {600 kg/cm <sup>2</sup> }
	2	799-101-5220	Nipple	4	Size: 10 × 1.25 mm	
		07002-11023	O-ring	4		
	3	799-401-2701	Differential pressure gauge	1	49 MPa {500 kg/cm <sup>2</sup> }	
Measuring solenoid valve output pressure	N	1	799-101-5002	Hydraulic tester	1	Pressure gauge: 2.5, 5.9, 39.2, 58.8 MPa {25, 60, 400, 600 kg/cm <sup>2</sup> }
			790-261-1204	Digital hydraulic tester	1	Pressure gauge: 58.8 MPa {600 kg/cm <sup>2</sup> }
	2	799-401-3100	Adapter	1	Size: 02	
Measuring PPC valve out-put pressure	P	1	799-101-5002	Hydraulic tester	1	Pressure gauge: 2.5, 5.9, 39.2, 58.8 MPa {25, 60, 400, 600 kg/cm <sup>2</sup> }
			790-261-1204	Digital hydraulic tester	1	Pressure gauge: 58.8 MPa {600 kg/cm <sup>2</sup> }
	2	799-101-5230	Nipple	1	Size: 14 × 1.5	
	3	07002-11423	O-ring	1		
Measuring oil leakage	Q	Commercially available	Measuring cylinder	1		
Measuring coolant temperature and oil temperature	—	799-101-1502	Digital thermometer	1	– 99.9 – 1,299°C	
Measuring operating effort and depressing force	—	79A-264-0021	Push-pull scale	1	0 – 294 N {0 – 30 kg}	
		79A-264-0091	Push-pull scale	1	0 – 490 N {0 – 50 kg}	
Measuring stroke and hydraulic drift	—	Commercially available	Ruler	1		
Measuring work equipment speed	—	Commercially available	Stopwatch	1		
Measuring voltage and resistance	—	Commercially available	Circuit tester	1		
Removal and installation of boost pressure and temperature sensors	—	Commercially available	Torque wrench	1	3.26 mm torque wrench (KTC Q4T15 or equivalent)	
Removal and installation of engine oil pressure sensor	—	(Not set yet)	Deep socket	1	27 mm deep socket	

Testing/Adjusting item	Sym- bol	Part No.	Part name	Qty	Remarks
Removal and installation of engine coolant temperature sensor	—	Commercially available	Socket	1	21 mm deep socket (MITOLOY 4ML-21 or equivalent)

- ★ For the model names and part Nos. of the T-boxes and T-adapters used for troubleshooting for the machine monitor, controllers, sensors, actuators, electrical equipment, and wiring harnesses, see “Troubleshooting (General information on troubleshooting), List of T-boxes and T-adapters”.

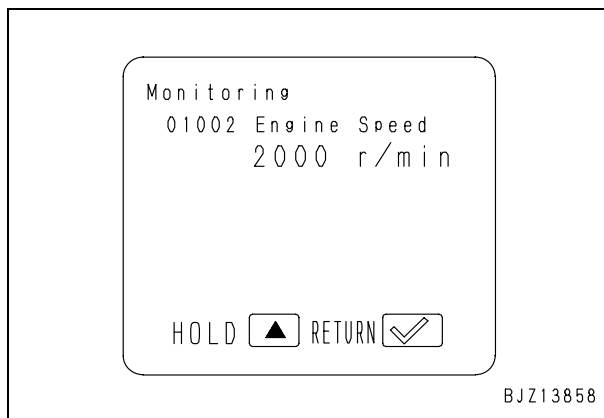
## Measuring engine speed

- ★ Measure the engine speed with the monitoring function of the machine monitor.
- ★ Measure the engine speed under the following condition.
  - Engine coolant temperature: Within operating range
  - Hydraulic oil temperature: Within operating range

### 1. Preparation work

Operate the machine monitor so that the engine speed can be monitored.

- ★ For the operating method of the machine monitor, see “Special functions of machine monitor”.
- ★ Monitoring code: 01002 Engine speed



### 2. Measuring low idle speed

- 1) Start the engine and set the fuel control dial in the low idle (MIN) position.
- 2) Set the machine in the operation mode and turn the all work equipment switches OFF.

### 3. Measuring high idle speed

- 1) Start the engine and set the fuel control dial in the high idle (MAX) position.
- 2) Set the machine in the operation mode and turn the all work equipment switches OFF.

### 4. Measuring 2-pump relief speed

- 1) Start the engine and set the fuel control dial in the high idle (MAX) position.
- 2) Set the machine in the travel mode, select travel speed Hi, and set the conveyor height to Hi (Travel operation position).
- 3) Operate the travel control lever to relieve the travels (Right and left) and measure the engine speed.



## Measuring intake air pressure (boost pressure)

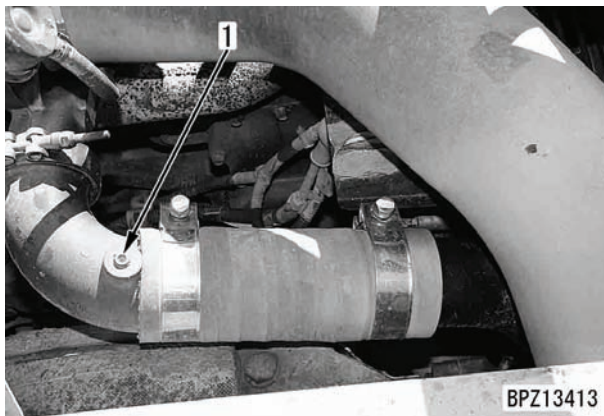
- ★ Measuring tools for intake air pressure (boost pressure)

Symbol	Part No.	Part name
A	799-201-2202	Boost gauge kit

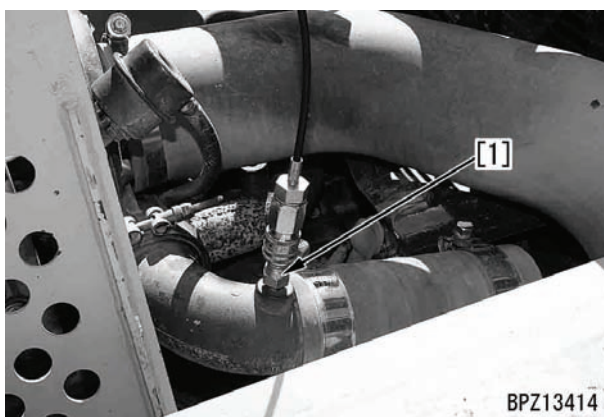
### ⚠ Stop the machine on a level ground.

- ★ Measure the intake air pressure under the following condition.
  - Engine coolant temperature: Within operating range
  - Hydraulic oil temperature: Within operating range

1. Open the engine hood and remove intake air pressure pickup plug (1) from the intake air connector.



2. Install nipple [1] of boost gauge kit A and connect it to gauge.



3. Run the engine at middle or higher speed and bleed oil from the hose.
  - ★ Insert the connecting parts of the gauge and hose about a half and open the self-seal on the hose side repeatedly, and the oil will be drained.
  - ★ If Pm kit (A) is available, you use the air-bleeding coupling (790-261-1130) in that kit.
  - ★ If oil is left in the hose, the gauge does not work. Accordingly, be sure to drain the oil.
4. Set the machine in the travel mode, select travel speed Hi, and set the conveyor height to Hi (Travel operation position).
5. While running the engine at high idle, operate the travel lever, relieve the travels (Right and left) and measure the intake air pressure.
6. After finishing measurement, remove the measuring tools and return the removed parts.

## Checking exhaust gas color

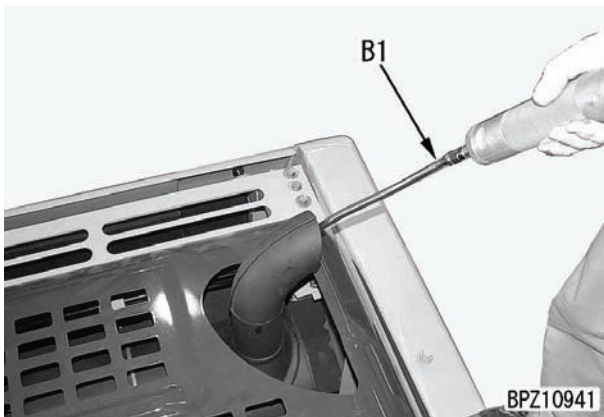
- ★ Checking tools for exhaust gas color

Symbol	Part No.	Part name
B	1	799-210-9001 Handy smoke checker
	2	Commercially available Smoke meter

- ⚠ **Stop the machine on a level ground.**
- ⚠ **Be careful not to touch any hot part when removing or installing the checking tools.**
- ★ Check the exhaust gas color under the following condition.
  - Engine coolant temperature: Within operating range
- ★ If an air source and an electric power source are not available in the field, use handy smoke checker **B1**. When recording official data, use smoke meter **B2**.

### 1. Measuring with handy smoke checker B1

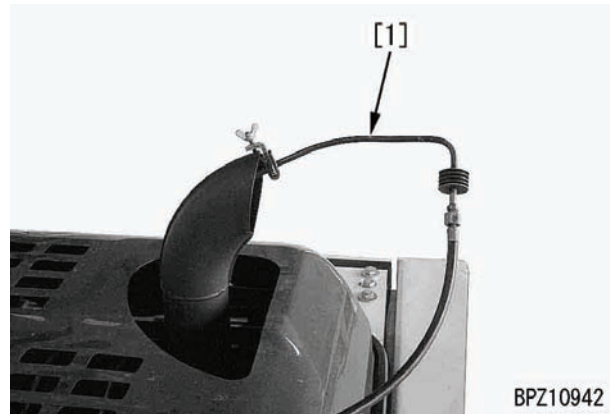
- 1) Stick a sheet of filter paper to smoke checker **B1**.
- 2) Insert the exhaust gas intake pipe in exhaust pipe.
- 3) Start the engine and accelerate it suddenly or run it at high idle and operate the handle of smoke checker **B1** so that the filter paper will absorb the exhaust gas.
  - ★ Absorbing time:  $1.4 \pm 0.2$  sec



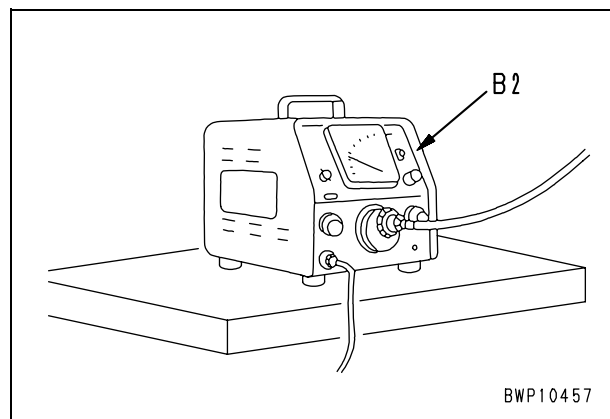
- 4) Remove the filter paper and compare it with the attached scale.
- 5) After finishing checking, remove the measuring tools and return the removed parts.

### 2. Checking with smoke meter B2

- 1) Insert probe [1] of smoke meter **B2** in the outlet of the exhaust pipe and fix it to the exhaust pipe with a clip.



- 2) Connect the probe hose, receptacle of the accelerator switch, and air hose to smoke meter **B2**.
  - ★ Limit the supplied air pressure to 1.5 MPa {15 kg/cm<sup>2</sup>}.
- 3) Connect the power cable to an AC receptacle.
  - ★ Before connecting the cable, check that the power switch of the smoke meter is turned OFF.
- 4) Loosen the cap nut of the suction pump and fit the filter paper.
  - ★ Fit the filter paper securely so that the exhaust gas will not leak.
- 5) Turn on the power switch of smoke meter **B2**.



- 6) Start the engine and accelerate it suddenly or run it at high idle and depress the accelerator pedal of smoke meter **B2** and collect the exhaust gas into the filter paper.
- 7) Place the contaminated filter paper on the clean filter paper (at least 10 sheets) in the filter paper holder and read the indicated value.
- 8) After finishing checking, remove the checking tools and return the removed parts.

### Adjusting valve clearance

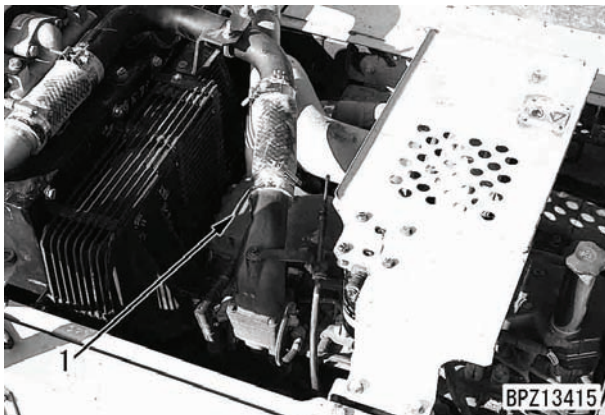
★ Measuring tools for valve clearance

Symbol	Part No.	Part name
C	1	795-799-1131 Gear
	2	Commercially available Clearance gauge

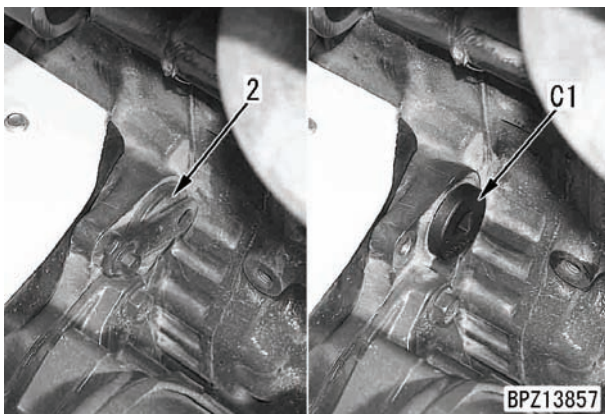
⚠ Stop the machine on a level ground.

- ★ Measure the valve clearance under the following condition.
  - Engine coolant temperature: Normal temperature

1. Open the engine hood and remove the bracket for the fan guard and engine step.
2. Remove cylinder head cover (1).
  - ★ Since the breather connector on the rear side of the cylinder head cover is connected to the flywheel housing through the O-ring, pull it together with the cylinder head cover.



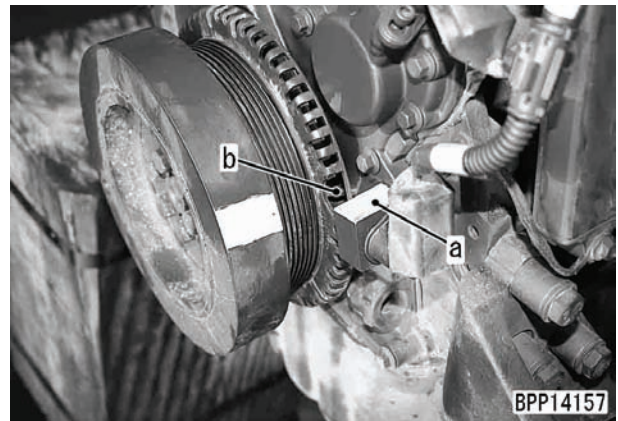
3. Remove plug (2) from the top of the starting motor and insert gear C1.



4. Rotate the crankshaft forward with gear C1 and set wide slit (b) of the rotation sensor ring to projection top (a) of front cover.

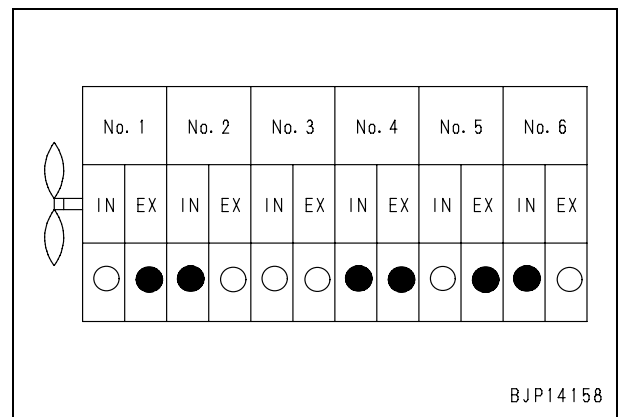
- ★ Projection top (a) must be within the range of wide slit (b) when it is seen from the fan side.
- ★ If you can see the yellow marks of projection top (a) and wide slit (b), you may set them to each other.

⚠ When the crankshaft is set as above, the piston in the No. 1 or No. 6 cylinder is not set to the compression top dead center (TDC). Take care.

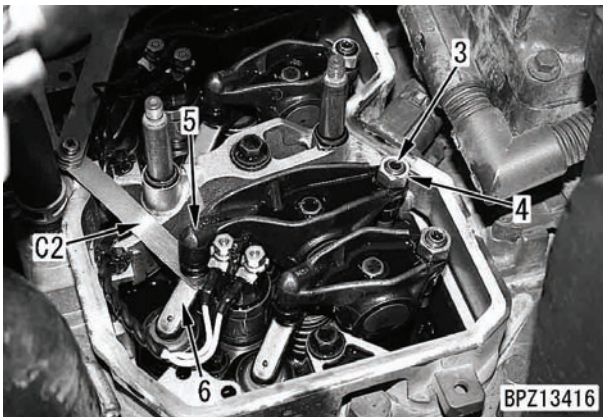


5. Check the movement of the rocker arm of the No. 1 cylinder to judge the valve to be adjusted.

- ★ If you can move the rocker arms of air intake valves (IN) with the hand by the valve clearance, adjust the valves marked with ○ in the valve arrangement drawing.
- ★ If you can move the rocker arms of exhaust valves (EX) with the hand by the valve clearance, adjust the valves marked with ● in the valve arrangement drawing.
- ★ Valve arrangement drawing



6. Adjust the valve clearance according to the following procedure.
- 1) While fixing adjustment screw (3), loosen locknut (4).
  - 2) Insert clearance gauge **C2** in the clearance between rocker arm (5) and crosshead (6) and adjust the valve clearance with adjustment screw (3).
    - ★ With the clearance gauge inserted, turn the adjustment screw to a degree that you can move the clearance gauge lightly.
  - 3) While fixing adjustment screw (3), tighten locknut (4).
    - ☞ Locknut:  
 $24 \pm 4 \text{ Nm } \{2.45 \pm 0.41 \text{ kgm}\}$
    - ★ After tightening the locknut, check the valve clearance again.



7. Rotate the crankshaft forward by 1 turn and set wide slit (b) to projection top (a) according to step 4.
8. Adjust the other valve clearances according to steps 5. and 6.
  - ★ If the valves marked with ● in the valve arrangement drawing were adjusted in steps 5. and 6, adjust the valves marked with ○.
  - ★ If the valves marked with ○ in the valve arrangement drawing were adjusted in steps 5. and 6, adjust the valves marked with ●.
9. After finishing adjustment, remove the adjusting tools and return the removed parts.
  - ⚠ **Remove gear C1 without fail.**
  - ☞ Cylinder head cover mounting nut:  
 $24 \pm 4 \text{ Nm } \{2.45 \pm 0.41 \text{ kgm}\}$

## Measuring compression pressure

- ★ Measuring tools for compression pressure

Symbol	Part No.	Part name
D	1	795-502-1590 Compression gauge
	2	795-799-6700 Puller
	3	795-790-4410 Adapter
		6754-11-3130 Gasket

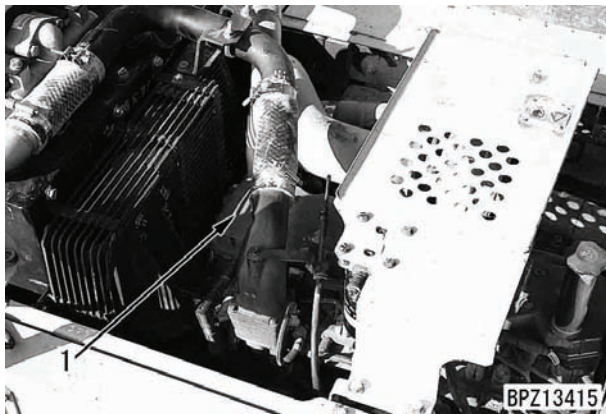
### ⚠ Stop the machine on a level ground.

- ★ Measure the compression pressure under the following condition.

- Engine oil temperature: 40 – 60°C

1. Open the engine hood and remove the fan guard bracket, engine step and cylinder head cover (1).

- ★ Since the breather connector on the rear side of the cylinder head cover is connected to the flywheel housing through the O-ring, pull it together with the cylinder head cover.



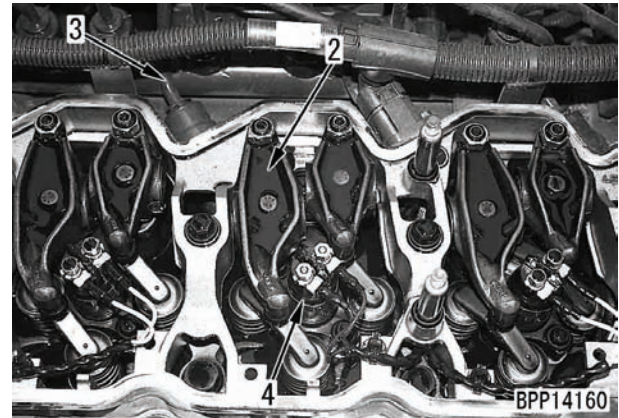
2. Remove the mounting bolts of rocker arm assembly (2) on the exhaust side, and then remove rocker arm assembly (2).

- ★ When removing the injector, you do not need to remove the rocker arm assembly on the intake side.

3. Remove fuel tube (3), and then remove inlet connector (7) in the cylinder head.

- ★ The inlet connector is connecting the fuel tube to the injector.

4. Disconnect injector wiring harness. Using tool D2, remove injector (4).



5. Install adapter D3 to the injector mounting part with the injector clamp and connect compression gauge D1.

- ★ Install the gasket to the adapter end without fail.

☞ Injector clamp mounting bolt:

**1st time : 3.5 ± 0.35 Nm**

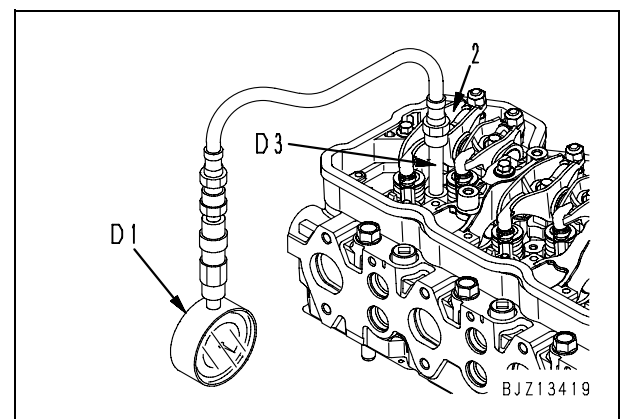
**{0.36 ± 0.04 kgm}**

**2nd time: 75 ± 5° (Angle tightening)**

- ★ If a little quantity of engine oil is applied to the joint of the adapter and gauge, air does not leak easily.

6. Install rocker arm assembly (2) on the exhaust side and adjust the valve clearance.

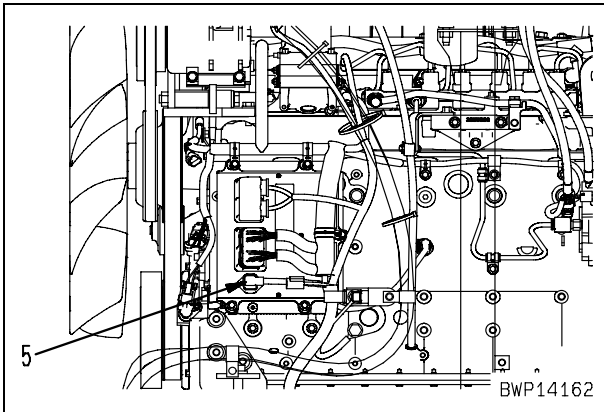
- ★ See "Adjusting valve clearance".



7. Disconnect **CE03** connector (5) of the engine controller.

⚠ **If the connector is not disconnected, the engine will start during measurement and it will be dangerous.**

⚠ **Since the CE03 connector is a part of the power supply circuit of the engine controller, cover the connector on the machine side with a vinyl sheet, etc. to prevent electric leakage and ground fault.**



8. Rotate the engine with the starting motor and measure the compression pressure.

★ Read the gauge when the pointer is stabilized.

9. After finishing measurement, remove the measuring tools and return the removed parts.

★ Install the injector and inlet connector according to the following procedure.

- 1) Apply new engine oil (SAE15W-40) to the O-ring of injector (4) and cylinder head.
- 2) Install injector (4) with the fuel inlet hole directed to the air intake manifold.
- 3) Install injector clamp (6) and tighten the mounting bolt by 3 – 4 threads.
- 4) Install inlet connector (7) and tighten inlet connector retainer temporarily.
- 5) Tighten the mounting bolt of injector clamp (6) securely.

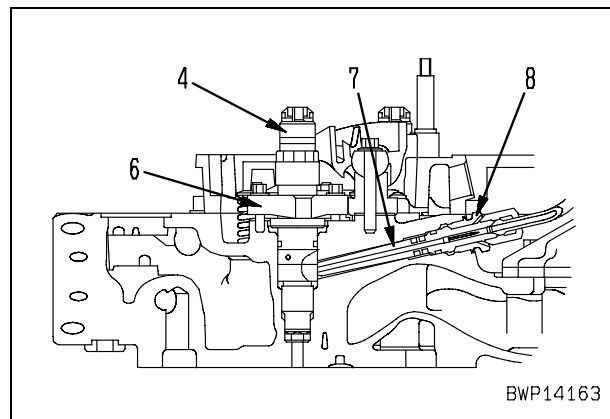
☞ Injector clamp mounting bolt:

**$8 \pm 0.8 \text{ Nm}$  { $0.8 \pm 0.08 \text{ kgm}$ }**

- 6) Tighten inlet connector retainer (8) securely.

☞ Inlet connector retainer:

**$50 \pm 5 \text{ Nm}$  { $5.1 \pm 0.5 \text{ kgm}$ }**



★ Tighten the bolts and nuts other than the injector and inlet connector to the following torque.

☞ Injector wiring harness nut:

**$1.5 \pm 0.25 \text{ Nm}$  { $0.15 \pm 0.026 \text{ kgm}$ }**

☞ Fuel tube sleeve nut:

**$35 \pm 3.5 \text{ Nm}$  { $3.6 \pm 0.4 \text{ kgm}$ }**

☞ Rocker arm assembly mounting bolt:

**$36 \pm 6 \text{ Nm}$  { $3.7 \pm 0.6 \text{ kgm}$ }**

★ Adjust the valve clearance. For details, see "Adjusting valve clearance".

☞ Cylinder head cover mounting nut:

**$24 \pm 4 \text{ Nm}$  { $2.45 \pm 0.41 \text{ kgm}$ }**

## Measuring blow-by pressure

### ★ Measuring tools for blow-by pressure

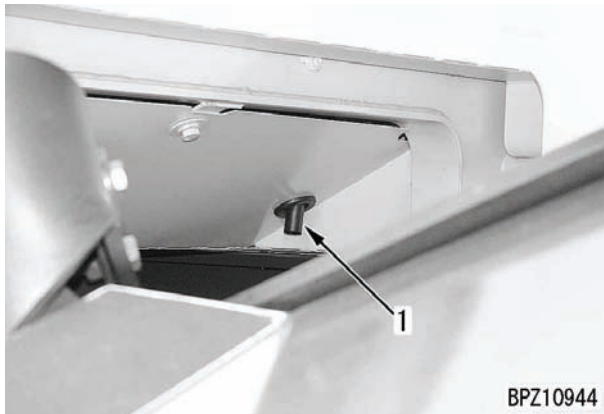
Symbol	Part No.	Part name
E	1	799-201-1504 Blow-by checker
	2	799-790-3300 Blow-by tool

### ⚠ Stop the machine on a level ground.

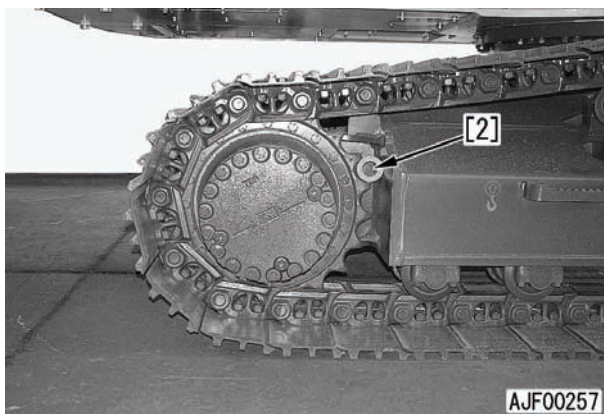
### ★ Measure the blow-by pressure under the following condition.

- Engine coolant temperature: Within operating range
- Hydraulic oil temperature: Within operating range

1. Install tool and adapter of blow-by checker **E1** or blow-by tool **E2** to breather hose (1) and connect gauge.



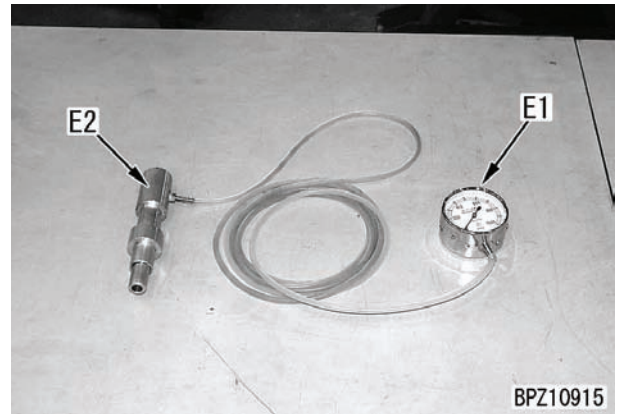
2. Start the engine and lock the travel.
  - ⚠ Insert pin [2] between the sprocket and the track frame to lock the travel securely.



3. Start the engine, set the conveyor height to Hi (Travel operation position), set the machine in the travel mode, and select travel speed Hi.

4. While running the engine at high idle, relieve the travels (Right and left) and measure the blow-by pressure.

### ★ Read the gauge when the pointer is stabilized.



5. After finishing measurement, remove the measuring tools and return the removed parts.

### Measuring engine oil pressure

★ Measuring tools for engine oil pressure

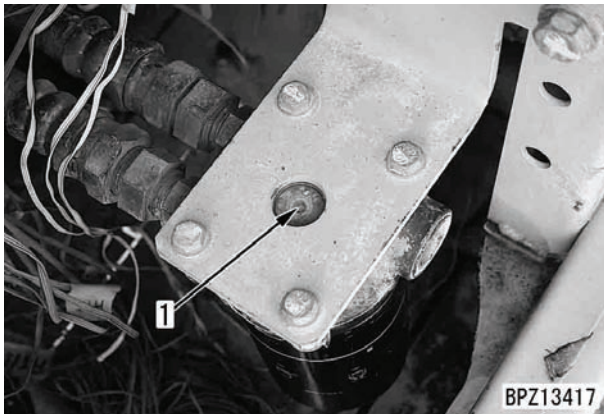
Symbol	Part No.	Part name
F	1	799-101-5002 Hydraulic tester
		790-261-1204 Digital hydraulic tester
2	799-401-2320	Hydraulic gauge

⚠ **Stop the machine on a level ground.**

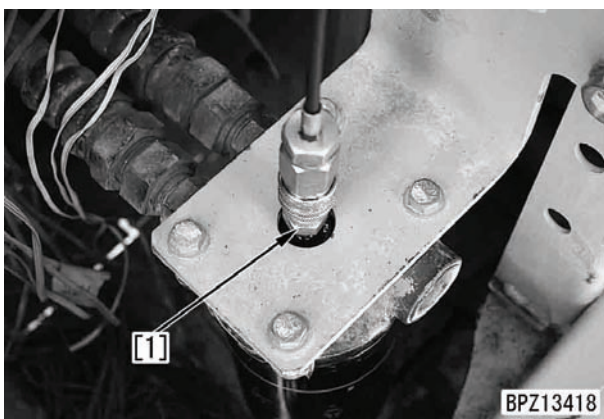
★ Measure the engine oil pressure under the following condition.

- Engine coolant temperature: Within operating range

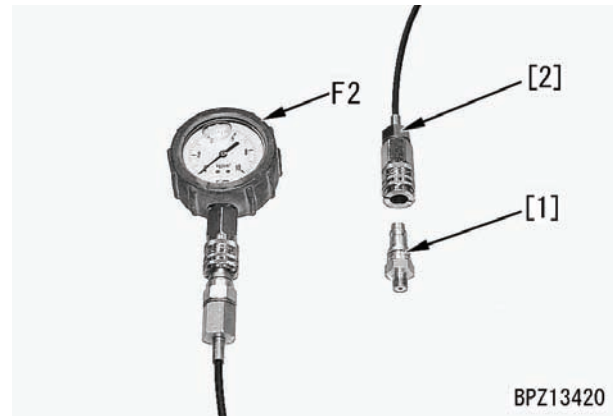
1. Remove oil pressure pickup plug (1) from the top of the engine oil filter.



2. Install nipple [1] of hydraulic tester F1 and connect hydraulic gauge F2.



3. Run the engine and measure the engine oil pressure at high idle and low idle.



4. After finishing measurement, remove the measuring tools and return the removed parts.



## Handling fuel system parts

- ★ Precautions for checking and maintaining fuel system  
The common rail fuel injection system (CRI) consists of more precise parts than the conventional fuel injection pump and nozzle. If foreign matter enters this system, it can cause a trouble.  
When checking and maintaining the fuel system, take care more than the past. If dust, etc. sticks to any part, wash that part thoroughly with clean fuel.
- ★ Precautions for replacing fuel filter cartridge  
Be sure to use the Komatsu genuine fuel filter cartridge.  
Since the common rail fuel injection system (CRI) consists of more precise parts than the conventional fuel injection pump and nozzle, it employs a high-efficiency special filter to prevent foreign matter from entering it. If a filter other than the genuine one is used, the fuel system may have a trouble. Accordingly, never use such a filter.

## Releasing residual pressure from fuel system

- ★ Pressure is generated in the low-pressure circuit and high-pressure circuit of the fuel system while the engine is running.  
Low-pressure circuit:  
Feed pump – Fuel main filter – Supply pump  
High-pressure circuit:  
Supply pump – Common rail – Injector
- ★ The pressure in both low-pressure circuit and high-pressure circuit lowers to a safety level automatically 30 seconds after the engine is stopped.
- ★ Before the fuel circuit is checked and its parts are removed, the residual pressure in the fuel circuit must be released completely. Accordingly, observe the following.
  - ⚠ **Before checking the fuel system or removing its parts, wait at least 30 seconds after stopping the engine until the residual pressure in the fuel circuit is released. (Do not start the work just after stopping the engine since there is residual pressure.)**

## Measuring fuel pressure

★ Measuring tools for fuel pressure

Symbol	Part No.	Part name	
1	799-101-5002	Hydraulic tester	
	790-261-1204	Digital hydraulic tester	
G	2	6732-81-3170	Adapter (10 × 1.0 mm → R1/8)
		6215-81-9710	O-ring
3	799-401-2320	Hydraulic gauge	

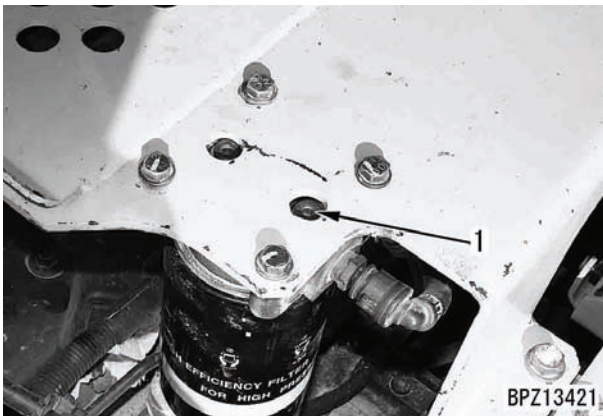
⚠ **Stop the machine on a level ground.**

★ Measure only the fuel pressure in the low-pressure circuit from the feed pump through the fuel main filter to the supply pump and the return circuit from the supply pump/common rail/injector to fuel tank.

⚠ **Since the pressure in the high-pressure circuit from the supply pump through the common rail to the injector is very high, it cannot be measured.**

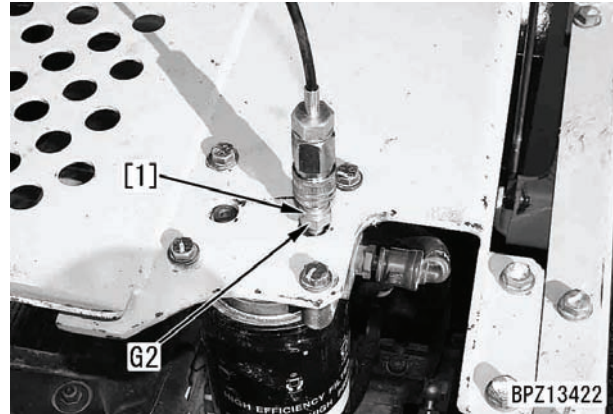
### 1. Measuring pressure in fuel low-pressure circuit

- 1) Open the engine hood and remove fuel pressure pickup plug (1) from the fuel main filter.



- 2) Install adapter **G2** and nipple [1] of hydraulic tester **G1** and connect them to oil pressure gauge [2].

★ Use the oil pressure gauge of 2.5 MPa {25 kg/cm<sup>2</sup>}.



- 3) Run the engine at low idle and measure the pressure in the fuel low-pressure circuit.

★ If the pressure in the fuel low-pressure circuit is in the following range, it is normal.

At low idle	0.5 – 1.3 MPa {5.1 – 13.3 kg/cm <sup>2</sup> }
During cranking	0.3 – 1.1 MPa {3.1 – 11.3 kg/cm <sup>2</sup> }

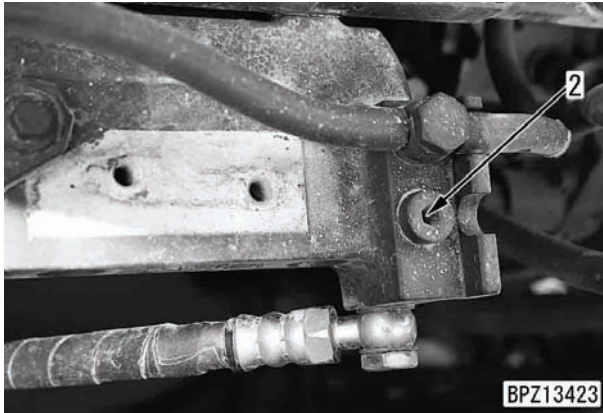
⚠ **If the engine cannot be started, you may measure the fuel pressure while rotating the engine with the starting motor. Do not rotate for more than 20 seconds continuously, however, for protection of the starting motor.**

- 4) After finishing measurement, remove the measuring tools and return the removed parts.


🔧 Fuel pressure pickup plug:  
**10 ± 2 Nm {1 ± 0.2 kgm}**

**2. Measuring pressure in fuel return circuit**

- 1) Open the engine hood and remove fuel pressure pickup plug (2) from the fuel return block.

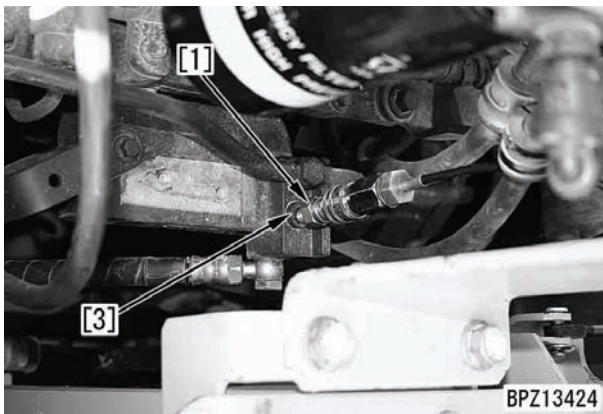


- 4) After finishing measurement, remove the measuring tools and return the removed parts.

 Fuel pressure pickup plug:  
 $24 \pm 4 \text{ Nm}$  { $2.4 \pm 0.4 \text{ kgm}$ }

- 2) Install nipple [3] of hydraulic tester **G1** and nipple [1] and connect them to hydraulic tester **G3**.

★ Nipple [3]:  
 790-301-1181, 07002-11223



- 3) Run the engine at low idle and measure the pressure in the fuel return circuit.

★ If the pressure in the fuel return circuit is in the following range, it is normal.

At low idle	Max. 0.02 MPa
During cranking	{Max. 0.19 kg/cm <sup>2</sup> }

**⚠ If the engine cannot be started, you may measure the fuel pressure while rotating the engine with the starting motor. Do not rotate for more than 20 seconds continuously, however, for protection of the starting motor.**

## Measuring fuel return rate and leakage

★ Measuring tools for fuel return rate and leakage

Symbol	Part No.	Part name	
H	1	795-790-4700 Tester kit	
	2	795-790-6700 Adapter	
	3	6754-71-5340	Connector
		6754-71-5350	Washer
	4	Commercially available	Measuring cylinder
5	Commercially available	Stopwatch	

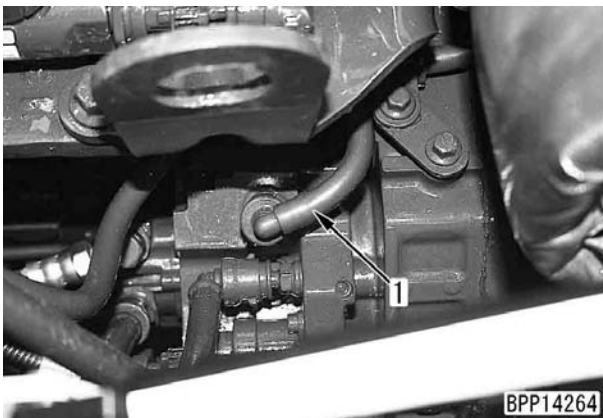
★ Since some fuel flows out during check, prepare receiving pan of about 20 liters.

⚠ **Stop the machine on a level ground.**

### 1. Measuring return rate from supply pump

1) Open the engine hood and disconnect return hose (1) of the supply pump.

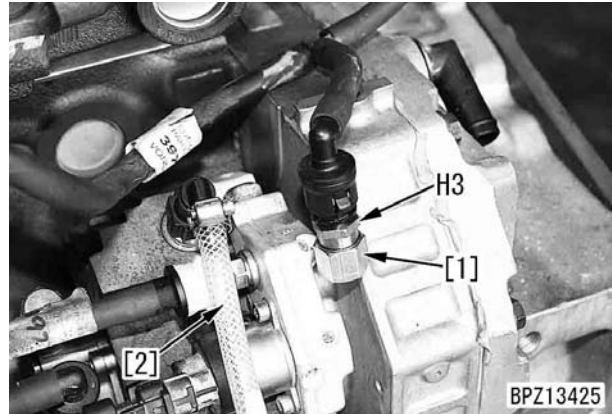
★ The return hose is connected by a quick coupler.



2) Install connector **H3** and cap nut [1] of tester kit **H1** to the return hose to stop the fuel from flowing out.

3) Connect test hose [2] of tester kit **H1** to the supply pump.

★ Lay the test hose so that it will not slacken and put its end in the receiving pan.

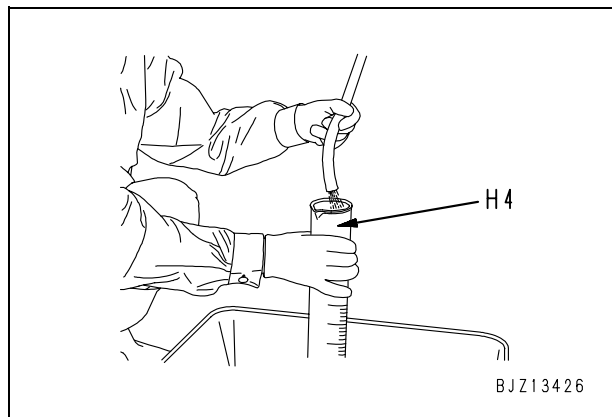


4) Run the engine at low idle and measure the return rate in 1 minute with measuring cylinder **H4**.

★ If the return rate from the supply pump is in the following range, it is normal.

At low idle	1,000 cc/min
During cranking	140 cc/min

⚠ **If the engine cannot be started, you may measure the fuel return rate while rotating the engine with the starting motor. Do not rotate for more than 20 seconds continuously, however, for protection of the starting motor.**



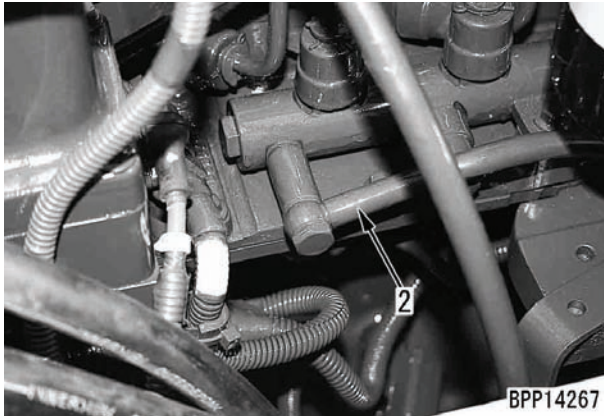
5) After finishing measurement, remove the measuring tools and return the removed parts.

★ When measuring the leakage from the pressure limiter or finishing the measurement: Return the removed parts to their original positions.

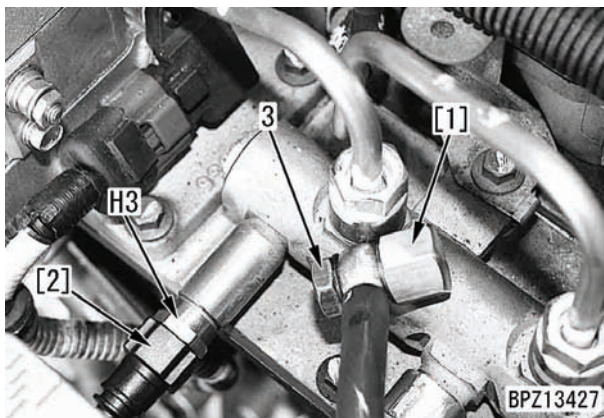
★ When measuring the leakage from the injector: Leave the removed parts as they are and keep the hose end in the receiving pan.

## 2. Measuring leakage from pressure limiter

- 1) Open the engine hood and disconnect return hose (2) of the pressure limiter.
  - ★ Install the seal washer to the connector bolt.

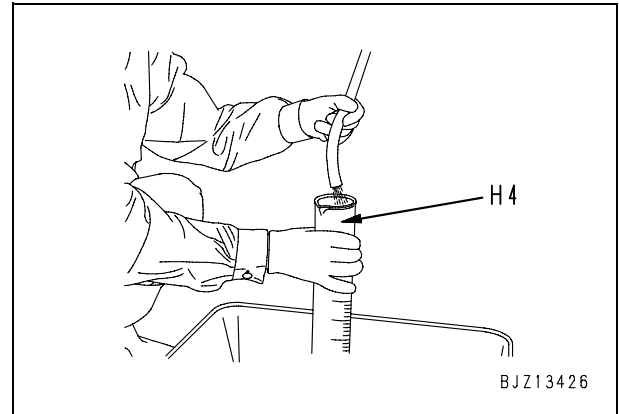


- 2) Install removed connector bolt (3) and cap nut [1] of tester kit H1 to the return hose to stop the fuel from flowing out.
- 3) Install connector H3 to the common rail and connect test hose [2] of tester kit H1.
  - ★ Lay the test hose so that it will not slacken and put its end in the receiving pan.



- 4) Run the engine at low idle and measure the return rate in 1 minute with measuring cylinder H4.
  - ★ If the leakage from the pressure limiter is in the following range, it is normal.

At low idle	0 cc (No leakage)
-------------	-------------------



- 5) After finishing measurement, remove the measuring tools and return the removed parts.

Joint bolt:

$24 \pm 4 \text{ Nm}$  { $2.4 \pm 0.4 \text{ kgm}$ }

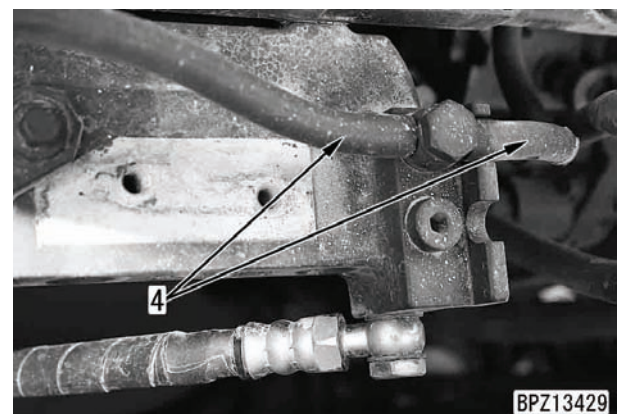
## 3. Measuring return rate from injector

- ★ The leakage from the injector is measured while the return hose of the pressure limiter is connected. Accordingly, before measuring the leakage from the injector, check that the leakage from the pressure limiter is normal.

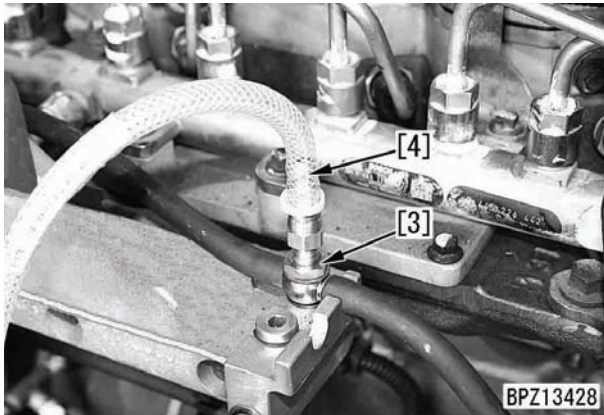
- 1) Referring to “Measuring return rate from supply pump”, set the supply pump for testing.

**⚠ The fuel returning from the supply pump flows out during measurement of the return rate from the injector. Accordingly, keep the test hose end in the receiving pan.**

- 2) Disconnect return hose (4) of the return block.
  - ★ Install the seal washer to the return hose.



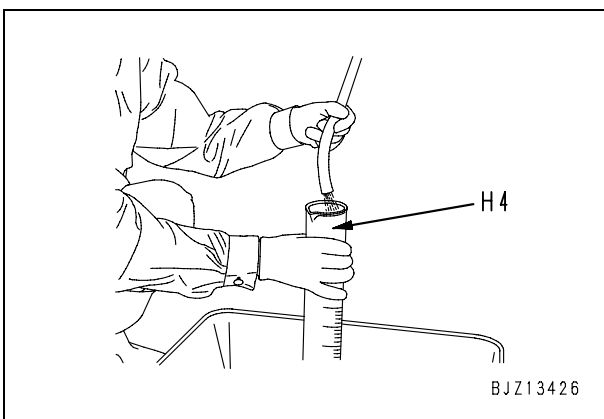
- 3) Install connector bolt [3] of adapter H2 instead of the removed connector bolt, and connect test hose [4].
  - ★ Lay the test hose so that it will not slacken and put its end in the receiving pan.



- 4) Run the engine at low idle and measure the return rate in 1 minute with measuring cylinder H4.
  - ★ If the return rate from the injector is in the following range, it is normal.

At low idle	180 cc/min
During cranking	90 cc/min

- ⚠ **If the engine cannot be started, you may measure the fuel return rate while rotating the engine with the starting motor. Do not rotate for more than 20 seconds continuously, however, for protection of the starting motor.**



- 5) After finishing measurement, remove the measuring tools and return the removed parts.

🔧 Joint bolt:

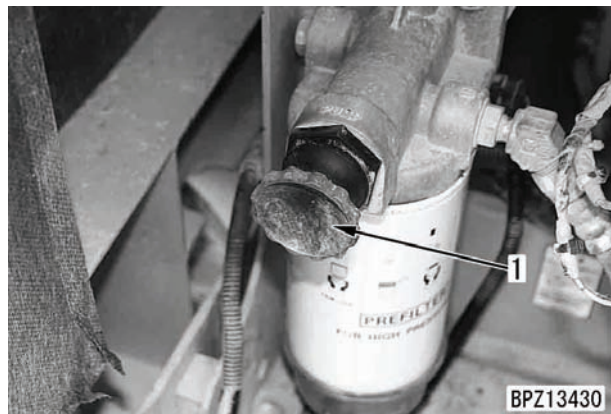
**24 ± 4 Nm {2.4 ± 0.4 kgm}**

## Bleeding air from fuel circuit

- ★ If fuel is used up or if a fuel circuit part is removed and installed, bleed air from the fuel circuit according to the following procedure.

⚠ **Stop the machine on a level ground.**

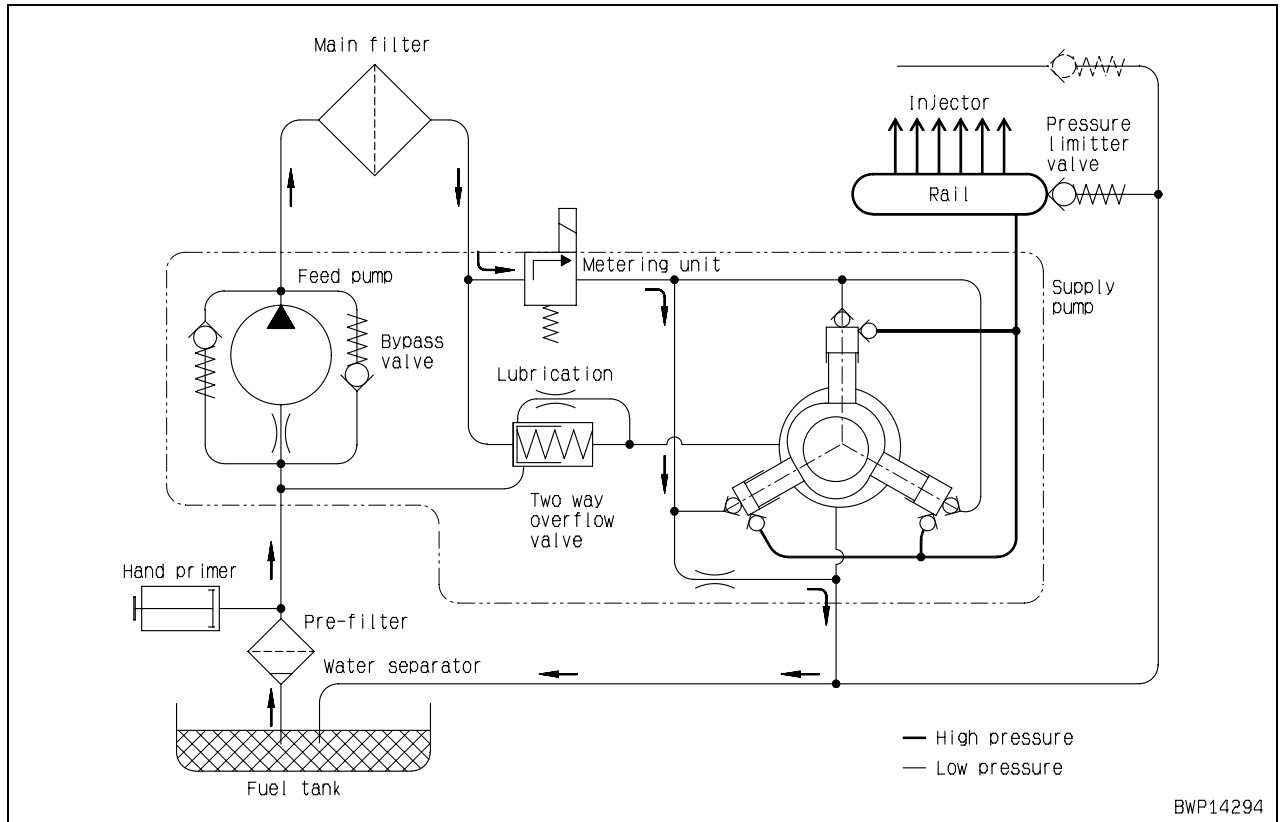
1. Fill the fuel tank with fuel.
  - ★ Add fuel until the float of the sight gauge reaches the maximum position.
2. Open the under cover of the pump room.
3. Loosen knob (1) of the feed pump and pull it out, and then operate it forward and backward.
  - ★ Move the knob until it becomes heavy.
  - ★ The plug at the top of the fuel main filter does not need to be removed.



4. After bleeding air, push in and tighten knob (1).

★ Air bleeding route of fuel circuit

Fuel tank → Pre-filter → Feed pump → Main filter → Metering unit → Fuel tank



## Checking fuel circuit for leakage

**⚠ Very high pressure is generated in the high-pressure circuit of the fuel system. If fuel leaks while the engine is running, it is dangerous since it can catch fire.**

**After checking the fuel system or removing its parts, check it for fuel leakage according to the following procedure.**

**⚠ Stop the machine on a level ground.**

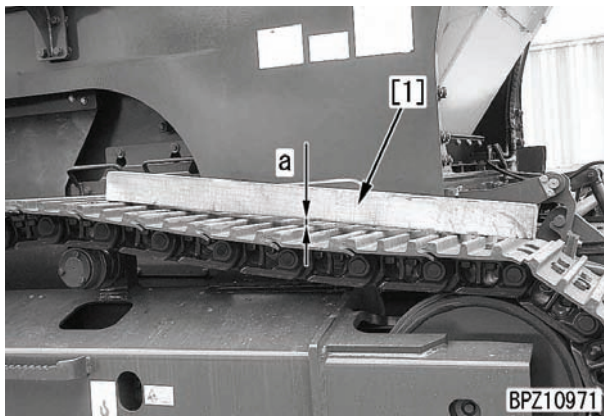
- ★ Clean and degrease the engine and the parts around it in advance so that you can check it easily for fuel leakage.
1. Spray color checker (developer) over the fuel supply pump, common rail, fuel injector, and joints of the high-pressure piping.
  2. Run the engine at speed below 1,000 rpm and stop it after its speed is stabilized.
  3. Check the fuel piping and devices for fuel leakage.
    - ★ Check mainly around the high-pressure circuit parts coated with the color checker for fuel leakage.
    - ★ If any fuel leakage is detected, repair it and check again from step 2.
  4. Run the engine at low idle.
  5. Check the fuel piping and devices for fuel leakage.
    - ★ Check mainly around the high-pressure circuit parts coated with the color checker for fuel leakage.
    - ★ If any fuel leakage is detected, repair it and check again from step 2.
  6. Run the engine at high idle.
  7. Check the fuel piping and devices for fuel leakage.
    - ★ Check around the high-pressure circuit parts coated with the color checker for fuel leakage.
    - ★ If any fuel leakage is detected, repair it and check again from step 2.
  8. Run the engine at high idle and load it.
    - ★ Relieve the travels (Right and left).
  9. Check the fuel piping and devices for fuel leakage.
    - ★ Check mainly around the high-pressure circuit parts coated with the color checker for fuel leakage.
    - ★ If any fuel leakage is detected, repair it and check again from step 2.
    - ★ If no fuel leakage is detected, check is completed.



## Checking and adjusting track shoe tension

### Checking

1. Run the engine at low idle and drive the machine forward by the length of track on ground, and then stop slowly.
2. Place steel bar [1] on the track shoe between the idler and the 1st carrier roller.
  - ★ As the steel bar, use an angle steel, etc. which will be deflected less.
3. Measure maximum clearance (a) between steel bar [1] and track shoe.
  - Standard maximum clearance (a):  
10 – 30 mm

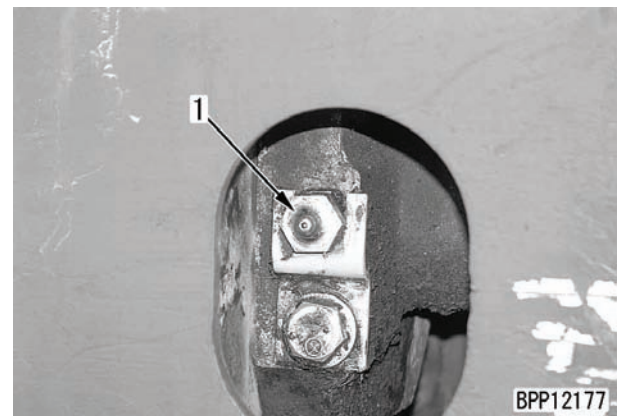


### Adjusting

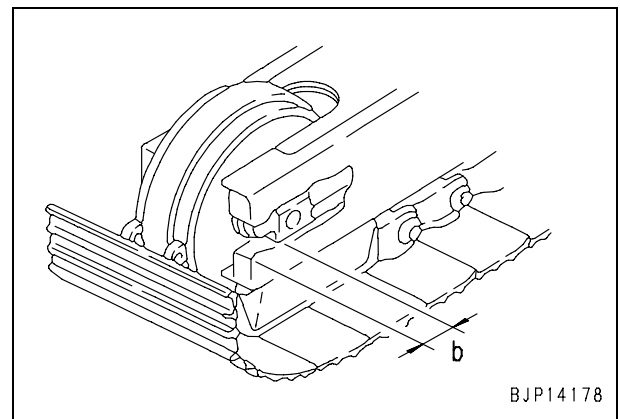
- ★ If the track shoe tension is abnormal, adjust it according to the following procedure.

#### 1. Increasing tension

- 1) Add grease through grease fitting (1) with a grease gun.
- 2) To check that the tension is normal, run the engine at low idle and move the machine forward by the length of track on ground, then stop slowly.
- 3) After adjusting, check the track shoe tension again according to the above procedure.



- ★ You may add grease until dimension (b) between the idler guide and track frame end becomes 0 mm. If the tension is still low, the pins and bushings are worn much. In this case, reverse or replace the pins and bushings.

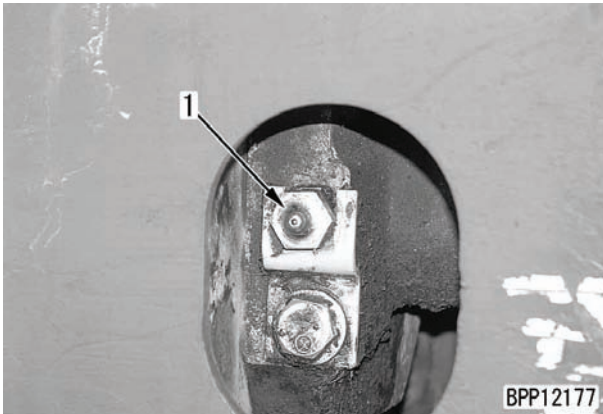


## 2. Decreasing tension

- 1) Loosen valve (2) to discharge grease, and then tighten it.

**⚠ Do not loosen the valve more than 1 turn. If it is loosened more, it may jump out because of the high-pressure grease in it.**

- 2) To check that the tension is normal, run the engine at low idle and move the machine forward by the length of track on ground, then stop slowly.
- 3) After adjusting, check the track shoe tension again according to the above procedure.



## Measuring and adjusting oil pressure in work equipment and travel circuits

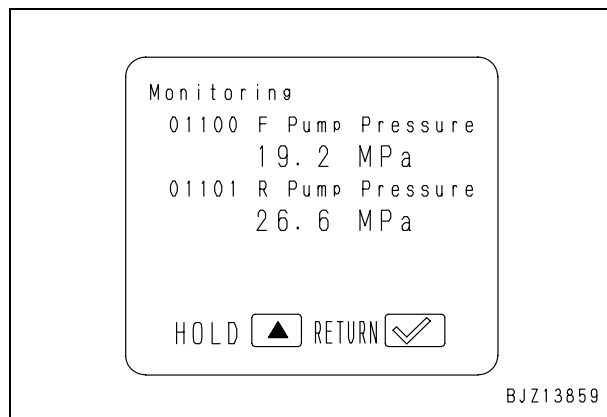
- ★ Measuring and adjusting tools for oil pressure in work equipment and travel circuits

Symbol	Part No.	Part name
J	1	799-101-5002 Hydraulic tester
		790-261-1204 Digital hydraulic tester
2		799-101-5220 Nipple (10 × 1.25 mm)
		07002-11023 O-ring

- ▲ Stop the machine on a level ground.

### Measuring

- ★ The oil pressure in the work equipment and travel circuits (pump discharge pressure) can be checked with monitoring function of the machine monitor, too (For details, see “Special functions of machine monitor”).
  - Monitoring code: 01100 F pump pressure
  - Monitoring code: 01101 R pump pressure

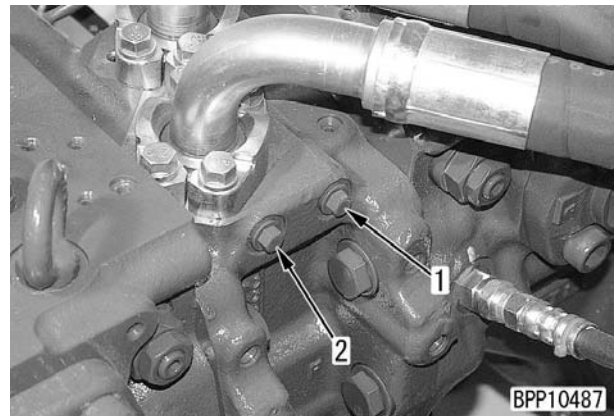


- ★ Measure the oil pressure in the work equipment and travel circuits under the following condition.
  - Hydraulic oil temperature: Within operating range

### 1. Preparation work

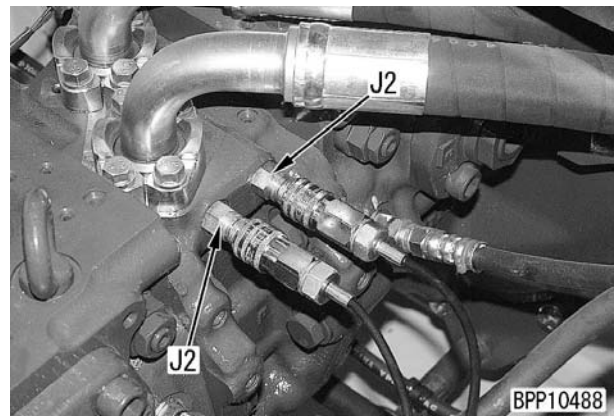
- ▲ Stop the engine and gradually loosen the oil filler cap of the hydraulic tank to release the air from the tank.

- 1) Remove oil pressure pickup plugs (1) and (2).
  - (1): Front pump discharge pressure pickup plug
  - (2): Rear pump discharge pressure pickup plug



- 2) Install nipples J2 and connect oil pressure gauges of hydraulic tester J1.

- ★ Use the oil pressure gauge of 58.8 MPa {600 kg/cm<sup>2</sup>}.



**2. Combination of pump, actuator, and valve**

- ★ When the oil from the pumps is divided, the front pump and rear pump act independently on each actuator as shown in the table below. Note that different actuators relieve different valves.

Pump	Actuator	Valve relieved
Front	Crusher	Crusher motor safety valve
	Right travel	F main relief valve
	Lock cylinder reset	Safety valve
	(Unload)	F unload valve
Rear	(Unload)	R unload valve
	Magnetic separator	Safety valve
	Side conveyor	Safety valve
	Primary conveyor elevator	Safety valve
	Side conveyor elevator	Safety valve
	Lock cylinder extension and retraction	Safety valve
	Primary conveyor	Safety valve
	Left travel	R main relief valve
	Feeder	Safety valve

**3. Measuring unload pressure**

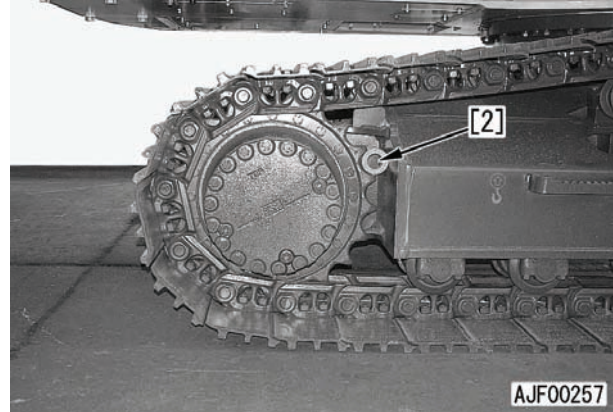
- 1) Start the engine.
- 2) Run the engine at high idle, turn OFF the work equipment switch, set the travel control lever to neutral, and measure the oil pressure.
  - ★ The pressure measured when the unload valve is unloaded is indicated.

**4. Measuring main relief pressure**

- 1) Run the engine at high idle.
- 2) Relieve each actuator and measure the oil pressure.
  - ★ The set pressures of the safety valves of the actuators other than the travel motor are lower than the set pressure of the main relief valve. Accordingly, the relief pressure of each safety valve is measured.
  - ★ As the relief pressure of the crusher motor, measure the oil pressure when the crusher motor is started.
  - ★ When measuring the relief pressure of each motor drive circuit of the grizzly feeder, primary conveyor, side conveyor, and magnetic separator, block the piping of the motor inlet circuit or the valve outlet circuit.

**5. Measuring travel relief pressure**

- 1) Run the engine and lock the travel mechanism.
  - ⚠ Put pin [2] between the sprocket and track frame to lock the travel mechanism securely.



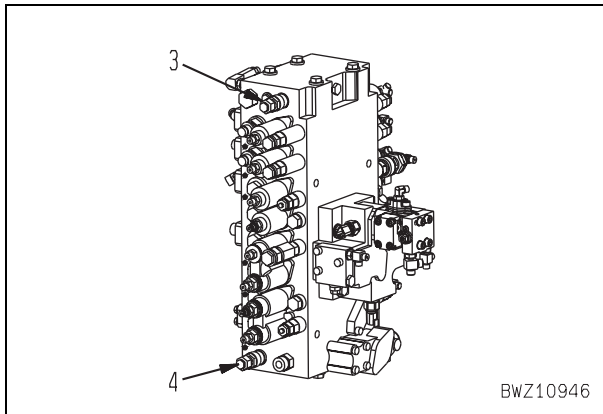
- 2) Set the conveyor height to Hi (Travel operation position), set the machine in the travel mode, and select travel speed Hi.
- 3) Run the engine at high idle, operate the travel lever to relieve the travel motor, and measure the oil pressure.
  - ⚠ Before operating the travel lever, check the position and locking direction of the locked sprocket again.
  - ★ The pressure measured when the main relief valve of the control valve is relieved is indicated. The travel circuit is always relieved at high pressure.

## Adjusting

- ★ The unload valve cannot be adjusted.

### 1. Adjusting main relief pressure (Travel)

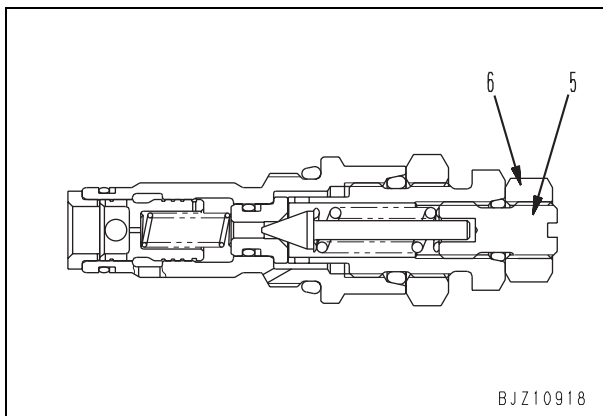
- ★ If the main relief pressure is abnormal, adjust main relief valves (3) and (4) according to the following procedure.
  - (3): Rear (R) main relief valve
  - (4): Front (F) main relief valve



- 1) While fixing adjustment screw (5), loosen locknut (6).
- 2) Turn adjustment screw (5) to adjust the set pressure.
  - ★ If the adjustment screw is
    - Turned to the right, the set pressure is increased.
    - Turned to the left, the set pressure is decreased.
  - ★ Quantity of adjustment per turn of adjustment screw:  
**Approx. 12.6 MPa {Approx. 128 kg/cm<sup>2</sup>}**
- 3) While fixing adjustment screw (5), tighten locknut (6).

☞ Locknut:

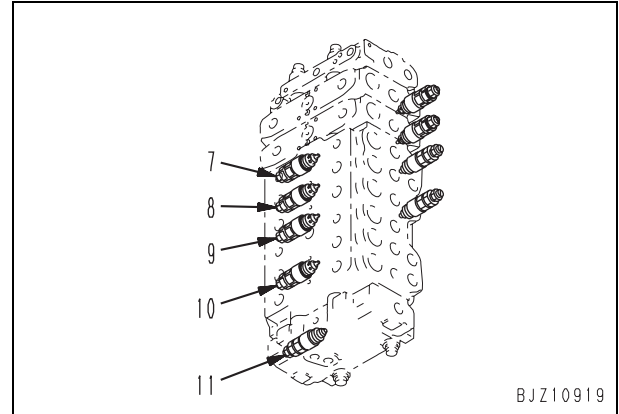
**29.4 – 39.2 Nm {3 – 4 kgm}**



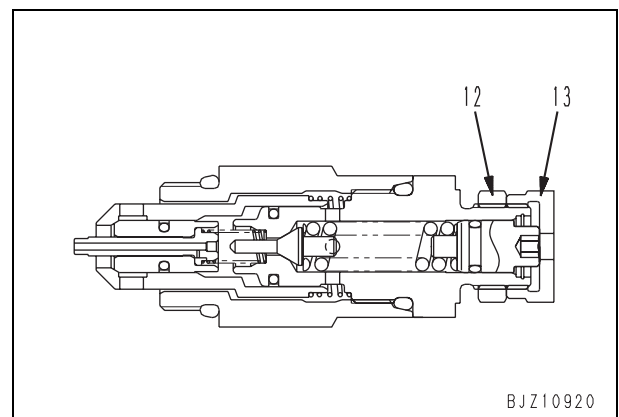
- 4) After finishing adjustment, check again that the oil pressure is normal according to the above described measurement procedure.

### 2. Adjusting work equipment safety valves

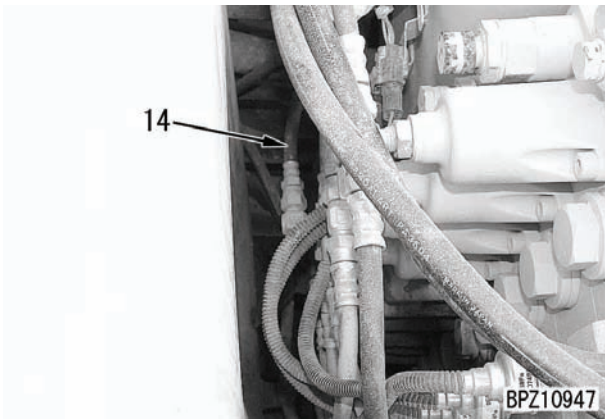
- ★ If the work equipment safety valves are abnormal, adjust safety valves (7), (8), (10) and (11) of the work equipment according to the following procedure.
  - (7) : Motor for magnetic separator
  - (8) : For side conveyor motor
  - (10) : For feeder motor
  - (11) : For resetting lock cylinder



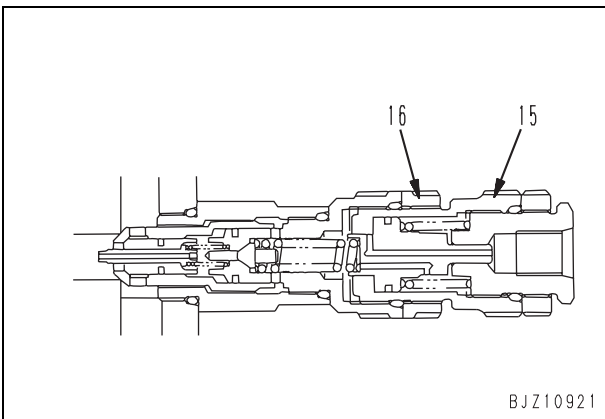
- 1) Loosen locknut (12).  
Turn adjustment nut (13) to adjust the pressure.
  - ★ If the adjustment nut is
    - Turned to the right, the set pressure is increased.
    - Turned to the left, the set pressure is decreased.
  - ★ Quantity of adjustment per turn of adjustment nut:  
**Approx. 25.3 MPa {Approx. 258 kg/cm<sup>2</sup>}**
- 2) While fixing adjustment nut (13), tighten locknut (12).  
☞ Locknut:  
**39 – 49 Nm {4 – 5 kgm}**



- (9): Accessory valve
  - The solenoid selector valve drives actuators of 3 kinds.
- ★ Adjusting relief pressure (High pressure setting side)
  - Primary conveyor motor
  - Conveyor elevator cylinder
- The high relief pressure is the pressure applied when the 2-stage relief valve is turned OFF and the pilot pressure is not applied to the selector port.
  - 1] Disconnect 2-stage selector pilot hose (14).

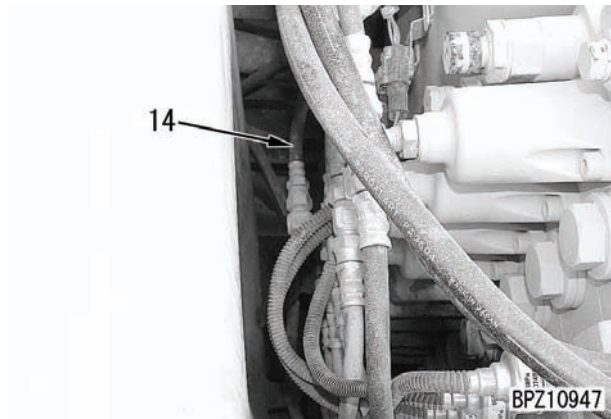


- 2] While fixing holder (15), loosen locknut (16).
    - ★ If the holder is
      - turned to the right, the pressure rises.
      - turned to the left, the pressure lowers.
    - ★ Quantity of adjustment per turn of holder:  
Approx. **25.3 MPa {258 kg/cm<sup>2</sup>}**
- 🔧 Locknut:  
**93 – 123 Nm {9.5 – 12.5 kgm}**

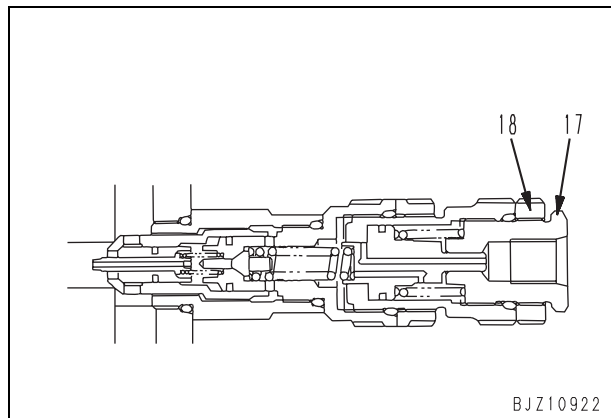


- 3] Connect pilot hose (14).

- 4] After finishing adjustment, check again that the oil pressure is normal according to the above described measurement procedure.
  - ★ If the high pressure setting side is adjusted, the low pressure setting side changes. Accordingly, adjust the low pressure setting side, too.
- ★ Adjusting relief pressure (Low pressure setting side)
  - Lock cylinder (Extension and retraction)
- The low relief pressure is the pressure applied when the 2-stage relief valve is turned ON and the pilot pressure is applied to the selector port.
  - 1] Disconnect 2-stage selector pilot hose (14).



- 2] While fixing holder (17), loosen locknut (18).
    - ★ If the holder is
      - turned to the right, the pressure rises.
      - turned to the left, the pressure lowers.
    - ★ Quantity of adjustment per turn of holder:  
Approx. **25.3 MPa {258 kg/cm<sup>2</sup>}**
- 🔧 Locknut:  
**78 – 93 Nm {8 – 9.5 kgm}**



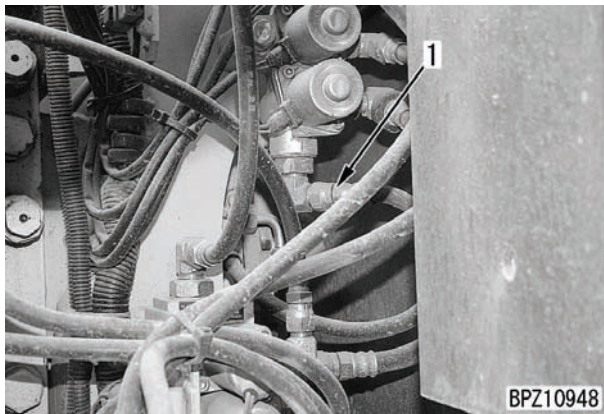
## Measuring control circuit basic pressure

- ★ Measuring tools for control circuit basic pressure

Symbol	Part No.	Part name
K	1	799-101-5002 Hydraulic tester
		790-261-1204 Digital hydraulic tester
	2	799-401-3100 Adapter: 02

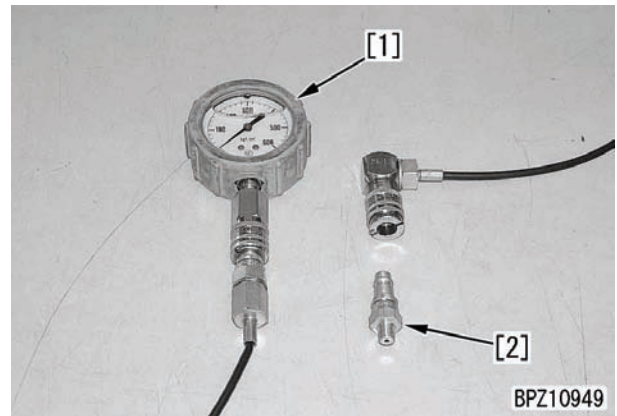
- ⚠ Stop the machine on a level ground.
- ⚠ Stop the engine, loosen the oil filler cap of the hydraulic tank gradually to release the residual pressure from the hydraulic tank, and set the work equipment lock lever in the LOCK position.
- ★ Measure the control circuit basic pressure under the following condition.
  - Hydraulic oil temperature: Within operating range

1. Disconnect inlet hose (1) of the 5-spool solenoid valve.



2. Connect adapter **K2** to hose (1) and install the hose again.

3. Install nipple [2] and oil pressure gauge [1] of hydraulic tester **K1**.
  - ★ Use the oil pressure gauge of 5.9 MPa {60 kg/cm<sup>2</sup>}.



4. Start the engine.
  5. While running the engine at high idle, turn all the operation switches OFF and measure the oil pressure.
  6. After finishing measurement, remove the measuring tools and return the removed parts.
- ★ Do not adjust the relief valve for control circuit basic pressure.

### Measuring and adjusting oil pressure in pump PC control circuit

★ Measuring and adjusting tools for oil pressure in pump PC control circuit

Symbol	Part No.	Part name
L	1	799-101-5002 Hydraulic tester
		790-261-1204 Digital hydraulic tester
2		799-101-5220 Nipple (10 × 1.25 mm)
		07002-11023 O-ring

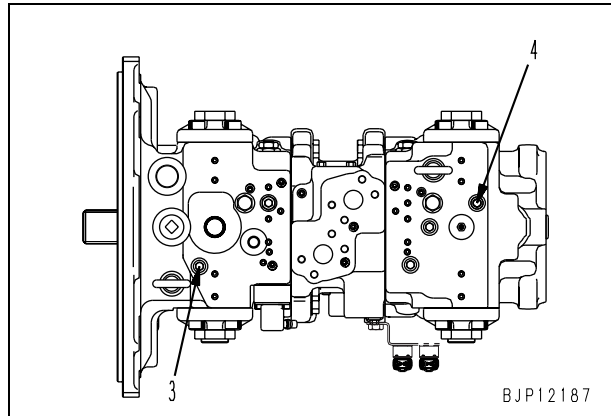
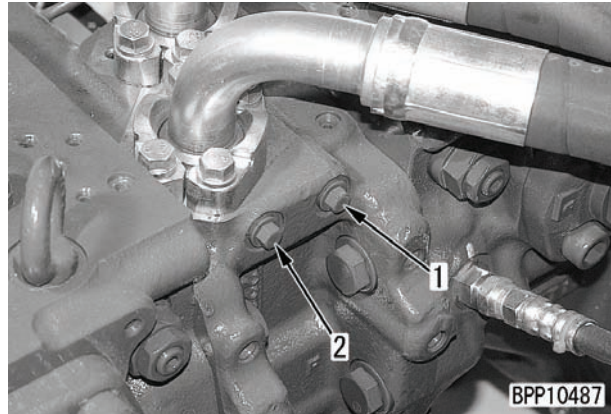
- ⚠ Stop the machine on a level ground.
- ⚠ Stop the engine, loosen the oil filler cap of the hydraulic tank gradually to release the residual pressure from the hydraulic tank, and set the work equipment lock lever in the LOCK position.

#### Measuring

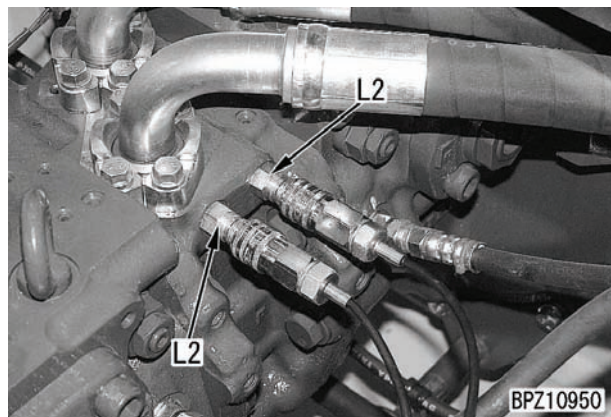
- ★ Before measuring the oil pressure in the pump PC control circuit, check that the oil pressure in the work equipment and travel circuits and the basic pressure of the control circuit are normal.
- ★ Measure the oil pressure in the pump PC control circuit under the following condition.
  - Hydraulic oil temperature: Within operating range

#### 1. Measuring PC valve output pressure (servo piston inlet pressure)

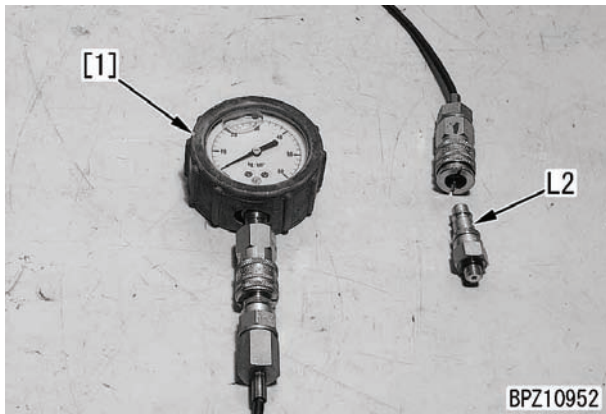
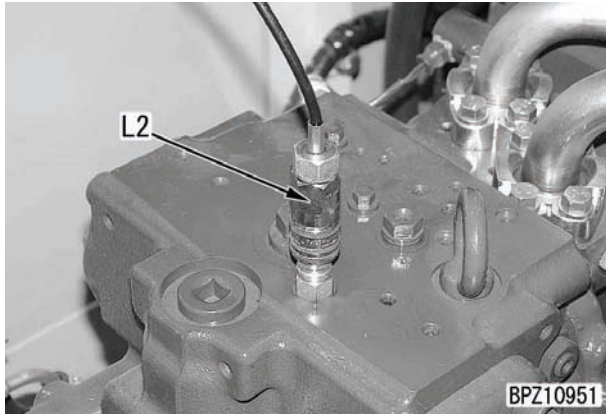
- ★ Measure the PC valve output pressure (servo piston inlet pressure) and pump discharge pressure simultaneously and compare them.
- 1) Remove oil pressure pickup plugs (1), (2), (3), and (4).
  - (1): Front pump discharge pressure pickup plug
  - (2): Rear pump discharge pressure pickup plug
  - (3): Front PC valve output pressure pickup plug
  - (4): Rear PC valve output pressure pickup plug



- 2) Install nipple L2 and connect it to oil pressure gauge [1] of hydraulic tester L1.
  - ★ Use the oil pressure gauge of 58.8 MPa {600 kg/cm<sup>2</sup>}.

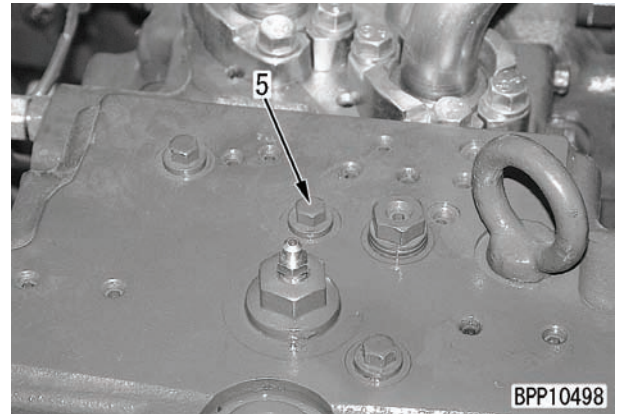




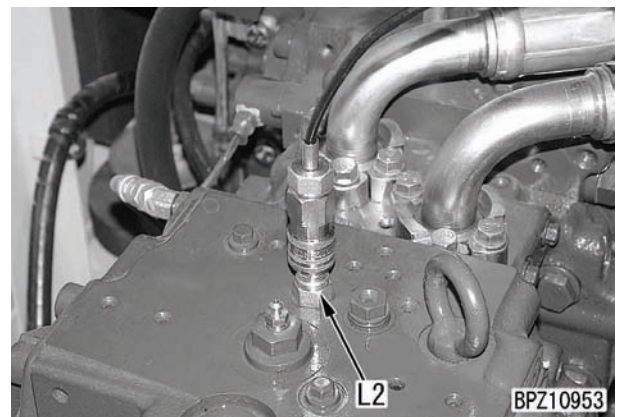


**2. Measuring PC-EPC valve output pressure**

- 1) Remove oil pressure pickup plug (5).



- 2) Install nipples **L2** and connect them to oil pressure gauges [1] of hydraulic tester **L1**.
  - ★ Use the oil pressure gauges of 5.9 MPa {60 kg/cm<sup>2</sup>}.



- 3) Start the engine.
- 4) While running the engine at high idle, relieve the travel circuit and measure the pump discharge pressure and PC valve output pressure (servo piston inlet pressure) simultaneously.

★ Measuring condition and method of judgment: If the pressures are in the following ratio, the PC valve is normal.

Measured oil pressure	Condition	Ratio of oil pressures
Pump discharge pressure	Travel relief	1
PC valve output pressure		Approx. 0.6 (Approx. 3/5)

★ If the PC valve or the servo piston is abnormal, the PC valve output pressure (servo piston inlet pressure) is “the same as the pump discharge pressure” or “almost 0”.

- 5) After finishing measurement, remove the measuring tools and return the removed parts.

- 3) Start the engine.
- 4) Turn OFF all the work equipment switches, run the engine at high idle and low idle, and measure the oil pressure at each speed.

- ★ Measuring condition and method of judgment: If the output pressures are in the following range, the PC-EPC valve is normal.

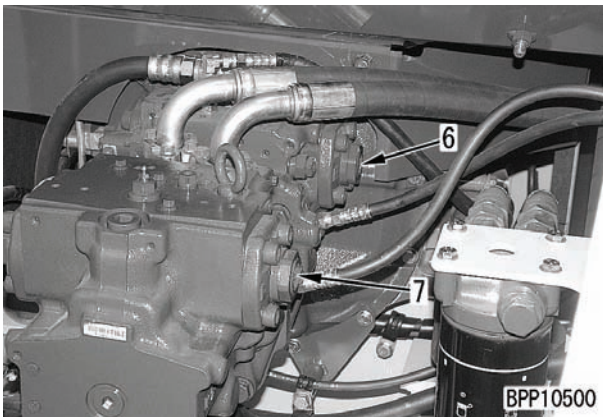
Engine	All work equipment switches	Output pressure
Low idle	OFF	Approx. 2.9 MPa {Approx. 30 kg/cm <sup>2</sup> }
High idle		0 MPa {0 kg/cm <sup>2</sup> }

- 5) After finishing measurement, remove the measuring tools and return the removed parts.

**Adjusting**

**Adjusting pump PC valve**

- ★ If either of the following phenomena occurs and the PC valve seems to be defective, adjust PC valves (6) and (7) according to the procedure shown below.
  - As the working load increases, the engine speed lowers remarkably.
  - The engine speed is normal but the work equipment speed is low.
  - (6): Front pump PC valve
  - (7): Rear pump PC valve

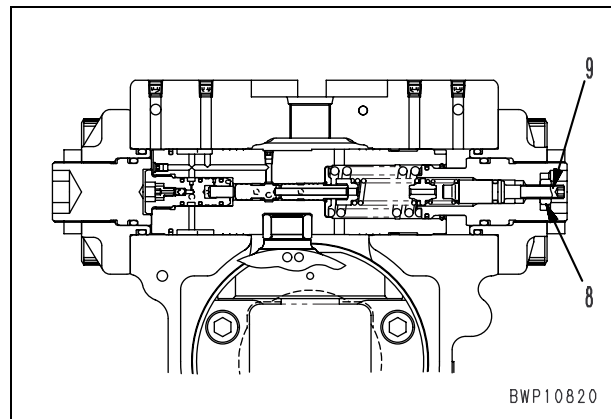


1. Loosen locknut (8).
  - ★ Before loosening the locknut, make counter mark at the adjustment screw end so that you can see the position of the locknut before the adjustment (and you can return the locknut to its original position after turning it in reverse).
2. Turn adjustment screw (9) clockwise or counterclockwise to adjust.
  - ★ Turn the adjustment screw
    - Clockwise when the work equipment speed is low (to increase pump absorption torque) and
    - Counterclockwise when the engine speed lowers (to decrease pump absorption torque).

3. Tighten locknut (8).

☞ Locknut:

**27.5 – 34.3 Nm {2.8 – 3.5 kgm}**



4. After finishing adjustment, check again that the PC valve output pressure (servo piston inlet pressure) is normal according to the above described measurement procedure.

## Measuring and adjusting oil pressure in pump LS control circuit

- ★ Measuring and adjusting tools for oil pressure in pump LS control circuit

Symbol	Part No.	Part name	
M	1	799-101-5002	Hydraulic tester
		790-261-1204	Digital hydraulic tester
	2	799-101-5220	Nipple (10 × 1.25 mm)
		07002-11023	O-ring
	3	799-401-2701	Differential pressure gauge

- ⚠ Stop the machine on a level ground.
- ⚠ Stop the engine and loosen the oil filler cap of the hydraulic tank gradually to release the residual pressure from the hydraulic tank.

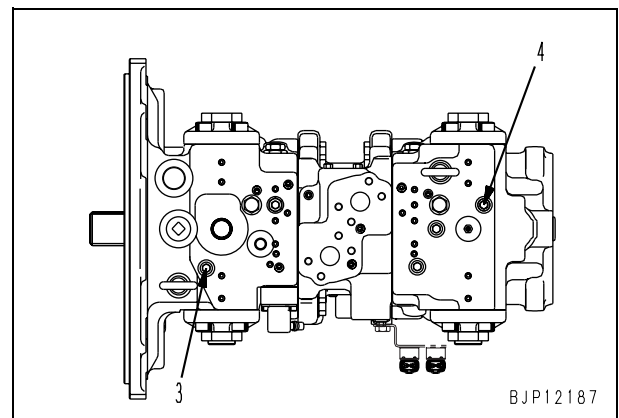
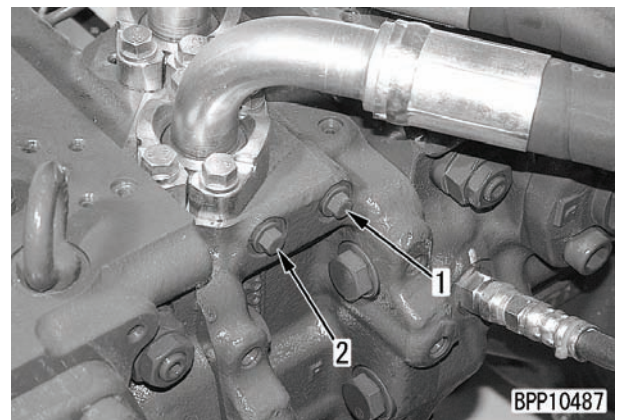
### Measuring

- ★ Before measuring the oil pressure in the pump LS control circuit, check that the oil pressure in the work equipment and travel circuits and the basic pressure of the control circuit are normal.
- ★ Measure the oil pressure in the pump LS control circuit under the following condition.
  - Hydraulic oil temperature: Within operating range

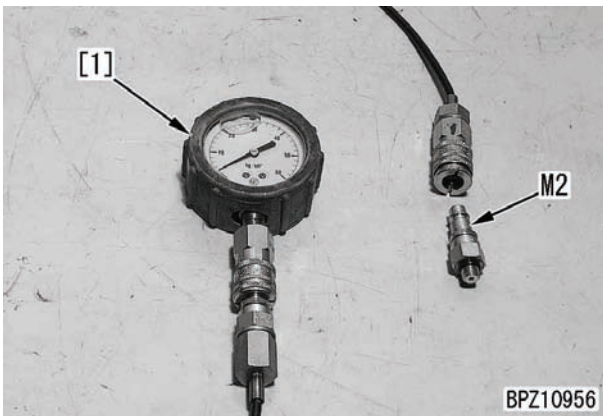
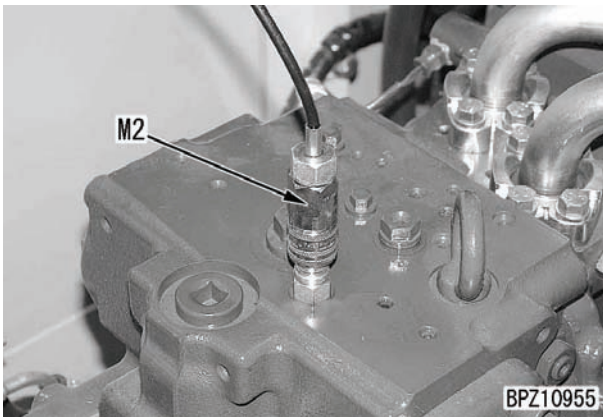
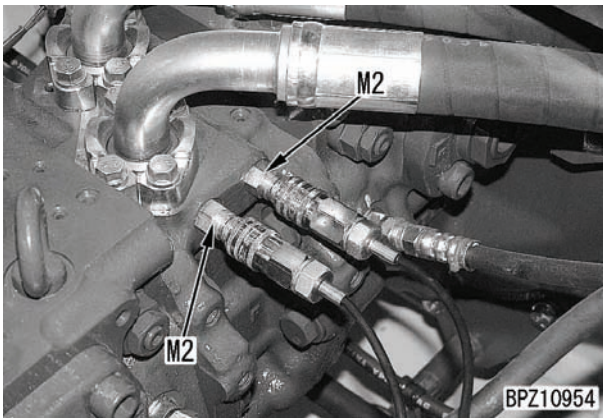
### 1. Measuring LS valve output pressure (servo piston inlet pressure)

- ★ Measure the LS valve output pressure (servo piston inlet pressure) and pump discharge pressure simultaneously and compare them.

- 1) Remove oil pressure pickup plugs (1), (2), (3), and (4).
  - (1): Front pump discharge pressure pickup plug
  - (2): Rear pump discharge pressure pickup plug
  - (3): Front LS valve output pressure pickup plug
  - (4): Rear LS valve output pressure pickup plug



- 2) Install nipple **M2** and connect them to oil pressure gauge [1] of hydraulic tester **M1**.
  - ★ Use the oil pressure gauges of 58.8 MPa {600 kg/cm<sup>2</sup>}.



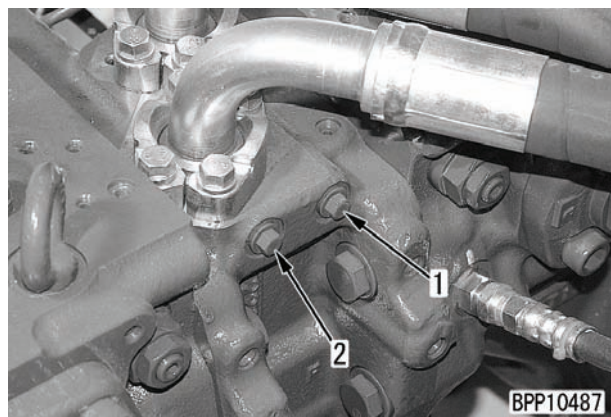
- 3) Start the engine.
- 4) While running the engine at high idle, measure the pump discharge pressure and LS valve output pressure (servo piston inlet pressure) simultaneously under the condition in the following table.
  - ★ Measuring condition and method of judgment: If the pressures are in the following ratio, the LS valve is normal.

Measured oil pressure	Condition	Ratio of oil pressures
	All work equipment switches OFF	All work equipment switches ON (No load)
Pump discharge pressure	Almost same	1
LS valve output pressure		Approx. 0.6 (Approx. 3/5)

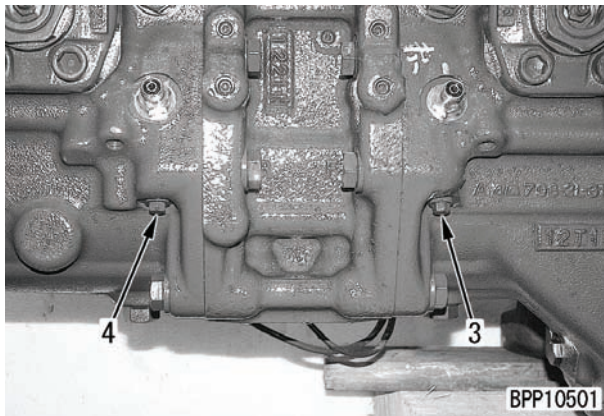
- 5) After finishing measurement, remove the measuring tools and return the removed parts.

**2. Measuring LS differential pressure**

- ★ Measure the pump discharge pressure and LS pressure (actuator load pressure) simultaneously and calculate the difference between them.
- 1) Remove oil pressure pickup plugs (1), (2), (3), and (4).
    - (1): Front pump discharge pressure pickup plug
    - (2): Rear pump discharge pressure pickup plug



- (3): Front LS pressure pickup plug
- (4): Rear LS pressure pickup plug



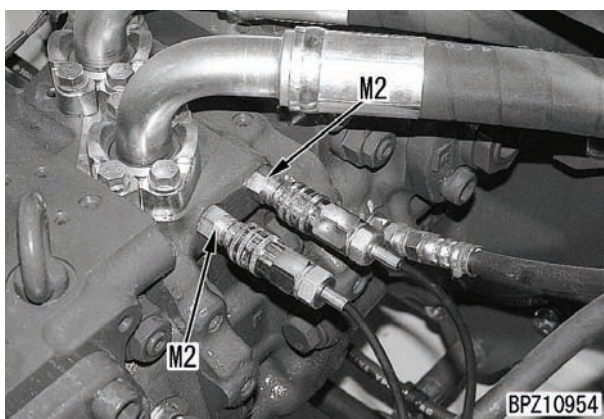
2) Install nipple **M2** and connect it to differential pressure gauge **M3** or the oil pressure gauge [1] of hydraulic tester **M1**.

★ When using differential pressure gauge **M3**:

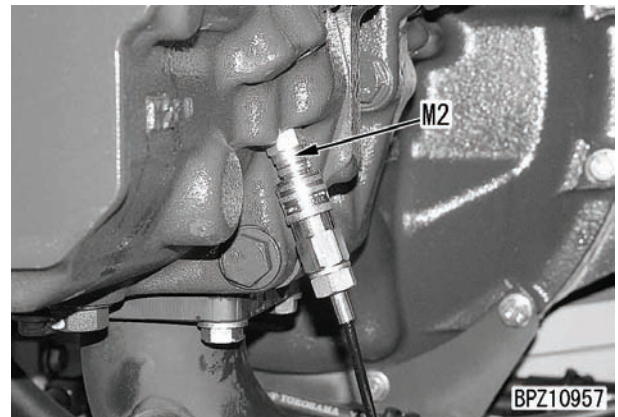
Connect the pump discharge pressure to the high pressure side (back side) and connect the LS pressure to the low pressure side (lower side). Since the differential pressure gauge needs a 12V power source, connect it to a battery.

★ When using oil pressure gauge (in **M1**): Use the oil pressure gauge of 58.8 MPa {600 kg/cm<sup>2</sup>} having the unit of 0.98 MPa {10 kg/cm<sup>2</sup>}. Since the differential pressure is about 3.9 MPa {40 kg/cm<sup>2</sup>} at maximum, measure it by installing the same gauge to the pickup plugs alternately.

- The figure shows the pump discharge pressure side.



- The figure shows the LS pressure side.



- 3) Run the engine.
- 4) While running the engine at high idle under the condition shown in the table, measure the pump discharge pressure and LS pressure (actuator load pressure) simultaneously.

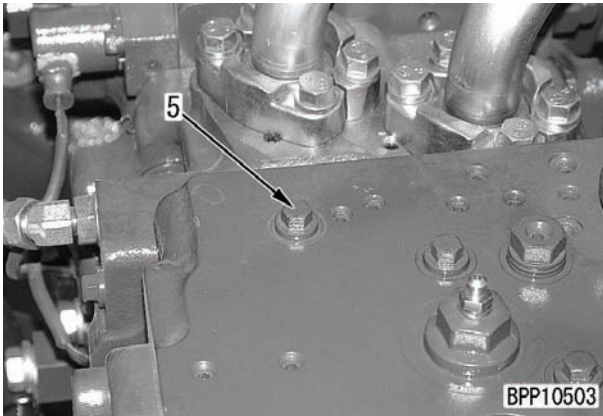
★ Calculation of LS differential pressure:  
 LS differential pressure = Pump discharge pressure – LS pressure

All work equipment switches	LS differential pressure (MPa {kg/cm <sup>2</sup> })
OFF	3.9 ± 1.0 {40 ± 10}
ON (No load)	0.98 ± 0.1 {10 ± 1.0}

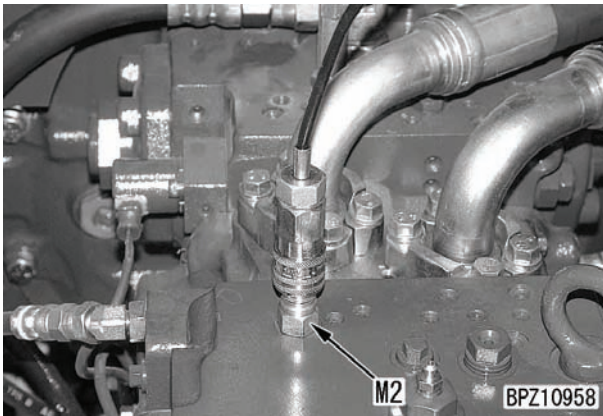
- 5) After finishing measurement, remove the measuring tools and return the removed parts.

**3. Measuring LS-EPC valve output pressure**

- 1) Remove oil pressure pickup plug (5).



- 2) Install nipple **M2** and connect it to oil pressure gauge of hydraulic tester **M1**.
  - ★ Use the oil pressure gauges of 5.9 MPa {60 kg/cm<sup>2</sup>}.



- 3) Start the engine.
- 4) Run the engine at high idle, Turn OFF all the work equipment switches, and measure the output pressure.
  - ★ Measuring condition and method of judgment: If the output pressures are in the following range, the LS-EPC valve is normal.

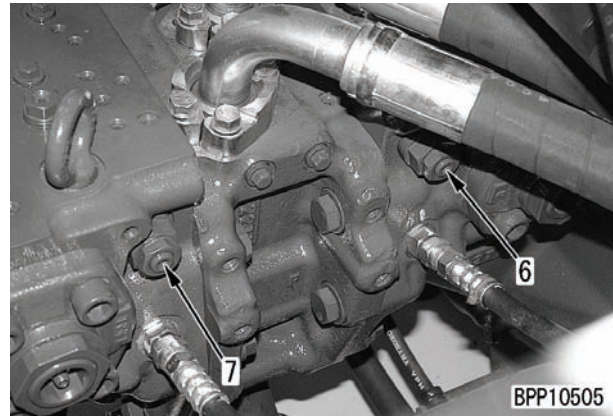
All work equipment switches	Output pressure
OFF	Approx. 2.9 MPa {Approx. 30 kg/cm <sup>2</sup> }

- 5) After finishing measurement, remove the measuring tools and return the removed parts.

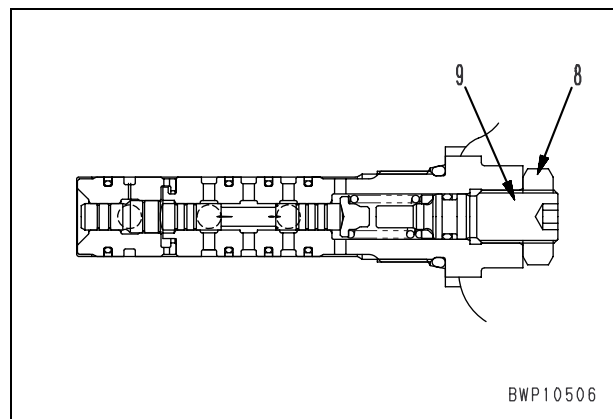
**Adjusting**

**Adjusting LS valve**

- ★ If the LS differential pressure is abnormal, adjust the LS valve according to the following procedure.
  - (6): Front pump LS valve
  - (7): Rear pump LS valve



1. While fixing adjustment screw (9), loosen locknut (8).
2. Turn adjustment screw (9) to adjust the differential pressure.
  - ★ If the adjustment screw is
    - Turned to the right, the differential pressure is increased.
    - Turned to the left, the differential pressure is decreased.
  - ★ Quantity of adjustment (LS differential pressure) per turn of adjustment screw: Approx. 1.3 MPa {Approx. 13.3 kg/cm<sup>2</sup>}
3. While fixing adjustment screw (9), tighten locknut (8).
  - 🔧 Locknut: **49 – 68.6 Nm {5 – 7 kgm}**



4. After finishing adjustment, check again that the LS differential pressure is normal according to the above described measurement procedure.

### Measuring solenoid valve output pressure

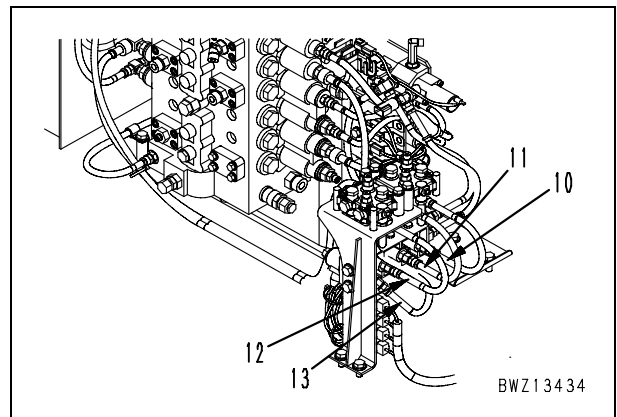
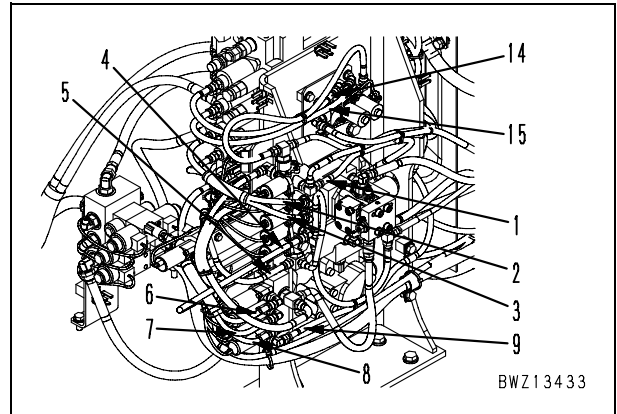
★ Measuring tools for solenoid valve output pressure

Symbol	Part No.	Part name
N	1	799-101-5002 Hydraulic tester
		790-261-1204 Digital hydraulic tester
	2	799-401-3100 Adapter (Size 02)

- ⚠ Stop the machine on a level ground.
- ⚠ Stop the engine and loosen the oil filler cap of the hydraulic tank gradually to release the residual pressure from the hydraulic tank.
- ★ Before measuring the solenoid valve output pressure, check that the basic pressure of the control circuit is normal.
- ★ Measure the solenoid valve output pressure under the following condition.
  - Hydraulic oil temperature: Within operating range

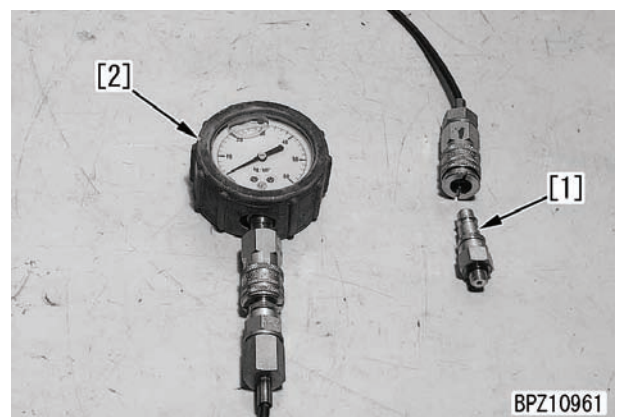
1. Disconnect outlet hoses (1) – (15) of the solenoid valves to be measured.

No.	Solenoid valve to be measured
1	Travel junction/2-stage relief solenoid valve
2	Magnetic separator solenoid valve
3	Side conveyor solenoid valve
4	Lock cylinder reset solenoid valve
5	Travel lock EPC solenoid valve
6	Accessory EPC solenoid valve
7	Feeder forward EPC solenoid valve
8	Crusher forward EPC solenoid valve
9	Crusher reverse EPC solenoid valve
10	Radio control left travel forward solenoid valve (if equipped)
11	Radio control left travel reverse solenoid valve (if equipped)
12	Radio control right travel forward solenoid valve (if equipped)
13	Radio control right travel reverse solenoid valve (if equipped)
14	Vibratory sieve solenoid valve (if equipped)
15	Secondary belt conveyor solenoid valve (if equipped)



★ The hoses to be measured are installed to the right side of the main valve.

2. Install adapter **N2** and connect the disconnected hose again.
3. Install nipple [1] of hydraulic tester **N1** and connect it to oil pressure gauge [2].
  - ★ Use the oil pressure gauge of 5.9 MPa {60 kg/cm<sup>2</sup>}.



4. Start the engine.

5. Run the engine at high idle, operate the control levers and switches to turn the solenoid valve ON or OFF, and measure the oil pressure.
  - ★ For the conditions for turning the solenoid valve ON and OFF, see the operation table of each solenoid valve.
  - ★ The operating condition of the solenoid valve can be checked with the monitoring function of the machine monitor (For details, see “Special functions of machine monitor”).
  - ★ If the output pressure is as follows, the solenoid valve is normal.

Solenoid valve	Output pressure
OFF (Demagnetization)	0 MPa {0 kg/cm <sup>2</sup> }
ON (Excitation)	2.9 MPa {30 kg/cm <sup>2</sup> } (Exclude EPC solenoid valve)

6. After finishing measurement, remove the measuring tools and return the removed parts.

**Operation table of travel junction/2-stage relief solenoid valve**

Operating condition		Operation
In travel mode	When travel steering signal is ON	ON
	When travel steering signal is OFF	OFF
In testing mode	When crusher clearance reducing switch is ON	ON
	When crusher clearance reducing switch is OFF	OFF

**Operation table of side conveyor solenoid valve**

Operating condition		Operation
Side conveyor signal (Side conveyor ON switch is pressed and side conveyor operating signal is ON)	ON	ON
	OFF	OFF

**Operation table of travel lock EPC solenoid valve**

Operating condition			Output pressure MPa {kg/cm <sup>2</sup> }
Conveyor top position	Travel mode	Travel speed Hi	Approx 2.9 {30}
		Travel speed Lo	Approx 1.8 {18.5}
	Inspection mode		0 {0}

**Operation table of magnetic separator solenoid valve**

Operating condition		Operation
Magnetic separator signal (Magnetic separator ON switch is pressed and magnetic separator operating signal is ON)	ON	ON
	OFF	OFF

**Operation table of lock cylinder reset solenoid valve**

Operating condition		Operation
Lock cylinder reset signal (Crusher clearance increase or decrease switch is pressed in inspection mode and signal is ON during operation)	ON	ON
	OFF	OFF

**Operation table of accessory EPC valve**

Operating condition		Output pressure MPa {kg/cm <sup>2</sup> }
Primary conveyor signal (Signal is ON for conveyor in operation when primary conveyor ON switch is pressed)	ON	Approx. 2.6 {26}
	OFF	0 {0}

**Operation table of crusher forward EPC valve**

Operating condition		Output: Left MPa {kg/cm <sup>2</sup> }
Crusher forward signal (Crusher speed: MAX)	ON	Approx 2.9 {30}
	OFF	0 {0}

**Operation table of radio control travel (Right, left, forward, and reverse) solenoid valve (if equipped)**

Operating condition		Operation
Radio control travel signal (Signal is ON for radio control travel in operation)	ON	ON
	OFF	OFF

**Operation table of feeder forward EPC valve**

Operating condition		Output: Left MPa {kg/cm <sup>2</sup> }
Feeder forward signal (Feeder speed: MAX)	ON	Min. 2.0 {20}
	OFF	0 {0}



**Operation table of crusher reverse EPC valve**

Operating condition		Output: Left MPa {kg/cm <sup>2</sup> }
Crusher reverse signal (Crusher speed: MAX)	ON	Approx. 2.9 {30}
	OFF	0 {0}

**Operation table of vibratory sieve solenoid valve (if equipped)**

Operating condition		Operation
Vibratory sieve signal (Vibratory sieve ON switch is pressed and vibratory sieve operating signal is ON)	ON	ON
	OFF	OFF

**Operation table of secondary belt conveyor solenoid valve (if equipped)**

Operating condition		Operation
Secondary belt conveyor signal (Secondary belt conveyor ON switch is pressed and second- ary belt conveyor operating sig- nal is ON)	ON	ON
	OFF	OFF

## Measuring PPC valve output pressure

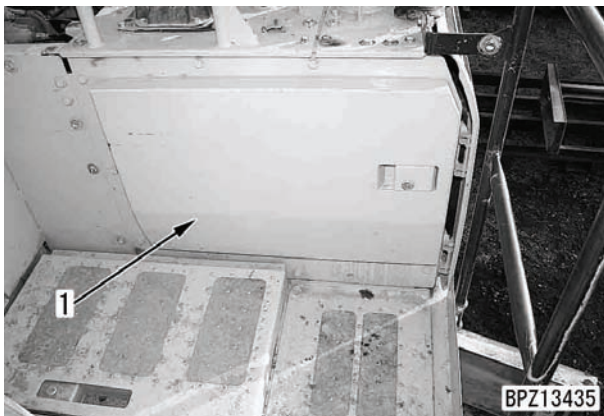
★ Measuring tools for PPC valve output pressure

Symbol	Part No.	Part name	
P	1	799-101-5002	Hydraulic tester
		790-261-1204	Digital hydraulic tester
	2	799-101-5230	Nipple (14 × 1.5)
	3	07002-11423	O-ring

### ⚠ Stop the machine on a level ground.

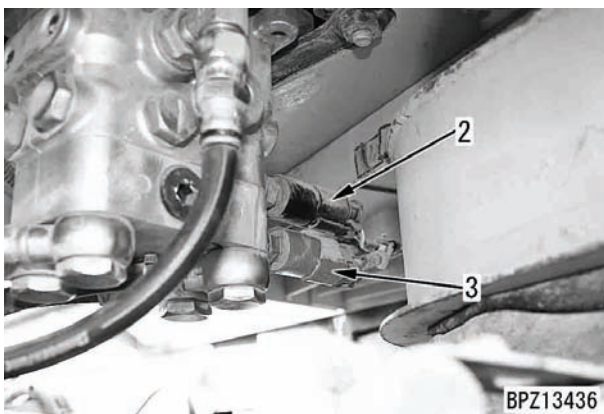
- ★ Before measuring the PPC valve output pressure, check that the basic pressure of the control circuit is normal.
- ★ Measure the PPC valve output pressure under the following condition.
  - Hydraulic oil temperature: Within operating range

1. Open cover (1).

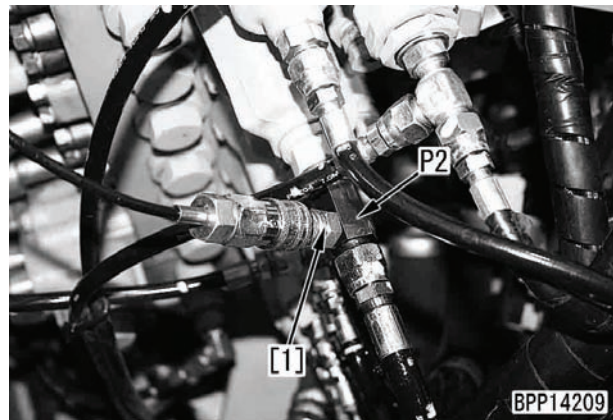


2. Remove PPC oil pressure switches (2) and (3) of the circuits to be measured.

- Switch (2): Travel signal (Black)
- Switch (3): Steering signal (Red)



3. Install nipple **P2** and connect it to oil pressure gauge [1] of hydraulic tester **P1**.
  - ★ Use the oil pressure gauge of 5.9 MPa {60 kg/cm<sup>2</sup>}.



4. Start the engine.

5. Run the engine at high idle and measure the oil pressure with the control lever in neutral and moved to the stroke end.
  - ★ If the output pressure is as follows, the PPC valve is normal.

Operation of lever	Output pressure MPa {kg/cm <sup>2</sup> }
Neutral	0 {0}
Stroke end	Approx. 2.9 {30}

6. After finishing measurement, remove the measuring tools and return the removed parts.

## Measuring oil leakage

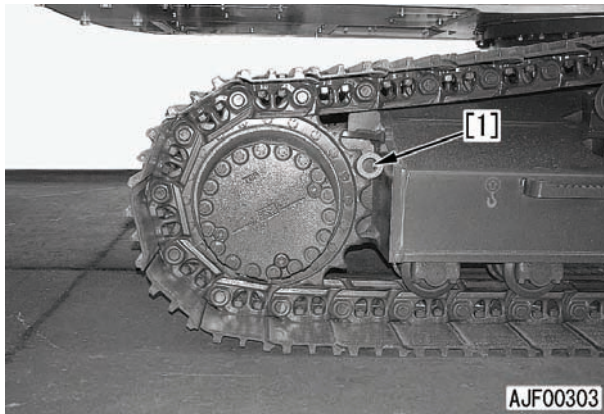
### ★ Measuring tools for oil leakage

Symbol	Part No.	Part name
Q	Commercially available	Measuring cylinder

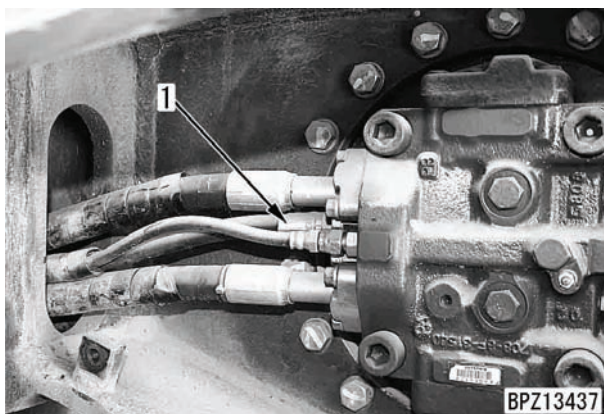
- ★ Measure the oil leakage under the following condition.
- Hydraulic oil temperature: Within operating range

### Measuring oil leakage from travel motor

1. Remove the travel motor cover.
2. Run the engine, lock the travel mechanism, and stop the engine.
  - ▲ Put pin [1] between the sprocket and track frame to lock the travel mechanism securely.



3. Disconnect drain hose (1) of the travel motor and block the hose side with a plug.
  - ★ Use the following part to block the hose side.  
07376-70422 (Plug #04)



4. Run the engine at high idle, relieve the travel circuit, and measure the oil leakage.
  - ▲ Before operating the travel lever, check the position and locking direction of the locked sprocket again.
  - ▲ Wrong operation of the lever can cause an accident. Accordingly, make signs and checks securely.
  - ★ Start measuring the oil leakage 30 seconds after relieving is started and measure for 1 minute.
  - ★ Measure several times, moving the motor a little (changing the position of the valve plate and cylinder and that of the cylinder and piston) each time.
5. After finishing measurement, return the removed parts.

### Bleeding air from each part

Air bleeding item	Air bleeding procedure						
	1	2	3	4	5	6	7
	Bleeding air from hydraulic pump	Starting engine	Bleeding air from grizzly feeder motor	Bleeding air from crusher motor	Bleeding air from travel motor	Bleeding air from belt conveyor motor	Checking oil level and starting operation
<ul style="list-style-type: none"> <li>• Replacing hydraulic oil</li> <li>• Cleaning strainer</li> </ul>	●	●	●	●	● (See note)	→	●
<ul style="list-style-type: none"> <li>• Replacing return filter element</li> </ul>		●	→	→	→	→	●
<ul style="list-style-type: none"> <li>• Replacing and repairing hydraulic pump</li> <li>• Removing suction piping</li> </ul>	●	●	●	●	●	→	●
<ul style="list-style-type: none"> <li>• Replacing and repairing control valve</li> <li>• Removing control valve piping</li> </ul>		●	●	●	●	→	●
<ul style="list-style-type: none"> <li>• Replacing and repairing grizzly feeder motor</li> <li>• Removing grizzly feeder motor piping</li> </ul>		●	●	→	→	→	●
<ul style="list-style-type: none"> <li>• Replacing and repairing crusher motor</li> <li>• Removing crusher motor piping</li> </ul>		●	→	●	→	→	●
<ul style="list-style-type: none"> <li>• Replacing and repairing travel motor</li> <li>• Removing travel motor piping</li> </ul>		●	→	→	●	→	●
<ul style="list-style-type: none"> <li>• Replacing and repairing belt conveyor motor</li> <li>• Removing belt conveyor motor piping</li> </ul>		●	→	→	→	●	●

Note: Bleed air from the travel motor only when the oil in the motor cases is drained.

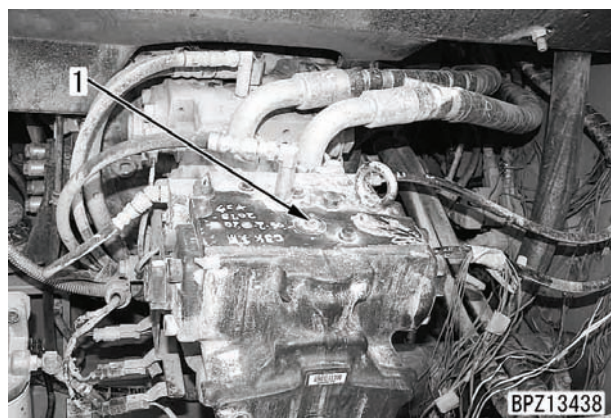
#### 1. Bleeding air from hydraulic pump

- 1) Loosen air bleeder (1) and check that oil oozes out through the air bleeder.
- 2) After the oil oozes out, tighten air bleeder (1).

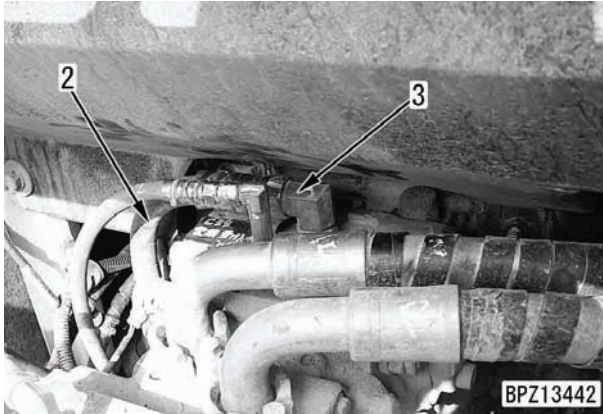
 Air bleeder:

**7.8 – 9.8 Nm {0.8 – 1.0 kgm}**

- ★ Do not use an impact wrench to tighten the air bleeder.



- ★ If the oil does not flow out of the air bleeder:
- 3) Leave bleeder (1) loosened, disconnect drain hose (2), and remove elbow (3).
- 4) Add oil through the elbow mounting hole until it flows out of the bleeder (1).
- 5) Install elbow (3) and connect drain hose (2).



- 6) Tighten air bleeder (1).

☞ Bleeder:

**7.8 – 9.8 Nm {0.8 – 1.0 kgm}**

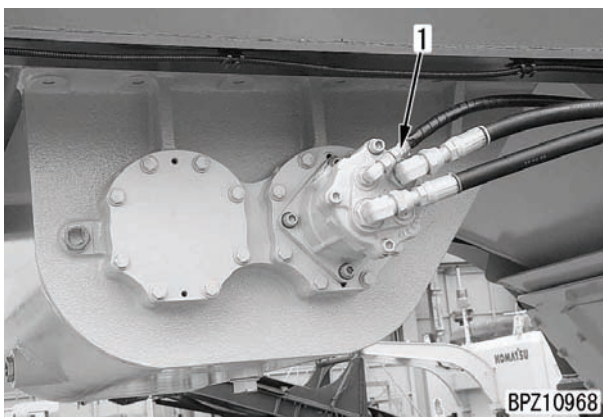
## 2. Starting engine

When running the engine after performing step 1, keep its speed at low idle for 10 minutes.

- ★ If the engine coolant temperature is low and the automatic warm-up operation is started, stop the engine temporarily and reset the automatic warm-up operation with the fuel control dial (Set the starting switch in the ON position and hold the fuel control dial in the MAX position for 3 seconds, and the automatic warm-up operation is reset).

## 3. Bleeding air from grizzly feeder motor

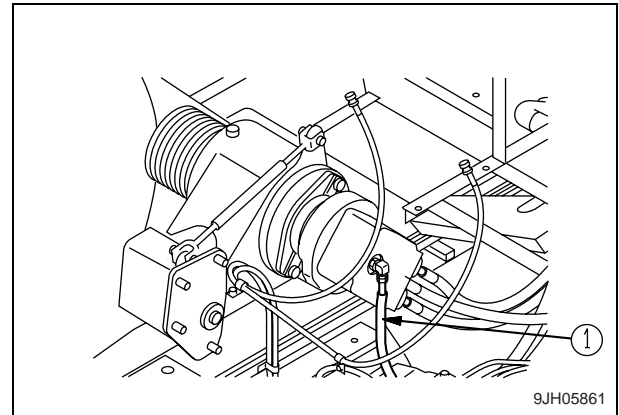
- 1) Run the engine at low idle, loosen drain hose (1), and check that oil flows out of the drain port.



- 2) If the oil does not flow out, stop the engine, disconnect the drain hose, and fill the motor case with oil.
- 3) After bleeding air, tighten the drain hose.
- 4) Run the engine at low idle to rotate the motor slowly.

## 4. Bleeding air from crusher motor

- 1) Run the engine at low idle, loosen drain hose (1), and check that oil flows out of the drain port.



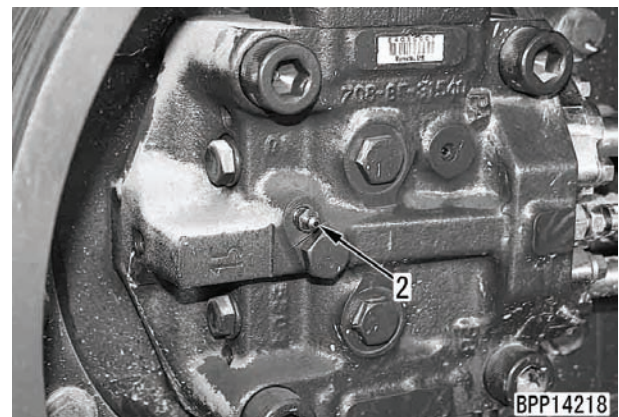
- 2) If the oil does not flow out, stop the engine, disconnect the drain hose, and fill the motor case with oil.
- 3) After bleeding air, tighten the drain hose.
- 4) Run the engine at low idle to rotate the motor slowly.

## 5. Bleeding air from travel motor

- 1) Run the engine at low idle.
- 2) Loosen air bleeder (2) and check that oil oozes out through the air bleeder.
- 3) After the oil oozes out, tighten air bleeder (2).

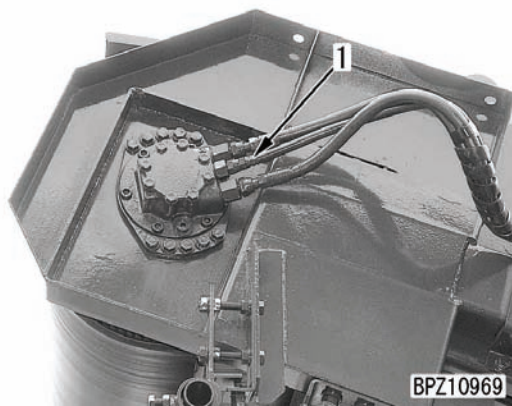
☞ Air bleeder:

**27.5 – 35.3 Nm {2.8 – 3.6 kgm}**



**6. Bleeding air from conveyor motor**

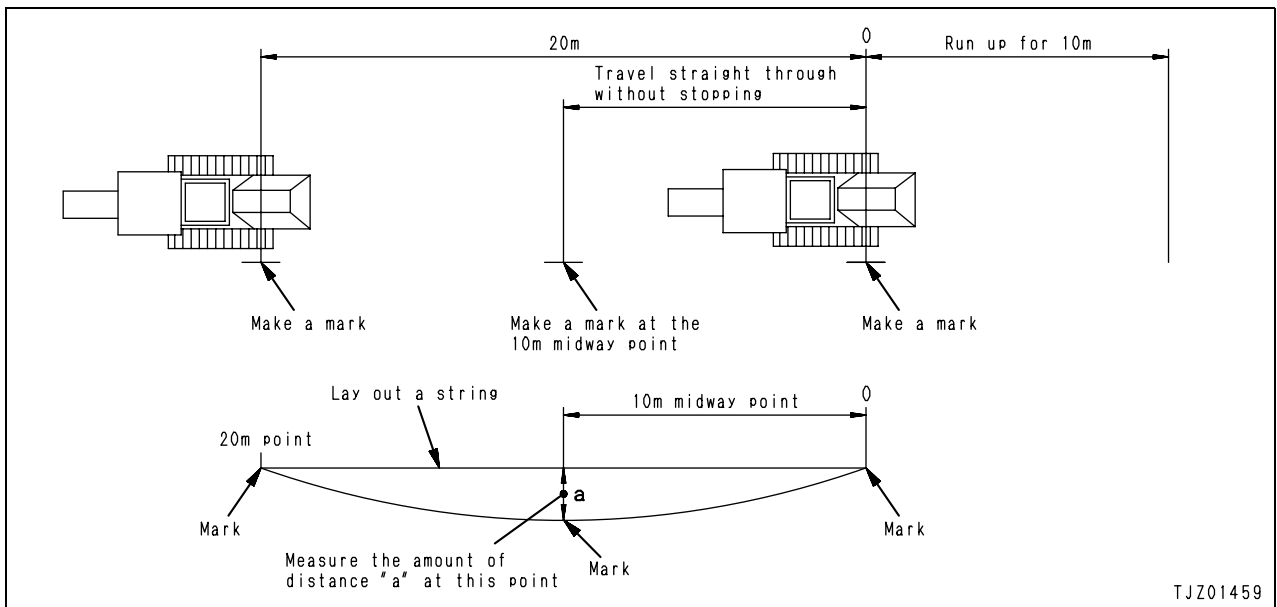
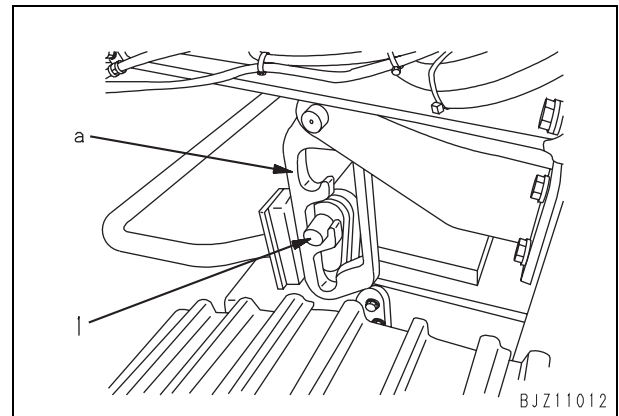
- 1) Run the engine at low idle, loosen drain hose (1), and check that oil flows out of the drain hose.



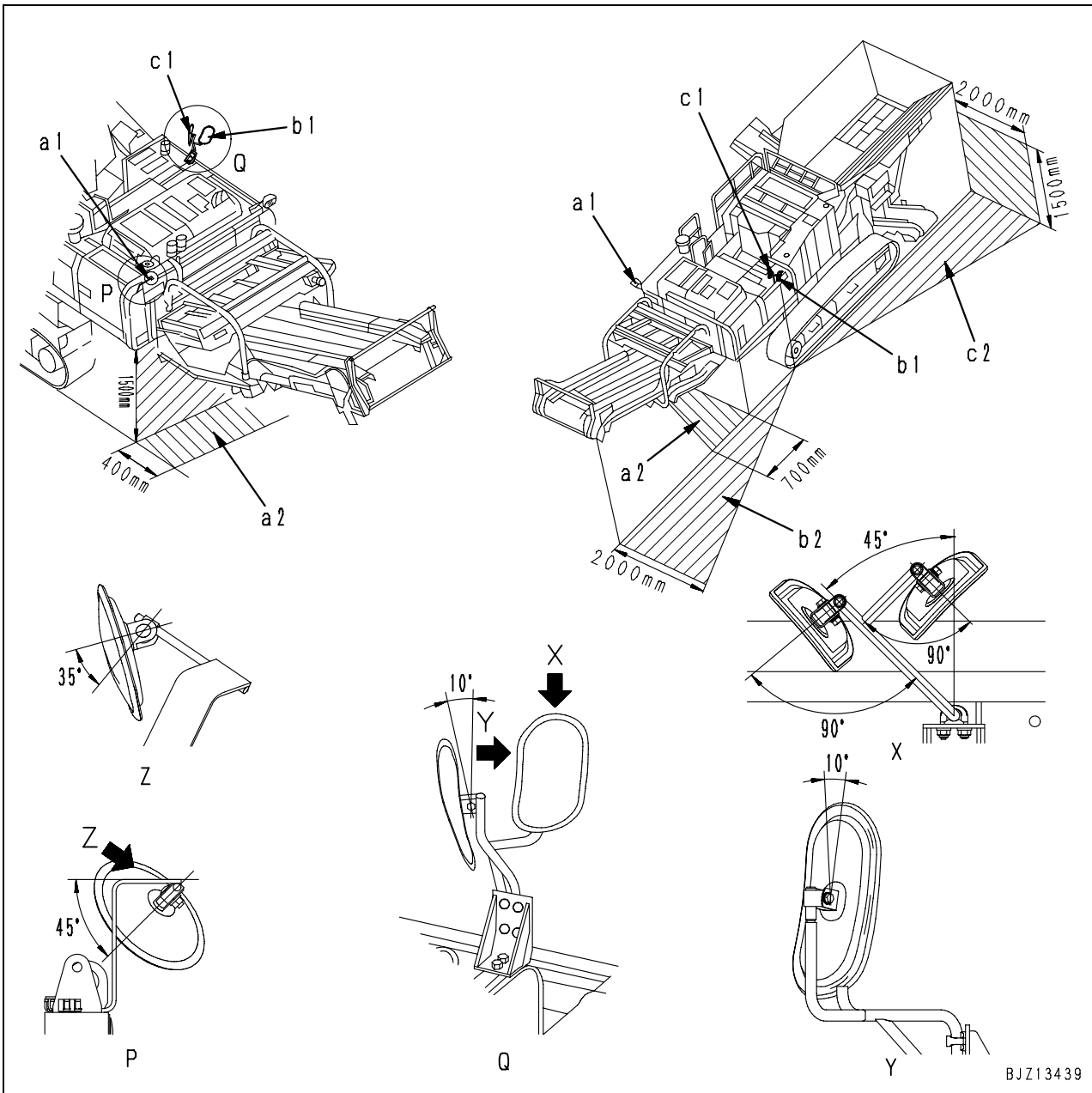
- 2) If the oil does not flow out, stop the engine, and fill the motor case with hydraulic oil.
- 3) After bleeding air, tighten the drain hose.
- 4) Run the engine at low idle to rotate the motor slowly.

## Testing travel deviation

- ★ When traveling on flat ground
- 1. Set the machine in the travel posture.
  - ★ To set the machine in the travel posture, raise the primary belt conveyor and hitch mount hook (1) in fixing position for travel (a) securely.
- 2. Make run up for 10 m, and then measure the travel deviation in 20 m.
  - ★ Run the engine at full throttle for measurement.
  - ★ Install an oil pressure gauge and measure the pump discharge pressure during the measurement of the travel deviation.



### Adjusting mirrors

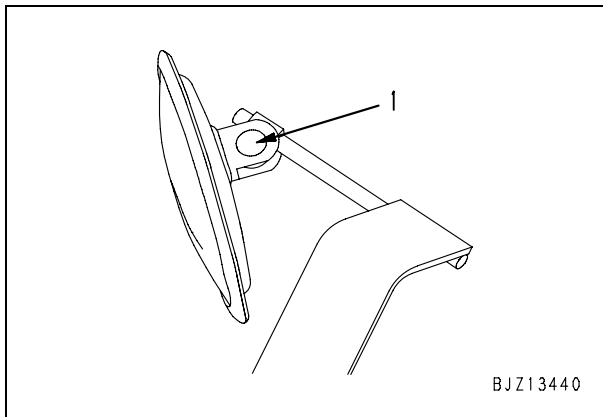




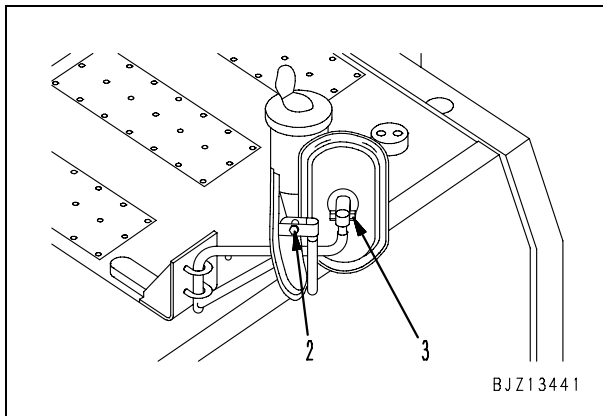
**Adjusting mirror (a1)**

Loosen bolt (1) of the mirror and adjust the mirror so that the operator can best see the view in front of the machine which is a blind corner from the operator's seat.

- ★ When installing the mirror, adjust so that it is possible to see any persons at the front left and right edges of the machine (both sides of the conveyor) or objects of a height of 1 m and diameter of 30 cm.

**Adjusting mirrors (b1) and (c1)**

Loosen bolts (2) and (3) of the mirrors and adjust the mirrors so that the operator can see a person (an object 1 m high and 30 cm in diameter) standing in the left side of the machine which is a blind corner from the operator's seat.

**Adjusting view**

Adjust each mirror so that the operator can see the following ranges.

- Mirror (a1): Hatched part (a2) must be seen
- Mirror (b1): Hatched part (b2) must be seen
- Mirror (c1): Hatched part (c2) must be seen

BR380JG-1E0 Mobile crusher

---

Form No. SEN02303-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

---

# **MOBILE CRUSHER**

## **BR380JG-1E0**

<b>Machine model</b>	<b>Serial number</b>
BR380JG-1E0	2001 and up

---

### **30 Testing and adjusting**

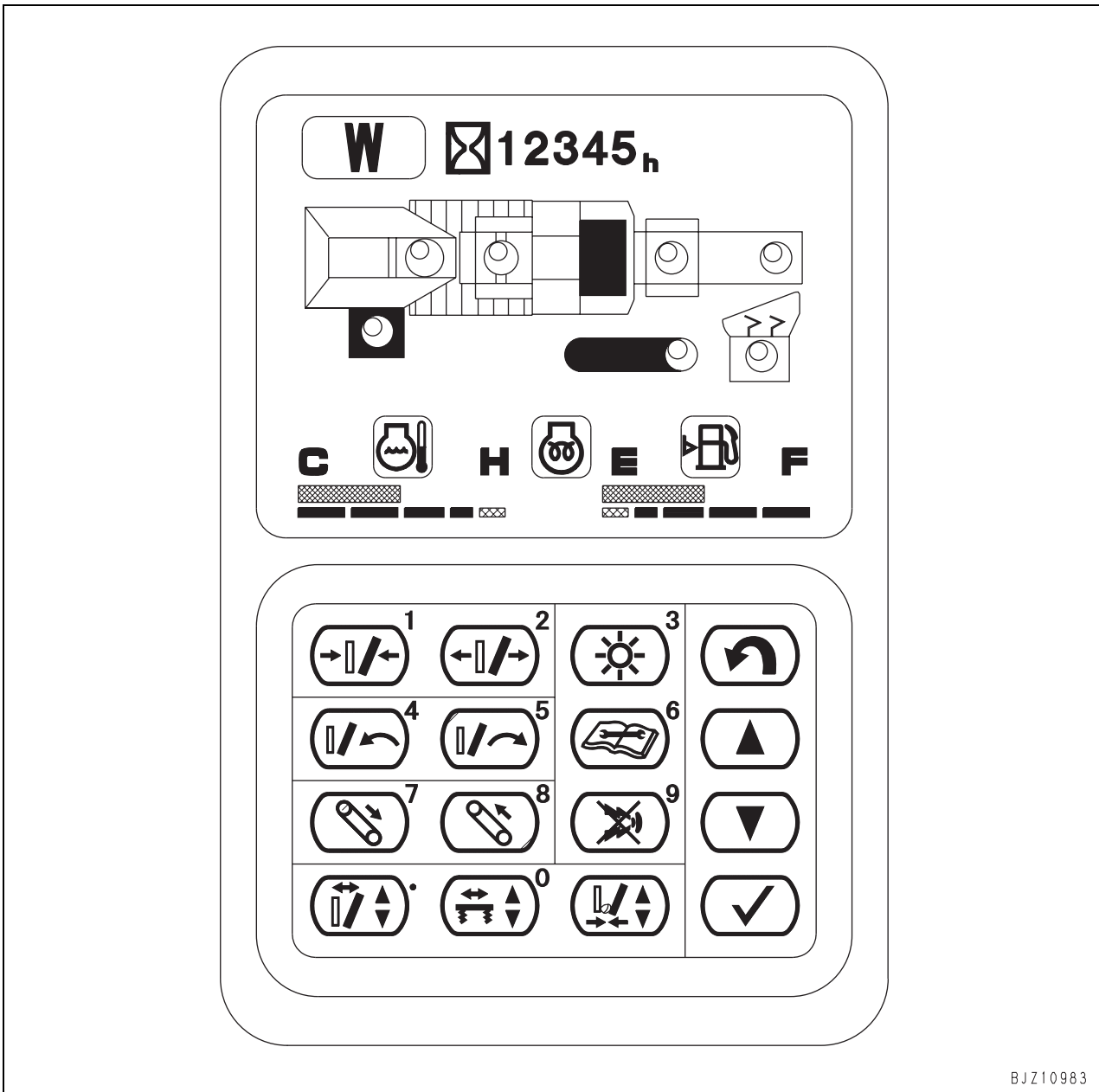
#### **Testing and adjusting, Part 2**

---

---

Special functions of machine monitor .....	2
--	---

### Special functions of machine monitor



- [1]: Figure input switch 1
- [2]: Figure input switch 2
- [3]: Figure input switch 3
- [4]: Figure input switch 4
- [5]: Figure input switch 5
- [6]: Figure input switch 6
- [7]: Figure input switch 7
- [8]: Figure input switch 8
- [9]: Figure input switch 9
- [0]: Figure input switch 0

- [↶]: Return switch
- [△]: Upward move switch
- [▽]: Downward move switch
- [✓]: Input confirmation switch

## Ordinary functions and special functions of machine monitor

The machine monitor has the ordinary function and special functions and displays information of various types on the multi-display.

Some items are displayed automatically and others are displayed through the switch operations according to the internal setting of the machine monitor.

- **Ordinary functions: Operator menu**

The functions in this mode are displayed ordinarily. Display and setting of these functions are available from the operator's switch operations.

- **Special functions: Service menu**

The functions in this mode are not ordinarily displayed. Display and setting of these functions are available from the serviceman's operations of the special switches.

This mode is used for special setting, testing, adjusting or troubleshooting.

Operator menu	
1	Password input and setting function
2	KOMATSU logo display screen
3	Check before starting function
4	Maintenance display function
5	Caution items display function
6	Function of travel mode
7	Function of working mode
8	Function of testing mode
9	Function of setting feeder speed
10	Function of setting crusher speed
11	Function of setting crusher load
12	Display's brightness and contrast adjusting function
13	Check of maintenance information function
14	Service meter display function
15	Caution generation display function
16	Function of displaying user code
17	Function of displaying error code and failure code
18	Function of monitoring emergency stop
19	Function of displaying conveyor location

Service menu		
20	Function of monitoring [01]	
21	Function of abnormality record [02]	Electrical systems
		Mechanical systems
22	Function of maintenance record [03]	
23	Function of maintenance mode change [04]	
24	Function of phone number entry [05]	
25	Function of default [06]	Language
		Unit
26	Function of adjustment [07]	Pump absorption torque
		Adjustment of feeder speed
		Adjustment of crusher speed
		Initialization of clearance potentiometer
27	Function of cylinder cut-out operation [08]	
	Function of no injection cranking [09]	
29	Function of crusher clearance record [10]	
30	Function of lock cylinder slip record [11]	

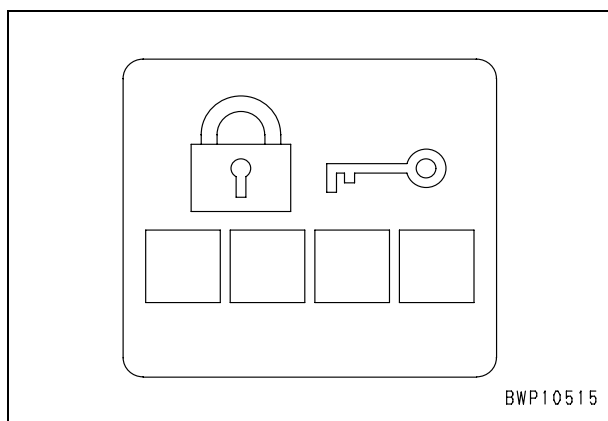
**Operation of operator menu and display (outline)**

★ This section introduces only the outline of the operator menu. For details on the contents and operation steps of each menu, refer to the “Operation and maintenance manual” or the chapter of “Structure, function and maintenance standard” in this shop manual.

**1. Password input and setting function**

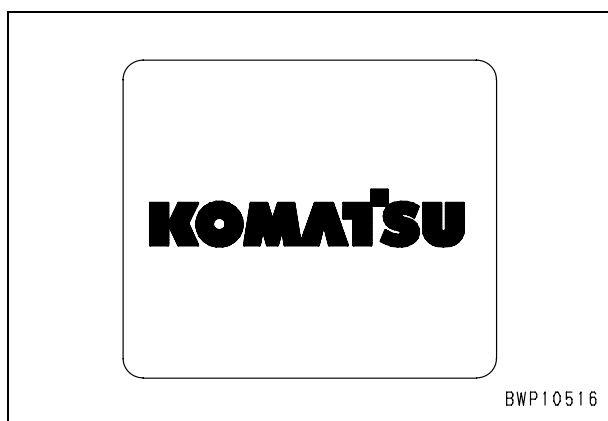
Password input screen is displayed as the starting switch is turned ON.

★ Above display is available only when the password function is selected.



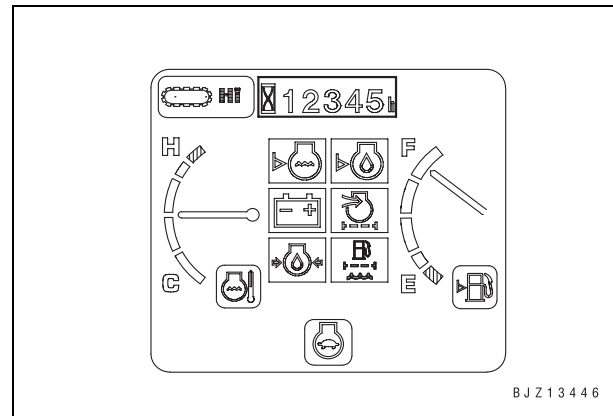
**2. KOMATSU logo display screen**

KOMATSU logo is displayed for 2 seconds as a password is entered (as a password is specified) or the starting switch is turned ON.



**3. Check before starting function**

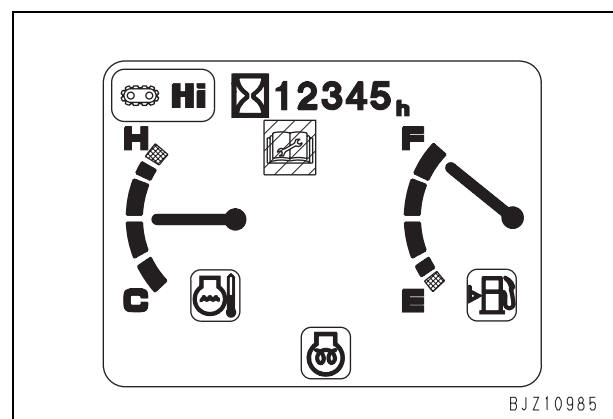
Check before starting screen is displayed for 2 seconds succeeding to display of KOMATSU logo.



**4. Maintenance display function**

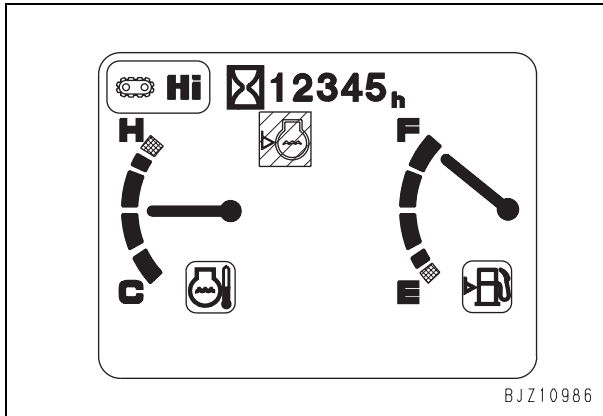
Succeeding to display of the check before starting screen, a maintenance mark appears for 30 seconds pointing the oil or filter whose specified maintenance time has already expired or going to expire soon.

★ Above display is available only when the maintenance function is selected.



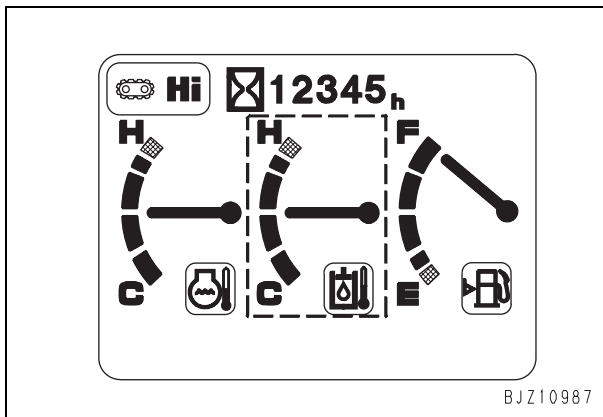
**5. Caution items display function**

Succeeding display of the check before starting screen, an applicable caution mark appears pointing a check before starting item on which a problem was found.



**6. Function of travel mode**

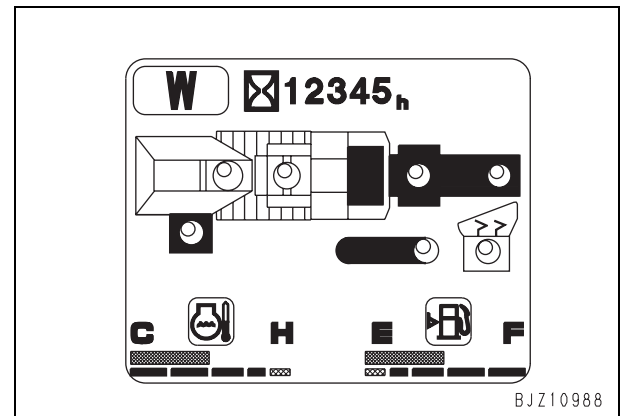
If the travel mode is selected with the mode selector switch of the main control box, the Hi, Mi or Lo speed is displayed according to the setting of the travel speed selector switch of the upper control box.



**7. Function of working mode**

If the working mode is selected with the mode selector switch of the main control box, the operator can check the operating condition of each work equipment unit and specify the work equipment that is overloaded or loaded abnormally.

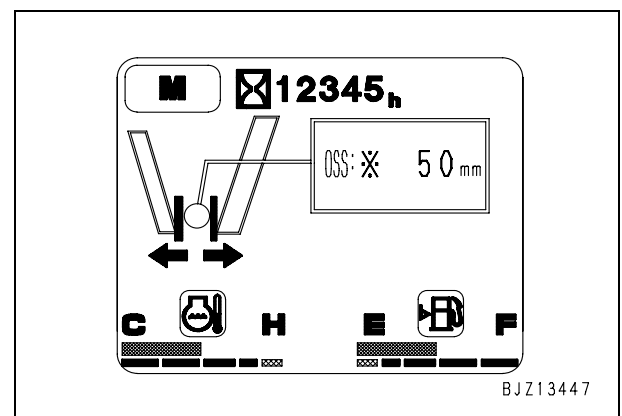
- If the hydraulic oil temperature is abnormally high, the travel mode is selected forcibly.



**8. Function of testing mode**

If the testing mode is selected with the mode selector switch of the main control box, the screen changes according to the position of Manual (M), Semiauto (S), or Auto (A) selected with the crusher clearance adjustment mode selector switch of the main control box, then the operator can adjust the crusher clearance in each mode.

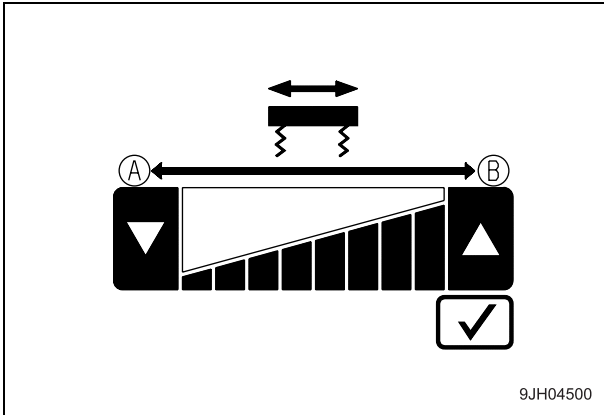
- If the hydraulic oil temperature is abnormally high, the travel mode is selected forcibly.



**9. Function of setting feeder speed**

The operator can adjust the feeder speed with the feeder speed setting switch of the machine monitor.

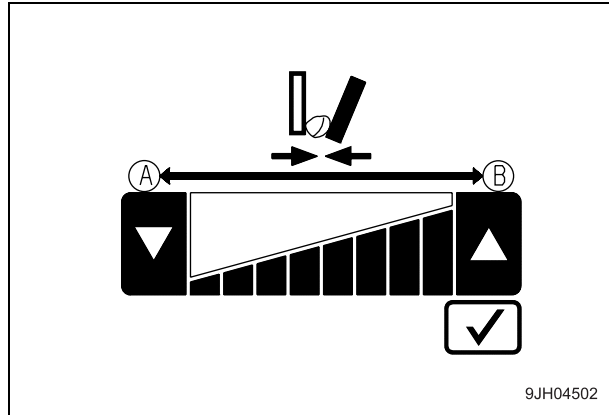
- A: Feeding speed is minimum
- B: Feeding speed is maximum



**11. Function of setting crusher load**

The operator can adjust the crusher load with the crusher load setting switch of the machine monitor.

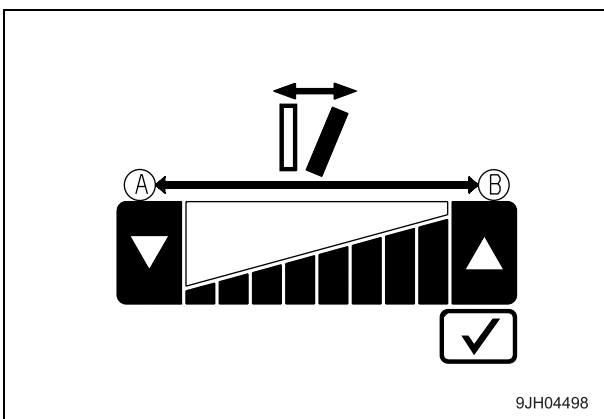
- A: Load is set to minimum.
- B: Load is set to maximum.



**10. Function of setting crusher speed**

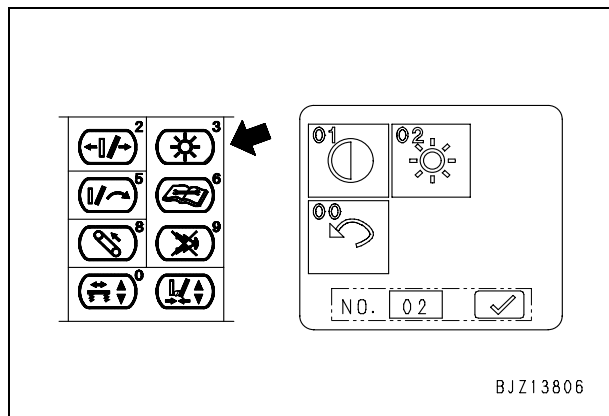
The operator can adjust the crusher speed with the crusher speed setting switch of the machine monitor.

- A: Speed is minimum
- B: Speed is maximum



**12. Display's brightness and contrast adjusting function**

The screen adjustment switches allow adjusting the display brightness and contrast.

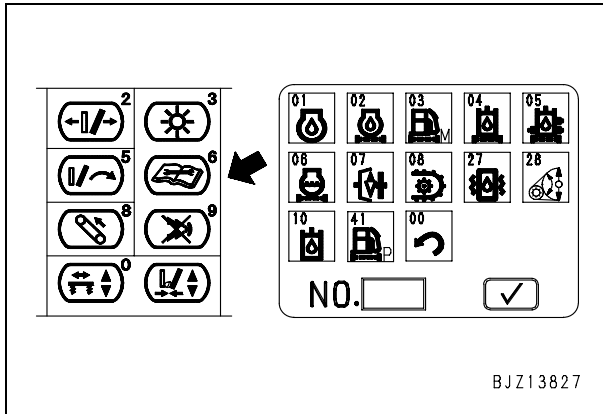




**13. Check of maintenance information function**

The maintenance switch allows checking detailed information of the maintenance items (specified maintenance time and elapsed time). It also allows resetting after the maintenance.

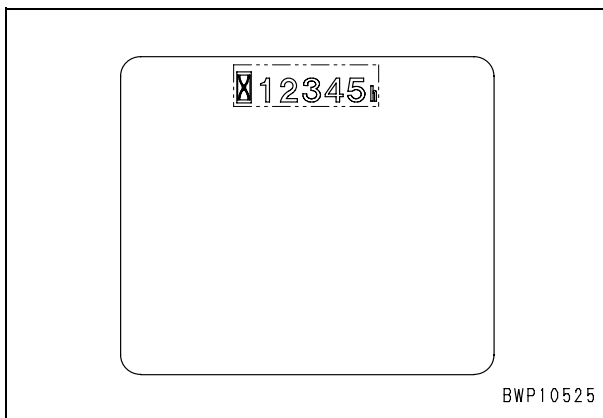
- ★ Setting and resetting of the maintenance function as well as setting of the maintenance time is done from the service menu.



**14. Service meter display function**

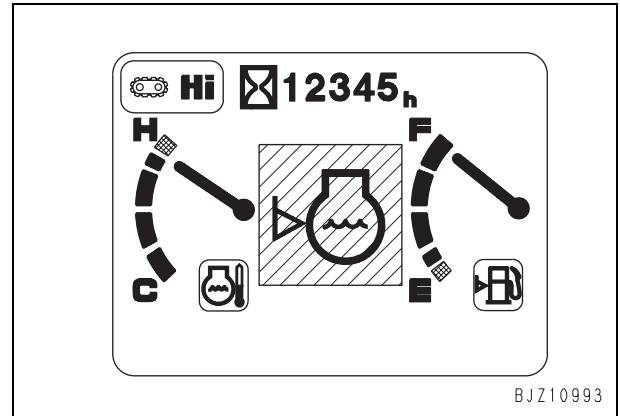
Display of the service meter alone becomes available by operating the following switches after the starting switch is turned OFF.

- Switch operation: [ $\Omega$ ] + [ $\Delta$ ]  
(Simultaneous operation)



**15. Caution generation display function**

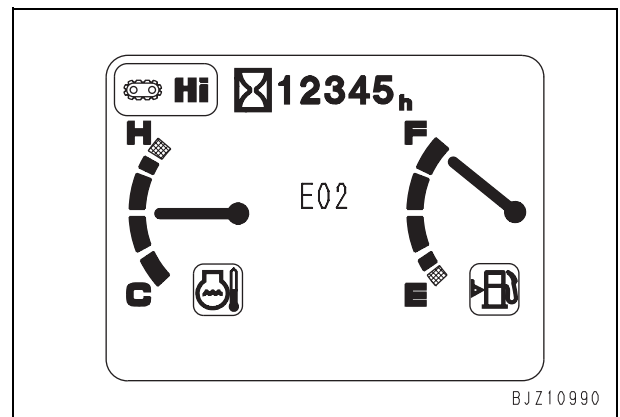
If a caution is warned for a caution item, applicable symbol mark is displayed large for 2 seconds and then it remains on the screen in a smaller size until the trouble is eliminated.



**16. User code display function**

If a trouble occurs on the machine, an applicable user code is automatically displayed depending on the seriousness of the trouble in order to alert the operator to take an appropriate action.

- ★ Operating any switch while an user code is on the screen, switch the failure code display screen (see Item 17).



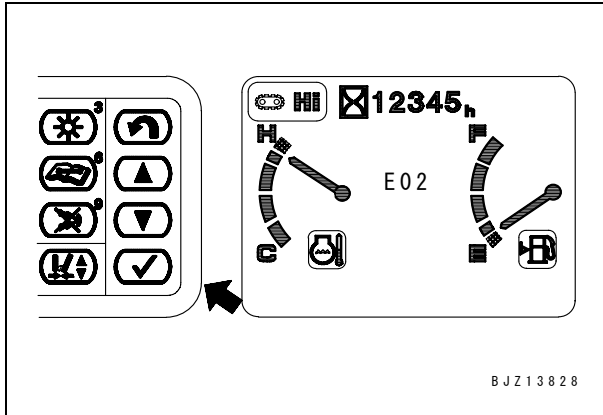
## ★ User codes and actions requested to operator

User code	Failure mode	Action
E02	PC-EPC valve error	Pump controller malfunctions and have inspection carried out immediately.
E10	Engine controller power source error Engine controller drive system circuit error (engine stopped)	Have inspection carried out immediately.
E11	Engine controller system error (Output reduced to protect engine)	Operate machine to a safe posture and have inspection carried out immediately.
E14	Throttle system error	Operate machine to a safe posture and have inspection carried out immediately.
E15	Engine sensor (coolant temperature, fuel temperature and oil pressure) system error	Operations are possible, but have inspection carried out immediately.
E0E	Network error Pump controller solenoid power source error	Operate machine to a safe posture and have inspection carried out immediately.

17. Failure code display function

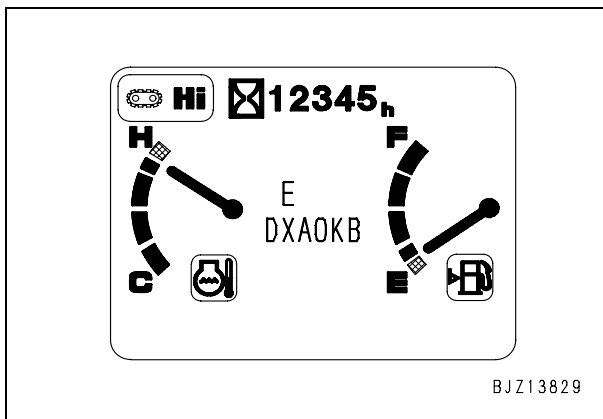
Operating the following switch while an user code is on the screen, sequentially displays the failure code, the phone mark (if registered) and phone number (if registered).

- Switching operation: (✓)

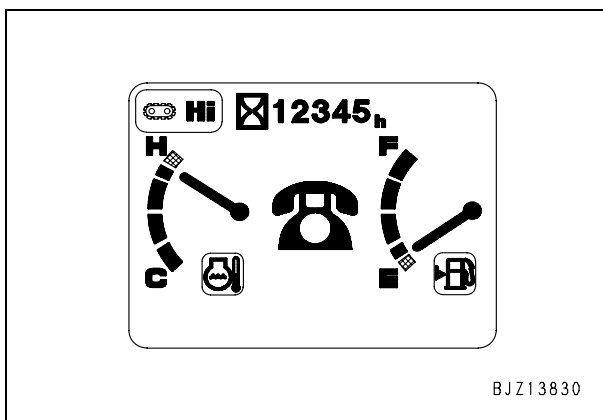


- ★ The screen display sequentially changes as shown below.

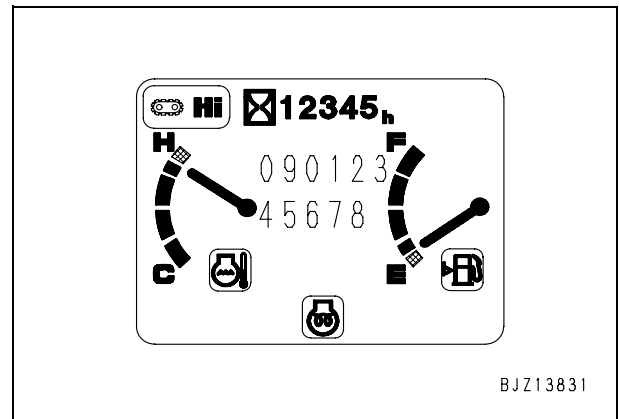
(1) Failure code



(2) Telephone symbol mark



(3) Telephone number



- ★ The telephone mark and telephone number are displayed only when the telephone number is registered to the machine monitor.  
Registration, correction or deletion of a telephone number is done from the service menu.
- ★ For detailed information of failure codes, see the "Failure code table".

Failure code table

User code	Failure code	Failure contents	Alarm buzzer	Applicable equipment	History classification
—	7RC1KB	Short circuit conveyor ON switch		W/E	Electrical system
—	7RC2KA	Disconnection in conveyor OFF switch		W/E	Electrical system
—	7RC5KB	Short circuit in feeder ON switch		W/E	Electrical system
—	7RD2KB	Short circuit in conveyor reverse relay		W/E	Electrical system
—	7RD2KZ	Disconnection or short circuit in conveyor reverse relay		W/E	Electrical system
—	7RE1KB	Short circuit in crusher ON switch		W/E	Electrical system
—	7RE2KA	Disconnection in crusher OFF switch		W/E	Electrical system
—	7RE6KB	Short circuit in muck conveyor ON switch		W/E	Electrical system
—	7RE7KA	Disconnection in muck conveyor OFF switch		W/E	Electrical system
—	7RE8KB	Short circuit in magnetic separator ON switch		W/E	Electrical system
—	7RE9KA	Disconnection in magnetic separator OFF switch		W/E	Electrical system
—	7REAKB	Short circuit in accessory Input circuit		W/E	Electrical system
—	7REDMA	Abnormality in conveyor pressure sensor		W/E	Electrical system
—	7REEMA	Abnormality in muck conveyor pressure sensor		W/E	Electrical system
—	7RENKZ	Abnormality in clearance potentiometer		W/E	Electrical system
—	7REPKA	Disconnection in feeder OFF switch		W/E	Electrical system
—	7RESKB	Short circuit in one-touch start switch		W/E	Electrical system
—	7RETKA	Disconnection in one-touch stop switch		W/E	Electrical system
—	7RF2KA	Disconnection in crusher forward EPC solenoid		W/E	Electrical system
—	7RF2KB	Short circuit in crusher forward EPC solenoid		W/E	Electrical system
—	7RF2KY	Short circuit in crusher forward EPC solenoid		W/E	Electrical system
—	7RF3KA	Disconnection in crusher reverse EPC solenoid		W/E	Electrical system
—	7RF3KB	Short circuit in crusher reverse EPC solenoid		W/E	Electrical system
—	7RF3KY	Short circuit in crusher reverse EPC solenoid		W/E	Electrical system
—	7RF4KA	Disconnection in feeder forward EPC solenoid		W/E	Electrical system
—	7RF4KB	Short circuit in feeder forward EPC solenoid		W/E	Electrical system
—	7RF4KY	Short circuit in feeder forward EPC solenoid		W/E	Electrical system
—	7RFAKY	Short circuit in engine stop relay		W/E	Electrical system
—	7RFAKZ	Disconnection or short circuit in engine stop relay		W/E	Electrical system
—	7RFBKB	Short circuit in muck conveyor solenoid		W/E	Electrical system
—	7RFBKZ	Disconnection or short circuit in muck conveyor solenoid		W/E	Electrical system
—	7RFCKA	Disconnection in magnetic separator solenoid		W/E	Electrical system
—	7RFCKB	Short circuit in magnetic separator solenoid		W/E	Electrical system
—	7RFCKY	Short circuit in magnetic separator solenoid		W/E	Electrical system
—	7RFHKB	Short circuit in conveyor forward relay		W/E	Electrical system
—	7RFHKY	Short circuit in conveyor forward relay		W/E	Electrical system
—	7RFKKB	Short circuit in lock cylinder pull relay		W/E	Electrical system
—	7RFKKY	Short circuit in lock cylinder pull relay		W/E	Electrical system
—	7RFLKA	Disconnection in accessory EPC solenoid		W/E	Electrical system
—	7RFLKB	Short circuit in accessory EPC solenoid		W/E	Electrical system
—	7RFLKY	Short circuit in accessory EPC solenoid		W/E	Electrical system
—	7RFMKY	Short circuit in abnormal pressure relay		W/E	Electrical system
—	7RFMKZ	Disconnection or short circuit in abnormal pressure relay		W/E	Electrical system
—	7RFNKA	Disconnection in lock cylinder unlock solenoid valve		W/E	Electrical system
—	7RFNKB	Short circuit in lock cylinder unlock solenoid valve		W/E	Electrical system
—	7RFNKY	Short circuit in lock cylinder unlock solenoid valve		W/E	Electrical system
—	7RFPKB	Short circuit in lock cylinder push relay		W/E	Electrical system
—	7RFPKY	Short circuit in lock cylinder push relay		W/E	Electrical system
—	7RGAMA	Abnormality in 2nd conveyor pressure sensor		W/E	Electrical system
—	7RJAKA	Disconnection in travel lock EPC solenoid valve		W/E	Electrical system

User code	Failure code	Failure contents	Alarm buzzer	Applicable equipment	History classification
—	7RJAKB	Short circuit in travel lock EPC solenoid valve		W/E	Electrical system
—	7RJAKY	Short circuit in travel lock EPC solenoid valve		W/E	Electrical system
—	7RJMMW	Lock cylinder slipping		W/E	Mechanical system
—	7RJNMA	Abnormality in vibration screen pressure sensor		W/E	Electrical system
—	7RJPKB	Short circuit in radio control work-mode switch		W/E	Electrical system
—	7RJQKB	Short circuit in radio control travel-mode switch		W/E	Electrical system
—	7RJRKB	Short circuit on travel signal		W/E	Electrical system
—	7RJSMA	Abnormality in magnetic separator pressure sensor		W/E	Electrical system
—	AA10NX	Air cleaner Clogging		MON	Mechanical system
—	AB00KE	Charge voltage too low		MON	Mechanical system
—	B@BAZG	Engine oil pressure too low	▲	ENG	Mechanical system
—	B@BAZK	Engine oil level reduction		MON	Mechanical system
—	B@BCNS	Radiator coolant overheat	▲	ENG	Mechanical system
—	B@BCZK	Radiator coolant level reduction	▲	MON	Mechanical system
—	B@HANS	Hydraulic oil overheat	▲	MON	Mechanical system
E10	CA111	Abnormality in engine controller	●	ENG	Electrical system
E10	CA115	Abnormality in engine NE and Bkup speed sensors	●	ENG	Electrical system
E11	CA122	Charge pressure sensor too high	●	ENG	Electrical system
E11	CA123	Charge pressure sensor too low	●	ENG	Electrical system
E14	CA131	Throttle sensor too high	●	ENG	Electrical system
E14	CA132	Throttle sensor too low	●	ENG	Electrical system
E15	CA144	Coolant temperature sensor too high	●	ENG	Electrical system
E15	CA145	Coolant temperature sensor too low	●	ENG	Electrical system
E15	CA153	Charge temperature sensor too high	●	ENG	Electrical system
E15	CA154	Charge temperature sensor too low	●	ENG	Electrical system
E11	CA155	Charge temperature too high and engine speed derated	●	ENG	Electrical system
E15	CA187	Sensor power source 2 too low	●	ENG	Electrical system
E11	CA221	Ambient pressure sensor too high	●	ENG	Electrical system
E11	CA222	Ambient pressure sensor too low	●	ENG	Electrical system
E15	CA227	Sensor power source 2 too high	●	ENG	Electrical system
—	CA234	Engine overspeed	●	ENG	Mechanical system
E15	CA238	Abnormal power source for Ne speed sensor	●	ENG	Electrical system
E10	CA271	Short circuit in fuel pump actuator	●	ENG	Electrical system
E10	CA272	Disconnection in fuel pump actuator	●	ENG	Electrical system
E11	CA322	Disconnection or short circuit in injector No.1	●	ENG	Electrical system
E11	CA323	Disconnection or short circuit in injector No.5	●	ENG	Electrical system
E11	CA324	Disconnection or short circuit in injector No.3	●	ENG	Electrical system
E11	CA325	Disconnection or short circuit in injector No.6	●	ENG	Electrical system
E11	CA331	Disconnection or short circuit in injector No.2	●	ENG	Electrical system
E11	CA332	Disconnection or short circuit in injector No.4	●	ENG	Electrical system
E10	CA342	Abnormality in engine controller data consistency	●	ENG	Electrical system
E10	CA351	Abnormality in injector drive circuit	●	ENG	Electrical system
E15	CA352	Sensor power source 1 too low	●	ENG	Electrical system
E15	CA386	Sensor power source 1 too high	●	ENG	Electrical system
E15	CA428	Water detection sensor too high	●	ENG	Electrical system
E15	CA429	Water detection sensor too low	●	ENG	Electrical system
E15	CA435	Abnormality in engine oil pressure switch	●	ENG	Electrical system
E10	CA441	Power source voltage too low	●	ENG	Electrical system
E10	CA442	Power source voltage too high	●	ENG	Electrical system
E11	CA449	Common rail pressure sensor too high (2)	●	ENG	Electrical system
E11	CA451	Common rail pressure sensor too high	●	ENG	Electrical system
E11	CA452	Common rail pressure sensor too low	●	ENG	Electrical system

User code	Failure code	Failure contents	Alarm buzzer	Applicable equipment	History classification
E11	CA488	Charge temperature too high and torque derated	●	ENG	Electrical system
E15	CA553	Common rail pressure sensor too high (1)	●	ENG	Electrical system
E15	CA559	Supply pump no pressure	●	ENG	Electrical system
E15	CA689	Abnormality in engine Ne speed sensor	●	ENG	Electrical system
E15	CA731	Abnormal phase in engine Bkup speed sensor	●	ENG	Electrical system
E10	CA757	Loss of all engine controller data	●	ENG	Electrical system
E15	CA778	Abnormality in engine Bkup speed sensor	●	ENG	Electrical system
E0E	CA1633	CAN communication error (engine controller)	●	ENG	Electrical system
E14	CA2185	Throttle pedal sensor power source too high	●	ENG	Electrical system
E14	CA2186	Throttle pedal sensor power source too low	●	ENG	Electrical system
E11	CA2249	Supply pump no pressure (2)	●	ENG	Electrical system
E11	CA2311	Abnormal resistance in pump regular valve	●	ENG	Electrical system
E15	CA2555	Disconnection in air intake heater relay	●	ENG	Electrical system
E15	CA2556	Short circuit in air intake heater relay	●	ENG	Electrical system
—	D162KY	Short circuit in horn relay		W/E	Electrical system
—	D162KZ	Disconnection or short circuit in horn relay		W/E	Electrical system
E0E	DA22KK	Solenoid power source too low	●	PUMP	Electrical system
—	DA25KP	Abnormality in pressure sensor power source		PUMP	Electrical system
E0E	DA2RMC	CAN communication error (pump controller)	●	PUMP	Electrical system
—	DA2SKQ	Abnormality in model code input		PUMP	Electrical system
E0E	DAFRMC	CAN communication error (monitor controller)	●	MON	Electrical system
—	DDA6KA	Disconnection in engine stop switch		W/E	Electrical system
—	DGH2KB	Short circuit in hydraulic oil temperature sensor		MON	Electrical system
—	DHPAMA	Abnormality in F pump pressure sensor		PUMP	Electrical system
—	DHPBMA	Abnormality in R pump pressure sensor		PUMP	Electrical system
—	DUB0KY	Short circuit in beacon solid state relay		W/E	Electrical system
—	DUB0KZ	Disconnection or short circuit in beacon solid state relay		W/E	Electrical system
E02	DXA0KA	Disconnection in PC-EPC Solenoid	●	PUMP	Electrical system
E02	DXA0KB	Short circuit in PC-EPC Solenoid	●	PUMP	Electrical system
E02	DXA0KY	Short circuit in PC-EPC Solenoid	●	PUMP	Electrical system
—	DXE0KA	Disconnection in LS-EPC solenoid		PUMP	Electrical system
—	DXE0KB	Short circuit in LS-EPC solenoid		PUMP	Electrical system
—	DXE0KY	Short circuit in LS-EPC solenoid		PUMP	Electrical system

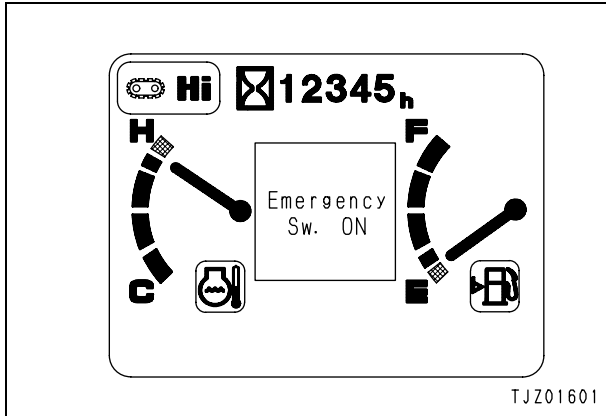
- ★ Entry order of items in table  
The items are entered in the order of their failure codes (incremental order).
- ★ User code  
Attached : If the failure code is detected, the user code, failure code, and telephone No. (if registered) are displayed on the ordinary screen to notify the operator of the abnormality.  
Not attached: Even if the failure code is detected, the machine monitor does not notify the operator of the abnormality.
- ★ Alarm buzzer
  - : When occurrence of an error is notified to the operator, the buzzer sounds (The operator can stop the buzzer with the alarm buzzer cancel switch).
  - ▲ : Since the caution monitor is also turned ON, its function sounds the buzzer.
- ★ Component in charge  
MON: The machine monitor is in charge of detection of abnormality.  
W/E: The work equipment and pump controller is in charge of detection of abnormality.  
PUMP: The pump controller is in charge of detection of abnormality.  
ENG: The engine controller is in charge of detection of abnormality.
- ★ Category of record  
Mechanical system: Abnormality information is recorded in the mechanical system abnormality record.  
Electrical system: Abnormality information is recorded in the electrical system abnormality record.

**18. Function of monitoring emergency stop**

- 1) Warning for turning emergency stop switch ON

When an emergency stop switch installed around the machine is depressed;

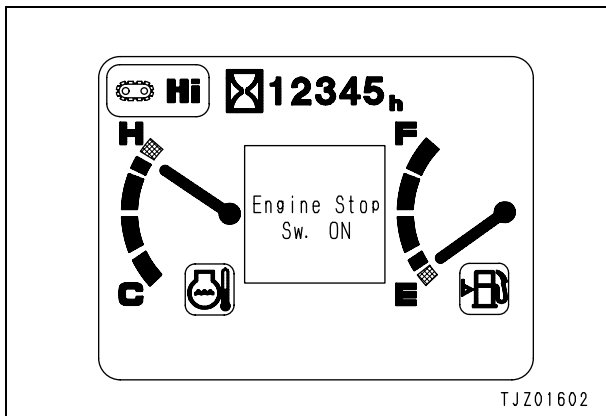
- The whole work equipment stops and the horn sounds.



- 2) Warning for turning engine stop switch ON

When the engine stop switch installed to the upper operation box is depressed;

- The whole work equipment and engine stop and the horn sounds.

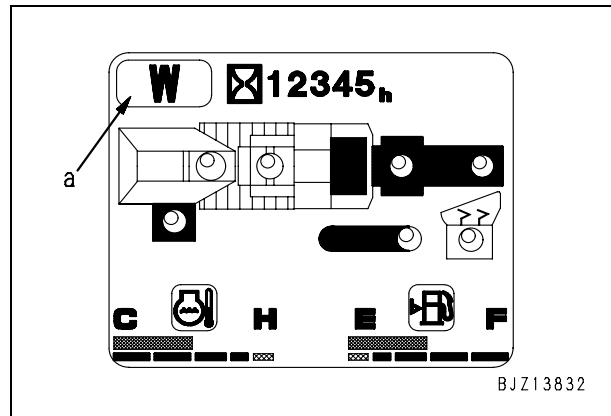


**19. Function for conveyor position display**

- 1) Conveyor position display in operation mode

If the operation mode is selected with the mode selector switch of the main control box, the color of mode monitor (a) changes according to the conveyor position.

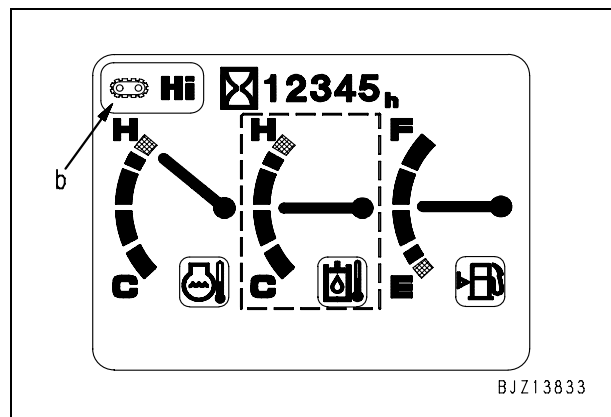
- When conveyor position is "Upper" Mode monitor (a) becomes red. At this time, the whole work equipment stops.
- When conveyor position is "Middle" or "Lower" Mode monitor (a) becomes yellow. At this time, the work equipment can operate.



- 2) Conveyor position display in travel mode

If the travel mode is selected with the mode selector switch of the main control box, the color of mode monitor (b) changes according to the conveyor position.

- When conveyor position is "Lower" Mode monitor (b) becomes red. At this time, the machine cannot travel.
- When conveyor position is "Middle" or "Upper" Mode monitor (b) becomes yellow. At this time, the machine can travel.



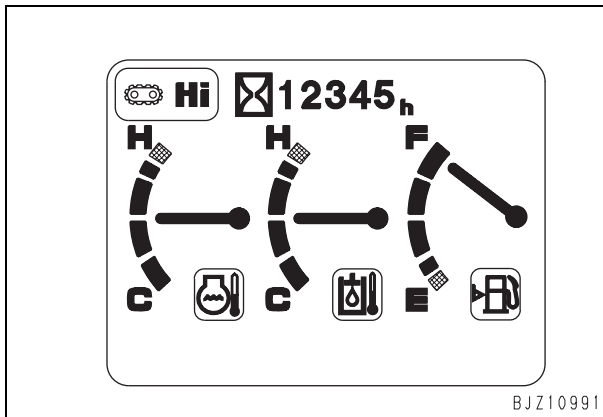


**Service menu operation and display**

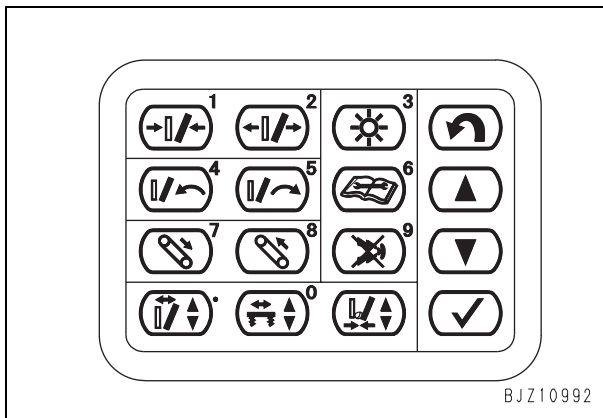
**Switching to service menu**

★ When using the service menu, switch the screen through the following special operation.

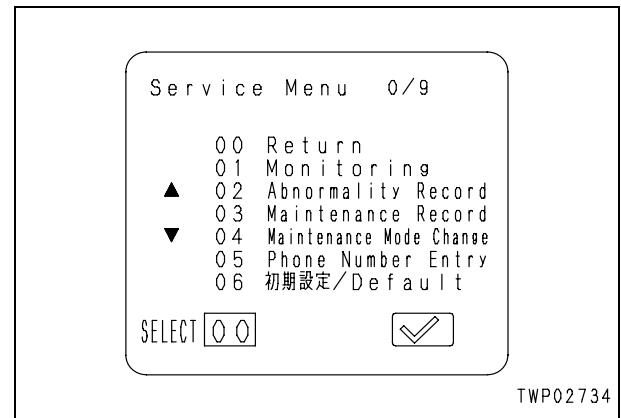
- 1) Confirmation of display  
Make sure that the conventional display is turned on.  
★ Changing to Service Menu is usually available only from this conventional display.



- 2) Switch operation  
Do the following switch operation.
  - Switch operation:  $[\Delta] + [1] \rightarrow [2] \rightarrow [3]$   
(Enter the numbers while holding  $\Delta$  down)



- 3) Displaying menu screen  
The display is changed to the initial display of Service Menu program. Select an appropriate item from among the menu.



No.	Service menu
00	Return (Ends the service menu)
01	Monitoring
02	Abnormality record
03	Maintenance record
04	Maintenance mode change
05	Phone number entry
06	Default
07	Adjustment
08	Cylinder cut out
09	No injection cranking
10	Crusher clearance record
11	Lock cylinder slip record

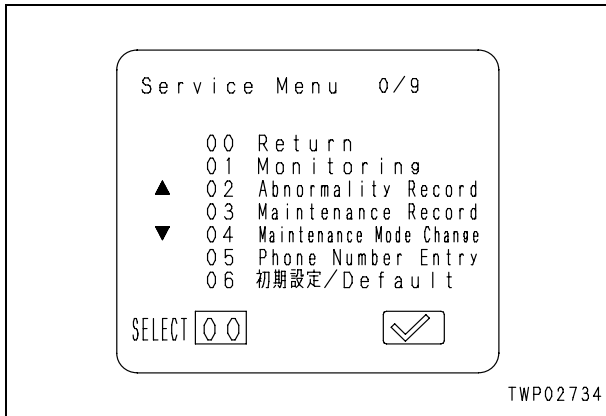
- 4) Ending the menu and function  
When ending the operation from the service menu screen or respective menu screens, select either of the following operations.
  - Press [ $\curvearrowright$ ] switch (enables every screen).
  - When "RETURN" switch is displayed, press the applicable switch.
  - When "Return" menu is displayed, select the menu and press [ $\checkmark$ ] switch.

**20. Monitoring [01] function**

The machine monitor monitors signals from the switch sensor actuators on various machine parts. It allows displaying and checking the monitored information through following operations.

1) Menu selection

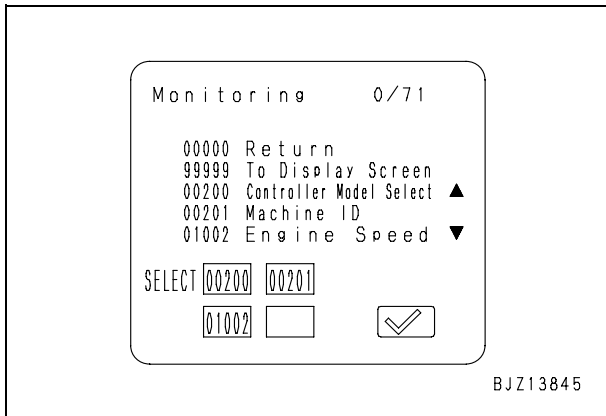
Select "01 Monitoring" in the initial display of Service Menu and depress [✓] switch.



2) Setting a monitoring item

Select and register an item to be monitored through the following switch operation.

- [▲] switch: Selection
- [▼] switch: Selection
- [✓] switch: Registration



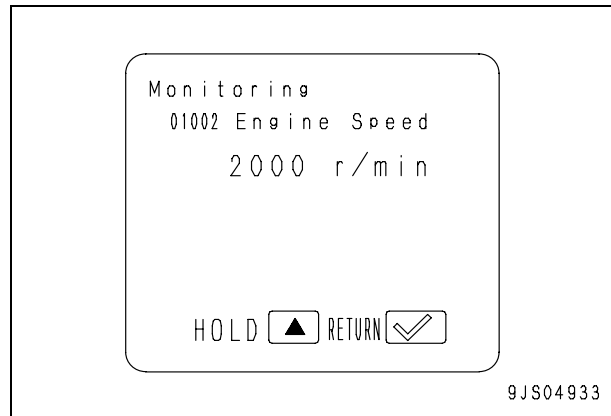
- ★ A monitoring item can be set from 1 to 4 at maximum (Depending upon the selected item, the max. number can be less than four)
- ★ In case of monitoring 1 to 3 items, move to the monitoring information screen through any of the following switch operations after the registration work has been completed.
  - [Hold down [✓] switch (for about 3 seconds).

- Select menu "99999" and press [✓] switch.

- ★ When you have registered all the items that can be registered, the screen will be automatically switched to the monitoring information screen.
- ★ Monitored information are transmitted via communication circuits. Thus the number of selected items can impact the communication speed. If truly real time monitoring is required, reduce the selected items to the minimum.
- ★ For details on the monitoring items, display unit, etc., refer to the "Monitoring Items table".

3) Operation for monitoring

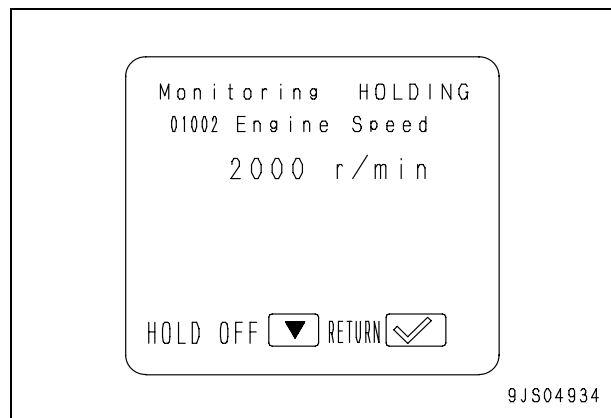
As the monitoring information screen is displayed, confirm the monitored information operating the machine.



4) Monitored information holding function

You can hold every monitored information by pressing [▲] while monitoring is continued.

If you press [▼] switch again in this condition, the currently held information will be released.



Monitoring items table

Code No	Monitoring item (Display on screen)	Unit (Initial setting ISO)			Component charge	Remarks
		ISO	meter	inch		
00200	Controller Model Select	—	—	—	PUMP	
00201	Machine ID	—	—	—	ENG	
01002	Engine speed	r/min	rpm	rpm	ENG	
01601	2nd Eng. Speed Command	r/min	rpm	rpm	PUMP	
01100	F Pump Pressure	MPa	kg/cm <sup>2</sup>	psi	PUMP	
01101	R Pump Pressure	MPa	kg/cm <sup>2</sup>	psi	PUMP	
24300	Conv. Pressure	MPa	kg/cm <sup>2</sup>	psi	PUMP	
24400	Muck Conv. Pressure	MPa	kg/cm <sup>2</sup>	psi	PUMP	
24401	Mag. Pressure	MPa	kg/cm <sup>2</sup>	psi	PUMP	
24402	2nd Conv. Pressure	MPa	kg/cm <sup>2</sup>	psi	PUMP	
25801	Vibrator Screen Pressure	MPa	kg/cm <sup>2</sup>	psi	PUMP	
04107	Coolant Temperature	°C	°C	°F	ENG	
04401	Hydr. Oil Temperature	°C	°C	°F	MON	
01300	PC-EPC Sol. Curr.(F)	mA	mA	mA	PUMP	
01500	LS-EPC Sol. Curr.	mA	mA	mA	PUMP	
24700	Feeder FWD EPC Curr.	mA	mA	mA	PUMP	
25900	Crusher FWD EPC Curr.	mA	mA	mA	PUMP	
26000	Crusher REV EPC Curr.	mA	mA	mA	PUMP	
25705	Acc. EPC Curr.	mA	mA	mA	PUMP	
28801	Travel Lock EPC Curr.	mA	mA	mA	PUMP	
03200	Battery Voltage	V	V	V	PUMP	
03203	Battery Power Supply	V	V	V	ENG	
04300	Battery Charge Vol.	V	V	V	MON	
36400	Rail Pressure	MPa	kg/cm <sup>2</sup>	psi	ENG	
37400	Ambient Pressure	kPa	kg/cm <sup>2</sup>	psi	ENG	
18500	Charge Temperature	°C	°C	°F	ENG	
36500	Boost Pressure	kPa	kg/cm <sup>2</sup>	psi	ENG	
36700	Engine Torque Ratio	%	%	%	ENG	
18700	Engine Output Torque	Nm	Nm	kgfm	ENG	
03000	Fuel Dial Pos Sens Volt	V	V	V	ENG	
04200	Fuel Level Sensor Vol.	V	V	V	MON	
04105	Eng. Water Temp. Vol. Lo	V	V	V	ENG	
04402	Hydr. Temp. Sensor Vol.	V	V	V	MON	
37401	Ambient Press Sens Volt	V	V	V	ENG	
18501	Charge Temp Sens Volt	V	V	V	ENG	
36501	Charge Press Sens Volt	V	V	V	ENG	
36401	Rail Pressure Sens Volt	V	V	V	ENG	
17500	Engine Power Mode	—	—	—	ENG	
31701	Throttle Position	%	%	%	ENG	
31706	Final Throttle Position	%	%	%	ENG	
18600	Inject Fueling Command	mg/st	mg/st	mg/st	ENG	
36200	Rail Press Command	MPa	kg/cm <sup>2</sup>	psi	ENG	
36300	Injection Timing Command	CA	CA	CA	ENG	

Code No	Monitoring item (Display on screen)		Unit (Initial setting ISO)			Component charge	Remarks
			ISO	meter	inch		
37300	Fuel Rate		ℓ/h	ℓ/h	ℓ/h	ENG	
01602	2nd Eng. Speed Command		%	%	%	PUMP	
13113	Main Pump Absorb Torque		Nm	kgm	lbft	PUMP	
04500	Monitor input 1	Key Switch	ON•OFF			PUMP	
		Start				PUMP	
		Preheat				PUMP	
		Light				PUMP	
		Rad. Level				PUMP	
04501	Monitor Input 2	Air cleaner	ON•OFF			MON	
		Eng. Oil Level				MON	
		Battery Charge				MON	
18800	Water In Fuel		—	—	—	ENG	
25000	Switch Input 0	Conv. ON Sw.	ON•OFF			MON	
		Conv. OFF Sw.				MON	
		Crusher ON Sw.				MON	
		Crusher OFF Sw.				MON	
		Feeder ON Sw.				MON	
		Feeder OFF Sw.				MON	
25001	Switch Input 1	R-Ctrl. Work Sw.	ON•OFF			MON	
		R-Ctrl. Trv. Sw.				MON	
		R-Ctrl. On Trv.				MON	
25002	Switch Input 2	Mode Sel. Work	ON•OFF			PUMP	
		Mode Sel. Travel				PUMP	
		Crush. FWD/REV				PUMP	
		Machine Select1				PUMP	
		Machine Select2				PUMP	
25003	Switch Input 3	Emergency Sw.	ON•OFF			PUMP	
		Engine Stop Sw.				PUMP	
		1-touch start Sw				PUMP	
		1-touch stop Sw.				PUMP	
25004	Switch Input 4	Conv. Hi Sensor	ON•OFF			PUMP	
		Conv. Mi Sensor				PUMP	
		MuckConv. Sen.				PUMP	
		Overfeed Sensor				PUMP	
25005	Switch Input 5	Radio Sel. Sw.	ON•OFF			PUMP	
		TravelSpeed Sw.1				PUMP	
		TravelSpeed Sw.2				PUMP	
		Clearance F-auto				PUMP	
		Clearance Auto.				PUMP	
25006	Switch Input 6	MuckConv.ON Sw.	ON•OFF			PUMP	
		MuckConv.OFF Sw.				PUMP	
		Mag. ON Sw.				PUMP	
		Mag. OFF Sw.				PUMP	
		Acc. Input				PUMP	

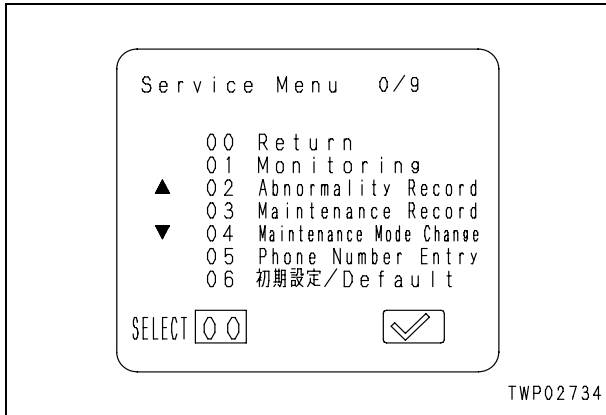
Code No	Monitoring item (Display on screen)		Unit (Initial setting ISO)			Component charge	Remarks
			ISO	meter	inch		
02202	Switch Input 7	Key Switch(ACC)	ON•OFF			PUMP	
25500	Solenoid Valve	Mag. Sep. Sol.	ON•OFF			PUMP	
		Lock.Cyl. Unlock				PUMP	
		Muck Conv. Sol.				PUMP	
25601	Relay Drive 0	Horn Relay	ON•OFF			PUMP	
		Becon Relay				PUMP	
		Abno.Press Relay				PUMP	
		LockCyl.Push Re.				PUMP	
		LockCyl.Pull Re.				PUMP	
		Eng. Stop Relay				PUMP	
25602	Relay Drive 1	Conv. FWD Relay	ON•OFF			PUMP	
		Conv. REV Relay				PUMP	
26100	Clearance Potentio Vol.		V	V	V	PUMP	
26200	Clearance Angle		rad	°	°	PUMP	
26300	Last 0 Clearance Vol.		V	V	V	PUMP	
20216	ECM Build Version		—	—	—	ENG	
20217	ECM CAL Data Ver		—	—	—	ENG	
18900	ECM Internal Temp		°C	°C	°F	ENG	
20400	ECM Serial No.		—	—	—	ENG	
20200	Monitor Prog. Version		—	—	—	MON	
20227	Monitor Ass'y P/N					MON	
20402	Monitor Serial No					MON	
20212	Pump Con. Prog. Version		—	—	—	PUMP	
20230	Pump Con. Prog. P/N					PUMP	
20229	Pump Con. Ass'y P/N					PUMP	
20403	Pump Con. Serial No					PUMP	

- ★ Entry order of items in table  
The items are entered in the order of display on the monitoring selection menu screen.
- ★ Unit  
The display unit can be set to ISO, meter, or inch freely (Set it with “Unit selecting” in “Initialization” of the service menu).  
“CA” in the display unit is an abbreviation for crankshaft angle.  
“mg/st” in the display unit is an abbreviation for milligram/stroke.
- ★ Component in charge  
MON: The machine monitor is in charge of detection of monitoring information.  
ENG: The engine controller is in charge of detection of monitoring information.  
PUMP: The pump controller is in charge of detection of monitoring information.

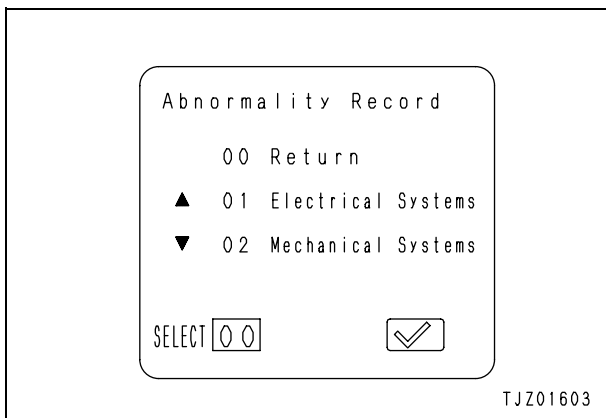
21. Function of abnormality record [02]

The machine monitor records and classifies the past failure information as into the electrical and mechanical failures. It allows displaying and checking the information through the following operations.

- 1) Menu selection  
Select "02 Abnormality Record" in the initial display of Service Menu and depress [✓] switch.

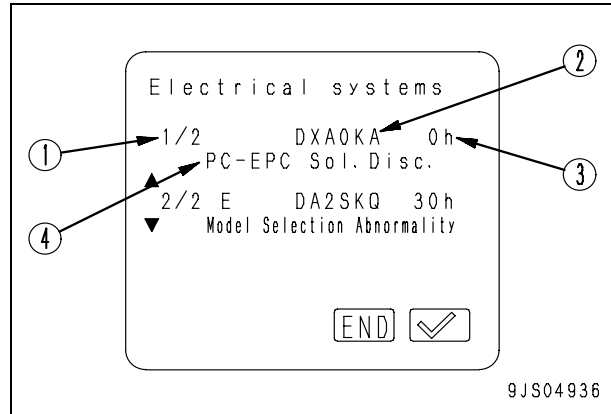


- 2) Sub menu selection  
Select the sub menu from the abnormality record menu screen and then press [✓] switch.

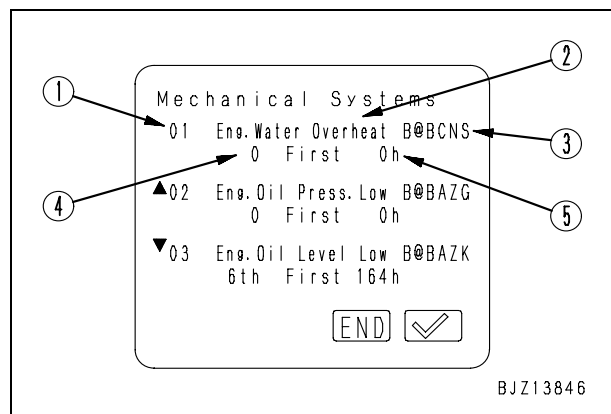


Number	Sub menu of abnormality record
00	Return (End of abnormality record)
01	Electrical systems
02	Mechanical systems

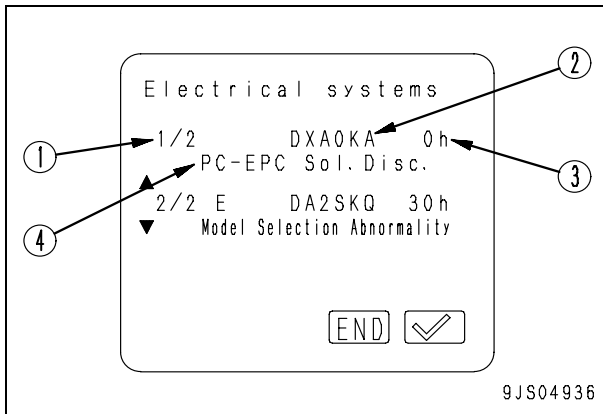
- 3) Contents of display of electrical system abnormality record information screen
  - (1): Occurrence order of abnormalities from latest one/Total number of records
  - (2): Failure code (Equipment: 4 digits, Phenomena: 2 digits)
  - (3): Elapsed time on service meter from the first occurrence
  - (4): Contents of trouble
 ★ See the operator menu "Failure codes table".



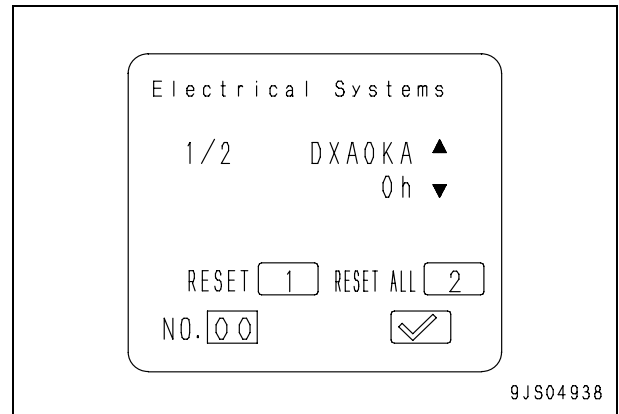
- 4) Contents of display of mechanical system abnormality record information screen
  - (1): Record number
  - (2): Contents of trouble
  - (3): Failure code (Equipment: 4 digits, Phenomena: 2 digits)
  - (4): Total number of occurrences
  - (5): Service meter reading at first occurrence
 ★ See the operator menu "Failure codes table".



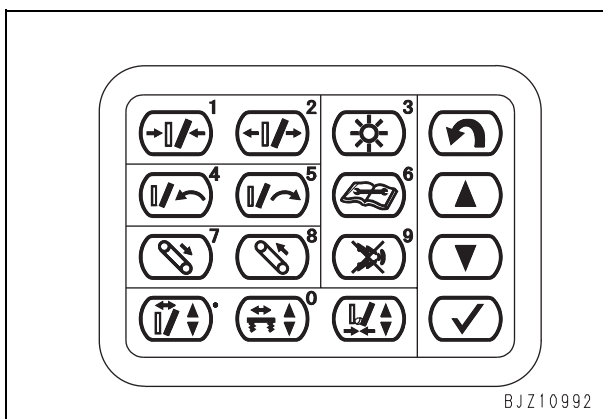
- 5) Resetting electrical systems abnormality record
  - ★ Resetting abnormality record (deletion) is possible only with the electrical system. The abnormality record in the mechanical system cannot be reset.
  - ★ When resetting individual or all information in the abnormality record of the electrical systems, implement the following procedure.



- 2) From the reset screen, do the switch operation according to the screen instructions.
  - ★ When a specific individual information alone is to be reset, be sure to display the subject information on the screen using [ $\Delta$ ] switch or [ $\nabla$ ] switch.
  - ★ When resetting all information, the information to be displayed on the screen can be any.



- 1) Following switch operation from the electrical system abnormality record screen opens the reset screen.
  - Switch operation:  
[ $\Delta$ ] + [1] → [2] → [3]
  - ★ Above is the same as that done when switching to the service menu.

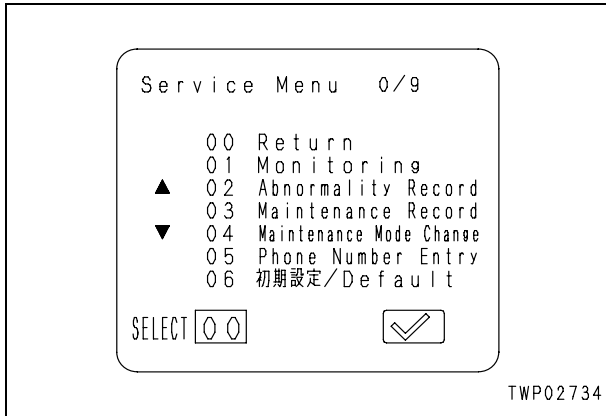


**22. Function of maintenance record [03]**

The machine monitor records the maintenance information of the filters, oils, etc., which the operator can display and check by the following operations.

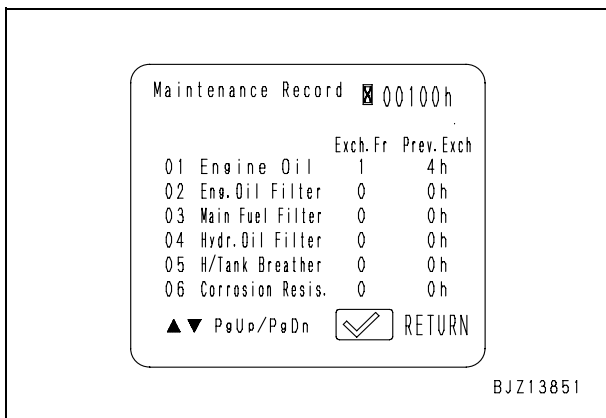
1) Menu selection

Select "03 Maintenance Record" from the initial display of Service Menu and then depress [✓] switch.



2) Information to be displayed

- Oil and filter names
- Replacement time elapsed up to present
- Time elapsed on service meter up to the last replacement



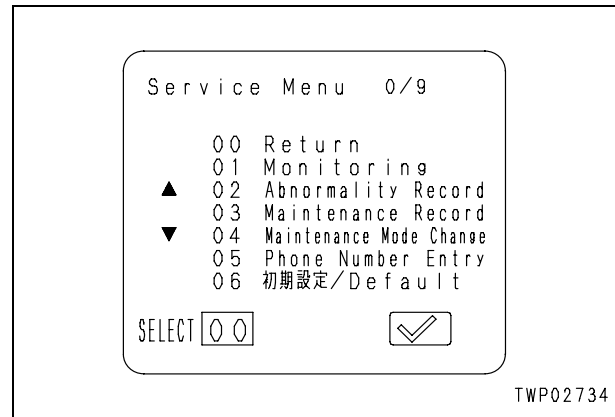
**23. Function of maintenance mode change [04]**

Following procedure allows changing the currently set operating conditions of the maintenance display function.

- Set function effective or ineffective
- Change set replacement interval

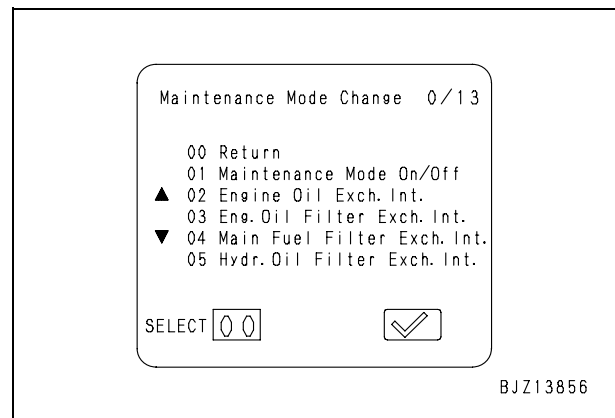
1) Menu selection

Select "04 Maintenance Mode Change" from the Service Menu and then depress [✓] switch.



2) Selection of item to be changed

Select the item to be changed from the "Maintenance Mode Change" Selection Menu screen.

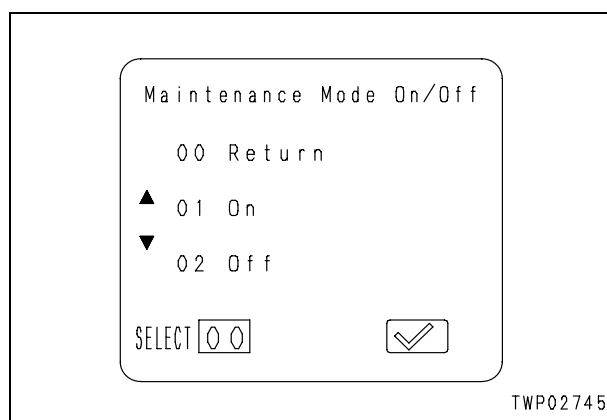




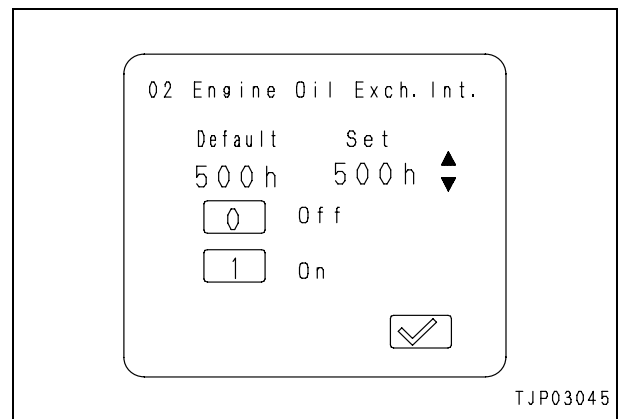
Number	Items of the maintenance mode change
00	Return (End of change in the maintenance mode)
01	Maintenance mode on/off
02	Engine oil change int.
03	Engine oil filter change int.
04	Fuel main filter change int.
05	Hyd oil filter change int.
06	Hyd tank breather change int.
07	Corrosion resistor change int.
08	Damper case service int.
09	Final drive case oil change int.
10	Feeder vibration oil change int.
11	Crusher motor case oil change int.
12	Hydraulic oil change int.
13	Fuel pre-filter change int.
14	Initialize all items

★ 01 and 14 menus are provided for setting the whole maintenance mode, while those from 02 through 13 are for setting individual items.

- 3) Contents of Maintenance Mode On/Off
- Use (On): The maintenance display function of all oil and filter-related items are turned effectual. (Irrespective of whether “On” or “Off” set for individual items, this setting prevails)
  - Not use (Off): The maintenance display function of all oils and filter-related items is disabled (precedence is given to this setting over the “On” or “Off” selected for an individual items).



- 4) Description of individual setting items
- (1): Default value: The maintenance time set in the monitor (recommended by the manufacturer and cannot be changed).
  - (2): Set value: Denotes the maintenance time that can be freely set. The maintenance mode operates based on this time (the time can be increased or decreased in multiple of 50 hours by use of [▲] and [▼] switches).
  - (3): Use (On): Maintenance display function for this item is enabled.
  - (4): Not use (Off): Maintenance display function for this item is disabled.
- ★ The lower limit of this setting is 50 hours.



- 5) Description of “Initialize all items”
- Select this menu and then press [✓] switch to restore the default value for the individually set information.

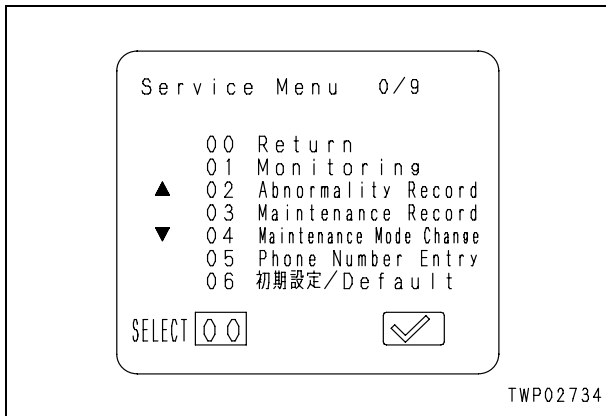
**24. Function of phone number entry [05]**

When the user code is displayed, following procedure allows entering or correcting the phone numbers to be displayed alternately with the failure code.

- ★ If a telephone number is not input, the phone number screen is not displayed.

## 1) Menu selection

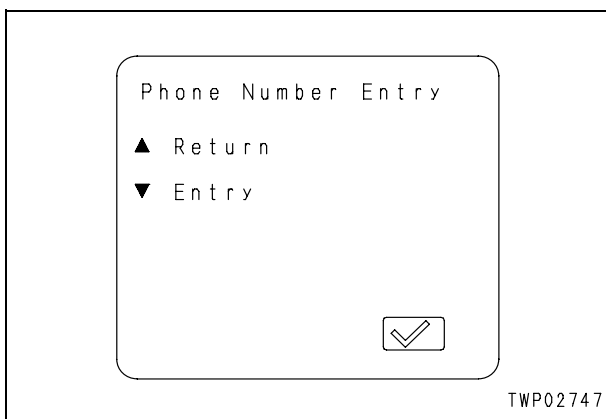
Select "05 Phone Number Entry" menu from the Service Menu initial screen and then depress [✓] switch.



## 2) Changing the display

Select "Entry" next to change the display to the "Phone Number Entry" display.

- ★ Even if a Phone number is already inputted, it is deleted if you switch the "Phone Number Entry" screen.



## 3) Entry and setting phone number

Following the method explained below, enter a phone number in the "Phone Number Entry" display. (Entry automatically begins with a cursor at the left end)



## 1] Using the numerical keypad, enter the number starting with the cursor position situated at the left end.

- ★ Numbers can be entered up to the max. 12 digits, but omit unnecessary digits.

- ★ When entered a wrong number, depress [B] switch to return the cursor by one digit.

## 2] Depress [✓] switch when all the numbers have been entered.

- ★ As the input is finished, the screen changes to entry screen shown above. If the entered phone number is shown on this display, the input is normal.

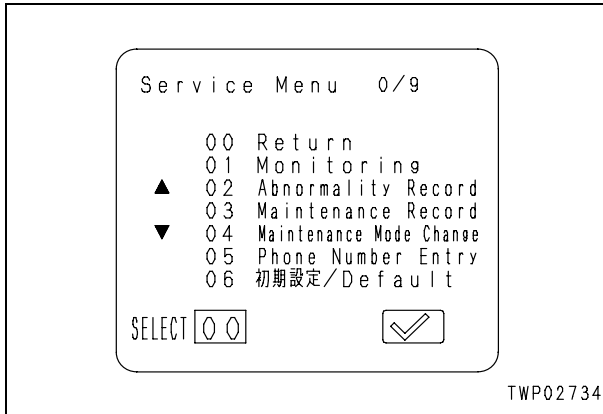
**25. Function of default [06]**

Following machine monitor- or machine-related settings are modifiable. Do necessary modifications as needed.

- Language used in the service menu
- Unit to be displayed in relation to the monitoring function

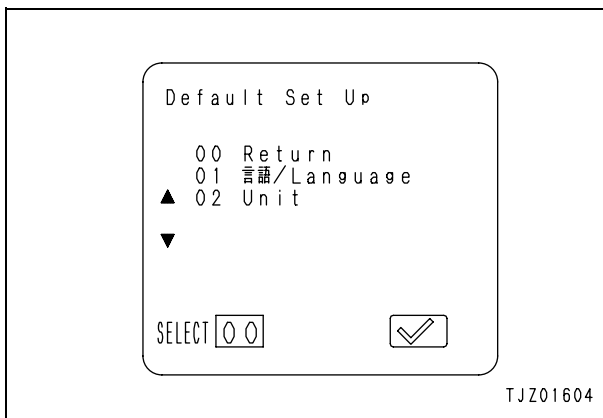
1) Menu selection

Select "06 Default" menu from the Service Menu initial screen and then press [✓] switch.



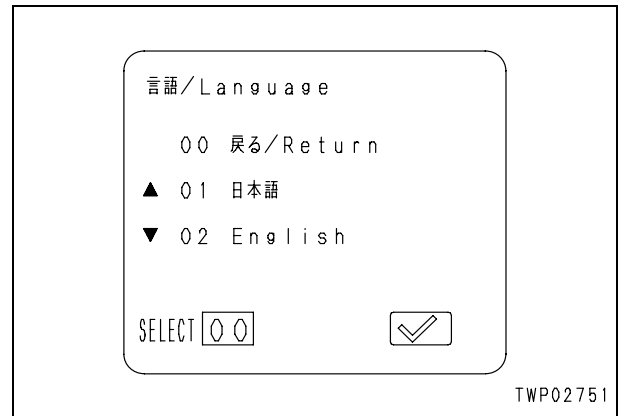
2) Selecting sub menu

Select the target sub menu of setting change and then press [✓] switch.



3) Language setting function

Service Menu allows switching the language between Japanese and English.

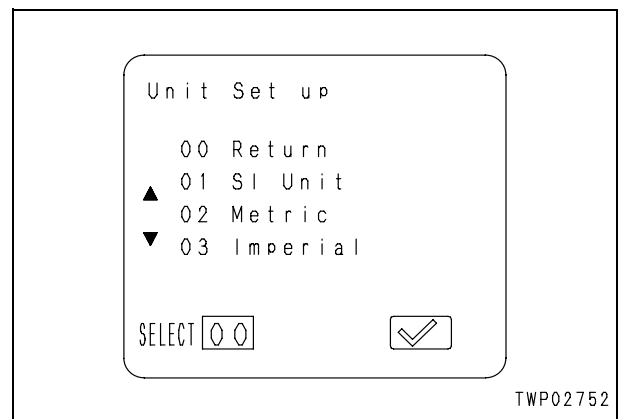


- ★ The default language of the machine monitor is English.
- ★ When using the machine monitor, which is a spare part, in the Japanese-speaking sphere, switch this function from English to Japanese.

4) Unit selection function

You can select 1 from the 3 units to be used in the monitoring function display of Service Menu.

- ★ SI unit system is the default setting of the machine monitor.



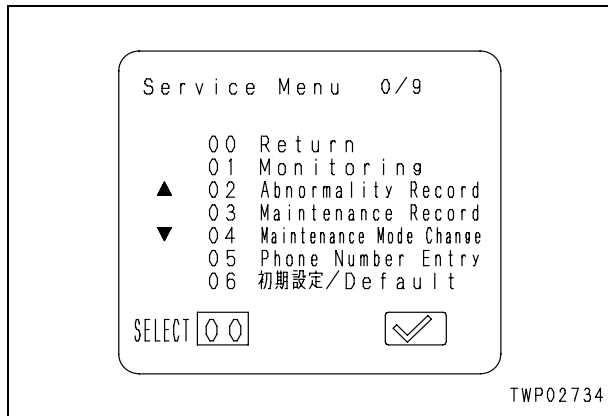
Number	Sub menu of default value
00	Return (End of default)
01	Language
02	Unit

26. Function of adjustment [07]

The operator can adjust various items related to the machine with the machine monitor.

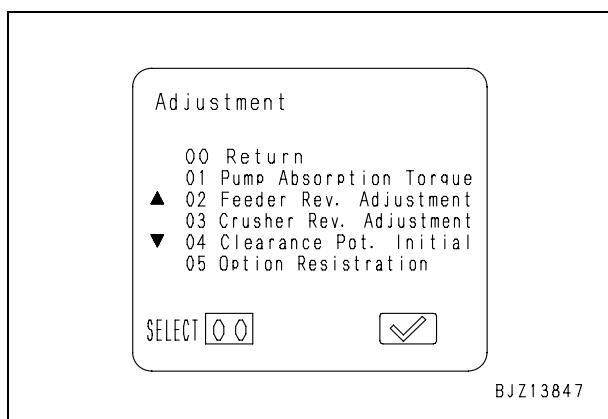
1) Menu selection

Select "07 Adjustment" menu from the Service Menu initial screen and then press [✓] switch.



2) Sub menu selection

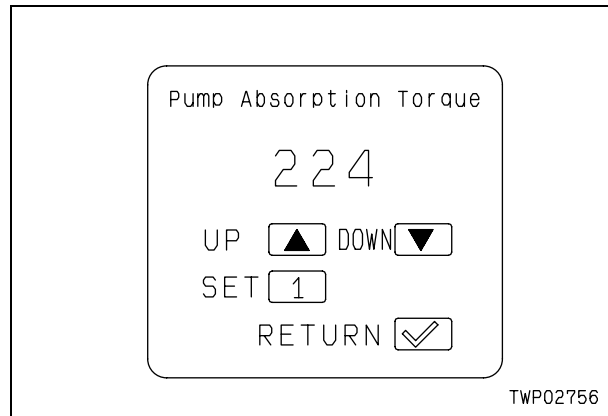
Select the sub menu on which setting change is to be done and then press [✓] switch.



Number	Adjustment of sub menu
00	Return (Ends the adjustment)
01	Pump absorption torque
02	Feeder speed adjustment
03	Crusher speed adjustment
04	Clearance potentiometer initialization
05	Option register

3) Function for Pump Absorption Torque adjustment

The pump absorption torque can be adjusted within the range shown in the table below.

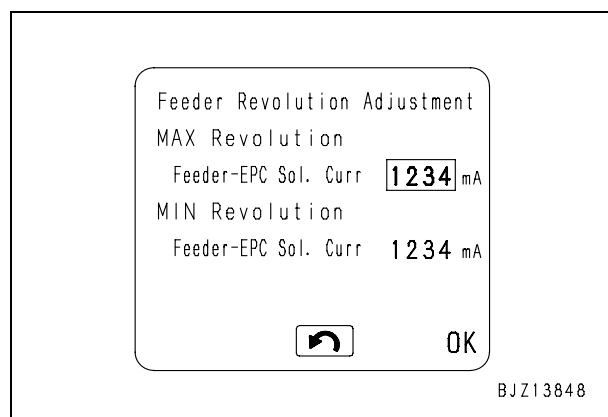


Adjustment value	Torque adjustment value (kgm)	Adjustment value	Torque adjustment value (kgm)
220	+4.0	225	-1.0
221	+3.0	226	-2.0
222	+2.0	227	-3.0
223	+1.0	228	-4.0
224	0.0		

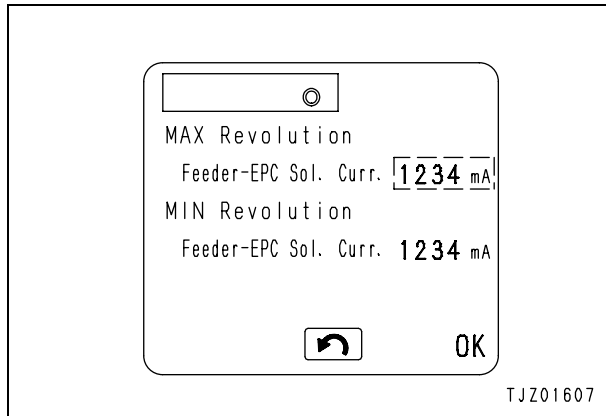
4) Function for feeder speed adjustment

The maximum and minimum feeder speed can be adjusted within the range shown in the table below by adjusting the feeder EPC current.

Item	Input range (mA)
Max. speed	750 – 910
Min. speed	250 – 650

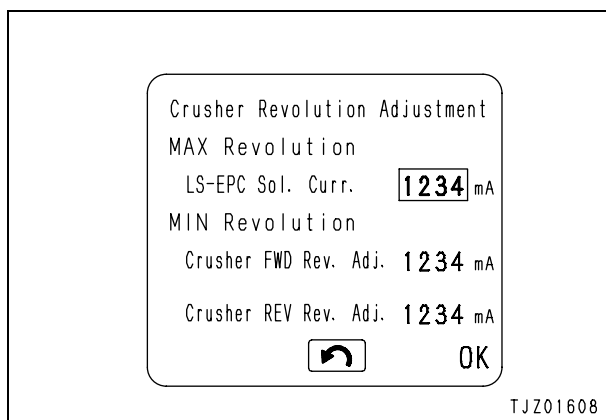


- 1] Move the cursor to the current to adjust with [△] switch and [▽] switch and depress [✓] switch.
- 2] The adjusted current flashes and the value input window is displayed.
- 3] Input a value with the numeral keys and depress [✓] switch.
- ★ If a value out of the proper range is input, the value before inputting is displayed again.

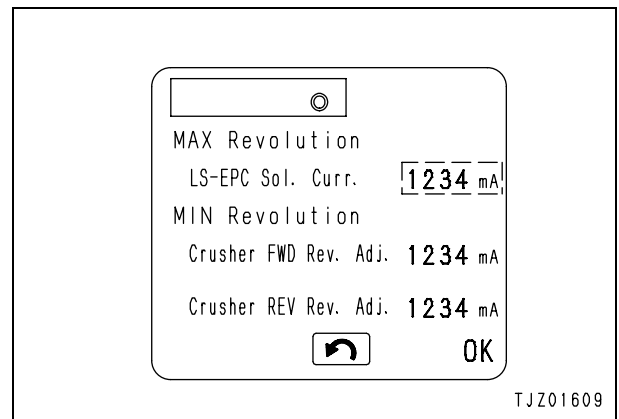


- 5) Function for crusher speed adjustment
  - Maximum speed adjustment  
Adjust the LS-EPC current.
  - Minimum speed adjustment  
Adjust the crusher forward/reverse EPC current.

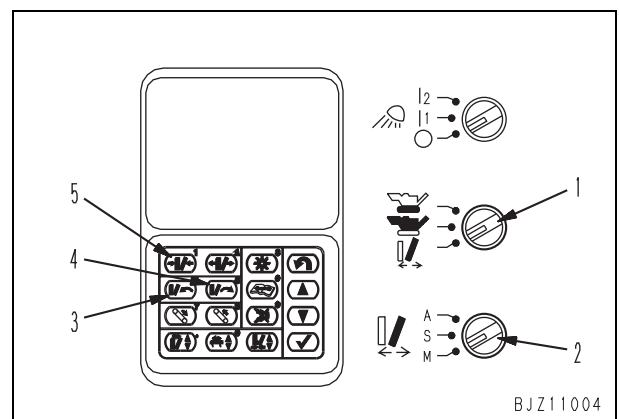
Item		Input range (mA)
Max. speed (LS-EPC solenoid current)		600 – 1000
Min. speed (EPC current)	Forward	250 – 650
	Reverse	250 – 650



- 1] Move the cursor to the current to adjust with [△] switch and [▽] switch and depress [✓] switch.
- 2] The adjusted current flashes and the value input window is displayed.
- 3] Input a value with the numeral keys and depress [✓] switch.
- ★ If a value out of the proper range is input, the value before inputting is displayed again.
- ★ If the LS-EPC solenoid current is adjusted, the minimum crusher speed and maximum and minimum feeder speeds, as well as the maximum crusher speed, change. When adjusting the crusher and feeder speeds, adjust the maximum crusher speed first, then adjust the other speeds.



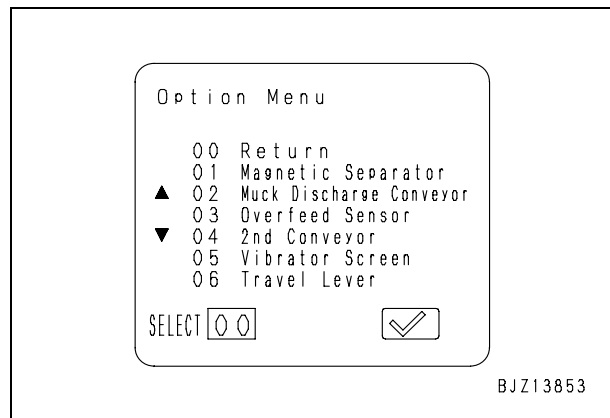
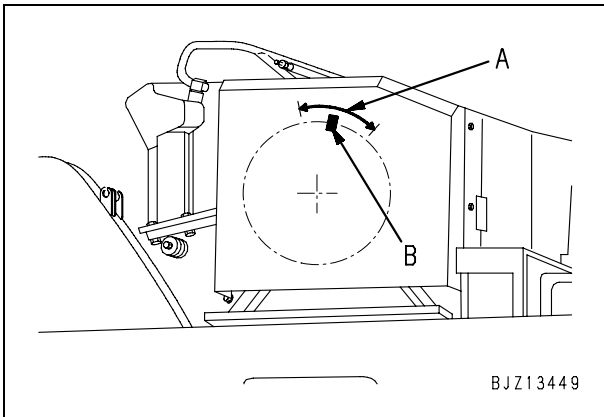
- 6) Function for clearance potentiometer initial adjustment  
When the tooth plate is replaced, initialize the clearance potentiometer.



- 1] Check that the display is in the ordinary display mode.
- 2] Set mode selector switch (1) of the main control box in the testing mode position.
- 3] Set clearance adjustment selector switch (2) of the main control box in the manual mode position.
- 4] Rotate the crusher with crusher manual forward switch (3) and reverse switch (4) of the machine monitor to bring mark (B) of the flywheel to the center of adjustment range (A).
- 5] Depress crusher clearance closing switch (5) of the machine monitor to press the swing jaw of the crusher against the fixed jaw (and the monitor buzzer sounds).

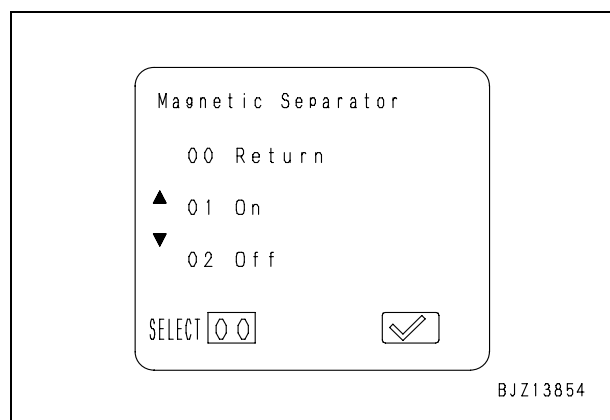
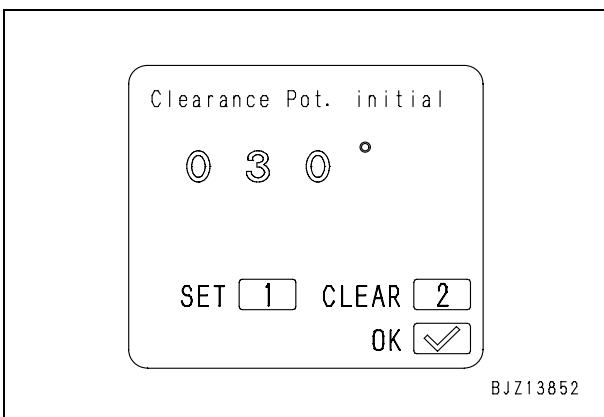
- 7) Function for option registration  
Use/Disuse of the options of the machine can be set.
  - 1] On the option setting menu screen, move the cursor with the [△] switch and [▽] switch to an option to be adjusted and press the [✓] switch.

Number	Option registration menu
00	Return (Finish adjustment)
01	Magnetic separator
02	Muck discharge conveyor
03	Overfeed sensor
04	2nd conveyor
05	Vibrator screen
06	Travel lever



- 6] Select the service menu to display the clearance potentiometer initialization screen.
- 7] Depress "1" (SET) on the clearance potentiometer initialization screen.

- 2] The screen changes to the use (on)/disuse (off) setting screen for the selected option.  
Move the cursor with the [△] switch and [▽] switch to "Use"/"Disuse" and press the [✓] switch.



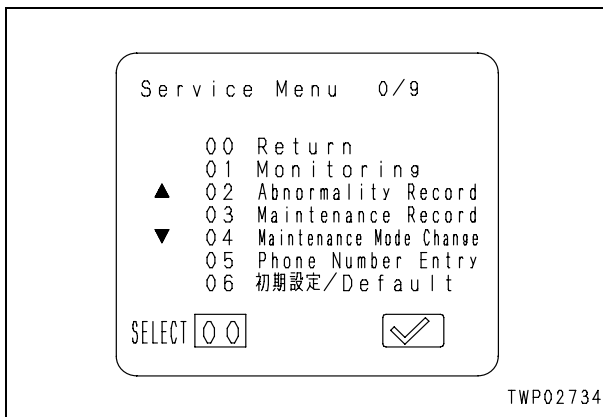
- 3] When the option is set normally, the monitor buzzer sounds for 3 seconds and then the screen returns to the previous screen.

**27. Function of cylinder cut out operation [08]**

The operator can perform the engine on cylinder cut out operation with the machine monitor. "Cylinder cut out" operation means to run the engine with 1 or more fuel injectors disabled electrically to reduce the number of effective cylinders. This operation is used to find out a cylinder which does not output power normally (combustion in it is abnormal).

## 1) Selecting menu

Select "08 Cylinder cut out" menu from the Service Menu initial screen and press [✓] switch.

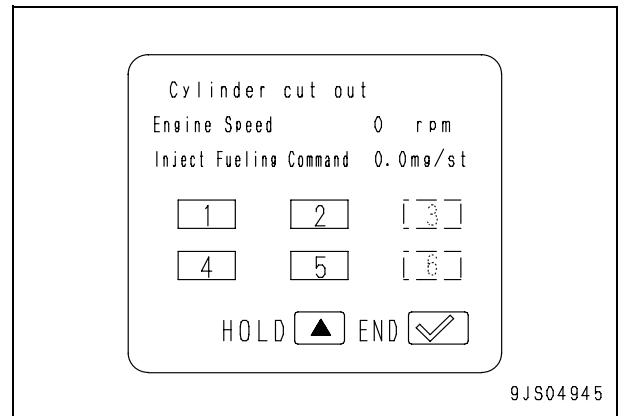
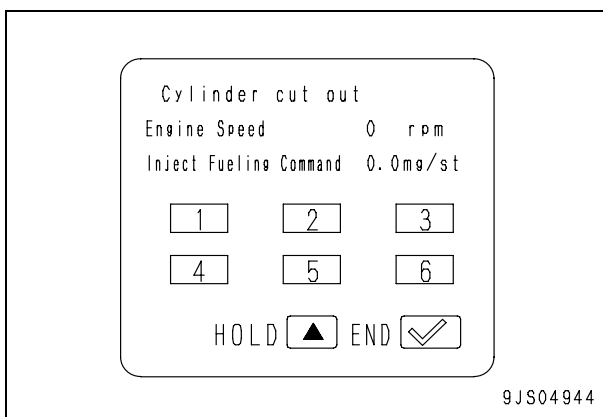


## 2) Selecting cylinder to be cut out

Press a switch corresponding to the cylinder No. to be cut out from switches [1] to [6] of the machine monitor.

★ If pressing the switch changes the cylinder number on the screen to a white letter enclosed in the white frame, the cylinder is cut out (when a wrong number is selected, press the correct switch again).

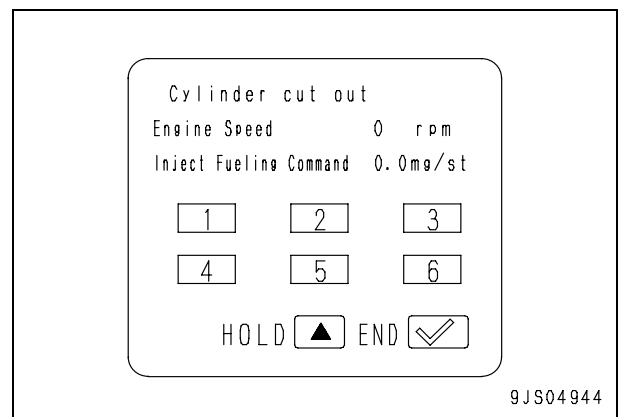
★ Number of cylinders to be reduced is any.



## 3) Resetting cut out cylinder

Press the switch corresponding to the cut out cylinder number from switches [1] to [6] of the machine monitor to be reset.

★ If pressing the switch changes the cylinder number on the screen to a black letter enclosed in the black frame, the cylinder is reset.



4) Engine speed holding function  
 Pressing [△] switch while the engine operation on cylinder cut out screen is turned on holds the engine speed and its speed is newly displayed in the lower space.

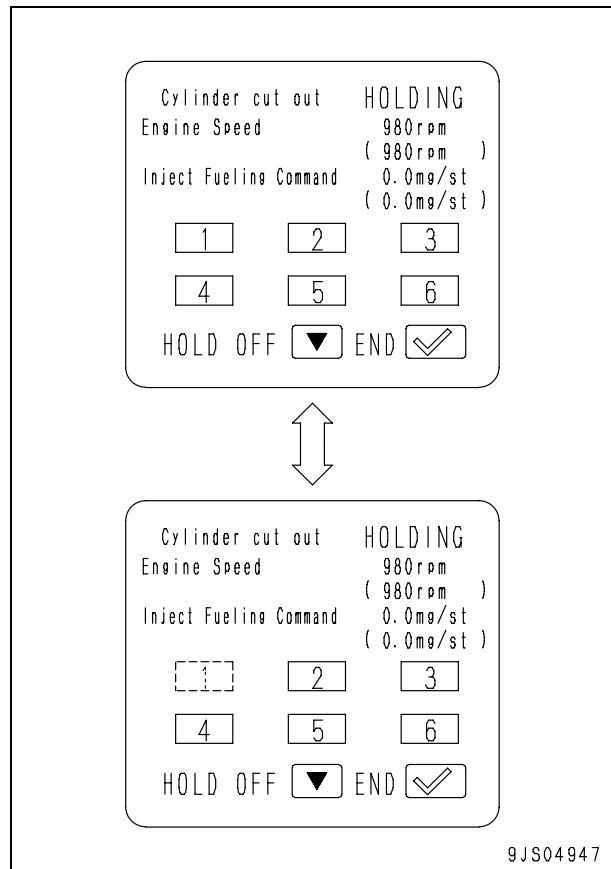
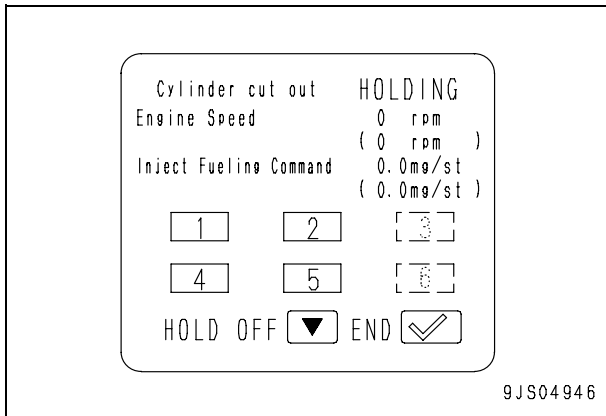
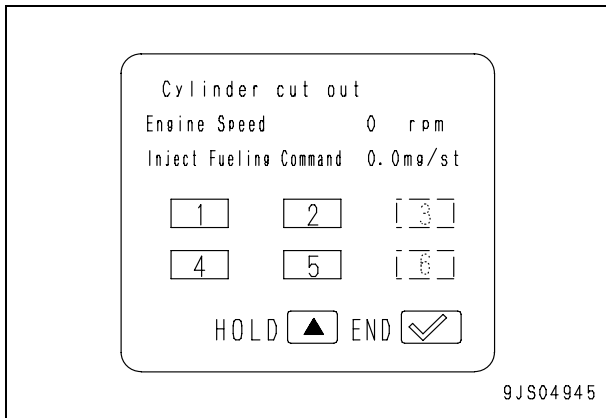
Pressing [▽] switch during holding cancels the holding function and deletes the display in the lower space.

- ★ If the holding function is used, the held speed is displayed in the lower space along with ( ) and the upper space continuously displays the current speed.
- ★ The holding function is usable independent of the currently set mode – the cylinder cut out or not.

[Reference]: Using the holding function effectively  
 The engine speed being displayed on the screen through the holding function remains on it until the holding is cancelled. In other words, enabling or disabling of the cylinder cut out mode does not affect the display.

Thus, when identifying a failed cylinder quicker, following operation is effective.

- (1) Run the engine from the normal operation mode (no cylinder cut out) and then hold the speed of that time.
  - (2) Specify the cylinder to be diagnosed as the cut out.
  - (3) Run the engine under the same condition as that for (1). Then compare the engine speed at that time and the held speed being displayed to diagnose the cylinder.
  - (4) Reset a cut out cylinder independent of the fluctuations in the engine speed.
  - (5) Repeat above steps (2) to (4) and then compare the results against that obtained from other cylinders.
- ★ If the diagnosis identified a cylinder on which there was no decrease in the engine speed or the decrease was small, it can be safely judged that there must be some abnormalities in its combustion.





**28. Function of no injection cranking [09]**

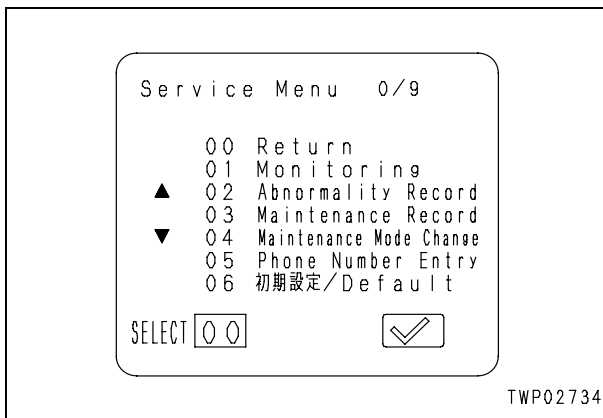
No injection cranking of the engine is available from the machine monitor.

No injection cranking denotes stopping injection of fuel from the injector even if the engine is run from the starting motor. This mode is used, for instance, for measurement of compressive pressure.

★ This setting must be done after stopping the engine.

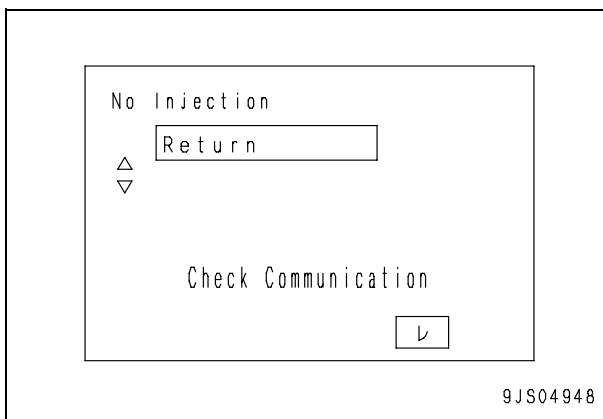
1) Selecting menu

Select "09 No Injection Cranking" from the Service Menu initial screen and press [✓] switch.

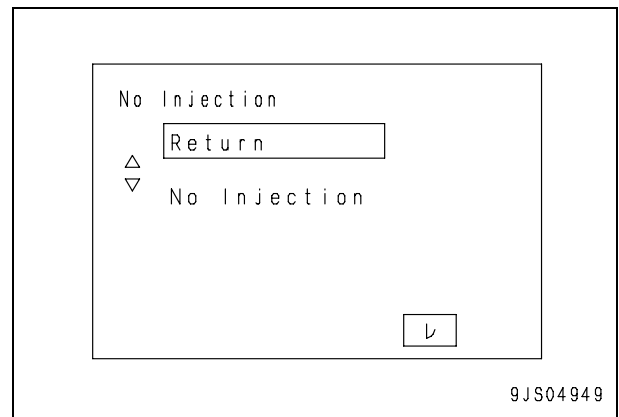


2) The initial screen for the no injection cranking will appear.

★ "Check Communication" will be displayed in red.

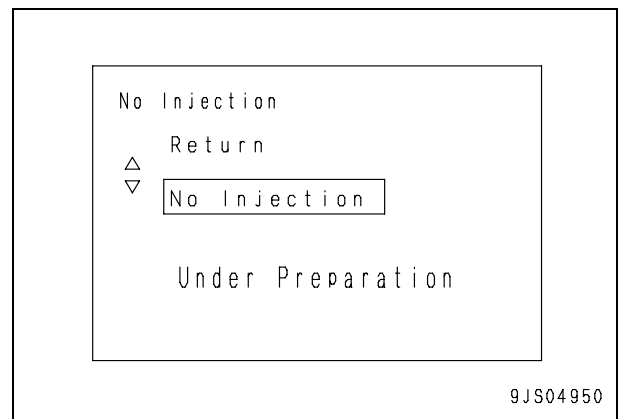


3) As the checkup is over, following screen appears.



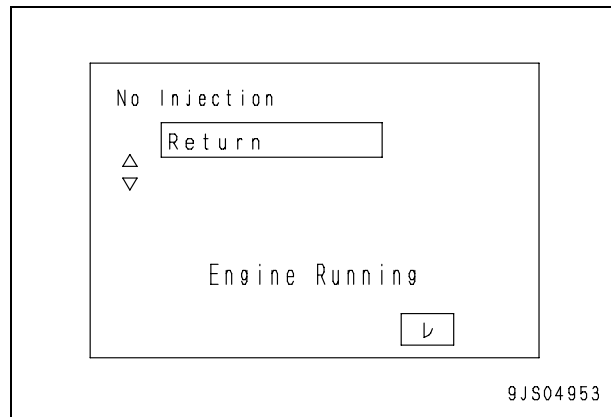
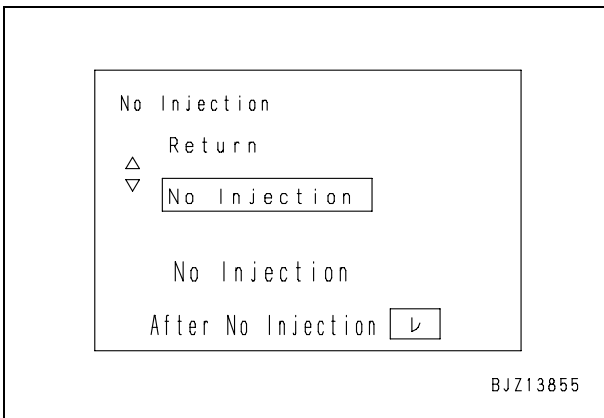
4) Select "No Injection" and press [✓] switch. "Under Preparation" will be displayed on the screen.

★ The letters "Under Preparation" are displayed in red.

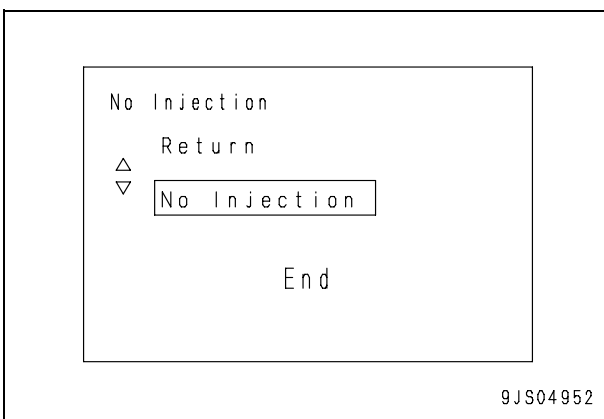


- 5) As the preparation for no injection cranking is completed, display of "Under Preparation" is replaced with "After No Injection".
  - ★ The letters "After No Injection" are displayed in green.
- 6) From this state, crank the engine using the starting motor.
  - ★ Limit the cranking time to 20 seconds to protect the starting motor.

- ★ If the no injection cranking function is inadvertently selected while the engine is running, "Engine Running" will appear as No Injection in step 4) is selected. This "Engine Running" display remains on the screen even after the engine is stopped. Restoring the service menu screen alone deletes the display.



- 7) After the no injection cranking is over, press [✓] switch from the previous screen and the letters "End" will be displayed for 3 seconds.
  - ★ The letters "End" are displayed in green.
- 8) Press "Return" when ending the no injection cranking.



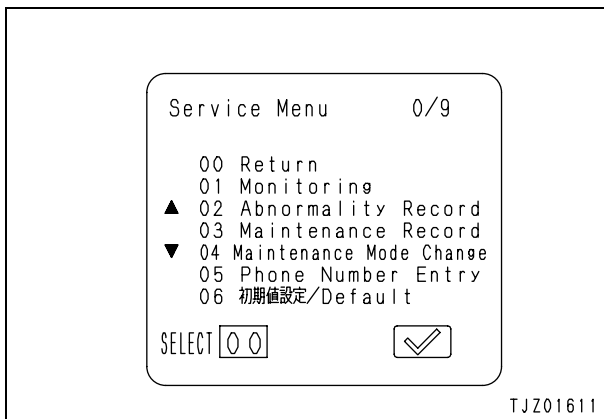
**29. Function for crusher clearance record [10]**

The machine monitor records the information about the crusher clearance setting.

- The machine monitor records the information up to 10 times. After recording 10 times, the machine monitor discards the data in order from the oldest one and keeps the newest ones.
- When the mode selector switch is changed from the “testing mode” to “another mode”, if the crusher clearance saved previous time is different from the current crusher clearance, the machine monitor saves the current crusher clearance.

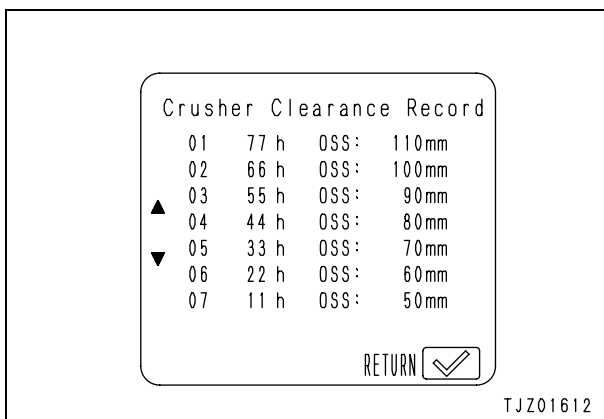
1) Selection of menu

Select “10 Crusher Clearance Record” in the initial display of Service Menu, and depress [✓] switch.



2) Information shown in display

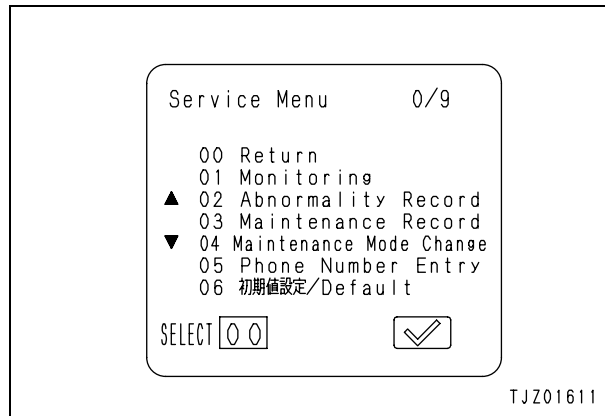
- 1) Crusher clearance
- 2) Service meter reading at which crusher clearance was saved



**30. Function for lock cylinder slip record [11]**

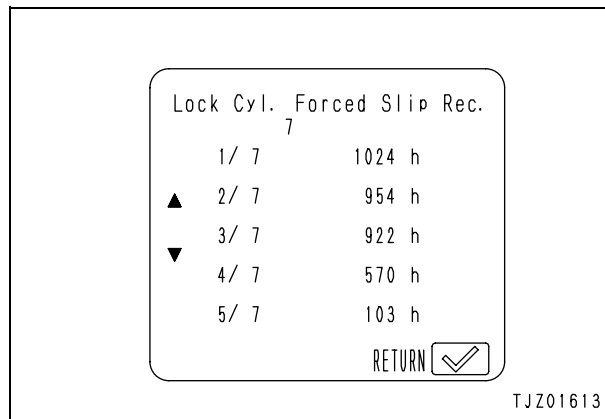
The machine monitor records the information about the past slip of the crusher lock cylinder (service meter reading).

- The machine monitor records the slips up to 10 times. After recording 10 times, the machine monitor discards the data in order from the oldest one and keeps the newest ones.
- The total number of the recorded slips above 10 is counted and recorded up to 999.

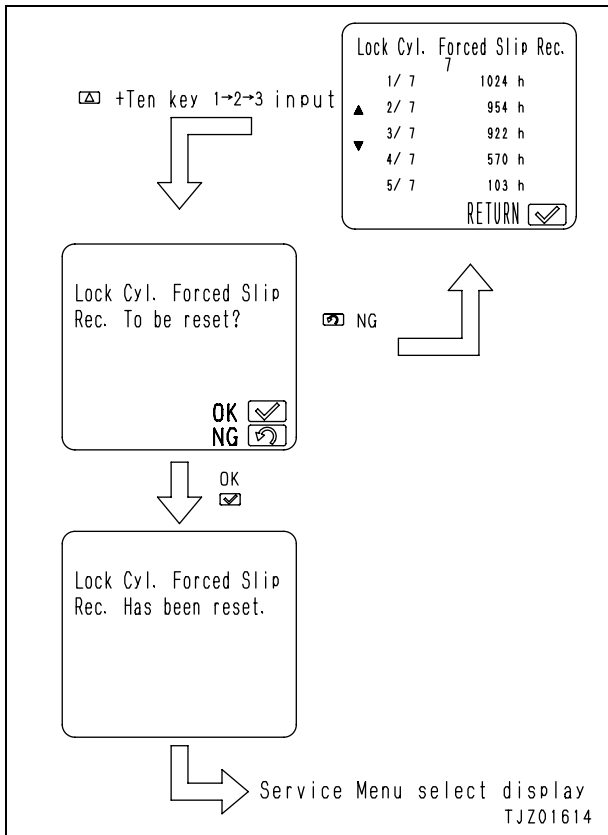


1) Selection of menu

Select “11 Lock Cylinder Slip Record” in the initial display of Service Menu, and depress [✓] switch.



- 2) Deletion of data  
[△] + [1] → [2] → [3]  
(While pressing [△], input numbers)



BR380JG-1E0 Mobile crusher

---

Form No. SEN02304-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

## 30 Testing and adjusting

### Testing and adjusting, Part 3

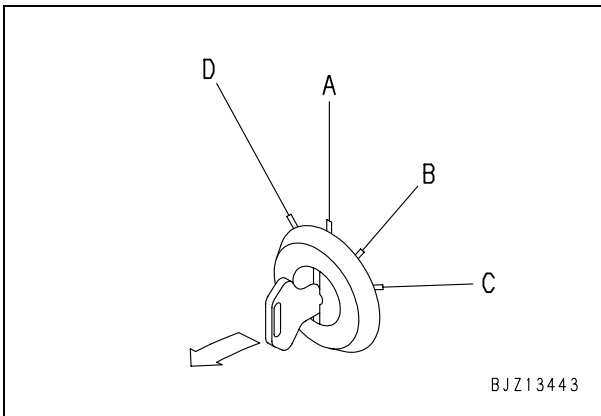
---

Check and adjustment of jaw crusher.....	2
Check and adjustment of outlet clearance.....	4
Adjusting tension of crusher drive V-belt.....	37
Check and adjustment of primary conveyor.....	38
Inspection and maintenance of magnetic separator.....	44
Check and adjustment of muck discharge conveyor.....	46
List of companies which handles radio controllers.....	48
Handling voltage circuit of engine controller.....	49
Procedure for turning on KOMTRAX terminal.....	50
KOMTRAX terminal lamp indications.....	53
Preparation work for troubleshooting for electrical system.....	56
Procedure for testing diodes.....	60

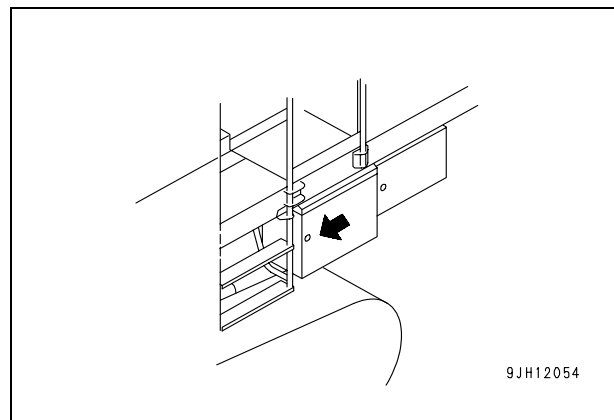
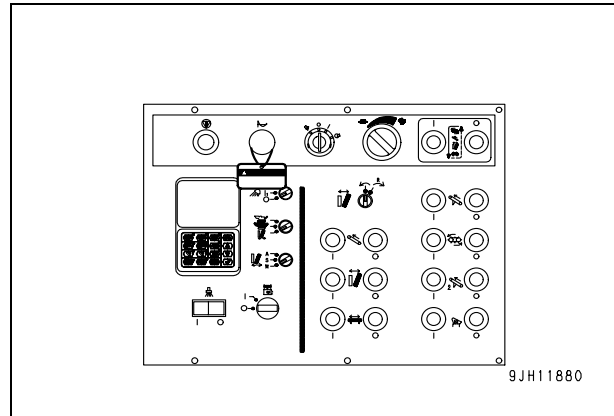
## Check and adjustment of jaw crusher

**⚠** When entering the top of the feeder or the inside of the crusher to carry out inspection and maintenance of the crusher, or replacement of consumable parts, always follow the procedure below when carrying out the operation.  
If the work equipment is actuated by mistake, there is danger that this may lead to serious personal injury.

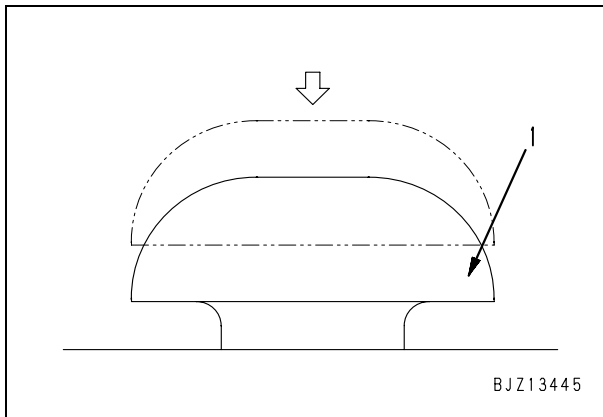
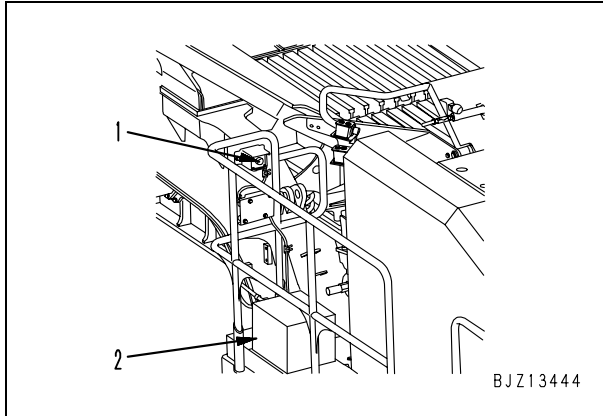
1. Always carry out operations with 2 or more workers.  
One worker should stand in front of the control box to prevent any other person from turning the starting switch ON by mistake.
2. One worker should turn the key in the starting switch to the OFF position (A), then remove the key and keep it with him.



3. Hang a warning tag on the horn switch of the control box, then lock the control box.



4. Press work equipment lock switch (1).
5. When moving from the deck on the right side of the machine to the top of the feeder, put stand (2) of a height of approx. 300 mm on top of the deck, then go up to the feeder from stand (2).





## Check and adjustment of outlet clearance

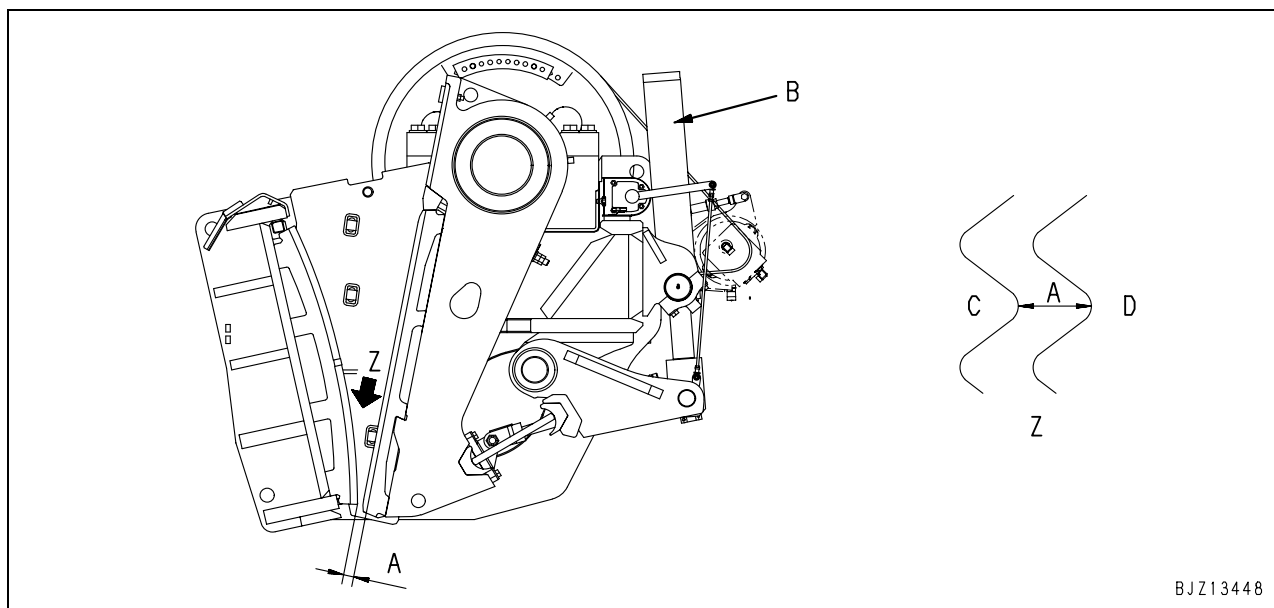
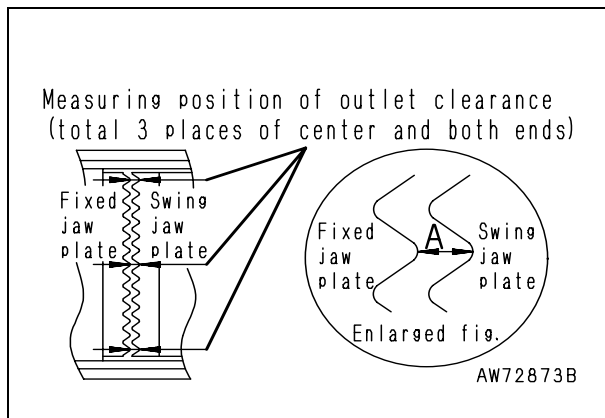
### Check of outlet clearance

Outlet clearance **A** (opening end) means the distance from the tip of the fixed jaw plate to the bottom of the movable tooth when the crusher outlet is fully open.

Measure at three places (both ends and the center) and take the value for the smallest clearance as the representative value.

★ When measuring outlet clearance **A**, it is convenient to use a jig as shown in the example below.

(Example) Length = approx. 1500 mm, diameter of rod =  $\phi 6$  to 10 mm at both ends. Weld a rod of the commonly used outlet clearance dimension (for example: 50 mm) to an H-shape.



- (A) Crusher outlet clearance
- (B) Lock cylinder
- (C) Fixed jaw plate
- (D) Swing jaw plate

### Outlet clearance adjusting method

When the machine is used continuously, wear of the addendum will cause the crusher outlet clearance to become larger, and the size of the particle will become coarser. If the crushed particles are remarkably worse than when the clearance was last adjusted, adjust the clearance as follows.

The crusher outlet clearance is adjusted by extending or retracting the lock cylinder.

On this machine, there are three types of clearance adjustment function.

A (Automatic):

The clearance is automatically adjusted according to the set value input on the clearance set monitor.

S (Semi-automatic):

The clearance is automatically adjusted by inputting the desired value for change on the clearance set monitor. (If the input value is (+), the clearance becomes larger; if the input value is (–), the clearance becomes smaller.)

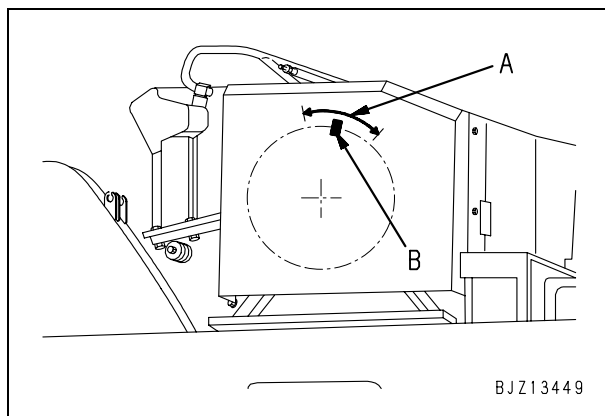
M (Manual): It is possible to adjust the clearance manually by using the panel switch.

- ⚠ **Start the engine. For adjusting the outlet clearance, set the travel lever lock to the LOCK position without fail.**
- ⚠ **Be sure to attach a warning tag to the starting switch in the control box.**
- ⚠ **For starting the engine, see the sections of “Check before starting engine” and “Starting engine” in Operation of OPERATION in Operation and maintenance manual.**

When adjusting the outlet clearance, use the inching operation to bring the position of the flywheel to the center of the adjustment range on the right to position it before adjusting the outlet clearance.

(A): Adjustment range

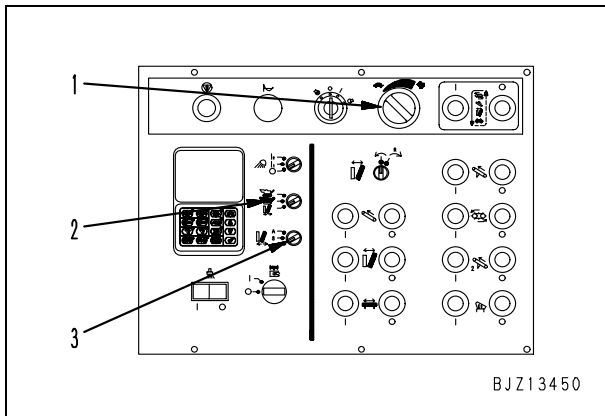
(B): Flywheel marking (red painted part)



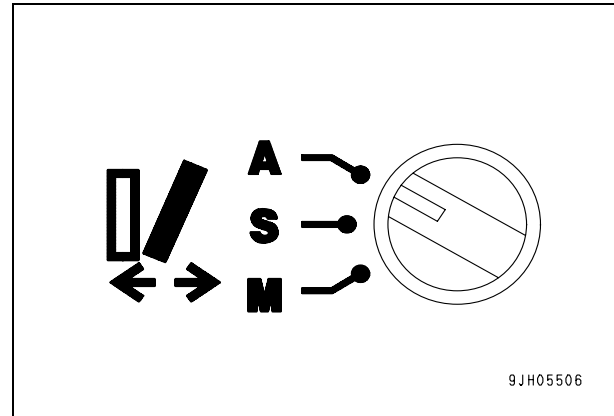
- ⚠ **Before starting operations, check that there is no one inside the crusher or in the surrounding area.**
- ⚠ **When the machine is shipped from the factory, the clearance is set to 50 mm (O. S. S.), so adjust the discharge clearance to the desired size or size suitable for the material being crushed.**
- ⚠ **O. S. S. means the condition when the crusher discharge clearance is fully opened.**
- ⚠ **Always be sure to check that the crusher chamber is empty and that there is no mud, sand, or soil stuck to the teeth.**

**Adjusting clearance in A (automatic) mode**

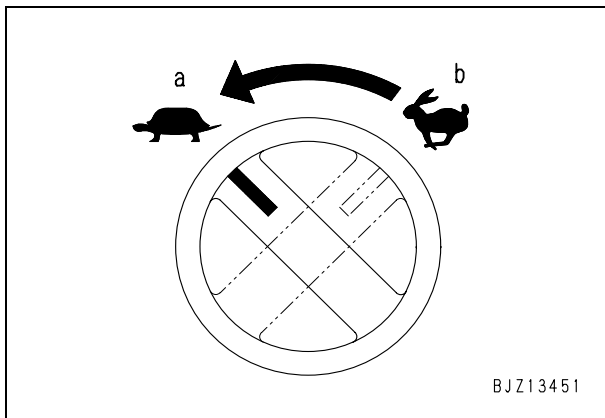
1. Start the engine.



4. Set clearance adjustment selector switch (3) to position (A) (automatic).

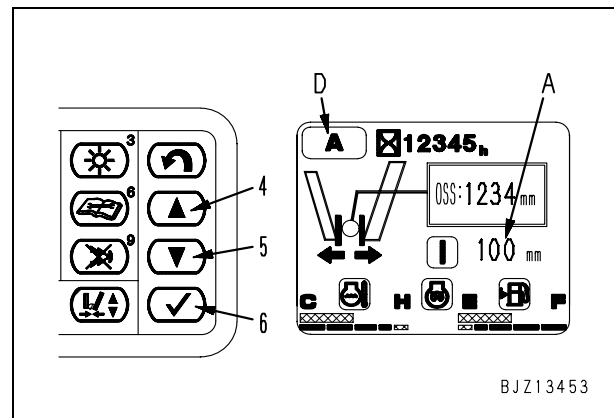


2. Set fuel control dial (1) to the low idle (MIN) position.

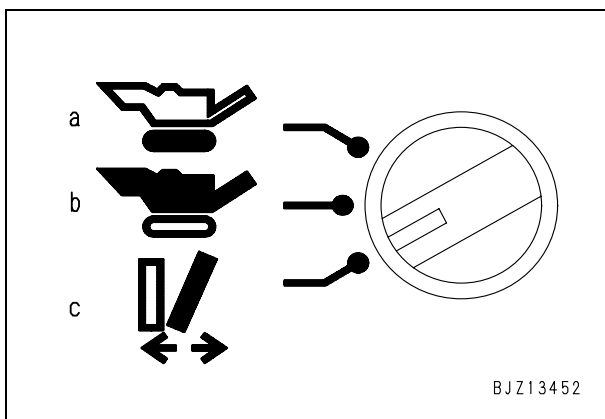


5. Check that clearance adjustment monitor (D) of the machine monitor is set to (A) (automatic) mode, then input the OSS clearance (A) to be adjusted to the machine monitor in the following order.

1) Use UP switch (4) or DOWN switch (5) to move the cursor on the screen display to position (A).



3. Set mode selector switch (2) to INSPECTION (c) position. The machine monitor switches to the normal inspection screen.



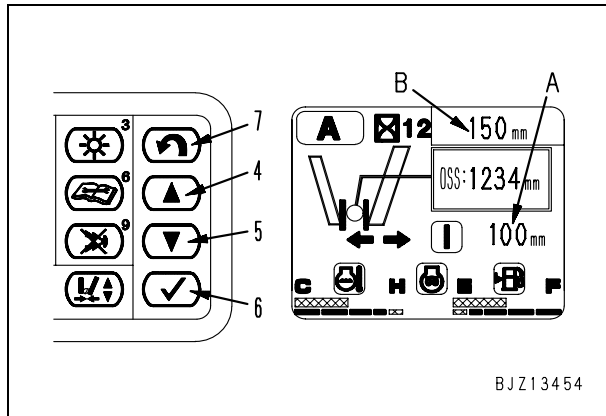
2) Press input confirmation switch (6). (A) starts flashing and numeral input window (B) is displayed at the top left of the screen.

3) Use UP switch (4) or DOWN switch (5) to increase or decrease the value on the display and adjust to give the desired set value.

The numerical value can be set in units of 1 mm in a range of 50 to 150 mm.

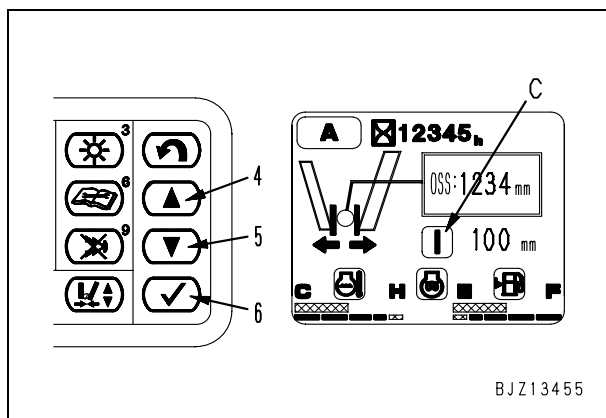
If the UP switch (4) or DOWN switch (5) is kept pressed continuously, the set value will increase or decrease in units of 10 mm .

- 4) After inputting the desired O.S.S. clearance, press input confirmation switch (6) to set the input value.



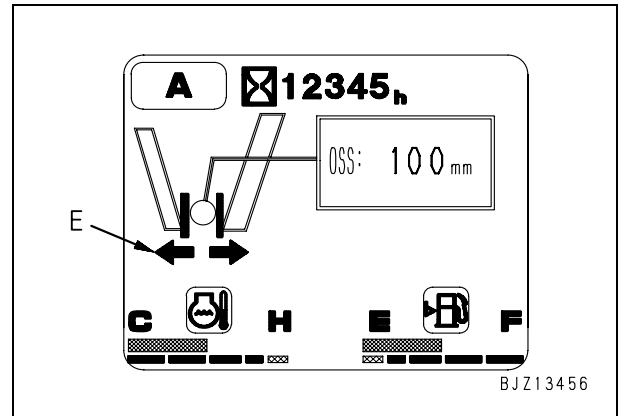
- ★ The set value is saved and is displayed when the next adjustment is made to the clearance. If that value is to be used as it is, there is no need to input the set value again.
- ★ If it is desired to abort the setting of the O.S.S. clearance, press return switch (7). This will return the set value to the original setting.

6. Adjust the clearance.
  - 1) Use UP switch (4) or DOWN switch (5) to move the cursor on the screen display to position (C).
  - 2) Press input confirmation switch (6) to complete the preparations. "I" lamp (C) flashes.
  - 3) Press input confirmation switch (6) again to carry out the adjustment. "I" lamp (C) lights up and the automatic adjustment is carried out.

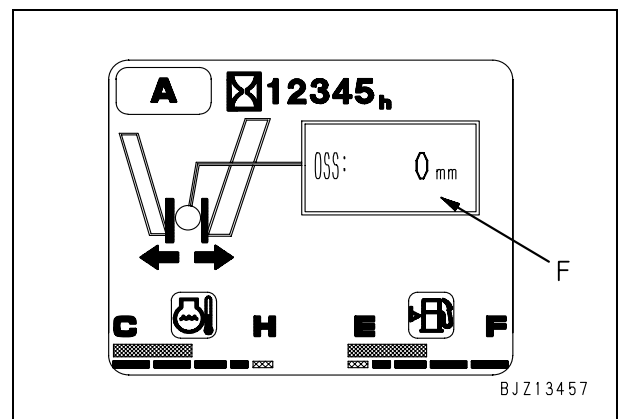


7. "I" lamp (C) goes out to show that the clearance adjustment is completed.
  - Automatic adjustment is carried out with the following procedure.

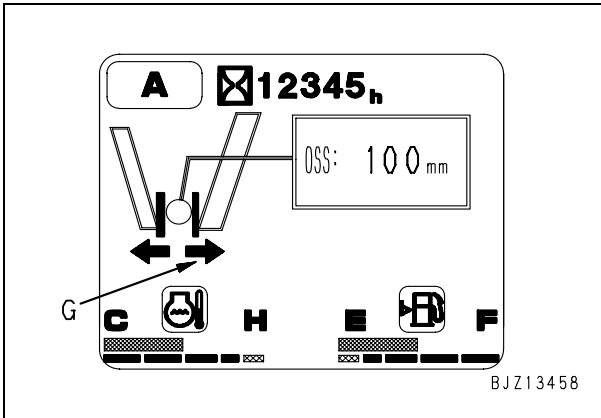
- 1) The movable swing jaw plate to the fixed tooth side and the crusher clearance closes. When this happens, portion (E) on the machine monitor flashes.



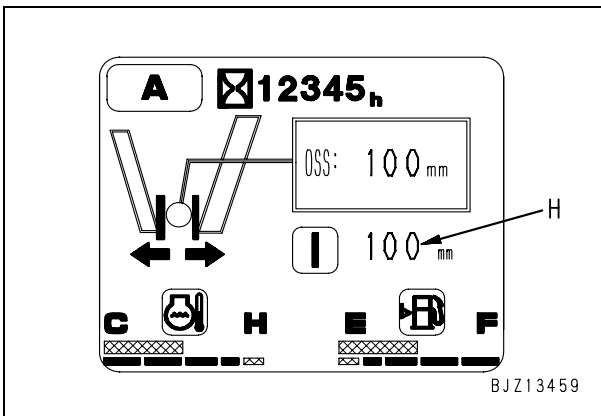
- 2) When the swing jaw plate contacts the fixed tooth, the buzzer inside the machine monitor sounds, and crusher actual clearance monitor display value (F) is as shown as 0.



- 3) The swing jaw plate acts in the direction to open the crusher clearance. While the clearance is opening, machine monitor portion (G) flashes.



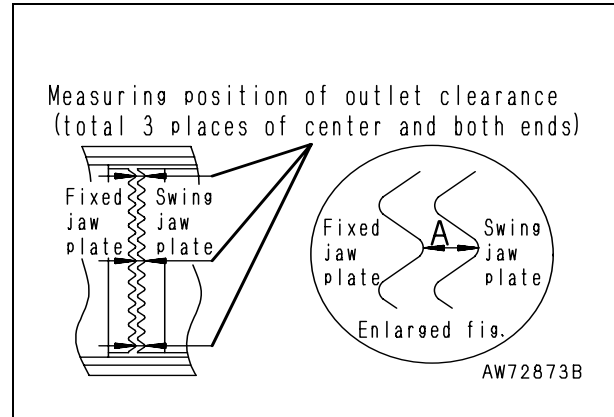
- 4) When the crusher clearance reaches the desired O.S.S. clearance set value (H), the automatic clearance adjustment is completed.



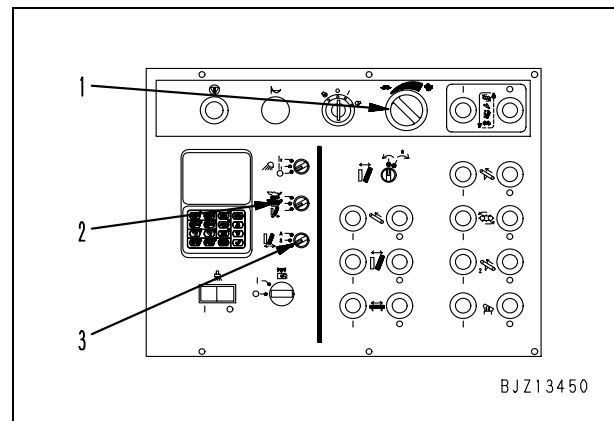
- ★ The value for the outlet clearance displayed on the monitor panel and selector and the outlet clearance adjusted in the A (automatic) mode may be different because of the wear of the tooth plate and the condition of installation. In such cases, measure the clearance and adjust with S (semi-automatic) mode or M (manual) mode.

**Adjusting clearance in S (semi-automatic) mode**

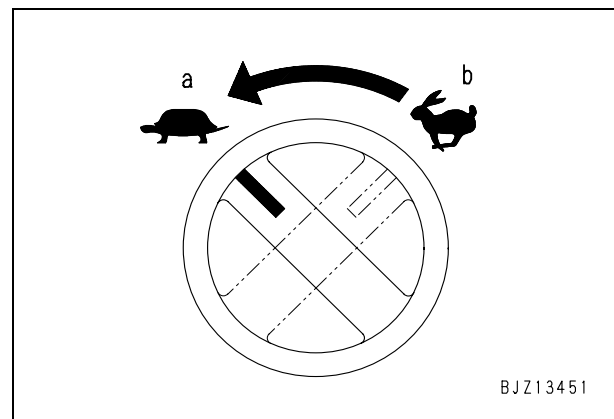
1. Measure the present crusher outlet clearance to understand how much to increase or decrease the value to reach the target value for the clearance.



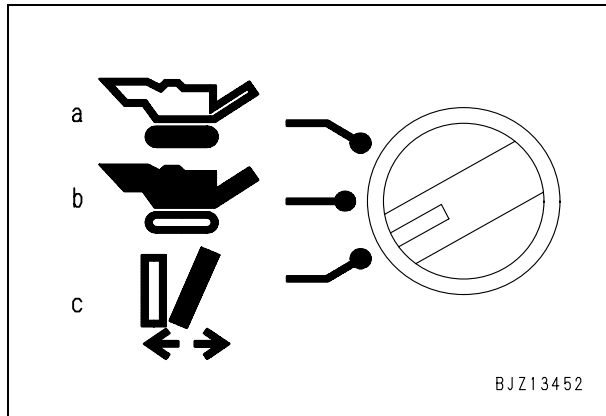
2. Start the engine.



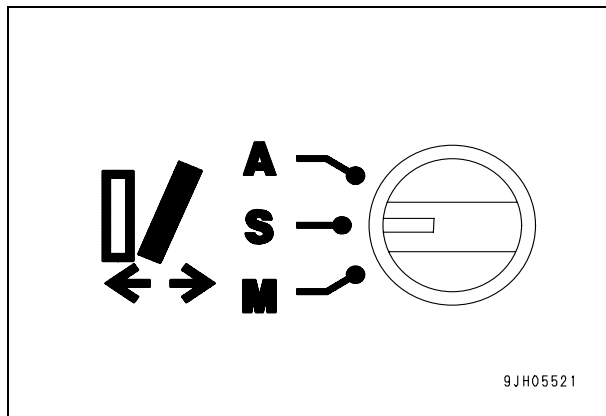
3. Set fuel control dial (1) to the low idle (MIN) position.



- Set mode selector switch (2) to INSPECTION (c) position. The machine monitor switches to the normal inspection screen.

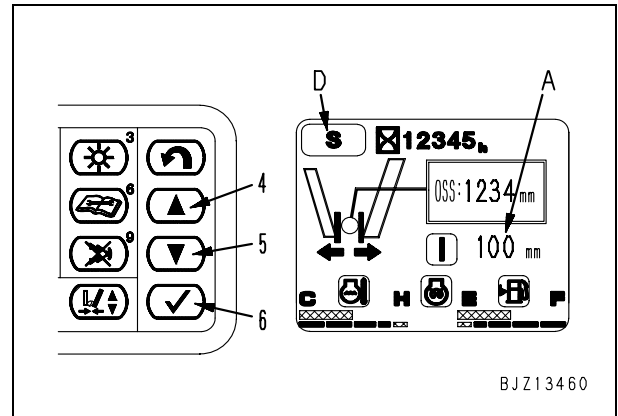


- Set clearance adjustment selector switch (3) to the S (semi-automatic) position.



- Check that mode monitor (D) of the machine monitor has changed to S (semi-automatic) mode, then input clearance value (A) for the amount to change the present clearance on the machine monitor as follows.

- Use UP switch (4) or DOWN switch (5) to move the cursor on the screen display to position (A).



- Press input confirmation switch (6). (A) starts flashing and numeral input window (B) is displayed at the top left of the screen.

- Use UP switch (4) or DOWN switch (5) to increase or decrease the value on the display and adjust to give the desired set value.

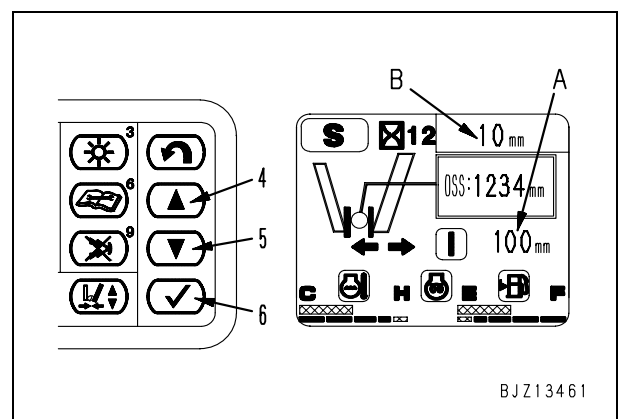
The numerical value can be set in units of 1 mm in a range of 50 to 150 mm.

+ display: Adjustment to open clearance

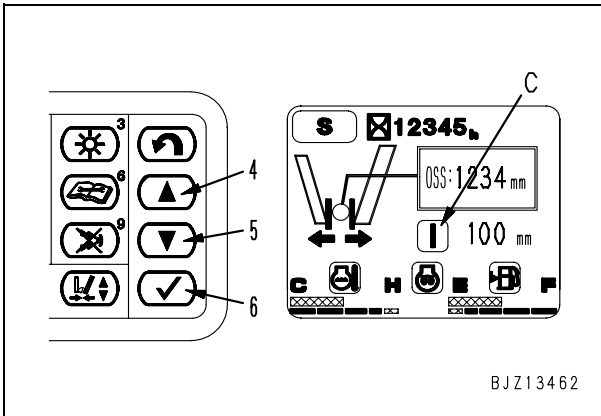
- display: Adjustment to close clearance

If the UP switch (4) or DOWN switch (5) is kept pressed continuously, the set value will increase or decrease in units of 10 mm.

- After inputting the set value for the adjustment, press input confirmation switch (6) to set the input value.



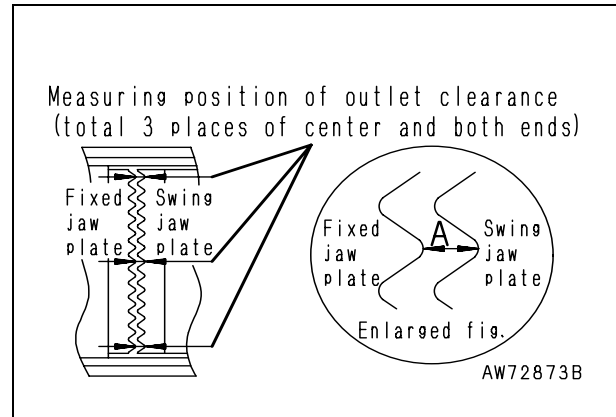
7. Adjust the clearance.
  - 1) Use UP switch (4) or DOWN switch (5) to move the cursor on the screen display to position (C).
  - 2) Press input confirmation switch (6) to complete the preparations.  
"|" lamp (C) flashes.
  - 3) Press input confirmation switch (6) again to carry out the adjustment.  
"|" lamp (C) lights up.



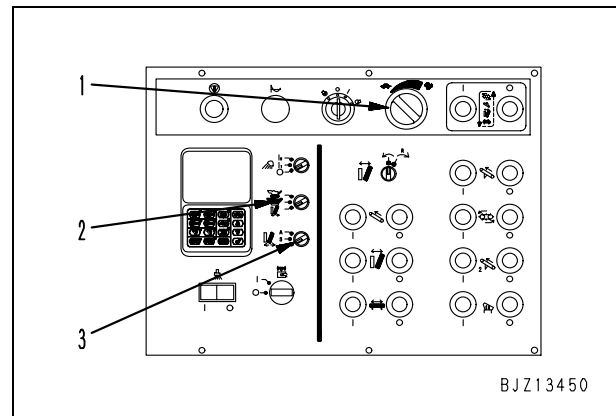
8. "|" lamp (C) goes out to show that the clearance adjustment is completed.

**Adjusting clearance in M (manual) mode**

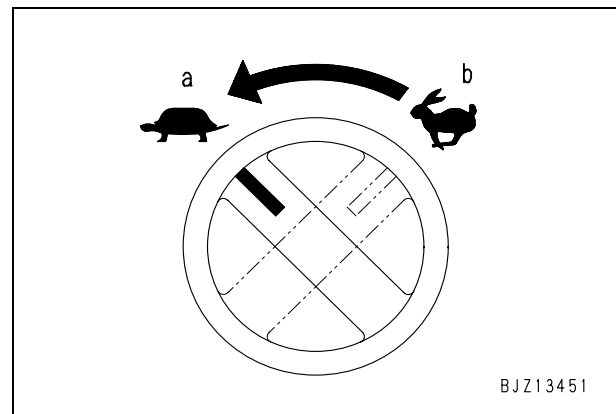
1. Measure the present crusher outlet clearance to understand how much to increase or decrease the value to reach the target value for the clearance.



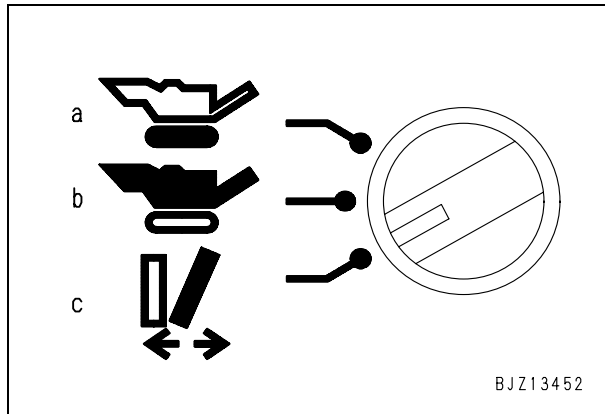
2. Start the engine.



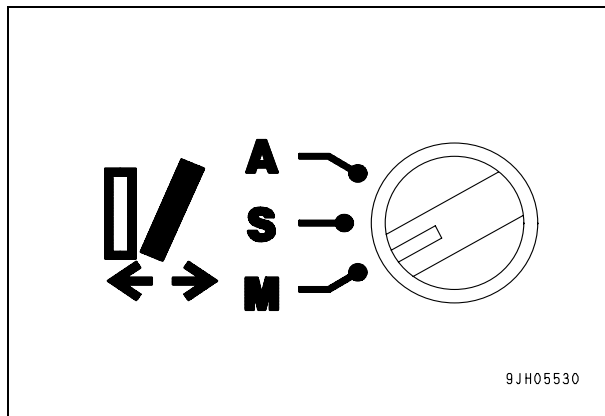
3. Set fuel control dial (1) to the low idle (MIN) position.



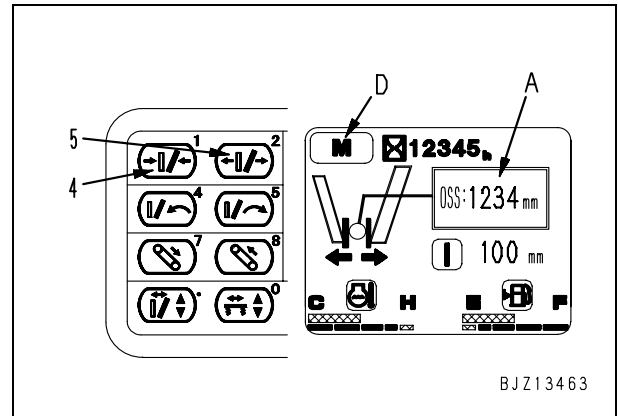
4. Set mode selector switch (2) to INSPECTION (c) position. The machine monitor switches to the normal inspection screen.



5. Set clearance adjustment selector switch (3) to the M (manual) position.



6. Check that mode monitor (D) of the machine monitor has changed to M (manual) mode.
7. Using crusher clearance decrease switch (4) and crusher clearance increase switch (5), adjust so that crusher actual clearance monitor (A) for the amount to change the present clearance reaches the target value.
- (4) Crusher clearance decrease switch  
Action to close crusher clearance continues while switch is being pressed.
- (5) Crusher clearance increase switch  
Action to open crusher clearance continues while switch is being pressed.



- ★ As the crusher is operated, the teeth become worn, so the value displayed on clearance display monitor (A) gradually becomes different from the actual clearance. When this happens, it is possible to compensate for the value by keeping crusher clearance decrease switch (4) pressed to bring the teeth into contact with the fixed jaw plate.

1. Keep crusher clearance decrease switch (4) pressed to bring the movable teeth and fixed jaw plate into contact. When the value (A) shows no more change, the movable teeth and fixed jaw plate are in contact.
2. After bringing the movable teeth and fixed jaw plate into contact, keep crusher clearance decrease switch (4) pressed for approx. 10 seconds.
3. The buzzer sounds and the compensation is completed. When this happens, the value on crusher actual clearance monitor (A) changes to 0.
  - ★ Depending on the wear of the teeth, the value after compensation may not become exactly 0, but this does not indicate any abnormality.
4. Press crusher clearance increase switch (5) and adjust so that the value on crusher actual clearance monitor (A) becomes the target value.
  - ★ After the operation for adjusting the crusher clearance is completed, even if the mode selector switch is turned to the OPERATION mode, the crusher cannot be started while the crusher status lamp is lighted up the yellow (period that crusher operation is prohibited after adjusting clearance: approx. 30 seconds). For details, see "Operation status display lamp in Operation and maintenance manual".



### Check and adjustment of tooth plate wedge bolt spring case, tension spring

If there is play in the tooth plate, abnormal noise from around the crusher, knocking noise from the toggle plate, or if the toggle plate has fallen out, stop operations immediately and carry out the following check and adjustment.

**⚠ With new machines or with machines where the jaw plate or other consumable parts have been turned or replaced, because of the fitting of parts together during the first 50 hours (time shown on the service meter), the spring set length and tightening torque of the nuts and bolts may change, so carry out inspection and control thoroughly.**

If tension spring set length is greater than dimension shown below:

- Knocking occurs between the toggle plate and toggle seat, and this will reduce the life of the toggle plate and toggle seat.
- The toggle plate may fall out.

If tension spring set length is less than dimension shown below:

- The tension rod or tension spring may break.

If swing jaw, fixed jaw wedge bolt spring is not suitable:

- There may be play in the jaw plate and breakage of the wedge bolt.

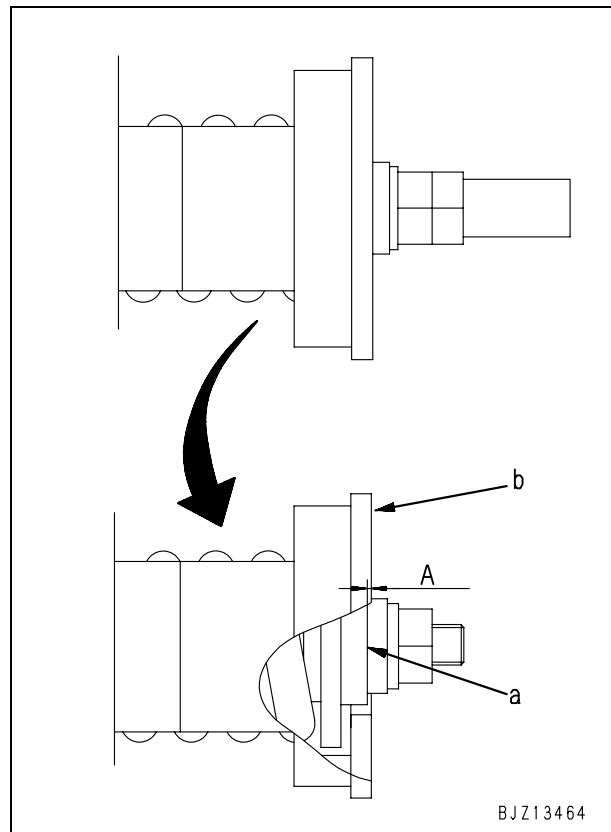
Check that the spring set length is correct and adjust it if there is any problem.

The spring set length is as follows.

### Fixed jaw plate wedge bolt spring

$A = 0 - 2 \text{ mm}$

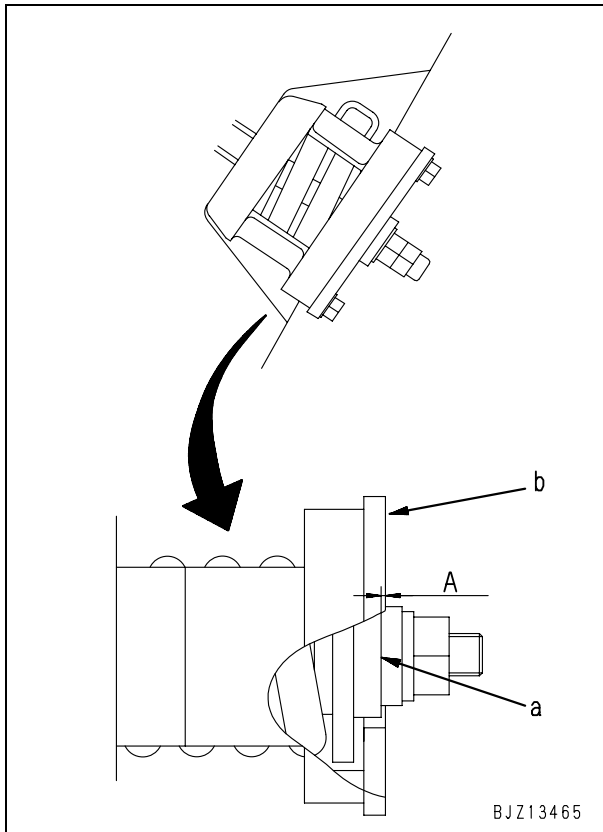
As shown in the diagram, face (a) (collar face) does not extend to the outside from face (b) (plate surface), and the inset is within 2 mm.



**Swing jaw plate wedge bolt spring**

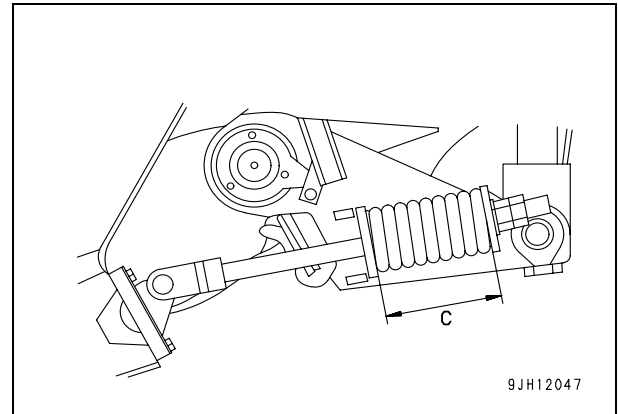
$A = 0 - 2 \text{ mm}$

As shown in the diagram below, face (a) (collar face) does not extend to the outside from face (b) (plate surface), and the inset is within 2 mm.

**Tension spring**

(when clearance at tip of teeth is set to maximum)

$C = 258 - 260 \text{ mm}$

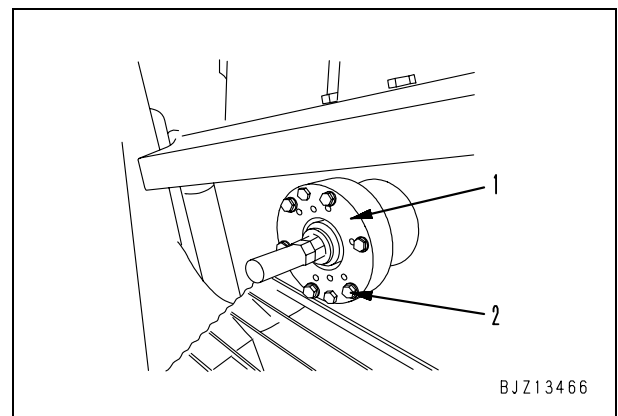


When measuring the set length of the tension spring, measure at 4 places  $90^\circ$  apart around the circumference.

Check that there is no deformation of the spring.

If the difference in the spring set length of the tension spring is more than 3 mm, rotate the spring to change the seating position of the spring, then tighten again.

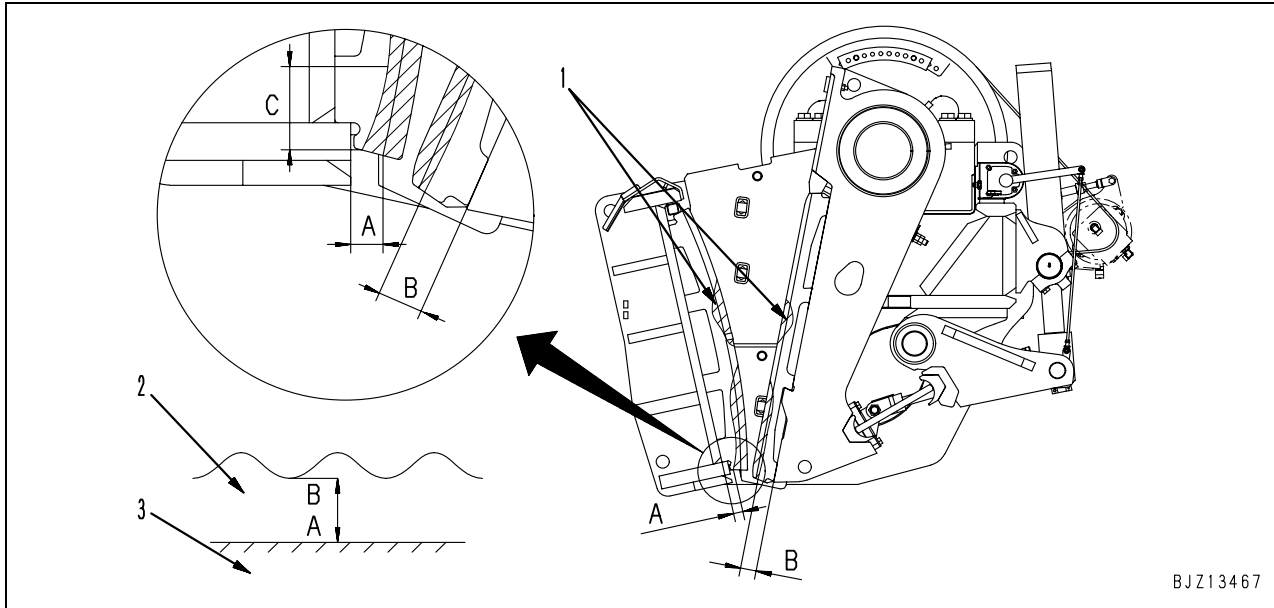
**⚠ This machine uses cover assembly (1) with springs built into the fixed jaw plate wedge portion and swing jaw plate wedge portion. If bolts (2) of the front face of the cover are removed during disassembly, there is danger that the internal parts will fly out and cause injury.**



Check of wear on major wearing parts

Jaw plate

- ⚠ When checking the wear, stop the crusher, then stop the engine and check the wear.
- ⚠ If the machine is used continuously with the crusher chamber excessively charged, premature partial wear will develop on the tips of jaw plates.
- ⚠ If a work is continued with the partially worn jaw plates, rocks may not be discharged smoothly, eventually resulting in damages on the jaw plates on account of the worsened partial wear. Replace the partially worn jaw plates with new ones.
- ⚠ If jaw plates are used beyond their wear limit, a serious damage will be inflicted on the jaw crusher main body itself.



BJZ13467

- (1): Hypothetical wear range (hatched portion)
- (2): Tooth plate
- (3): Frame

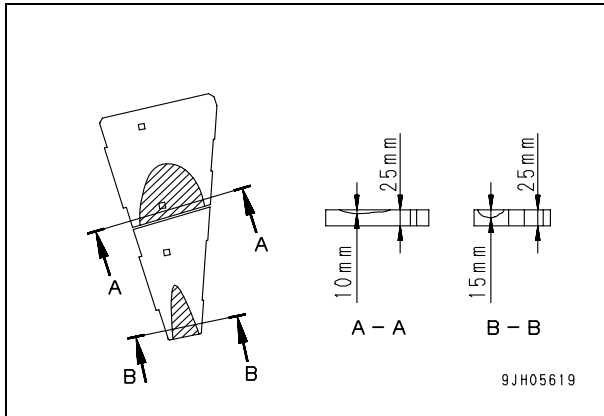
		New part (mm)	Wear limit height (mm)
Height from mounting face of tooth plate to groove in tooth plate	Fixed jaw (A)	44	34
	Swing jaw (B)	75	65

- ★ Even if dimension (A) and (B) have not reached the wear limit, if position (C) (100 – 300 mm from the bottom end) is the same as the bottom end portion and the protrusion of the tooth has been worn and the tooth has become flat, turn the tooth plate or replace it.

**Cheek plate**

Carry out replacement when the remaining dimension reaches approx. 15 mm (wear amount: 10 mm) at the top, and approx. 10 mm (wear amount: 15 mm) at the bottom.

★ When replacing the cheek plate, replace the cheek plate mounting bolts also at the same time.

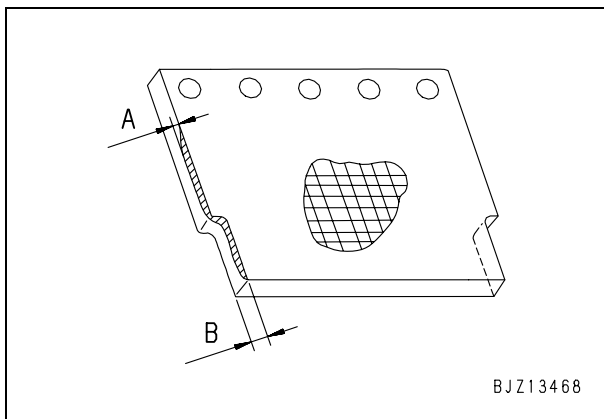


**Protector**

Replace when the remaining dimension is approx. 10 mm (wear amount: 10 mm).

Replace also if part of the protector is worn unevenly.

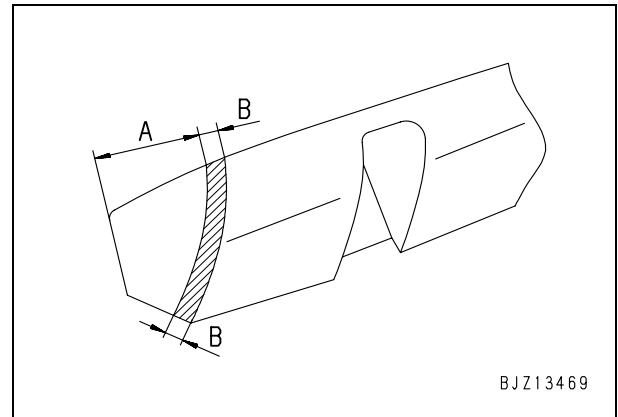
- (A) Wear amount: 10 mm
- (B) Protector thickness: 19 mm



**Swing jaw plate wedge**

Replace when remaining dimension (A) at the bottom of the wedge is approx. 79 mm (wear amount (B): 10 mm).

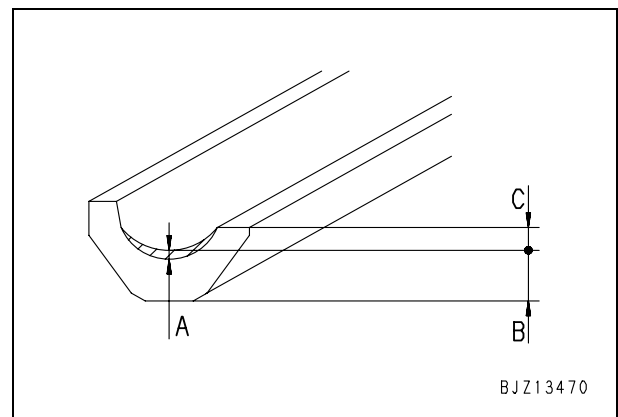
Replace also if part of the wedge is worn unevenly.



**Toggle seat**

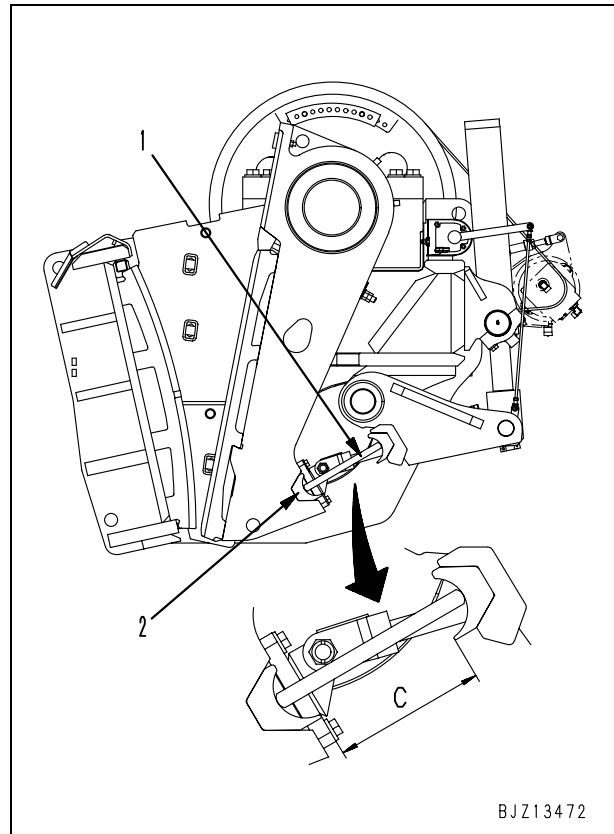
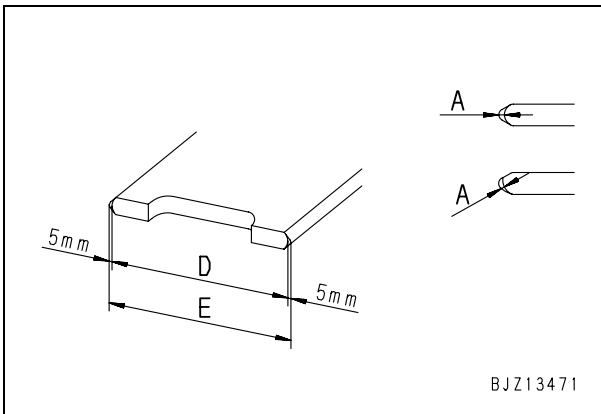
If the wear dimension reaches approx. 5 mm, proceed with the replacement.

- (A) Wear amount: 5 mm
- (B) 50 mm
- (C) 30 mm

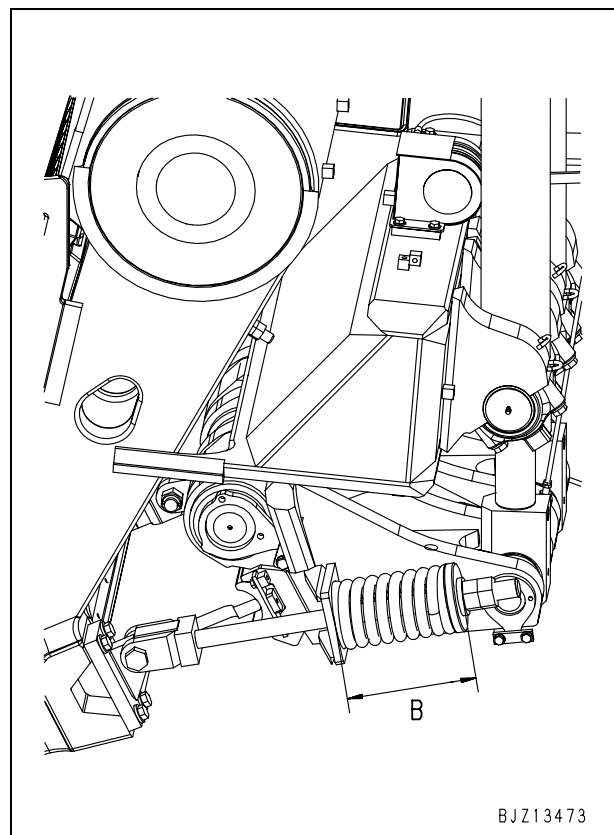


**Toggle plate**

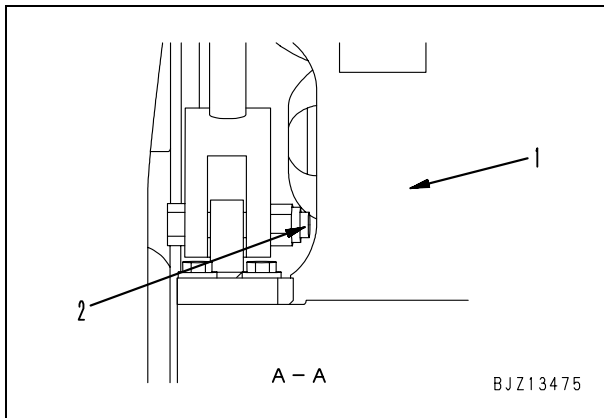
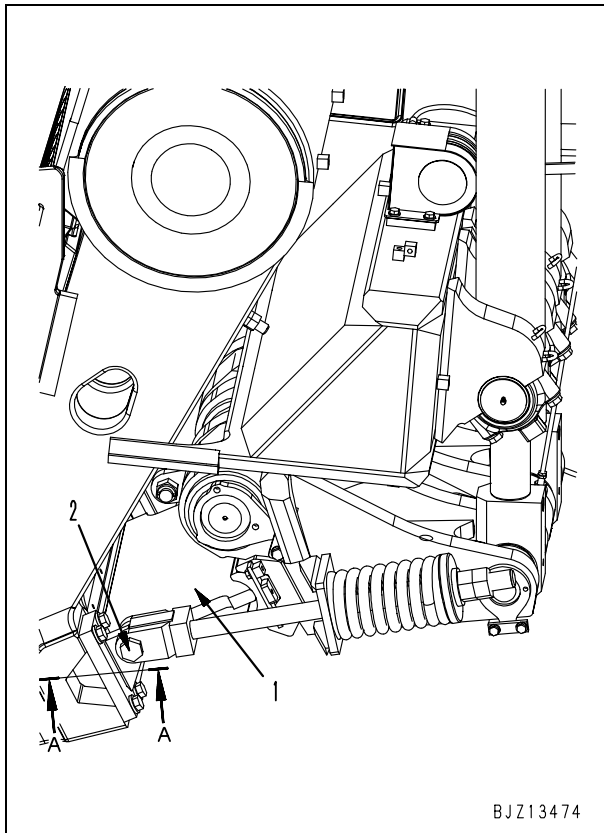
1. If distance (C) between the tip of the flange and the bottom of the toggle seat is 278 mm, remove the toggle plate and measure the amount of wear (A) of the toggle plate.  
For details of the amount of wear of the toggle seat, see "Toggle seat".
2. Replace if wear amount (A) is approx. 5 mm on one side.  
Replace also if there is more wear of the one side as shown in the diagram.  
Wear limit (D): 390 mm  
When new (E): 400 mm



- ★ Use the wear tolerance of toggle seat (2) and toggle plate (1) as a guideline for the above dimension.
- ★ When replacing toggle plate (1), replace the toggle plate dust cover also at the same time.
- ★ If noise is generated between toggle seat (2) and toggle plate (1), the noise made when toggle plate (1) rolls on the surface of the toggle seat has no effect on the machine itself. If a knocking noise is generated, check if tension spring set length (B) is the specified value.  
(For details of the tension spring set length, see "Check of jaw crusher and related accessories in Operation and maintenance manual".)



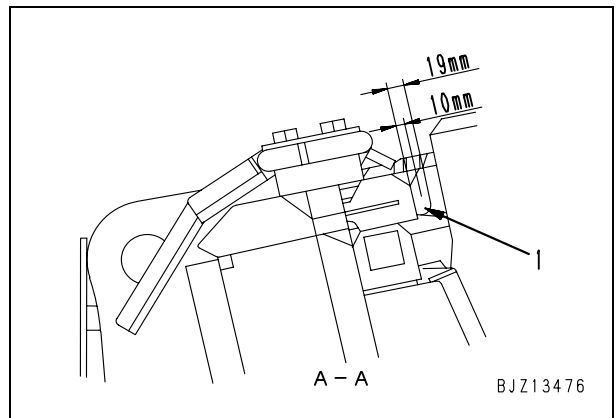
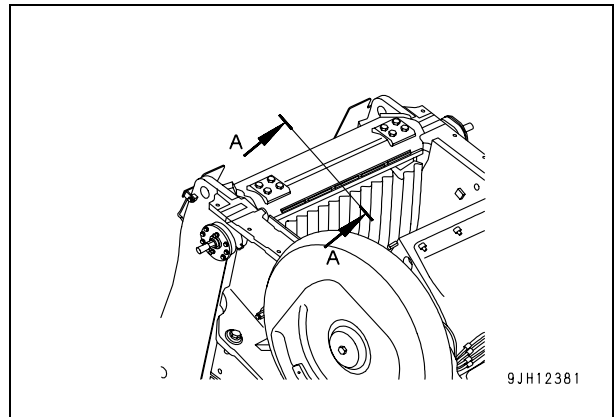
- When wear develops on the side of toggle plate (1) and as a result, the side comes in contact with the tip of rod pin (2), replace the toggle plate with a new one.



**Liner plate**

(Crusher feeder portion)

Liner plate (1) needs to be replaced with a new one when its remaining dimension reaches 10 mm (wear amount of 9 mm).



**Replacement of cheek plate**

1. Use an air gun or wire brush to remove the sand or soil clogging lifting hole (3) of top cheek plate (1).

2. Loosen cheek plate mounting bolt (4). Next, with the bolt loosened, tighten locknut (5) again.

Tools to use

Wrench: Accessory tool No. 1

Handle: Accessory tool No. 3

Extension: Accessory tool No. 4

Socket: Accessory tool No. 5

Wrench: Accessory tool No. 7

Pipe: Accessory tool No. 8

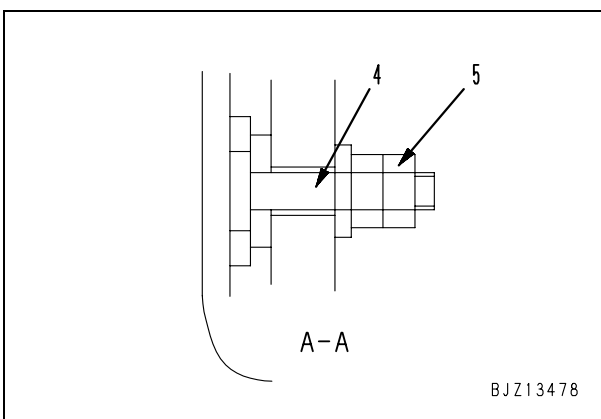
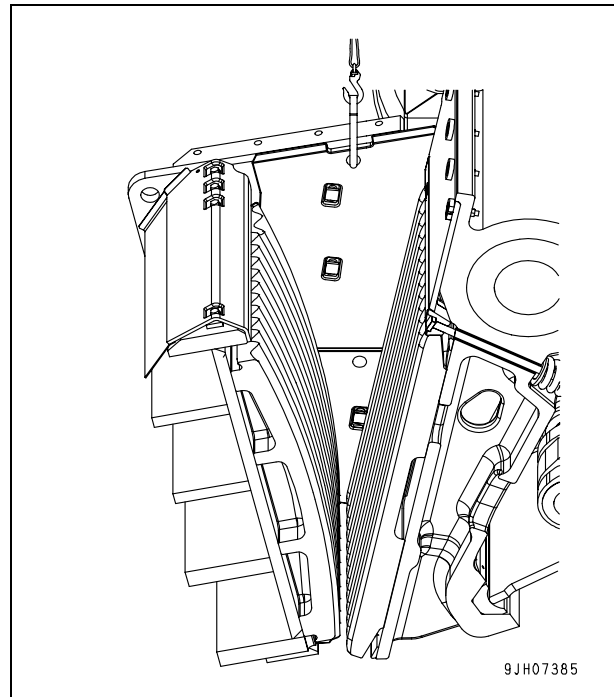
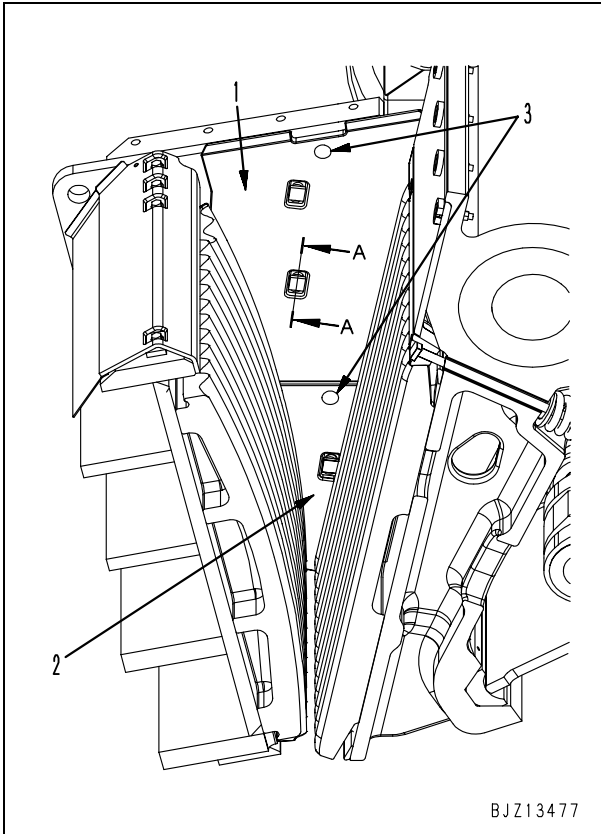
**▲ For details of the accessory tool, see "Crusher accessory tool" in Maintenance volume of the operation and maintenance manual.**

3. Fit the tool supplied with the machine to the lifting hole, then lift up vertically. If the load is at an angle, it may be difficult to remove.

Tools to use

Hook: Accessory tool No. 10

**▲ For details of the accessory tool, see "Crusher accessory tool" in Maintenance volume of the operation and maintenance manual.**

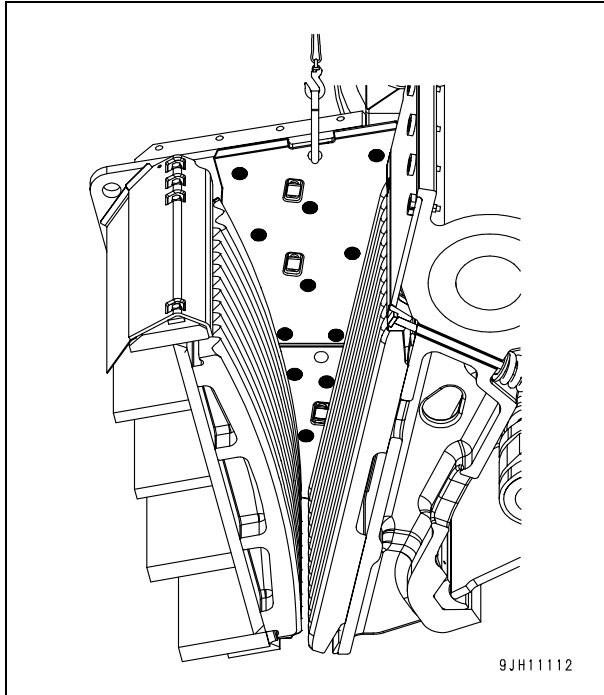


4. While lifting, hit the area around the cheek plate with a medium-sized hammer.  
(Hit the places marked ● in the diagram.)


Tool to use

Hammer: Accessory tool No. 17

▲ For details of the accessory tool, see “Crusher accessory tool” in Maintenance volume of the operation and maintenance manual.



5. When cheek plate (1) comes free, remove the mounting bolts and lift up.

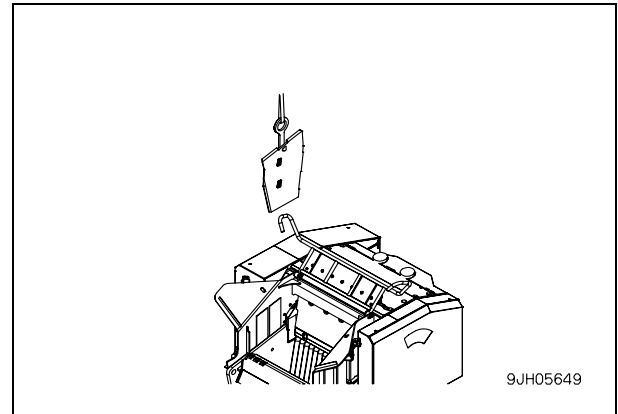
 Top cheek plate (1): **74.0 kg**

6. Repeat the same procedure to lift up bottom cheek plate (2).

 Bottom cheek plate (2): **36.0 kg**

7. After removing all the cheek plates, completely remove the soil and sand from the cheek plate fitting surfaces (front, rear, right and left).  
In particular, remove the soil and sand clogging both sides of the fixed jaw.

8. Insert new cheek plates in order from the underside along the fixed jaw and a guide of the side frame.



9. Tighten the cheek plate lock bolts.  
Top cheek plate (1): M24 x 2 (each side)  
Bottom cheek plate (2): M24 x 1 (each side)

Tools to use

Wrench: Accessory tool No. 1

Handle: Accessory tool No. 3

Extension: Accessory tool No. 4

Socket: Accessory tool No. 5

Wrench: Accessory tool No. 7

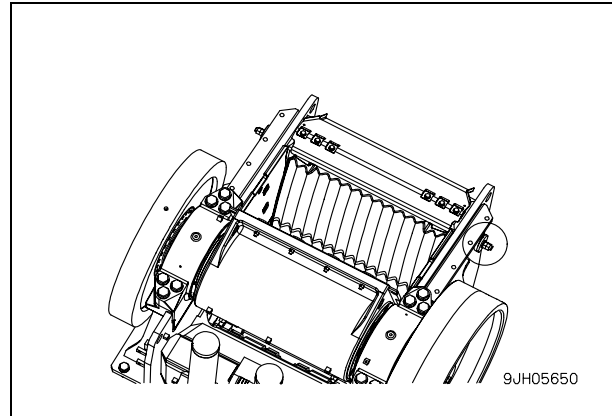
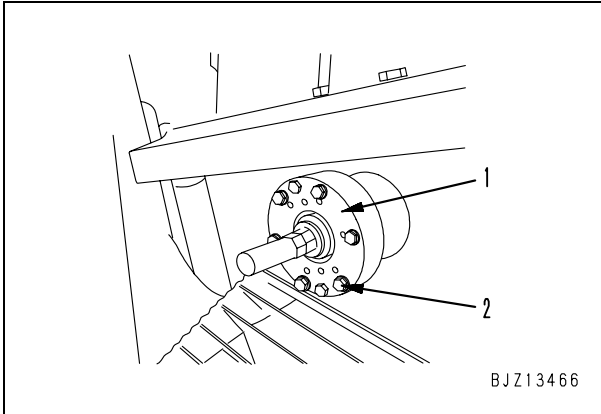
Pipe: Accessory tool No. 8

▲ For details of the accessory tool, see “Crusher accessory tool” in Maintenance volume of the operation and maintenance manual.



### Reversal or replacement of fixed jaw plate

**⚠** This machine uses cover assembly (1) with springs built into the fixed jaw plate wedge portion and swing jaw plate wedge portion. If bolts (2) of the front face of the cover are removed during disassembly, there is danger that the internal parts will fly out and cause injury.



**⚠** After removing the fixed jaw plate, completely remove soils, sand, etc. from the fixed jaw fitting surfaces (front frame and mount stopper upper surface). Unless removed completely, they may cause a backlash on the fixed jaw plate.

If the clearance is not even on the right and left sides, there will be a slippage from the swing jaw plate tip, which likely leads to premature wear or partial wear on the jaw plates.

1. Remove the cheek plate. For details, see "Replacement of cheek plate".
2. Remove the fixed jaw wedge bolt spring cover assembly, fixed jaw wedge bolt, and fixed jaw wedge block.

#### Tools to use

Wrench: Accessory tool No. 1

Handle: Accessory tool No. 3

Socket: Accessory tool No. 5

Wrench: Accessory tool No. 7

Pipe: Accessory tool No. 8

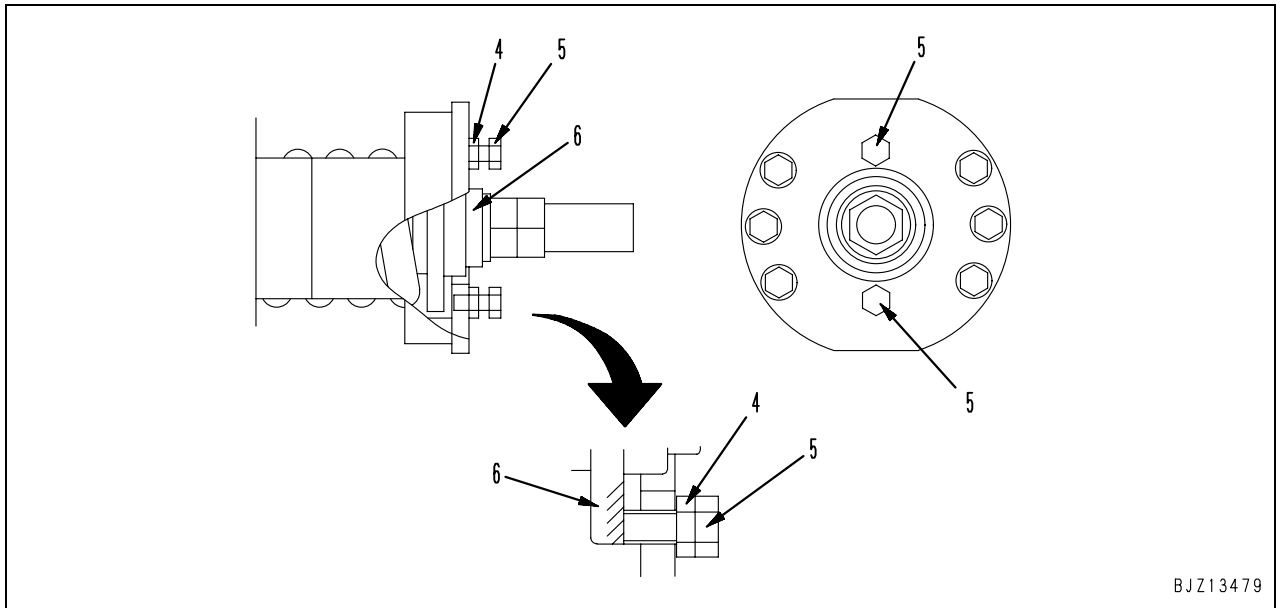
Adjustable wrench: Accessory tool No. 12

Wrench: Accessory tool No. 13

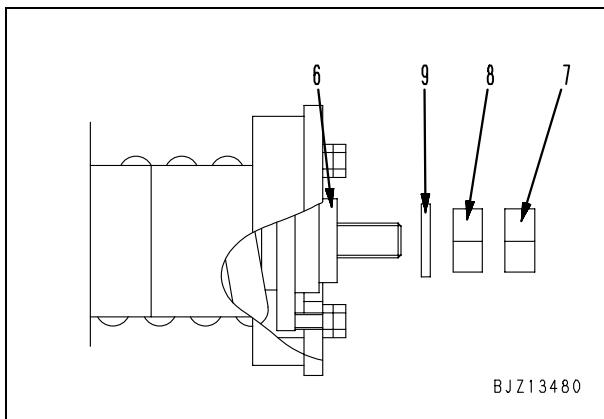
**⚠** For details of the accessory tool, see "Crusher accessory tool" in Maintenance volume of the operation and maintenance manual.

Remove the fixed jaw wedge bolt spring cover assembly as follows.

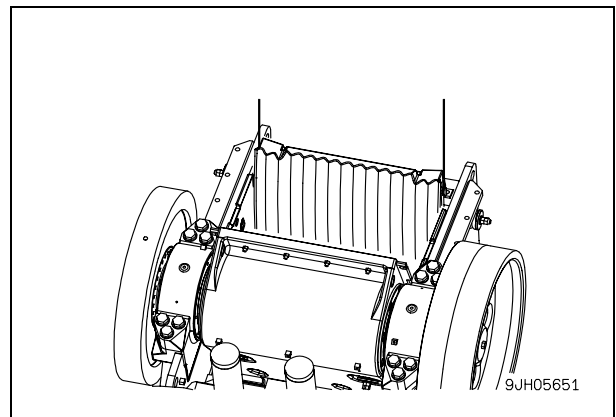
- 1) Loosen locknut (4) and tighten until spring holder push bolt (5) contacts spring holder (6).



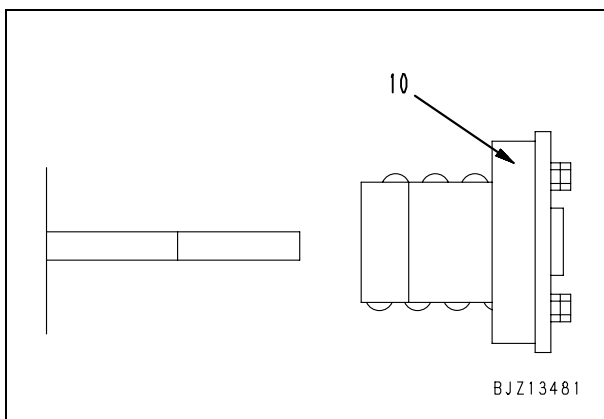
- 2) Remove wedge bolt locknut (7), nut (8), and washer (9).



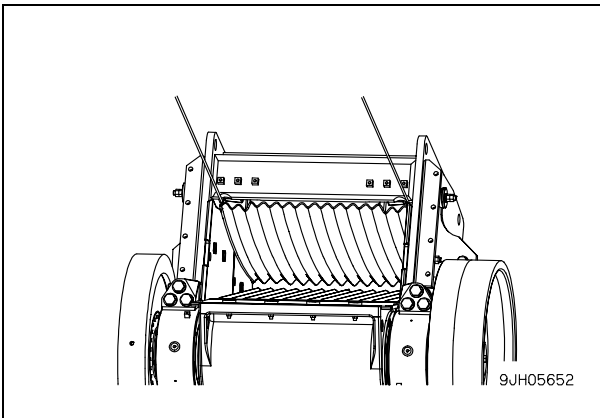
3. Lift up the fixed jaw plate with a wire rope.
  - When reversing the fixed jaw plate, lower it on to a block once. Then hook a wire rope on the other side to lift it up and insert it into the crusher frame.
  - When replacing the worn fixed jaw plate, lower it on to a block once. Then lift up a new fixed jaw plate with a wire rope and insert it into the crusher frame.



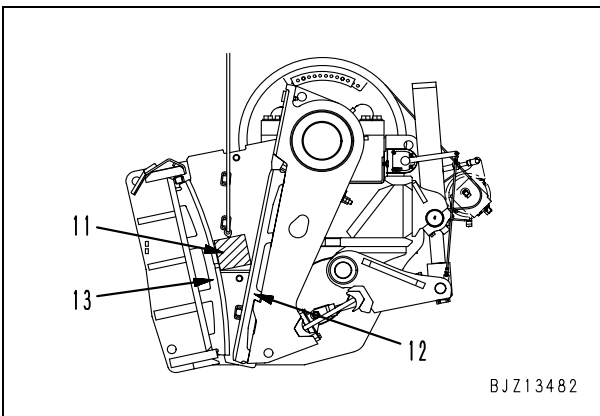
- 3) Remove spring cover assembly (10) and raise it with wire.



4. Take measurements of the clearance on both sides of fixed jaw plate, and position the fixed jaw plate and the crusher frame so that both centers are aligned.

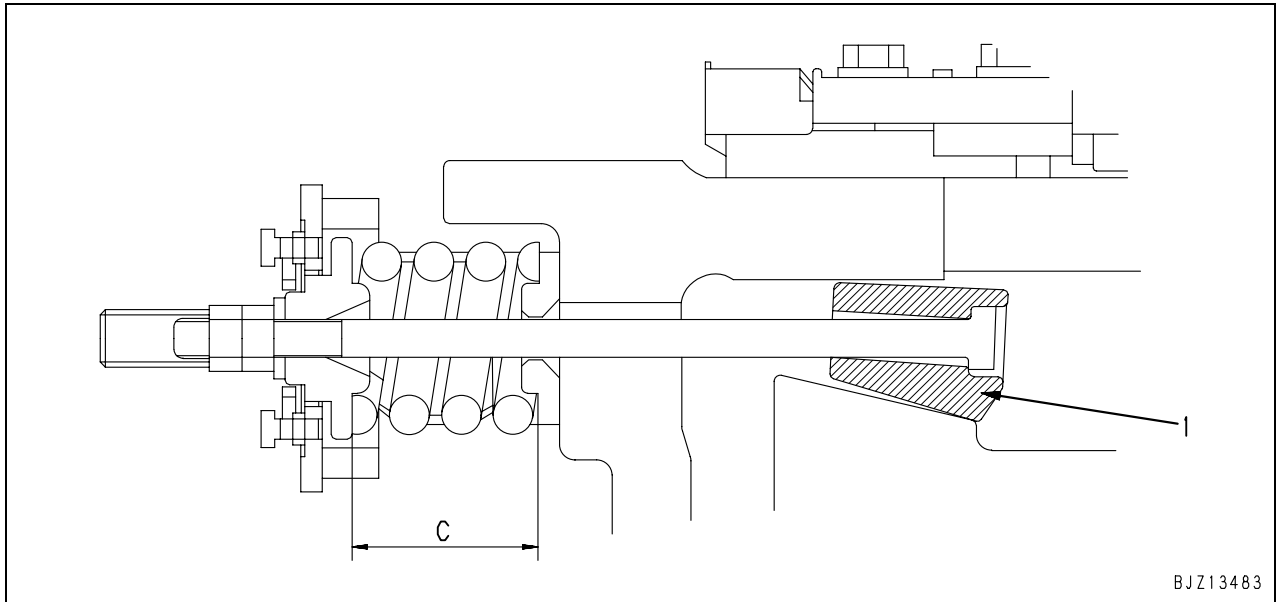


5. If fixed jaw (13) is not in tight contact with the frame, insert wooden block (11) (or equivalent object) between fixed jaw (13) and swing jaw (12).
6. Push out swing jaw (12) and push fixed jaw (13) against the front frame. For details, see "Outlet clearance adjusting method".

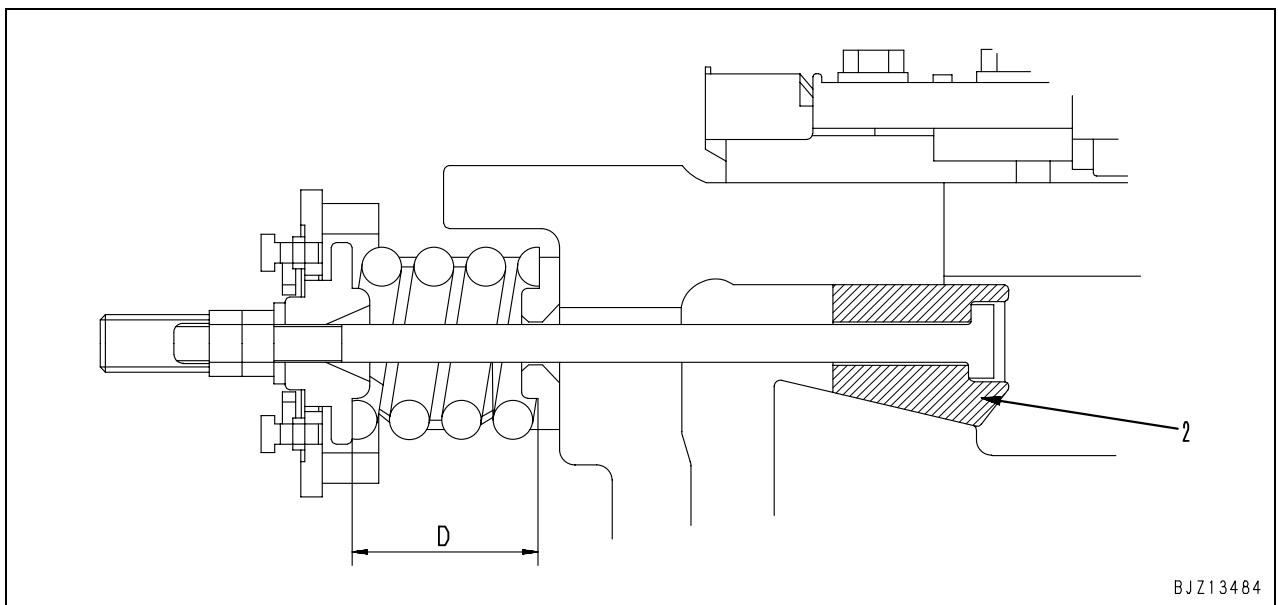


7. Install the fixed jaw wedge, fixed jaw wedge bolt, and fixed jaw wedge bolt spring cover assembly. When the fixed jaw wedge is installed to the fixed jaw plate, the wedge may not sit well with the plate due to burrs remaining on the contact face of either parts. In that case, remove the burrs before installing the wedge. If it is left unstable with burrs remaining, the wedge securing bolt may loosen during the initial running-in period of crushing operation and the machine may be damaged.

- Condition of wedge sitting (1): Unstable

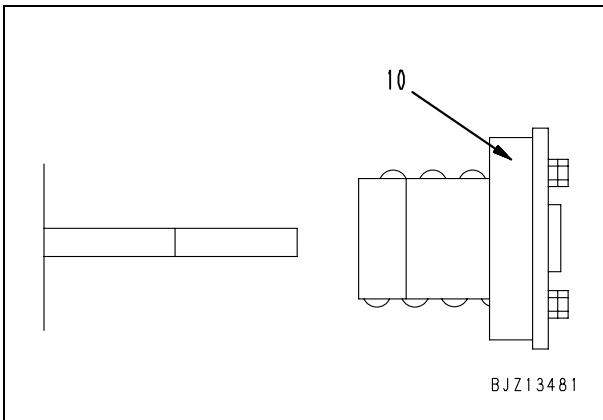


- Condition of wedge sitting: After initial running-in period of crushing operation  
Spring set length increases.  $D > C$

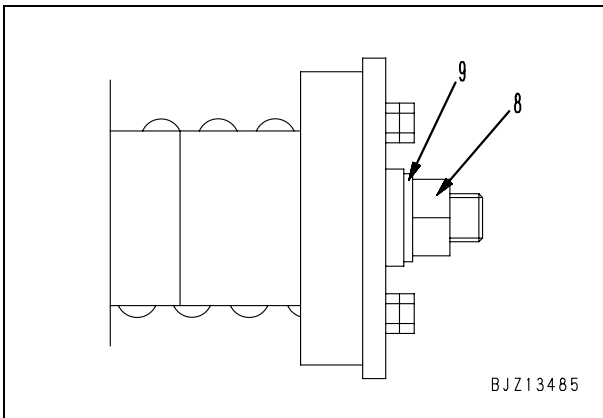


Install the fixed jaw wedge bolt spring cover assembly as follows.

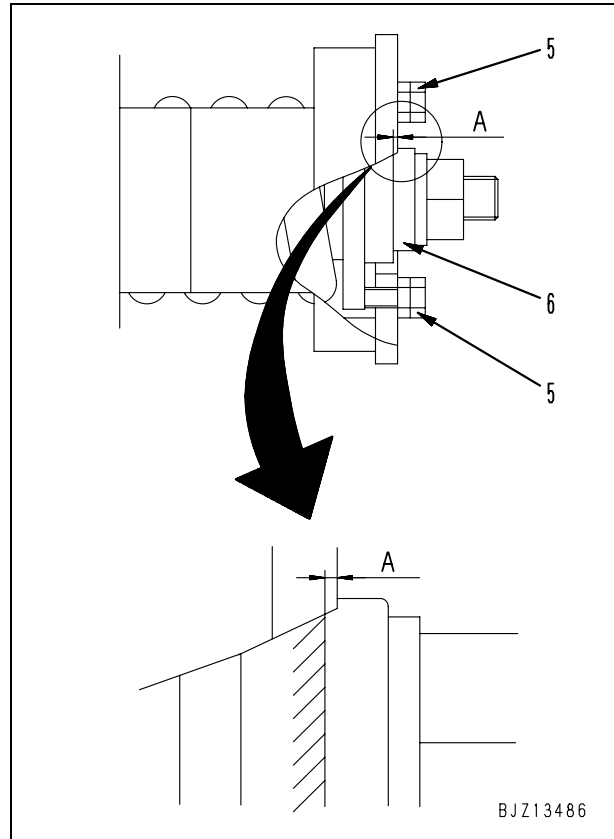
- 1) Raise spring cover assembly (10) with wire and insert into the wedge bolt.



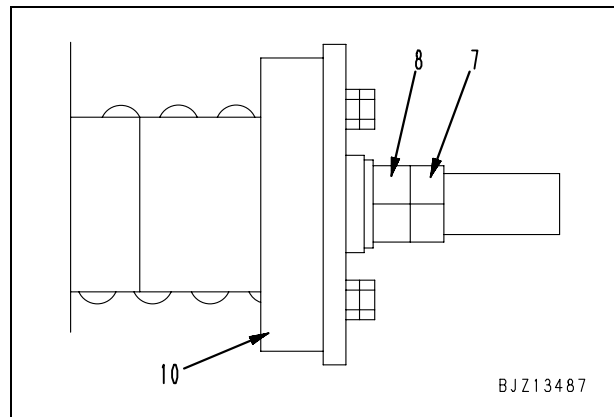
- 2) Install wedge bolt nut (8) and washer (9). At this point, do not apply the tightening torque to nut (8).



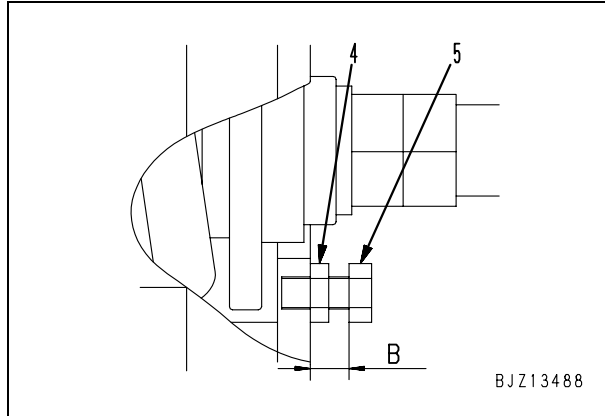
- 3) Check that spring holder (6) is being pushed into the correct position. (The width of (A) should be 0 – 2 mm.) If it is not being pushed in to the correct position, turn 2 bolts (5) to adjust the holder.



- 4) Tighten wedge bolt locknut (7). At this time, secure nut (8) so that it will not rotate together with wedge bolt locknut (7). In addition, secure spring cover assembly (10), too, so that it will not rotate together with wedge bolt locknut (7) and interfere with the swing jaw.



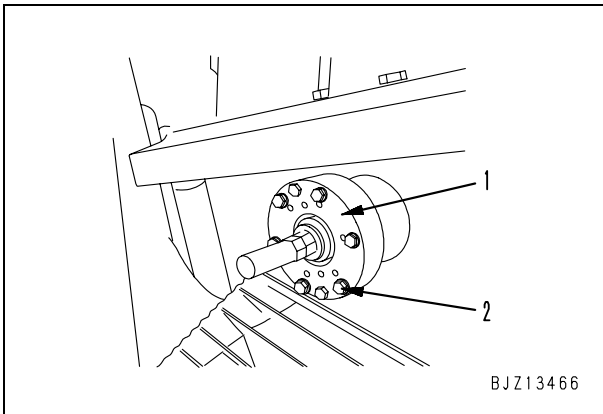
- 5) Loosen spring holder push bolt (5) so that dimension (B) becomes 15 mm, then tighten locknut (4).
- 6) Repeat the procedure in Step 3) to check that spring holder (6) is being pushed in to the correct position. If it is not the specified value, adjust again.



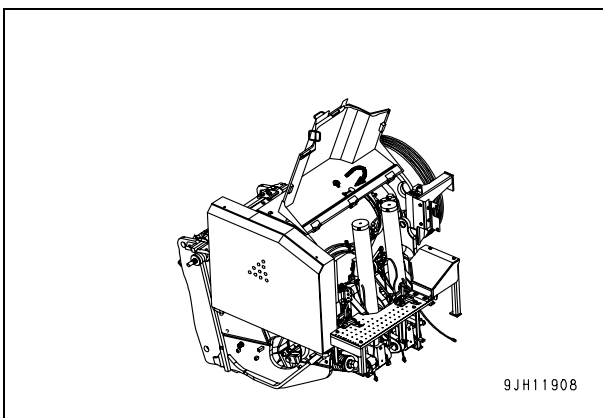
8. Install the cheek plates.

**Reversal or replacement of swing jaw plate**

**⚠ This machine uses cover assembly (1) with springs built into the fixed jaw plate wedge portion and swing jaw plate wedge portion. If bolts (2) of the front face of the cover are removed during disassembly, there is danger that the internal parts will fly out and cause injury.**



1. Secure the crusher inspection hatch in the open position.



**⚠ When pushing out the swing jaw plate wedge from the rear of the swing jaw, to prevent the movable wedge from falling, always leave one of the swing jaw plate wedge bolts inserted.**

2. Remove the swing jaw wedge bolt spring cover assembly (2 places), then remove 1 swing jaw wedge bolt on one side. After removing the swing jaw wedge spring cover assembly, fit the nut and leave the bolt inserted.

Tools to use

Wrench: Accessory tool No. 1

Hook: Accessory tool No. 6

Wrench: Accessory tool No. 7

Pipe: Accessory tool No. 8

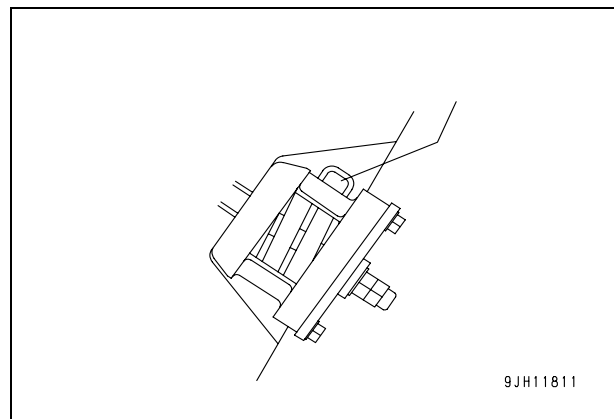
Adjustable wrench: Accessory tool No. 12

Wrench: Accessory tool No. 13

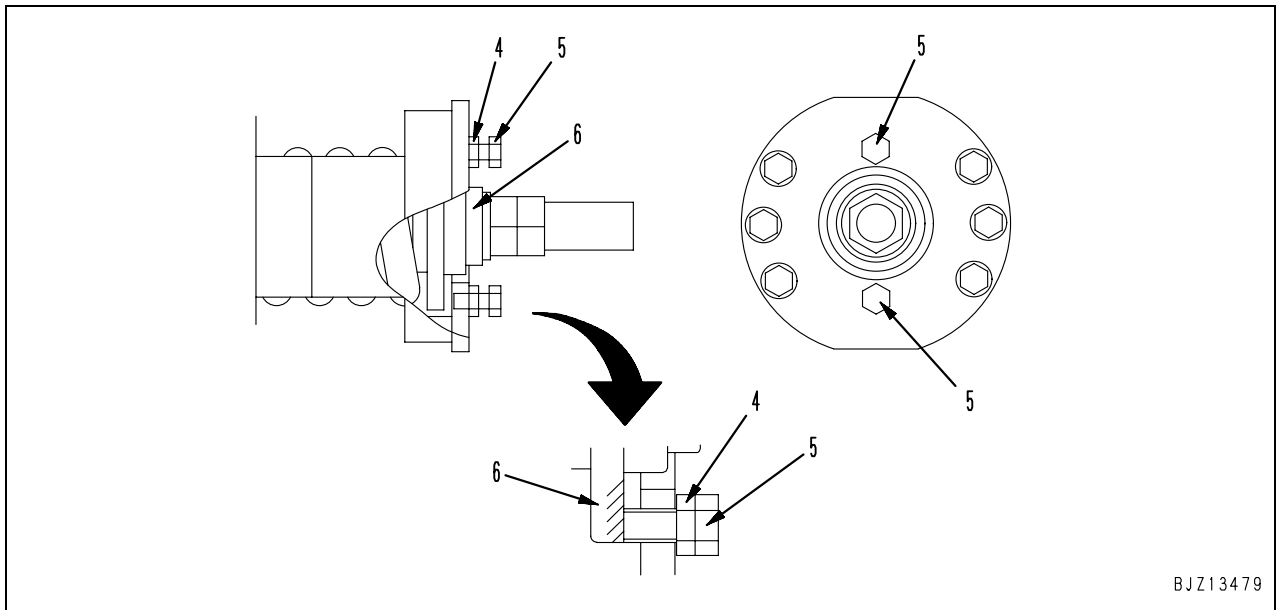
**⚠ For details of the accessory tool, see "Crusher accessory tool" in Maintenance volume of the operation and maintenance manual.**

Remove the swing jaw wedge bolt spring cover assembly as follows.

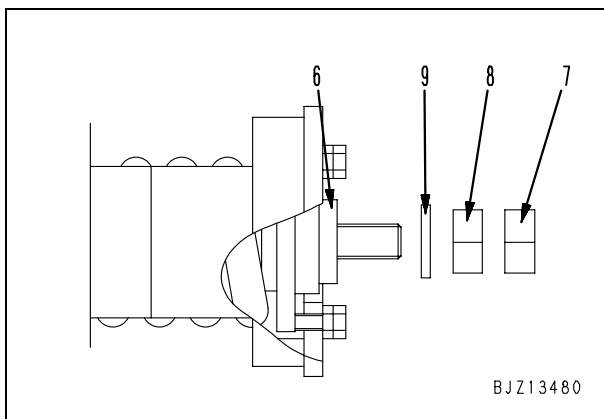
- 1) Lift the spring cover assembly lightly with wire, taking care not to drop it.



- 2) Loosen locknut (4) and tighten until spring holder push bolt (5) contacts spring holder (6).

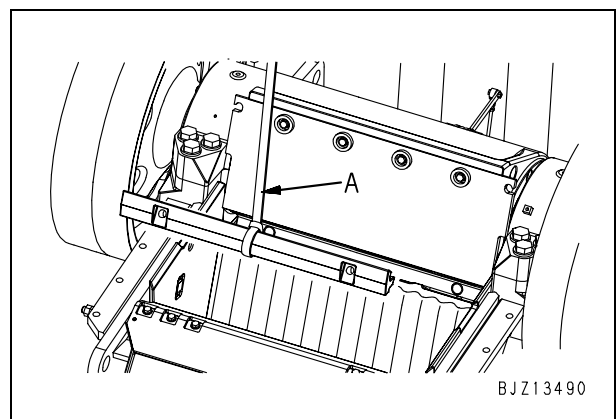


- 3) Remove wedge bolt locknut (7), nut (8), and washer (9).

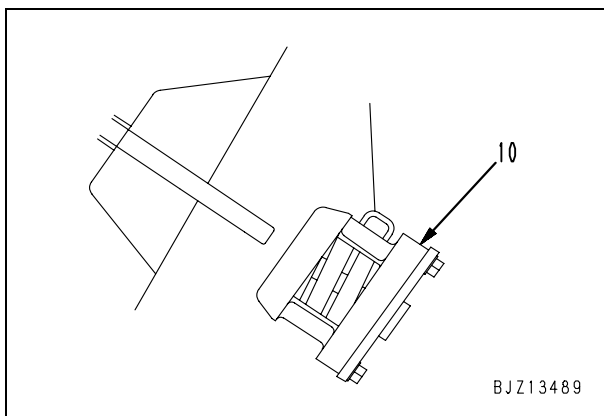


★ To make it easier to fit lifting wire (A) to the swing jaw plate wedge, push the swing jaw plate wedge out approximately 30 mm.

3. Check that the swing jaw wedge is completely loose, fit lifting wire (A) to the center portion, then remove the temporarily installed bolts and nuts, and raise the wedge.




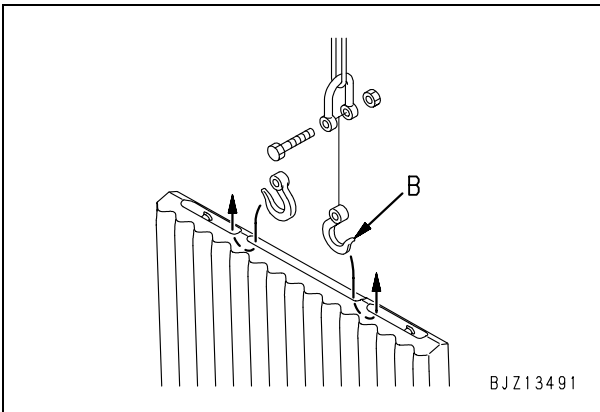
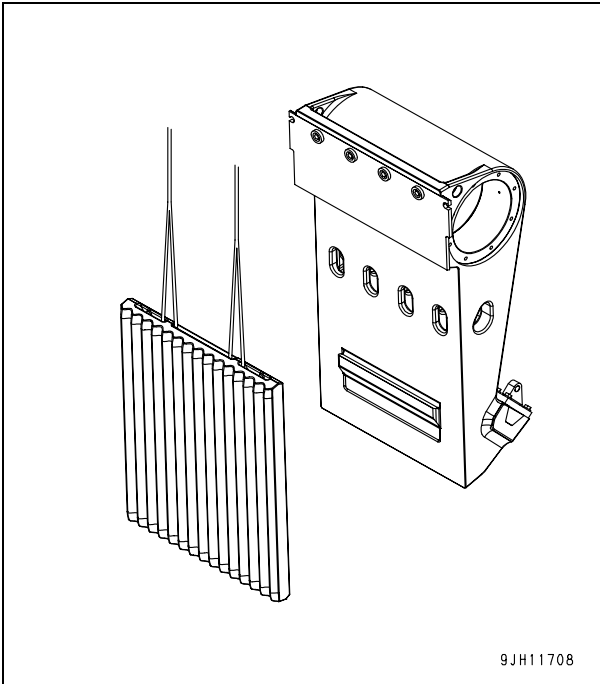
- 4) Remove spring cover assembly (10) and raise it with wire.





4. Fit swing jaw lifting hook (B) to the top surface of the swing jaw, then raise it.

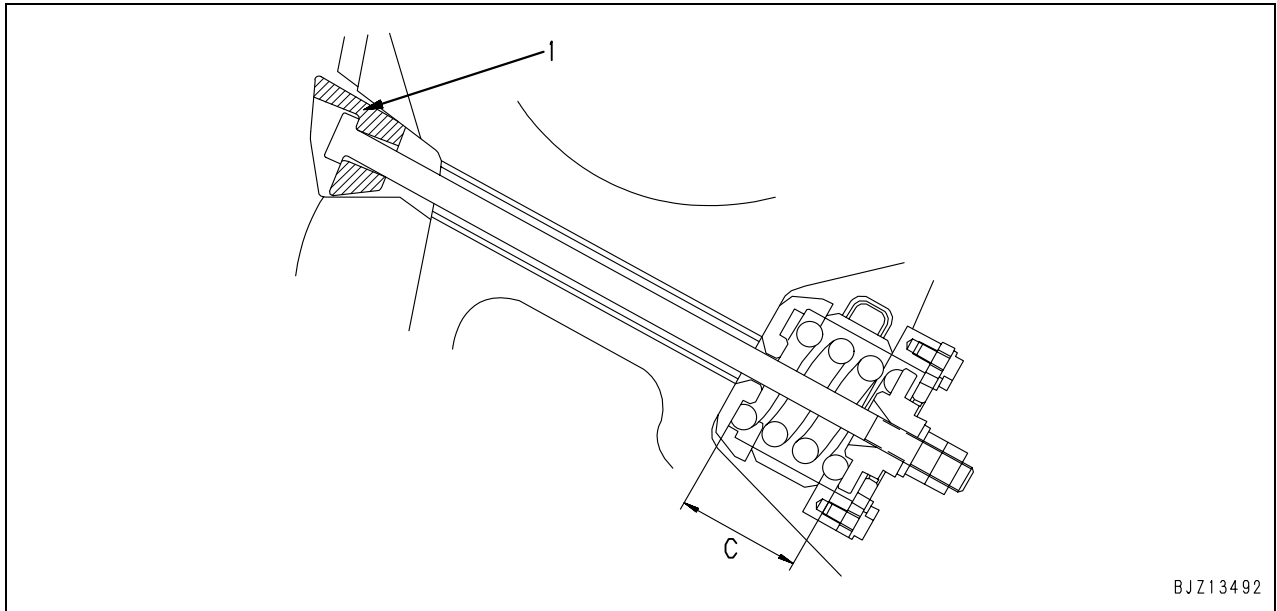
 Swing jaw: **735 kg**



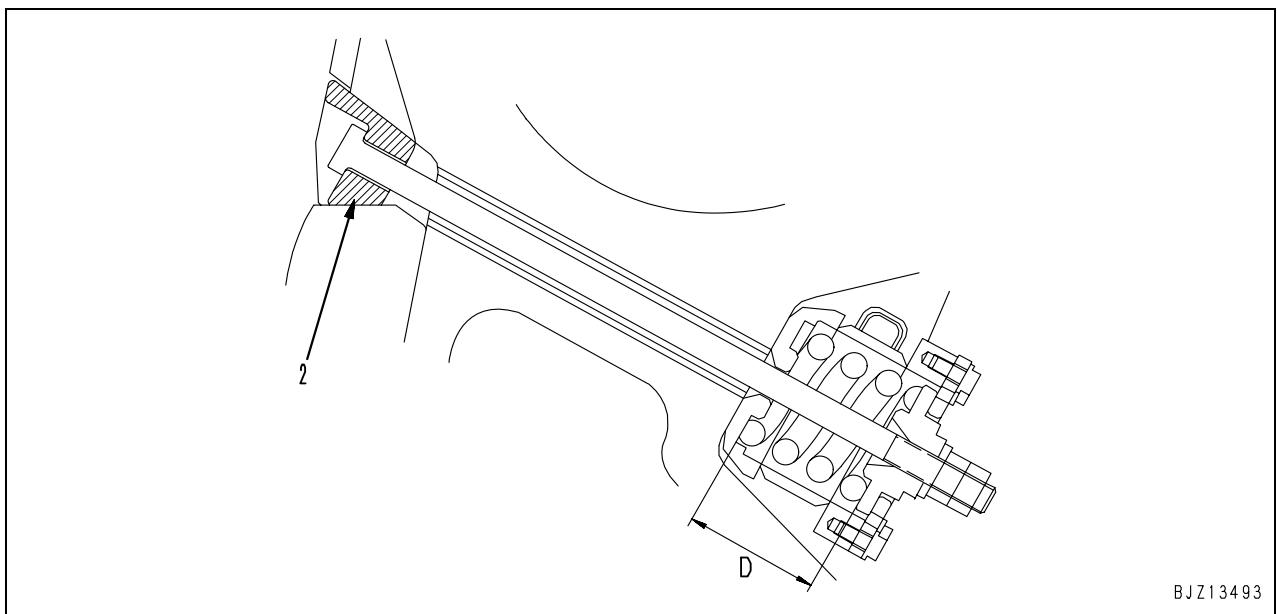
**⚠ After removing the swing jaw plate, completely remove soils, sand, etc. from the swing jaw plate fitting surfaces (swing jaw, each upper surface of swing jaw plate mount stopper and transverse stopper piece). If not removed completely, they may cause a backlash on the swing jaw plate.**

- When turning over, lower the swing jaw plate on top of a stand, then fit the wire to the hook on the opposite side, and insert again in the crusher frame.
- When replacing the swing jaw plate, lower the worn plate on to a block once. Lift up a new swing jaw plate with a wire rope and insert it into the crusher frame.

5. Install the swing jaw wedge and swing jaw wedge bolt.
- When the swing jaw wedge is installed to the swing jaw plate, the wedge may not sit well with the plate due to burrs remaining on the contact face of either parts. In that case, remove the burrs before installing the wedge. If it is left unstable with burrs remaining, the wedge securing bolt may loosen during the initial running-in period of crushing operation and the machine may be damaged.
- Condition of wedge sitting (1): Unstable

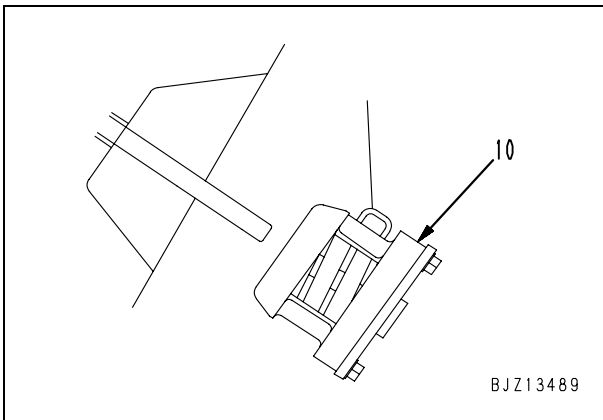


- Condition of wedge sitting (2): After initial running-in period of crushing operation  
Spring set length increases.  $D > C$

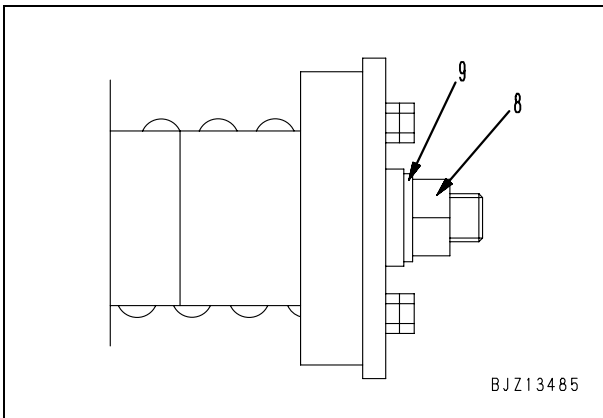


Install the swing jaw wedge bolt spring cover assembly as follows.

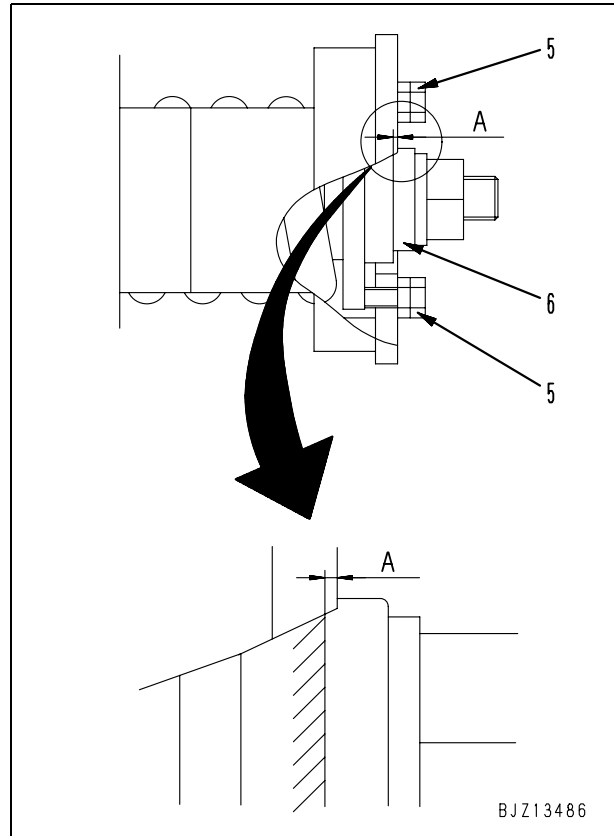
- 1) Raise spring cover assembly (10) with wire and insert into the wedge bolt.



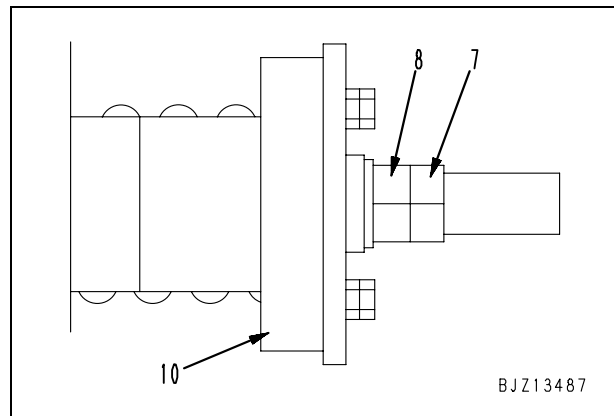
- 2) Install wedge bolt nut (8) and washer (9). At this point, do not apply the tightening torque to nut (8).



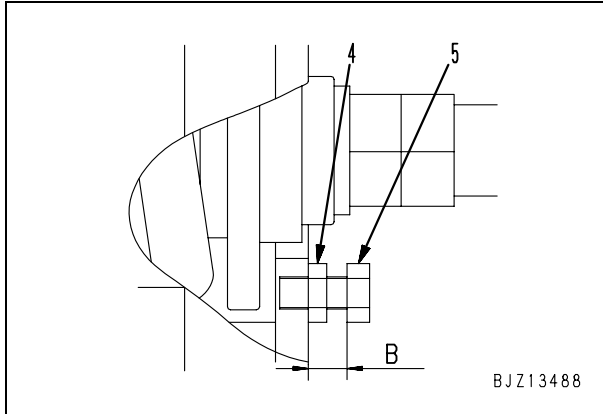
- 3) Check that spring holder (6) is being pushed into the correct position. (The width of (A) should be 0 – 2 mm.) If it is not being pushed in to the correct position, turn 2 bolts (5) to adjust the holder.



- 4) Tighten wedge bolt locknut (7). At this time, secure nut (8) so that it will not rotate together with wedge bolt locknut (7). In addition, secure spring cover assembly (10), too, so that it will not rotate together with wedge bolt locknut (7) and interfere with the swing jaw.

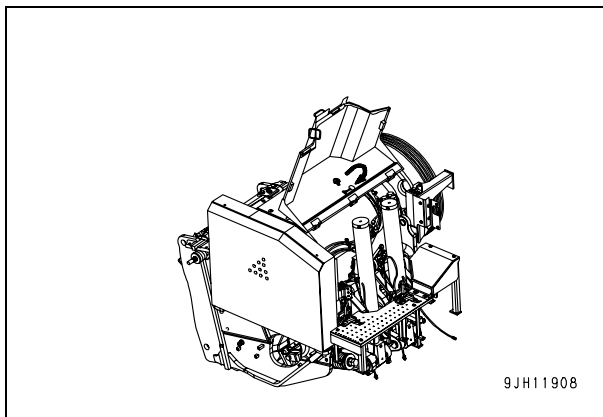


- 5) Loosen spring holder push bolt (5) so that dimension (B) becomes 15 mm, then tighten locknut (4).
- 6) Repeat the procedure in Step 3) to check that spring holder (6) is being pushed in to the correct position. If it is not the specified value, adjust again.

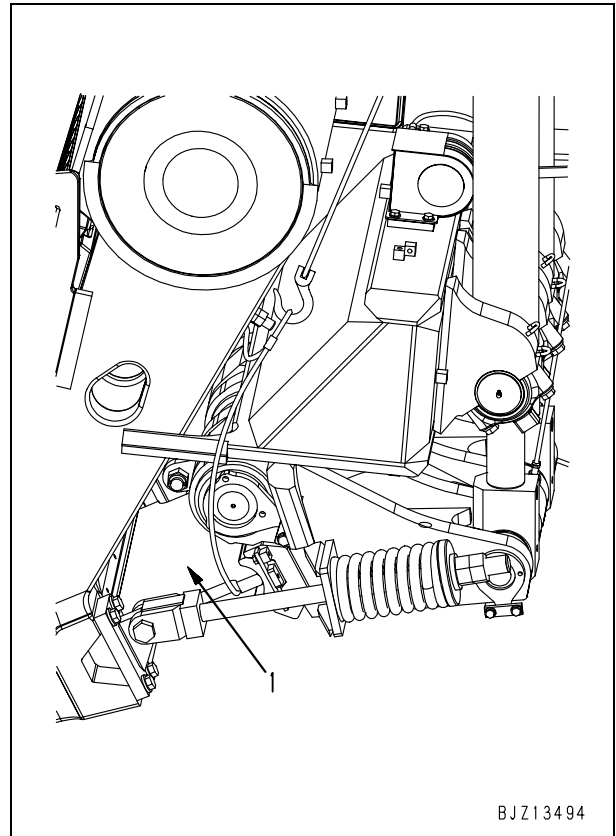


### Replacement of toggle plate

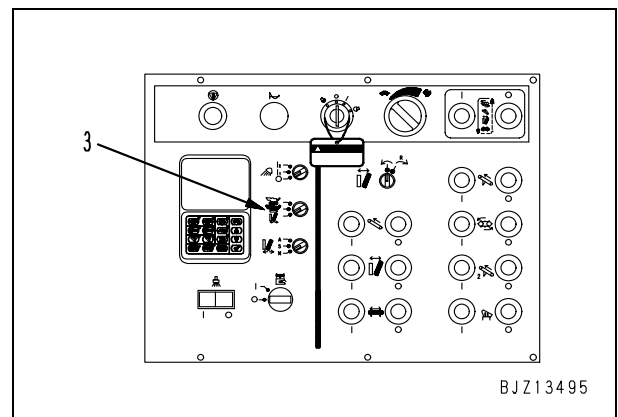
1. Secure the crusher inspection hatch in the open position.
2. Remove the dust prevention rubber plate at the side of the crusher. (left and right)



3. Wrap a nylon sling around toggle plate (1) and sling it.

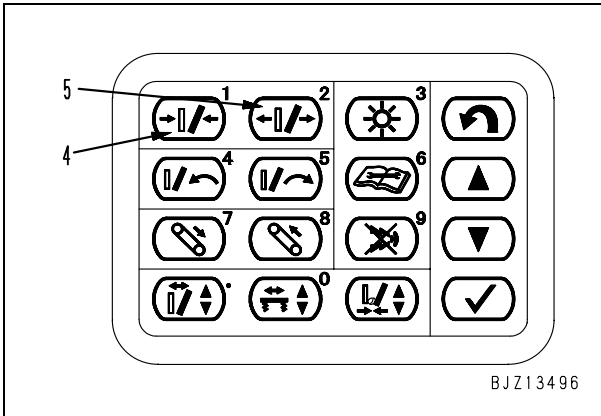


4. Check that there is no one inside the machine, then start the engine.
5. Set mode selector switch (3) to the inspection position.



6. Attach a warning tag to announce to those concerned that the machine is now worked on.
7. Press crusher clearance decrease switch (4) on the control box, and move the fixed link forward until the fixed jaw plate contacts the fixed jaw plate.

- If the tooth plates come into contact with each other, stop the engine.



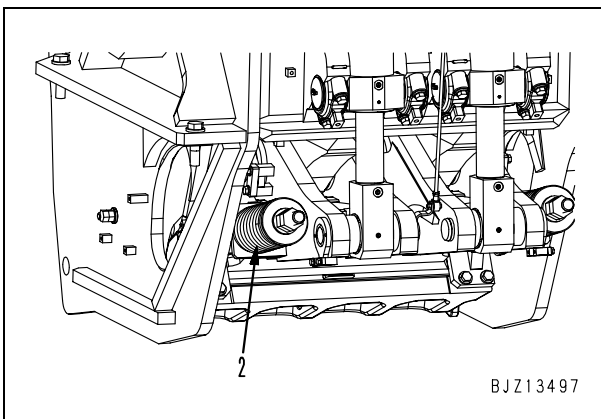
BJZ13496

**⚠ It is extremely dangerous if you go on to the next work without completely loosening tension spring (2), so remove tension spring nut (M42) from the rod.**

- Loosen tension spring (2) (both ends: M42) completely.

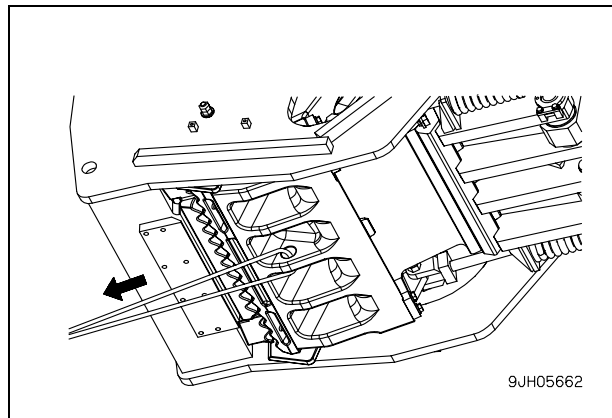
- (1) Wrench: Accessory tool No. 2
- (2) Pipe: Accessory tool No. 8

**⚠ For details of the accessory tool, see "Crusher accessory tool" in Maintenance volume of the operation and maintenance manual.**



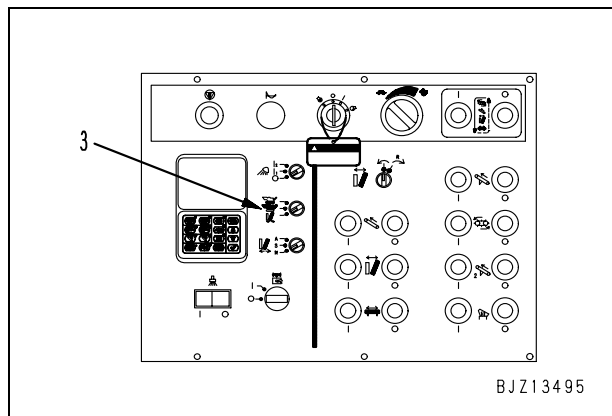
BJZ13497

- Pass the wire through the hole in the bottom of the swing jaw, then use a chain block to pull the crusher case and the track frame and fix them in position.



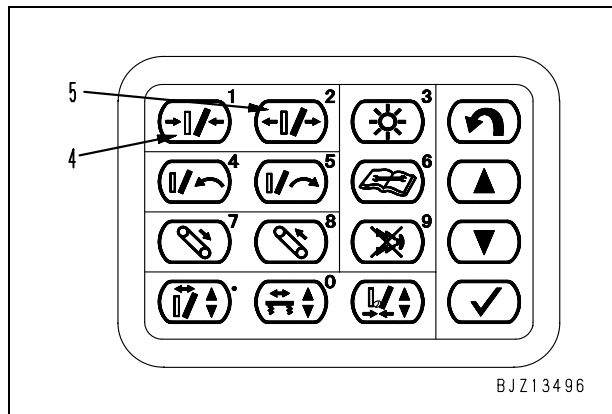
9JH05662

- Check that there is no one inside the machine, then start the engine.
- Set mode selector switch (3) to the inspection position.



BJZ13495


- Attach a warning tag to announce to those concerned that the machine is now worked on.
- Press crusher clearance increase switch (5) on the control box, and pull back the fixed link slowly.

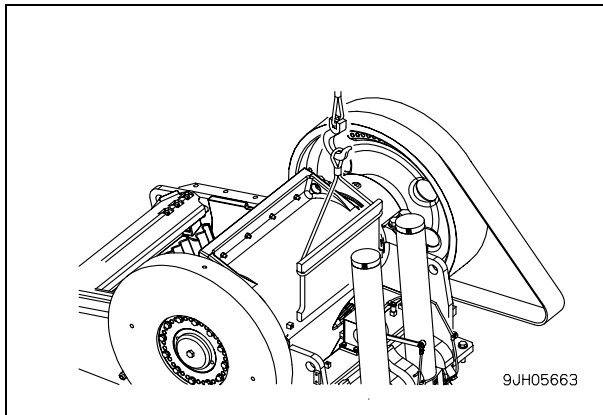


BJZ13496

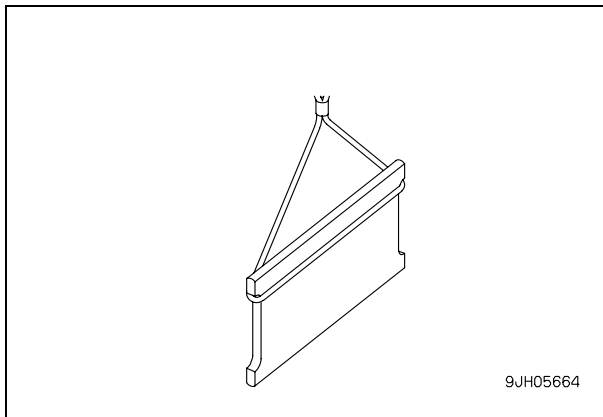
- Stop the engine.

16. Take out the toggle plate.

 Toggle plate: **144 kg**

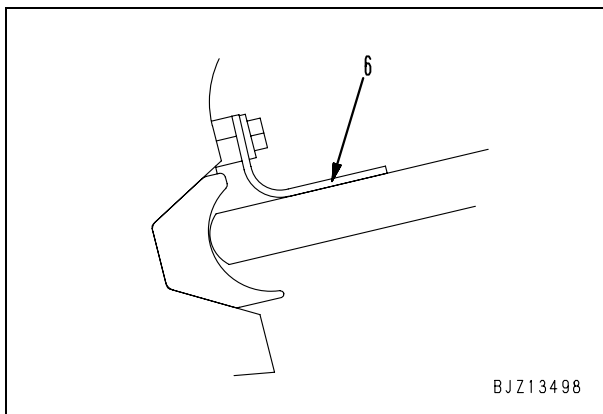


17. Wrap a nylon sling around the new toggle plate.



18. Lower the toggle plate and align it with the center of the seat at the fixed link end.

19. Loosen the chain block fixed in Step 10, then position it so that the center of the swing jaw contact face of the toggle plate is aligned with the center of the swing jaw toggle seat contact face. When doing this, be careful not let rubber cover (6) on top of the toggle plate get caught.



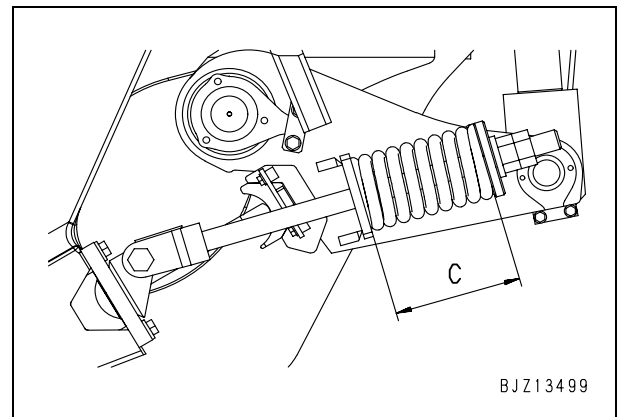
20. Remove the nylon sling fitted to the toggle plate.

21. Install the tension spring and tighten it to the specified tightening length.

Set tightening length (C) of the tension spring so that it is 258 – 260 mm when the lock cylinder length = Min (maximum clearance at crusher addendum).

22. Loosen the chain block installed to the bottom of the swing jaw and remove the wire.

23. Close the crusher inspection hatch.



24. Install the dustproof rubber plate to the side of the crusher.

25. Check crusher outlet clearance and adjust it to a desired clearance.

For adjusting the crusher outlet clearance, see the section of "Check and adjustment of outlet clearance".

**Replacement of toggle seat**

**⚠ Before replacing the toggle seat, follow the items below without fail.**

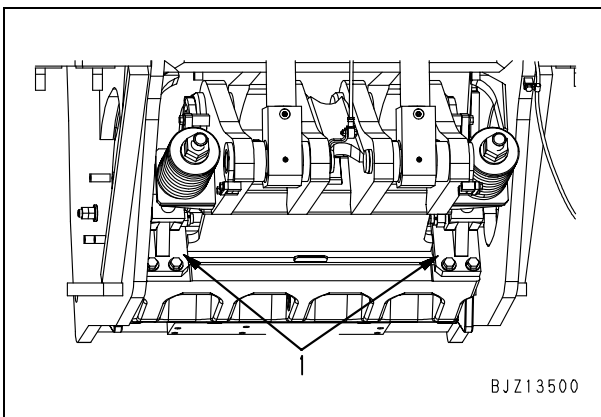
After long use, the toggle seat becomes deformed, so it may get stuck to the fixed link or swing jaw. In this case, weld a hook to the center of the toggle seat and pull out the worn toggle seat.

In addition, if necessary, take action with the gasket or other part as necessary.  
(Toggle seat material: Carbon steel)

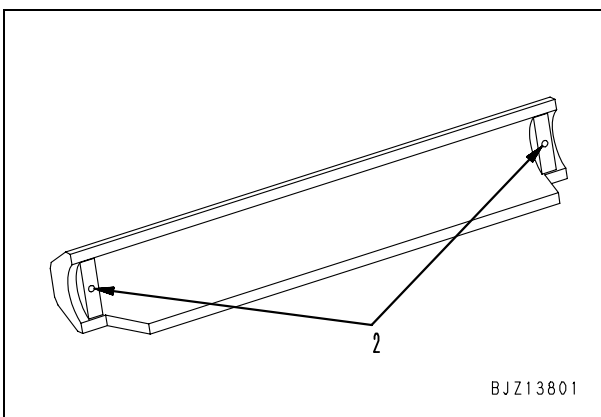
**⚠ There is no commonality of the toggle seats, so when installing, be careful not to mistake the assembly combinations.**

**⚠ To prevent the lock link toggle seat from falling, carry out the operation with the lock cylinder extended to the maximum.**


1. Start with removing the toggle plate beforehand, referring to the section dealing with replacement of the toggle plate in this manual.
2. Remove toggle seat holder plates (1) of the swing jaw at both ends.  
(Bolts to use: M20 x 8)

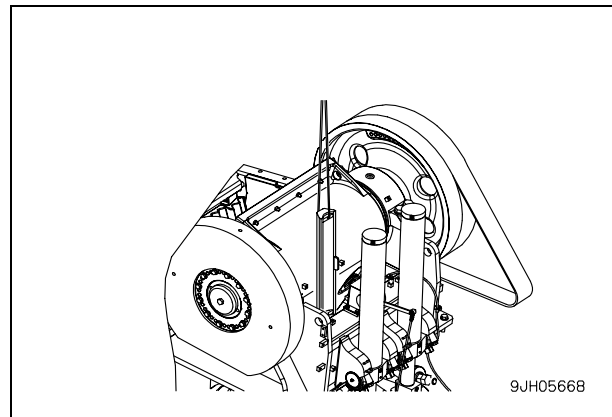


3. Screw in eyebolts (M12) into tap hole (2) at both ends of the toggle seat and fit the wire.

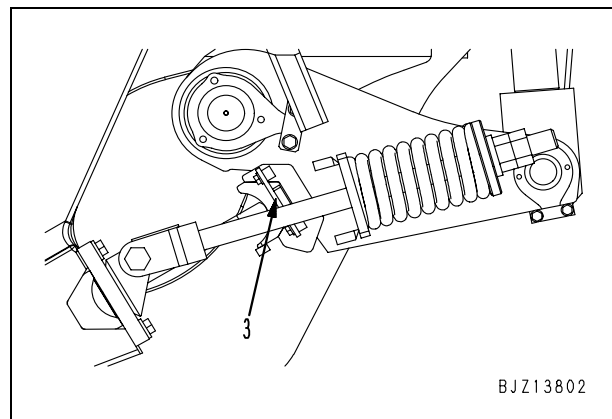


4. Raise the toggle seat.

 Toggle seat at swing jaw end: **44.5 kg**



5. Remove only one toggle seat holder plate (3) at the fixed link end.



6. Screw in an eyebolt (M12) on the side from which a holding plate has been removed and lift up the toggle seat provisionally, taking care not to let it fall.

7. When the work of lifting up the toggle seat provisionally has been completed, proceed to remove a toggle seat holding plate on the opposite side.

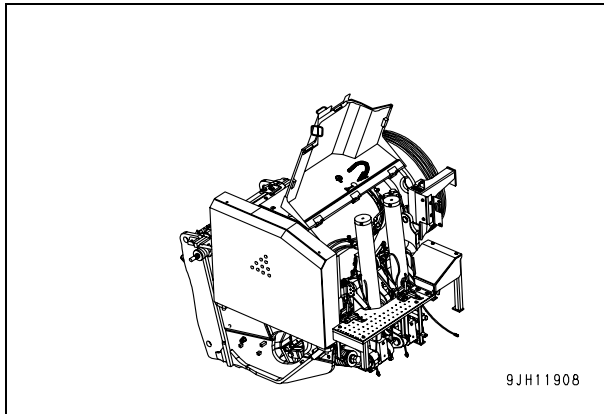
8. Insert eyebolts into both ends of the lock link toggle seat, then raise the toggle seat.

 Lock link toggle seat: **41.7 kg**

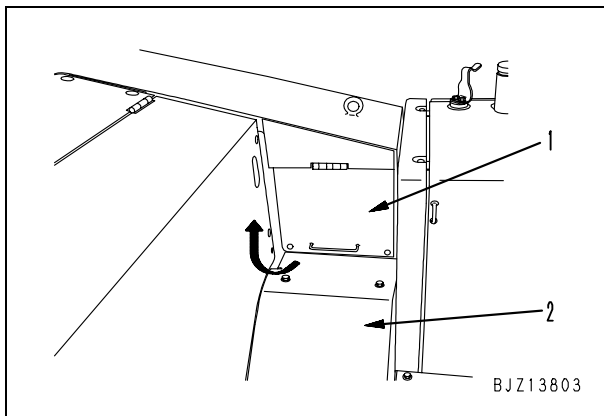
9. Insert new toggle seats in the reverse order of the works explained above.

**Replacement of crusher driving V-belt**

1. Secure the crusher inspection hatch in the open position.



2. Loosen the bolts of flywheel cover (1) at the side of the top step to release it, and at the same time, remove motor cover (2).



3. Loosen locknuts (4) and (5) of crusher V-belt adjustment turnbuckle (3). (Locknut (5) turns in the opposite direction to normal.)

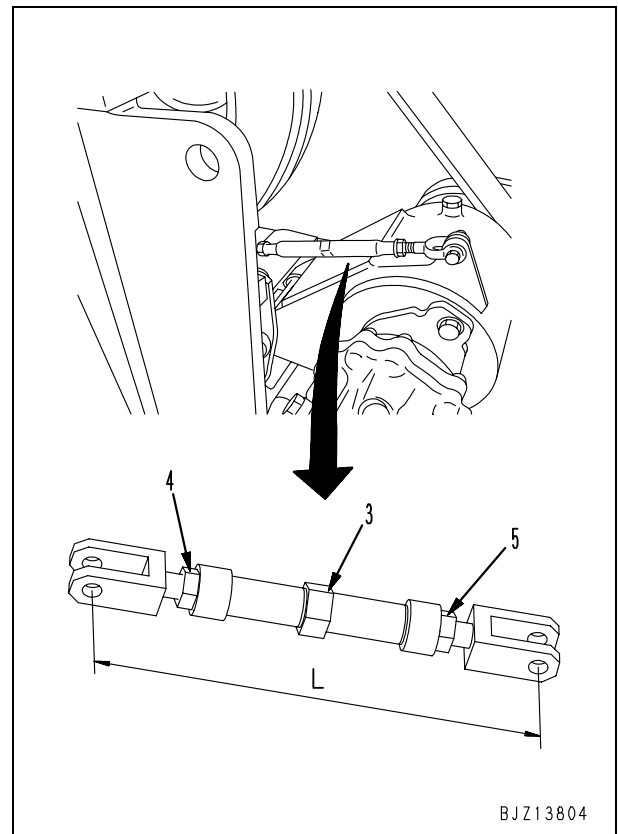
Tools to use

Wrench: Accessory tool No. 1

Wrench: Accessory tool No. 11

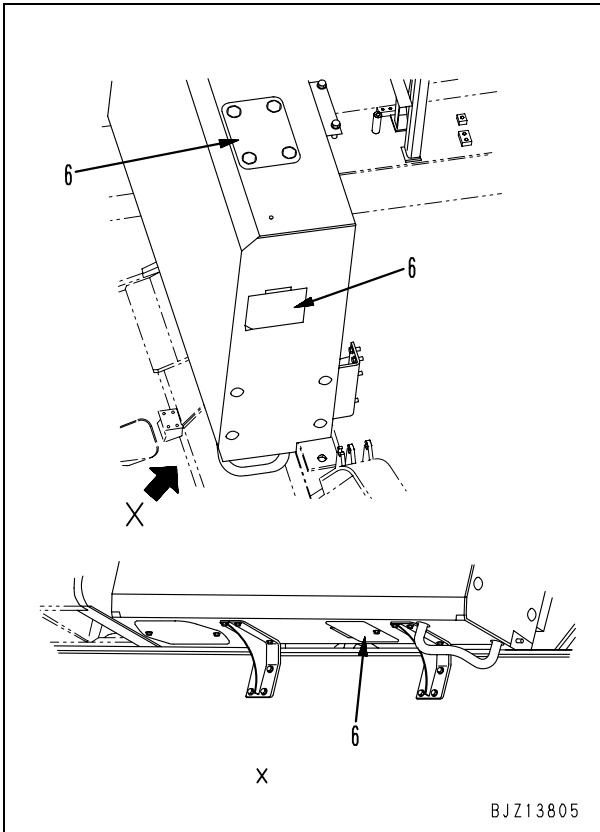
- ▲ For details of the accessory tool, see "Crusher accessory tool" in Maintenance volume of the operation and maintenance manual.**

4. Turn the crusher V-belt adjustment turnbuckle (3) to reduce distance (L) between the yokes.





5. Loosen the bolts of covers (6) at the top, rear, and bottom of the flywheel cover on the left. Remove the V-belts, starting from the outside, then remove them from the opening at the top of the crusher motor.



6. Fit new belts to the flywheel in the opposite order from removal, then turn crusher V-belt adjustment turnbuckle (3) to extend distance (L) between the yokes and adjust the V-belt tension.  
(For details of the method of adjusting the V-belt tension, see "Adjusting tension of crusher drive V-belt".)
7. After completing adjustment of the V-belt tension, tighten locknuts (4) and (5).
8. Return the cover to its original position.

## Adjusting tension of crusher drive V-belt

- ⚠ If the V belt tension is not normal, the V belts will likely slip when the crusher starts or stops, and shorten the service life of the V belts drastically.

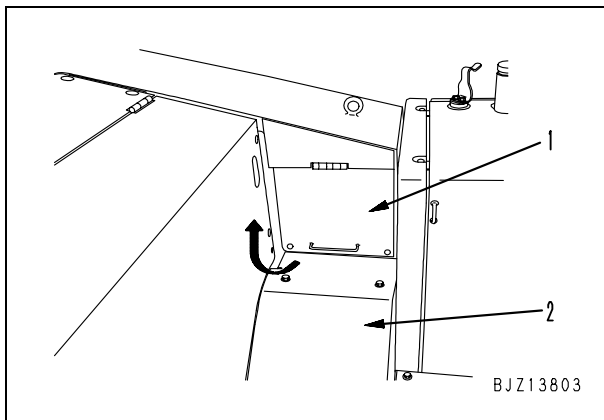
Open the V-belt inspection cover, then adjust the V-belt tension as follows.

Tools to use

Handle: Accessory tool No. 14 or 15

Box wrench: Accessory tool No. 16

- ⚠ For details of the accessory tool, see “Crusher accessory tool” in Maintenance volume of the operation and maintenance manual.



### Guideline when checking V-belt tension

The deflection should be approx. 15 mm when 1 belt is pressed with a finger force of approx. 6 – 7 kg. If the V-belt makes a slipping sound when the crusher is started or stopped, use the following procedure to adjust to the correct belt tension.

### V belt tension adjusting method

The V belt tension may be changed by adjusting the turnbuckle located behind the crusher motor.

After the adjustment, be sure to tighten the locknut.

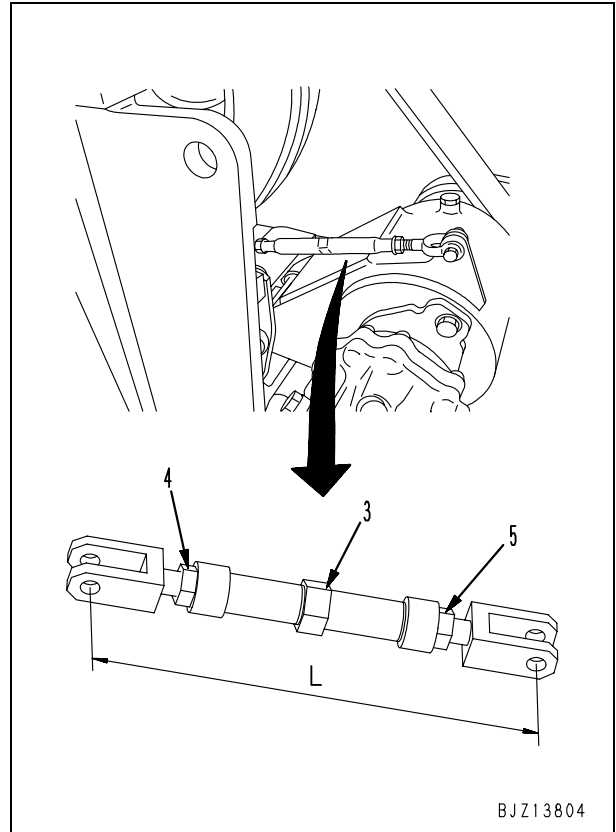
1. Open the V-belt inspection window.
2. Loosen locknuts (4) and (5) of crusher V-belt adjustment turnbuckle (3). (Locknut (5) turns in the opposite direction to normal.)

Tools to use

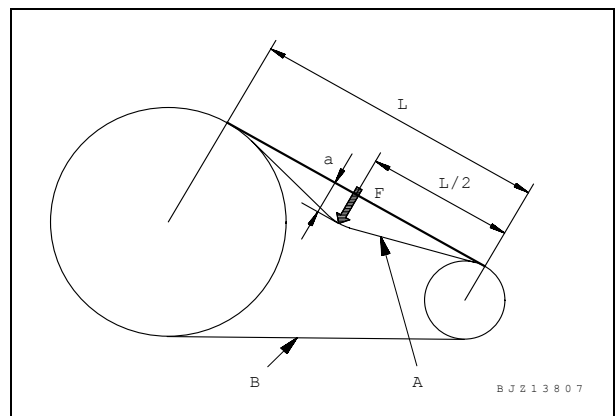
Wrench: Accessory tool No. 1

Wrench: Accessory tool No. 11

- ⚠ For details of the accessory tool, see “Crusher accessory tool” in Maintenance volume of the operation and maintenance manual.



3. Turn crusher V-belt adjustment turnbuckle (3) to extend distance (L) between the yokes, then adjust the turnbuckle so that tension load (F) for 1 V-belt is 63.6 – 73.6 N {6.5 – 7.5 kg}. (When this is done, deflection (a) is 15 mm.) Tension load (F) is the average value of the measured tension loads for 9 V-belts.



4. Start and stop the crusher 2 – 5 times.
5. Measure tension load (F) for 1 V-belt again and check that the measured value is 58.7 – 68.7 N {6.0 – 7.0 kg}. (When this is done, deflection (a) is 15 mm.)
6. Tighten locknuts (4) and (5).

7. Close the V-belt inspection window.
  8. Start the engine and turn the fuel control dial to the MAX position.  
Next, start and stop the crusher and check that there is no slipping sound from the V-belt. If the V-belt slips, it emits a loud noise.
- ★ There may be a difference in the V-belt tension at the top (A) and bottom (B). After adjusting the V-belt tension according to Step 3 above, start and stop the crusher 2 – 5 times to remove the difference in tension between the top and bottom, then check the tension according to Step 5 above.

## Check and adjustment of primary conveyor

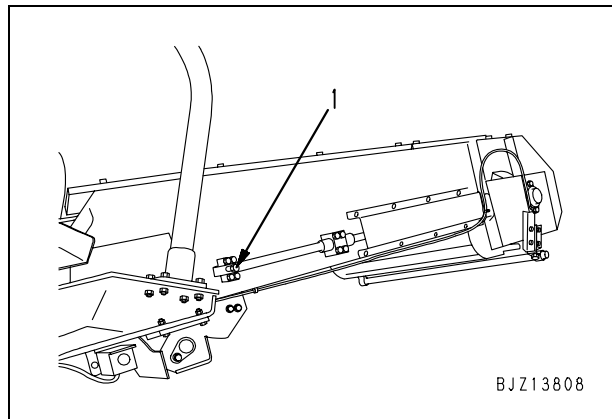
**⚠ When inspecting and cleaning the primary conveyor and its surrounding, there is always the danger that you are caught in a revolving parts. Be sure to start the work only after stopping the belt conveyor.**

## Check and adjustment of snaky movement of conveyor belt

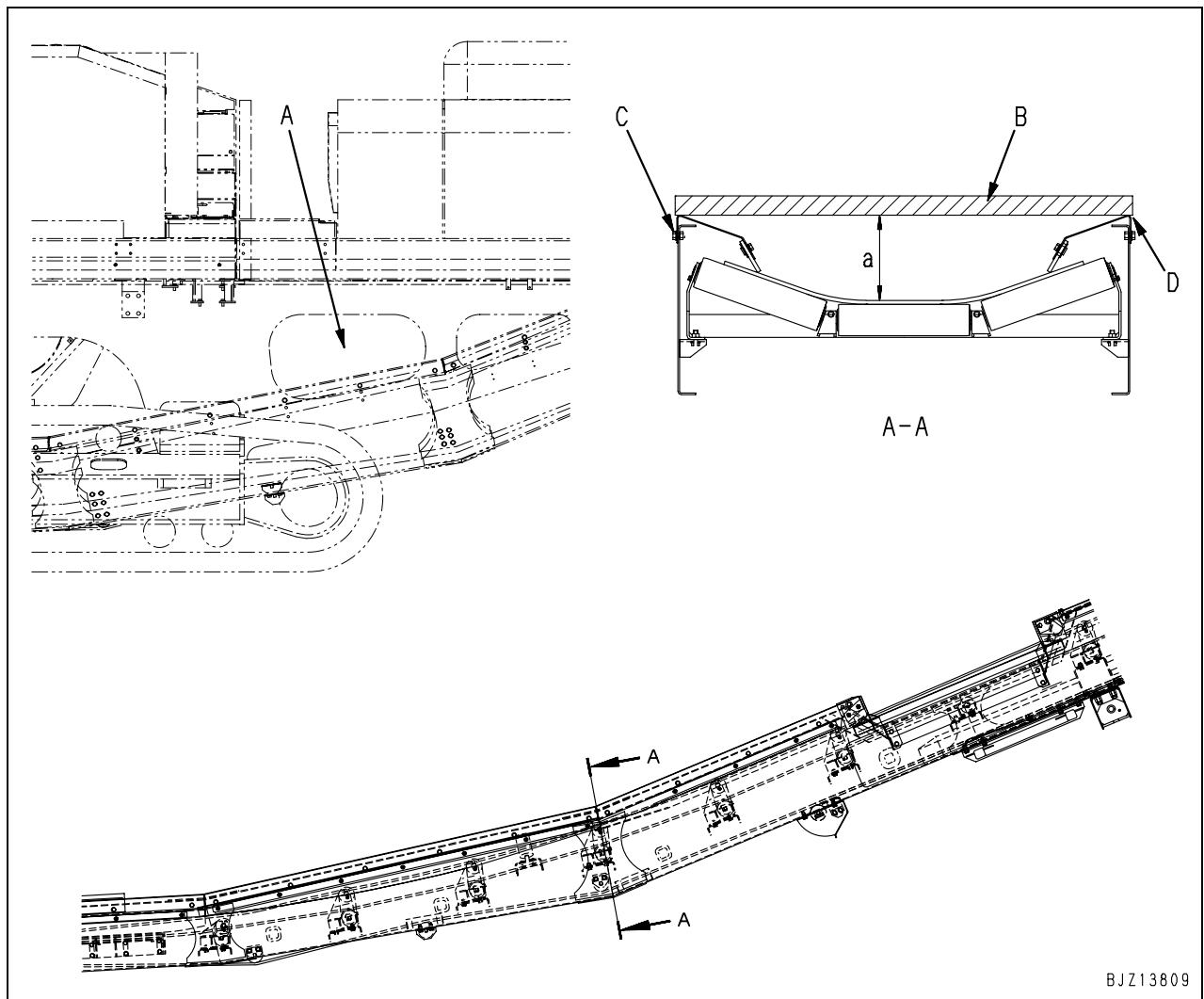
**⚠ If it becomes necessary to work on the adjust bolts, start with the work only after stopping the engine.**

If the belt starts snaking, turn adjustment bolt (1) to adjust the left and right tension.

When turning the adjustment bolt, remove the stopper plate to adjust, and after adjustment, install it to its original position without fail.



## Check tension of conveyor belt



BJZ13809

1. Remove rubber cover (A) at the side of the machine.
2. Place wooden block (B) on top of the conveyor between both sides (C) – (D) of the conveyor frame at cross-section A – A where the conveyor frame bends.
3. Measure the maximum deflection of the conveyor belt top surface from the bottom surface of the wooden block.

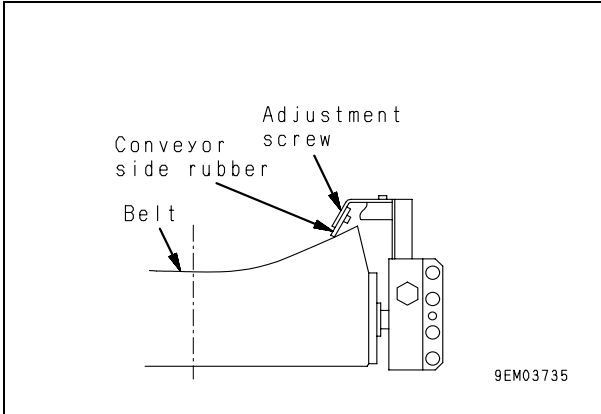
**Standard value for deflection**

Deflection (a) should be 170 to 175 mm.

**Adjustment of conveyor side rubber**

If the conveyor side rubber has been worn out, creating a clearance between the rubber and belt, loosen the adjustment bolt.

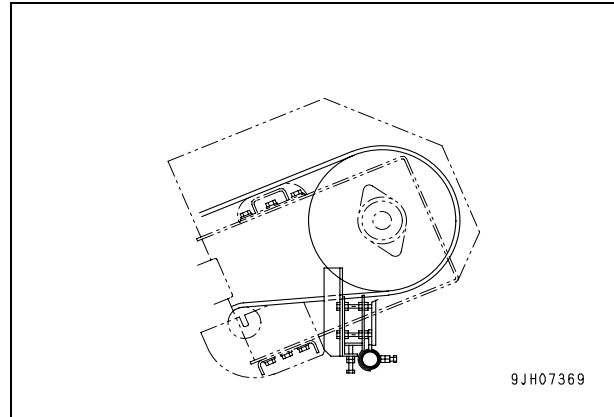
(Standard clearance 0 mm, i.e. close contact)



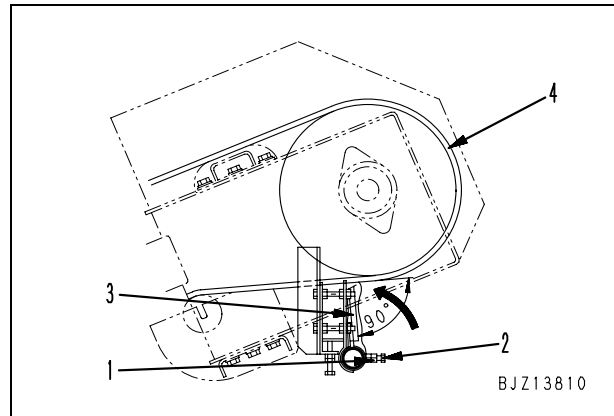
**Adjustment of scraper**

**Driving pulley side**

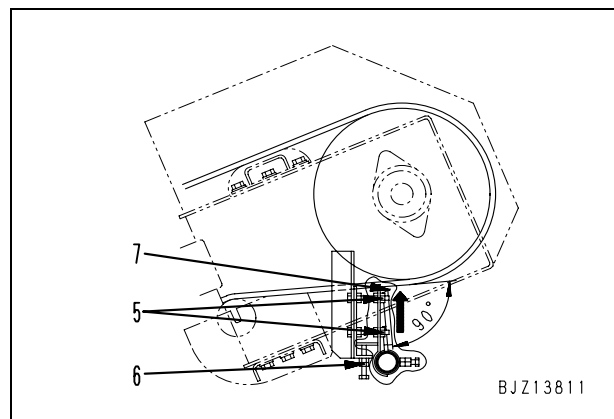
1. The default condition is as shown in the diagram.



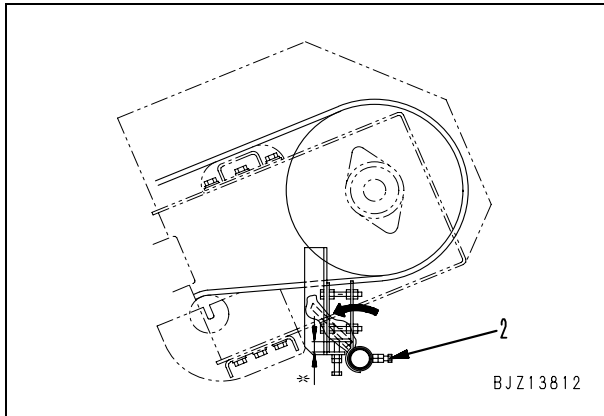
2. Loosen nuts (1) and bolts (2), then set cleaner plate (4) so that it is at right angles to belt (3).



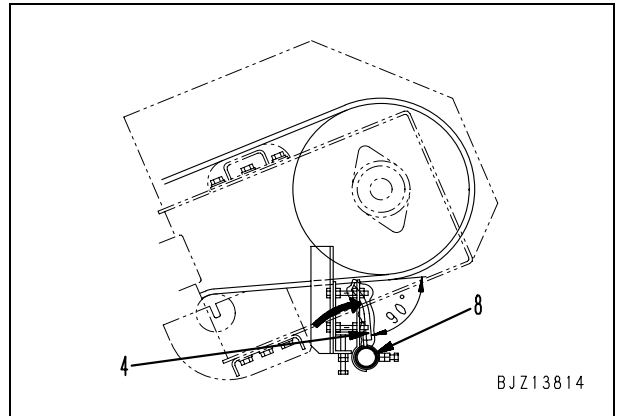
3. Loosen nuts (5) and (6), then move the cleaner up so that the tip (7) of the cleaner contacts the belt.



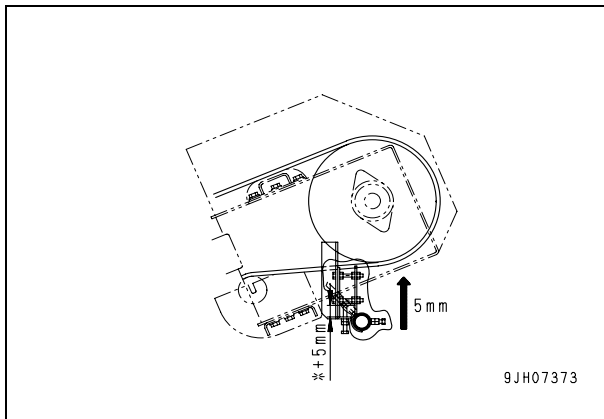
4. Loosen bolts (2), then rotate the cleaner plate as shown in the diagram.



7. Rotate cleaner shaft (8) so that cleaner plate (4) is at right angles.




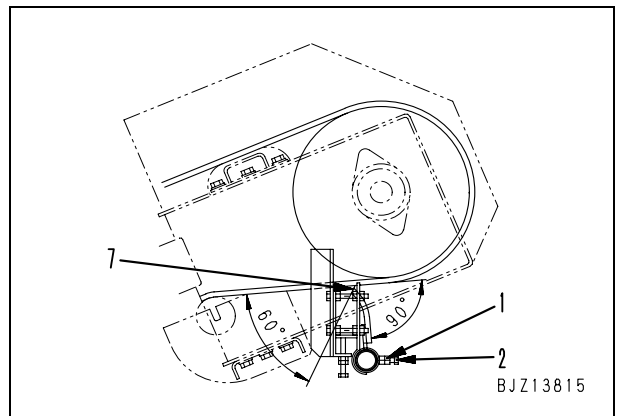
5. Raise the cleaner 5 mm.



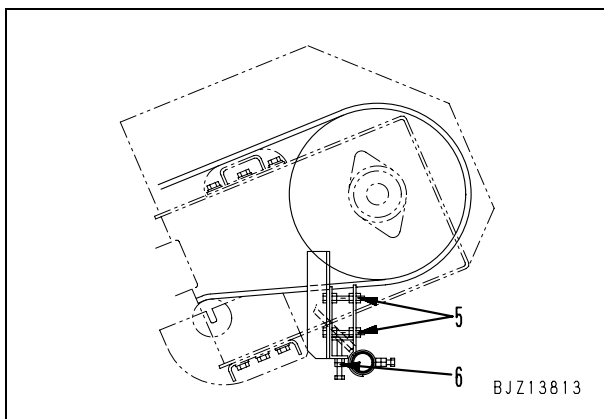
8. Check that cleaner tip (7) and the belt are at the 60° position, then tighten bolt (2) and nut (1).

If the angle of the tip of the cleaner and the belt is less than 60°, move the cleaner up.

 Bolt M12: **34.3 Nm {3.5 kgm}**



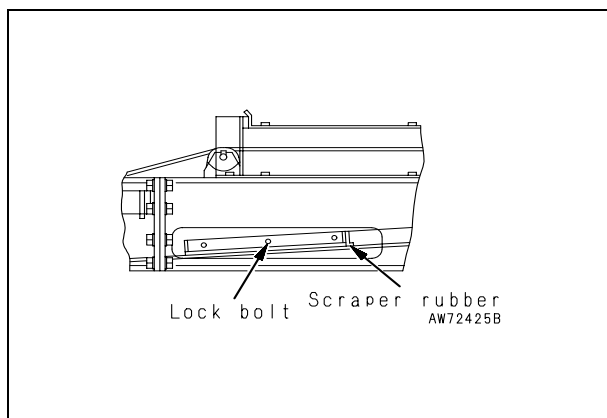
6. Tighten nuts (5) and (6).



**Driven pulley side**

If the scraper rubber has been worn out, replace it by loosening the securing bolts.

(It is in even contact with the belt across the width)



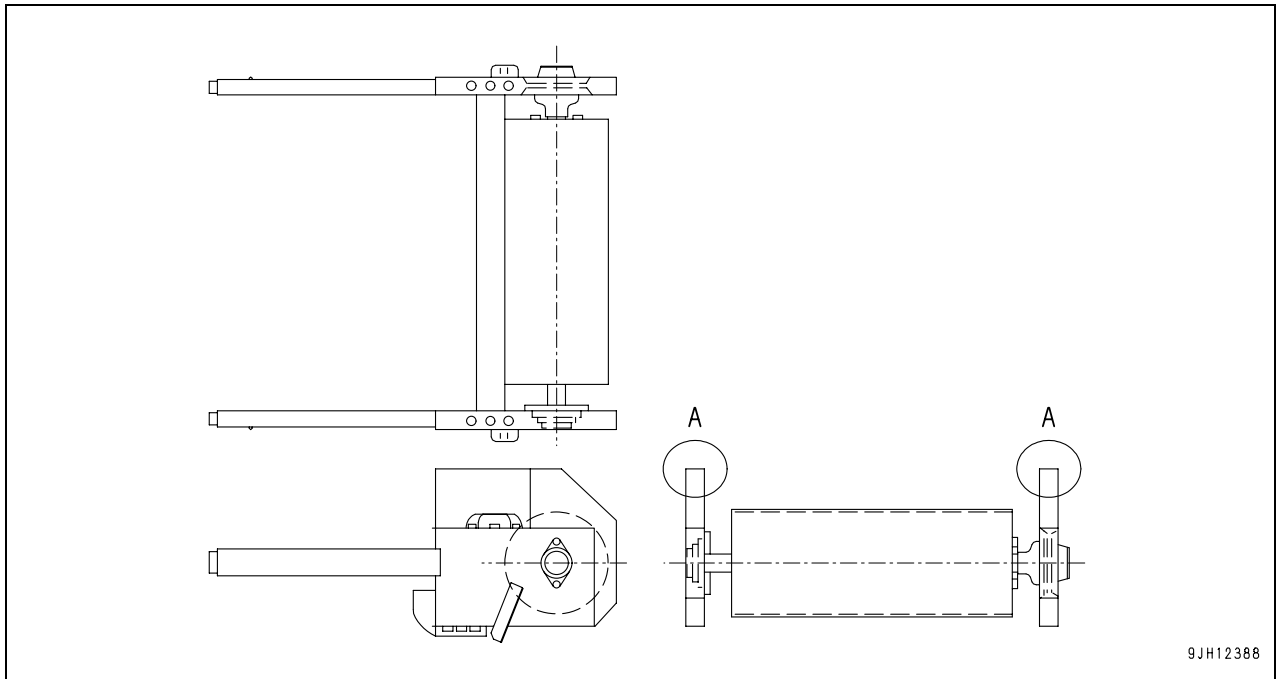
**Inspection of frame at head pulley portion**

If the frame was once deformed at the belt conveyor head pulley portion, or any of the parts was removed and installed in the past, carry out the following inspection and make adjustments or replace a parts, if necessary.

1. Operate the belt conveyor without load.
2. Check the frame at portion (A) visually, and if the frame is found to sway sideways, it means the frame needs to be replaced with a new one.

If the frame does not show such sway, there is no need for the replacement.

★ This sideways sway can be visually confirmed when an amount of sway is over 3 mm.





## Inspection and maintenance of magnetic separator

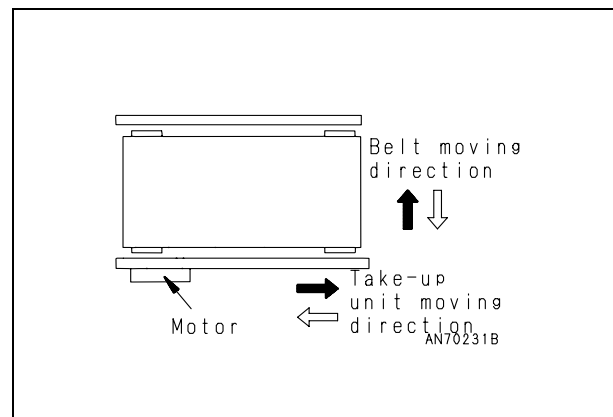
- ⚠ There is danger that the magnetic field may cause malfunction of pacemakers, so persons wearing pacemakers should not approach within a range of 5 m from the magnetic separator.
- ⚠ The magnetic force will attract metal tools and pieces of steel, and there is danger of getting your fingers or hands caught between such objects and the attracting surface, so do not approach the magnetic separator when carrying metal tools or pieces of steel.
- ⚠ Use a steel object removal belt to remove any pieces of steel attracted to the magnetic separator. There is danger of injury, so do not approach the magnetic separator while it is being operated.
- ⚠ When storing this machine or removing the magnetic separator, set up cones and make a no entry area. Do not allow any person wearing a pacemaker to approach within a range of 5 m from the magnetic separator.
- ⚠ Before starting operations, check that there is no misalignment or snaking of the belt.
- ⚠ If there is any misalignment or snaking of the belt, there is danger that the belt will be damaged or cut.
- ⚠ There is danger of the magnetic field causing damage, so do not bring watches, cellular phones, or other precision instruments close to the magnetic separator.
- ⚠ There is danger of the stored data being damaged by the magnetic field, so do not carry bank cards, credit cards, or other cards with magnetic strips when approaching the magnetic separator.
- ⚠ When conduction a trial run of the machine, be sure to run the motor at low speed and check that the conveyor belt does not make a snaky movement.
- ⚠ If metal pieces are drawn by the magnetic separator, they will be ejected, accelerated by the metal piece discharging belt. As that poses a big danger, provide a safety cover at the discharging outlet to prevent the metal pieces from flying off.
- ⚠ Do not feed concrete debris containing reinforcing bars larger than 13 mm in diameter and longer than 600 mm, since they can damage the conveyor belt.

The discharging belt for this machine has the same structure as that for the conventional belt conveyor. Pay attention to the following points, when starting the day's work or daily inspection.

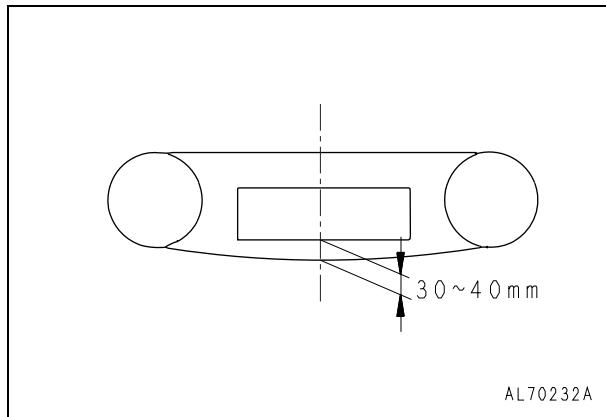
- Has the belt been biased or does it make a snaky movement?
- Is the belt tension appropriate?
- Are debris stuck to the backside of the belt?
- Has the belt surface been scratched or peeled off?
- Has the belt scraper not been damaged?
- Have metal parts or bolts at the connection of the belt end not been damaged or fallen off?

If anything unusual is found, take the following actions.

- 1) In case the belt is deflected or makes a snaky movement;  
Adjust the position of the take-up unit, referring to the figure. The take-up unit consists of a base plate, a pillow block and a tap bolt. Loosen the lock bolt on the base plate and adjust the position of the take-up unit with the tap bolt. After the adjustment, tighten the lock bolt again. When there is a clearance more than 10 mm at both ends from the inner surface of the flange at the end of the pulley, the belt is at a proper position.

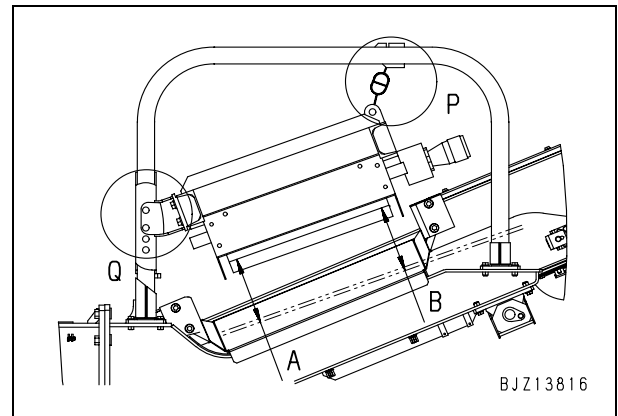


- 2) In case the belt tension is not appropriate; Adjust the belt tension in the same way as mentioned above. At that time, adjust the belt so that it will have a clearance of 30 to 40 mm from the lower surface of the magnet on the main body.
- 3) In case debris are stuck at the backside of the belt; Remove them as soon as found, since they can cause a damage on the belt or the pulley.

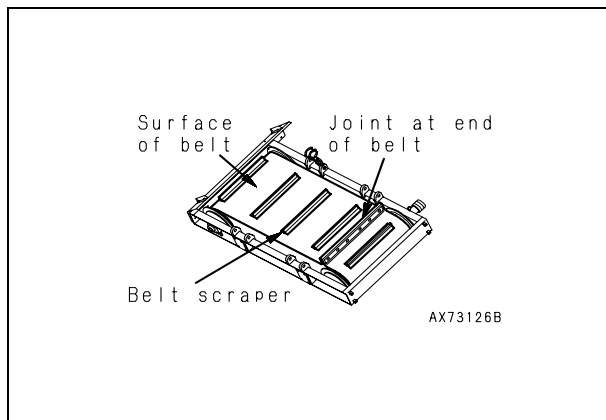


**Adjusting clearance from conveyor**

The clearance between the surface of the conveyor belt and the magnet when the machine is shipped from the factory is approx. 350 mm at both (A) and (B) when the primary conveyor height is at the fixed position for crushing reinforced concrete. Change as necessary according to the crusher discharge clearance and condition. For details of the fixed position for crushing reinforced concrete, see "Preparations for primary conveyor in Operation and maintenance manual".

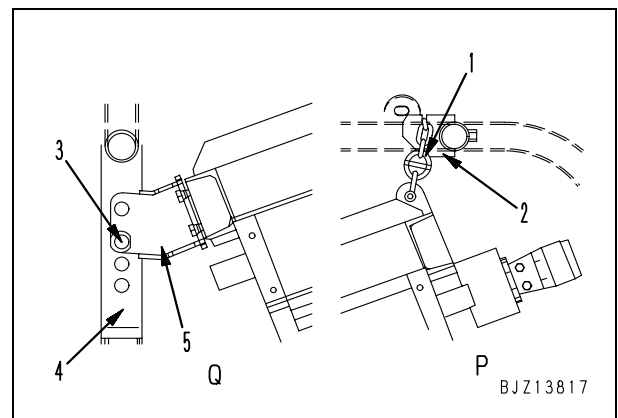


- 4) If the belt or any related part is broken, replace it immediately.



Front (P): Change position of magnetic separator chain (1) to adjust, and fit on magnetic separator frame hook (2).

Rear (Q): Change position of magnetic separator bracket hole (5) and magnetic separator frame hole (4) to adjust, then secure with pin (3).



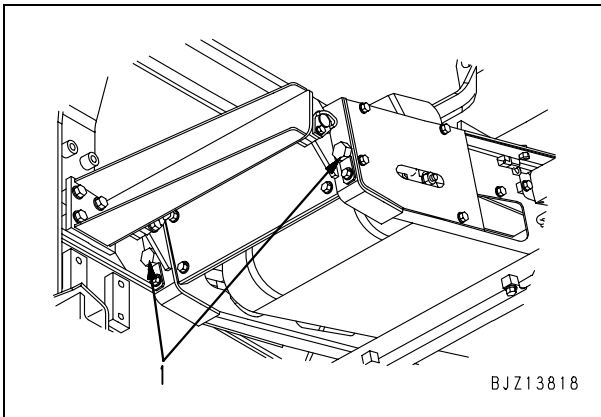
### Check and adjustment of muck discharge conveyor

**⚠** There is always the danger that you get caught in the revolving parts of the conveyor, while inspecting or cleaning it. Be sure to stop the engine before starting the work.

#### If the belt is not slackened

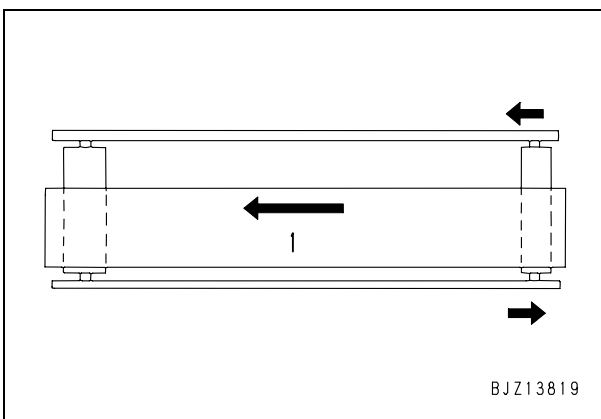
**⚠** Stop the engine first and start to work on the adjusting bolt (1).

If the conveyor belt is slackened, it tends to slip off and does not perform properly. Adjust the belt tension by turning the adjusting bolts (1) on the right and left sides of the belt.

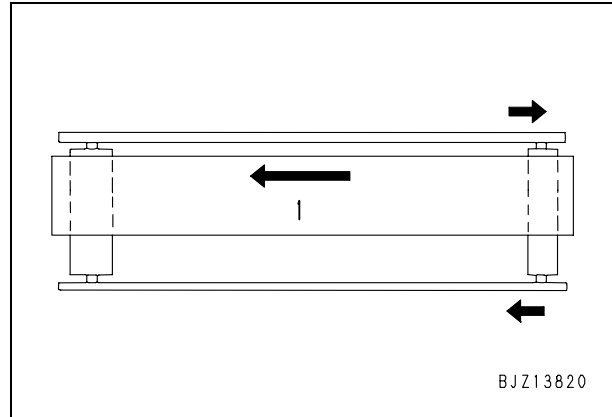


#### If the belt is not deflected

1. When the belt is deflected to the left, move the belt in the direction indicated with an arrow. (1): Direction of travel of belt



2. When the belt is deflected to the right, move the belt in the direction indicated with an arrow. (1): Direction of travel of belt



#### Check of each part in belt conveyor for any stuck foreign object

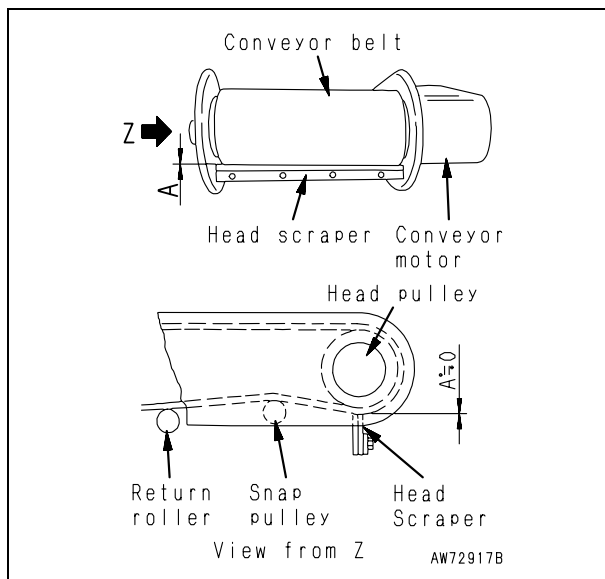
Remove a stone, wire shred, gravel, etc. that are stuck at the backside of the belt conveyor, or in between the rollers and belt, or inside the hopper rubber and belt.

**Check that the tail pulley and rollers turn smoothly or there is any part in the belt that is about to break**

The conveyor belt may be damaged or broken while in operation. In that case, replace the defective belt with new one promptly.

1. Keep a close watch on the head scraper constantly.

Unless the scraper is in firm contact with the belt, earth stuck to the rollers will likely cause the rollers to wear prematurely.



## List of companies which handles radio controllers

Area	Company name	Address
Japan (Japan and Asia)	Hetronic Japan	Yamada Bldg., Honjo 2-3-12, Matsumoto-shi, Nagano-ken Tel: 0263-38-7403 Fax: 0263-38-7404
Europe (all European countries)	Hetronic Steuesysteme GmbH	Abalbert-Stifter-Sir. 2 D-84085 Langquaid, Germany Tel: +49 9452-1890 Fax: +49 9452-189-20
Australia (Australia)	Hetronic Australia	P.O.Box 619 Unit 4/11 Durie Road Cardiff NSW 2285, Newcastle, Australia Tel: +61 249-537931 Fax: +61 249-537932
USA (North & South America)	Hetronic USA Inc.	4300 Highline Blvd. Building A Oklahoma City, OK 73108 USA Tel: +1 405-946-3574 Fax: +1 405-946-3574
Mediterranean and Middle East	Hetronic Malta Ltd.	Mosta Technopark, Factory F15B MT-MST02 Mosta, Malta Tel: +356-436214 Fax: +356-435057

## Handling voltage circuit of engine controller

1. Before disconnecting or connecting a connector between the engine controller and engine, be sure to turn the starting switch OFF.
2. If a T-adaptor is inserted in or connected to a connector between the engine controller and engine for troubleshooting, do not start the engine.
  - ★ You may turn the starting switch to the OFF or ON position but must not turn it to the START position.

## Procedure for turning on KOMTRAX terminal

When the machine is delivered, KOMTRAX terminal is installed:

★ When the machine is delivered, KOMTRAX terminal is installed (machine with the standard equipment), implement the following procedure.

### 1. Reporting of machine model, model number and serial number

Report the machine model, model number and serial number to the person responsible to operation of KOMTRAX.

### 2. Registration of KOMTRAX terminal

The person responsible to operation of KOMTRAX shall register the subject terminal using the KOMTRAX client PC.

- ★ See "KOMTRAX administrator manual" for the procedure.
- ★ Above completes the necessary operations.

When installing KOMTRAX terminal after the machine is delivered:

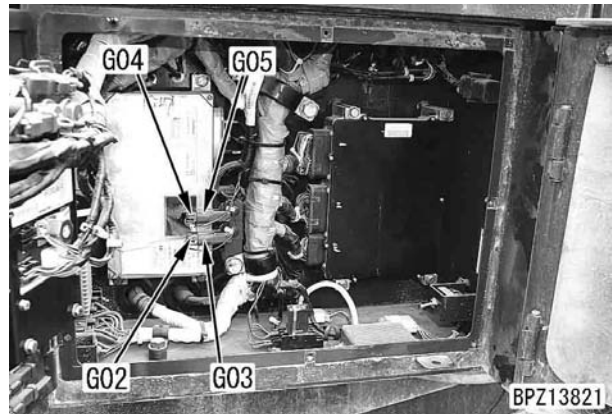
★ When installing KOMTRAX terminal after the machine is delivered (machine with the retrospective equipment), implement the following procedure.

### 1. Station opening inspection

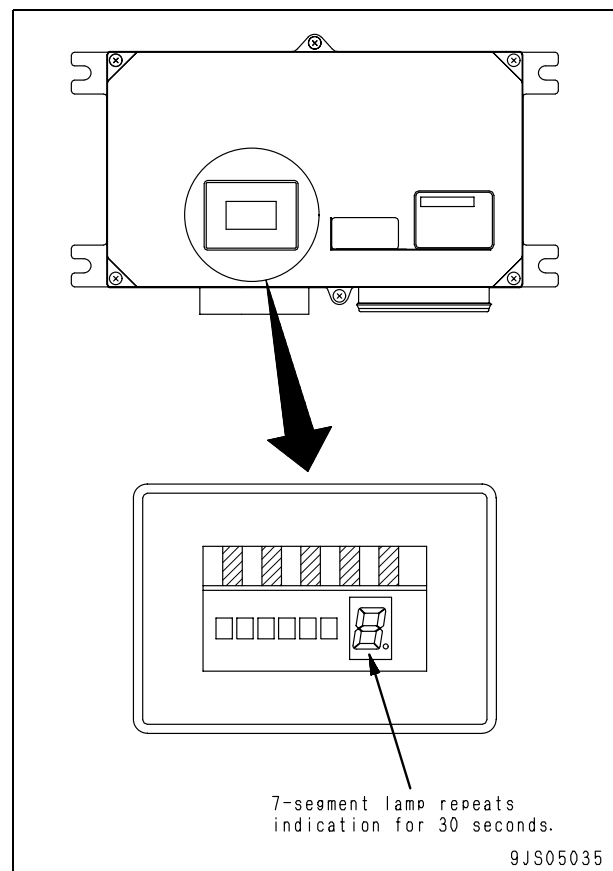
★ Referencing "Preparation work for troubleshooting of electrical system", confirm the position of KOMTRAX terminal and the inspecting connector (the inspecting connector is provided at the bottom of KOMTRAX terminal).

★ Finish the operations of steps 4) to 7) within 30 seconds.

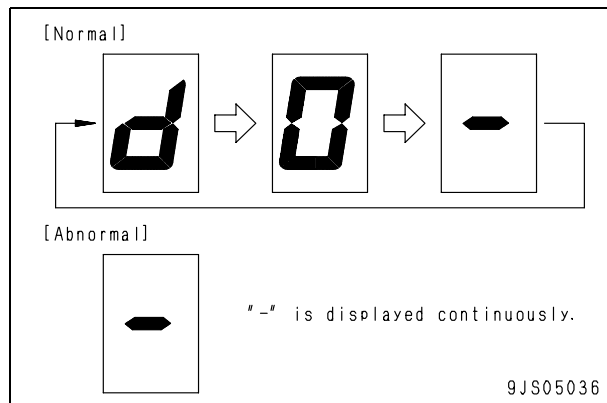
- 1) Turn OFF the starting switch and then, after making sure 5 seconds have elapsed, proceed to the next step.
- 2) Make sure visually that the inspecting connectors 1 and 2 are connected.
  - Inspecting connector 1:  
G02 (female) and G03 (male)
  - Inspecting connector 2:  
G04 (female) and G05 (male)



- 3) Disconnect the inspecting connector 1 and maintain that state for 5 seconds.
- 4) Turn ON the starting switch and maintain that state for 5 seconds.
- 5) Disconnect the inspecting connector 2 and maintain that state for 5 seconds.
- 6) Connect the inspecting connector 1 again and maintain that state for 5 seconds.
- 7) Connect the inspecting connector 2 again and maintain that state for 5 seconds.
- 8) Make sure that the KOMTRAX terminal 7-segment indicator lamp is normally turned on.



- ★ As [Normal] is indicated, proceed to the next step.
- ★ If [Abnormal] is indicated, repeat the procedure from step 1).

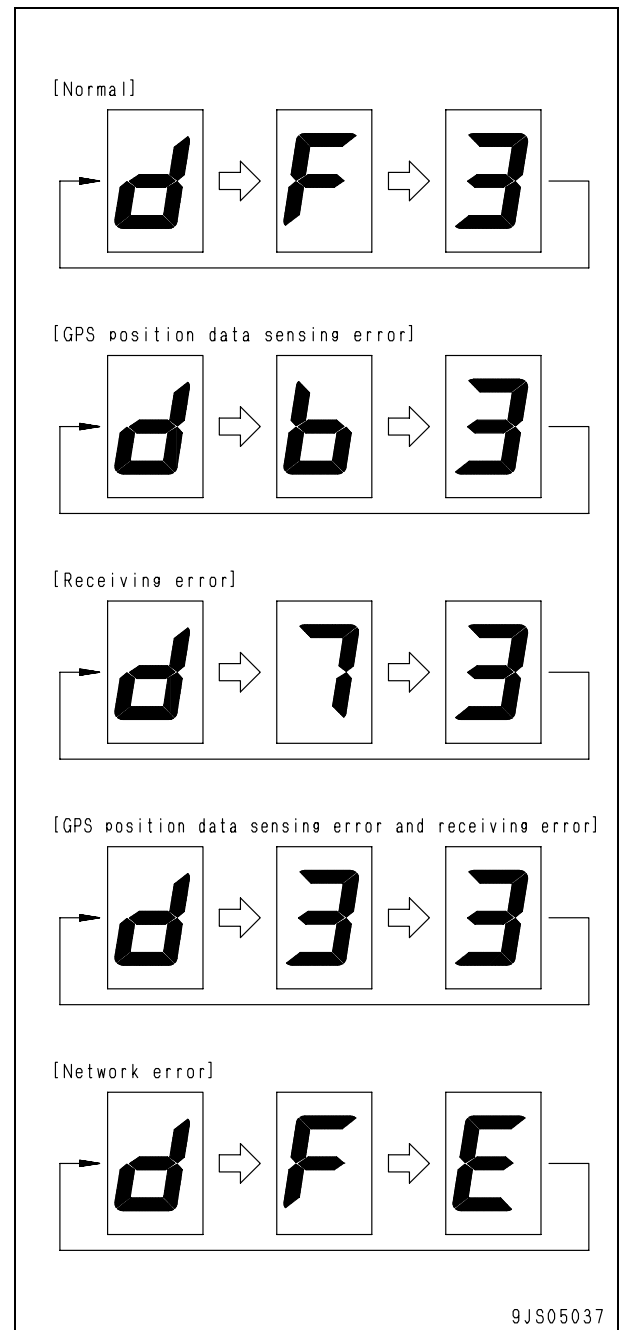


- 9) Set the starting switch to START position and maintain it in that state for 5 seconds. Make sure the engine is not started.
  - ★ If the engine is started, repeat the procedure from step 1).
- 10) Return the starting switch to ON position and maintain that state for 5 seconds.
  - ★ Don't return it to OFF position.
- 11) Set the starting switch to START position again and make sure the engine is started.
- 12) Make sure that the KOMTRAX terminal 7-segment indicator lamps are normally turned on.

Note: The third number on the display can be "2" or "3" though "3" is displayed in figure below (both for the normal state and when trouble is present).

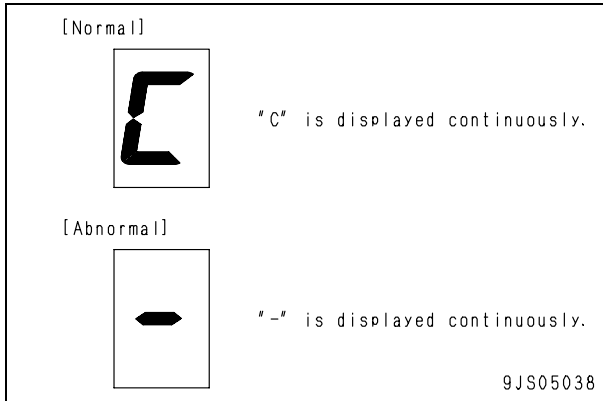
- ★ As [Normal] is confirmed, proceed to the next step (it will take 90 seconds to 15 minutes until normal display is restored).
- ★ If [GPS position data sensing error] were displayed, check the GPS antenna and cable for external troubles. If any, repair the trouble and repeat the procedure from step 1).
- ★ If [Receiving error] were displayed, check the communication antenna and cable for external troubles. If any, repair the trouble and repeat the procedure from step 1).
- ★ If [GPS position data sensing error and Receiving error] were displayed, check the GPS antenna and cable as well as the communication antenna and cable for external troubles. If any, repair the trouble and repeat the procedure from step 1).

- ★ If [Network error] were displayed, check the indication of [LED-C4] referencing "KOMTRAX terminal lamp indications". (When CAN is not recognized, check KOMTRAX terminal CAN harness for troubles. If any, repair the trouble and repeat the procedure from step 1)).





- 13) Turn the starting switch OFF.
- 14) Make sure that the 7-segment indicator lamp comes on normally in 10 seconds.
  - ★ As [Normal] is displayed, the station opening inspection is complete.
  - ★ If [Abnormal] is displayed, the inspection is incomplete and must be repeated from step 1).

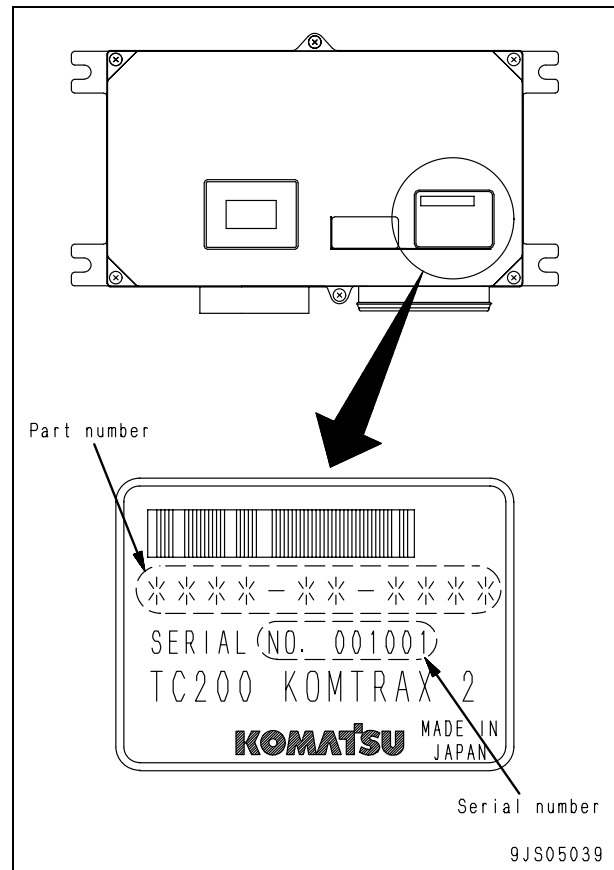


**2. Application for start of use**

★ The application for start of use is allowed only after the terminal station opening inspection has been successfully ended.

- 1) Concerning the machine body for which the station opening inspection has been completed, report the following information to the person responsible to operation of KOMTRAX.

- (1) Information of the machine body for which the station opening inspection has been completed (machine model, model number and serial number)
- (2) Part number and serial number of KOMTRAX terminal
- (3) The service meter reading when KOMTRAX terminal was installed (in 0.1 h unit)

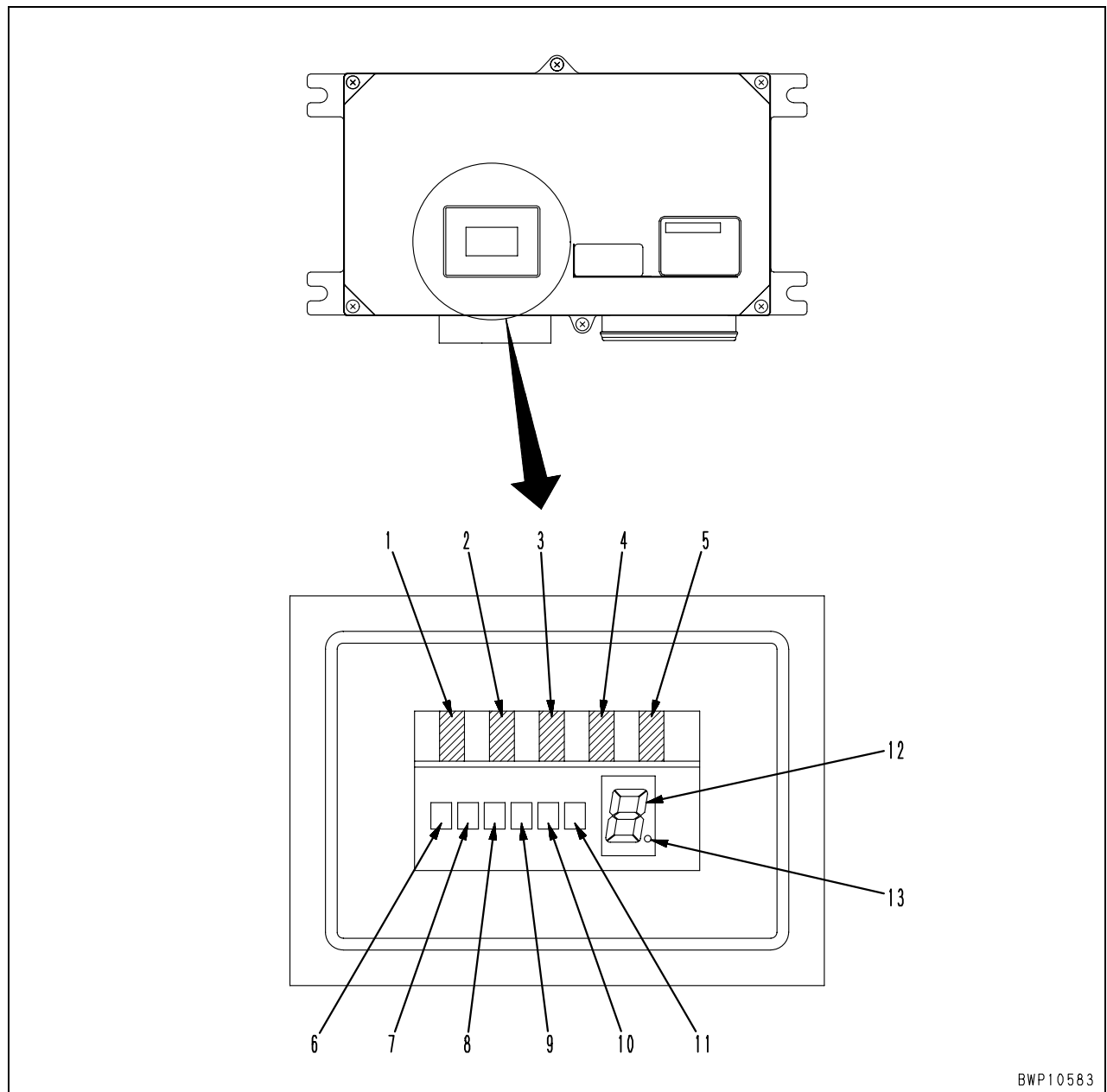


- 2) The person responsible to operation of KOMTRAX shall register the machine body using the KOMTRAX client PC.

★ See "KOMTRAX administrator manual" for the procedure.

★ Above completes the necessary operations.

## KOMTRAX terminal lamp indications



BWP10583

### LED for communication module

1. LED-A1 (Power lamp)
2. LED-A2 (Within communication range lamp)
3. LED-A3 (Communication in progress lamp)
4. LED-A4 (Internal transmitting lamp)
5. LED-A5 (Internal receiving lamp)

### LED for CPU

6. LED-C1 (R signal and ACC signal)
7. LED-C2 (Initial output state)
8. LED-C3 (S-NET and C signal state)
9. LED-C4 (CAN state)
10. LED-C5 (Download writing state)
11. LED-C6 (Download writing state)

### 7-segment and dot for CPU

12. 7-segment (Number of mails not transmitted yet)
13. Dot (GPS positioning state)

KOMTRAX system displays various information in the system as well as contents of information processing on the LED display unit located at the top of KOMTRAX terminal. Thus, when a failure on the system is suspected, implement the following checkups.

- Checking antennas
- Checking terminal LED display

Before using KOMTRAX, the application for start of use and the machine side station opening inspection must be completed.

When above is not completed, all LEDs for the communication module are turned off. It does not indicate the machine trouble.

### Checking antennas

- ★ Before inspecting display of LED, check the communication antenna and its vicinity as well as GPS antenna and its vicinity for any trouble.
- The communication antenna shall not be disconnected or damaged.
- The communication antenna cable shall not be broken and shall be appropriately connected to KOMTRAX terminal.
- GPS antenna shall not be disconnected or damaged.
- GPS antenna cable shall not be broken and shall be appropriately connected to KOMTRAX terminal.

### Checking terminal LED indication

#### 1. Display contents of LED for communication module

- ★ Turn ON the starting switch prior to inspection of LED display.

No.	LED	Name and function	Display	Contents of display
1	LED-A1	Power lamp	ON	LED stays turned on as long as power is supplied normally
			OFF	
2	LED-A2	Within communication range lamp	ON	LED comes on as the machine body moves inside the communication range of KOMTRAX system.
			OFF	
3	LED-A3	Communication in progress lamp	ON	LED stays turned on as long as KOMTRAX terminal is connected to KOMTRAX server. (Connection is made only needed)
			OFF	
4	LED-A4	Internal transmitting lamp	ON	LED stays turned on as long as data transmission is continued from CPU to the communication module. (Transmission is made only needed)
			OFF	
5	LED-A5	Internal receiving lamp	ON	LED stays turned on as long as the communication module is receiving data from CPU. (Receiving is made only needed)
			OFF	

## 2. Display contents of LED for CPU

- ★ Turn ON, START the starting switch or the engine prior to inspection of LED display.

No.	LED	Name and function	Display	Contents of display
6	LED-C1	State of starting switch ACC signal, alternator R signal	ON	Starting switch ACC signal: ON, Alternator R signal: ON
			Quick flashing	Starting switch ACC signal: ON, Alternator R signal: OFF
			Slow flashing	Starting switch ACC signal: OFF, Alternator R signal: ON
			OFF	Starting switch ACC signal: OFF, Alternator R signal: OFF
7	LED-C2	State of engine control signal	ON	Engine control signal: ON
			OFF	Engine control signal: OFF
8	LED-C3	State of S-NET connection and starting switch C signal	ON	S-NET: Connection and starting switch C signal: OFF
			Quick flashing	Starting switch C signal: ON
			Slow flashing	(Not used)
			OFF	S-NET: Non-connection and starting switch C signal: OFF
9	LED-C4	State of CAN connection	ON	CAN: Present (Fuel sensor: Absent)
			Quick flashing	CAN: Present (Fuel sensor: Present)
			Slow flashing	CAN: Absent (Fuel sensor: Present)
			OFF	CAN: Absent (Fuel sensor: Absent)
10	LED-C5	Download writing state	Single side ON	Download writing mode (Special function for system administrator)
11	LED-C6		Both sides OFF	Normal working mode

- ★ Types of flashing and flashing duration  
Quick flashing: Flashing of approximately 1 second cycle  
Slow flashing: Flashing of approximately 4 seconds cycle

## 3. Display contents of 7-segment and dots for CPU

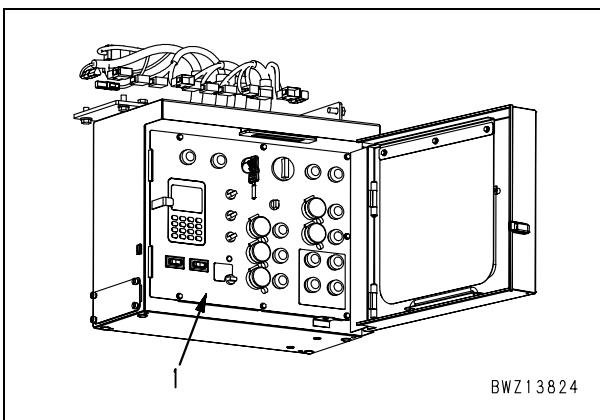
- ★ Turn ON the starting switch prior to inspection of LED display.

No.	Display unit	Name and function	Display	Contents of display
12	7-segment	Number of mails not transmitted yet	0 – 9	Number of mails not transmitted yet
13	Dot	State of positioning with GPS	ON	Positioning with GPS complete (Position is recognized See * mark)
			OFF	Positioning with GPS incomplete (Position is not recognized See * mark)

- \* In a outdoor location within radio waves penetration range, it sometimes takes more than a minute from turning on of the starting switch to completion of the positioning.  
Positioning is not available in a location where radio waves are extremely weak or unreachable.

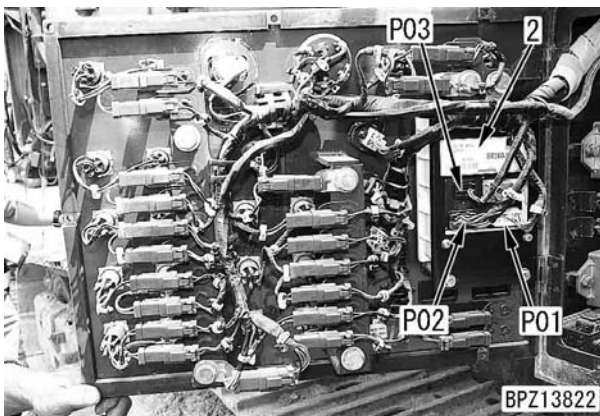
## Preparation work for troubleshooting for electrical system

- ★ When carrying out troubleshooting for an electric circuit related to the machine monitor, engine controller, pump controller and KOMTRAX terminal controller, expose the related connectors according to the following procedure.
- ★ Since the machine monitor, engine and pump controller and KOMTRAX terminal are installed inside main panel (1), remove the 7 main panel mounting screws and open the main panel first.



### 1. Machine monitor

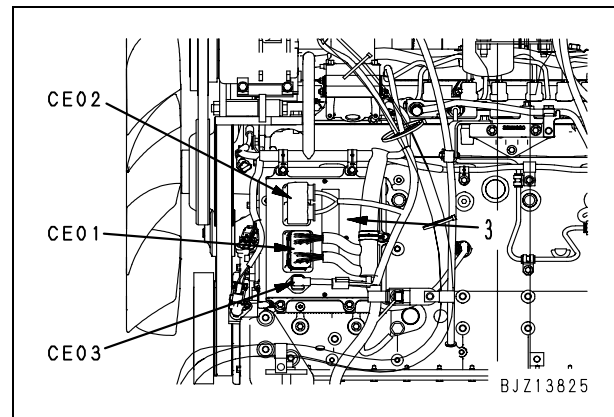
Insert or connect test T-adapters to connectors P01, P02, and P03 of machine monitor (2).



### 2. Engine controller

- 1) Open the engine hood.
  - ★ The engine controller is mounted on the engine.
- 2) Insert or connect troubleshooting T-adapters in or to connectors **CE01**, **CE02**, and **CE03** of engine controller (3).
  - ★ Connectors **CE01** and **CE02** are fixed with screws. When disconnecting them, loosen the screws.
  - ★ When returning connectors **CE01** and **CE02**, tighten the screws to the specified torque.


 Screw:  $3 \pm 1 \text{ Nm}$  { $0.3 \pm 0.1 \text{ kgm}$ }



### 3. Pump controller

Insert or connect test T-adapters to connectors **C01**, **C02**, and **C03** of pump controller (3).

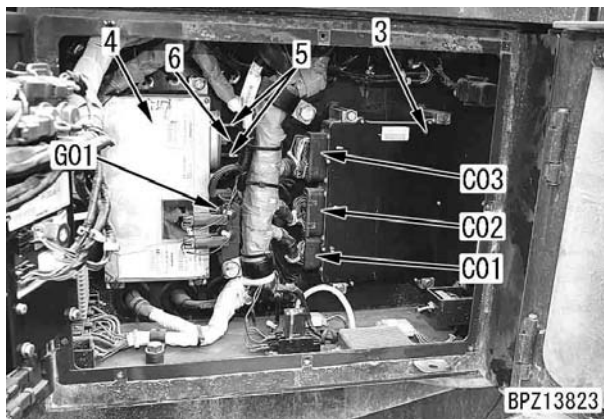
- ★ Since the connectors are fixed with screws, loosen those screws before disconnecting the connectors.
- ★ When returning the connectors, tighten the screws to the specified torque.

 Screw:  $2.82 \text{ Nm}$  { $0.288 \text{ kgm}$ }

#### 4. KOMTRAX terminal

Insert or connect troubleshooting T-adapter in or to connector G01 of KOMTRAX terminal (4).

- ★ The connectors are fixed with screws.  
Loosen the screws before disconnecting them.
- ★ When returning the connectors to their original positions, fix them by tightening the screws with the specified torque.
- 🔧 Screw: **2.82 Nm {0.288 kgm}**
- ★ Cable (5) is used for the communication antenna (2 systems).
- ★ Cable (6) is used for the GPS antenna.



#### 5. Atmospheric pressure sensor (AMBAIR PRESSURE)

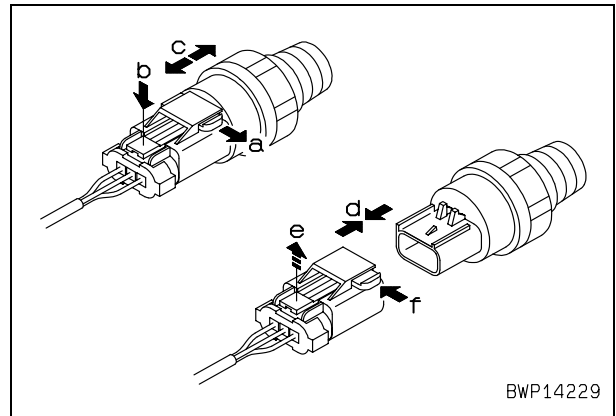
Engine Ne speed sensor (CRANK SENSOR)  
Engine Bkup speed sensor (CAM SENSOR)  
Engine oil pressure switch (OIL PRESSURE SWITCH)

##### ★ Disconnection and connection of connectors

The connectors of the atmospheric pressure sensor, engine Ne speed sensor, engine Bkup speed sensor, engine oil pressure switch have a special locking mechanism. Disconnect them according to steps (a) – (c) and connect them according to steps (d) – (f) as shown below.

**Disconnection:** (a) Slide lever – (b) Unlock – (c) Disconnect connector.

**Connection:** (d) Connect connector – (e) Lock – (f) Slide lever.



BWP14229

##### ★ Removal and installation of sensor

A deep socket is necessary for removal and installation of the engine oil pressure switch. See “Tools for testing, adjusting, and troubleshooting”.

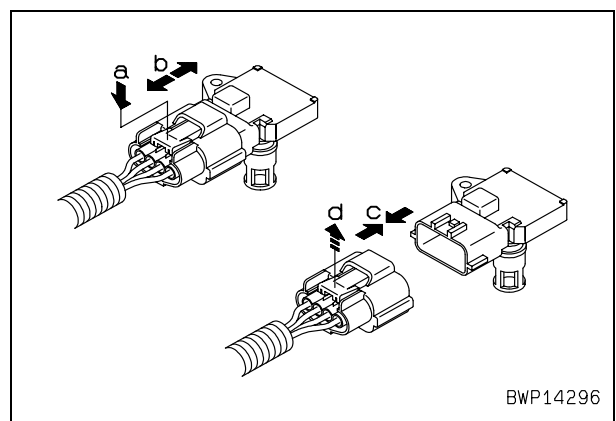
#### 6. Boost pressure and temperature sensor (BOOST PRESS & IMT)

##### ★ Disconnection and connection of connector

The connector of the boost pressure and temperature sensor has a special locking mechanism. Disconnect it according to steps (a) – (b) and connect it according to steps (c) – (d) as shown below.

**Disconnection:** (a) Unlock – (b) Disconnect connector.

**Connection:** (c) Connect connector – (d) Lock.



BWP14296

##### ★ Removal and installation of sensor

A torque wrench is necessary for removal and installation of the boost pressure and temperature sensor. See “Tools for testing, adjusting, and troubleshooting”.

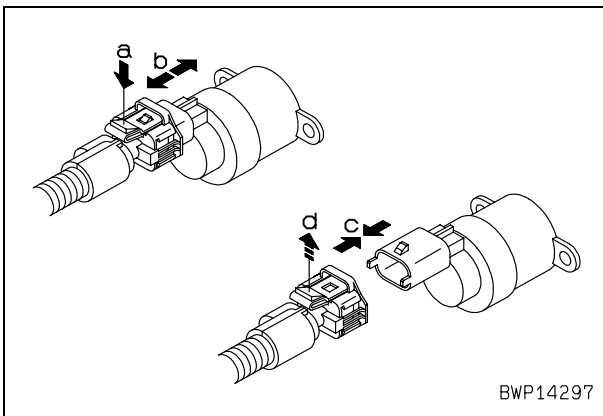
**7. Supply pump IMV solenoid (FUEL REGULATOR)**

★ **Disconnection and connection of connector**

The connector of the supply pump IMV solenoid has a special locking mechanism. Disconnect it according to steps (a) – (b) and connect it according to steps (c) – (d) as shown below.

**Disconnection:** (a) Unlock – (b) Disconnect connector.

**Connection:** (c) Connect connector – (d) Lock.



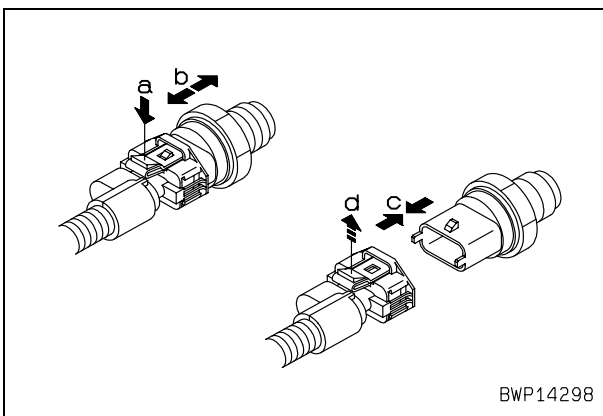
**8. Common rail pressure sensor (FUEL RAIL PRESS)**

★ **Disconnection and connection of connector**

The connector of the common rail pressure sensor has a special locking mechanism. Disconnect it according to steps (a) – (b) and connect it according to steps (c) – (d) as shown below.

**Disconnection:** (a) Unlock – (b) Disconnect connector.

**Connection:** (c) Connect connector – (d) Lock.

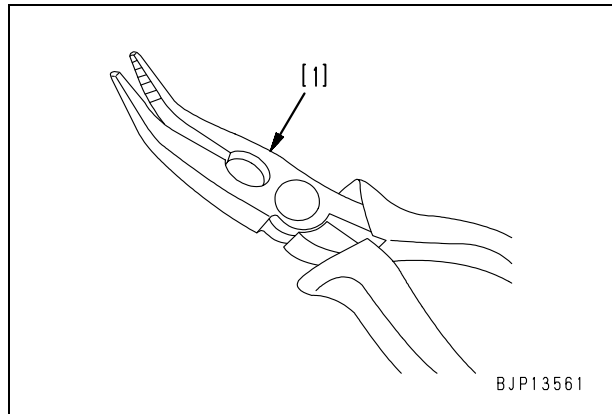


★ **Precautions for disconnecting connector**

The direction of the lock of the connector varies with the tightened position of the sensor and the lock may be in a direction in which it is difficult to reset (on the underside or engine side).

In this case, pinch the lock in direction (a) with bent-nose nippers [1] (commercially available), and the lock is reset.

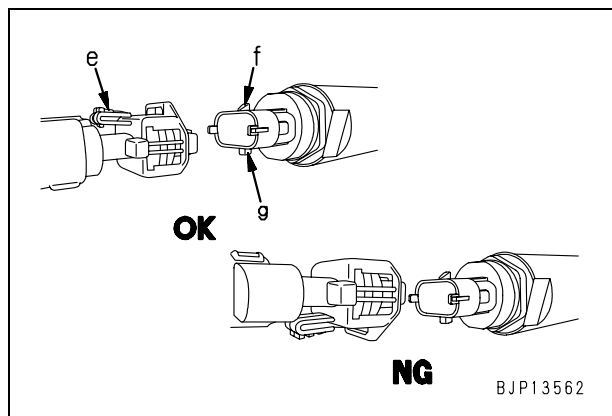
Since the lock clicks when it is reset, disconnect the connector after a click is heard.



★ **Precautions for connecting connector**

Take care not to connect the connector reversely.

Engage lock (e) on the wiring harness side with triangular notch (f) on the sensor side (Do not engage lock (e) with square guide (g) on the opposite side of triangular notch (f)).



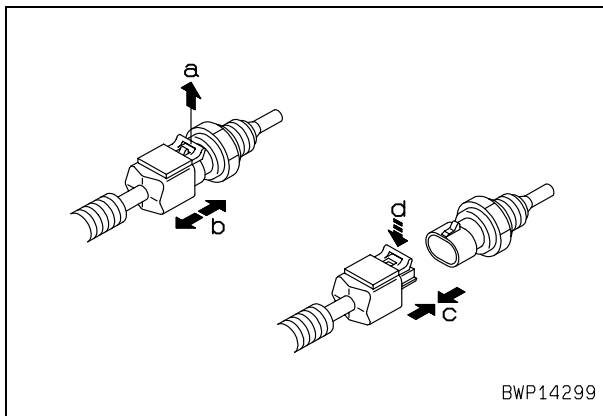
### 9. Engine coolant temperature sensor (COOL-ANT TEMP)

#### ★ Disconnection and connection of connector

The connector of the engine coolant temperature sensor has a special locking mechanism. Disconnect it according to steps (a) – (b) and connect it according to steps (c) – (d) as shown below.

**Disconnection:** (a) Unlock – (b) Disconnect connector.

**Connection:** (c) Connect connector – (d) Lock.



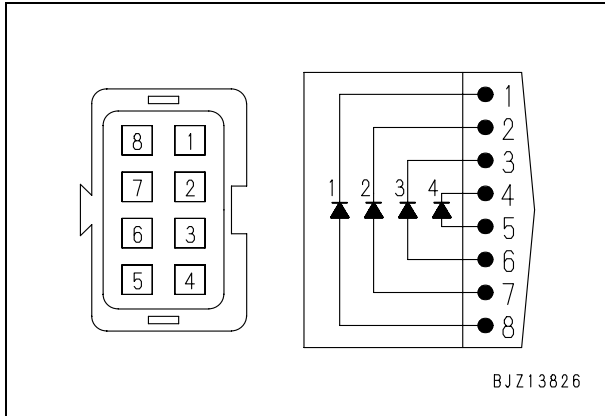
#### ★ Removal and installation of sensor

A deep socket is necessary for removal and installation of the engine oil pressure switch sensor. See “Tools for testing, adjusting, and troubleshooting”.

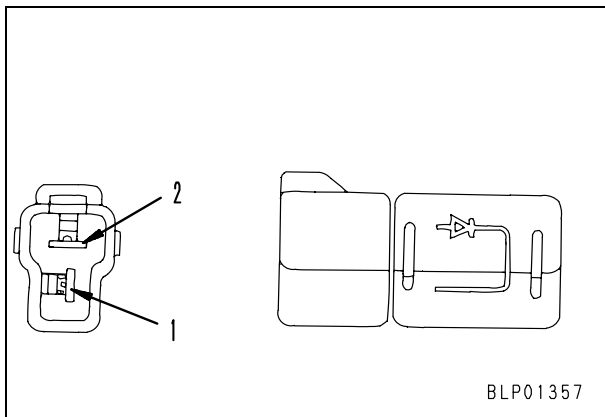


### Procedure for testing diodes

- ★ Test the assembled-type diode (8-pin) and the single diode (2-pin) according to the following procedure.
- ★ The conductive directions of the assembled-type diode are as follows.



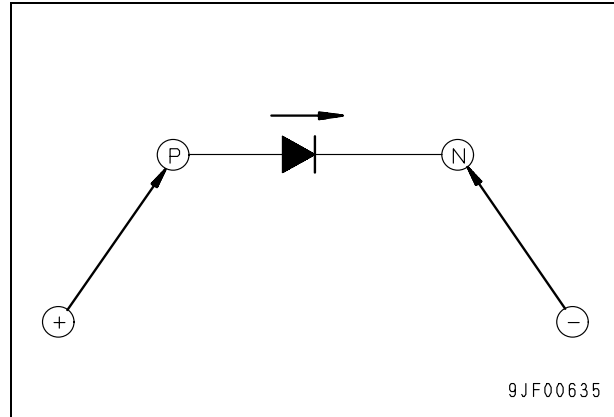
- ★ The conductive direction of the single diode is indicated on the surface of the diode.



#### 1. When using digital circuit tester

- 1) Set the tester in the diode range and check the indicated value.
  - ★ When an ordinary circuit tester is used, the voltage of the internal battery is indicated.
- 2) Apply the red (+) lead of the tester to the anode (P) side of the diode and apply the black (-) lead to the cathode (N) side and check the indicated value.
- 3) Judge the condition of the diode by the indicated value.
  - The indicated value does not change:  
The diode does not have conductivity (Defective).
  - The indicated value changes:  
The diode has conductivity (Normal).

Note: In the case of a silicon diode, a value in the range from 460 to 600 is indicated.



#### 2. When using analog circuit tester

- 1) Set the tester in the resistance range.
- 2) Apply the leads of the tester as explained below and check the movement of the pointer.
  - 1] Apply the red (+) lead of the tester to the anode (P) side of the diode and apply the black (-) lead to the cathode (N) side.
  - 2] Apply the red (+) lead of the tester to the cathode (N) side of the diode and apply the black (-) lead to the anode (P) side.
- 3) Judge the condition of the diode by the movement of the pointer.
  - The pointer does not move in 1] but moves in 2]: The diode is normal (The moving range (resistance) depends on the type and selected range of the tester, however).
  - The pointer moves in both 1] and 2]: The diode is defective (Internal short circuit).
  - The pointer moves in neither 1] and 2]: The diode is defective (Internal disconnection).



BR380JG-1E0 Mobile crusher

Form No. SEN02305-01

---

© 2007 KOMATSU  
All Rights Reserved  
Printed in Japan 02-07 (01)

---

---

# **MOBILE CRUSHER**

## **BR380JG-1E0**

<b>Machine model</b>	<b>Serial number</b>
BR380JG-1E0	2001 and up

---

## **40 Troubleshooting**

### **Failure code table and fuse locations**

---

---

Failure code table .....	2
Fuse locations .....	6

## Failure code table

Failure code	Failure contents	Applicable equipment	User code	History classification	Reference document No.	
7RC1KB	Short circuit conveyor ON switch	W/E	—	Electrical system	Troubleshooting by failure code, Part 1 SEN02090-00	
7RC2KA	Disconnection in conveyor OFF switch	W/E	—	Electrical system		
7RC5KB	Short circuit in feeder ON switch	W/E	—	Electrical system		
7RD2KB	Short circuit in conveyor reverse relay	W/E	—	Electrical system		
7RD2KZ	Disconnection or short circuit in conveyor reverse relay	W/E	—	Electrical system		
7RE1KB	Short circuit in crusher ON switch	W/E	—	Electrical system		
7RE2KA	Disconnection in crusher OFF switch	W/E	—	Electrical system		
7RE6KB	Short circuit in muck discharge conveyor ON switch	W/E	—	Electrical system		
7RE7KA	Disconnection in muck discharge conveyor OFF switch	W/E	—	Electrical system		
7RE8KB	Short circuit in magnetic separator ON switch	W/E	—	Electrical system		
7RE9KA	Disconnection in magnetic separator OFF switch	W/E	—	Electrical system		
7REAKB	Short circuit in accessory Input circuit	W/E	—	Electrical system		
7REDMA	Abnormality in primary conveyor pressure sensor	W/E	—	Electrical system		
7REEMA	Abnormality in muck conveyor pressure sensor	W/E	—	Electrical system		
7RENKZ	Abnormality in clearance potentiometer	W/E	—	Electrical system		
7REPKA	Disconnection in feeder OFF switch	W/E	—	Electrical system		
7RESKB	Short circuit in one-touch start switch	W/E	—	Electrical system		
7RETKA	Disconnection in one-touch stop switch	W/E	—	Electrical system		
7RF2KA	Disconnection in crusher forward EPC valve	W/E	—	Electrical system		
7RF2KB	Short circuit in crusher forward EPC valve	W/E	—	Electrical system		
7RF2KY	Short circuit in crusher forward EPC valve	W/E	—	Electrical system		
7RF3KA	Disconnection in crusher reverse EPC valve	W/E	—	Electrical system		
7RF3KB	Short circuit in crusher reverse EPC valve	W/E	—	Electrical system		
7RF3KY	Short circuit in crusher reverse EPC valve	W/E	—	Electrical system		
7RF4KA	Disconnection in feeder forward EPC valve	W/E	—	Electrical system		
7RF4KB	Short circuit in feeder forward EPC valve	W/E	—	Electrical system		
7RF4KY	Short circuit in feeder forward EPC valve	W/E	—	Electrical system		
7RFAKY	Short circuit in engine stop relay	W/E	—	Electrical system		Troubleshooting by failure code, Part 2 SEN02091-00
7RFAKZ	Disconnection or short circuit in engine stop relay	W/E	—	Electrical system		
7RFBKB	Short circuit in muck conveyor solenoid	W/E	—	Electrical system		
7RFBKZ	Disconnection or short circuit in muck conveyor solenoid	W/E	—	Electrical system		
7RFCKA	Disconnection in magnetic separator solenoid	W/E	—	Electrical system		
7RFCKB	Short circuit in magnetic separator solenoid	W/E	—	Electrical system		
7RFCKY	Short circuit in magnetic separator solenoid	W/E	—	Electrical system		
7RFHKB	Short circuit in conveyor forward relay	W/E	—	Electrical system		
7RFHKY	Short circuit in conveyor forward relay	W/E	—	Electrical system		
7RFKKB	Short circuit in lock cylinder pull relay	W/E	—	Electrical system		
7RFKKY	Short circuit in lock cylinder pull relay	W/E	—	Electrical system		
7RFLKA	Disconnection in accessory EPC solenoid	W/E	—	Electrical system		
7RFLKB	Short circuit in accessory EPC solenoid	W/E	—	Electrical system		
7RFLKY	Short circuit in accessory EPC solenoid	W/E	—	Electrical system		
7RFMKY	Short circuit in abnormal pressure relay	W/E	—	Electrical system		
7RFMKZ	Disconnection or short circuit in abnormal pressure relay	W/E	—	Electrical system		
7RFNKA	Disconnection in lock cylinder unlock solenoid valve	W/E	—	Electrical system		
7RFNKB	Short circuit in lock cylinder unlock solenoid valve	W/E	—	Electrical system		
7RFNKY	Short circuit in lock cylinder unlock solenoid valve	W/E	—	Electrical system		
7RFPKB	Short circuit in lock cylinder push relay	W/E	—	Electrical system		
7RFPKY	Short circuit in lock cylinder push relay	W/E	—	Electrical system		
7RGAMA	Abnormality in 2nd conveyor pressure sensor	W/E	—	Electrical system		
7RJAKA	Disconnection in travel lock EPC solenoid valve	W/E	—	Electrical system		

Failure code	Failure contents	Applicable equipment	User code	History classification	Reference document No.
7RJAKB	Short circuit in travel lock EPC solenoid valve	W/E	—	Electrical system	Troubleshooting by failure code, Part 2 SEN02091-00
7RJAKY	Short circuit in travel lock EPC solenoid valve	W/E	—	Electrical system	
7RJMMW	Lock cylinder slipping	W/E	—	Mechanical system	
7RJNMA	Abnormality in vibratory screen pressure sensor	W/E	—	Electrical system	
7RJPKB	Short circuit in radio control work-mode switch	W/E	—	Electrical system	
7RJQKB	Short circuit in radio control travel-mode switch	W/E	—	Electrical system	
7RJRKB	Short circuit on travel signal	W/E	—	Electrical system	
7RJSMA	Abnormality in magnetic separator pressure sensor	W/E	—	Electrical system	
AA10NX	Air cleaner Clogging	MON	—	Mechanical system	
AB00KE	Charge voltage too low	MON	—	Mechanical system	
B@BAZG	Engine oil pressure too low	ENG	—	Mechanical system	Troubleshooting by failure code, Part 3 SEN02092-00
B@BAZK	Engine oil level reduction	MON	—	Mechanical system	
B@BCNS	Radiator coolant overheat	ENG	—	Mechanical system	
B@BCZK	Radiator coolant level reduction	MON	—	Mechanical system	
B@HANS	Hydraulic oil overheat	MON	—	Mechanical system	
CA111	Abnormality in engine controller	ENG	E10	Electrical system	
CA115	Abnormality in engine NE and Bkup speed sensors	ENG	E10	Electrical system	
CA122	Charge pressure sensor too high	ENG	E11	Electrical system	
CA123	Charge pressure sensor too low	ENG	E11	Electrical system	
CA131	Throttle sensor too high	ENG	E14	Electrical system	
CA132	Throttle sensor too low	ENG	E14	Electrical system	
CA144	Coolant temperature sensor too high	ENG	E15	Electrical system	
CA145	Coolant temperature sensor too low	ENG	E15	Electrical system	
CA153	Charge temperature sensor too high	ENG	E15	Electrical system	
CA154	Charge temperature sensor too low	ENG	E15	Electrical system	
CA155	Charge temperature too high and engine speed derated	ENG	E11	Electrical system	
CA187	Sensor power source 2 too low	ENG	E15	Electrical system	
CA221	Ambient pressure sensor too high	ENG	E11	Electrical system	
CA222	Ambient pressure sensor too low	ENG	E11	Electrical system	
CA227	Sensor power source 2 too high	ENG	E15	Electrical system	
CA234	Engine overspeed	ENG	—	Mechanical system	
CA238	Abnormal power source for Ne speed sensor	ENG	E15	Electrical system	
CA271	Short circuit in fuel pump actuator	ENG	E10	Electrical system	
CA272	Disconnection in fuel pump actuator	ENG	E10	Electrical system	
CA322	Disconnection or short circuit in injector No.1	ENG	E11	Electrical system	
CA323	Disconnection or short circuit in injector No.5	ENG	E11	Electrical system	
CA324	Disconnection or short circuit in injector No.3	ENG	E11	Electrical system	
CA325	Disconnection or short circuit in injector No.6	ENG	E11	Electrical system	
CA331	Disconnection or short circuit in injector No.2	ENG	E11	Electrical system	
CA332	Disconnection or short circuit in injector No.4	ENG	E11	Electrical system	
CA342	Abnormality in engine controller data consistency	ENG	E10	Electrical system	
CA351	Abnormality in injector drive circuit	ENG	E10	Electrical system	
CA352	Sensor power source 1 too low	ENG	E15	Electrical system	
CA386	Sensor power source 1 too high	ENG	E15	Electrical system	
CA428	Water detection sensor too high	ENG	E15	Electrical system	
CA429	Water detection sensor too low	ENG	E15	Electrical system	
CA435	Abnormality in engine oil pressure switch	ENG	E15	Electrical system	
CA441	Power source voltage too low	ENG	E10	Electrical system	
CA442	Power source voltage too high	ENG	E10	Electrical system	
CA449	Common rail pressure sensor too high (2)	ENG	E11	Electrical system	
CA451	Common rail pressure sensor too high	ENG	E11	Electrical system	
CA452	Common rail pressure sensor too low	ENG	E11	Electrical system	

Failure code	Failure contents	Applicable equipment	User code	History classification	Reference document No.
CA488	Charge temperature too high and torque derated	ENG	E11	Electrical system	Troubleshooting by failure code, Part 4 SEN02093-00
CA553	Common rail pressure sensor too high (1)	ENG	E15	Electrical system	
CA559	Supply pump no pressure	ENG	E15	Electrical system	
CA689	Abnormality in engine Ne speed sensor	ENG	E15	Electrical system	
CA731	Abnormal phase in engine Bkup speed sensor	ENG	E15	Electrical system	
CA757	Loss of all engine controller data	ENG	E10	Electrical system	
CA778	Abnormality in engine Bkup speed sensor	ENG	E15	Electrical system	
CA1633	CAN communication error (engine controller)	ENG	E0E	Electrical system	
CA2185	Throttle pedal sensor power source too high	ENG	E14	Electrical system	
CA2186	Throttle pedal sensor power source too low	ENG	E14	Electrical system	
CA2249	Supply pump no pressure (2)	ENG	E11	Electrical system	
CA2311	Abnormal resistance in pump regulator valve	ENG	E11	Electrical system	
CA2555	Disconnection in air intake heater relay	ENG	E15	Electrical system	
CA2556	Short circuit in air intake heater relay	ENG	E15	Electrical system	
D162KY	Short circuit in horn relay	W/E	—	Electrical system	
D162KZ	Disconnection or short circuit in horn relay	W/E	—	Electrical system	
DA22KK	Solenoid power source too low	PUMP	E0E	Electrical system	
DA25KP	Abnormality in pressure sensor power source	PUMP	—	Electrical system	
DA2RMC	CAN communication error (work equipment and pump controller)	PUMP	E0E	Electrical system	
DA2SKQ	Abnormality in model code input	PUMP	—	Electrical system	
DAFRMC	CAN communication error (monitor controller)	MON	E0E	Electrical system	
DDA6KA	Disconnection in engine stop switch	W/E	—	Electrical system	
DGH2KB	Short circuit in hydraulic oil temperature sensor	MON	—	Electrical system	
DHPAMA	Abnormality in F pump pressure sensor	PUMP	—	Electrical system	
DHPBMA	Abnormality in R pump pressure sensor	PUMP	—	Electrical system	
DUB0KY	Short circuit in beacon solid state relay	W/E	—	Electrical system	
DUB0KZ	Disconnection or short circuit in beacon solid state relay	W/E	—	Electrical system	
DXA0KA	Disconnection in PC-EPC Solenoid	PUMP	E02	Electrical system	
DXA0KB	Short circuit in PC-EPC Solenoid	PUMP	E02	Electrical system	
DXA0KY	Short circuit in PC-EPC Solenoid	PUMP	E02	Electrical system	
DXE0KA	Disconnection in LS-EPC solenoid	PUMP	—	Electrical system	
DXE0KB	Short circuit in LS-EPC solenoid	PUMP	—	Electrical system	
DXE0KY	Short circuit in LS-EPC solenoid	PUMP	—	Electrical system	

★ Failure code:

The failure code table is written in alphabetical order and also starting from small number.

The failure code in parentheses is not recorded in the failure history for both electrical and mechanical system.

★ Applicable equipment:

Applicable equipment indicates in which controller system the failure has occurred.

MON : Machine monitor system

ENG : Engine controller system

TM : Transmission controller system

COM : Communication controller system

W/E : Work equipment and pump controller (work equipment control) system

PUMP: Work equipment and pump controller (pump control) system

★ User code:

User code indicates what is displayed in the operator mode when a failure is detected.

★ History classification:

History classification indicates in which system, either electrical system or mechanical system in the failure history displayed function, a failure has been recorded.

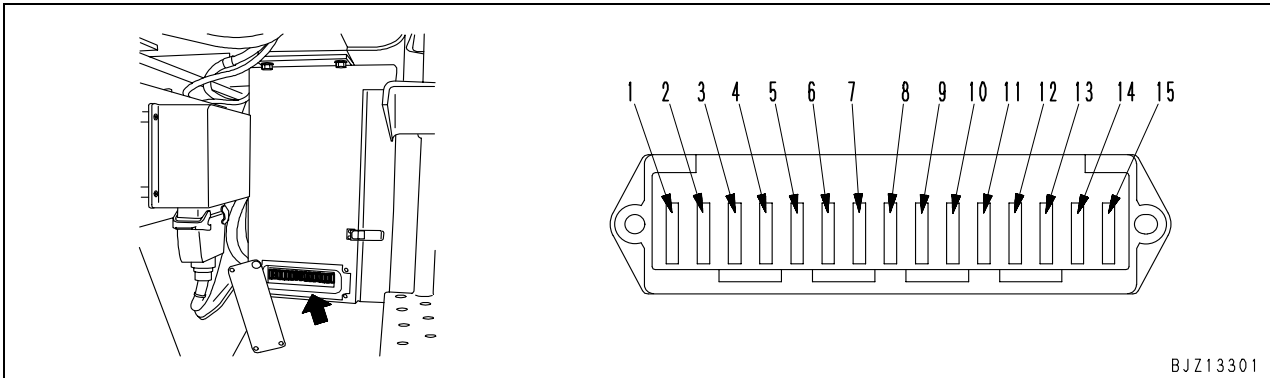
## Fuse locations

### Connection table of fuse box and fusible links

- ★ This connection table indicates the devices to which the power of the fuse box and fusible links is supplied. (A switched power supply is a device which supplies power while the starting switch is in the ON position and a constant power supply is a device which supplies power while the starting switch is in the OFF and ON positions).
- ★ When carrying out troubleshooting related to the electrical system, you should check the fuse box and fusible links to see if the power is supplied normally.

### Locations and numbers of fuse boxes and fusible links

#### Fuse box



BJZ13301

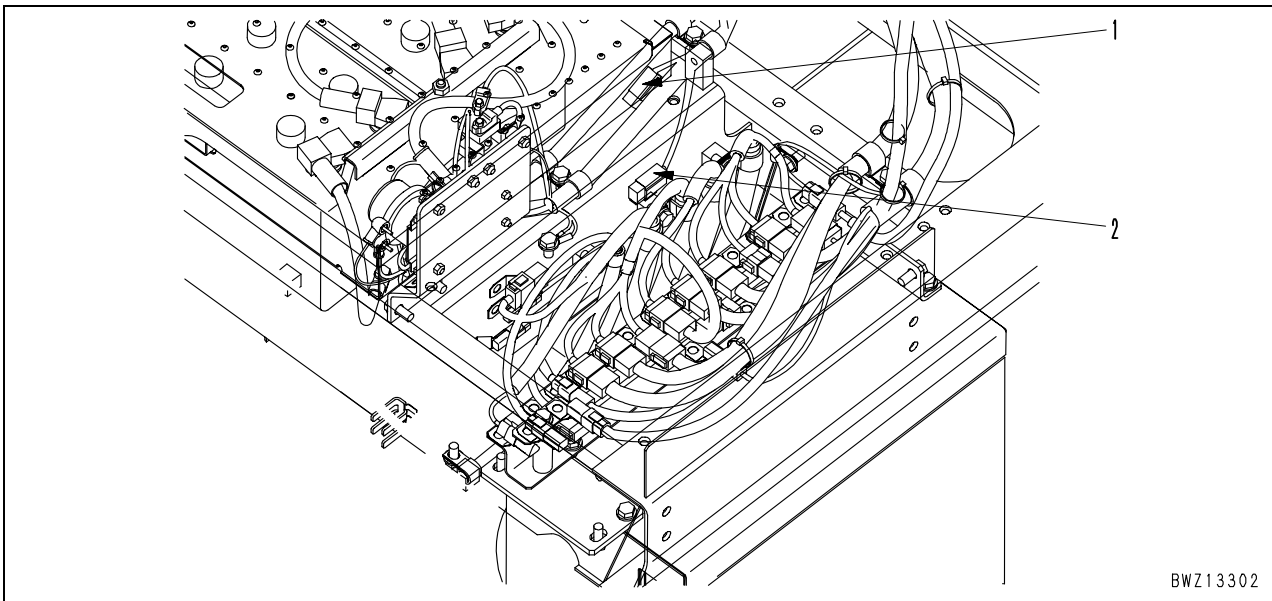
#### Fuse

Type of power source	Fuse No.	Capacity of fuse	Destination of power
Constant power source Fusible link E02 (30A)	1	20A	Starting switch KOMTRAX controller
	2	10A	Machine monitor
	3	30A	Engine controller
	4	10A	Work equipment and pump controller
Switched power source Starting switch ACC	5	5A	Engine controller (ACC signal)
Switched power source Fusible link E07 (65A)	6	15A	Pump controller (solenoid power source) Engine stop relay Preheater relay (when auto preheat relay is actuated)
	7	20A	Front lamp Rear lamp Machine monitor panel light Box lamp Upper travel control box lamp
	8	10A	Horn relay Travel straight, 2 step relief relay Travel straight, 2 step relief solenoid valve Lock cylinder push solenoid valve
	9	10A	Beacon lamp (red) relay Beacon lamp (red)



Type of power source	Fuse No.	Capacity of fuse	Destination of power
Switched power source Fusible link E07 (65A)	10	10A	Mode select switch Travel alarm relay Travel alarm Conveyor up solenoid valve Conveyor down solenoid valve Power source for accessory input (conveyor up/down switch) Conveyor/muck discharge conveyor select solenoid valve 2nd conveyor solenoid valve Vibrator screen solenoid valve Sprinkler relay Abnormal stop relay (2nd conveyor, vibrator screen, sprinkler) Emergency stop relay 2 (spare) Pull-up power source for over feed sensor (spare)
	11	15A	Spare
	12	10A	Horn
	13	10A	Radio control select relay Beacon lamp for radio control (yellow) Radio control receiver Radio control travel relay (left forward, left backward, right forward, right backward) Radio control engine stop relay Radio control horn relay Radio control beacon lamp relay Radio control one-touch stop relay Radio control feeder off relay Travel solenoid valve (left forward, left backward, right forward, right backward)
	14	20A	Sprinkler pump stop relay Sprinkler pump
	15	10A	Radio control power charger

**Fusible link**



BWZ13302

**Fusible link**

No.	Type of power source	Connector No.	Capacity of fusible link	Destination of power
1	Constant power source	E02	30A	Fuse No.1 – No.5
2	Switched power source	E07	65A	Fuse No.6 – No.15

BR380JG-1E0 Mobile crusher

---

Form No. SEN02088-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

## 40 Troubleshooting

### General information on troubleshooting

---

---

Points to remember when troubleshooting .....	2
Sequence of events in troubleshooting.....	3
Checks before troubleshooting .....	4
Classification and procedures of troubleshooting .....	6
Contents of troubleshooting table .....	10
Wiring table for connector pin numbers .....	12
T-adapter box and T-adapter table.....	45

## Points to remember when troubleshooting

- ⚠ Stop the machine in a level place, and check that the lock pin, blocks, and parking brake are securely fitted.
- ⚠ When carrying out the operation with 2 or more workers, keep strictly to the agreed signals, and do not allow any unauthorized person to come near.
- ⚠ If the radiator cap is removed when the engine is hot, hot coolant may spurt out and cause burns, so wait for the engine to cool down before starting troubleshooting.
- ⚠ Be extremely careful not to touch any hot parts or to get caught in any rotating parts.
- ⚠ When disconnecting wiring, always disconnect the negative (–) terminal of the battery first.
- ⚠ When removing the plug or cap from a location which is under pressure from oil, water, or air, always release the internal pressure first. When installing testing equipment, be sure to connect it properly.

The aim of troubleshooting is to pinpoint the basic cause of the failure, to carry out repairs swiftly, and to prevent reoccurrence of the failure. When carrying out troubleshooting, an important point is of course to understand the structure and function. However, a short cut to effective troubleshooting is to ask the operator various questions to form some idea of possible causes of the failure that would produce the reported symptoms.

1. When carrying out troubleshooting, do not hurry to disassemble the components. If components are disassembled immediately any failure occurs:
  - Parts that have no connection with the failure or other unnecessary parts will be disassembled.
  - It will become impossible to find the cause of the failure.

It will also cause a waste of manhours, parts, or oil or grease, and at the same time, will also lose the confidence of the user or operator. For this reason, when carrying out troubleshooting, it is necessary to carry out thorough prior investigation and to carry out troubleshooting in accordance with the fixed procedure.
2. Points to ask user or operator
  - 1) Have any other problems occurred apart from the problem that has been reported?
  - 2) Was there anything strange about the machine before the failure occurred?
  - 3) Did the failure occur suddenly, or were there problems with the machine condition before this?
  - 4) Under what conditions did the failure occur?
  - 5) Had any repairs been carried out before the failure? When were these repairs carried out?
  - 6) Has the same kind of failure occurred before?
3. Check before troubleshooting
  - 1) Is there any sign of irregularities of the machine?
  - 2) Make checks before starting day's work.
  - 3) Make checks of other items.
  - 4) Other maintenance items can be checked externally, so check any item that is considered to be necessary.
4. Confirming failure
 

Confirm the extent of the failure yourself, and judge whether to handle it as a real failure or as a problem with the method of operation, etc.

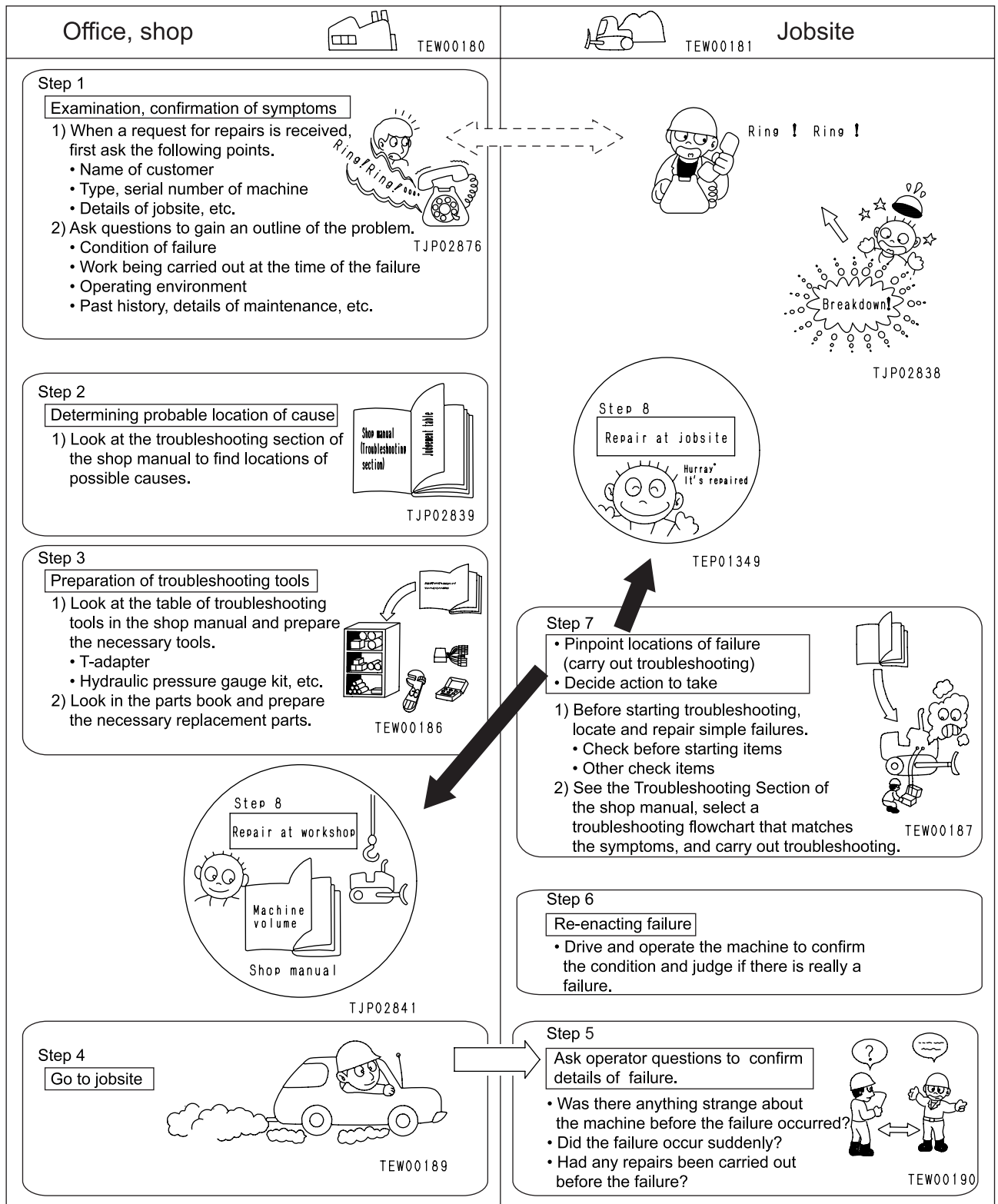
  - ★ When operating the machine to reenact the troubleshooting symptoms, do not carry out any investigation or measurement that may make the problem worse.
5. Troubleshooting
 

Use the results of the investigation and inspection in Items 2 – 4 to narrow down the causes of failure, then use the troubleshooting table or troubleshooting flowchart to locate the position of the failure exactly.

  - ★ The basic procedure for troubleshooting is as follows.
    - 1] Start from the simple points.
    - 2] Start from the most likely points.
    - 3] Investigate other related parts or information.
6. Measures to remove root cause of failure
 

Even if the failure is repaired, if the root cause of the failure is not repaired, the same failure will occur again. To prevent this, always investigate why the problem occurred. Then, remove the root cause.

### Sequence of events in troubleshooting



## Checks before troubleshooting

### 1. Chassis

	Item	Judgement Value	Action
Lubricating oil, coolant	1. Check fuel level, type of fuel	—	Add fuel
	2. Check for impurities in fuel	—	Clean, drain
	3. Check hydraulic oil level	Between H – L	Add oil
	4. Check hydraulic oil strainer	—	Clean, drain
	5. Check engine oil level (oil pan oil level)	Between H – L	Add oil
	6. Check coolant level (in sub tank)	Between H – L	Add coolant
	7. Check dust indicator for clogging	No red part	Clean or replace
	8. Check hydraulic filtering	—	Replace
Hydraulic, mechanical equipment	1. Check for abnormal noise, smell	—	Repair
	2. Check for oil leakage	—	Repair
	3. Carry out air bleeding	—	Bleed air
Electrical equipment	1. Check for looseness, corrosion of battery terminal, wiring	—	Tighten or replace
	2. Check for looseness, corrosion of alternator terminal, wiring	—	Tighten or replace
	3. Check for looseness, corrosion of starting motor terminal, wiring	—	Tighten or replace
	4. Check battery voltage (Engine stopped)	20 – 30 V	Charge or replace
	5. Check battery electrolyte level	Between H – L	Add or replace
	6. Check for discolored, burnt, exposed wiring	—	Charge or replace
	7. Check for missing wiring clamps, hanging wire	—	Repair
	8. Check for water leaking on wiring (Pay particular attention to water leaking on connectors or terminals)	—	Disconnect connector and dry
	9. Check for blown, corroded fuses	—	Replace
	10. Check alternator voltage (Engine running at 1/2 throttle or above)	After running for several minutes: 27.5 – 29.5 V	Replace
	11. Check operating sound of battery relay (When starting switch is turned ON, OFF)	—	

## 2. Crusher

	Item	Judgment value	Action
Wear of consumable parts	1. Wear of fixed jaw	Wear limit *See Testing and adjusting.	Reverse or replace
	2. Wear of swing jaw		
	3. Wear of cheek plate		Replace
	4. Wear of protector		
	5. Wear of movable tooth wedge		
	6. Wear of toggle seat		
	7. Wear of toggle plate		
Spring	1. Check tooth plate wedge bolt spring case	Standard value *See Testing and adjusting.	Retighten
	2. Check tension spring		
	Check of crusher driving V-belt tension		Adjust

## 3. Belt conveyor

	Item	Judgment value	Action
Rollers	Check carrier roller and return roller	Must rotate easily	Adjust or replace
	Dirt or mud attached to, or foreign material caught in carrier roller or return roller	Must not exist	Clean
	Damage of head pulley and tail pulley	Must not exist	Replace
	Check of conveyor belt tension	Standard value *See Testing and adjusting	Adjust
	Check belt cleaner and scraper	Must work	Adjust or replace

## 4. Others

Item	Judgment value
Machine installation condition (during work)	Must be on a flat firm surface
Machine exterior damage (by loading machine etc.) or modification (*1)	Harmful damage must not exist

\*1: Frame deformation by hitting the hydraulic excavator bucket to the conveyor frame (that can cause the belt meandering or abnormal rotation of head pulley)  
Addition of liner plate to the feeder (that weakens the feeder feeding force)



## Classification and procedures of troubleshooting

### Classification for troubleshooting

Type	Contents
<b>Display of code</b>	Troubleshooting by failure code
<b>E mode</b>	Troubleshooting for electrical system
<b>H mode</b>	Troubleshooting for hydraulic and mechanical system
<b>S mode</b>	Troubleshooting for engine

### Procedure for troubleshooting

If a phenomenon looking like a trouble occurs in the machine, select a proper troubleshooting No. according to the following procedure, and then go to the corresponding troubleshooting section.

**1. Procedure for troubleshooting to be taken when user code and failure code are displayed on machine monitor:**

If a user code and a failure code are displayed on the machine monitor, carry out the troubleshooting for the corresponding “**Display of code**” according to the displayed failure code.

**2. When electrical system failure code or mechanical system failure code is recorded in fault history:**

If a user code and a failure code are not displayed on the machine monitor, check for a mechanical system failure code and an electrical system failure code with the fault history function of the machine monitor.

If a failure code is recorded, carry out troubleshooting for the corresponding “**Display of code**” according to that code.

- ★ If an electrical system failure code is recorded, delete all the codes and reproduce them, and then see if the trouble is still detected.
- ★ A failure code of the mechanical system cannot be deleted.
- ★ If a trouble is displayed in the air conditioner fault history or heater fault history by the fault history function, carry out the corresponding troubleshooting in “**E mode**”.

**3. When user code or failure code is not displayed and no failure code is recorded in fault history:**

If a user code or a failure code is not displayed on the machine monitor and no failure code is recorded in the fault history, a trouble that the machine cannot find out by itself may have occurred in the electrical system or hydraulic and mechanical system.

In this case, check the phenomenon looking like a trouble again and select the same phenomenon from the table of “Phenomena looking like troubles and troubleshooting Nos.”, and then carry out troubleshooting corresponding to that phenomenon in the “**E mode**”, “**H mode**”, or “**S mode**”.

## Phenomena considered to be failures and troubleshooting Nos.

No.	Phenomena considered to be failures		Troubleshooting			
			Indication of code	E-mode	H-mode	S-mode
<b>Phenomena related to user code, error code, or failure code</b>						
1	User code is displayed on machine monitor		According to indicated code			
2	When failure history is checked, error code is displayed in electrical system					
3	When failure history is checked, error code is displayed in mechanical system					
<b>Phenomena related to engine</b>						
4	Engine does not start easily (It always takes time to start)					S-1
5	Engine does not start	Engine does not crank		E-1		S-2 a)
6		Engine cranks but exhaust smoke does not come out				S-2 b)
7		Exhaust smoke comes out but engine does not start				S-2 c)
8	Engine speed does not rise sharply					S-3
9	Engine stops during operation			E-2	H-2	S-4
10	Engine does not rotate smoothly					S-5
11	Engine lacks output (or lacks power)				H-1	S-6
12	Exhaust gas color is bad (Incomplete combustion)					S-7
13	Oil is consumed much or (exhaust gas color is blue)					S-8
14	Oil becomes dirty quickly					S-9
15	Fuel is consumed much					S-10
16	Coolant contains oil (or coolant spurts back or coolant level goes down)					S-11
17	Oil pressure drops					S-12
18	Oil level rises (Water or fuel is mixed in oil)					S-13
19	Coolant temperature becomes too high (overheating)					S-14
20	Abnormal sound comes out					S-15
21	Vibration is excessive					S-16
22	Engine does not stop					
23	Automatic warm-up function does not work			E-3		
24	The engine preheater does not operate			E-4		
<b>Phenomena related to work equipment and travel</b>						
25	Speed or power of whole work equipment and travel is low				H-1	S-6
26	Engine speed lowers extremely or engine stalls				H-2	S-4
27	All work equipment stops suddenly			E-5		
28	Work equipment and travel systems do not work				H-3	
29	Abnormal sound comes out from around hydraulic pump				H-4	
30	Fine control performance or response is low				H-5	

No.	Phenomena considered to be failures	Troubleshooting			
		Indication of code	E-mode	H-mode	S-mode
<b>Phenomena related to work equipment</b>					
31	Conveyor does not operate			H-6	
32	Speed or power of conveyor is low			H-7	
33	Crusher does not operate			H-8	
34	Speed or power of crusher is low			H-9	
35	Feeder does not operate			H-10	
36	Feeder does not feed smoothly (Vibration frequency is low)			H-11	
37	Magnetic separator does not operate			H-12	
38	Speed of magnetic separator belt is low			H-13	
39	Side conveyor does not operate			H-14	
40	Speed or power of side conveyor is low			H-15	
41	Primary conveyor and side conveyor do not move up and down			H-16	
42	Feeder cannot be turned ON and OFF by radio control		E-19		
43	One-touch start, stop switch cannot be operated by radio control		E-20		
44	Rotating direction cannot be changed by radio control		E-16		
<b>Phenomena related to travel</b>					
45	Machine deviates during travel			H-17	
46	Travel speed is low			H-18	
47	Machine is not steered well or steering power is low			H-19	
48	Travel motor does not work		E-17	H-20	
49	When travel switch of radio controller is depressed, machine does not travel		E-18	H-21	
<b>Phenomena related to monitor panel (Operator menu: Ordinary screen)</b>					
50	Red mark of emergency stop is indicated just after engine is started		E-6		
51	No items are displayed on machine monitor		E-7		
52	Some items are not displayed on machine monitor		E-8		
53	Contents of display by machine monitor are different from applicable machine		E-9		
54	Radiator coolant level monitor lights red during check before starting	B@BCZK			
55	Engine oil level monitor lights red during check before starting	B@BAZK			
56	Maintenance hour monitor lights red during check before starting	Refer to Operation & Maintenance Manual			
57	Battery charge level monitor lights red while engine is running	AB00KE			
58	Fuel level monitor lights red while engine is running		E-10		
59	Air cleaner clogging monitor lights red while engine is running	AA10NX			
60	Engine coolant temperature monitor lights red while engine is running	B@BCNS			
61	Hydraulic oil temperature monitor lights red while engine is running	B@HANS			
62	Engine coolant temperature gauge does not display normally		E-11		
63	Fuel level gauge does not display normally		E-12		

No.	Phenomena considered to be failures	Troubleshooting			
		Indication of code	E-mode	H-mode	S-mode
64	Hydraulic oil temperature gauge does not display normally		E-13		
65	Travel, work, and inspection modes do not change		E-14		
66	Crusher clearance adjustment mode does not change		E-15		
67	When switches on monitor are operated, nothing is displayed		E-21		
<b>Phenomena related to monitor panel (Service menu: Special function screen)</b>					
68	Crusher cannot be operated with crusher manual forward/reverse switch on monitor		E-22		
69	Conveyor cannot be operated with conveyor manual forward/reverse switch on monitor		E-23		
70	Crusher clearance cannot be adjusted with crusher clearance increase/decrease switch on monitor			H-22	
<b>Phenomena related to KOMTRAX system</b>					
71	KOMTRAX system does not operate normally		E-24		

### Contents of troubleshooting table

★ The following information is summarized in the troubleshooting table and the related electrical circuit diagram. Before carrying out troubleshooting, understand that information fully.

User code	Failure code	Trouble	Names of the failure symptoms displayed in the failure history on the machine monitor
<b>Machine monitor display</b>	<b>Machine monitor display</b>		
Contents of trouble	<b>State where the machine monitor or controller detects the trouble</b>		
Action of controller	<b>Action to be taken to protect the system and equipment when the machine monitor or controller detects a trouble</b>		
Problem that appears on machine	<b>Problem that appears as an abnormality in the machine by the action (above) taken by monitor or controller</b>		
Related information	<b>Information related to troubles occurred or troubleshooting</b>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
		1	Cause by which a trouble is assumed to be detected (The order number indicates a serial number, not a priority sequence.)
	2		
	3		
	4		

**Circuit diagram related**

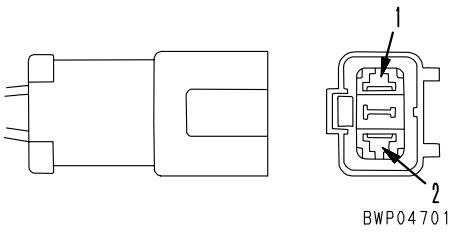
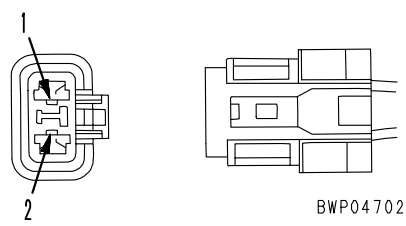
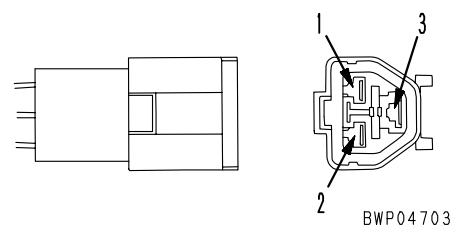
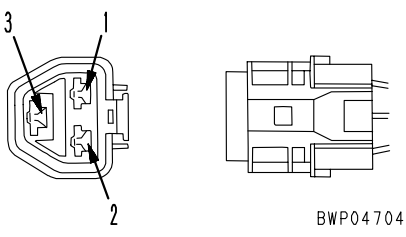
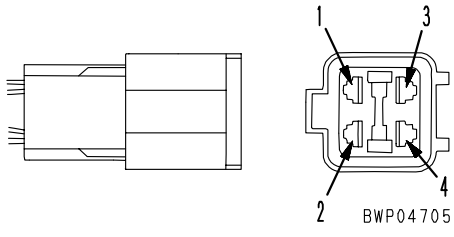
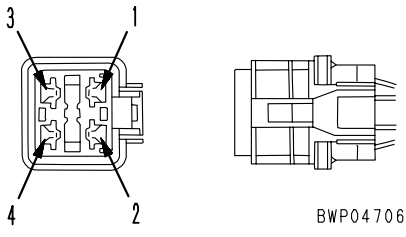
This drawing is a part of the electric circuit diagram related to troubleshooting.

- Connector No.: Indicates (Model - Number of pins) and (Color).
- "Connector No. and pin No." from each branching/merging point: Shows the ends of branch or source of merging within the parts of the same wiring harness.
- Arrow (←→): Roughly shows the location on the machine.

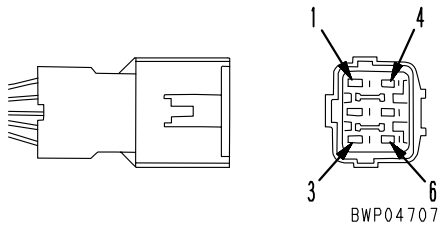
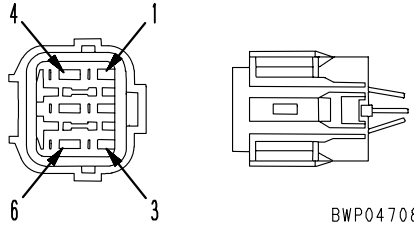
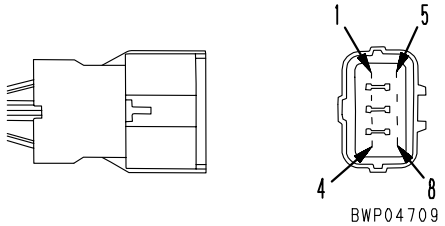
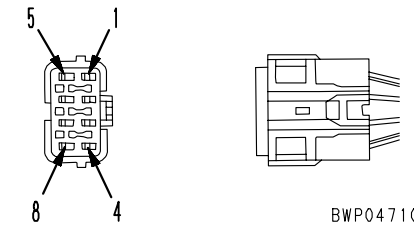
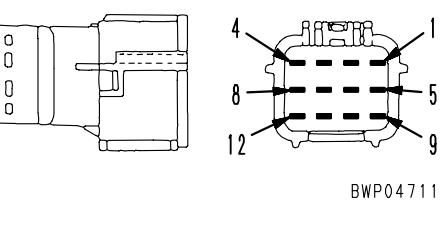
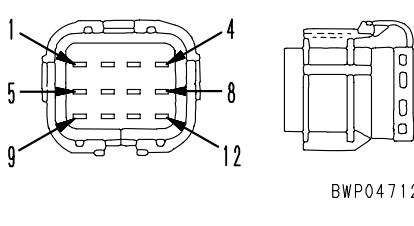
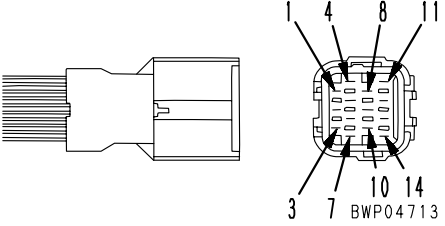
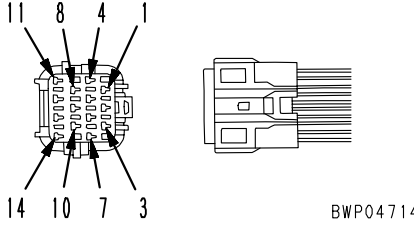
**Wiring table for connector pin numbers**

(Rev. 2006.11)

★ The terms of male and female refer to the pins, while the terms of male housing and female housing refer to the mating portion of the housing.

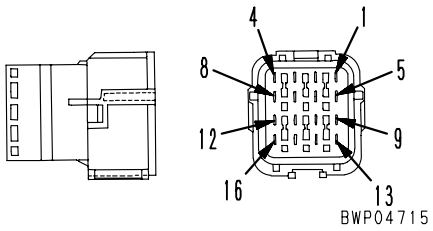
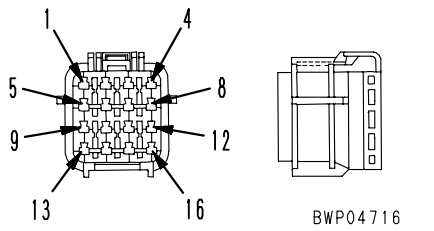
No. of pins	X type connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
1	Part No. : 08055-00181	Part No. : 08055-00191	799-601-7010
2	 <p>BWP04701</p>	 <p>BWP04702</p>	799-601-7020
	Part No. : 08055-00282	Part No. : 08055-00292	
3	 <p>BWP04703</p>	 <p>BWP04704</p>	799-601-7030
	Part No. : 08055-00381	Part No. : 08055-00391	
4	 <p>BWP04705</p>	 <p>BWP04706</p>	799-601-7040
	Part No. : 08055-00481	Part No. : 08055-00491	
—	Terminal part No. : 79A-222-3370 ·Electric wire size: 0.85 ·Grommet:Black ·Q'ty: 20	Terminal part No. : 79A-222-3390 ·Electric wire size: 0.85 ·Grommet:Black ·Q'ty: 20	—
—	Terminal part No. : 79A-222-3380 ·Electric wire size: 2.0 ·Grommet:Red ·Q'ty: 20	Terminal part No. : 79A-222-3410 ·Electric wire size: 2.0 ·Grommet:Red ·Q'ty: 20	—

9JS04890

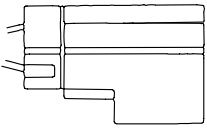
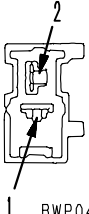
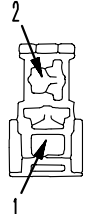
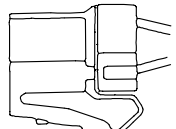
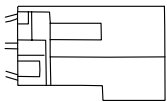
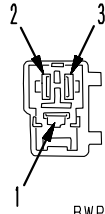
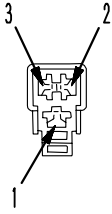
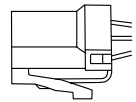
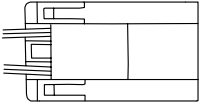
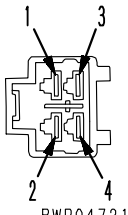
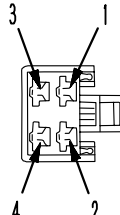


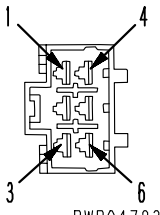
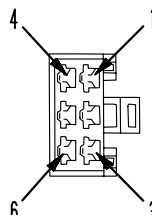
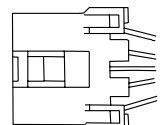
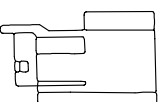
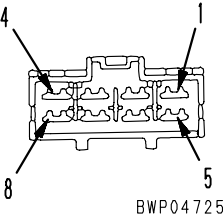
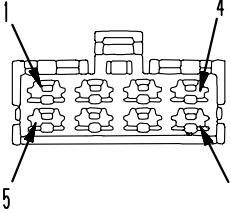

No. of pins	SWP type connector		
	Male (female housing)		Female (male housing)
6	 <p>BWP04707</p>		 <p>BWP04708</p>
	Part No. : 08055-10681		Part No. : 08055-10691
8	 <p>BWP04709</p>		 <p>BWP04710</p>
	Part No. : 08055-10881		Part No. : 08055-10891
12	 <p>BWP04711</p>		 <p>BWP04712</p>
	Part No. : 08055-11281		Part No. : 08055-11291
14	 <p>BWP04713</p>		 <p>BWP04714</p>
	Part No. : 08055-11481		Part No. : 08055-11491

9JS04891

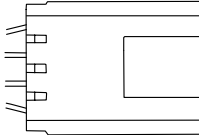
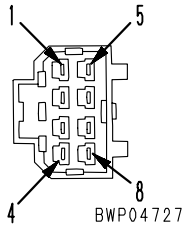
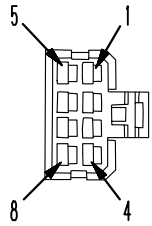
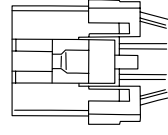
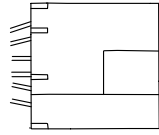
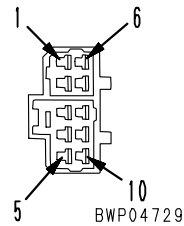
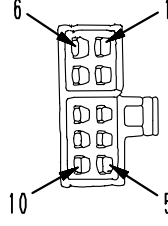
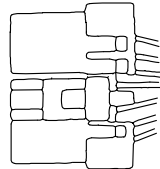
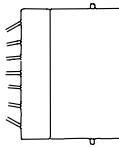
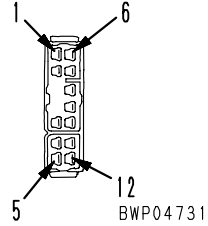
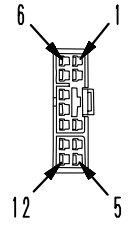
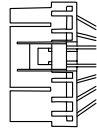
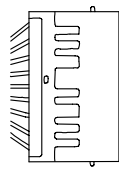
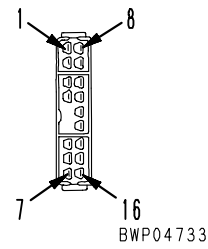
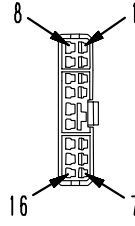
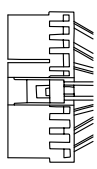


No. of pins	SWP type connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
16	 <p>Part No. : 08055-11681</p>	 <p>Part No. : 08055-11691</p>	799-601-7320
—	Terminal part No. : ·Electric wire size: 0.85 ·Grommet:Black ·Q'ty: 20	Terminal part No. : ·Electric wire size: 0.85 ·Grommet:Black ·Q'ty: 20	—
—	Terminal part No. : ·Electric wire size: 1.25 ·Grommet:Red ·Q'ty: 20	Terminal part No. : ·Electric wire size: 1.25 ·Grommet:Red ·Q'ty: 20	—

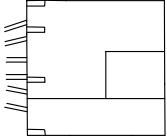
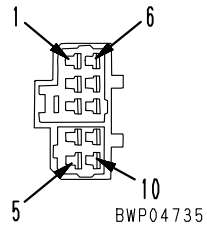
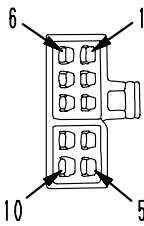
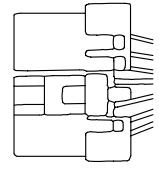
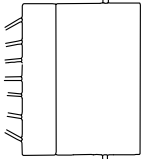
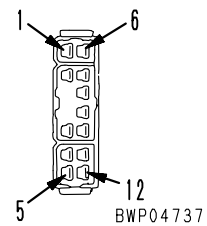
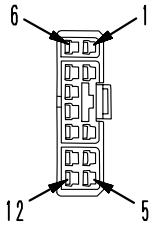
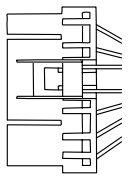
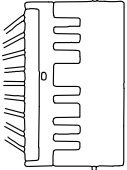
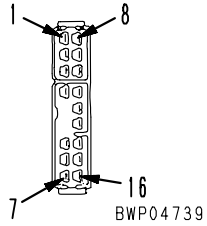
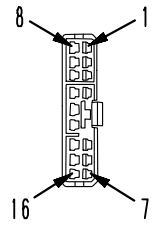
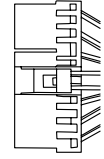
9JS04892

No. of pins	M type connector		
	Male (female housings)	Female (male housings)	T-adapter Part No.
1	Part No. : 08056-00171	Part No. : 08056-00181	799-601-7080
2	  <p>BWP04717</p>	  <p>BWP04718</p>	799-601-7090
	Part No. : 08056-00271	Part No. : 08056-00281	
3	  <p>BWP04719</p>	  <p>BWP04720</p>	799-601-7110
	Part No. : 08056-00371	Part No. : 08056-00381	
4	  <p>BWP04721</p>	  <p>BWP04722</p>	799-601-7120
	Part No. : 08056-00471	Part No. : 08056-00481	
6	  <p>BWP04723</p>	  <p>BWP04724</p>	799-601-7130
	Part No. : 08056-00671	Part No. : 08056-00681	
8	  <p>BWP04725</p>	  <p>BWP04726</p>	799-601-7340
	Part No. : 08056-00871	Part No. : 08056-00881	

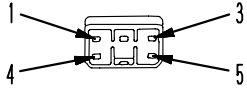
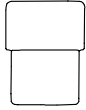
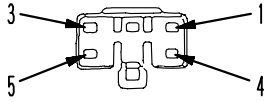
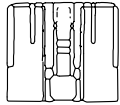
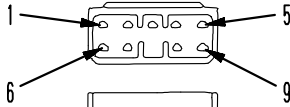
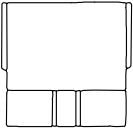
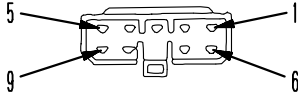
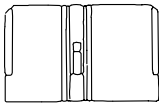
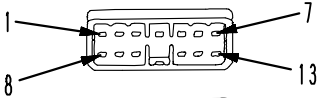

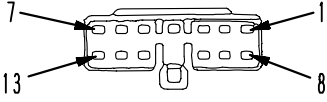
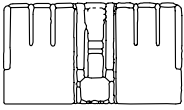
9JS04893

No. of pins	S type connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
8	  <p>BWP04727</p>	  <p>BWP04728</p>	799-601-7140
	Part No. : 08056-10871	Part No. : 08056-10881	
10 (White)	  <p>BWP04729</p>	  <p>BWP04730</p>	799-601-7150
	Part No. : 08056-11071	Part No. : 08056-11081	
12 (White)	  <p>BWP04731</p>	  <p>BWP04732</p>	799-601-7350
	Part No. : 08056-11271	Part No. : 08056-11281	
16 (White)	  <p>BWP04733</p>	  <p>BWP04734</p>	799-601-7330
	Part No. : 08056-11671	Part No. : 08056-11681	

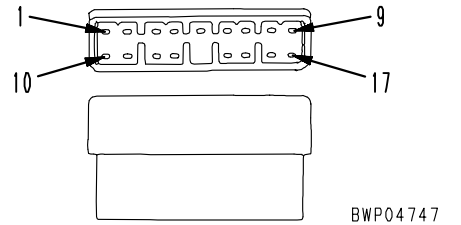
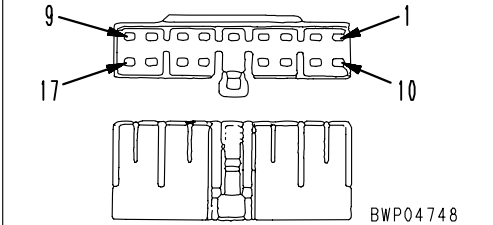
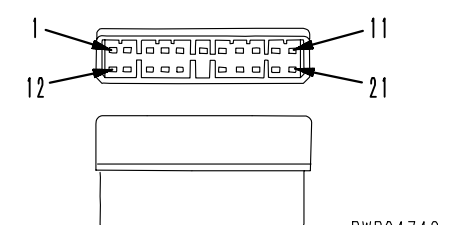
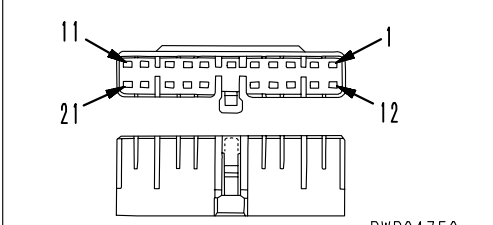
9JS04894

No. of pins	S type connector			T-adapter Part No.
	Male (female housing)		Female (male housing)	
10 (Blue)	  <p>BWP04735</p>		  <p>BWP04736</p>	—
	—	—	—	
12 (Blue)	  <p>BWP04737</p>		  <p>BWP04738</p>	799-601-7160
	Part No. : 08056-11272	Part No. : 08056-11282		
16 (Blue)	  <p>BWP04739</p>		  <p>BWP04740</p>	799-601-7170
	Part No. : 08056-11672	Part No. : 08056-11682		

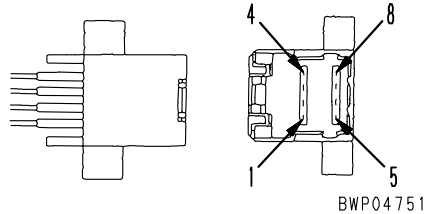
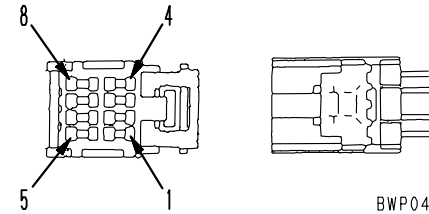
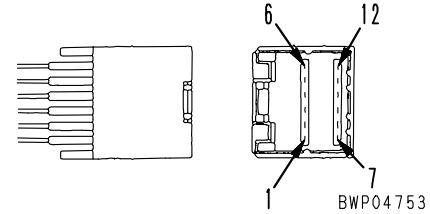
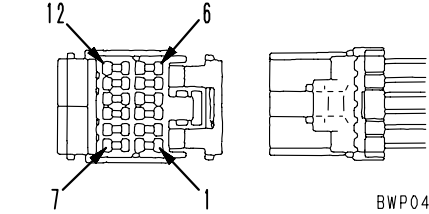
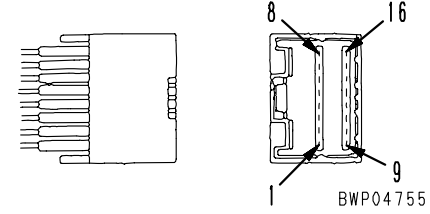
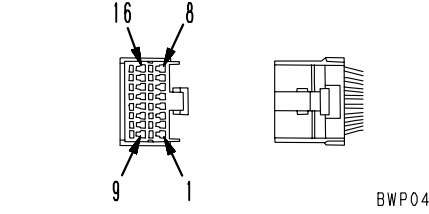
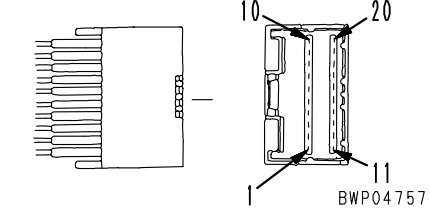
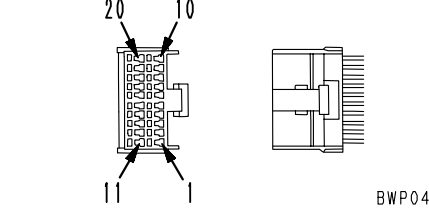
9JS04895

No. of pins	MIC type connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
7	Body part No. : 79A-222-2640 (Q' ty:5)	Body part No. : 79A-222-2630 (Q' ty:5)	—
11	Body part No. : 79A-222-2680 (Q' ty:5)	Body part No. : 79A-222-2670 (Q' ty:5)	—
5	  BWP04741	  BWP04742	799-601-2710
	Body part No. : 79A-222-2620 (Q' ty:5)	Body part No. : 79A-222-2610 (Q' ty:5)	
9	  BWP04743	  BWP04744	799-601-2950
	Body part No. : 79A-222-2660 (Q' ty:5)	Body part No. : 79A-222-2650 (Q' ty:5)	
13	  BWP04745	  BWP04746	799-601-2720
	Body part No. : 79A-222-2710 (Q' ty:2)	Body part No. : 79A-222-2690 (Q' ty:2)	

9JS04896

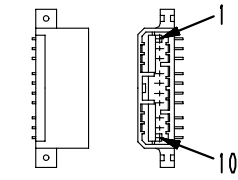
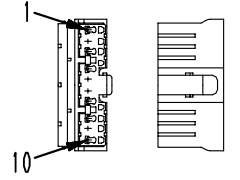
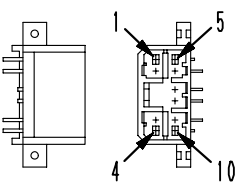
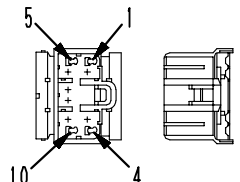
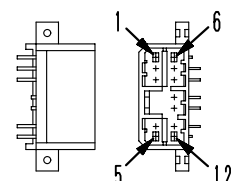
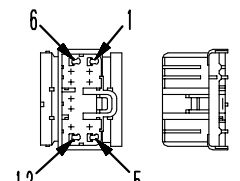
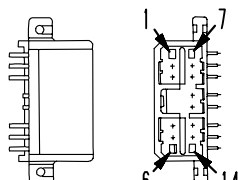
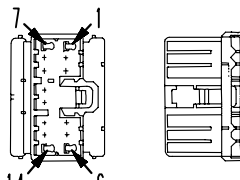
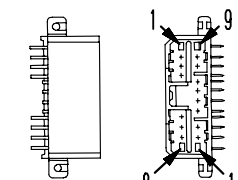
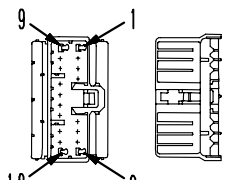
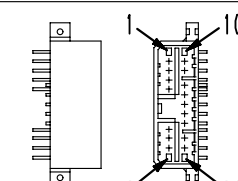
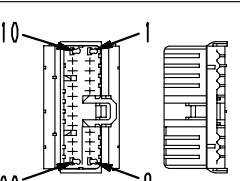
No. of pins	MIC type connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
17	 <p>BWP04747</p>	 <p>BWP04748</p>	799-601-2730
	<p>Body part No. : 79A-222-2730 (Q' ty:2)</p>		
21	 <p>BWP04749</p>	 <p>BWP04750</p>	799-601-2740
	<p>Body part No. : 79A-222-2750 (Q' ty:2)</p>		
	<p>Terminal part No. : 79A-222-2770 (Q' ty:50)</p>		
	<p>Terminal part No. : 79A-222-2760 (Q' ty:50)</p>		

9JS04897

No. of pins	AMP040 type connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
8	 <p>BWP04751</p>	 <p>BWP04752</p>	799-601-7180
	—	Housing part No. : 79A-222-3430 (Q' ty:5)	
12	 <p>BWP04753</p>	 <p>BWP04754</p>	799-601-7190
	—	Housing part No. : 79A-222-3440 (Q' ty:5)	
16	 <p>BWP04755</p>	 <p>BWP04756</p>	799-601-7210
	—	Housing part No. : 79A-222-3450 (Q' ty:5)	
20	 <p>BWP04757</p>	 <p>BWP04758</p>	799-601-7220
	—	Housing part No. : 79A-222-3460 (Q' ty:5)	

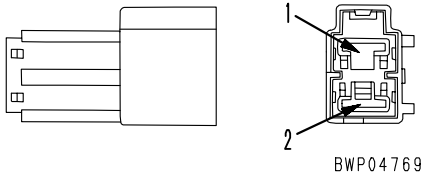
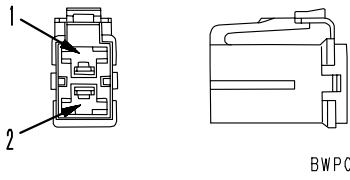
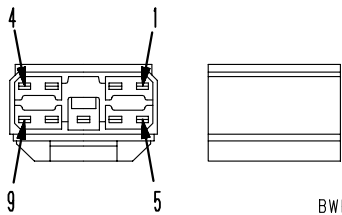
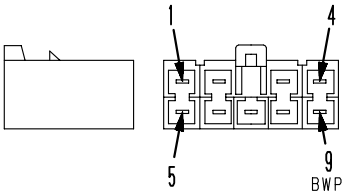
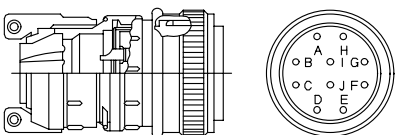
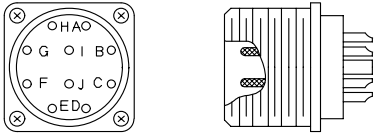
★ Terminal part No. : 79A-222-3470 (No relation with number of pins)

9JS04898

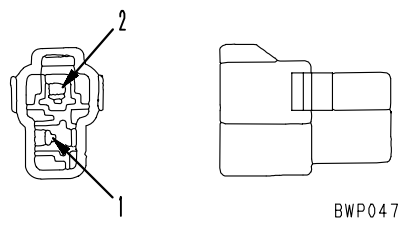
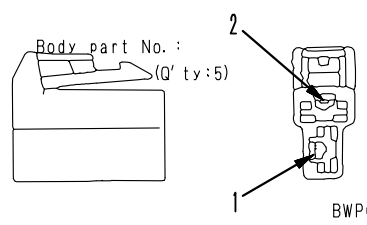
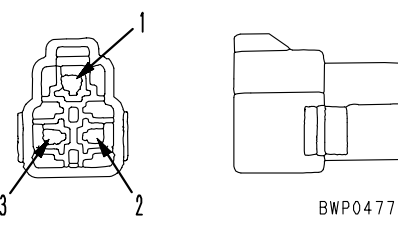
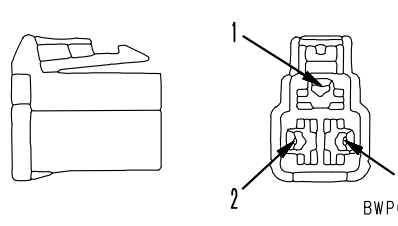
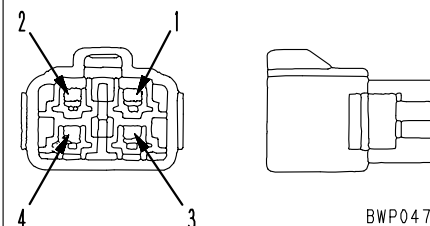
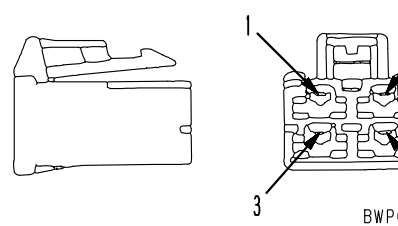
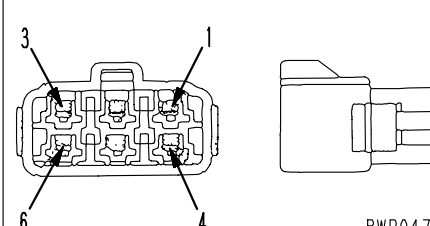
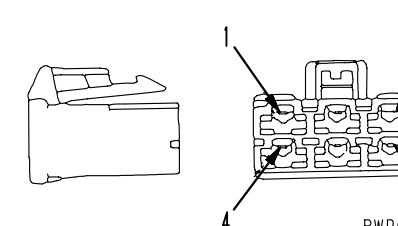
No. of pins	AMP070 type connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
10	 <p>BWP04759</p>	 <p>BWP04760</p>	—
	—	Part No. : 08195-10210	
10	 <p>9JS02245</p>	 <p>9JS02246</p>	799-601-7510
	—	Part No. : 7821-92-7330	
12	 <p>BWP04761</p>	 <p>BWP04762</p>	799-601-7520
	—	Part No. : 7821-92-7340	
14	 <p>BWP04763</p>	 <p>BWP04764</p>	799-601-7530
	—	Part No. : 7821-92-7350	
18	 <p>BWP04765</p>	 <p>BWP04766</p>	799-601-7540
	—	Part No. : 7821-92-7360	
20	 <p>BWP04767</p>	 <p>BWP04768</p>	799-601-7550
	—	Part No. : 7821-92-7370	

BJP15789

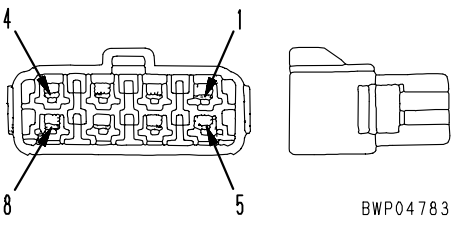
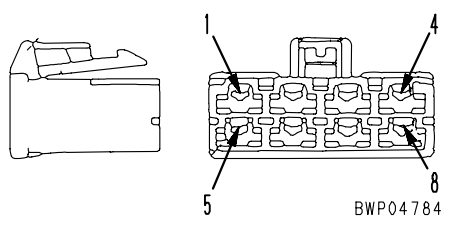
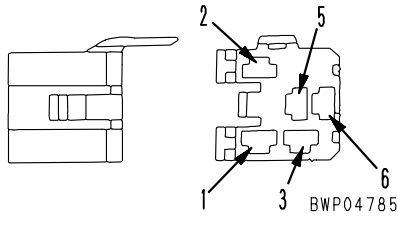
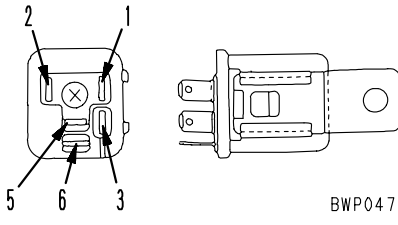
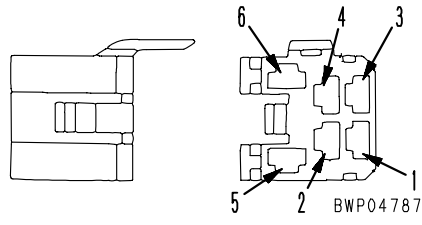
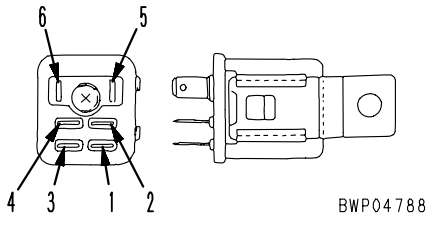


No. of pins	L type connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
2	 <p>BWP04769</p>	 <p>BWP04770</p>	—
	—	—	
No. of pins	Connector for PA		
	Male (female housing)	Female (male housing)	T-adapter Part No.
9	 <p>BWP04771</p>	 <p>BWP04772</p>	—
	—	—	
No. of pins	Bendix MS connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
10	 <p>BWP04773</p>	 <p>BWP04774</p>	799-601-3460
	—	—	

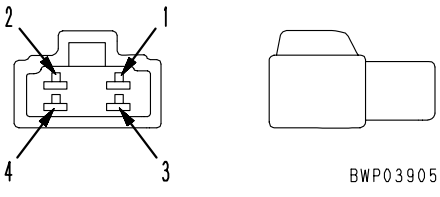
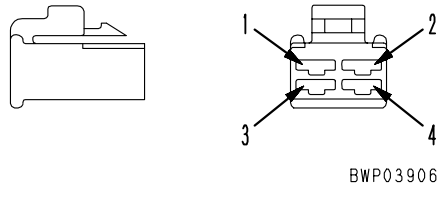
9JS04900

No. of pins	KES 1 (Automobile) connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
2	 <p>BWP04775</p>	 <p>Body part No. : (Qty:5)</p> <p>BWP04776</p>	—
	Part No. : 08027-10210 (Natural color) 08027-10220 (Black)		Part No. : 08027-10260 (Natural color) 08027-10270 (Black)
3	 <p>BWP04777</p>	 <p>BWP04778</p>	—
	Part No. : 08027-10310		Part No. : 08027-10360
4	 <p>BWP04779</p>	 <p>BWP04780</p>	—
	Part No. : 08027-10410 (Natural color) 08027-10420 (Black)		Part No. : 08027-10460 (Natural color) 08027-10470 (Black)
6	 <p>BWP04781</p>	 <p>BWP04782</p>	—
	Part No. : 08027-10610 (Natural color) 08027-10620 (Black)		Part No. : 08027-10660 (Natural color) 08027-10670 (Black)

9JS04901

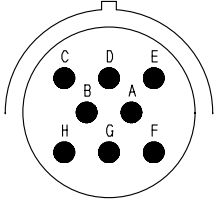
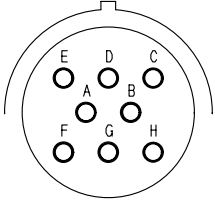
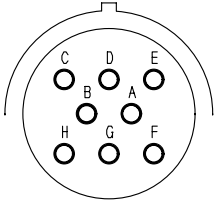
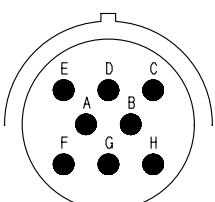
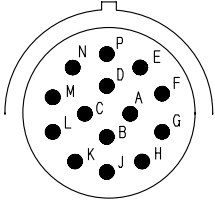
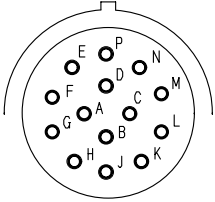
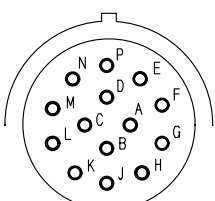
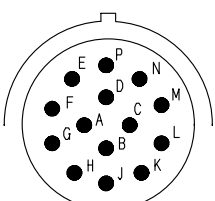
KES1 (Automobile) connector			
No. of pins	Male (female housing)	Female (male housing)	T-adapter Part No.
8	 <p>Part No. :08027-10810 (Natural color) 08027-10820 (Black)</p>	 <p>Part No. :08027-10860 (Natural color) 08027-10870 (Black)</p>	—
Connector for relay (Socket type)			
No. of pins	Male (female housing)	Female (male housing)	T-adapter Part No.
5			799-601-7360
6			799-601-7370

9JS04902

No. of pins	F type connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
4	 <p>BWP03905</p>	 <p>BWP03906</p>	—
	—	—	

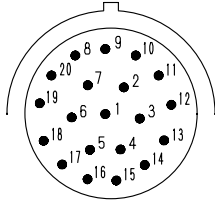
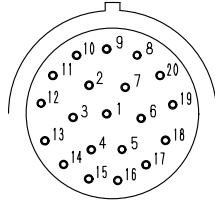
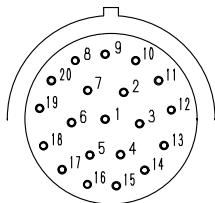
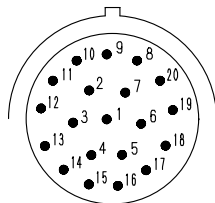
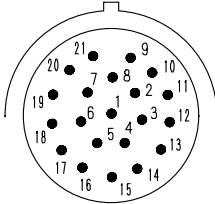
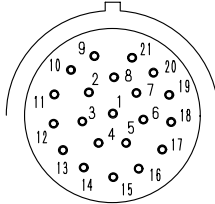
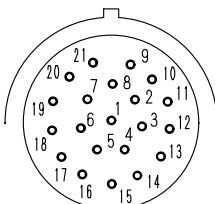
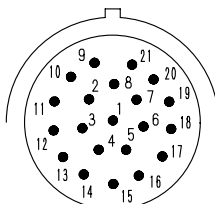
9JS04903

[The pin No. is also marked on the connector (electric wire insertion end)]

Type (shell size code)	HD30 Series connector		
	Body (plug)	Body (receptacle)	T-adaptor Part No.
18-8 (1)	Pin (male terminal)  BWP05001	Socket (female terminal)  BWP05002	799-601-9210
	Part No. :08191-11201, 08191-11202, 08191-11205, 08191-11206	Part No. :08191-14101, 08191-14102, 08191-14105, 08191-14106	
	Socket (female terminal)  BWP05003	Pin (male terminal)  BWP05004	799-601-9210
	Part No. :08191-12201, 08191-12202, 08191-12205, 08191-12206	Part No. :08191-13101, 08191-13102, 08191-13105, 08191-13106	
18-14 (2)	Pin (male terminal)  BWP05005	Socket (female terminal)  BWP05006	799-601-9220
	Part No. :08191-21201, 08191-21202, 08191-21205, 08191-21206	Part No. :08191-24101, 08191-24102, 08191-24105, 08191-24106	
	Socket (female terminal)  BWP05007	Pin (male terminal)  BWP05008	799-601-9220
	Part No. :08191-22201, 08191-22202, 08191-22205, 08191-22206	Part No. :08191-23101, 08191-23102, 08191-23105, 08191-23106	

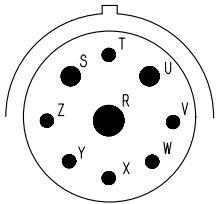
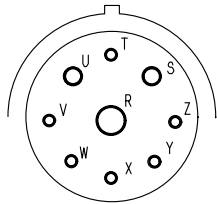
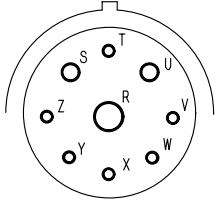
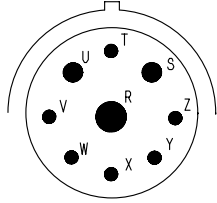
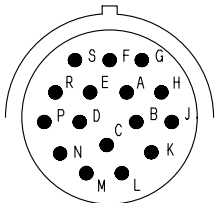
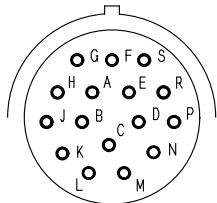
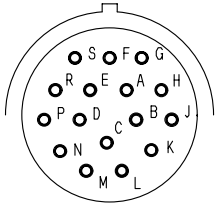
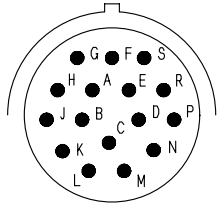
9JS04904

[The pin No. is also marked on the connector (electric wire insertion end)]

Type (shell size code)	HD30 Series connector		
	Body (plug)	Body (receptacle)	T-adaptor Part No.
18-20 (3)	Pin (male terminal)  BWP05009	Socket (female terminal)  BWP05010	799-601-9230
	Part No. :08191-31201, 08191-31202	Part No. :08191-34101, 08191-34102	
	Socket (female terminal)  BWP05011	Pin (male terminal)  BWP05012	799-601-9230
	Part No. :08191-32201, 08191-32202	Part No. :08191-33101, 08191-33102	
18-21 (4)	Pin (male terminal)  BWP05013	Socket (female terminal)  BWP05014	799-601-9240
	Part No. :08191-41201, 08191-42202	Part No. :08191-44101, 08191-44102	
	Socket (female terminal)  BWP05015	Pin (male terminal)  BWP05016	799-601-9240
	Part No. :08191-42201, 08191-42202	Part No. :08191-43101, 08191-43102	

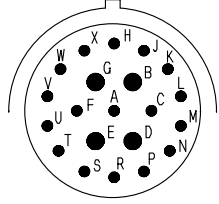
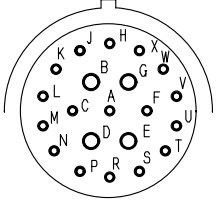
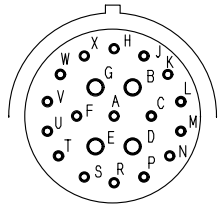
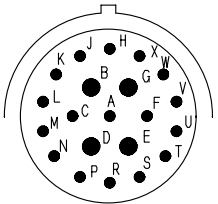
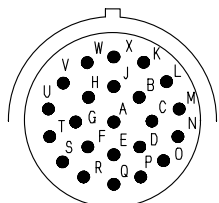
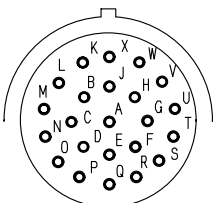
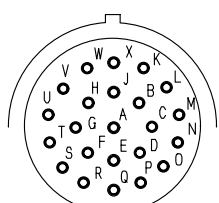
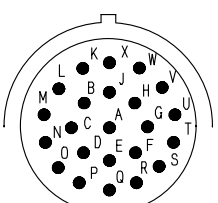
9JS04905

[The pin No. is also marked on the connector (electric wire insertion end)]

Type (shell size code)	HD30 Series connector		
	Body (plug)	Body (receptacle)	T-adaptor Part No.
24-9 (5)	Pin (male terminal)	Socket (female terminal)	799-601-9250
			
	Part No. :08191-51201, 08191-51202		Part No. :08191-54101, 08191-54102
	Socket (female terminal)	Pin (male terminal)	799-601-9250
			
Part No. :08191-52201, 08191-52202		Part No. :08191-53101, 08191-53102	
24-16 (6)	Pin (male terminal)	Socket (female terminal)	799-601-9260
			
	Part No. :08191-61201, 08191-62202, 08191-61205, 08191-62206		Part No. :08191-64101, 08191-64102, 08191-64105, 08191-64106
	Socket (female terminal)	Pin (male terminal)	799-601-9260
			
Part No. :08191-62201, 08191-62202, 08191-62205, 08191-62206		Part No. :08191-63101, 08191-63102, 08191-63105, 08191-63106	

9JS04906

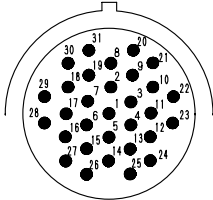
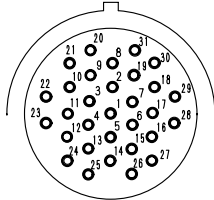
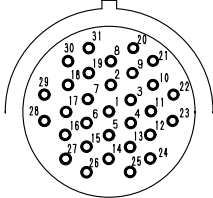
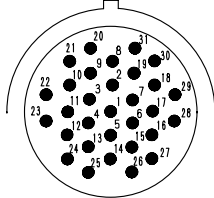
[The pin No. is also marked on the connector (electric wire insertion end)]

Type (shell size code)	HD30 Series connector		
	Body (plug)	Body (receptacle)	T-adaptor Part No.
24-21 (7)	Pin (male terminal)	Socket (female terminal)	799-601-9270
	 BWP05025	 BWP05026	
	Part No. : 08191-71201, 08191-71202, 08191-71205, 08191-71206	Part No. : 08191-74101, 08191-74102, 08191-74105, 08191-74106	
	Socket (female terminal)	Pin (male terminal)	799-601-9270
 BWP05027	 BWP05028		
	Part No. : 08191-72201, 08191-72202, 08191-72205, 08191-72206	Part No. : 08191-73101, 08191-73102, 08191-73105, 08191-73106	
24-23 (8)	Pin (male terminal)	Socket (female terminal)	799-601-9280
	 BWP05029	 BWP05030	
	Part No. : 08191-81201, 08191-81202, 08191-81203, 08191-81204, 08191-81205, 08191-80206	Part No. : 08191-84101, 08191-84102, 08191-84103, 08191-84104, 08191-84105, 08191-84106	
	Socket (female terminal)	Pin (male terminal)	799-601-9280
 BWP05031	 BWP05032		
	Part No. : 08191-82201, 08191-82202, 08191-82203, 08191-82204, 08191-82205, 08191-82206	Part No. : 08191-83101, 08191-83102, 08191-83103, 08191-83104, 08191-83105, 08191-83106	

9JS04907

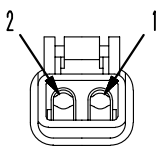
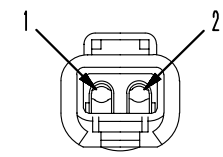
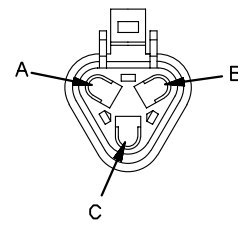
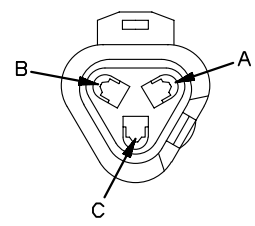
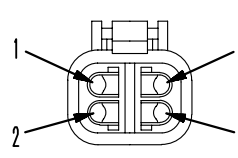
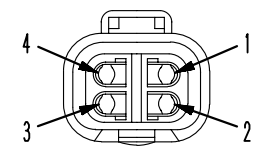
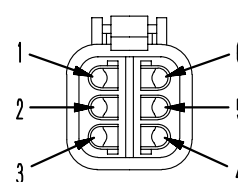
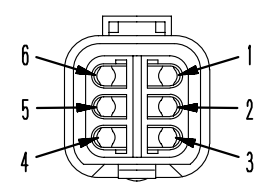


[The pin No. is also marked on the connector (electric wire insertion end)]

Type (shell size code)	HD30 Series connector		
	Body (plug)	Body (receptacle)	T-adapter Part No.
24-31 (9)	Pin (male terminal)	Socket (female terminal)	799-601-9290
	 <p>BWP05033</p>	 <p>BWP05034</p>	
	Part No. :08191-91203, 08191-91204, 08191-91205, 08191-91206	Part No. :08191-94103, 08191-94104, 08191-94105, 08191-94106	
	Socket (female terminal)	Pin (male terminal)	799-601-9290
 <p>BWP05035</p>	 <p>BWP05036</p>		
Part No. :08191-92203, 08191-92204, 08191-92205, 08191-92206	Part No. :08191-93103, 08191-93104, 08191-93105, 08191-93106		

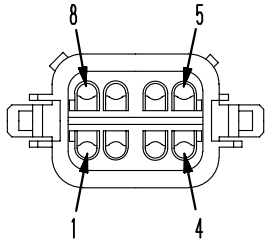
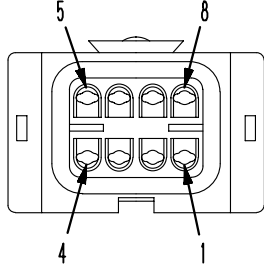
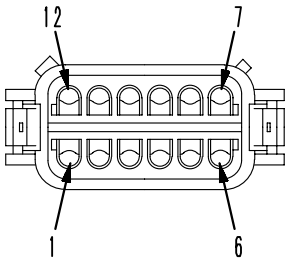
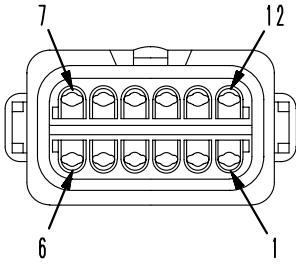
9JS04908

[The pin No. is also marked on the connector (electric wire insertion end)]

No. of pins	DT Series connector		
	Body (plug)	Body (receptacle)	T-adapter Part No.
2	 <p style="text-align: center;">BWP05037</p> <p style="text-align: center;">Part No. :08192-12200 (normal type) 08192-22200 (fine wire type)</p>	 <p style="text-align: center;">BWP05038</p> <p style="text-align: center;">Part No. :08192-12100 (normal type) 08192-22100 (fine wire type)</p>	799-601-9020
3	 <p style="text-align: center;">BWP05039</p> <p style="text-align: center;">Part No. :08192-1A200 (normal type) 08192-2A200 (fine wire type)</p>	 <p style="text-align: center;">BWP05040</p> <p style="text-align: center;">Part No. :08192-13100 (normal type) 08192-23100 (fine wire type)</p>	799-601-9030
4	 <p style="text-align: center;">BWP05041</p> <p style="text-align: center;">Part No. :08192-14200 (normal type) 08192-24200 (fine wire type)</p>	 <p style="text-align: center;">BWP05042</p> <p style="text-align: center;">Part No. :08192-14100 (normal type) 08192-24100 (fine wire type)</p>	799-601-9040
6	 <p style="text-align: center;">BWP05043</p> <p style="text-align: center;">Part No. :08192-16200 (normal type) 08192-26200 (fine wire type)</p>	 <p style="text-align: center;">BWP05044</p> <p style="text-align: center;">Part No. :08192-16100 (normal type) 08192-26100 (fine wire type)</p>	799-601-9050

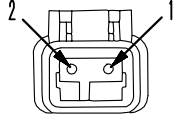
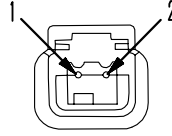
BJD14069

[The pin No. is also marked on the connector (electric wire insertion end)]

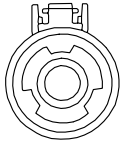

No. of pins	DT Series connector		
	Body (plug)	Body (receptacle)	T-adapter Part No.
8	 <p style="text-align: center;">BWP05045</p>	 <p style="text-align: center;">BWP05046</p>	8GR: 799-601-9060 8B: 799-601-9070 8G: 799-601-9080 8BR: 799-601-9090
	Part No. :08192-1820□ (normal type) 08192-2820□ (fine wire type)	Part No. :08192-1810□ (normal type) 08192-2810□ (fine wire type)	
12	 <p style="text-align: center;">BWP05047</p>	 <p style="text-align: center;">BWP05048</p>	12GR: 799-601-9110 12B: 799-601-9120 12G: 799-601-9130 12BR: 799-601-9140
	Part No. :08192-1920□ (normal type) 08192-2920□ (fine wire type)	Part No. :08192-1910□ (normal type) 08192-2910□ (fine wire type)	

9JS04910

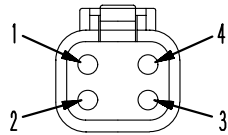
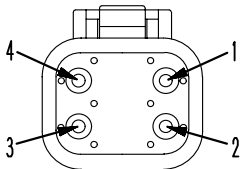
[The pin No. is also marked on the connector (electric wire insertion end)]

No. of pins	DTM Series connector		
	Body (plug)	Body (receptacle)	T-adapter Part No.
2	 BWP05049 Part No. :08192-02200	 BWP05050 Part No. :08192-02100	799-601-9010
	9JS04911		

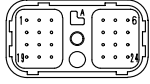
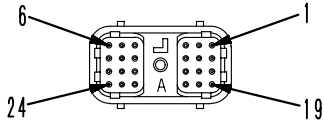
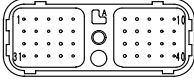
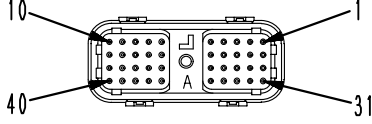
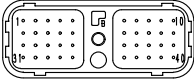
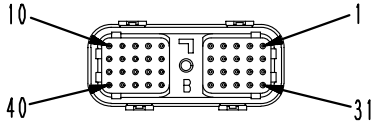
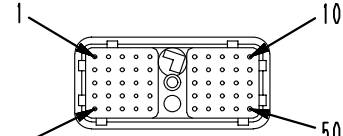
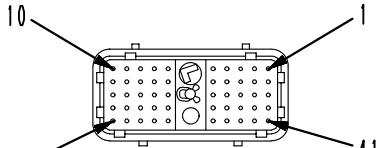
[The pin No. is also marked on the connector (electric wire insertion end)]

No. of pins	DTHD Series connector		
	Body (plug)	Body (receptacle)	T-adapter Part No.
2	 BWP05051 Part No. :08192-31200 (Contact size #12) 08192-41200 (Contact size #8) 08192-51200 (Contact size #4)	 BWP05052 Part No. :08192-31100 (Contact size #12) 08192-41100 (Contact size #8) 08192-51100 (Contact size #4)	—
	9JS04912		

[The pin No. is also marked on the connector (electric wire insertion end)]

No. of pins	DTP4 Series connector		
	Pin (male terminal)	Socket (female terminal)	T-adapter Part No.
4	 BJD14066	 BJD14067 Part No. :6261-81-2810	799-601-4260
	BJD14071		

[The pin No. is also marked on the connector (electric wire insertion end)]

No. of pins	DRC26 Series connector		
	Male pin (female housing)	Female pin (male housing)	T-adapter Part No.
24	 <p>BJD12722</p>	 <p>BJD12723</p>	799-601-9360 (Kit:799-601-9300)
	-	Part No. :08194-01101	
40 (A)	 <p>BJD12724</p>	 <p>BJD12725</p>	799-601-9350 (Kit:799-601-9300)
	-	Part No. :08194-02101	
40 (B)	 <p>BJD12726</p>	 <p>BJD12727</p>	799-601-9350 (Kit:799-601-9300)
	-	Part No. :08194-02102	
50	 <p>9JS02951</p>	 <p>9JS02952</p>	799-601-4210 (Kit:799-601-4100)
	-	Part No. :08194-03103	

BJW12751

[The pin No. is also marked on the connector (electric wire insertion end)]

No. of pins	DRC26 Series connector		
	Male pin (female housing)	Female pin (male housing)	T-adapter Part No.
60 -05※	<p style="text-align: center;">Key groove (05)</p> <p style="text-align: center;">BJD14063</p>	<p style="text-align: center;">Key (5)</p> <p style="text-align: center;">BJD14064</p>	799-601-4220 (Kit:799-601-4100)
	-	Part No. 08194-04104	
	※ -05:Key position		
60 -06※	<p style="text-align: center;">Key groove (06)</p> <p style="text-align: center;">BJD14063</p>	<p style="text-align: center;">Key (6)</p> <p style="text-align: center;">BJD14064</p>	Socket Part No.  799-601-4390
	-	-	
	※ -06:Key position		

BJW12752

[The pin No. is also marked on the connector (electric wire insertion end)]

No. of pins	DRC12, 16 Series connector		
	DRC12:Male pin (female housing)	DRC16:Female pin (male housing)	T-adapter Part No.
24 (A)※ (B) (C)			-
40 (A)※ (B) (C)			-
	-	Seal (S) Part No. : 17A-06-41830	
70 (A)※ (B) (C)			-
	-	Seal (S) Part No. : 17A-06-41840	

※ (A)、(B)、(C) : Key position

BJW12753

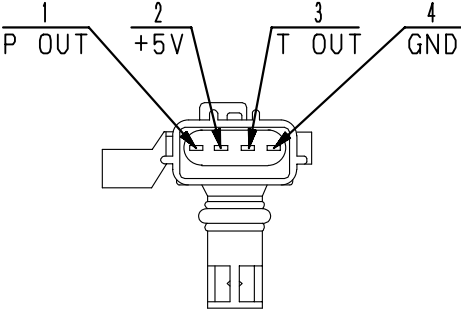
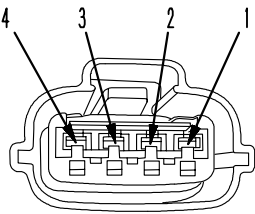
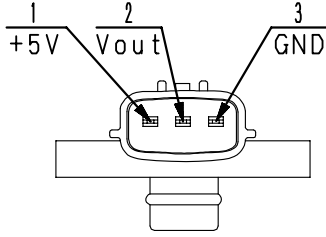
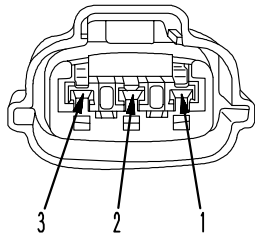
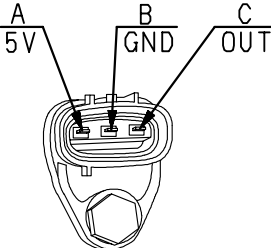
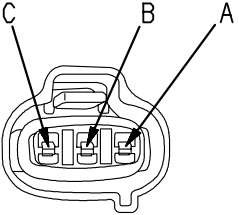
AMP connector for pump controller (CH700)		
No. of pins	PC200/220-8, 160-7E0, 128/138US-8, 228US-3E0 and so on	T-adapter Part No.
81	Controller side (plug)	799-601-4280
	—	
40	Harness side (receptacle)	799-601-4280
	Part No. : 7880-70-9040	
40	Controller side (plug)	799-601-4280
	—	
40	Harness side (receptacle)	799-601-4280
	Part No. : 7880-70-9010	

BJW12754

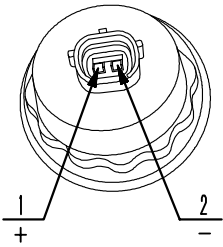
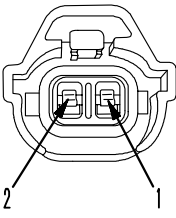


BOSCH connector for engine			
No. of pins	Boost (air intake) pressure and temperature sensor (95 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
4	<p>4 P OUT    3 +5V    2 T OUT    1 GND</p>	<p>1    2    3    4</p>	799-601-4380
	—	—	
No. of pins	Common rail (fuel) pressure sensor (95, 107, 114 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
3	<p>3 +5V    2 SIG    1 GND</p>	<p>1    2    3</p>	799-601-4190 (Kit:799-601-4100)
	—	—	
No. of pins	Fuel supply pump (95, 107 engine) and fuel injector (95 engine)		
	Valve side (plug)	Harness side (receptacle)	T-adapter Part No.
2	<p>2    1</p>	<p>1    2</p>	799-601-4340 (Kit:799-601-4100)
	—	—	

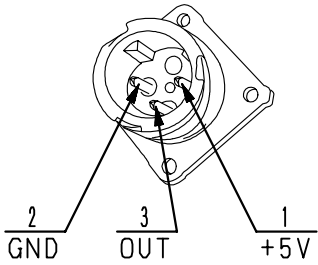
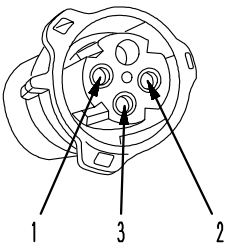
BJW12755

SUMITOMO connector for engine			
No. of pins	Boost (air intake) pressure and temperature sensor (107, 114 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
4			799-601-4230 (Kit:799-601-4100)
-	-	-	-
No. of pins	Boost (air intake) pressure sensor (125, 170, 12V140, 140 without EGR engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
3			799-601-4250 (Kit:799-601-4100)
-	-	-	-
No. of pins	G sensor (fuel supply pump speed sensor) (125, 140, 170, 12V140 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
3			799-601-4330 (Kit:799-601-4100)
-	-	-	-

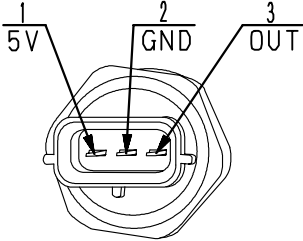
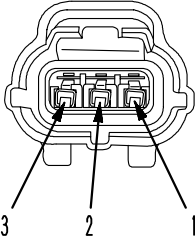
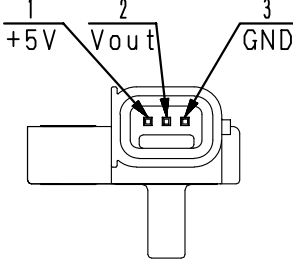
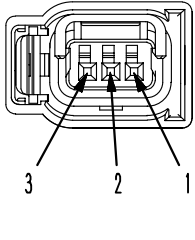
BJW12756

SUMITOMO connector for engine			
No. of pins	PCV (125, 140, 170, 12V140 engine)		
	Valve side (plug)	Harness side (receptacle)	T-adapter Part No.
2			799-601-9430 (Kit: 799-601-4100)
	-	-	

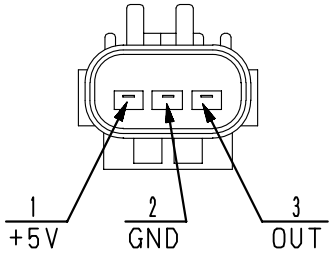
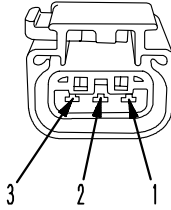
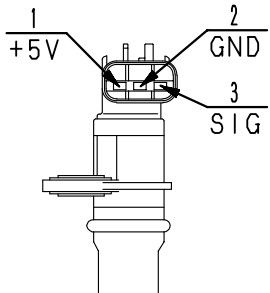
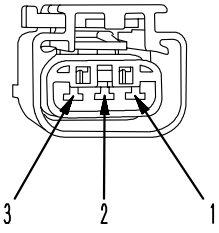
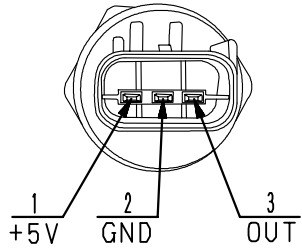
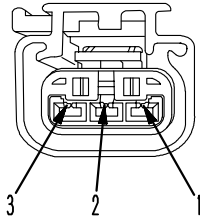
BJW12757

CANNON connector for engine			
No. of pins	Boost (air intake) pressure sensor (140 with EGR engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
4			799-601-4110
	☆ Without pin (4)	☆ Without pin (4)	

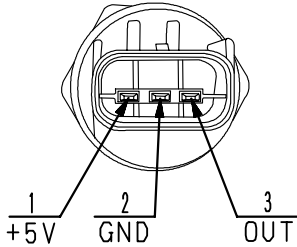
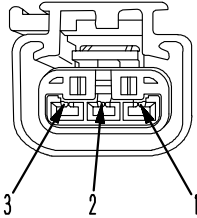
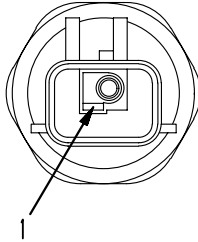
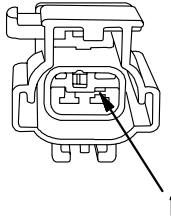
BJW12758

AMP connector for engine			
No. of pins	Common rail (fuel) pressure sensor (125, 140, 170, 12V140 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
3			799-601-9420 (Kit:799-601-4100)
	-	-	
No. of pins	Ambient pressure sensor (95, 125, 140, 170, 12V140 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
3			799-601-4240 (Kit:799-601-4100)
	-	-	

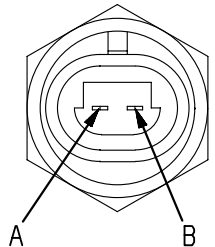
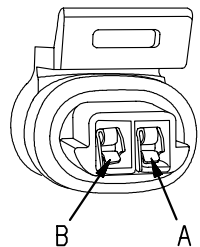
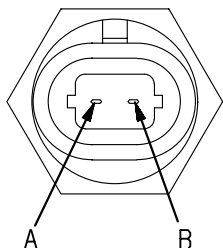
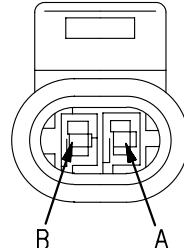
BJW12759

FRAMATOME connector for engine			
No. of pins	Ambient pressure sensor (107, 114 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
3			799-601-4140 Kit:799-601-4100
	—	—	
No. of pins	NE speed sensor (95, 107, 114, 125, 140, 170, 12V140 engine) and CAM sensor (95, 107, 114 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
3			799-601-4130 Kit:799-601-4100
	—	—	
No. of pins	EGR gas pressure sensor (125, 140 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
3			799-601-4180 Kit:799-601-4100
	—	—	

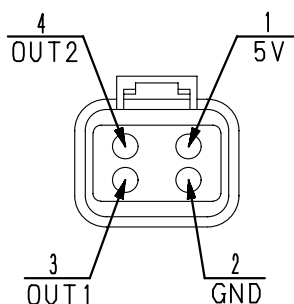
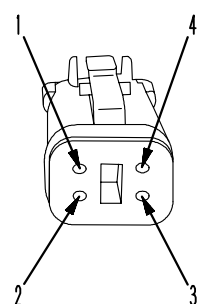
BJW12760

FRAMATOME connector for engine			
No. of pins	Lubricating oil pressure sensor (125, 140, 170, 12V140 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
3			799-601-4150 Kit:799-601-4100
	-	-	
No. of pins	Hydraulic switch (95, 107, 114 engine)		
	Switch side (plug)	Harness side (receptacle)	T-adapter Part No.
2			799-601-4160 Kit:799-601-4100
	☆ Without pin (2)	☆ Without pin (2)	

BJW12761

PACKARD connector for engine			
No. of pins	Temperature sensor of coolant, fuel and lubricating oil (95, 107, 114, 125, 140, 170, 12V140 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
2			795-799-5530 (Kit:799-601-4100)
	☆ Non-polarity	—	
No. of pins	Boost (air intake) temperature sensor (125, 140, 170, 12V140 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
2			795-799-5540 (Kit:799-601-4100)
	☆ Non-polarity	—	

BJW12762

DT series connector for engine			
No. of pins	EGR (by pass) valve stroke sensor (125, 140, 170, 12V140 engine)		
	Sensor side (plug)	Harness side (receptacle)	T-adapter Part No.
4			799-601-9040 (Kit:799-601-4100)
	—	—	

BJW12763







Part No.	Part name	Number of pins	Identification symbol	T-adapter kit												Out of kit	
				799-601-2500	799-601-2700	799-601-2800	799-601-7000	799-601-7100	799-601-7400	799-601-7500	799-601-8000	799-601-9000	799-601-9100	799-601-9200	799-601-9300		799-601-4100
799-601-9320	T-box (for DT/HD)	12										●	●				
799-601-9330	Case											●					
799-601-9340	Case											●					
799-601-9350	Adapter for DRC	40	DRC-40											●			
799-601-9360	Adapter for DRC	24	DRC-24											●			
799-601-9410*	Socket for engine (CRI-T2)	2	G														●
799-601-9420	Adapter for engine (CRI-T2) Adapter for engine (CRI-T3) PFUEL	3	A3													●	●
799-601-9430*	Socket for engine (CRI-T2) Socket for engine (CRI-T3) PCV	2	P													●	●
799-601-9440*	Socket for engine (CRI-T2)	3	1,2,3														●
795-799-5520*	Socket for engine (HPI-T2)	2	S														●
795-799-5530*	Socket for engine (HPI-T2) Socket for engine (CRI-T3) Temperature sensor	2	C													●	●
795-799-5540*	Socket for engine (HPI-T2) Socket for engine (CRI-T3) TIM	2	A													●	●
795-799-5460	Cable for engine (HPI-T2)	3															●
795-799-5470	Cable for engine (HPI-T2)	3															●
795-799-5480	Cable for engine (HPI-T2)	3															●
799-601-4110	Adapter for engine (140-T3) PIM	4	ITT3N														●
799-601-4130	Adapter for engine (CRI-T3) NE, CAM	3	FCIN													●	●
799-601-4140	Adapter for engine (CRI-T3) Atmosphere pressure	3	FCIG													●	●
799-601-4150	Adapter for engine (CRI-T3) POIL	3	FCIB													●	●
799-601-4160	Adapter for engine (CRI-T3) Oil pressure switch	2	4160													●	●
799-601-4180	Adapter for engine (CRI-T3) PEVA	3	4180													●	●
799-601-4190*	Socket for engine (CRI-T3) Commonrail pressure	3	1,2,3L													●	●
799-601-4230*	Socket for engine (CRI-T3) Air intake pressure/temperature	4	1,2,3,4C													●	●
799-601-4240*	Socket for engine (CRI-T3) PAMB	3	1,2,3A													●	●
799-601-4250*	Socket for engine (CRI-T3) PIM	3	1,2,3B													●	●
799-601-4330*	Socket for engine (CRI-T3) G	3	1,2,3,G													●	●
799-601-4340*	Socket for engine (CRI-T3) Pump actuator	2	2,PA													●	●
799-601-4380*	Socket for engine (CRI-T3)(95) Air intake pressure/temperature	4	1,2,3,4T														●
799-601-4260	Adapter for controller (ENG)	4	DTP4													●	●
799-601-4211	Adapter for controller (ENG)	50	DRC50													●	
799-601-4220	Adapter for controller (ENG)	60	DRC60													●	
799-601-4390*	Socket for controller (95 ENG)	60															●
799-601-4280	Box for controller (PUMP)	121															●
799-601-9720	Adapter for controller (HST)	16	HST16A														●
799-601-9710	Adapter for controller (HST)	16	HST16B														●
799-601-9370	Adapter for controller (HST)	26	HST26A														●

“\*” Shows not T-adapter but socket.

BR380JG-1E0 Mobile crusher

Form No. SEN02089-01

---

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

## 40 Troubleshooting

### Troubleshooting by failure code, Part 1

---

Failure code [7RC1KB] Short circuit conveyor ON switch .....	4
Failure code [7RC2KA] Disconnection in conveyor OFF switch .....	6
Failure code [7RC5KB] Short circuit in feeder ON switch .....	8
Failure code [7RD2KB] Short circuit in conveyor reverse relay .....	10
Failure code [7RD2KZ] Disconnection or short circuit in conveyor reverse relay .....	12
Failure code [7RE1KB] Short circuit in crusher ON switch .....	14
Failure code [7RE2KA] Disconnection in crusher OFF switch .....	16
Failure code [7RE6KB] Short circuit in muck discharge conveyor ON switch .....	18
Failure code [7RE7KA] Disconnection in muck discharge conveyor OFF switch .....	20
Failure code [7RE8KB] Short circuit in magnetic separator ON switch .....	22
Failure code [7RE9KA] Disconnection in magnetic separator OFF switch .....	24
Failure code [7REAKB] Short circuit in accessory input circuit .....	26
Failure code [7REDMA] Abnormality in primary conveyor pressure sensor .....	28
Failure code [7REEMA] Abnormality in muck conveyor pressure sensor .....	30
Failure code [7RENKZ] Abnormality in clearance potentiometer .....	32
Failure code [7REPKA] Disconnection in feeder OFF switch .....	34

---

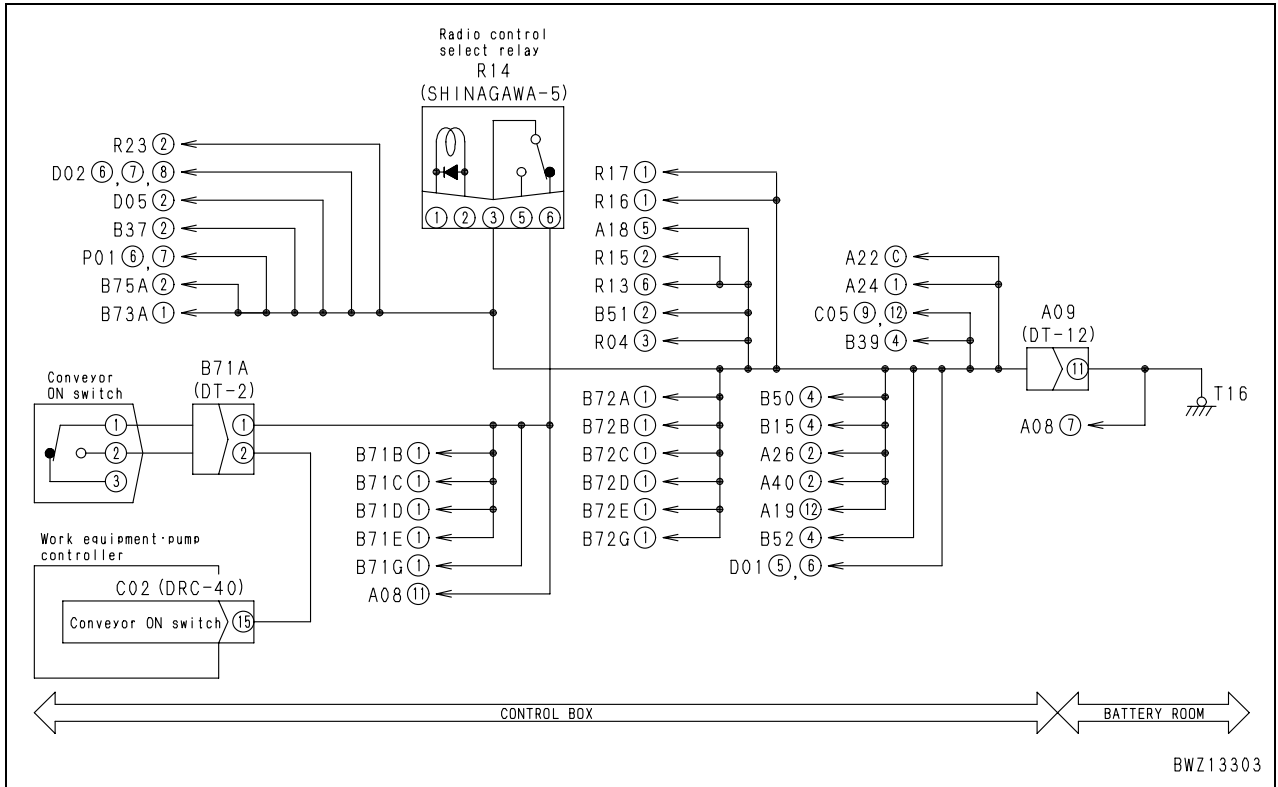
Failure code [7RESKB] Short circuit in one-touch start switch .....	36
Failure code [7RETKA] Disconnection in one-touch stop switch .....	38
Failure code [7RF2KA] Disconnection in crusher forward EPC valve.....	40
Failure code [7RF2KB] Short circuit in crusher forward EPC valve .....	41
Failure code [7RF2KY] Short circuit in crusher forward EPC valve .....	42
Failure code [7RF3KA] Disconnection in crusher reverse EPC valve.....	43
Failure code [7RF3KB] Short circuit in crusher reverse EPC valve .....	44
Failure code [7RF3KY] Short circuit in crusher reverse EPC valve .....	45
Failure code [7RF4KA] Disconnection in feeder forward EPC valve .....	46
Failure code [7RF4KB] Short circuit in feeder forward EPC valve .....	47
Failure code [7RF4KY] Short circuit in feeder forward EPC valve .....	48

### Failure code [7RC1KB] Short circuit conveyor ON switch

User code	Failure code	Trouble	Short circuit conveyor ON switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RC1KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the conveyor ON switch is closed (connected to ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF</li> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Output to the conveyor normal rotation EPC solenoid does not turn ON even if the conveyor ON switch is pressed.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Primary conveyor does not work even if the conveyor ON switch is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) from the conveyor ON switch can be checked with the monitoring function (Code: <b>25000</b>, Switch Input 0).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective conveyor ON switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
B71A (male)				Conveyor ON switch	Resistance
Between (1) and (2)				ON	Max. 1 Ω
		OFF	Min. 1 MΩ		
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C02 (female) (15) – B71 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C02 (female)	Conveyor ON switch	Resistance
			Between (15) and chassis ground	ON	Max.1 Ω
OFF	min.1 MΩ				

Related electrical circuit diagram



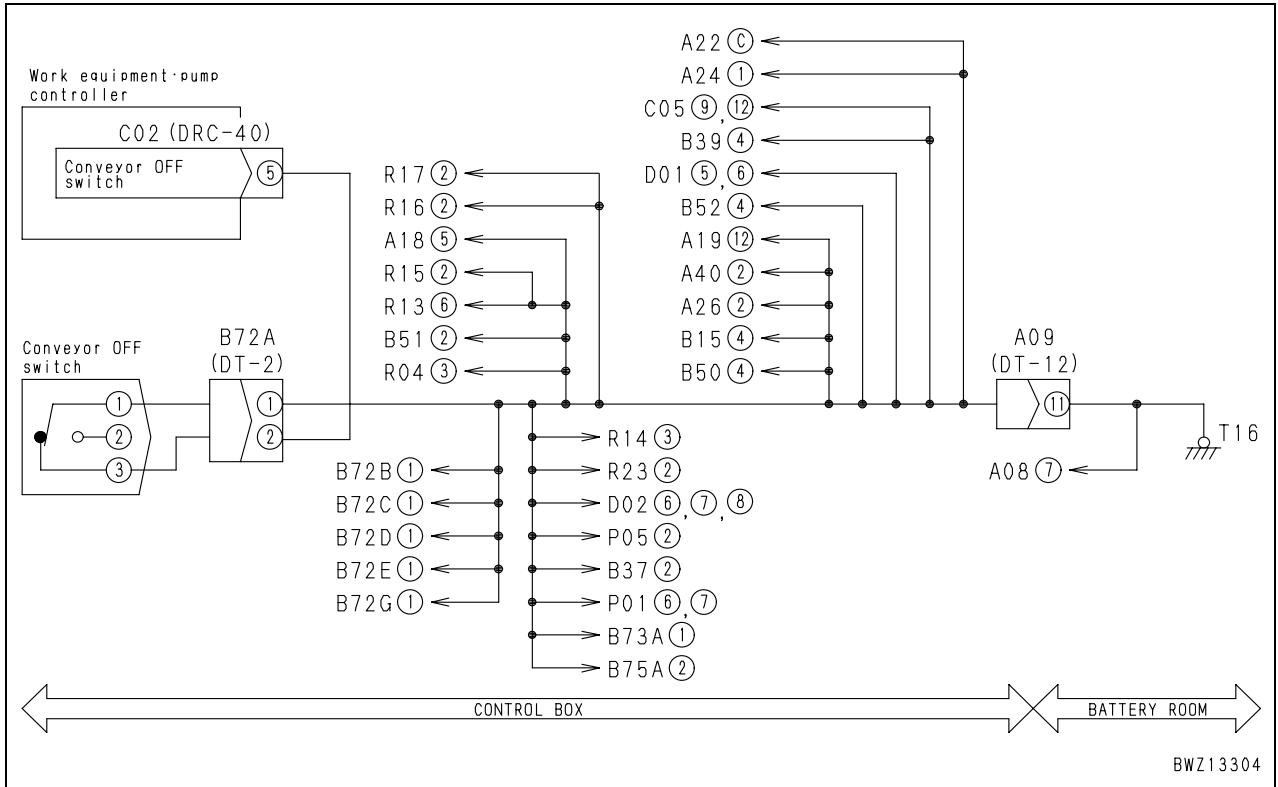
### Failure code [7RC2KA] Disconnection in conveyor OFF switch

User code	Failure code	Trouble	Disconnection in conveyor OFF switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RC2KA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the conveyor OFF switch is opened (disconnected from ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Turn OFF the output to conveyor normal rotation solenoid.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Conveyor does not work even if the conveyor ON switch is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) from the conveyor stop switch can be checked with the monitoring function (Code: <b>25000</b>, Switch Input 0).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective conveyor OFF switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
B72A (male)				Conveyor OFF switch	Resistance	
Between (1) and (2)				ON	Min. 1 MΩ	
				OFF	Max. 1 Ω	
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C02 (female) (5) – B72A (female) (2)		Resistance	Max. 1 Ω
			Wiring harness between B72A (female) (1) and chassis ground		Resistance	Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			C02 (female)		Resistance	
	Between (5) and chassis ground		Max. 1 Ω			



Related electrical circuit diagram

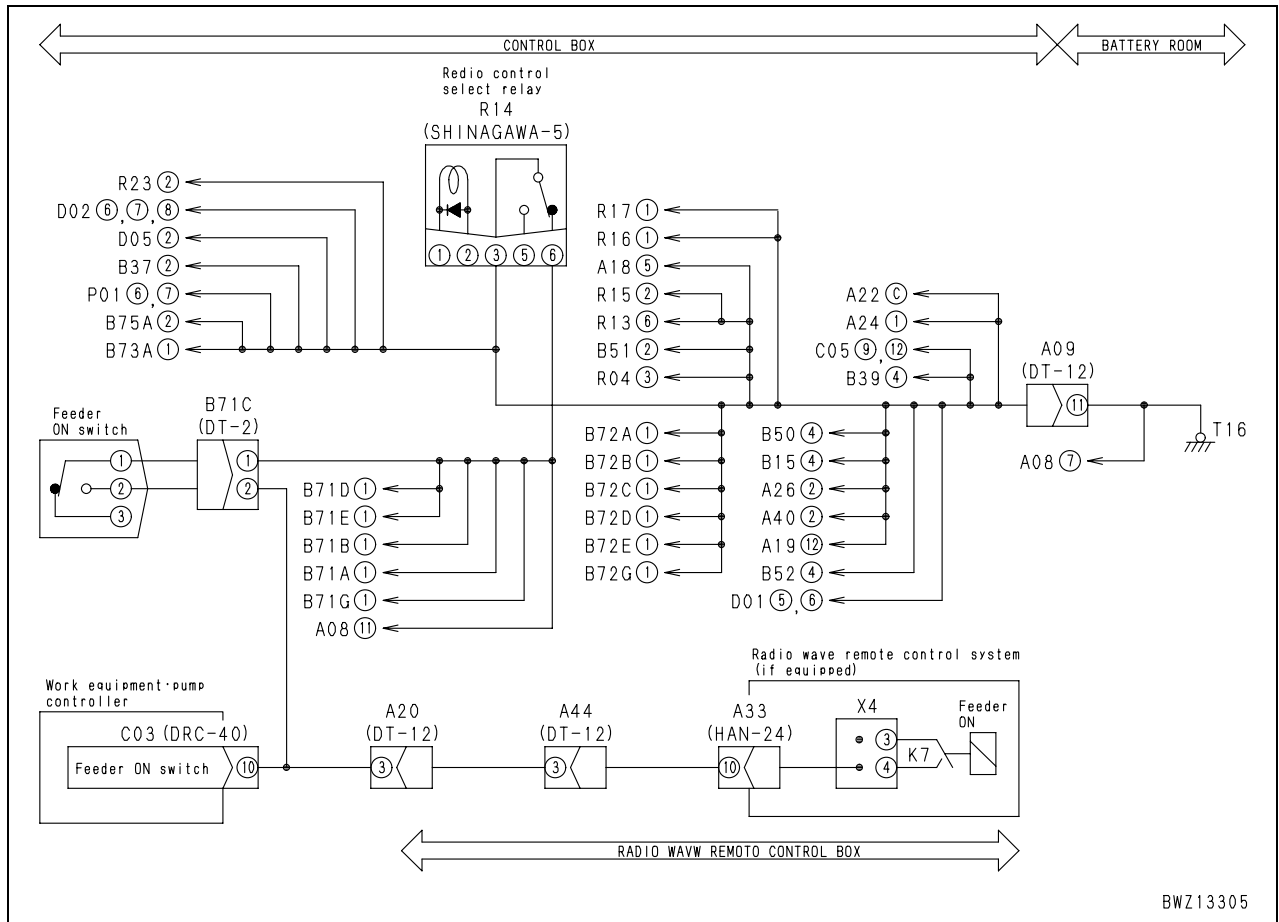


### Failure code [7RC5KB] Short circuit in feeder ON switch

User code	Failure code	Trouble	Short circuit in feeder ON switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RC5KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the feeder ON switch is closed (connected to ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Even if cause of failure disappears, system does not reset itself until starting switch is turned OFF.</li> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Output to the feeder normal rotation EPC does not turn ON even if the feeder ON switch is pressed.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Feeder does not work even if feeder ON switch is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) from the conveyor feeder ON switch can be checked with the monitoring fusion (Code: <b>25000</b>, Switch Input 0).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective feeder ON switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
B71C (male)				Feeder ON switch	Resistance
Between (1) and (2)				ON	Max. 1 Ω
		OFF	Min. 1 MΩ		
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (10) – A20 – A44 – A33 (female) (10) and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between C03 (female) (10) – B71C (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)	Feeder ON switch	Resistance
			Between (10) and chassis ground	ON	Max. 1 Ω
OFF	Min. 1 MΩ				

Related electrical circuit diagram

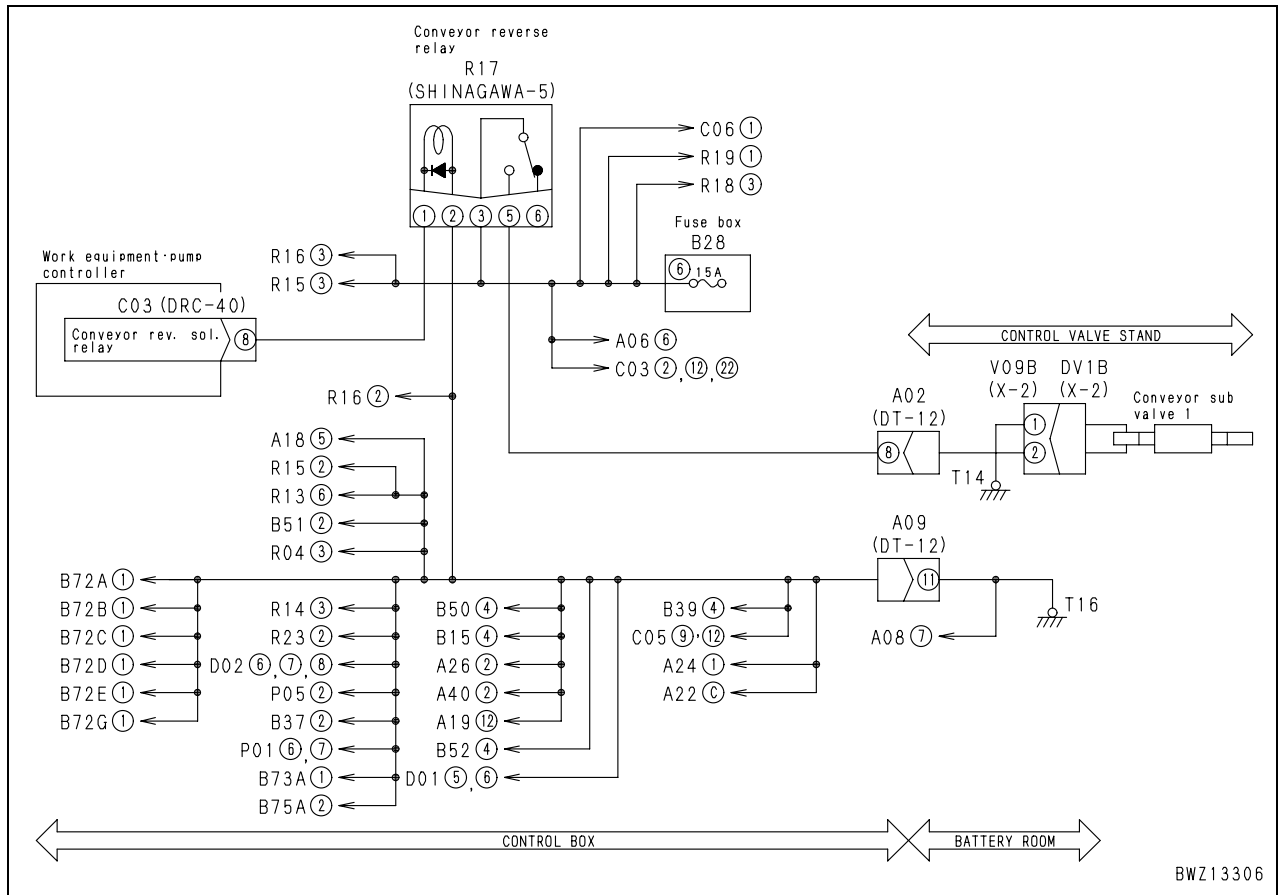


## Failure code [7RD2KB] Short circuit in conveyor reverse relay

User code	Failure code	Trouble	Short circuit in conveyor reverse relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RD2KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Abnormal voltage is detected when output to the discharge conveyor reverse relay is ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turn OFF the output to discharge conveyor reverse rotation relay.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Discharge conveyor reverse rotation does not work.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective discharge conveyor reverse rotation relay (Internal short circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
R17 (male)				Resistance		
Between (1) and (2)				100 – 500 Ω		
		Between (3) and (5)		Min. 1 MΩ		
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			Wiring harness between C03 (female) (8) – R17 (female) (1) and chassis ground		Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			C03 (female)	Conveyor manual reverse rotation switch	Voltage	
			Between (8) and chassis ground	ON	20 – 30 V	
OFF	Max. 1 V					

Related electrical circuit diagram

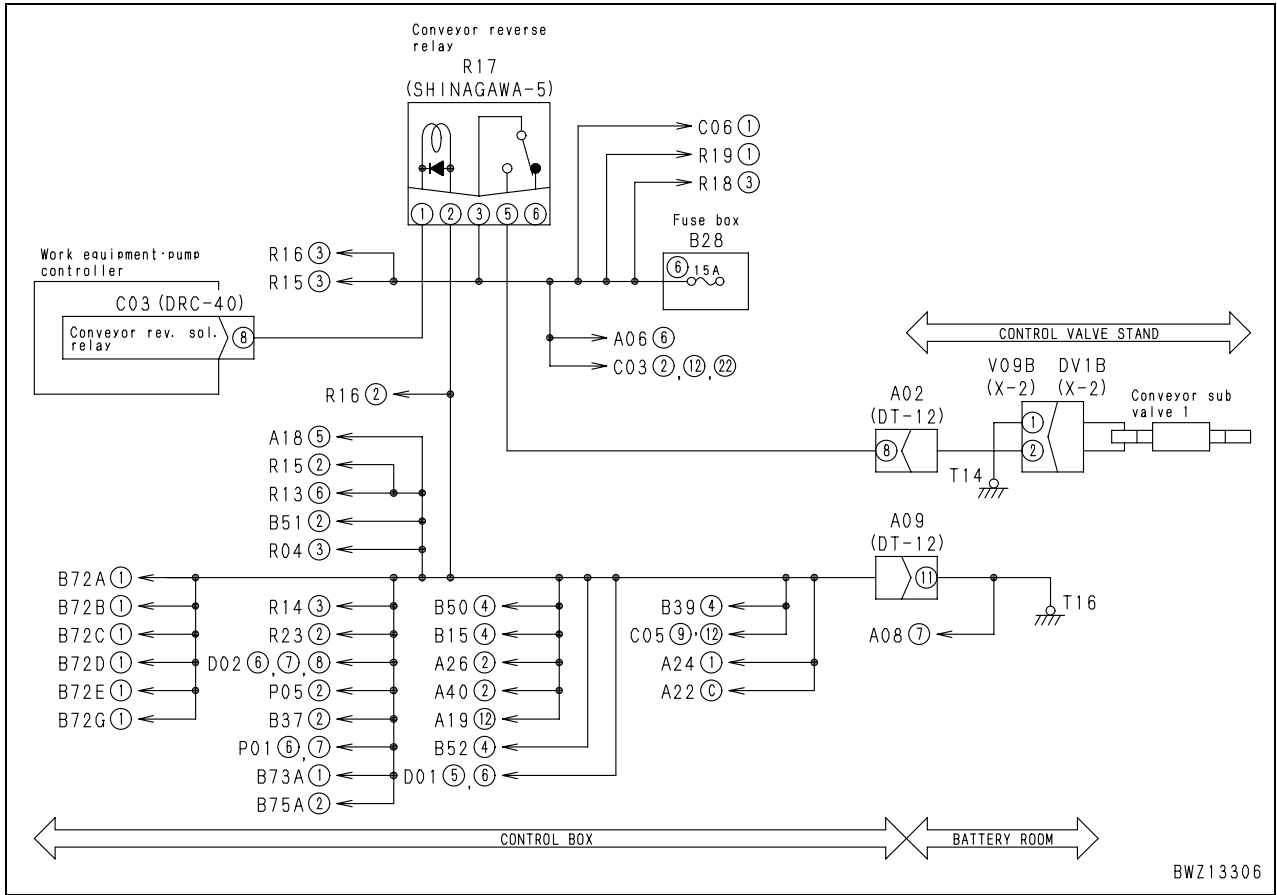


## Failure code [7RD2KZ] Disconnection or short circuit in conveyor reverse relay

User code	Failure code	Trouble	Disconnection or short circuit in conveyor reverse relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RD2KZ</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Abnormal voltage is detected when output to the discharge conveyor reverse rotation relay is OFF.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turn OFF the output to discharge conveyor reverse rotation relay.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Discharge conveyor reverse rotation does not work.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective fuse No. 6	If the fuse No. 6 is burn, the circuit probably has a grounding fault, etc. (See cause 4.)	
2		Defective discharge conveyor reverse rotation relay	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			R17 (male)	Resistance	
			Between (1) and (2)	100 – 500 Ω	
			Between (3) and (6)	Max. 1 Ω	
3		Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (8) – R17 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between R17 (female) (3) and B28No.6	Resistance	Max. 1 Ω
4		Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (8) – R17 (female) (1) and chassis ground	Voltage	Max. 1 V
5		Defective work equipment an pump controller	★ Prepare with engine starting switch OFF and with mode selector switch at inspection mode, then turn engine starting switch ON and carry out troubleshooting.		
			C03 (female)	Conveyor manual reverse rotation switch	Voltage
			Between (8) and chassis ground	ON	20 – 30 V
OFF		Max. 1 V			

Related electrical circuit diagram



BWZ13306

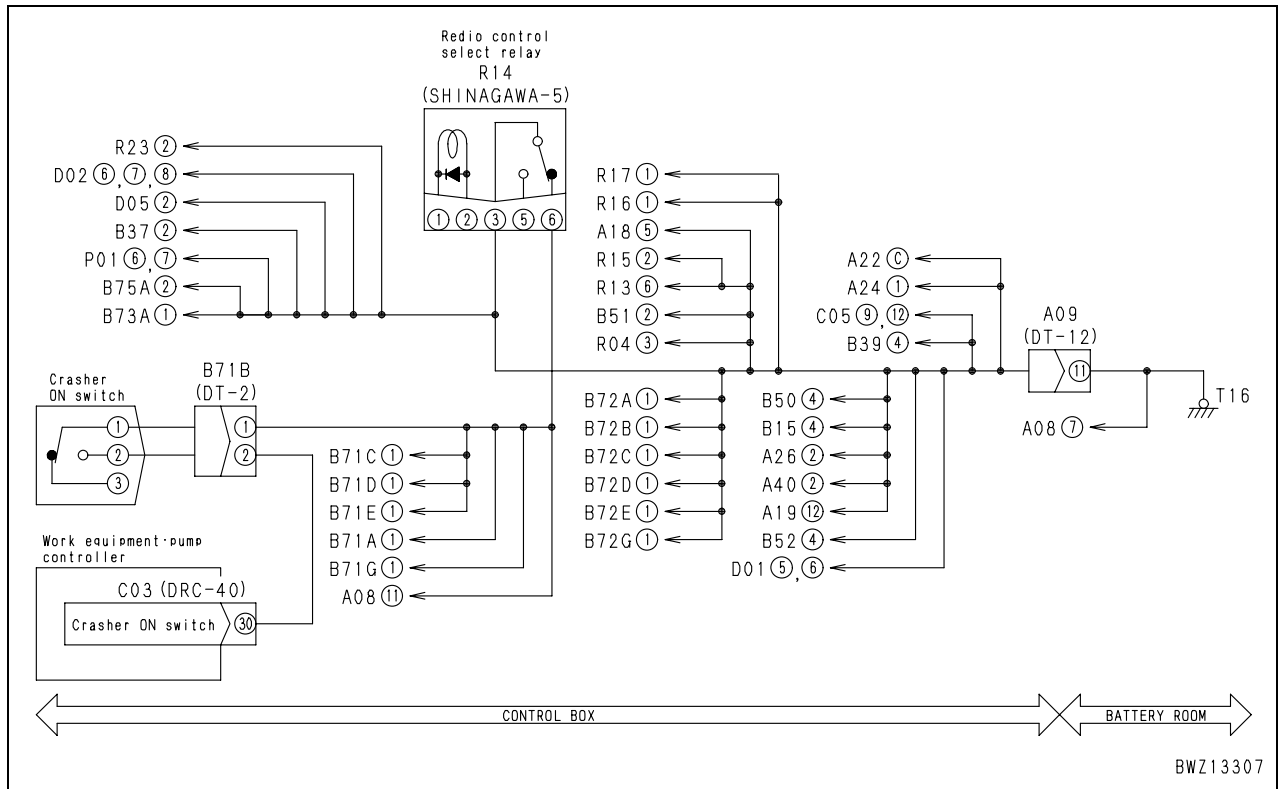
### Failure code [7RE1KB] Short circuit in crusher ON switch

User code	Failure code	Trouble	Short circuit in crusher ON switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RE1KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the crusher ON switch is closed (connected to ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turn OFF the output to crusher normal/reverse rotation EPC.</li> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Jaw crusher does not work even if the crusher ON switch is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) from the crusher ON switch can be checked with the monitoring function (Code: <b>25000</b>, Switch Input 0).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective crusher ON switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
B71B (male)				Conveyor ON switch	Resistance
Between (1) and (2)				ON	Max. 1 Ω
		OFF	Min. 1 MΩ		
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (30) – B71B (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)	Crusher ON switch	Resistance
			Between (30) and chassis ground	ON	Max. 1 Ω
OFF	Min. 1 MΩ				



Related electrical circuit diagram

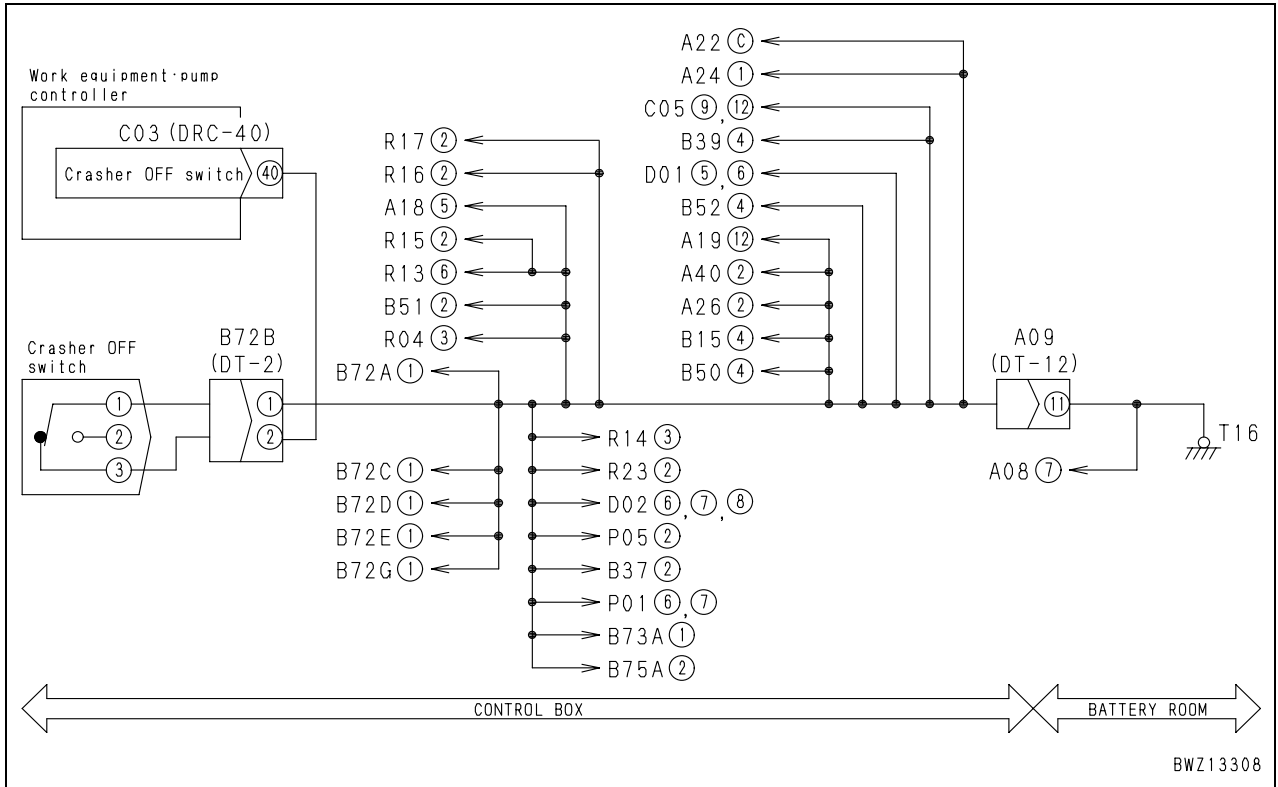


### Failure code [7RE2KA] Disconnection in crusher OFF switch

User code	Failure code	Trouble	Disconnection in crusher OFF switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RE2KA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the crusher OFF switch is opened (disconnected from ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turn OFF the output to crusher normal/reverse rotation EPC.</li> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Jaw crusher does not work even if the crusher ON switch is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) from the jaw crusher stop switch can be checked with the monitoring function (Code: <b>25000</b>, Switch Input 0).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective crusher OFF switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
B72A (male)				Conveyor OFF switch	Resistance
Between (1) and (2)				ON	Min. 1 MΩ
				OFF	Max. 1 Ω
2		Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (40) – B72B (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between B72B (female) (1) and chassis ground	Resistance	Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (40) and chassis ground	Resistance	Max. 1 Ω

Related electrical circuit diagram

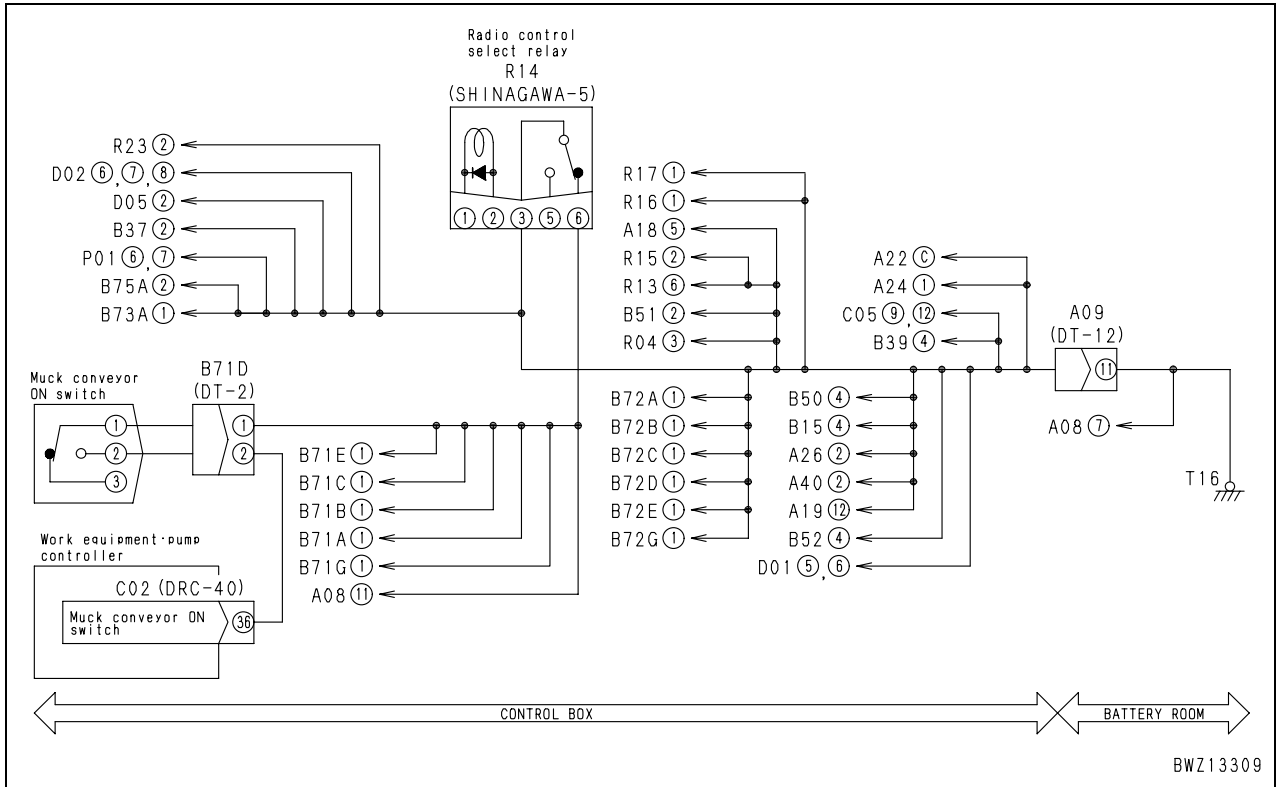


### Failure code [7RE6KB] Short circuit in muck discharge conveyor ON switch

User code	Failure code	Trouble	Short circuit in muck discharge conveyor ON switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RE6KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the muck discharge conveyor ON switch is closed (connected to ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turn OFF the output to muck discharge conveyor solenoid.</li> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Muck discharge conveyor does not work even if the muck discharge conveyor ON switch is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) from the muck discharge conveyor starting switch can be checked with the monitoring function (Code: <b>25006</b>, Switch Input 6).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective muck discharge conveyor ON switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
B71D (male)				Muck discharge conveyor ON switch	Resistance
Between (1) and (2)				ON	Max. 1 Ω
		OFF	Min. 1 MΩ		
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C02 (female) (36) – B71D (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C02 (female)	Muck discharge conveyor ON switch	Resistance
			Between (36) and chassis ground	ON	Max. 1 Ω
OFF	Min. 1 MΩ				

Related electrical circuit diagram



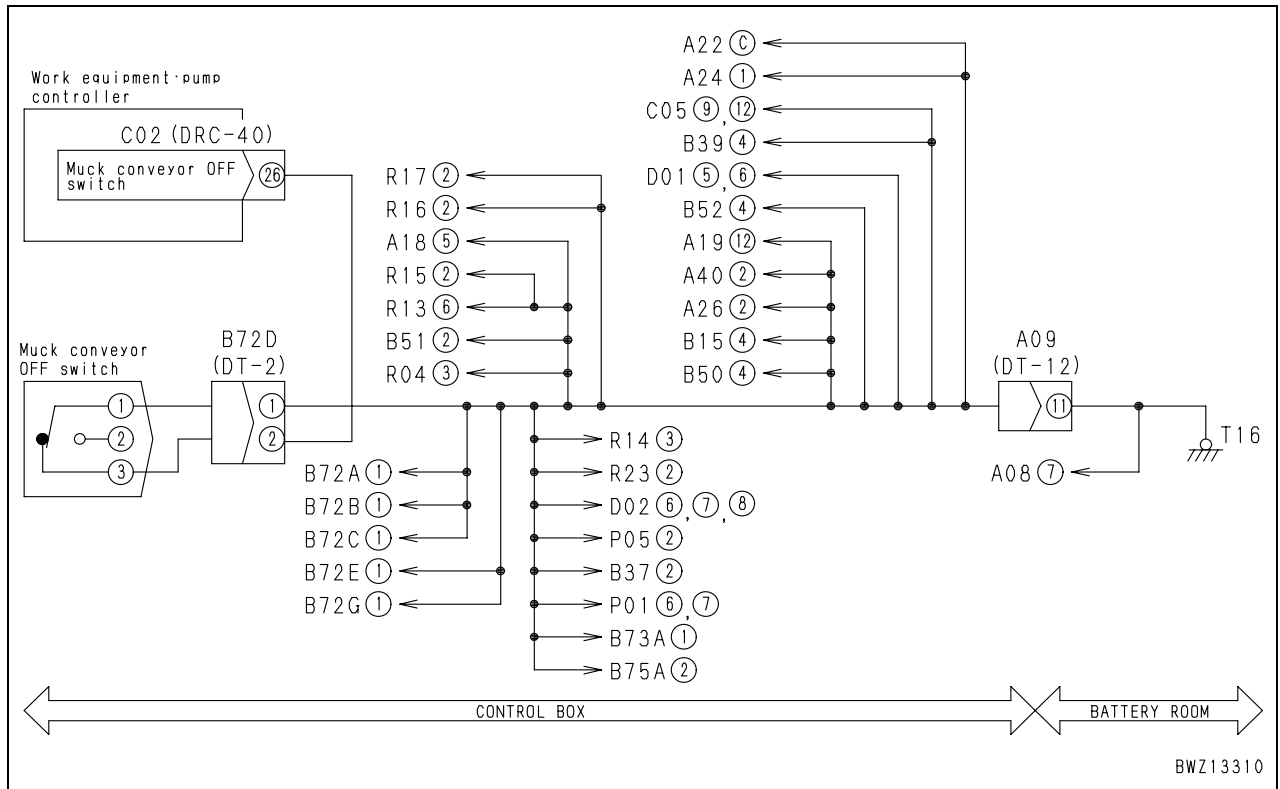
BWZ13309

### Failure code [7RE7KA] Disconnection in muck discharge conveyor OFF switch

User code	Failure code	Trouble	Disconnection in muck discharge conveyor OFF switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RE7KA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the muck discharge conveyor OFF switch is opened (disconnected to ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turn OFF the output to muck discharge conveyor solenoid.</li> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Muck discharge conveyor does not work even if the muck discharge conveyor ON switch is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) from the muck discharge conveyor OFF switch can be checked with the monitoring function (Code: <b>25006</b>, Switch Input 6).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective muck discharge conveyor OFF switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
B72D (male)				Muck discharge conveyor OFF switch	Resistance	
Between (1) and (2)				ON	Min. 1 MΩ	
		OFF	Max. 1 Ω			
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C02 (female) (26) – B72D (female) (2)		Resistance	Max. 1 Ω
			Wiring harness between B72D (female) (1) and chassis ground		Resistance	Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C02 (female) (26) and chassis ground		Resistance	Max. 1 Ω

Related electrical circuit diagram



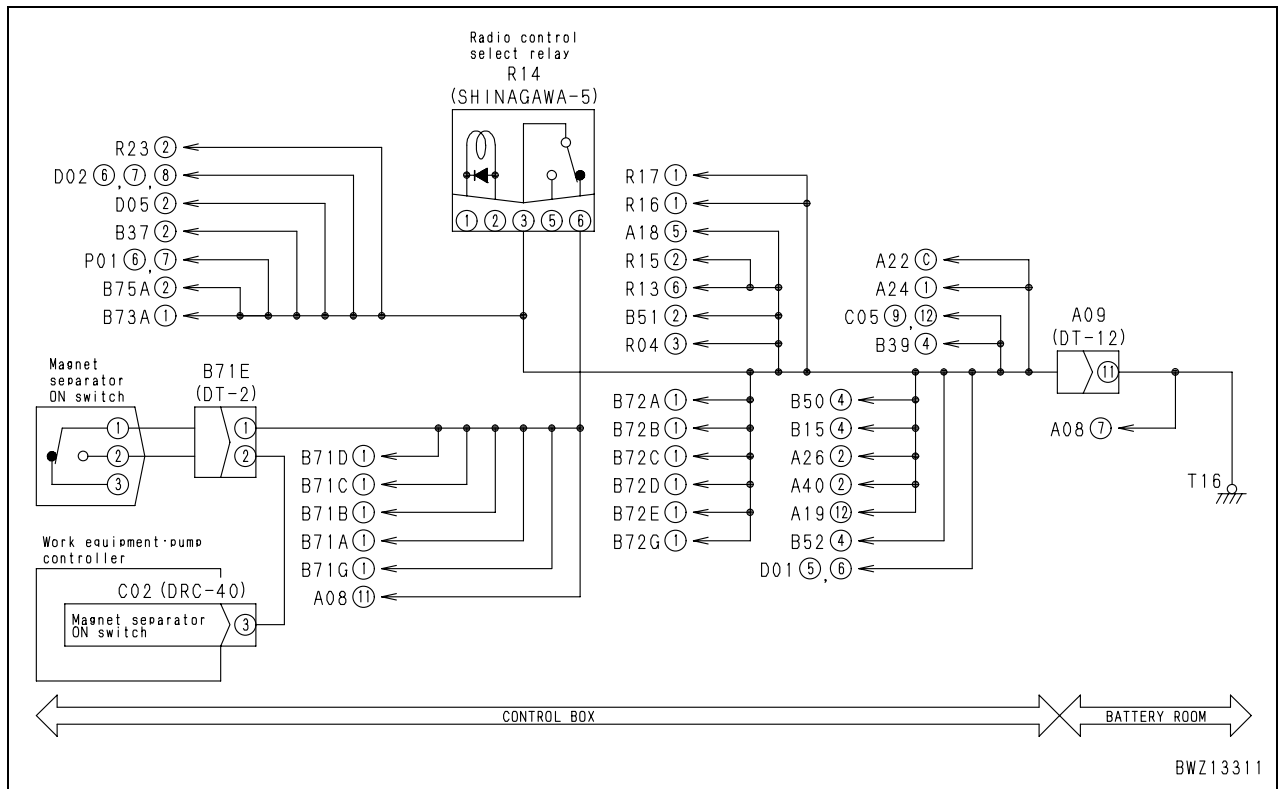
## Failure code [7RE8KB] Short circuit in magnetic separator ON switch

User code	Failure code	Trouble	Short circuit in magnetic separator ON switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RE8KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>The magnetic separator ON switch input signal circuit is closed (connected to the chassis ground) in 1 second after the engine starting switch is turned ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns OFF the output to the magnetic separator solenoid.</li> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Even if the cause of the failure disappears, the system does not reset itself until the engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>When the magnetic separator ON switch is depressed, the magnetic separator does not operate.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) from the magnetic separator ON switch can be checked with the monitoring function (Code: <b>25006</b>, Switch Input 6).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective magnetic separator ON switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
B71E (male)				Magnetic separator ON switch	Resistance
Between (1) and (2)				ON	Max. 1 Ω
		OFF	Min. 1 MΩ		
2		Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between wiring harness between C02 (female) (3) and B71E (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C02 (female)	Magnetic separator ON switch	Resistance
			Between (3) and chassis ground	ON	Max. 1 Ω
OFF	Min. 1 MΩ				



Circuit diagram related to magnetic separator ON switch

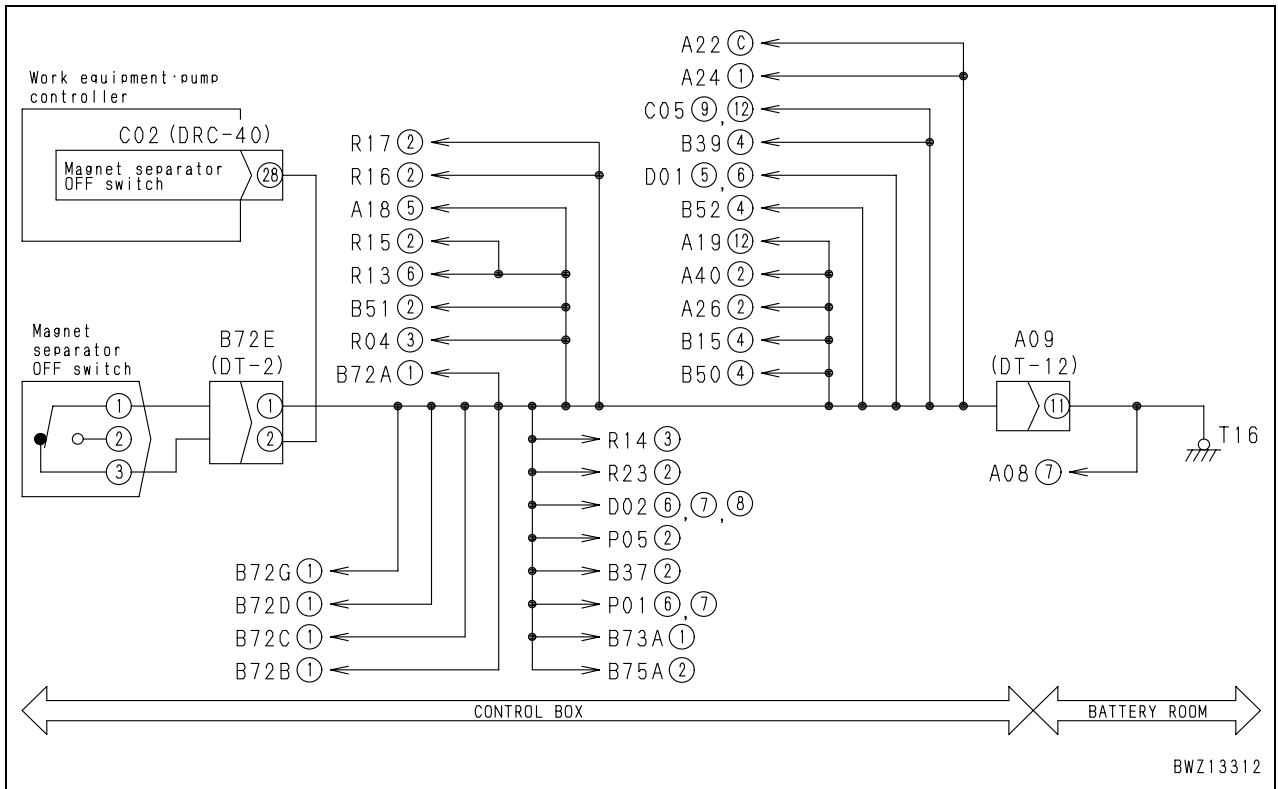


### Failure code [7RE9KA] Disconnection in magnetic separator OFF switch

User code	Failure code	Trouble	Disconnection in magnetic separator OFF switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RE9KA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>The magnetic separator OFF switch input signal circuit is opened (disconnected from the chassis ground) in 1 second after the engine starting switch is turned ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the magnetic separator OFF switch input OFF.</li> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Even if the cause of the failure disappears, the system does not reset itself until the engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>When the magnetic separator ON switch is depressed, the magnetic separator does not operate.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) from the magnetic separator OFF switch can be checked with the monitoring function (Code: <b>25006</b>, Switch Input 6).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting				
		1	Defective magnetic separator OFF switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
B72E (male)				Magnetic separator OFF switch		Resistance	
Between (1) and (2)				ON		Min. 1 MΩ	
				OFF		Max. 1 Ω	
2		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.				
			Wiring harness between C02 (female) (28) and B72E (female) (2)		Resistance	Max. 1 Ω	
			Wiring harness between B72E (female) (1) and chassis ground		Resistance	Max. 1 Ω	
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.				
			C02 (female)		Resistance		
			Between (28) and chassis ground		Max. 1 Ω		

Circuit diagram related to magnetic separator OFF switch

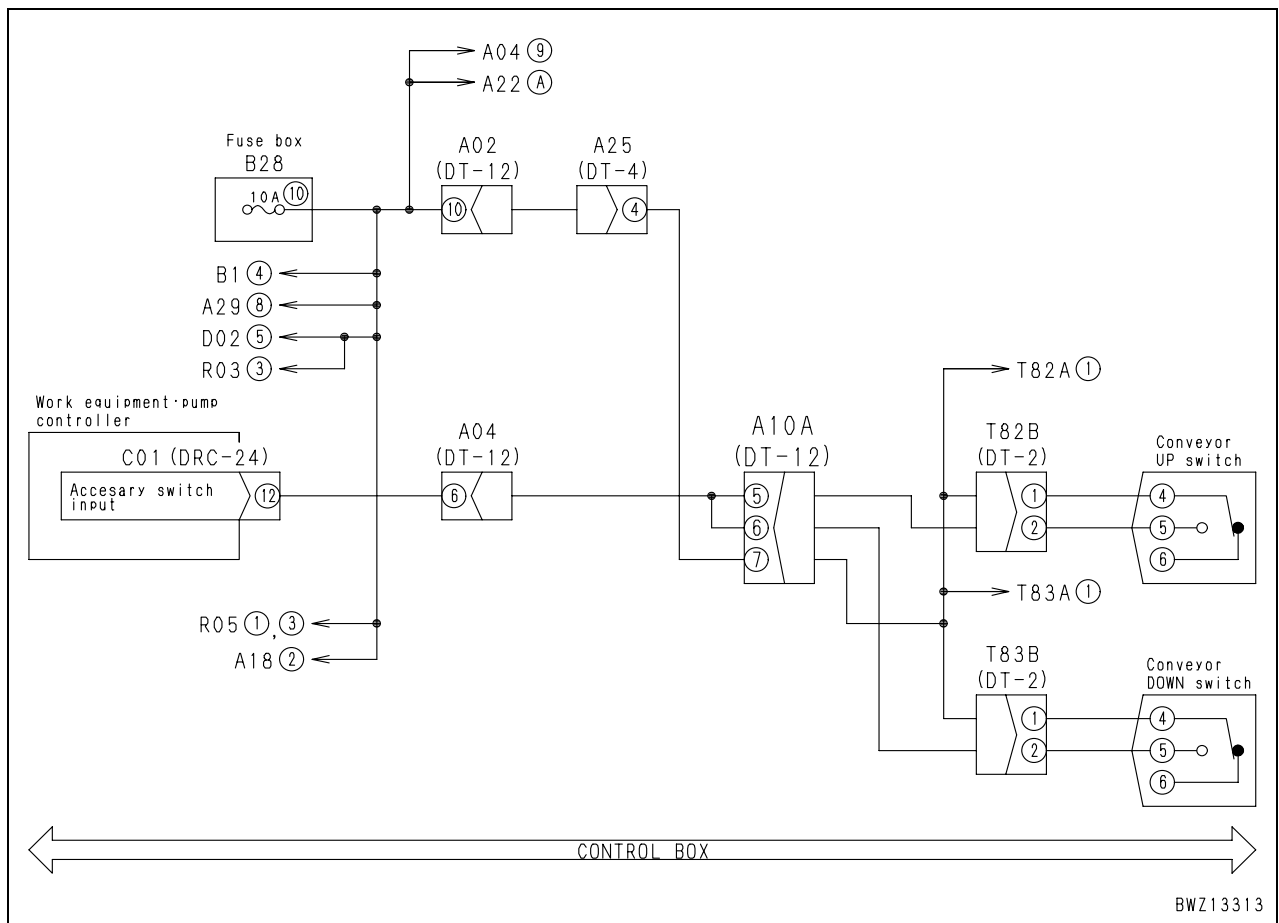


## Failure code [7REAKB] Short circuit in accessory input circuit

User code	Failure code	Trouble	Short circuit in accessory input circuit (Work equipment and pump controller (work equipment control) system)
—	<b>7REAKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit 1 for the accessory is closed (connected to power supply circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turn OFF the output of the accessory drive EPC solenoid.</li> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The machine does not work even if any of the conveyor up/down switch (2 switches) or side conveyor up/down switch (2 switches) is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The input state (ON/OFF) from the accessory input circuit can be checked with the monitoring function (Code: <b>25006</b>, Switch Input 6).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective conveyor up switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Between T82B (male) (1) and (2)				Resistance	Min. 1 MΩ
2		Defective conveyor down switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between T83B (male) (1) and (2)	Resistance	Min. 1 MΩ
3		Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			Wiring harness between C01 (female) (12) – T82B (male) (2) or T83B (male) (2) and chassis ground	Voltage	Max. 1 V
4		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between C01 (female) (12) and chassis ground	Resistance	Min. 1 MΩ

Related electrical circuit diagram

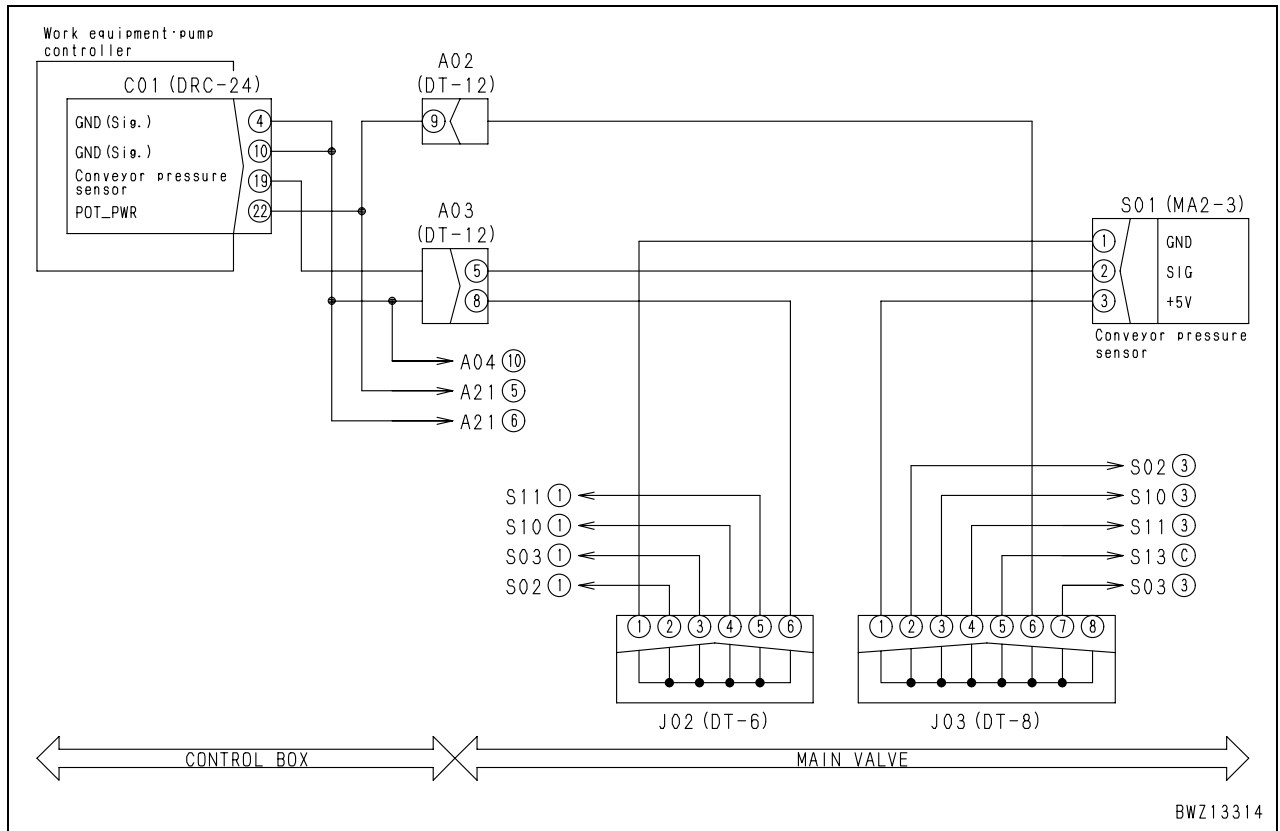


### Failure code [7REDMA] Abnormality in primary conveyor pressure sensor

User code	Failure code	Trouble	Abnormality in primary conveyor pressure sensor (Work equipment and pump controller (work equipment control) system)
—	<b>7REDMA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal voltage from the primary conveyor pressure sensor is below 0.3 V or above 4.42 V.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Detects primary conveyor pressure at 0 MPa.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Whole work equipment does not stop completely even if abnormal load is applied to the primary conveyor. (Primary conveyor, crusher, feeder, muck discharge conveyor, magnetic separator, vibratory screen, conveyor pressure)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>If 5V circuit (3) and ground circuit (1) of pressure sensor are connected inversely, pressure sensor will be broken. Accordingly, take extreme care when checking.</li> <li>Input from the primary conveyor pressure sensor can be checked with the monitoring function (Code: <b>24300</b>, Conv. Pressure).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
	Possible causes and standard value in normal state	1	Defective 5V sensor power source system	If the Failure code <b>[DA25KP]</b> is displayed simultaneously, perform the troubleshooting for it first.		
2		Defective primary conveyor pressure sensor (Internal defect)	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then start engine and carry out troubleshooting.</li> <li>★ If Items 3 – 5 are normal</li> </ul>			
			S01		Voltage	
			Between (1) and (3)		0.3 – 4.5 V	
			Between (1) and (2)		4.5 – 5.5 V	
			If the voltage is abnormal, replace with another pressure sensor (pressure sensor of magnetic separator etc.) and check if failure codes are displayed. (If the E mark of the failure code disappears, the primary conveyor pressure sensor is defective.)			
3		Disconnection in wiring harness (Disconnection or defective contact in connector)	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.</li> </ul>			
			Wiring harness between C01 (female) (19) – A03 – S01 (female) (2)	Resistance	Max. 1 Ω	
			Wiring harness between C01 (female) (4) or (10) – A03 – S01 (female) (1)	Resistance	Max. 1 Ω	
			Wiring harness between C01 (female) (22) – A02 – S01 (female) (3)	Resistance	Max. 1 Ω	
4		Grounding fault in wiring harness (Contact with ground circuit)	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.</li> </ul>			
			Wiring harness between C01 (female) (19) – A03 – S01 (female) (2) and chassis ground	Resistance	Min. 1 MΩ	
5		Hot short in wiring harness (Contact with 24V circuit)	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.</li> <li>★ Disconnect C01 and S01.</li> </ul>			
			Wiring harness between C01 (female) (19) – A03 – S01 (female) (2) and chassis ground	Voltage	Max. 5 V	
6		Defective work equipment and pump controller	If causes 1 – 5 are not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

Related electrical circuit diagram



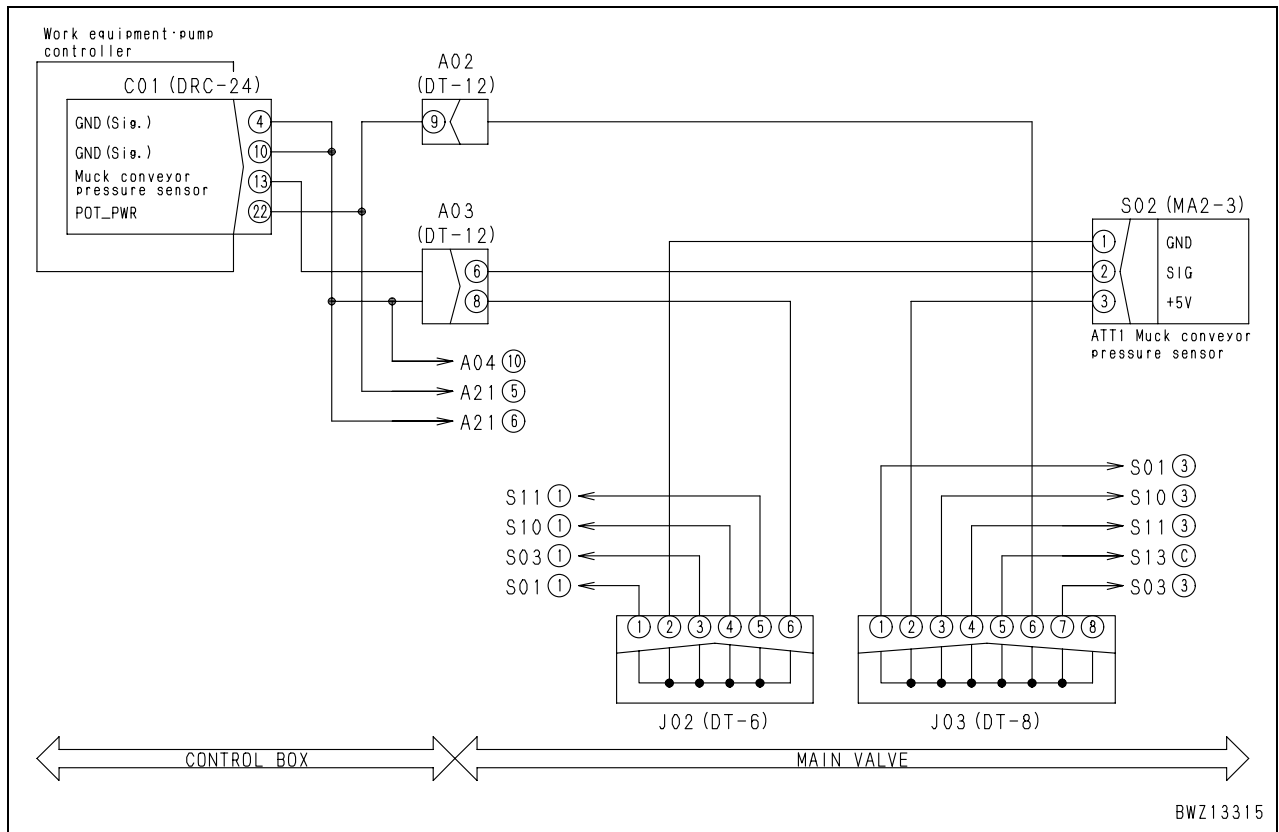
### Failure code [7REEMA] Abnormality in muck conveyor pressure sensor

User code	Failure code	Trouble	Abnormality in muck conveyor pressure sensor (Work equipment and pump controller (work equipment control) system)
—	<b>7REEMA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal voltage from the muck discharge conveyor pressure sensor is below 0.3 V or above 4.42 V.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Mistakes muck discharge conveyor pressure for 0 MPa.</li> <li>If cause of failure disappears, the system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Whole work equipment does not stop completely even if abnormal load is applied to the muck discharge conveyor. (Primary conveyor, crusher, muck discharge conveyor, magnetic separator, vibratory screen, secondary conveyor and feeder)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>If 5V circuit (3) and ground circuit (1) of pressure sensor are connected inversely, pressure sensor will be broken. Accordingly, take extreme care when checking.</li> <li>Input from the muck discharge conveyor pressure sensor can be checked with the monitoring function (Code: <b>24400</b>, Muck Conv. Pressure).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective 5V sensor power source system	If the Failure code [DA25KP] is displayed simultaneously, perform the troubleshooting for it first.		
2		Defective muck discharge conveyor pressure sensor (Internal defect)	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then turn engine starting switch ON or start engine and carry out troubleshooting in each case.</li> <li>★ If Items 3 – 5 are normal</li> </ul>			
			S02		Voltage	
			Between (1) and (3)		4.5 – 5.5 V	
			Between (1) and (2)		0.3 – 4.5 V	
If the voltage is normal, replace with another pressure sensor (pressure sensor of primary conveyor etc.) and check if failure codes are displayed. (If the E mark of the failure code disappears, the muck discharge conveyor pressure sensor is defective.)						
3		Disconnection in wiring harness (Disconnection or defective contact in connector)	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.</li> </ul>			
			Wiring harness between C01 (female) (13) – A03 – S02 (female) (2)	Resistance	Max. 1 Ω	
			Wiring harness between C01 (female) (4) or (10) A03 – S02 (female) (1)	Resistance	Max. 1 Ω	
4		Grounding fault in wiring harness (Contact with ground circuit)	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.</li> <li>★ Disconnect C01 and S02.</li> </ul>			
			Wiring harness between C01 (female) (13) – A03 – S02 (female) (2) and chassis ground	Resistance	Min. 1 MΩ	
5		Hot short in wiring harness (Contact with 24V circuit)	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.</li> <li>★ Disconnect C01 and S02.</li> </ul>			
	Wiring harness between C01 (female) (13) – A03 – S02 (female) (2) and chassis ground		Voltage	Max. 5 V		
6	Defective work equipment and pump controller	If causes 1 – 5 are not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)				



Related electrical circuit diagram



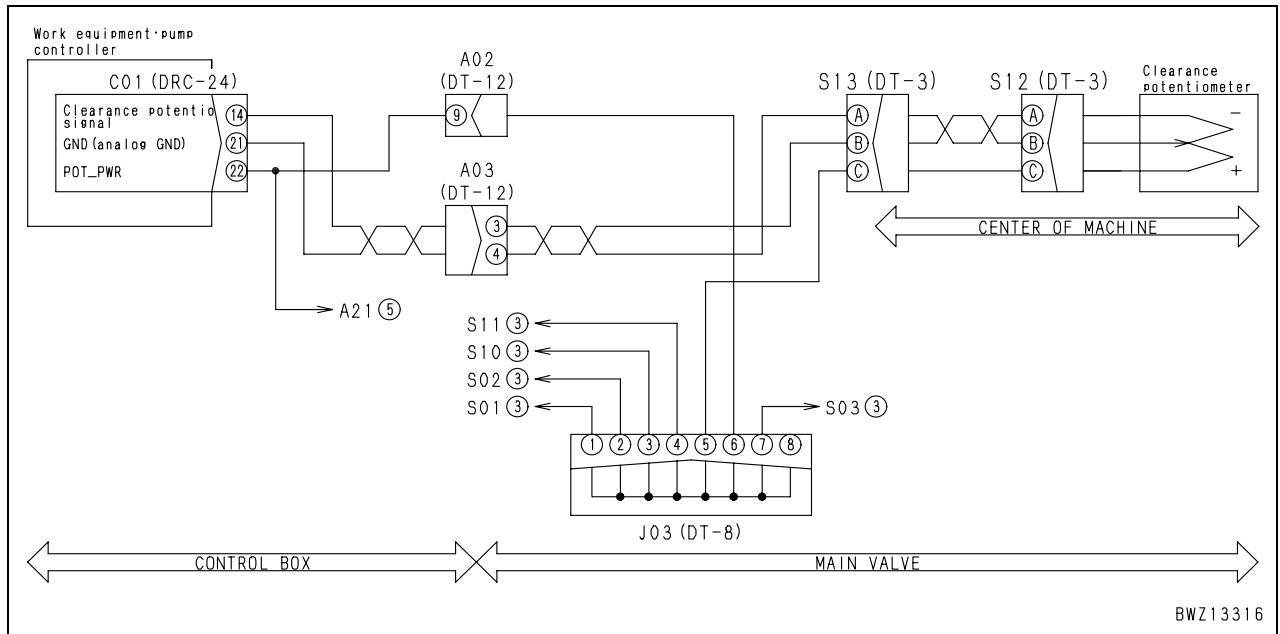
BWZ13315

### Failure code [7RENKZ] Abnormality in clearance potentiometer

User code	Failure code	Trouble	Abnormality in clearance potentiometer (Work equipment and pump controller (work equipment control) system)
—	<b>7RENKZ</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal voltage from the clearance detection potentiometer is below 0.23 V or above 4.77 V.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Stops full-auto or auto clearance adjustment.</li> <li>Detects wrong clearance detection potentiometer value.</li> <li>If cause of failure disappears, the system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Multi-monitor displays incorrect clearance value.</li> <li>Wear limit warning is not issued.</li> <li>Clearance adjustment is disabled.</li> <li>Crusher and feeder do not stop even if foreign matter is pinched in the auto/full-auto crusher and the movable jaw moves toward open position.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective 5V sensor power source system	If the Failure code [DA25KP] is displayed simultaneously, perform the troubleshooting for it first.		
2		Defective clearance detection potentiometer (Internal defect)	Prepare with engine starting switch OFF, then turn engine starting switch ON or start engine and carry out troubleshooting in each case.			
			S12 (male)	Resistance		
			Between (A) – (C)	4.0 – 6.0 kΩ		
			Between (B) – (A)	0.25 – 5.0 kΩ		
3		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C01 (female) (22) – S12 (female) (C)	Resistance	Max. 1 Ω	
			Wiring harness between C01 (female) (21) – S12 (female) (A)	Resistance	Max. 1 Ω	
4		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C01 (female) (14) – S12 (female) (B) and chassis ground	Resistance	Min. 1 MΩ	
			★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
5		Hot short in wiring harness (Contact with 24V circuit)	Wiring harness between C01 (female) (22) – S12 (female) (C) and chassis ground	Voltage	Max. 5 V	
			Wiring harness between C01 (female) (14) – S12 (female) (B) and chassis ground	Voltage	Max. 5 V	
6		Defective work equipment and pump controller	If causes 1 – 5 are not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

Related electrical circuit diagram

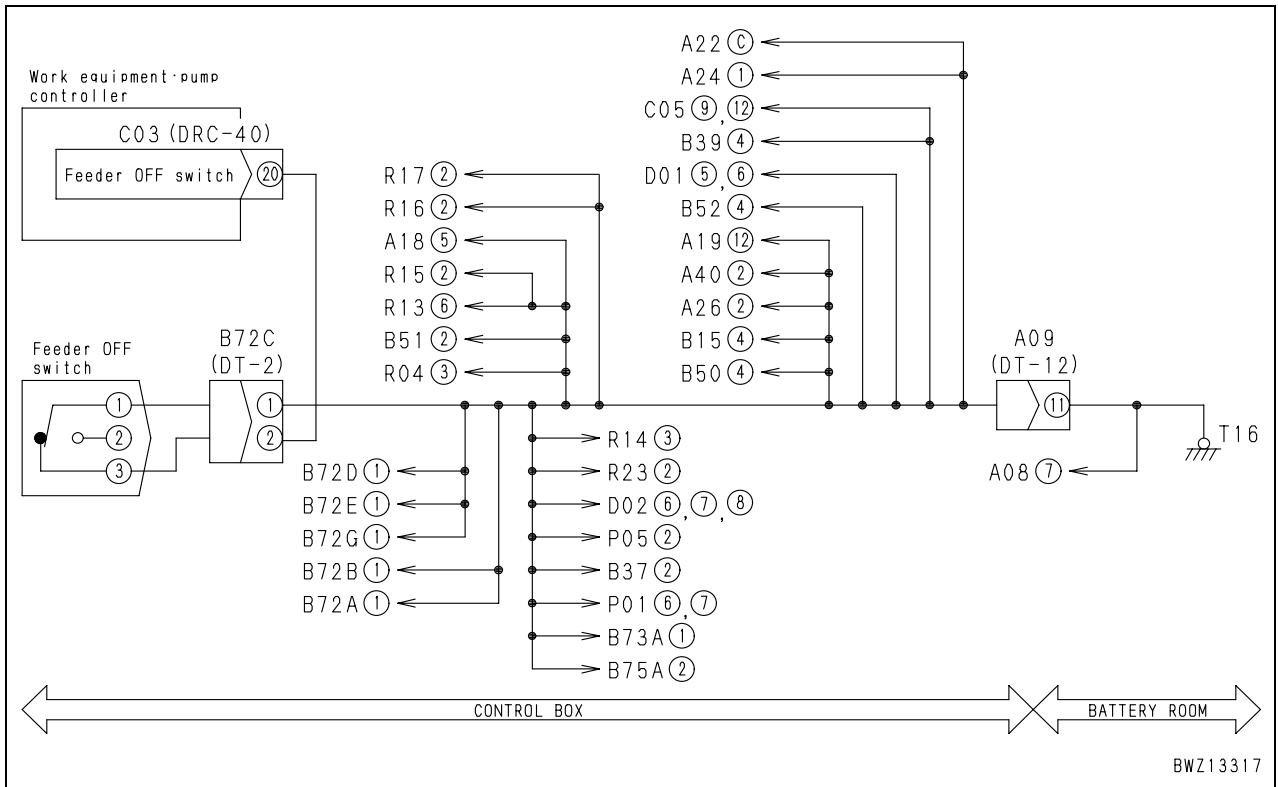


### Failure code [7REPKA] Disconnection in feeder OFF switch

User code	Failure code	Trouble	Disconnection in feeder OFF switch (Work equipment and pump controller (work equipment control) system)
—	<b>7REPKA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the grizzly feeder OFF switch is opened (disconnected from ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Turns OFF the output to feeder normal rotation EPC.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Feeder does not work even if grizzly feeder start switch is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) of the feeder OFF switch can be checked with the monitoring function (Code: <b>25000</b>, Switch Input 0)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective feeder OFF switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
B72C (male)				Grizzly feeder OFF switch	Resistance	
Between (1) and (2)				ON	Min. 1 MΩ	
		OFF	Max. 1 Ω			
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C03 (female) (20) – B72C (female) (2)		Resistance	Max. 1 Ω
			Wiring harness between B72C (female) (1) – chassis ground		Resistance	Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			C03 (female)	Resistance		
	Between (20) and chassis ground		Max. 1 Ω			

Related electrical circuit diagram

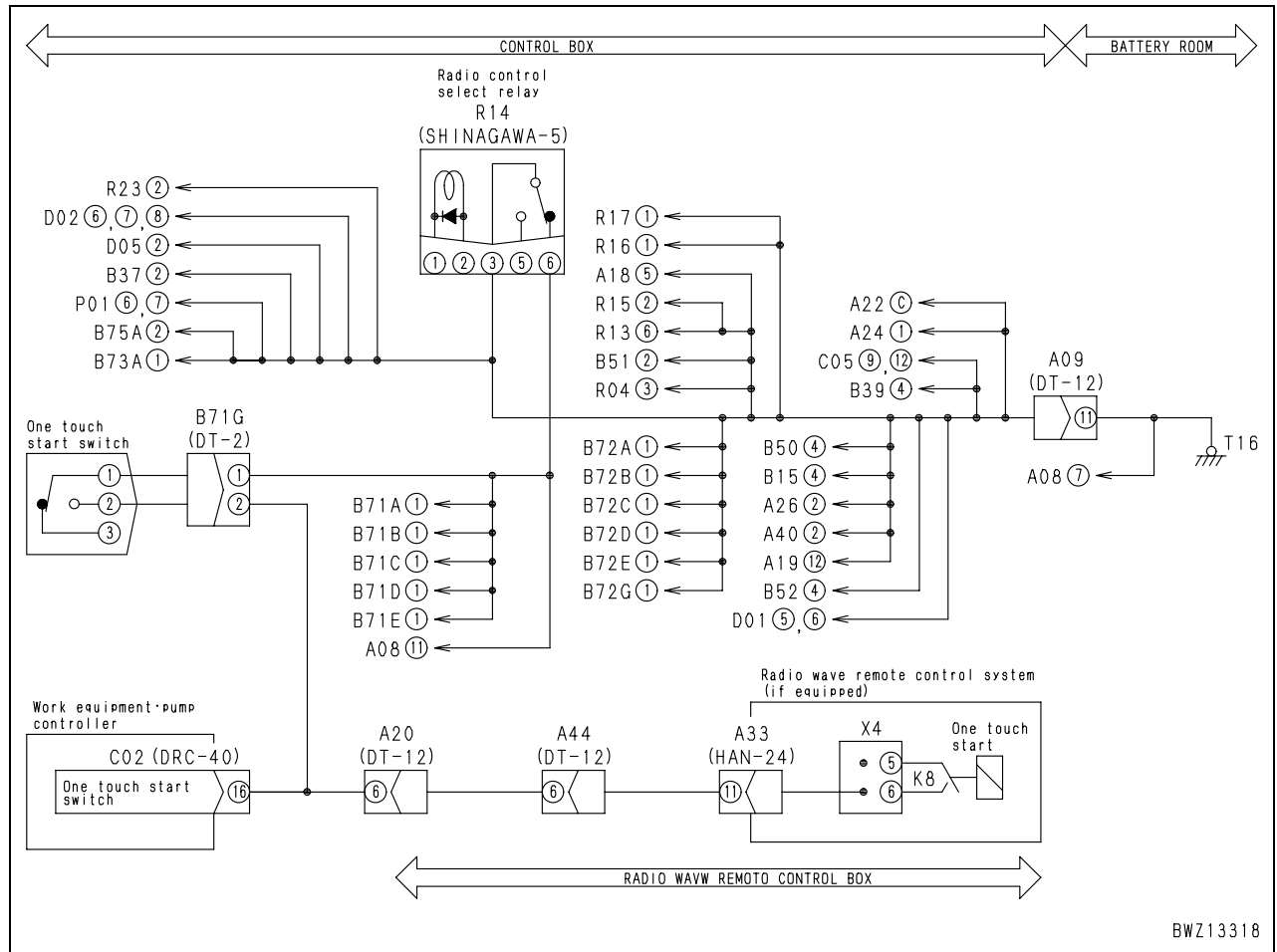


### Failure code [7RESKB] Short circuit in one-touch start switch

User code	Failure code	Trouble	Short circuit in one-touch start switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RESKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the one-touch start switch or work equipment start switch is closed (connected to ground circuit) within 1 second after the starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Turns OFF the output related to one-touch start switch. (Primary conveyor, magnetic separator, muck discharge conveyor, crusher, feeder)</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Machine does not work even if the one-touch start switch is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) of the one-touch start switch can be checked with monitoring function (Code: <b>25003</b>, Switch Input 3)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective one-touch start switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
B71G (male)				Work equipment starting switch (One-touch stop switch)	Resistance
Between (1) and (2)				ON	Max. 1 Ω
		OFF	Min. 1 MΩ		
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C02 (female) (16) – A20 – A44 – A33 (female) (11) and chassis ground	Resistance	Min. 1 MΩ
			Between wiring harness C02 (female) (16) – A20 (female) (6) – radio controller switch, and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C02 (male)	One-touch start switch	Resistance
	Between (16) and chassis ground		ON	Max. 1 Ω	
OFF		Min. 1 MΩ			

Related electrical circuit diagram



BWZ13318

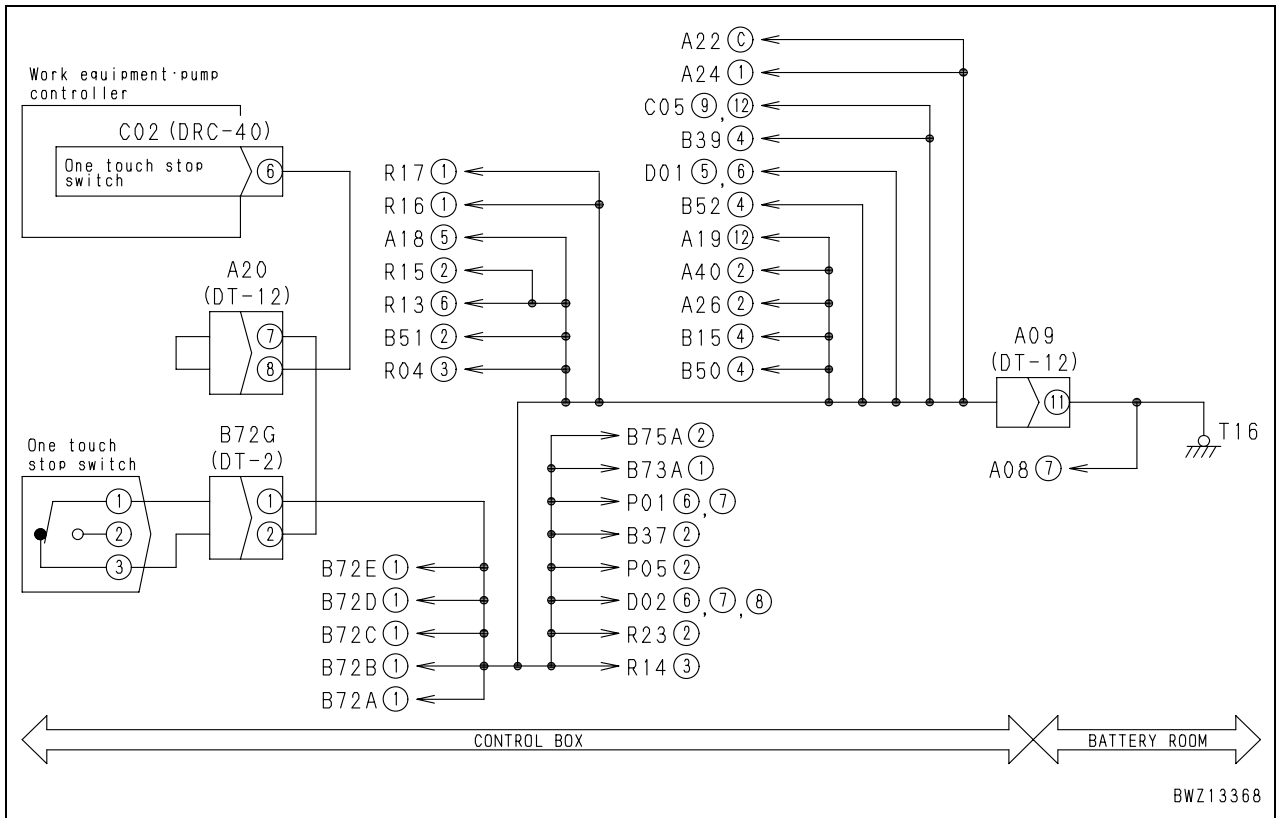
### Failure code [7RETKA] Disconnection in one-touch stop switch

User code	Failure code	Trouble	Disconnection in one-touch stop switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RETKA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the one-touch stop switch or work equipment stop switch is opened (disconnected from ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns all the output OFF for 1 second after turning the engine starting switch ON.</li> <li>Turns OFF the output related to one-touch stop switch. (Primary conveyor, magnetic separator, muck discharge conveyor, crusher, feeder)</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input state (ON/OFF) of the one-touch stop switch can be checked with monitoring function (Code: <b>25003</b>, Switch Input 3)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective one-touch stop switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
B72G (male)				Work equipment stop switch (One-touch stop switch)	Resistance	
Between (1) and (2)				ON	Min. 1 MΩ	
				OFF	Max. 1 Ω	
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C02 (female) (6) – B72G (female) (2)		Resistance	Max. 1 Ω
			Wiring harness between B72G (female) (1) – chassis ground		Resistance	Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			C02 (female)	Resistance		
			Between (6) and chassis ground	Max. 1 Ω		



Related electrical circuit diagram

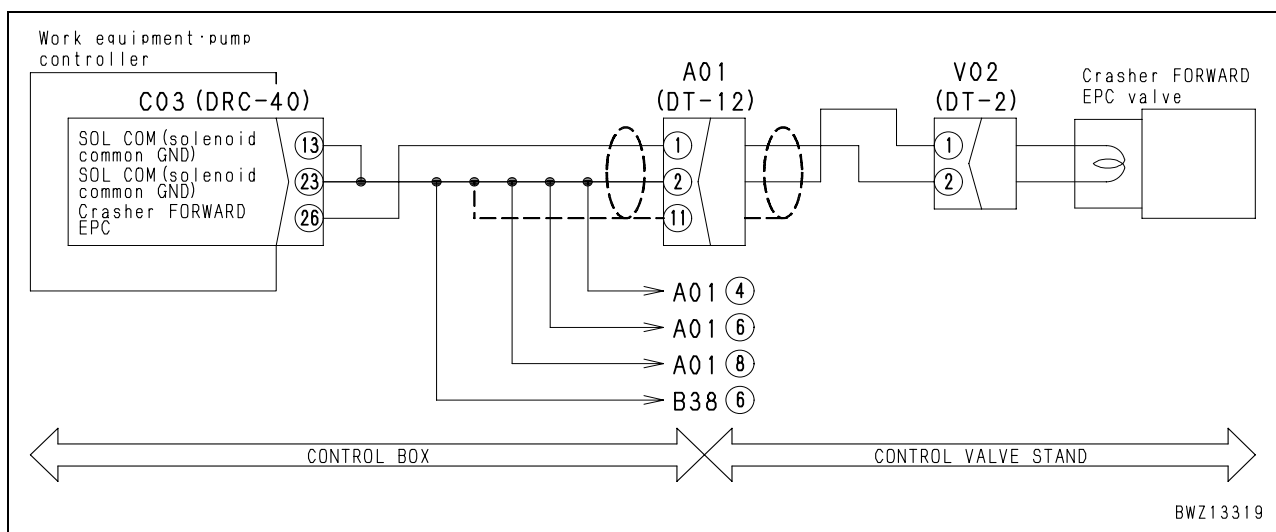


### Failure code [7RF2KA] Disconnection in crusher forward EPC valve

User code	Failure code	Trouble	Disconnection in crusher forward EPC valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RF2KA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Open circuit is detected when EPC valve solenoid for crusher forward rotation is driven.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the crusher forward EPC valve circuit OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The crusher does not operate forward.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive current of the valve solenoid for crusher forward rotation can be checked with the monitoring function. (Code: <b>25900</b>, Crusher FWD EPC Curr.)</li> <li>Since the controller detects disconnection while the solenoid output is turned ON, be sure to turn the solenoid output ON when checking for reproduction of the failure after repair.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective crusher forward EPC valve solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
V02 (male)				Resistance	
Between (1) and (2)				7 – 14 Ω	
2		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (26) – A01 – V02 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between C03 (female) (13), (23) – V02 (female) (1)	Resistance	Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C02 (female)	Resistance	
			Between (26) and (13), (23)	7 – 14 Ω	

#### Circuit diagram related to crusher forward EPC solenoid

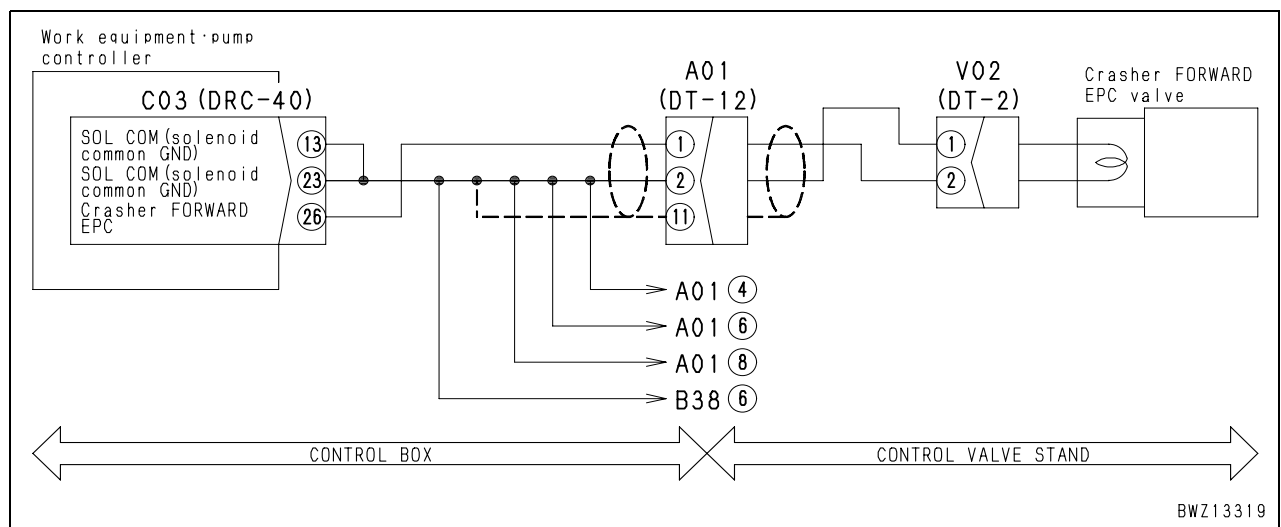


### Failure code [7RF2KB] Short circuit in crusher forward EPC valve

User code	Failure code	Trouble	Short circuit in crusher forward EPC valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RF2KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Ground short circuit is detected when EPC valve solenoid for crusher forward rotation is driven.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the crusher forward EPC valve solenoid circuit OFF.</li> <li>Even if the cause of the failure disappears, the system does not reset itself until the engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The crusher does not rotate forward.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive current of the valve solenoid for crusher forward rotation can be checked with the monitoring function. (Code: <b>25900</b>, Crusher FWD EPC Curr.)</li> <li>Since the controller detects short circuit while the solenoid output is turned ON, be sure to turn the solenoid output ON when checking for reproduction of the failure after repair.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective crusher forward EPC valve solenoid (Grounding fault)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
V02 (male)				Resistance	
Between (1) and (2)				7 – 14 Ω	
Between (2) and chassis ground				Min. 1 MΩ	
2		Short circuit with chassis ground in wiring harness (Contact with ground)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between wiring harness between C03 (female) (26) – A01 – V02 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			C03 (female)	Resistance	
	Between (26) and (13), (23)		7 – 14 Ω		
	Between (26) and chassis ground		Min. 1 MΩ		

#### Circuit diagram related to crusher forward EPC solenoid

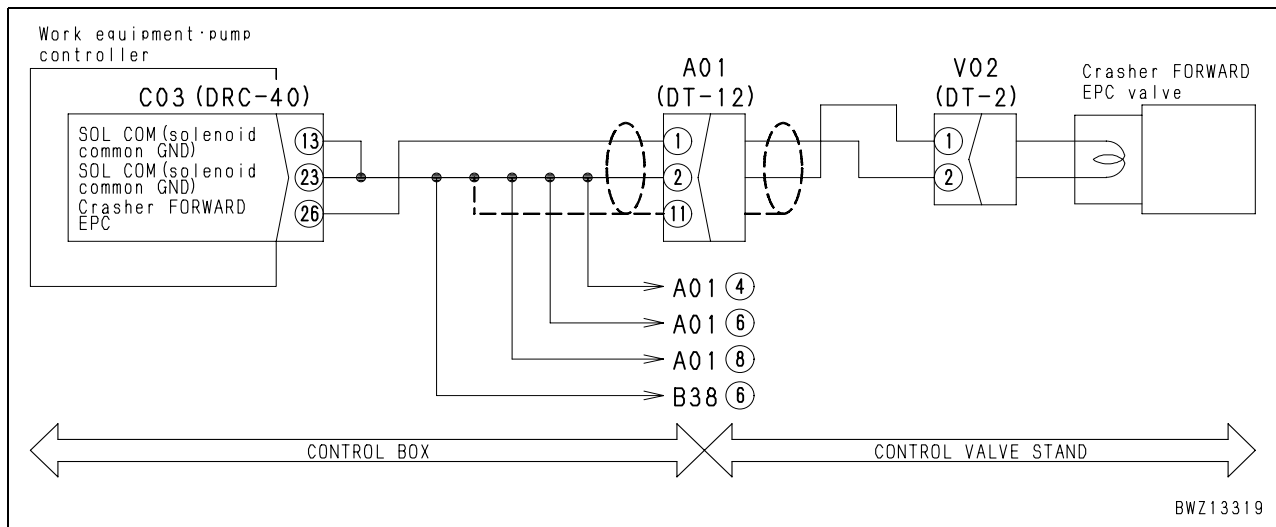


### Failure code [7RF2KY] Short circuit in crusher forward EPC valve

User code	Failure code	Trouble	Short circuit in crusher forward EPC valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RF2KY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Hot short circuit (contact with 24 V circuit) is detected when EPC valve solenoid for crusher forward rotation is not driven.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> <li>If the cause of the failure disappears, the system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The crusher does not stop operating forward.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	1	Hot short with wiring harness (Contact with 24-V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		Voltage
Between wiring harness between C03 (female) (26) – A01 – V02 (female) (2) and chassis ground					
2	Defective work equipment and pump controller	If cause 1 is not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

#### Circuit diagram related to crusher forward EPC solenoid

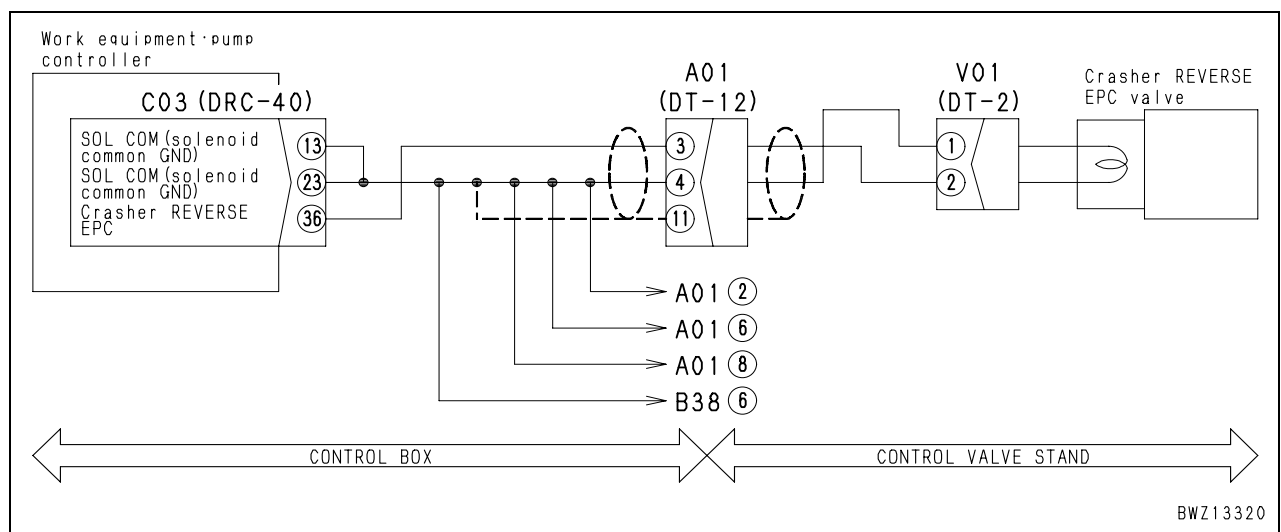


### Failure code [7RF3KA] Disconnection in crusher reverse EPC valve

User code	Failure code	Trouble	Disconnection in crusher reverse EPC valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RF3KA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Open circuit is detected when EPC valve solenoid for crusher reverse rotation is driven.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the crusher reverse EPC valve solenoid circuit OFF.</li> <li>Even if the cause of the failure disappears, the system does not reset itself until the engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The crusher does not operate in reverse.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive current of the EPC valve solenoid for crusher reverse rotation can be checked with the monitoring function. (Code: <b>26000</b>, Crusher REV EPC Curr.)</li> <li>Since the controller detects disconnection while the solenoid output is turned ON, be sure to turn the solenoid output ON when checking for reproduction of the failure after repair.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective crusher reverse EPC valve solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
V01 (male)				Resistance	
Between (1) and (2)				7 – 14 Ω	
2		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (36), A01 and V01 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between C03 (female) (13), (23), A01 and V01 (female) (1)	Resistance	Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)	Resistance	
	Between (36) and (13), (23)		7 – 14 Ω		

#### Circuit diagram related to crusher reverse EPC solenoid

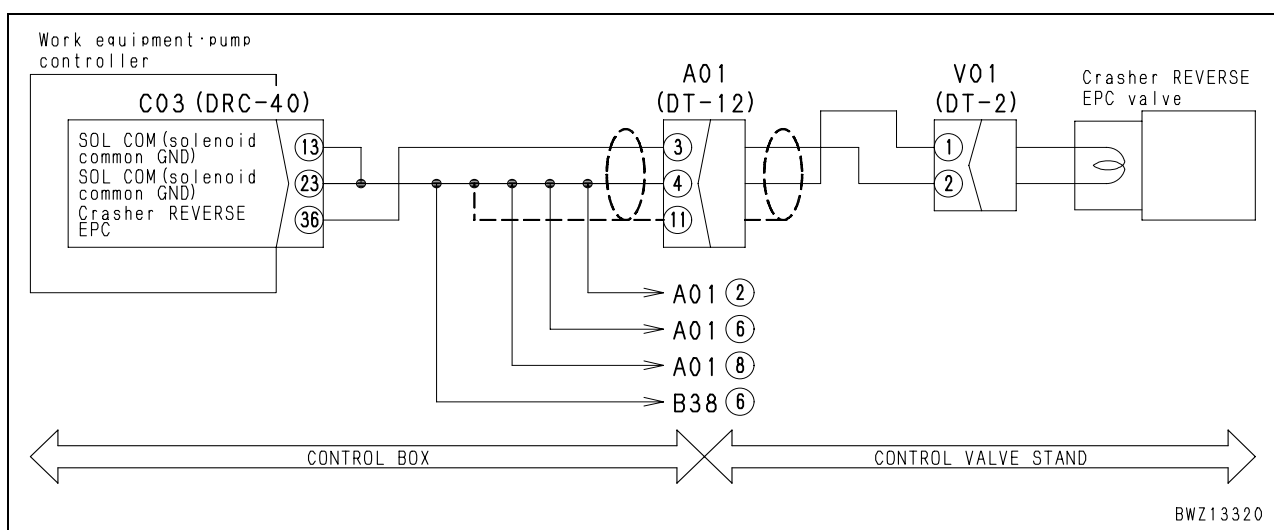


### Failure code [7RF3KB] Short circuit in crusher reverse EPC valve

User code	Failure code	Trouble	Short circuit in crusher reverse EPC valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RF3KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Ground short circuit is detected when EPC valve solenoid for crusher reverse rotation is driven.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the crusher reverse EPC valve solenoid circuit OFF.</li> <li>Even if the cause of the failure disappears, the system does not reset itself until the engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The crusher does not rotate in reverse.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Since the controller detects short circuit while the solenoid output is turned ON, be sure to turn the solenoid output ON when checking for reproduction of the failure after repair.</li> <li>The drive current of the EPC valve solenoid for crusher reverse rotation can be checked with the monitoring function. (Code: <b>26000</b>, Crusher REV EPC Curr.)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective crusher reverse EPC valve solenoid (Internal grounding)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
V01 (male)				Resistance	
Between (1) and (2)				7 – 14 Ω	
Between (2) and chassis ground				Min. 1 MΩ	
2		Short circuit with chassis ground in wiring harness (Contact with ground)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between wiring harness between C03 (female) (36) – A10 – V01 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)		Resistance
	Between (36) and (13), (23)		7 – 14 Ω		
	Between (36) and chassis ground		Min. 1 MΩ		

#### Circuit diagram related to crusher reverse EPC solenoid

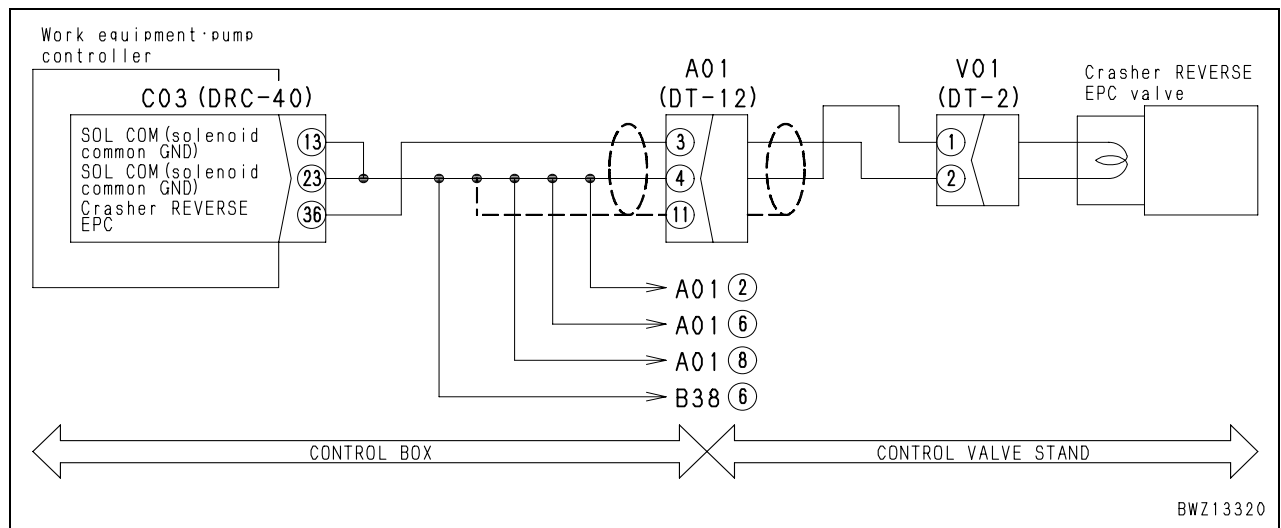


### Failure code [7RF3KY] Short circuit in crusher reverse EPC valve

User code	Failure code	Trouble	Short circuit in crusher reverse EPC valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RF3KY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Hot short circuit is detected when EPC valve solenoid for crusher reverse rotation is not driven.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> <li>If the cause of the failure disappears, the system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The crusher does not stop operating in reverse.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Hot short with wiring harness (Contact with 24-V circuit)	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then turn starting switch ON and carry out troubleshooting.</li> </ul>	Voltage
2	Defective work equipment and pump controller	<ul style="list-style-type: none"> <li>★ If cause 1 is not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)</li> </ul>		

#### Circuit diagram related to crusher reverse EPC solenoid

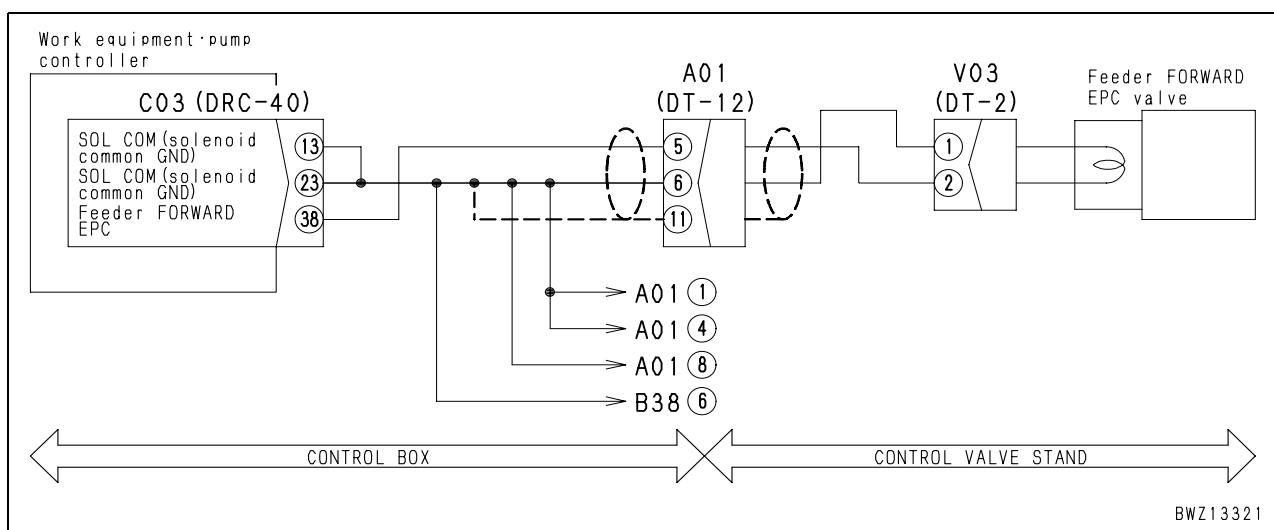


### Failure code [7RF4KA] Disconnection in feeder forward EPC valve

User code	Failure code	Trouble	Disconnection in feeder forward EPC valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RF4KA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Open circuit is detected when the EPC valve solenoid for feeder forward rotation is driven.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the feeder forward EPC valve solenoid circuit OFF.</li> <li>Even if the cause of the failure disappears, the system does not reset itself until the starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The feeder does not operate forward.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Feeder forward EPC valve solenoid drive current can be checked with the monitoring function (Code: <b>24700</b>, Feeder FWD EPC Curr.)</li> <li>Since the controller detects disconnection while the solenoid output is turned ON, be sure to turn the solenoid output ON when checking for reproduction of the failure after repair.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective feeder forward EPC valve solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
V03 (male)				Resistance
Between (1) and (2)				7 – 14 Ω
2		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between C03 (female) (38), A01 and V03 (female) (2)	Resistance Max. 1 Ω
			Wiring harness between C03 (female) (13), (23), A01 and V03 (female) (1)	Resistance Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			C03 (female)	Resistance
			Between (38) and (13), (23)	7 – 14 Ω

#### Circuit diagram related to feeder forward EPC solenoid



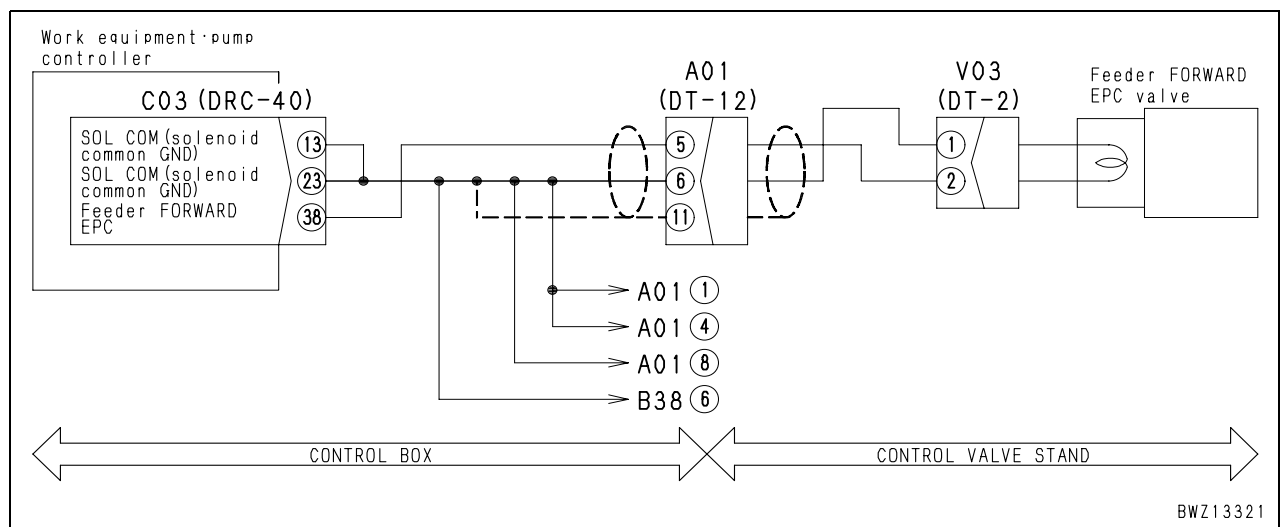


### Failure code [7RF4KB] Short circuit in feeder forward EPC valve

User code	Failure code	Trouble	Short circuit in feeder forward EPC valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RF4KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Ground short circuit is detected when EPC valve solenoid for feeder forward rotation is driven.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the feeder forward EPC valve solenoid circuit OFF.</li> <li>Even if the cause of the failure disappears, the system does not reset itself until the starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The feeder does not rotate forward.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Since the controller detects short circuit while the solenoid output is turned ON, be sure to turn the solenoid output ON when checking for reproduction of the failure after repair.</li> <li>Feeder forward EPC valve solenoid drive current can be checked with the monitoring function (Code: <b>24700</b>, Feeder FWD EPC Curr.)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective feeder forward EPC valve solenoid (Internal grounding fault)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
V03 (male)				Resistance	
Between (1) and (2)				7 – 14 Ω	
Between (2) and chassis ground				Min. 1 MΩ	
2		Short circuit with chassis ground in wiring harness (Contact with ground)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between wiring harness between C03 (female) (38) – A01 – V03 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)		Resistance
	Between (38) and (13), (23)		7 – 14 Ω		
	Between (38) and chassis ground		Min. 1 MΩ		

#### Circuit diagram related to feeder forward EPC solenoid

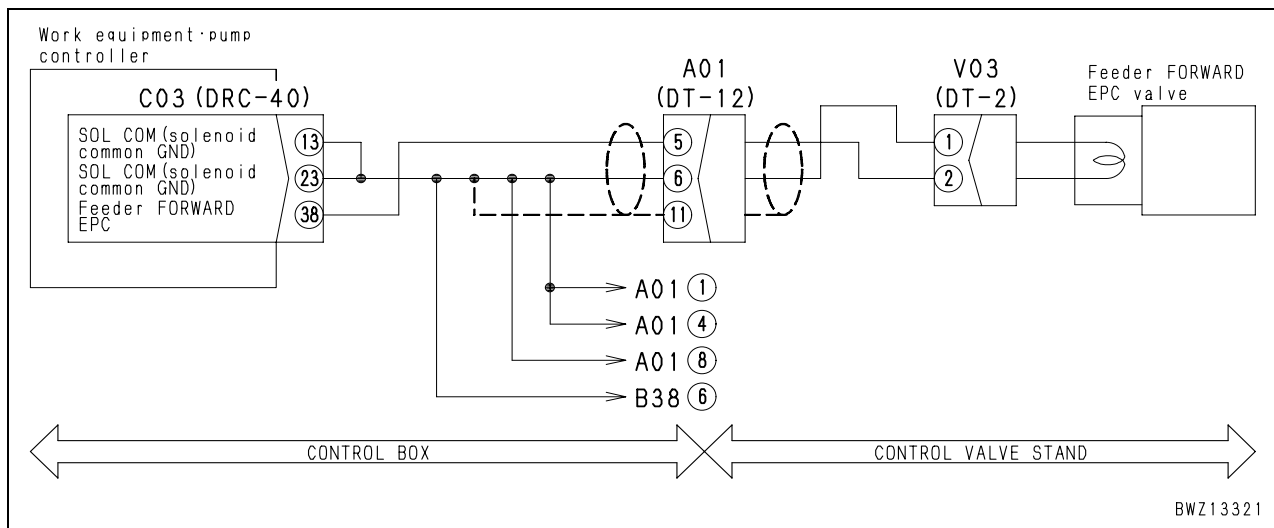


### Failure code [7RF4KY] Short circuit in feeder forward EPC valve

User code	Failure code	Trouble	Short circuit in feeder forward EPC valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RF4KY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When feeder forward EPC valve solenoid is not driven, hot short (contact with 24 V circuit) is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> <li>If the cause of the failure disappears, the system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The feeder does not stop operating forward.</li> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	1	Hot short with wiring harness (Contact with 24-V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		Voltage
Between wiring harness between C03 (female) (38) – A01 – V03 (female) (2) and chassis ground					
2	Defective work equipment and pump controller	★ If cause 1 is not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

#### Circuit diagram related to feeder forward EPC solenoid



BR380JG-1E0 Mobile crusher

---

Form No. SEN02090-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

# MOBILE CRUSHER

## BR380JG-1E0

**Machine model      Serial number**

**BR380JG-1E0          2001 and up**

---

## 40 Troubleshooting

### Troubleshooting by failure code, Part 2

---

Failure code [7RFAKY] Short circuit in engine stop relay .....	4
Failure code [7RFAKZ] Disconnection or short circuit in engine stop relay .....	6
Failure code [7RFBKB] Short circuit in muck conveyor solenoid .....	8
Failure code [7RFBKZ] Disconnection or short circuit in muck conveyor solenoid .....	9
Failure code [7RFCKA] Disconnection in magnetic separator solenoid.....	10
Failure code [7RFCKB] Short circuit in magnetic separator solenoid .....	11
Failure code [7RFCKY] Short circuit in magnetic separator solenoid .....	12
Failure code [7RFHKB] Short circuit in conveyor forward relay .....	14
Failure code [7RFHKY] Short circuit in conveyor forward relay .....	16
Failure code [7RFKKB] Short circuit in lock cylinder pull relay .....	18
Failure code [7RFKKY] Short circuit in lock cylinder pull relay .....	20
Failure code [7RFLKA] Disconnection in accessory EPC solenoid .....	22
Failure code [7RFLKB] Short circuit in accessory EPC solenoid .....	23
Failure code [7RFLKY] Short circuit in accessory EPC solenoid .....	24
Failure code [7RFMKY] Short circuit in abnormal pressure relay .....	26
Failure code [7RFMKZ] Disconnection or short circuit in abnormal pressure relay .....	28

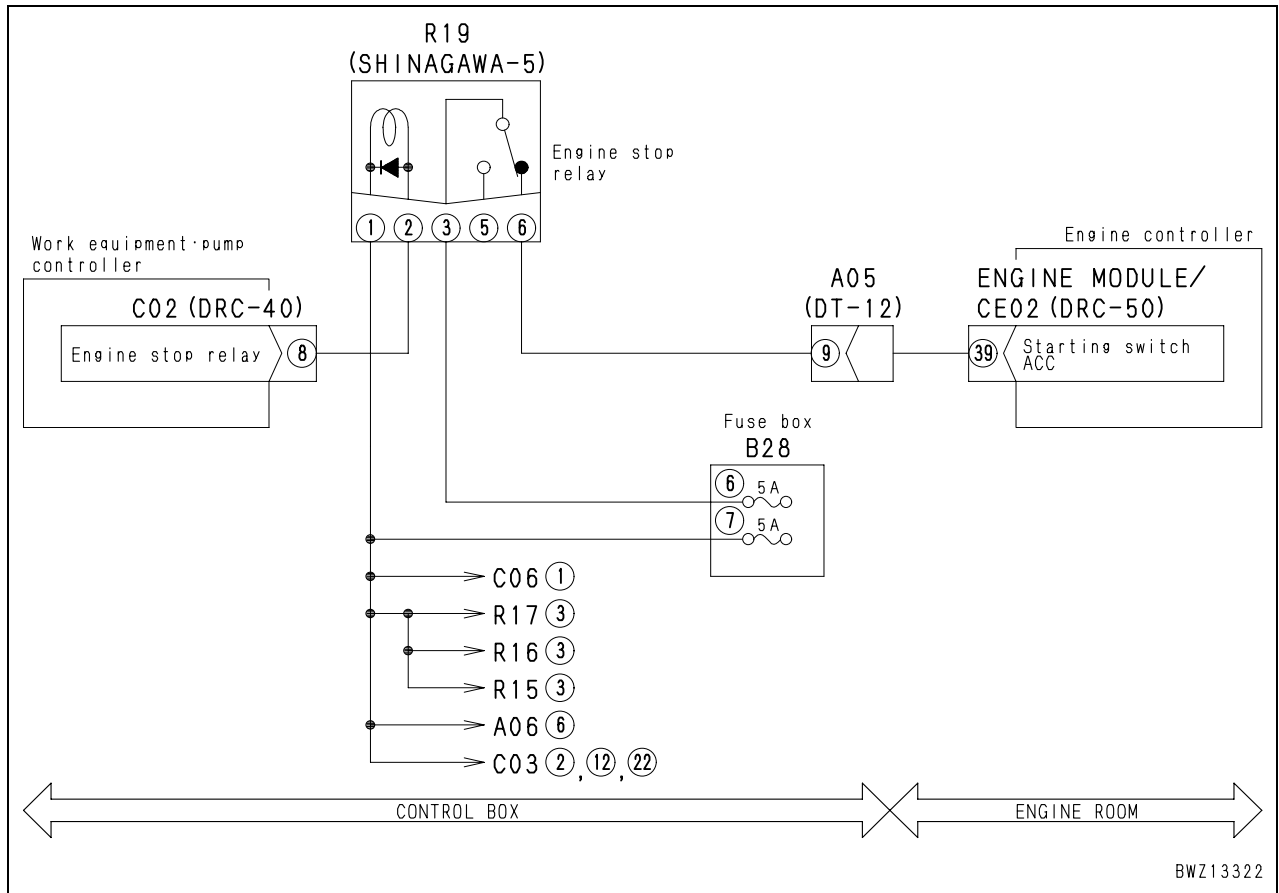
Failure code [7RFNKA] Disconnection in lock cylinder unlock solenoid valve .....	30
Failure code [7RFNKB] Short circuit in lock cylinder unlock solenoid valve.....	31
Failure code [7RFNKY] Short circuit in lock cylinder unlock solenoid valve.....	32
Failure code [7RFPKB] Short circuit in lock cylinder push relay .....	34
Failure code [7RFPKY] Short circuit in lock cylinder push relay .....	36
Failure code [7RGAMA] Abnormality in 2nd conveyor pressure sensor .....	38
Failure code [7RJAKA] Disconnection in travel lock EPC solenoid valve .....	40
Failure code [7RJAKB] Short circuit in travel lock EPC solenoid valve.....	42
Failure code [7RJAKY] Short circuit in travel lock EPC solenoid valve.....	44
Failure code [7RJMMW] Lock cylinder slipping.....	45
Failure code [7RJNMA] Abnormality in vibratory screen pressure sensor .....	46
Failure code [7RJPKB] Short circuit in radio control work-mode switch.....	48
Failure code [7RJQKB] Short circuit in radio control travel-mode switch .....	49
Failure code [7RJRKB] Short circuit on travel signal.....	50
Failure code [7RJSMA] Abnormality in magnetic separator pressure sensor .....	52
Failure code [AA10NX] Air cleaner Clogging .....	54
Failure code [AB00KE] Charge voltage too low .....	56

## Failure code [7RFAKY] Short circuit in engine stop relay

User code	Failure code	Trouble	Short circuit in engine stop relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RFAKY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the engine stop relay circuit was driven, hot short (contact with 24 V circuit) was detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Does not detect CAN communication error of the engine controller.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The engine does not start.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the engine stop relay can be checked with the monitoring function (Code: <b>25601</b>, Relay Drive 0).</li> <li>Since the controller detects hot short (contact with 24 V circuit) while the solenoid output is turned ON, be sure to turn the solenoid output ON when checking for reproduction of the failure after repair.</li> <li>This failure code is generated when the primary (coil side) of engine stop relay has failed. A failure of the secondary (contact side) cannot be detected with this code.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Engine stopped (Internal short circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
R19 (Male)				Resistance		
Between (1) and (2)				100 – 500 Ω		
2		Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			Wiring harness between C02 (female) (8) – R19 (female) (2) and chassis ground	Voltage	Max. 1 V	
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
	C02 (male)		Engine stop switch	Voltage		
	Between (8) and chassis ground		OFF	20 – 30 V		
ON		Max. 1 V				

Related electrical circuit diagram



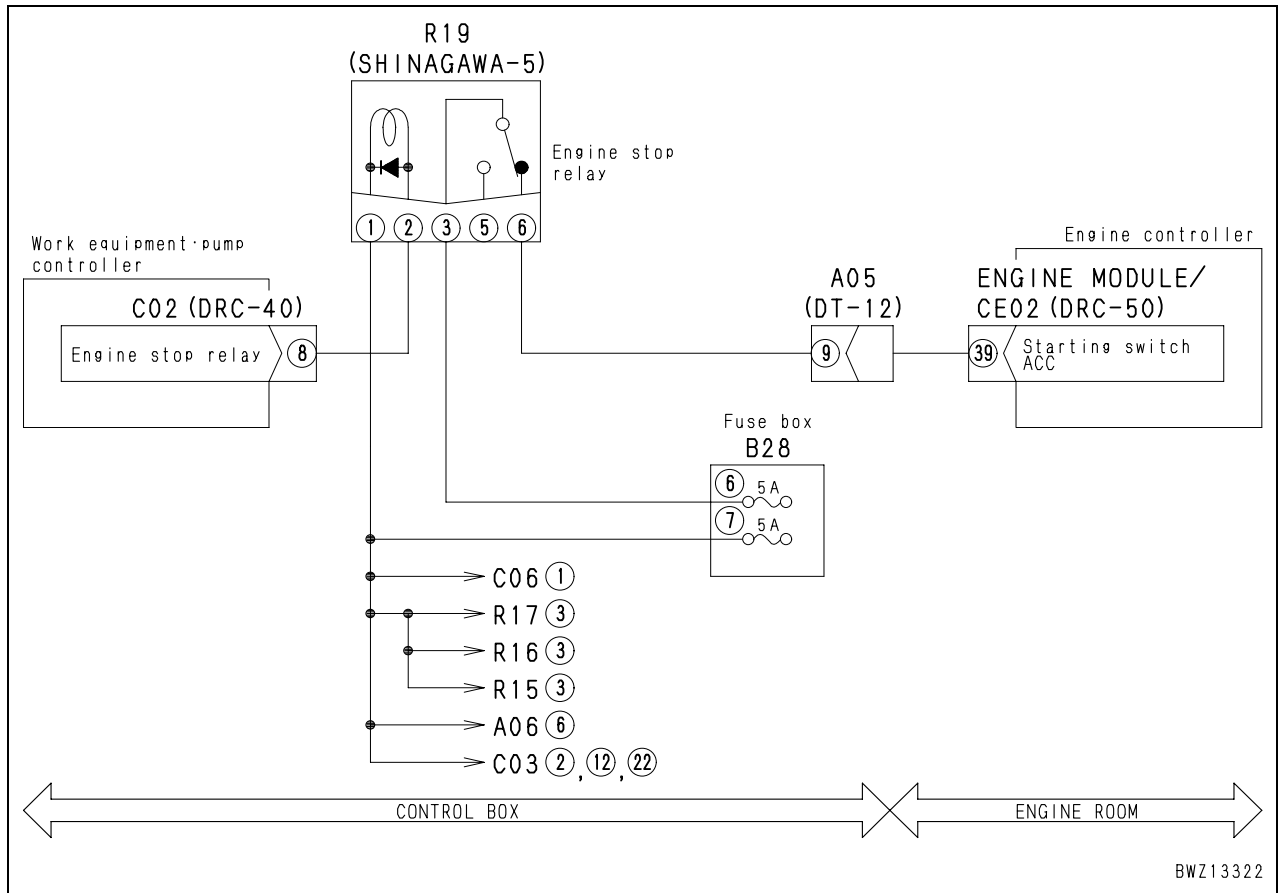
## Failure code [7RFAKZ] Disconnection or short circuit in engine stop relay

User code	Failure code	Trouble	Disconnection or short circuit in engine stop relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RFAKZ</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the engine stop relay is not driven, disconnection of the circuit or ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Does not detect CAN communication error of the engine controller.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The engine does not stop even if engine stop switch or All Stop switch of radio and wired remote control system is pressed.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the engine stop relay can be checked with the monitoring function (Code: <b>25601</b>, Relay Drive 0).</li> <li>This failure code is generated when the primary (coil side) of engine stop relay has failed. A failure of the secondary (contact side) cannot be detected with this code.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective fuse No. 7	If the fuse No. 7 is blown, the circuit probably has a grounding fault, etc. (See cause 4.)	
2		Defective engine stop relay (Internal disconnection or grounding)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			R19 (male)	Resistance	
			Between (1) and (2)	100 – 500 Ω	
3		Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C02 (female) (8) – R19 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between R19 (female) (1) – B28 No. 7	Resistance	Max. 1 Ω
4		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C02 (female) (8) – R19 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between R19 (female) (1) – B28 No. 7 and chassis ground	Resistance	Min. 1 MΩ
5		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			C02 (male)	Engine stop switch	Voltage
			Between (8) and chassis ground	OFF	20 – 30 V
ON		Max. 1 V			



Related electrical circuit diagram

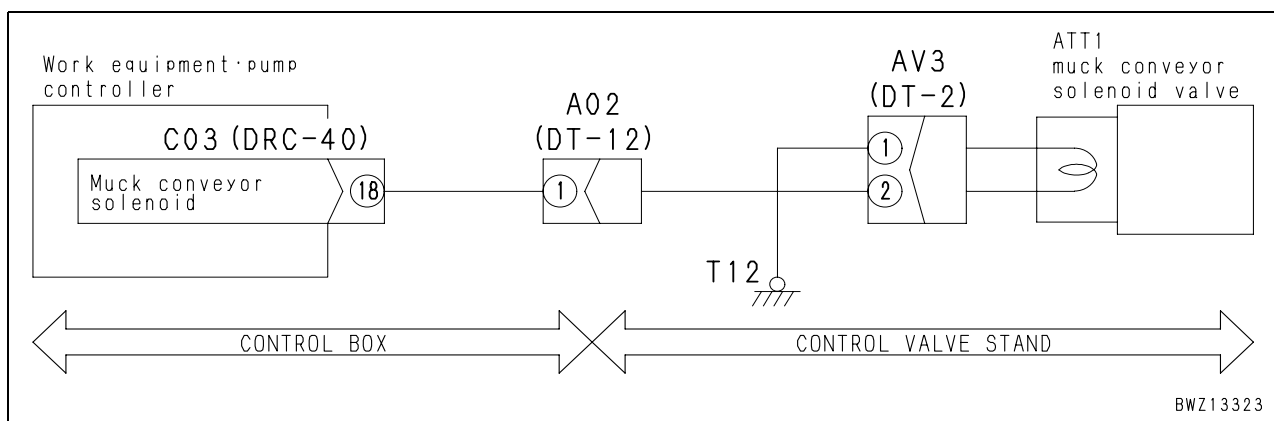


### Failure code [7RFBKB] Short circuit in muck conveyor solenoid

User code	Failure code	Trouble	Short circuit in muck conveyor solenoid (Work equipment and pump controller (work equipment control) system)
—	<b>7RFBKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the muck discharge conveyor solenoid was driven, ground short circuit was detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns OFF the output to the muck discharge conveyor solenoid circuit.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The muck discharge conveyor does not work.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the muck conveyor solenoid can be checked with the monitoring function (Code: <b>25500</b>, Solenoid Valve)</li> <li>Since the controller detects ground short circuit while the muck conveyor solenoid is driven, be sure to turn the solenoid output ON when checking reproduction of the failure after repair.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective muck discharge conveyor solenoid (Internal short circuit or grounding)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
AV3 (male)				Resistance	
Between (1) and (2)				20 – 60 Ω	
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (18) – A02 – AV3 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			C03 (male)	Muck discharge conveyor	Voltage
			Between (18) and chassis ground	Holds in position. Operating	Max. 1 V 20 – 30 V

#### Related electrical circuit diagram



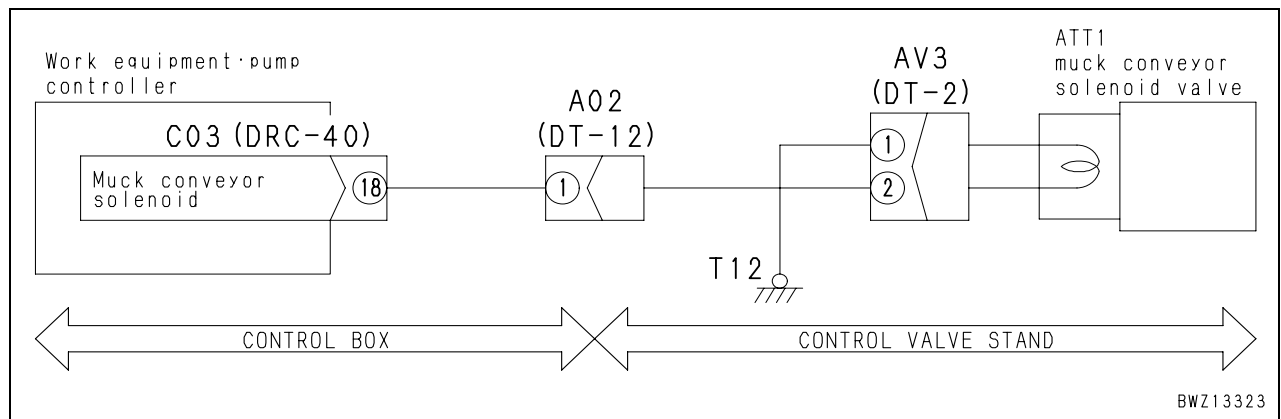
BWZ13323

### Failure code [7RFBKZ] Disconnection or short circuit in muck conveyor solenoid

User code	Failure code	Trouble	Disconnection or short circuit in muck conveyor solenoid (Work equipment and pump controller (work equipment control) system)
—	<b>7RFBKZ</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the muck discharge conveyor solenoid was not driven, disconnection or hot short (contact with 24 V circuit) was detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns OFF the output to the muck discharge conveyor solenoid.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The muck discharge conveyor does not work or does not stop. (If it does not stop, press the engine stop switch or turn OFF the engine starting switch OFF.)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the muck conveyor solenoid can be checked with the monitoring function (Code: <b>25500</b>, Solenoid Valve)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective muck discharge conveyor solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
AV3 (male)				Resistance	
Between (1) and (2)				20 – 60 Ω	
2		Disconnection in wiring harness (Open circuit or poor connector contact)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (18) – A02 – AV3 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between AV3 (female) (1) – chassis ground	Resistance	Max. 1 Ω
			★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
3		Hot short in wiring harness (Contact with 24V circuit)	Wiring harness between C03 (female) (18) – A02 – AV3 (female) (2) and chassis ground	Voltage	Max. 1 V
			★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
4		Defective work equipment and pump controller	C03 (female)	Muck discharge conveyor	Voltage
			Between (18) and chassis ground	Holds in position.	Max. 1 V
			Operating		20 – 30 V

**Related electrical circuit diagram**

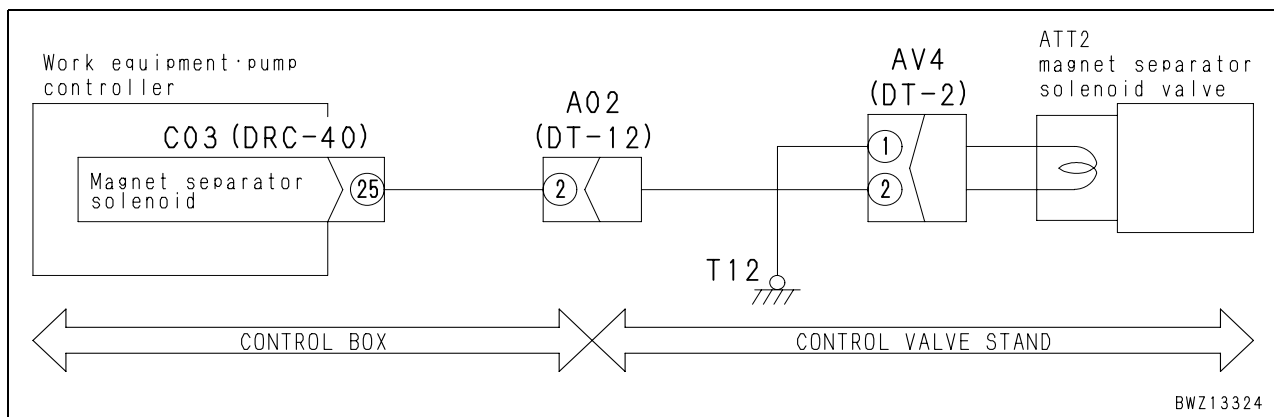


### Failure code [7RFCKA] Disconnection in magnetic separator solenoid

User code	Failure code	Trouble	Disconnection in magnetic separator solenoid (Work equipment and pump controller (work equipment control) system)
—	<b>7RFCKA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the magnetic separator solenoid is driven, disconnection of the circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the magnetic separator solenoid OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The magnetic separator does not work.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The driven state (ON/OFF) of the magnetic separator solenoid can be checked with the monitoring function (Code: <b>25500</b>, Solenoid Valve)</li> <li>Since the controller detects the disconnection while the magnetic separator solenoid is driven, be sure to turn the solenoid output ON when checking reproduction of the failure after repair.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective magnetic separator solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
AV4 (male)				Resistance	
Between (1) and (2)				20 – 60 Ω	
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (25) – AV4 (female) (2)	Resistance Max. 1 Ω	
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
	C03 (female)		Resistance		
	Between (25) and chassis ground		20 – 60 Ω		

#### Related electrical circuit diagram

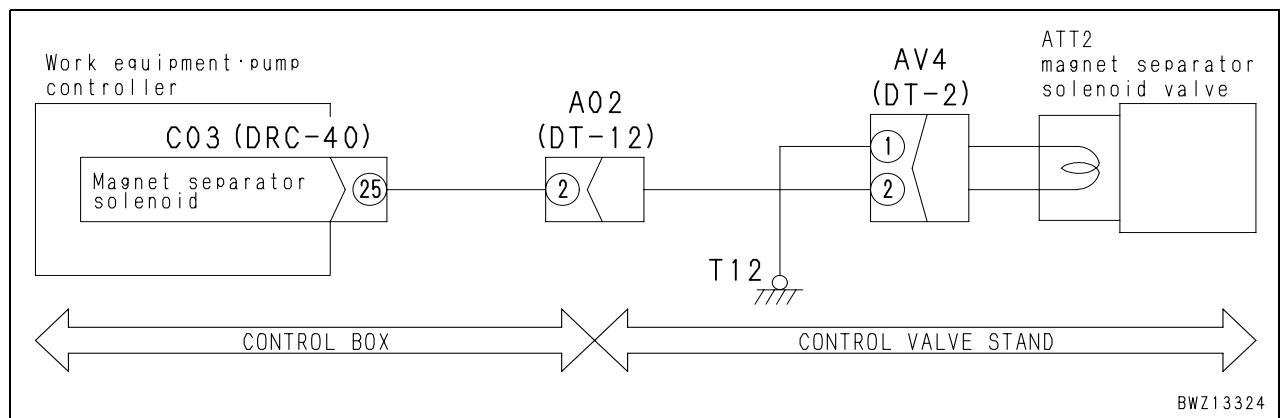


### Failure code [7RFCKB] Short circuit in magnetic separator solenoid

User code	Failure code	Trouble	Short circuit in magnetic separator solenoid (Work equipment and pump (work equipment control) controller system)
—	<b>7RFCKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the magnetic separator solenoid is driven, ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the magnetic separator solenoid OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The magnetic separator does not work.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The driven state (ON/OFF) of the magnetic separator solenoid can be checked with the monitoring function (Code: <b>25500</b>, Solenoid Valve)</li> <li>Since the controller detects the ground short circuit while the magnetic separator solenoid is driven, be sure to turn the solenoid output ON when checking reproduction of the failure after repair.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective magnetic separator solenoid (Internal short circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
AV4 (male)				Resistance
Between (1) and (2)				20 – 60 Ω
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between C03 (female) (25) – A02 – AV4 (female) (2) and chassis ground	Resistance   Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			C03 (female)	Resistance
			Between (25) and chassis ground	20 – 60 Ω

#### Related electrical circuit diagram



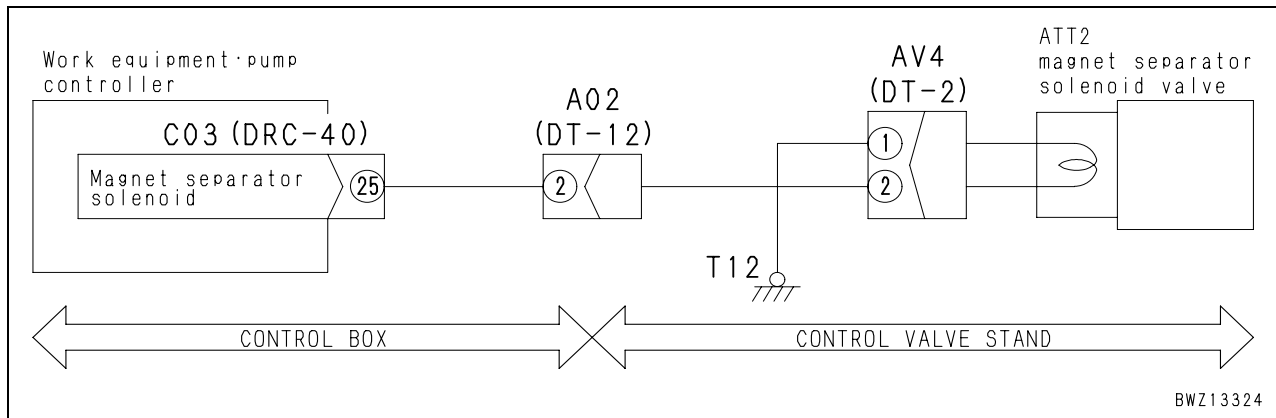
BWZ13324

### Failure code [7RFCKY] Short circuit in magnetic separator solenoid

User code	Failure code	Trouble	Short circuit in magnetic separator solenoid (Work equipment and pump controller (work equipment control) system)
—	<b>7RFCKY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When magnetic separator solenoid is not driven, hot short of the circuit (contact with 24 V circuit) is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The magnetic separator does not stop. (If it does not stop, press the engine stop switch or turn OFF the engine starting switch.)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The driven state (ON/OFF) of the magnetic separator solenoid can be checked with the monitoring function (Code: <b>25500</b>, Solenoid Valve)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective magnetic separator solenoid (Internal defect)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
AV4 (male)				Resistance		
Between (1) and (2)				20 – 60 Ω		
2		Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting			
			Wiring harness between C03 (female) (25) – A02 – AV4 (female) (2) and chassis ground	Voltage	Max. 1 V	
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting without.			
	C03 (female)		Voltage			
	Between (25) and chassis ground		Max. 1 V			

#### Related electrical circuit diagram



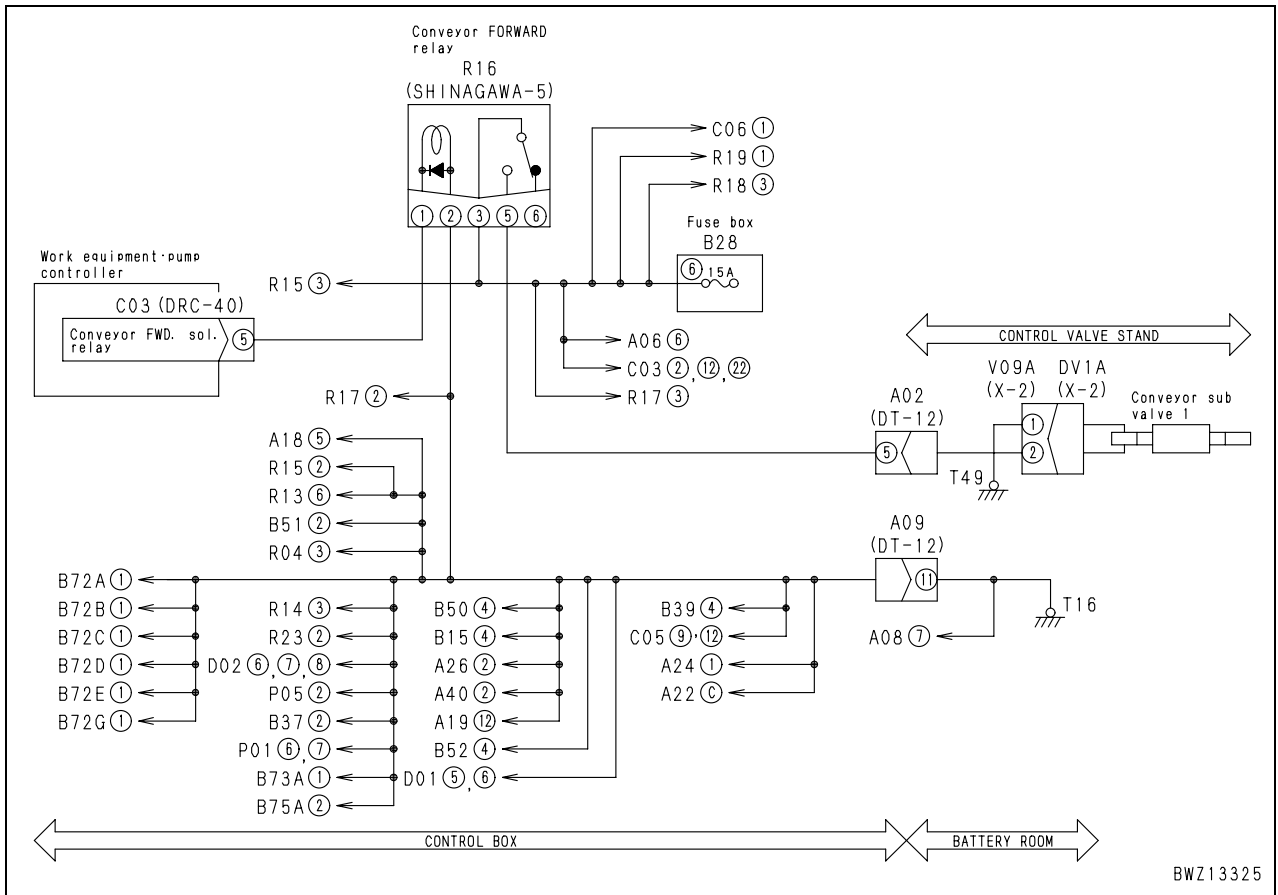
BWZ13324

### Failure code [7RFHKB] Short circuit in conveyor forward relay

User code	Failure code	Trouble	Short circuit in conveyor forward relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RFHKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the conveyor forward rotation relay circuit is driven, ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the conveyor forward rotation relay OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The conveyor forward rotation does not work.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the conveyor forward relay solenoid can be checked with the monitoring function (Code: <b>25602</b>, Relay Drive 1)</li> <li>Since the controller detects ground short circuit while the conveyor forward solenoid is driven, be sure to turn the solenoid output ON when checking reproduction of the failure after repair.</li> <li>This failure code is generated when the primary (coil side) of conveyor forward relay has failed. A failure of the secondary (contact side) cannot be detected with this code.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective conveyor forward rotation relay (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
R16 (male)				Resistance	
Between (1) and (2)				100 – 500 Ω	
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (5) – R16 (female) (1) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)	Resistance	
			Between (5) and chassis ground	100 – 500 Ω	

Related electrical circuit diagram



BWZ13325

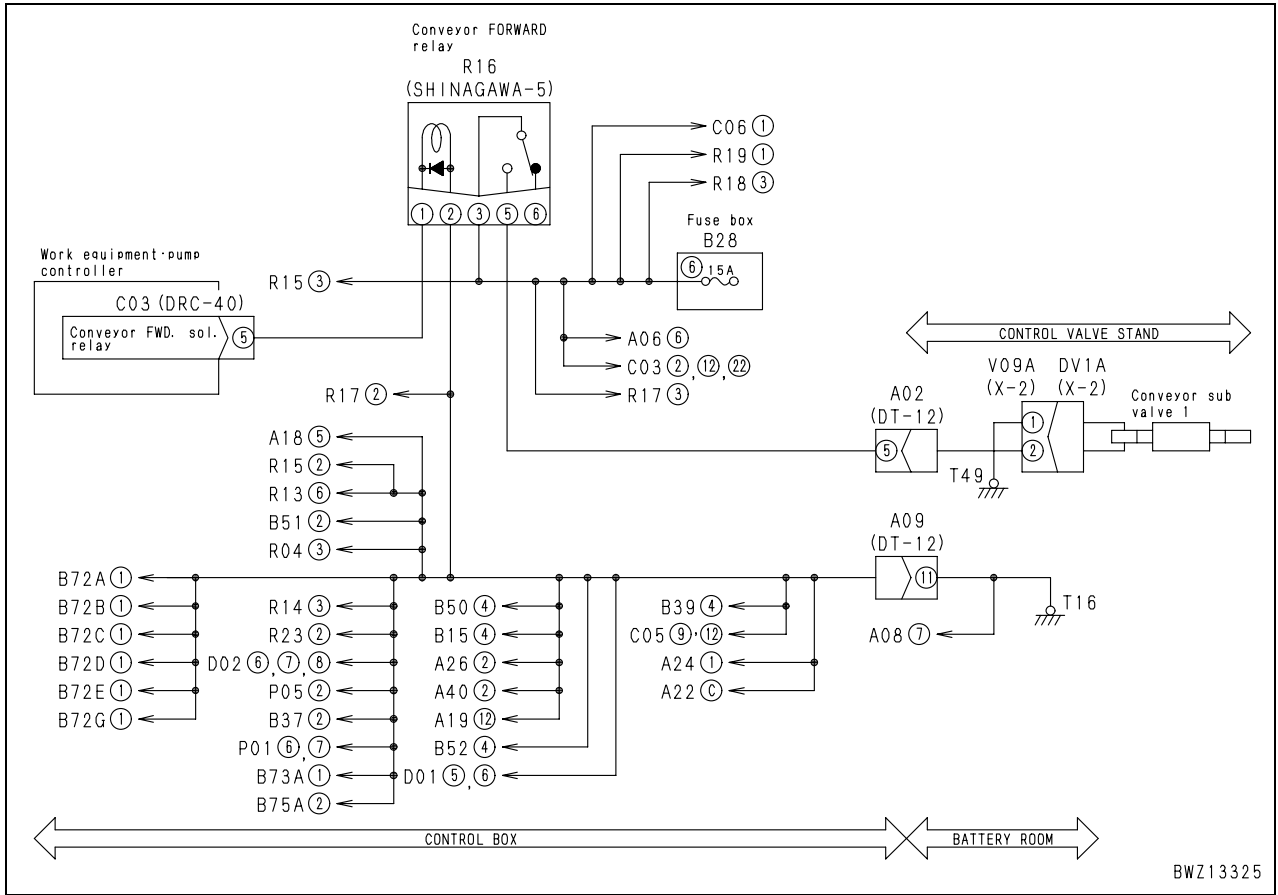


## Failure code [7RFHKY] Short circuit in conveyor forward relay

User code	Failure code	Trouble	Short circuit in conveyor forward relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RFHKY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the conveyor forward relay is not driven, hot short of the circuit (contact with 24 V circuit) is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The conveyor forward rotation does not stop. (If it does not stop, press the engine stop switch or turn OFF the engine starting switch.)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the conveyor forward relay solenoid can be checked with the monitoring function (Code: <b>25602</b>, Relay Drive 1)</li> <li>This failure code is generated when the primary (coil side) of magnetic separator relay has failed. A failure of the secondary (contact side) cannot be detected with this code.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective conveyor forward rotation relay (Internal defect)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
R16 (male)				Resistance		
Between (1) and (2)				100 – 500 Ω		
2		Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting			
			Wiring harness between C03 (female) (5) – R16 (female) (1) and chassis ground	Voltage	Max. 1 V	
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			C03 (female)	Voltage		
			Between (5) and chassis ground	Max. 1 V		

Related electrical circuit diagram



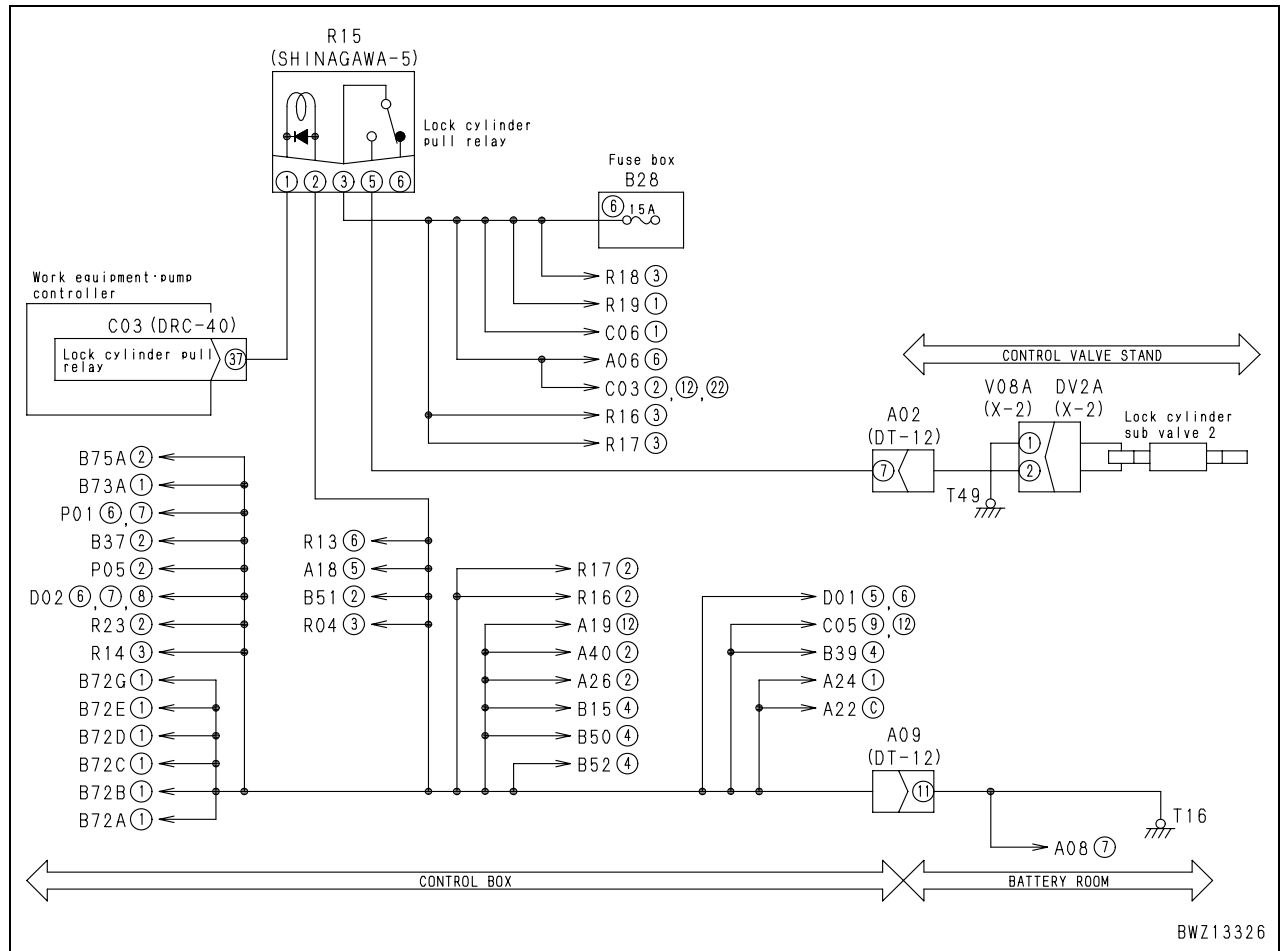
BWZ13325

## Failure code [7RFKKB] Short circuit in lock cylinder pull relay

User code	Failure code	Trouble	Short circuit in lock cylinder pull relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RFKKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the lock cylinder pull relay is driven, ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns output to each solenoid of the lock cylinder push and pull OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The lock cylinders are not pulled and their clearance adjustment is disabled.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the lock cylinder pull relay can be checked with the monitoring function (Code: <b>25601</b>, Relay Drive 0)</li> <li>This failure code is generated when the primary (coil side) of lock cylinder pull relay has failed. A failure of the secondary (contact side) cannot be detected with this code.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective lock cylinder pull relay (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
R15 (male)				Resistance		
Between (1) and (2)				100 – 500 Ω		
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C03 (female) (37) – R15 (female) (1) and chassis ground	Resistance	Min. 1 MΩ	
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
	C03 (female)		Resistance			
	Between (37) and chassis ground		100 – 500 Ω			

Related electrical circuit diagram

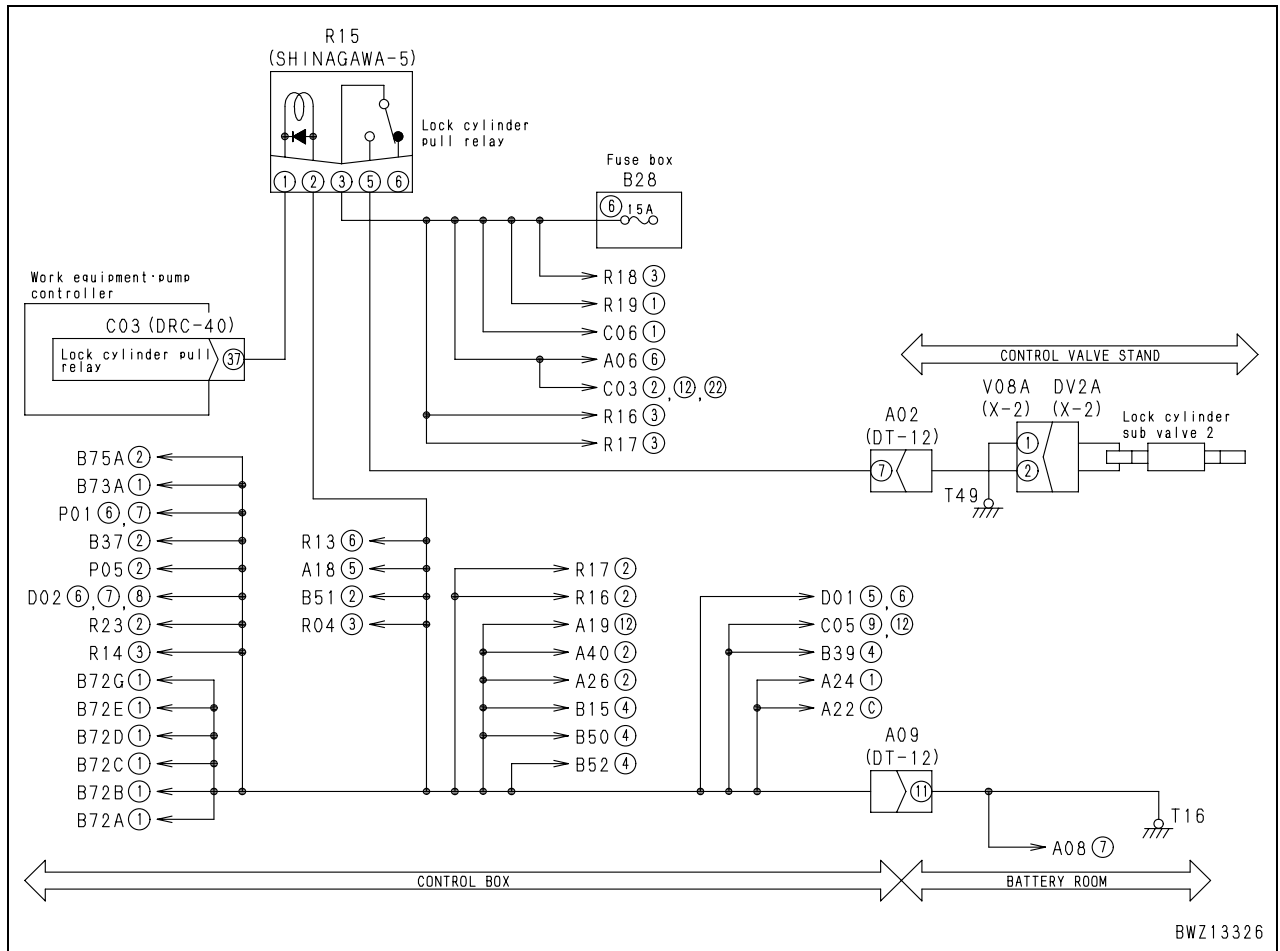


### Failure code [7RFKKY] Short circuit in lock cylinder pull relay

User code	Failure code	Trouble	Short circuit in lock cylinder pull relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RFKKY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the lock cylinder pull relay is not driven, hot short circuit (contact with 24 V circuit) is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>When the accessory EPC is driven during primary conveyor vertical operation, muck discharge conveyor vertical operation, lock cylinder push/pull, or primary conveyor forward rotation, the lock cylinders always tend to retract and relieve.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the lock cylinder pull relay can be checked with the monitoring function (Code: <b>25601</b>, Relay Drive 0)</li> <li>This failure code is generated when the primary (coil side) of lock cylinder pull relay has failed. A failure of the secondary (contact side) cannot be detected with this code.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective lock cylinder retract relay (Internal defect)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
R15 (male)				Resistance		
Between (1) and (2)				100 – 500 Ω		
2		Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting			
			Wiring harness between C03 (female) (37) – R15 (female) (1) and chassis ground	Voltage	Max. 1 V	
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			C03 (female)	Voltage		
			Between (37) and chassis ground	Max. 1 V		

Related electrical circuit diagram

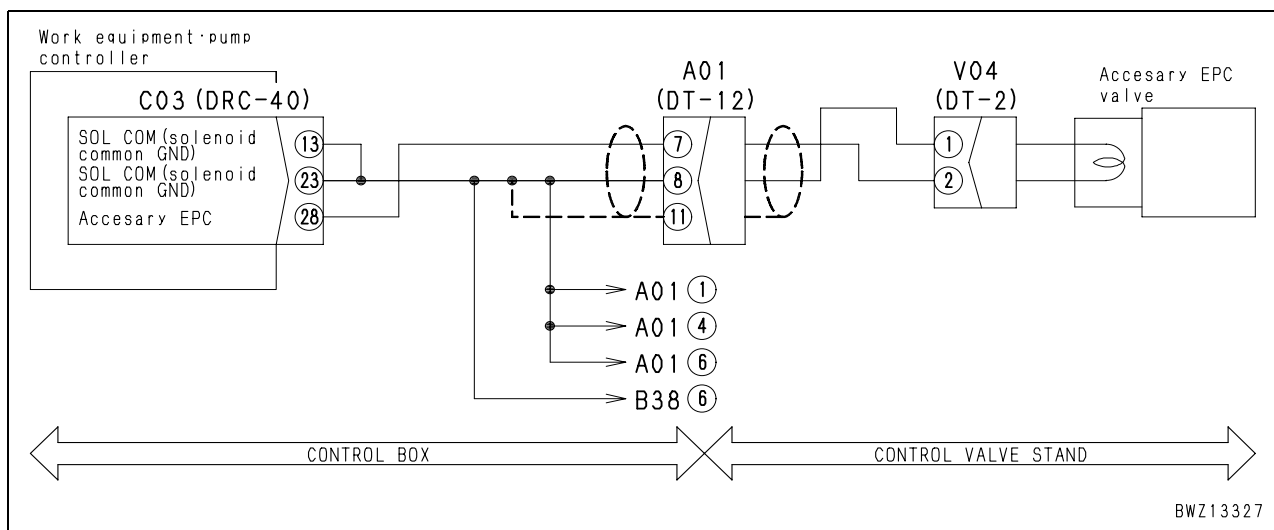


### Failure code [7RFLKA] Disconnection in accessory EPC solenoid

User code	Failure code	Trouble	Disconnection in accessory EPC solenoid (Work equipment and pump controller (work equipment control) system)
—	<b>7RFLKA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the accessory drive EPC valve circuit is driven, disconnection of the circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the accessory drive EPC valve OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is once turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The primary conveyor vertical operation, the muck discharge conveyor vertical operation, or lock cylinder push/pull, primary conveyor forward rotation do not work.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the accessory drive EPC valve can be checked with the monitoring function (Code: <b>25705</b>, Acc. EPC Curr.)</li> <li>Since the controller detects a disconnection when the solenoid output is ON, turn the output ON for reproduction check after recovery.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective accessory drive EPC valve solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
V04 (male)				Resistance	
Between (1) and (2)				7 – 14 Ω	
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (28) – A01 – V04 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between C03 (female) (13), (23) – V04 (female) (1)	Resistance	Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)	Resistance	
			Between (28) – (13), (23)	7 – 14 Ω	

#### Related electrical circuit diagram

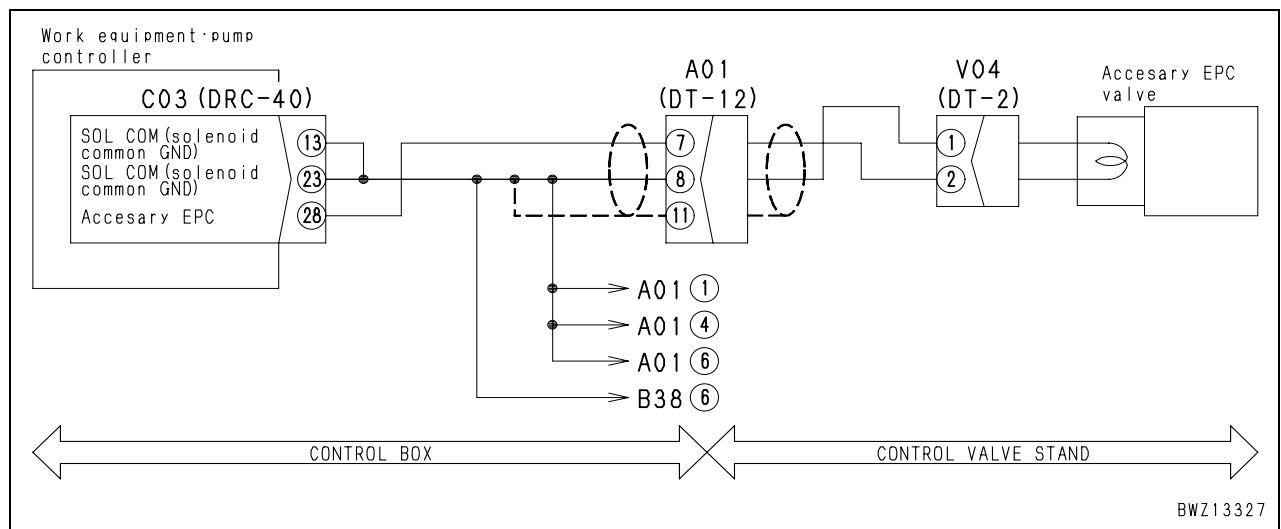


### Failure code [7RFLKB] Short circuit in accessory EPC solenoid

User code	Failure code	Trouble	Short circuit in accessory EPC solenoid (Work equipment and pump controller (work equipment control) system)
—	<b>7RFLKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the accessory drive EPC valve is driven, ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the accessory drive EPC valve circuit OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is once turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The primary conveyor vertical operation, the muck discharge conveyor vertical operation, or lock cylinder push/pull, primary conveyor forward rotation do not work.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the accessory drive EPC valve can be checked with the monitoring function (Code: <b>25705</b>, Acc. EPC Curr.)</li> <li>Since the controller detects a short circuit when the solenoid output is ON, turn the output ON for reproduction check after recovery.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective accessory drive EPC valve solenoid (Internal grounding fault)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
V04 (male)				Resistance	
Between (1) and (2)				7 – 14 Ω	
Between (2) and chassis ground				Min. 1 MΩ	
2		Grounding fault in wiring harness (Contact with ground)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (28) – A01 – V04 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)	Resistance	
	Between (28) – (13), (23)		7 – 14 Ω		
	Between (28) and chassis ground		Min. 1 MΩ		

#### Related electrical circuit diagram



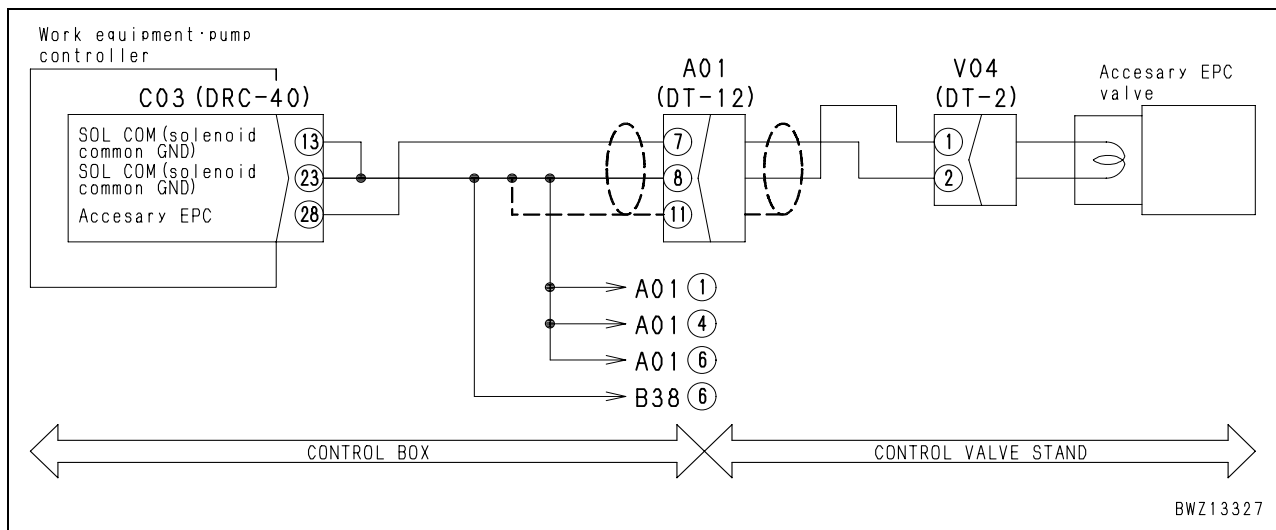


### Failure code [7RFLKY] Short circuit in accessory EPC solenoid

User code	Failure code	Trouble	Short circuit in accessory EPC solenoid (Work equipment and pump controller (work equipment control) system)
—	<b>7RFLKY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the accessory drive EPC valve circuit is not driven, hot short (contact with 24 V circuit) is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> <li>When the cause of failure disappears, system is reset by itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>If the primary conveyor vertical operation, muck discharge conveyor vertical operation, and lock cylinder push/pull switch have failed, these operations do not stop. (If they do not stop, press the engine stop switch or turn OFF the engine starting switch.)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting. Wiring harness between C03 (female) (28) – A01 – V04 (female) (2) and chassis ground	Voltage
2		Defective work equipment and pump controller	If cause 1 is not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

#### Related electrical circuit diagram

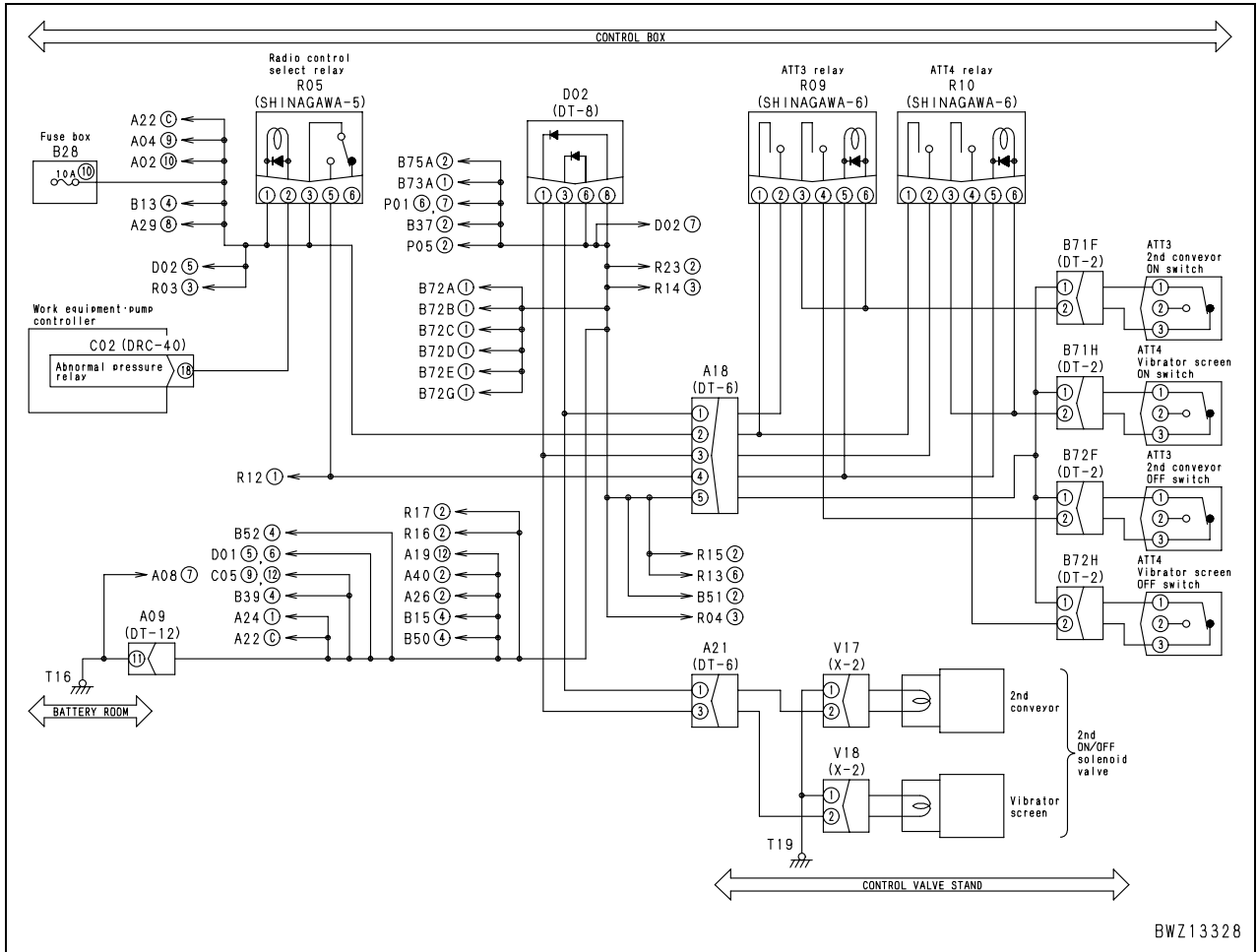


### Failure code [7RFMKY] Short circuit in abnormal pressure relay

User code	Failure code	Trouble	Short circuit in abnormal pressure relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RFMKY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the abnormal pressure recovery relay circuit is driven, hot short (contact with 24 V circuit) is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the abnormal pressure recovery relay circuit OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The secondary conveyor, water spray, and vibratory screen do not work.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the abnormal pressure relay can be checked with the monitoring function (Code: <b>25601</b>, Relay Drive 0)</li> <li>Since the controller detects a hot short (contact with 24 V circuit), turn the output ON for reproduction check after recovery.</li> <li>This failure code is generated when the primary (coil side) of abnormal pressure recovery relay has failed. A failure of the secondary (contact side) cannot be detected with this code.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective abnormal pressure recovery relay (Internal short circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
R05 (male)				Resistance	
Between (1) and (2)				100 – 500 Ω	
2		Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			Wiring harness between C02 (female) (18) – R05 (female) (2) and chassis ground	Voltage	Max. 1 V
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C02 (male)	Resistance	
			Between (18) and chassis ground	100 – 500 Ω	

Related electrical circuit diagram

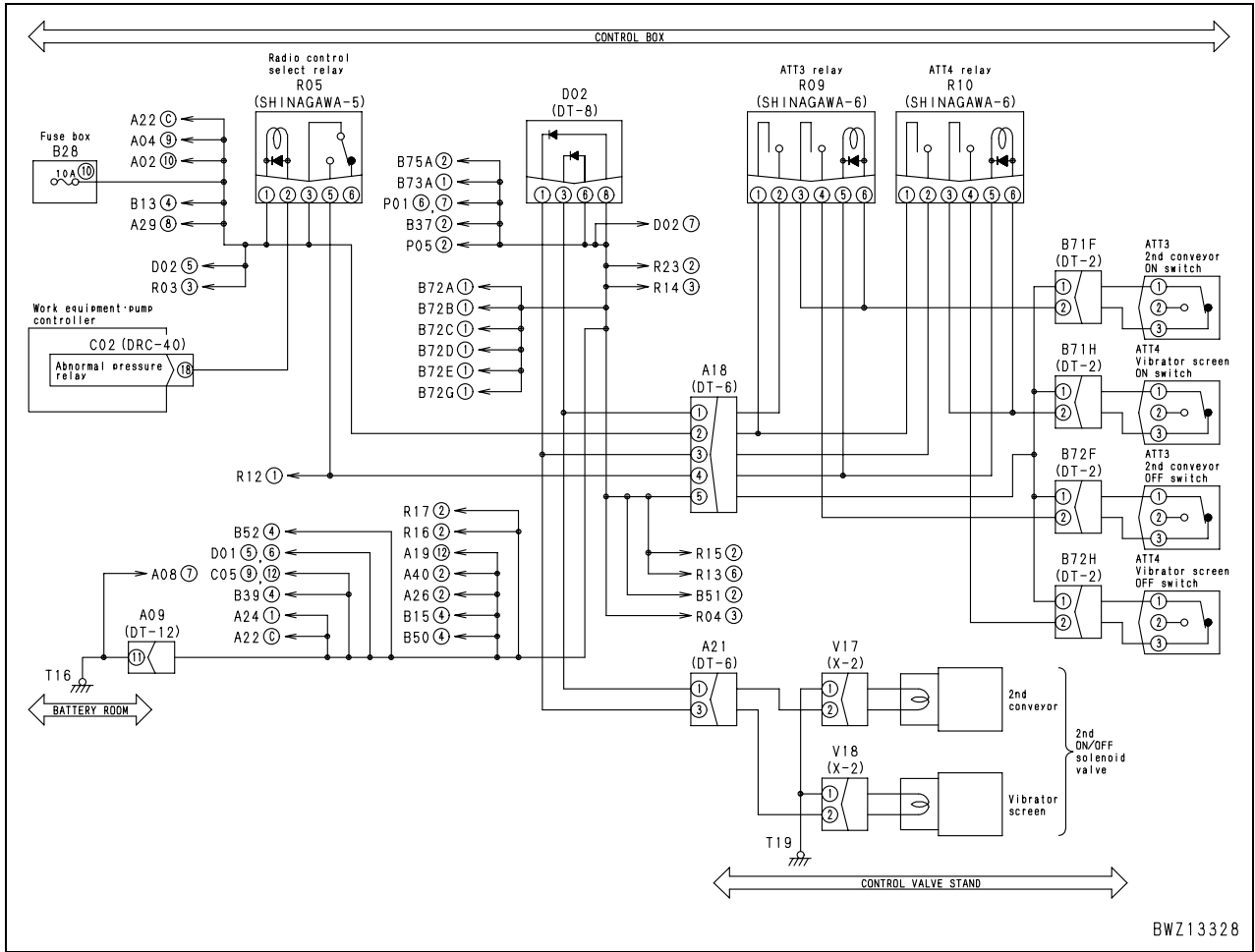


### Failure code [7RFMKZ] Disconnection or short circuit in abnormal pressure relay

User code	Failure code	Trouble	Disconnection or short circuit in abnormal pressure relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RFMKZ</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the abnormal pressure recovery relay circuit is not driven, disconnection or ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the abnormal pressure recovery relay circuit OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The secondary conveyor, water splay, and vibratory screen do not work, or do not stop automatically. (If they do not stop, press the stop switch.)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the abnormal pressure relay can be checked with the monitoring function (Code: <b>25601</b>, Relay Drive 0)</li> <li>This failure code is generated when the primary (coil side) of abnormal pressure recovery relay has failed. A failure of the secondary (contact side) of the relay cannot be detected with this code.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective fuse No. 10	If fuse No. 10 is blown, circuit probably has ground fault (See cause 4).	
2		Defective abnormal pressure recovery relay (Internal disconnection or contact with ground)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			R05 (male)		Resistance
			Between (1) and (2)		100 – 500 Ω
3		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C02 (female) (18) – R05 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between R05 (female) (1) – B28 No. 10	Resistance	Max. 1 Ω
4		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C02 (female) (18) – R05 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between C05 (female) (1) – B28 No. 10 and chassis ground	Resistance	Min. 1 MΩ
5		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF and the conveyor at lower position, then carry out troubleshooting without turning engine starting switch ON.		
			C02 (male)	Mode selector switch	Voltage
			Between (18) and chassis ground	Working mode	Max. 1 V
Other than working mode		20 – 30 V			

Related electrical circuit diagram

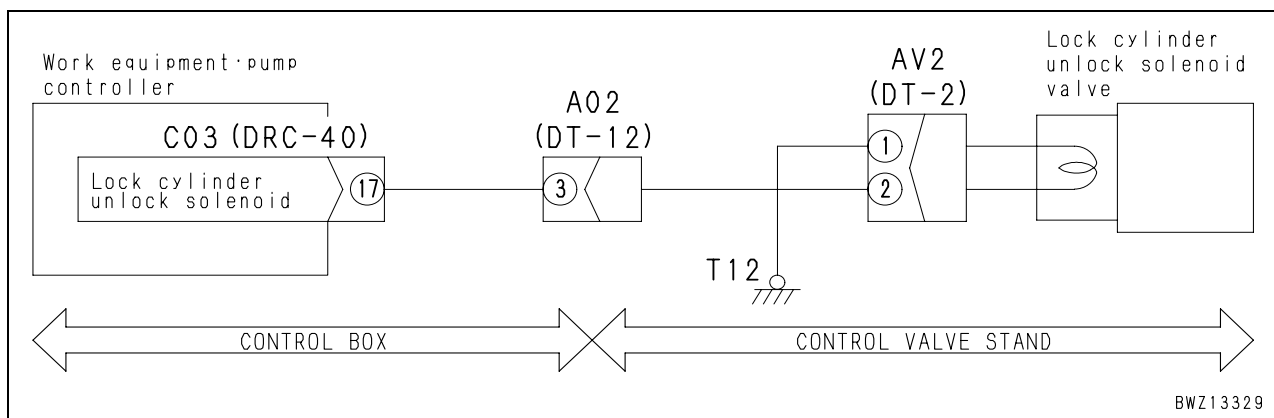


### Failure code [7RFNKA] Disconnection in lock cylinder unlock solenoid valve

User code	Failure code	Trouble	Disconnection in lock cylinder unlock solenoid valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RFNKA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the lock cylinder unlock solenoid circuit is driven, disconnection of the circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to each solenoid of lock cylinder unlock, push and pull OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The lock cylinders are not released (or the crusher clearance cannot be adjusted).</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the lock cylinder unlock solenoid can be checked with the monitoring function (Code: <b>25500</b>, Solenoid Valve)</li> <li>Since the controller detects a disconnection when the solenoid output is ON, turn the output ON for reproduction check after recovery.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective lock cylinder unlock solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
AV2 (male)				Resistance
Between (1) and (2)				20 – 60 Ω
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between C03 (female) (17) – A02 – AV2 (female) (2)	Resistance Max. 1 Ω
			Wiring harness between AV2 (female) (1) and chassis ground	Resistance Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			C03 (female)	Resistance
			Between (17) and chassis ground	20 – 60 Ω

#### Related electrical circuit diagram

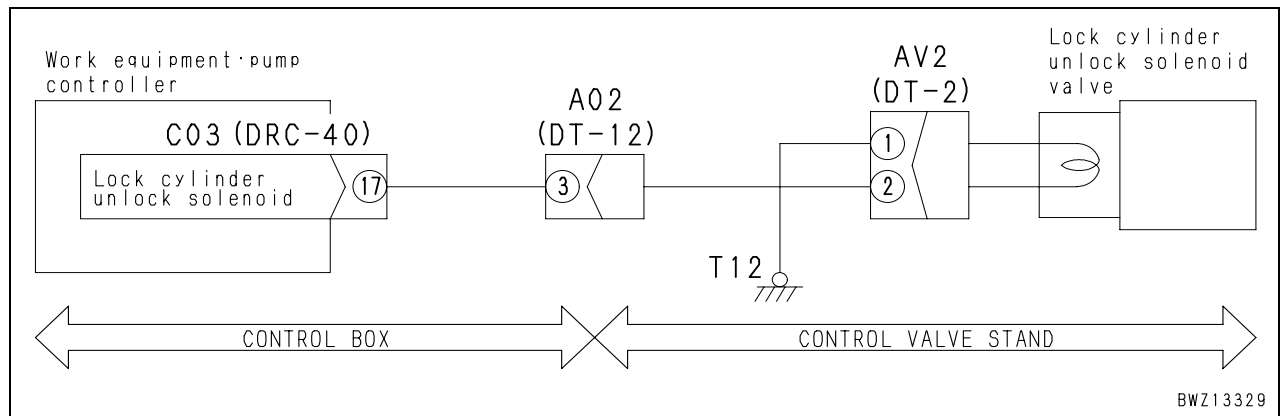


### Failure code [7RFNKB] Short circuit in lock cylinder unlock solenoid valve

User code	Failure code	Trouble	Short circuit in lock cylinder unlock solenoid valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RFNKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the output to the lock cylinder unlock solenoid circuit is driven, ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to each solenoid of lock cylinder unlock, push and pull OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The lock cylinders are not released (or the crusher clearance cannot be adjusted).</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the lock cylinder unlock solenoid can be checked with the monitoring function (Code: <b>25500</b>, Solenoid Valve)</li> <li>Since the controller detects a ground short circuit when the lock cylinder unlock solenoid is driven, turn the output ON for reproduction check after recovery.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective lock cylinder unlock solenoid (Internal short circuit or disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
AV2 (male)				Resistance	
Between (1) and (2)				20 – 60 Ω	
2		Disconnection in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (17) – A02 – AV2 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
	C03 (male)		Resistance		
	Between (17) and chassis ground		20 – 60 Ω		

#### Related electrical circuit diagram



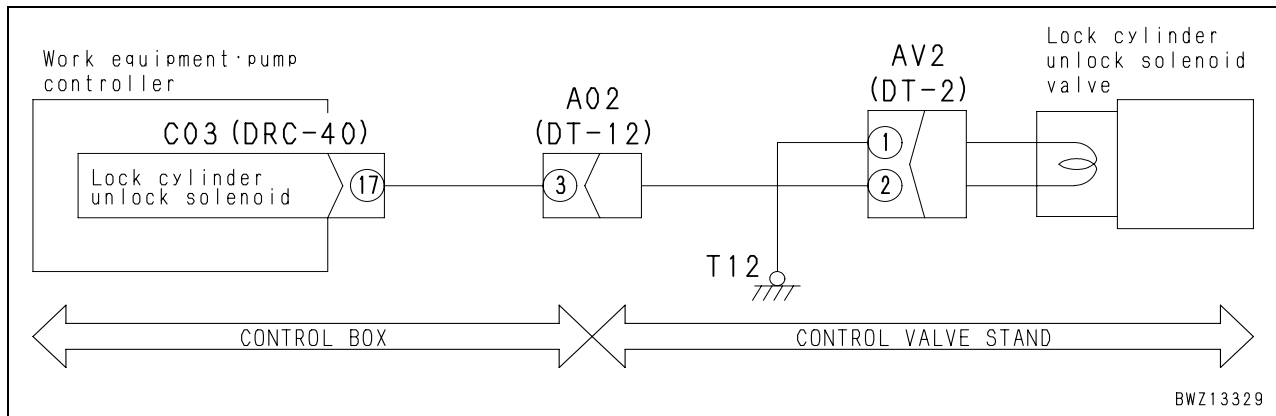
BWZ13329

### Failure code [7RFNKY] Short circuit in lock cylinder unlock solenoid valve

User code	Failure code	Trouble	Short circuit in lock cylinder unlock solenoid valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RFNKY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the lock cylinder unlock solenoid circuit is not driven, hot short (contact with 24 V circuit) is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The lock cylinders are always released. If the crusher is operated in this status, a slip of lock cylinder is detected and the crusher is stopped.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the lock cylinder unlock solenoid can be checked with the monitoring function (Code: <b>25500</b>, Solenoid Valve)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective lock cylinder unlock solenoid (Internal defect)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
AV2 (male)				Resistance	
Between (1) and (2)				20 – 60 Ω	
2		Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			Wiring harness between C03 (female) (17) – A02 – AV2 (female) (2) and chassis ground	Voltage	Max. 1 V
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
	C03 (male)		Voltage		
	Between (17) and chassis ground		Max. 1 V		

#### Related electrical circuit diagram



BWZ13329

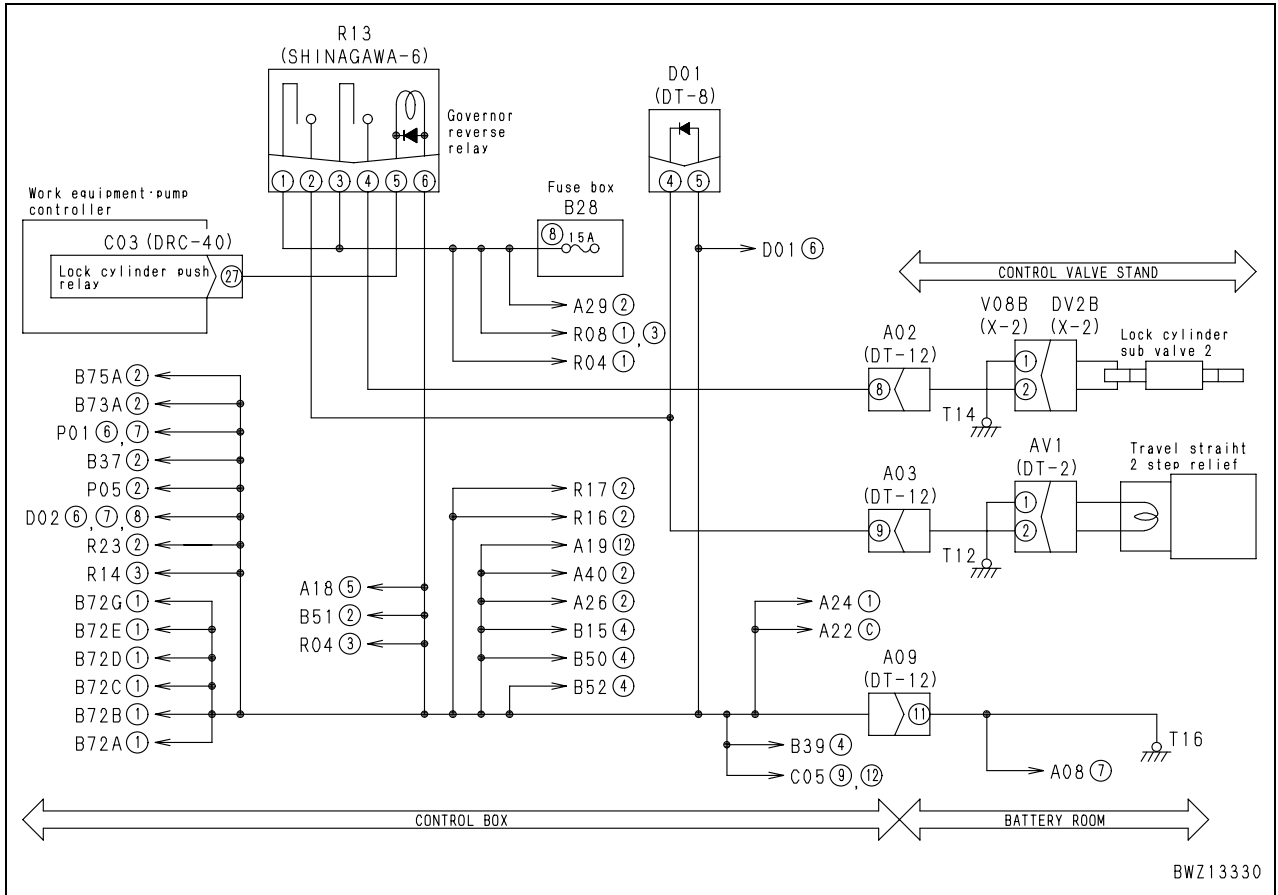


### Failure code [7RFPKB] Short circuit in lock cylinder push relay

User code	Failure code	Trouble	Short circuit in lock cylinder push relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RFPKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the lock cylinder push relay circuit is driven, ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns OFF the output to each solenoid of lock cylinder push and pull, even if the crusher clearance decrease switch is turned ON.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The lock cylinders are not pushed and the crusher clearance cannot be adjusted.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the lock cylinder push relay can be checked with the monitoring function (Code: <b>25601</b>, Relay Drive 0)</li> <li>Since the controller detects a disconnection when the relay output is ON, turn the output ON for reproduction check after recovery.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective lock cylinder push relay (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
R13 (male)				Resistance	
Between (5) and (6)				100 – 500 Ω	
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (27) – R13 (female) (5) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (male)	Resistance	
			Between (27) and chassis ground	100 – 500 Ω	

Related electrical circuit diagram

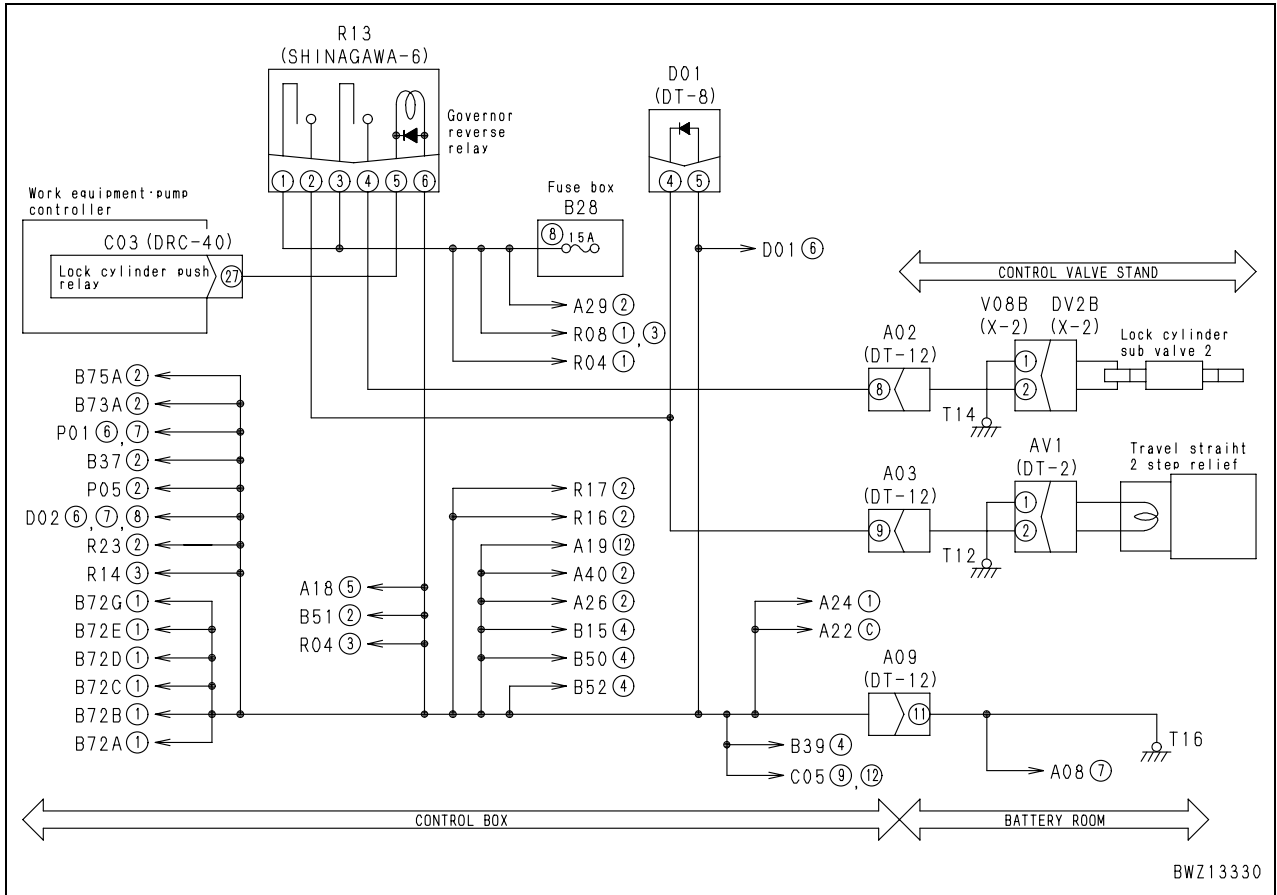


## Failure code [7RFPKY] Short circuit in lock cylinder push relay

User code	Failure code	Trouble	Short circuit in lock cylinder push relay (Work equipment and pump controller (work equipment control) system)
—	<b>7RFPKY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the output to the lock cylinder push relay circuit was OFF, an abnormal voltage was detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>When the accessory EPC is driven during primary conveyor vertical operation, muck discharge conveyor vertical operation, lock cylinder push/pull, or primary conveyor forward rotation, the lock cylinders always tend to push and relieve.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive state (ON/OFF) of the lock cylinder push relay can be checked with the monitoring function (Code: <b>25601</b>, Relay Drive 0)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective lock cylinder push relay (Internal short circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
R13 (male)				Resistance		
Between (5) and (6)				100 – 500 Ω		
2		Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting			
			Wiring harness between C03 (female) (27) – R13 (female) (5) and chassis ground	Voltage	Max. 1 V	
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting			
			C03 (male)		Voltage	
			Between (27) and chassis ground		Max. 1 V	

Related electrical circuit diagram

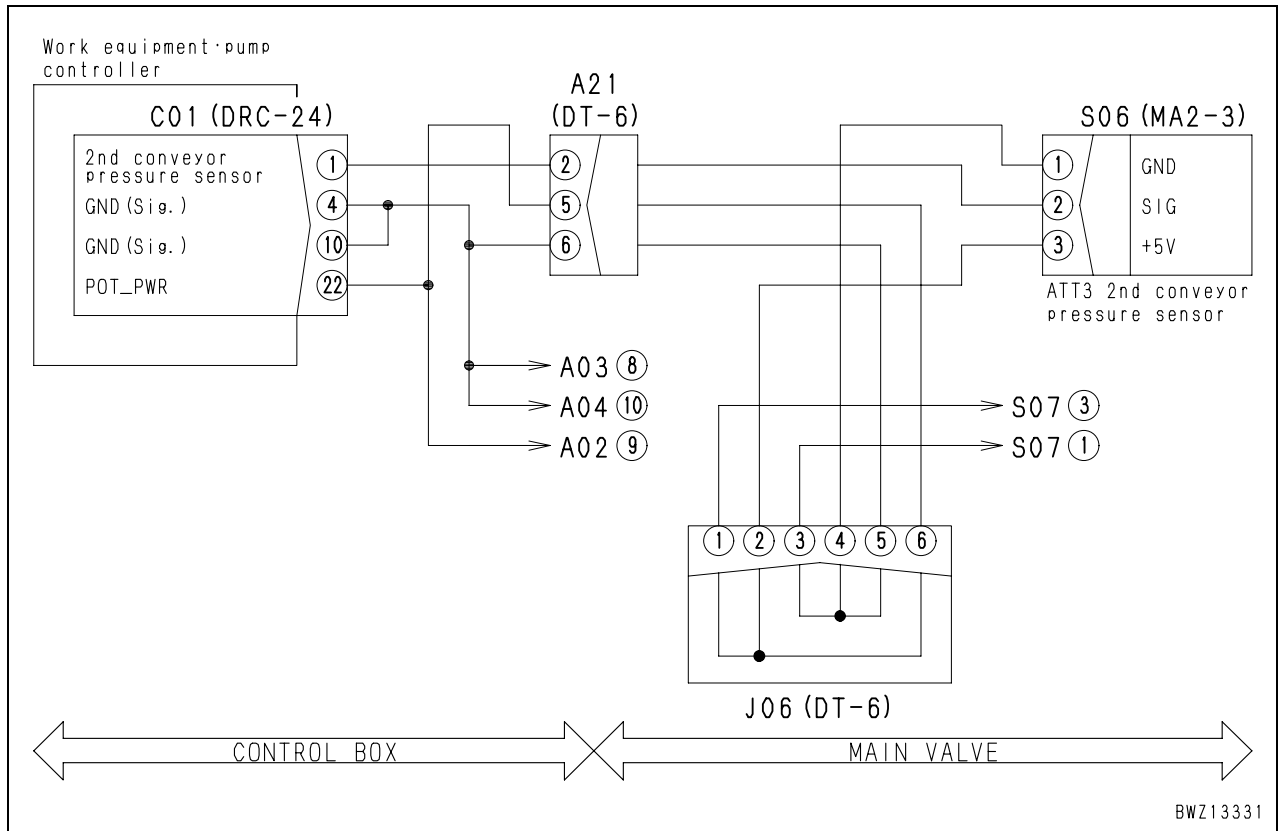


### Failure code [7RGAMA] Abnormality in 2nd conveyor pressure sensor

User code	Failure code	Trouble	Abnormality in 2nd conveyor pressure sensor (Work equipment and pump controller (work equipment control) system)
—	<b>7RGAMA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal voltage from the secondary conveyor pressure sensor is below 0.3 V or above 4.42 V.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Mistakes the second conveyor pressure for 0 MPa. (Primary conveyor, crusher, feeder, muck discharge conveyor, magnetic separator and vibratory screen)</li> <li>When the cause of failure disappears, system is reset by itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Whole work equipment does not stop completely even if abnormal load is applied to the secondary conveyor.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Input from the secondary conveyor pressure sensor can be checked with the monitoring function (Code: <b>24402</b>, 2nd Conv. Pressure).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Defective 5 V sensor power supply system	If the failure code [DA25KP] is displayed simultaneously, carry out troubleshooting for it first.
2		Defective secondary conveyor pressure sensor (Internal failure)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON or START and carry out troubleshooting.	
			S06 (male)	Voltage
			Between (1) and (3)	4.5 – 5.5 V
			Between (1) and (2)	0.3 – 4.5 V
		If the voltage is abnormal, replace with another pressure sensor (pressure sensor of magnetic separator etc.) and check if failure codes are displayed. (If the E mark of the failure code disappears, the secondary conveyor pressure sensor is defective.)		
3		Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between C01 (female) (1) – A21 – S06 (female) (2)	Resistance Max. 1 Ω
			Wiring harness between C01 (female) (4), (10) – A21 – S06 (female) (1)	Resistance Max. 1 Ω
			Wiring harness between C01 (female) (22) – A21 – S06 (female) (3)	Resistance Max. 1 Ω
4		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between C01 (female) (1) – A21 – S06 (female) (2) and chassis ground	Resistance Min. 1 MΩ
5		Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
	Wiring harness between C01 (female) (1) – A21 – S06 (female) (2) and chassis ground		Voltage Max. 1 V	
	Wiring harness between C01 (female) (22) – A21 – S06 (female) (3) and chassis ground		Voltage Max. 5 V	
6	Defective work equipment and pump controller	★ If causes 1 – 5 are not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

Related electrical circuit diagram

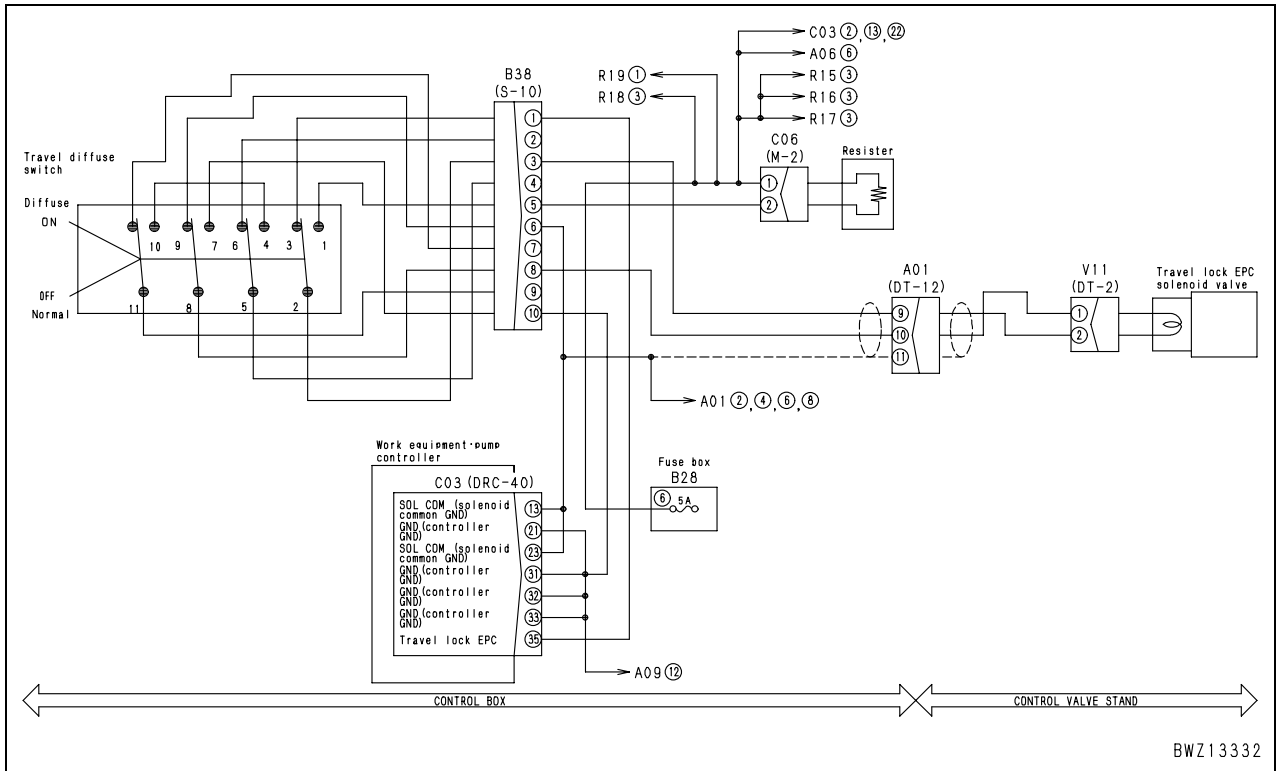


### Failure code [7RJAKA] Disconnection in travel lock EPC solenoid valve

User code	Failure code	Trouble	Disconnection in travel lock EPC solenoid valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RJAKA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the travel lock EPC valve solenoid is driven, disconnection of the circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the travel lock EPC valve solenoid OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The machine does not travel.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive current of the travel lock EPC valve can be checked with the monitoring function (Code: <b>28801</b>, Travel Lock EPC Curr.)</li> <li>Since the controller detects a disconnection when the solenoid output is ON, turn the output ON for reproduction check after recovery.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
	Possible causes and standard value in normal state	1	Defective travel lock EPC valve solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
V11 (male)				Resistance		
Between (1) and (2)				7 – 14 Ω		
2		Defective travel diffuse switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			B38 (male)	Travel diffuse switch	Resistance	
			Between (1) and (3)	Normal	Max. 1 Ω	
				Emergency	Min. 1 MΩ	
			Between (6) and (8)	Normal	Max. 1 Ω	
Emergency		Min. 1 MΩ				
3		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C03 (female) (35) and B38 (female) (1)		Resistance	Max. 1 Ω
			Wiring harness between B38 (female) (3) and V11 (female) (2)		Resistance	Max. 1 Ω
			Wiring harness between B38 (female) (8) and V11 (female) (1)		Resistance	Max. 1 Ω
			Wiring harness between B38 (female) (6) and C03 (female) (13), (23)		Resistance	Max. 1 Ω
4		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			C03 (female)		Resistance	
	Between (35) and (13), (23)		7 – 14 Ω			

Related electrical circuit diagram



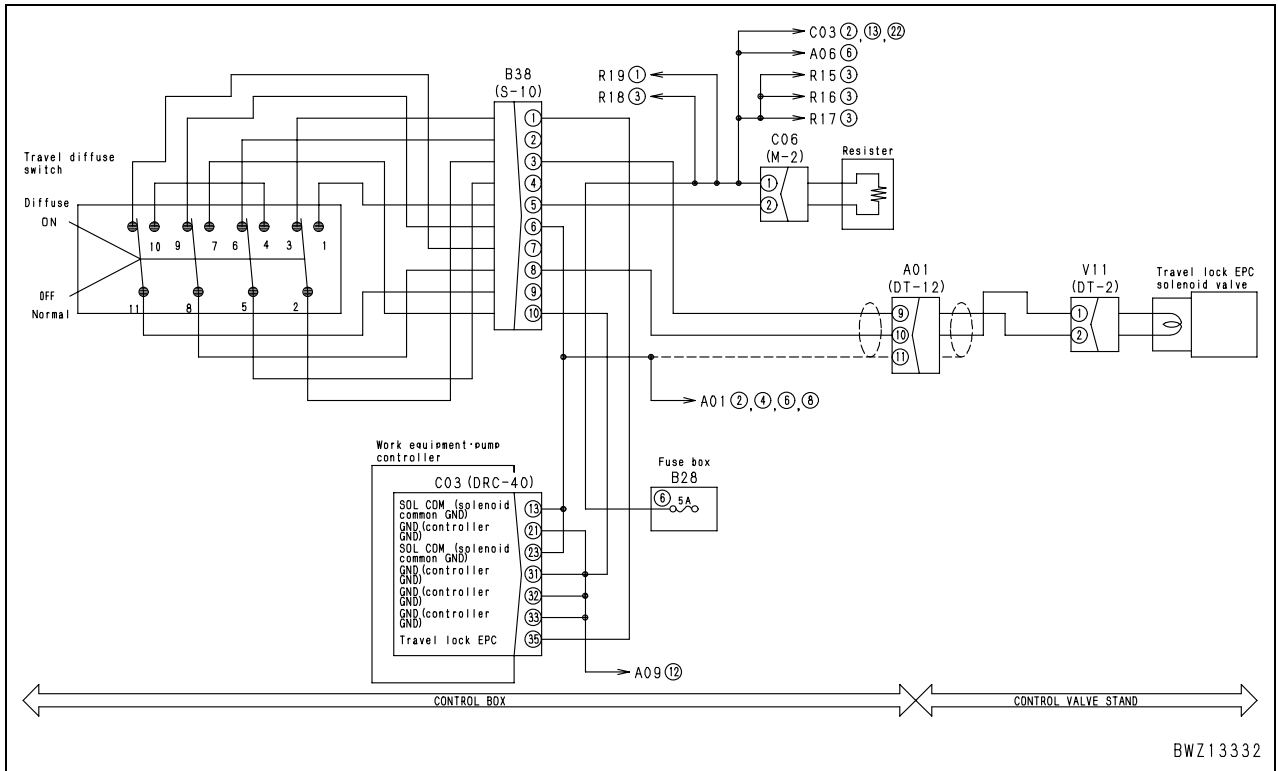


### Failure code [7RJAKB] Short circuit in travel lock EPC solenoid valve

User code	Failure code	Trouble	Short circuit in travel lock EPC solenoid valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RJAKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the travel lock EPC valve solenoid is driven, ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the travel lock EPC valve solenoid OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The machine does not travel.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The drive current of the travel lock EPC valve solenoid can be checked with the monitoring function (Code: <b>28801</b>, Travel Lock EPC Curr.)</li> <li>Since the controller detects short circuit when the EPC valve is driven, drive the EPC valve for reproduction check after recovery.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective travel lock EPC valve solenoid (Internal short circuit or grounding fault)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
V11 (male)				Resistance
Between (1) and (2)				7 – 14 Ω
Between (1) and chassis ground				Min. 1 MΩ
2		Defective travel diffuse switch	★ Prepare with engine starting switch OFF and travel diffuse switch Normal, then carry out troubleshooting without turning engine starting switch ON.	
			B38 (male)	Resistance
			Between (1), (3) and (10)	Min. 1 MΩ
			Between (1), (3) and chassis ground	Min. 1 MΩ
3		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between C03 (female) (35) – B38 (female) (1) and chassis ground	Resistance   Min. 1 MΩ
4		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			C03 (female)	Resistance
	Between (35) and (13), (23)		7 – 14 Ω	
	Between (35) and chassis ground		Min. 1 MΩ	

Related electrical circuit diagram

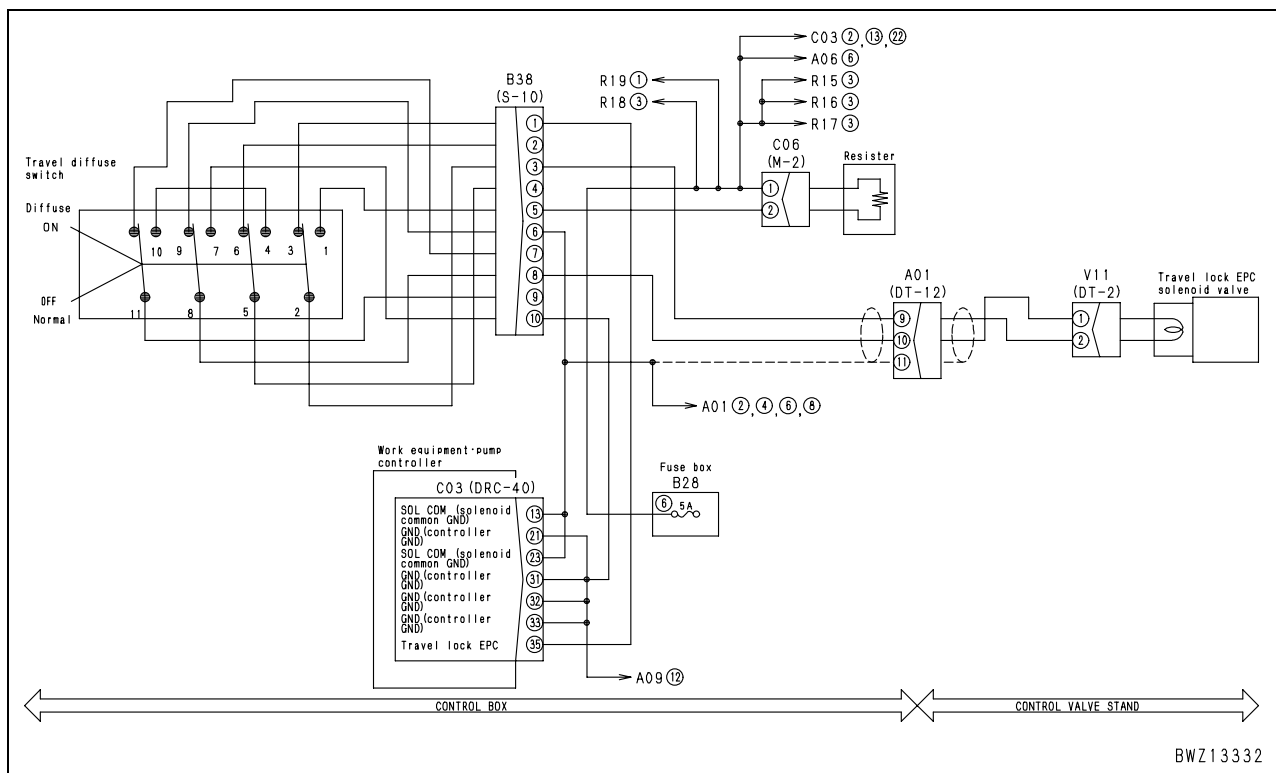


### Failure code [7RJAKY] Short circuit in travel lock EPC solenoid valve

User code	Failure code	Trouble	Short circuit in travel lock EPC solenoid valve (Work equipment and pump controller (work equipment control) system)
—	<b>7RJAKY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the travel lock EPC valve solenoid is not driven, hot short circuit (contact with 24 V circuit) is detected).</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> <li>When the cause of failure disappears, system is reset by itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The travel speed increases (equivalent to the “Mi” gear position) in the “Lo” position.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting. Wiring harness between C03 (female) (35) – V11 (female) (2) and chassis ground	Voltage
2		Defective work equipment and pump controller	If cause 1 is not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

#### Related electrical circuit diagram



## Failure code [7RJMMW] Lock cylinder slipping

User code	Failure code	Trouble	Lock cylinder slipping (Work equipment and pump controller (work equipment control) system)
—	<b>7RJMMW</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Judges that the lock cylinder slips if the gap in the crusher is increased for more than the specified value during the crusher operation, compared with the gap amount when the switch is turned from "Check" to "Working".</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>When a slip of lock cylinders is detected, the crusher and feeder automatically stop.</li> <li>Sounds the horn for 5 sec.</li> <li>Turns the red crusher monitor lamp on the machine monitor.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>If machine is operated as it is, crusher may be damaged.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>If a foreign material such as mass of iron enters, the crusher is overloaded and lock cylinder slips for crusher protection in the crusher while the machine is operating properly.</li> <li>The lock cylinder slip history can be checked with the SERVICE MENU on the machine monitor.</li> </ul>		

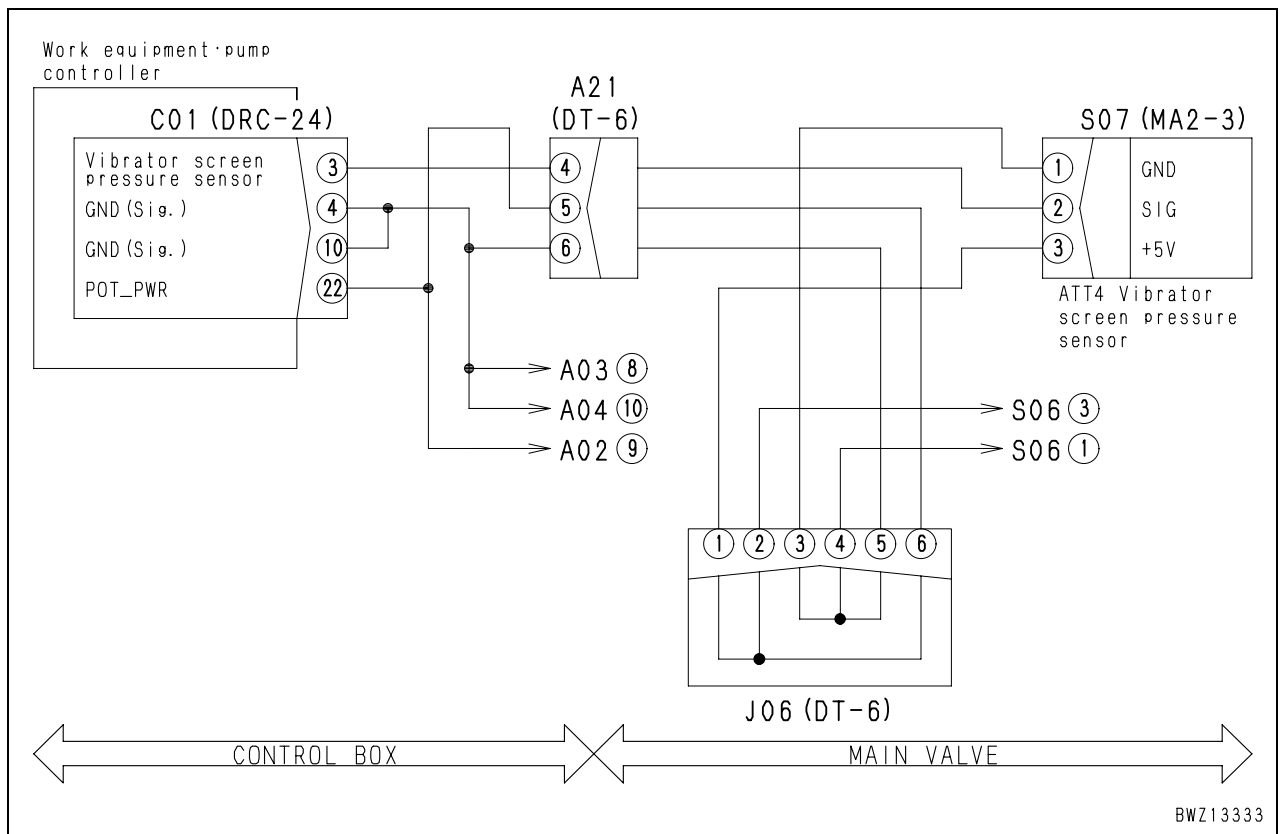
Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Abnormality in crusher clearance potentiometer system	
2	Abnormality in lock cylinder unlock solenoid circuit system	Troubleshoot based on failure code [7RFNKY].	
3	Abnormality in link of crusher clearance potentiometer	Directly check for missing, deformation or other defects of parts at the potentiometer and link mounting section.	
4	Internal defect of lock cylinders	<ul style="list-style-type: none"> <li>The cylinder locking force may be dropped or insufficient.</li> <li>If causes 1 – 3 are not detected, the lock cylinders may be defective.</li> </ul>	

### Failure code [7RJNMA] Abnormality in vibratory screen pressure sensor

User code	Failure code	Trouble	Abnormality in vibratory screen pressure sensor (Work equipment and pump controller (work equipment control) system)
—	<b>7RJNMA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal voltage from the vibratory screen pressure sensor is below 0.3 V or above 4.42 V.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Mistakes the vibratory screen pressure for 0 MPa.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Whole work equipment does not stop completely even if abnormal load is applied to the vibratory screen (primary conveyor, crusher, feeder, muck discharge conveyor, magnetic separator, vibratory screen and secondary conveyor).</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>If 5V circuit (3) and ground circuit (1) of pressure sensor are connected inversely, pressure sensor will be broken. Accordingly, take extreme care when checking.</li> <li>Input from the vibratory screen pressure sensor can be checked with the monitoring function (Code: <b>25801</b>, Vibrator Screen Pressure).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective 5 V sensor power supply system	If failure code [ <b>DA25KP</b> ] is displayed simultaneously, carry out the troubleshooting for it first
2		Defective vibratory screen pressure sensor (Internal failure)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON or START and carry out troubleshooting.	
			S07 (male)	Voltage
			Between (1) and (3)	4.5 – 5.5 V
			Between (1) and (2)	0.3 – 4.5 V
		If the voltage is normal, replace with another pressure sensor (pressure sensor of conveyor etc.) and check if failure codes are displayed. (If the E mark of the failure code disappears, the vibratory screen pressure sensor is defective.)		
3		Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between C01 (female) (3) – A21 – S07 (female) (2)	Resistance Max. 1 Ω
			Wiring harness between C01 (female) (4), (10) – A21 – S07 (female) (1)	Resistance Max. 1 Ω
4		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between C01 (female) (3) – A21 – S07 (female) (2) and chassis ground	Resistance Min. 1 MΩ
5		Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
	Wiring harness between C01 (female) (3) – A21 – S07 (female) (2) and chassis ground		Voltage Max. 1 V	
	Wiring harness between C01 (female) (22) – A21 – S07 (female) (3) and chassis ground		Voltage Max. 5 V	
6	Defective work equipment and pump controller	If causes 1 – 5 are not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

Related electrical circuit diagram

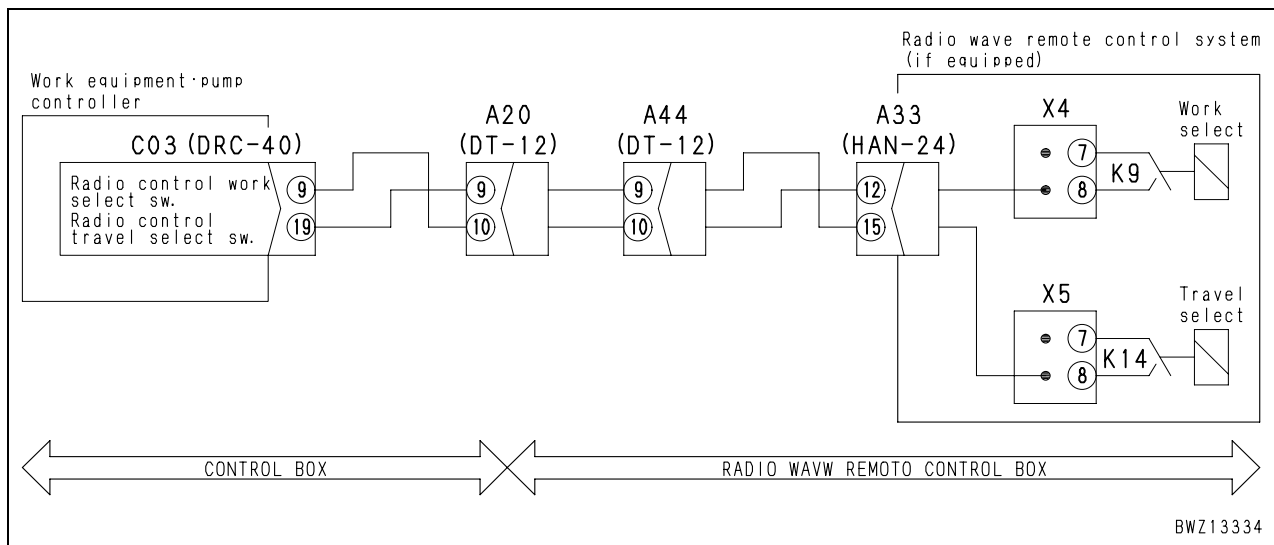


### Failure code [7RJPKB] Short circuit in radio control work-mode switch

User code	Failure code	Trouble	Short circuit in radio control work-mode switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RJPKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the radio controller mode selector switch is closed (connected to ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the feeder and One-Touch start OFF in the Radio Control mode. (Panel mode can output ON signal.)</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The feeder and One-Touch start operations are disabled in Radio Control mode.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The input state (ON/OFF) of the radio control work-mode switch can be checked with the monitoring function (Code: <b>25001</b>, Switch Input 1)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective radio controller receiver (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Between A33 (male) (12) and ground chassis				Resistance	Min. 1 MΩ
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (9) – A20 – A44 – A33 (female) (12) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between C03 (female) (9) and chassis ground	Resistance	Min. 1 MΩ

#### Related electrical circuit diagram

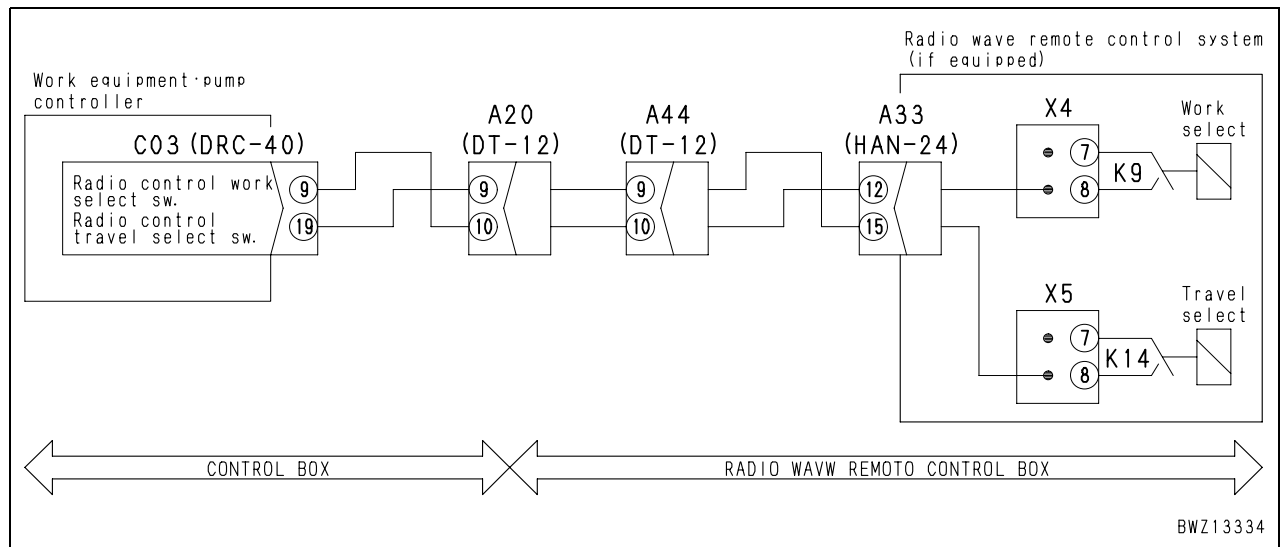


### Failure code [7RJQKB] Short circuit in radio control travel-mode switch

User code	Failure code	Trouble	Short circuit in radio control travel-mode switch (Work equipment and pump controller (work equipment control) system)
—	<b>7RJQKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Input signal circuit for the radio controller travel selector switch is closed (connected to ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the travel lock EPC output OFF in Radio Control mode. (Panel mode can output ON signal.)</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The travel operation is disabled.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The input state (ON/OFF) of the radio control travel-mode switch can be checked with the monitoring function (Code: <b>25001</b>, Switch Input 1)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	1	Defective radio controller receiver	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.</li> </ul>	Between A33 (male) (15) and chassis ground	Resistance
2	Grounding fault in wiring harness (Contact with ground circuit)	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.</li> </ul>	Wiring harness between C03 (female) (19) – A33 (female) (15) and chassis ground	Resistance	Min. 1 MΩ
3	Defective work equipment and pump controller	<ul style="list-style-type: none"> <li>★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.</li> </ul>	Between C03 (female) (19) and chassis ground	Resistance	Min. 1 MΩ

#### Related electrical circuit diagram



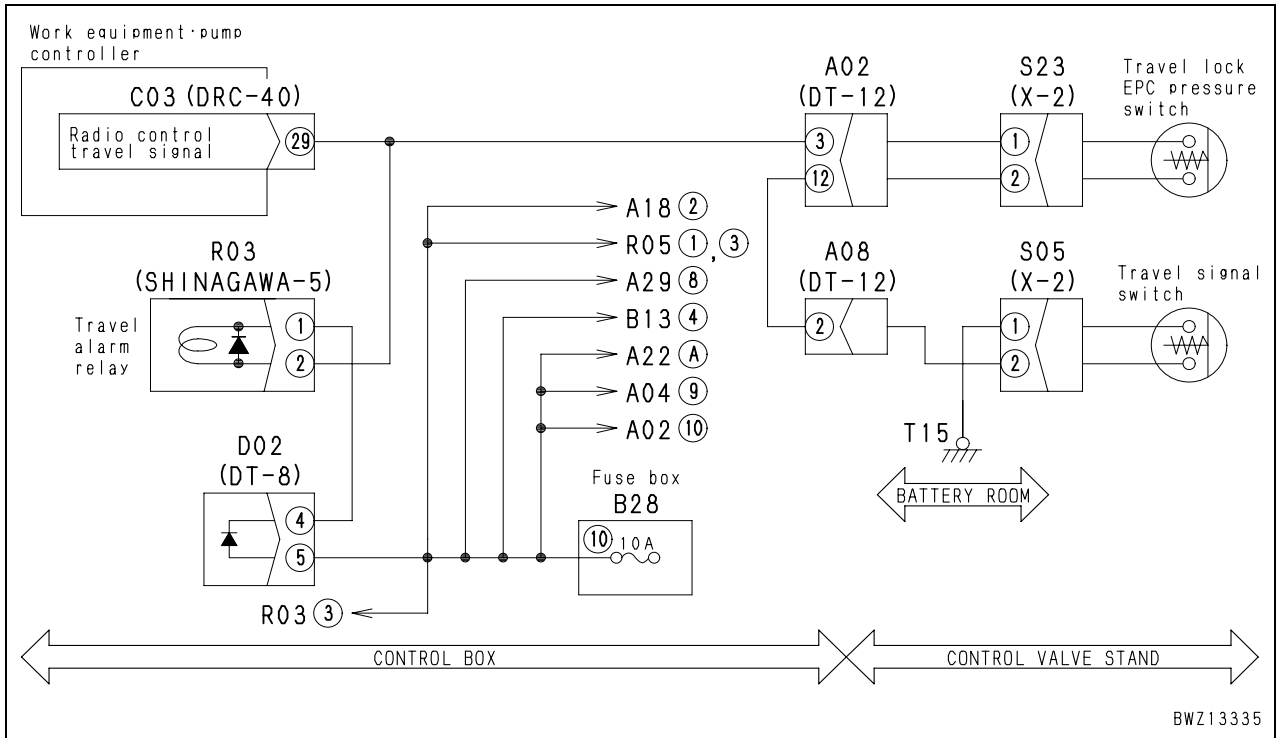


### Failure code [7RJRKB] Short circuit on travel signal

User code	Failure code	Trouble	Short circuit on travel signal (Work equipment and pump controller (work equipment control) system)
—	<b>7RJRKB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Travel signal circuit is closed (connected to ground circuit) within 1 second after the engine starting switch ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the travel lock EPC OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>The machine does not travel.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The input state (ON/OFF) of the radio control travel signal switch can be checked with the monitoring function (Code: <b>25001</b>, Switch Input 1)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective travel lock EPC pressure switch	★ Prepare with engine starting switch OFF and radio control work-mode switch on panel side, then carry out troubleshooting after starting the engine.		
S23 (male)				Mode selector switch	Resistance	
Between (1) and (2)				Working mode	Min. 1 MΩ	
				Travel mode	★ Set the conveyor to the travel operation position (upper position).	Max. 1 Ω
2		Defective travel signal pressure switch	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			C05 (male)	Travel operation	Resistance	
			Between (1) and (2)	Traveling	Max. 1 Ω	
				Holds in position.	Min. 1 MΩ	
3		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C03 (female) (29) – R03 (female) (2) and chassis ground		Resistance	Min. 1 MΩ
			Wiring harness between C03 (female) (29) – S23 (female) (1) and chassis ground		Resistance	Min. 1 MΩ
			Wiring harness between S23 (female) (2) – A08A – D10 (5), (6), (7), (8) and chassis ground		Resistance	Min. 1 MΩ
			Wiring harness between S23 (female) (2) – A08A – A08B – S05 (female) (2) and chassis ground		Resistance	Min. 1 MΩ
4	Defective work equipment and pump controller	If causes 1 – 3 are not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)				

Related electrical circuit diagram

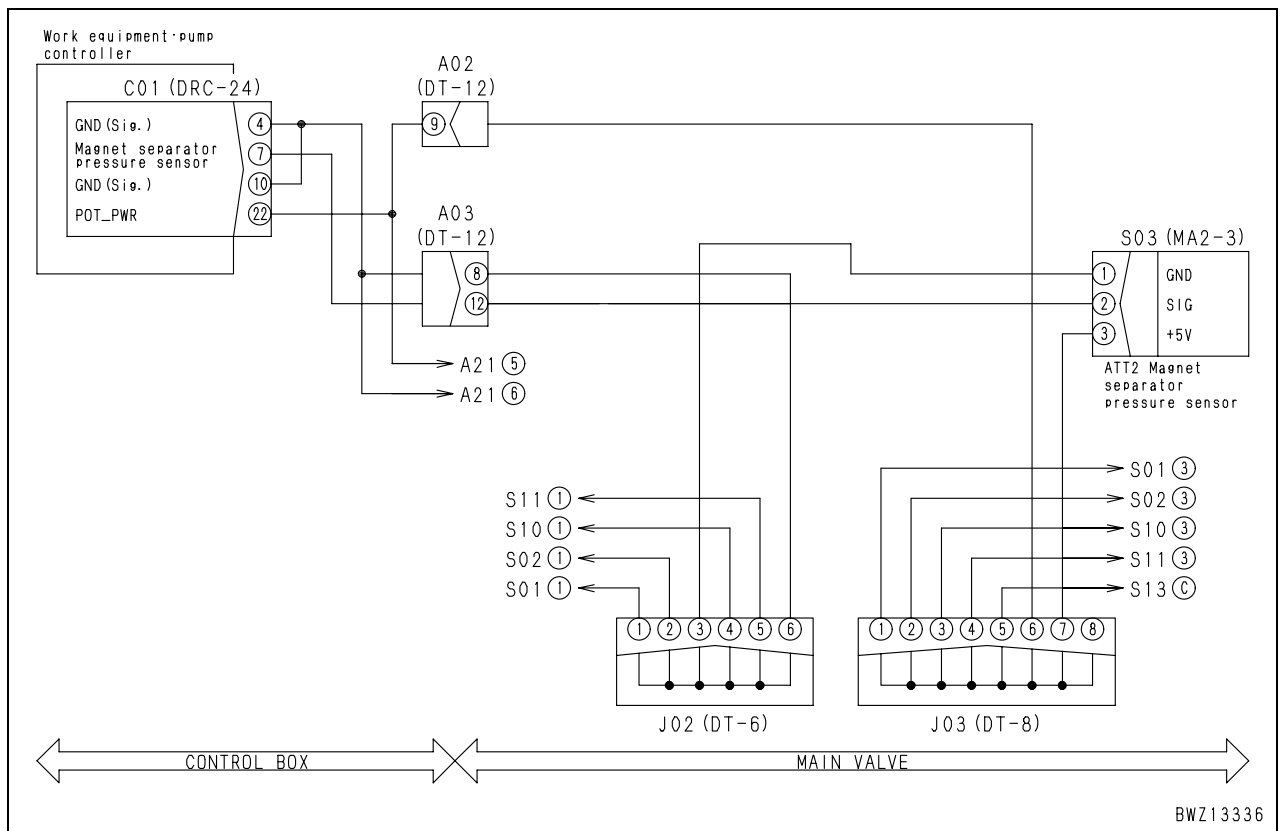


## Failure code [7RJSMA] Abnormality in magnetic separator pressure sensor

User code	Failure code	Trouble	Abnormality in magnetic separator pressure sensor (Work equipment and pump controller (work equipment control) system)
—	<b>7RJSMA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal voltage from the magnetic separator pressure sensor is below 0.3 V or above 4.42 V.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Mistakes the magnetic separator pressure for 0 MPa.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Whole work equipment does not stop completely even if abnormal load is applied to the magnetic separator. (Primary conveyor, crusher, feeder, muck discharge conveyor, magnetic separator, vibratory screen and secondary conveyor)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>If 5V circuit (3) and ground circuit (1) of pressure sensor are connected inversely, pressure sensor will be broken. Accordingly, take extreme care when checking.</li> <li>Signal input from the magnetic separator pressure sensor can be checked with the monitoring function (Code: <b>24401</b>, Mag. Pressure).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Defective 5 V power source system	If failure code [ <b>DA25KP</b> ] is displayed simultaneously, carry out troubleshooting for it first	
2	Defective magnetic separator pressure sensor (Internal failure)	★ Prepare with engine starting switch OFF, then turn engine starting switch and carry out troubleshooting.		
		S03 (male)	Voltage	
		Between (1) and (3)	4.5 – 5.5 V	
		Between (1) and (2)	0.3 – 4.5 V	
		If the voltage is normal, replace with another pressure sensor (pressure sensor of conveyor etc.) and check if failure codes are displayed. (If the E mark of the failure code disappears, the magnetic separator pressure sensor is defective.)		
3	Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
		Wiring harness between C01 (female) (7) – A03 – S03 (female) (2)	Resistance	Max. 1 Ω
		Wiring harness between C01 (female) (4), (10) – A03 – S03 (female) (1)	Resistance	Max. 1 Ω
		Wiring harness between C01 (female) (22) – A02 – S03 (female) (3)	Resistance	Max. 1 Ω
4	Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
		Wiring harness between C01 (female) (7) – A03 – S03 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
5	Hot short in wiring harness (Contact with 24V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
		Wiring harness between C01 (female) (7) – A03 – S03 (female) (2) and chassis ground	Voltage	Max. 1 V
		Wiring harness between C01 (female) (22) – A02 – S03 (female) (3) and chassis ground	Voltage	Max. 5 V
6	Defective work equipment and pump controller	★ If causes 1 – 5 are not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

Related electrical circuit diagram

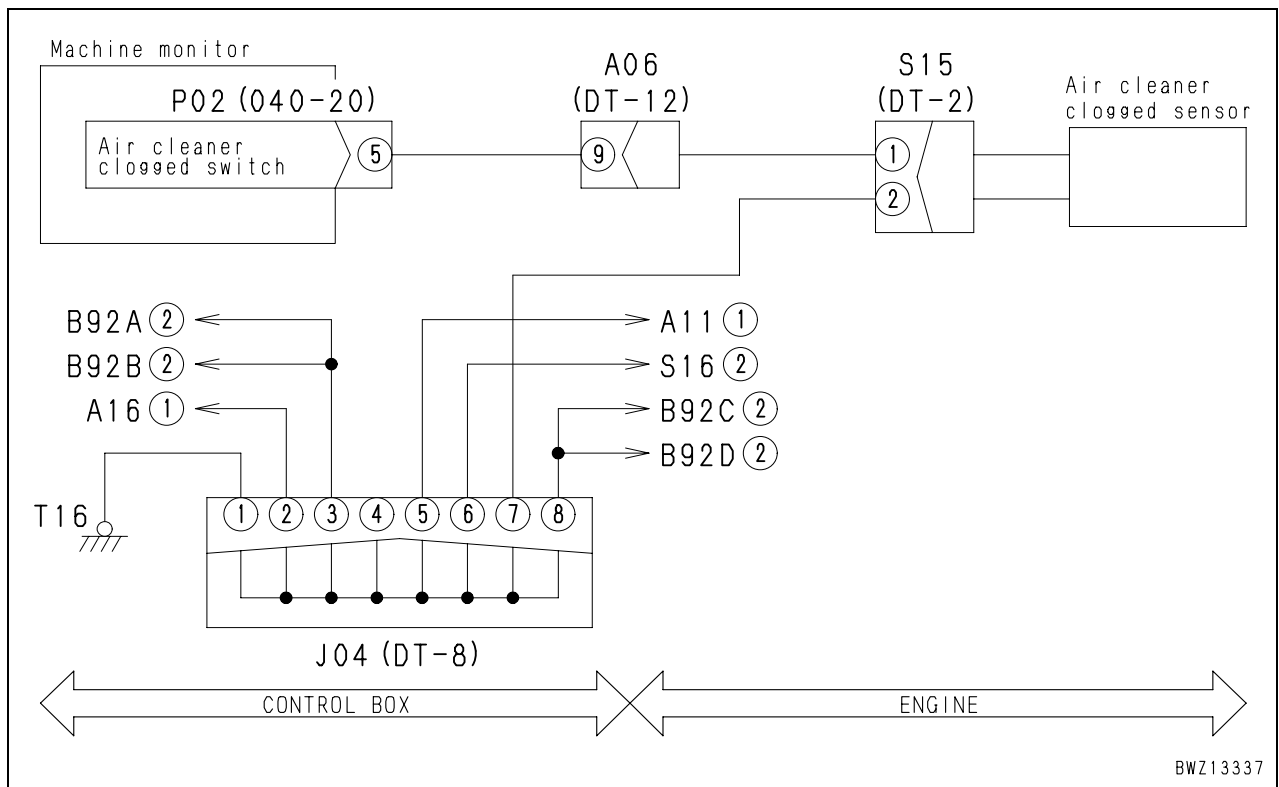


## Failure code [AA10NX] Air cleaner Clogging

User code	Failure code	Trouble	Air cleaner Clogging (Machine monitor system)
—	<b>AA10NX</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>While the engine is running, the signal circuit of the air cleaner clogging switch is opened (disconnected from the chassis ground).</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>If the machine is operated as it is, the engine may be damaged.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>If the air cleaner clogging monitor on the machine monitor lights red while the engine is running, this failure code is recorded.</li> <li>Input from the air cleaner clogging switch (ON/OFF) can be checked in the monitoring function. (Code <b>04501</b>: Monitor Input 2)</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Clogged air cleaner (When system is normal)	Check the air cleaner. If it is clogged, clean or replace it.	
2		Defective air cleaner clogging switch (Internal disconnection)	★ Prepare with engine starting switch OFF, then start engine and carry out troubleshooting.		
			S15 (male)	Air cleaner	Resistance
			Between (1) and (2)	Normal	Max. 1 Ω
3		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between P02 (female) (5) and S15 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between S15 (female) (2) and chassis ground	Resistance	Max. 1 Ω
4		Defective machine monitor	★ Prepare with engine starting switch OFF, then start engine and carry out troubleshooting.		
			P02	Air cleaner	Voltage
			Between (5) and chassis ground	Normal	Max. 1 V
				Clogged	20 – 30 V

Circuit diagram related to air cleaner clogging

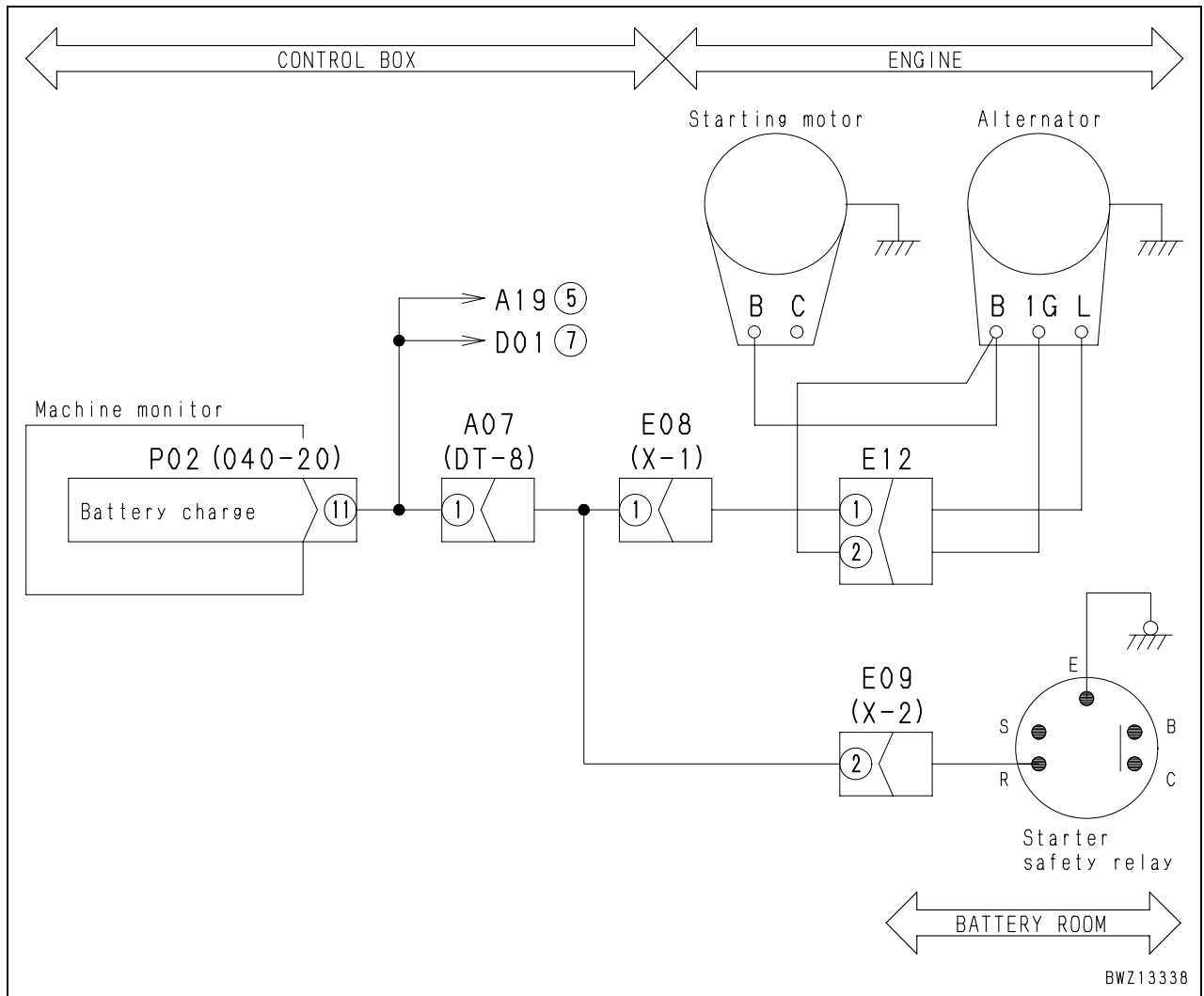


## Failure code [AB00KE] Charge voltage too low

User code	Failure code	Trouble	Charge voltage too low (Machine monitor system)
—	<b>AB00KE</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>While the engine is running, the generation signal is not input from the alternator.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>If the machine is operated as it is, the battery may not be charged.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>If the charge level monitor on the machine monitor lights red while the engine is running, this failure code is recorded.</li> <li>Input from the alternator (ON or OFF) can be checked in the monitoring function. (Code <b>04300</b>: Battery Charge Vol.)</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective alternator (Insufficient generation)	★ Prepare with engine starting switch OFF, then start engine and carry out troubleshooting.	
E12 (male)				Engine speed	Voltage
Between (1) and chassis ground				Medium or higher	27.5 – 29.5 V
2		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between P02 (female) (11) and E12 (female) (1)	Resistance	Max. 1 Ω
3		Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between wiring harness between P02 (female) (11) and E12 (female) (1) and chassis ground	Resistance	Min. 1 MΩ
4		Defective machine monitor	★ Prepare with engine starting switch OFF, then start engine and carry out troubleshooting.		
			P02	Engine speed	Voltage
			Between (11) and chassis ground	Medium or higher	27.5 – 29.5 V

Circuit diagram related to charge voltage





BR380JG-1E0 Mobile crusher

---

Form No. SEN02091-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

## 40 Troubleshooting

### Troubleshooting by failure code, Part 3

---

Failure code [B@BAZG] Engine oil pressure too low .....	4
Failure code [B@BAZK] Engine oil level reduction .....	6
Failure code [B@BCNS] Radiator coolant overheat .....	7
Failure code [B@BCZK] Radiator coolant level reduction .....	8
Failure code [B@HANS] Hydraulic oil overheat .....	10
Failure code [CA111] Abnormality in engine controller .....	10
Failure code [CA115] Abnormality in engine NE and Bkup speed sensors .....	11
Failure code [CA122] Charge pressure sensor too high .....	12
Failure code [CA123] Charge pressure sensor too low .....	14
Failure code [CA131] Throttle sensor too high .....	16
Failure code [CA132] Throttle sensor too low .....	18
Failure code [CA144] Coolant temperature sensor too high .....	20
Failure code [CA145] Coolant temperature sensor too low .....	22
Failure code [CA153] Charge temperature sensor too high .....	24
Failure code [CA154] Charge temperature sensor too low .....	26
Failure code [CA155] Charge temperature too high and engine speed derated .....	28

---

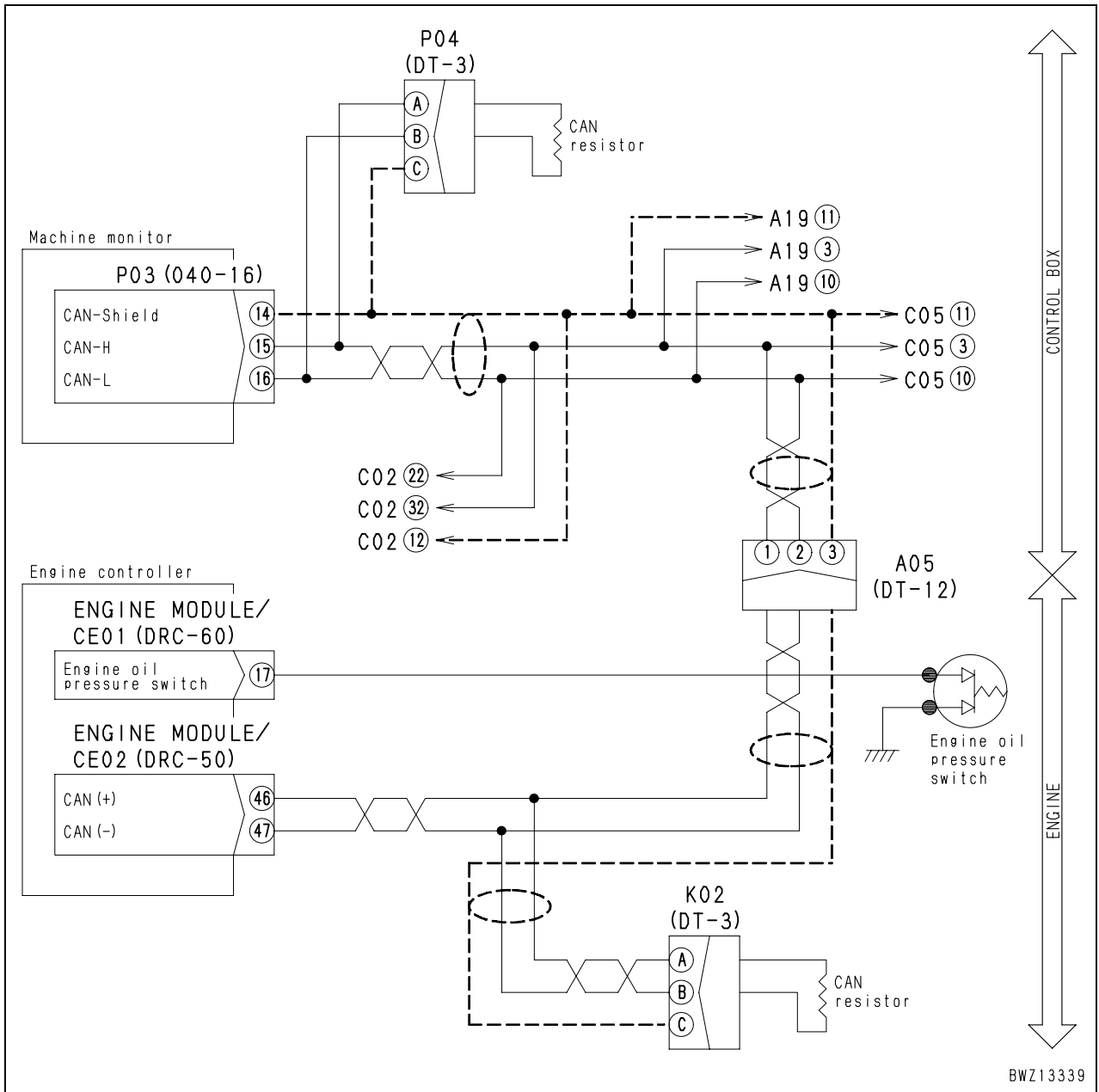
Failure code [CA187] Sensor power source 2 too low .....	30
Failure code [CA221] Ambient pressure sensor too high.....	32
Failure code [CA222] Ambient pressure sensor too low .....	34
Failure code [CA227] Sensor power source 2 too high.....	36
Failure code [CA234] Engine overspeed .....	37
Failure code [CA238] Abnormal power source for Ne speed sensor .....	38
Failure code [CA271] Short circuit in fuel pump actuator.....	39
Failure code [CA272] Disconnection in fuel pump actuator .....	40
Failure code [CA322] Disconnection or short circuit in injector No.1 .....	42
Failure code [CA323] Disconnection or short circuit in injector No.5 .....	44
Failure code [CA324] Disconnection or short circuit in injector No.3 .....	46
Failure code [CA325] Disconnection or short circuit in injector No.6 .....	48
Failure code [CA331] Disconnection or short circuit in injector No.2 .....	50
Failure code [CA332] Disconnection or short circuit in injector No.4 .....	52

## Failure code [B@BAZG] Engine oil pressure too low

User code	Failure code	Trouble	Engine oil pressure too low (Engine controller system)
—	<b>B@BAZG</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Engine oil pressure drops while engine is running.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Limits output for travel (Limits injection rate and engine speed)</li> <li>Displays engine oil pressure monitor on machine monitor.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine output lowers.</li> <li>If machine is operated as it is, engine may be damaged.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Engine oil pressure switch signal is input to engine controller and then transmitted to machine monitor.</li> <li>Method of reproducing failure code: Start engine</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Lowering of engine oil pressure (when system is normal)	
2	Defective engine oil pressure switch system	★ If cause 1 is not the cause of the trouble, engine oil pressure switch system may be defective. Carry out troubleshooting for the failure code [CA435].	

Circuit diagram related to engine oil pressure of machine monitor

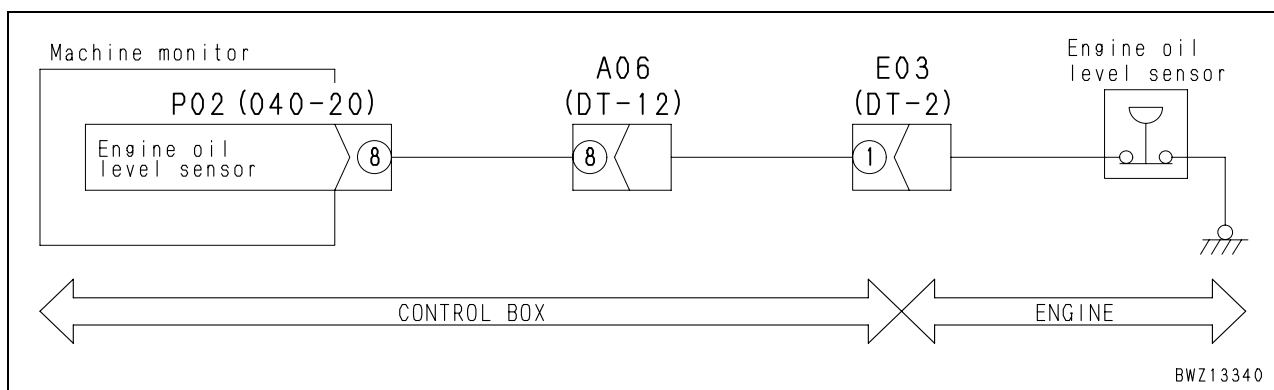


### Failure code [B@BAZK] Engine oil level reduction

User code	Failure code	Trouble	Engine oil level reduction (Machine monitor system)
—	<b>B@BAZK</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>While the engine is stopped (with the starting switch in the ON position), the signal circuit of the engine oil level switch is opened (disconnected from the chassis ground).</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>If the machine is operated as it is, the engine may be seized.</li> </ul>		
Relative information	<ul style="list-style-type: none"> <li>If the engine oil level monitor on the machine monitor lights red while the engine is stopped (with the starting switch in the ON position), this failure code is recorded.</li> <li>Input from the engine oil level switch (ON or OFF) can be checked in the monitoring function. (Code <b>04501</b>: Monitor Input 2)</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Lowering of engine oil level (When system is normal)	Check the oil level in the engine oil pan. If it is low, add oil. (If this trouble occurs frequently, find the cause.)	
2		Defective engine oil level switch (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			E03 (male)	Engine oil level	Resistance
				Between (1) and chassis ground	Normal
Low		Min. 1 MΩ			
3		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between wiring harness between P02 (female) (8) and E03 (female) (1)		Resistance
4		Defective machine monitor	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			P02 (male)	Engine oil level	Voltage
			Between (8) and chassis ground	Normal	Max. 1 V
Low	20 – 30 V				

#### Circuit diagram related to engine oil level



BWZ13340

## Failure code [B@BCNS] Radiator coolant overheat

User code	Failure code	Trouble	Radiator coolant overheat (Engine controller system)
—	<b>B@BCNS</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Engine coolant overheats while engine is running.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Limits output for travel (Limits injection rate and engine speed)</li> <li>Displays engine coolant temperature monitor with red on machine monitor.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine output lowers.</li> <li>If machine is operated as it is, engine may be seized.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Engine coolant temperature sensor signal is input to engine controller and then transmitted to machine monitor.</li> <li>Engine coolant temperature can be checked with monitoring function (Code: <b>04107</b>, Coolant Temperature)</li> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Overheating of engine coolant (when system is normal)	
2	Defective engine coolant temperature gauge system	If cause 1 is not detected, engine coolant temperature gauge system may be defective. Carry out troubleshooting for failure codes [CA144] and [CA145].	

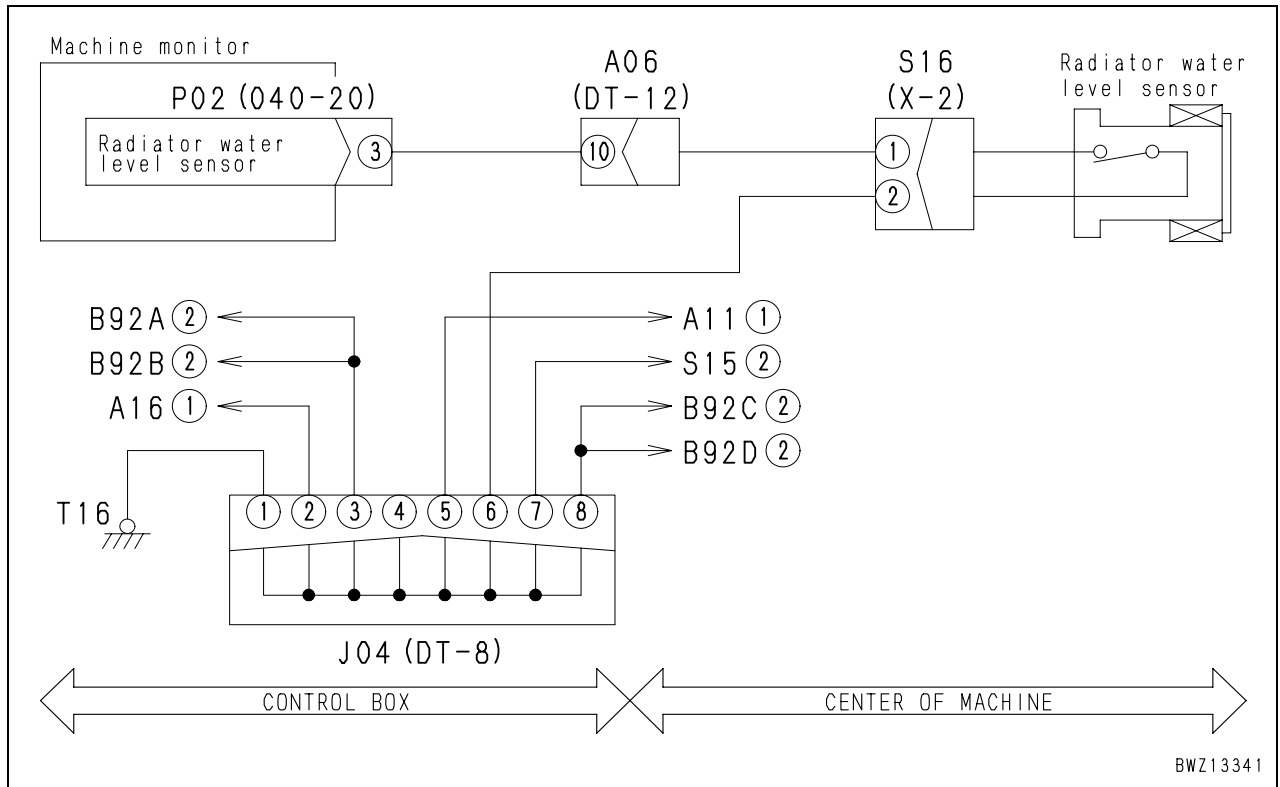
### Failure code [B@BCZK] Radiator coolant level reduction

User code	Failure code	Trouble	Radiator coolant level reduction (Machine monitor system)
—	<b>B@BCZK</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>While the engine is running, the signal circuit of the radiator coolant level switch is opened (disconnected from the chassis ground).</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>If the machine is operated as it is, the engine may overheat.</li> </ul>		
Relative information	<ul style="list-style-type: none"> <li>If radiator coolant level caution symbol appears on the machine monitor while the engine is running, this failure code will be recorded.</li> <li>Input from the radiator coolant level switch (ON/OFF) can be checked in the monitoring function. (Code <b>04500</b>: Monitor Input 1)</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Lowering of radiator coolant level (When system is normal)	Check the coolant level in the radiator sub tank. If it is low, add coolant. (If this trouble occurs frequently, find the cause.)	
2		Defective radiator coolant level switch (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			S16 (male)	Radiator coolant level	Resistance
			Between (1) and (2)	Normal	Max. 1 Ω
Low		Min. 1 MΩ			
3		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between wiring harness between P02 (female) (3) and S16 (female) (1) and chassis ground	Resistance	Max. 1 Ω
			Between wiring harness between S16 (female) (2) and chassis ground	Resistance	Max. 1 Ω
4		Defective machine monitor	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			P02	Radiator coolant level	Voltage
			Between (3) and chassis ground	Normal	Max. 1 V
Low		20 – 30 V			



Circuit diagram related to radiator coolant level



## Failure code [B@HANS] Hydraulic oil overheat

User code	Failure code	Trouble	Hydraulic oil overheat (Machine monitor system)
—	<b>B@HANS</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>While engine was running, signal circuit of hydraulic oil temperature sensor detected overheating of hydraulic oil (above about 102°C).</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Displays hydraulic oil temperature monitor with red on machine monitor.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>If machine is operated as it is, engine may be seized.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Hydraulic oil temperature can be checked with monitoring function (Code: <b>04401</b>, Hydr. Oil Temperature)</li> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Overheating of hydraulic oil (when system is normal)	
2	Defective hydraulic oil temperature gauge system	If cause 1 is not detected, hydraulic oil temperature gauge system may be defective. Carry out troubleshooting for "E-13 Hydraulic oil temperature gauge does not work normally" in E-mode.	

## Failure code [CA111] Abnormality in engine controller

User code	Failure code	Trouble	Abnormality in engine controller (Engine controller system)
<b>E10</b>	<b>CA111</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Memory or power supply circuit in engine controller is defective.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start.</li> </ul>		
Related information			

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defective engine controller	

## Failure code [CA115] Abnormality in engine NE and Bkup speed sensors

User code	Failure code	Trouble	Abnormality in engine NE and Bkup speed sensors (Engine controller system)
<b>E10</b>	<b>CA115</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Both signals of engine Ne speed sensor and engine Bkup speed sensor are abnormal.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine stops.</li> <li>Engine does not start.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

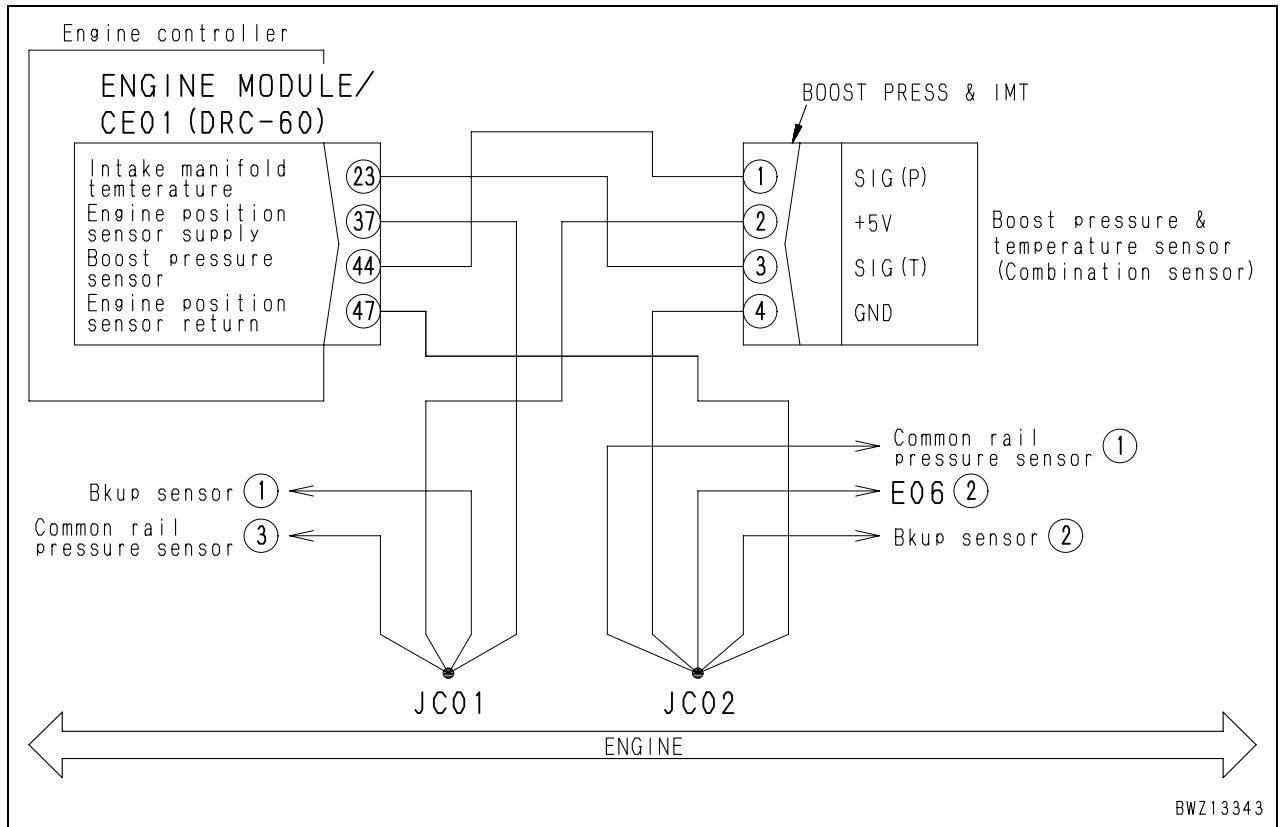
Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defective connection of sensor connector	

### Failure code [CA122] Charge pressure sensor too high

User code	Failure code	Trouble	Charge pressure sensor too high (Engine controller system)
<b>E11</b>	<b>CA122</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Pressure signal circuit of boost pressure/temperature sensor detected high voltage.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes charge pressure value and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage on boost pressure side of boost pressure/temperature sensor can be checked with monitoring function. (Code: <b>36501</b>, Charge Press Sens Volt)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective sensor power supply 2 system	If failure code [CA227] is also indicated, carry out troubleshooting for it first.	
2		Defective boost pressure/temperature sensor [pressure signal system]	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			BOOST PRESS & IMT		Voltage
			Between (2) – (4)	Power supply	4.75 – 5.25 V
			Voltage is measured with wiring harness connected. Accordingly, if voltage is abnormal, check wiring harness and controller, too, for another cause of trouble, and then judge.		
3		Hot short (Short circuit with 5 V/24 V circuit) in wiring harness	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			Wiring harness between CE01 (female) (44) – BOOST PRESS & IMT (female) (1)	Voltage	Max. 1 V
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (44) – BOOST PRESS & IMT (female) (1) and between CE01 (female) (37) – JC01 – BOOST PRESS & IMT (female) (2)	Resistance	Min. 100 kΩ
5		Defective wiring harness connector	Connecting parts between boost pressure/temperature sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>		
6		Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			CE01		Voltage
	Between (37) – (47)		Power supply	4.75 – 5.25 V	

Circuit diagram related to boost pressure/temperature sensor (Combination sensor)

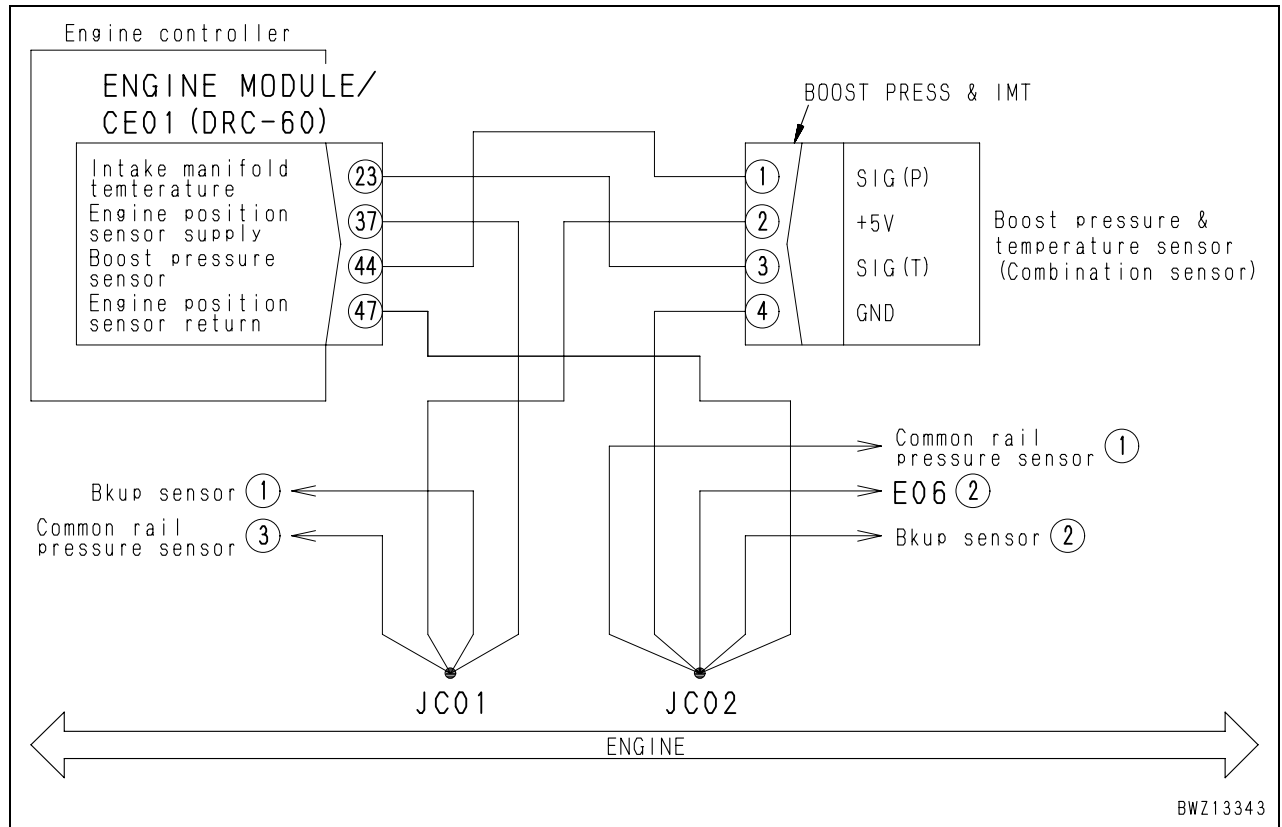


### Failure code [CA123] Charge pressure sensor too low

User code	Failure code	Trouble	Charge pressure sensor too low (Engine controller system)
<b>E11</b>	<b>CA123</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Pressure signal circuit of boost pressure/temperature sensor detected low voltage.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes charge pressure value and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage on boost pressure side of boost pressure/temperature sensor can be checked with monitoring function. (Code: <b>36501</b>, Charge Press Sens Volt)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective sensor power supply 2 system	If failure code [CA187] is also indicated, carry out troubleshooting for it first.
2		Defective boost pressure/temperature sensor [pressure signal system]	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
			BOOST PRESS & IMT	
			Between (2) – (4)	Power supply
		Voltage is measured with wiring harness connected. Accordingly, if voltage is abnormal, check wiring harness and controller, too, for another cause of trouble, and then judge.		
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (44) – BOOST PRESS & IMT (female) (1)	Resistance
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (44) – BOOST PRESS & IMT (female) (1) and between CE01 (female) (47) – JC02 – BOOST PRESS & IMT (female) (4)	Resistance
5		Defective wiring harness connector	Connecting parts between boost pressure/temperature sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
6		Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
			CE01	
	Between (37) – (47)		Power supply	Voltage

Circuit diagram related to boost pressure/temperature sensor (Combination sensor)



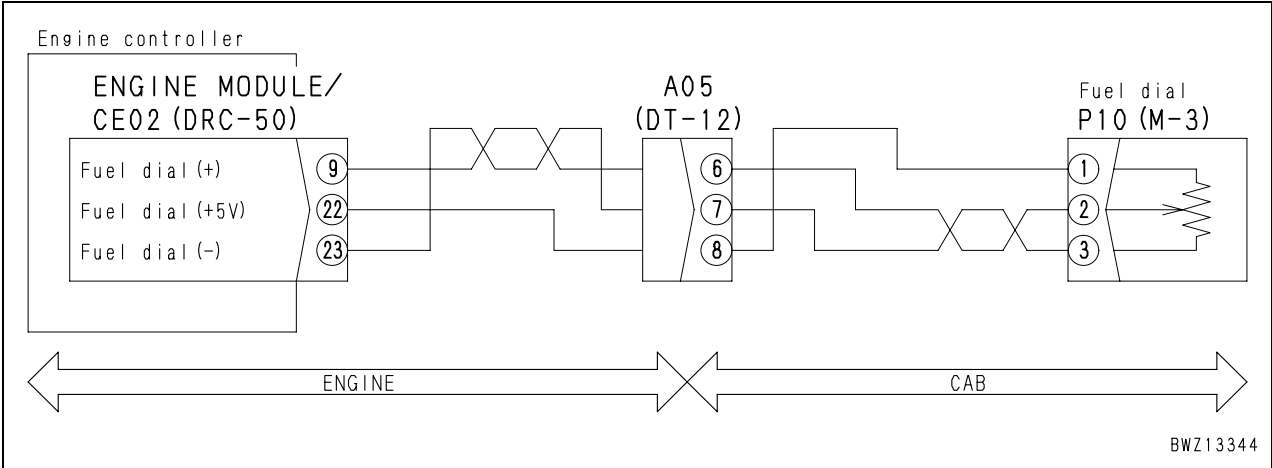
### Failure code [CA131] Throttle sensor too high

User code	Failure code	Trouble	Throttle sensor too high (Engine controller system)
<b>E14</b>	<b>CA131</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal circuit of fuel control dial detected high voltage.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>If trouble occurs while starting switch is in ON position, controller fixes voltage value to level just before detection of trouble and continues operation.</li> <li>If starting switch is turned ON while voltage is abnormally high, controller continues operation with voltage at 100% value.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine speed cannot be controlled with fuel control dial.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage of fuel control dial can be checked with monitoring function. (Code: <b>03000</b>, Fuel Dial Pos Sens Volt)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective throttle sensor power supply system	If failure code [CA2185] is also indicated, carry out troubleshooting for it first.	
2		Defective fuel control dial	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			P10		Voltage
			Between (1) – (3)	Power supply	4.75 – 5.25 V
Voltage is measured with wiring harness connected. Accordingly, if voltage is abnormal, check wiring harness and controller, too, for another cause of trouble, and then judge.					
3		Hot short (Short circuit with 5 V/24 V circuit) in wiring harness	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
	Wiring harness between CE02 (female) (9) – P10 (female) (2)		Voltage	Max. 1 V	
4	Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
		Wiring harness between CE02 (female) (9) – P10 (female) (2) and between CE02 (female) (22) – P10 (female) (1)	Resistance	Min. 100 kΩ	
5	Defective wiring harness connector	Connecting parts between fuel control dial – machine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>			
6	Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
		CE02		Voltage	
		Between (22) – (23)	Power supply	4.75 – 5.25 V	



Circuit diagram related to fuel control dial

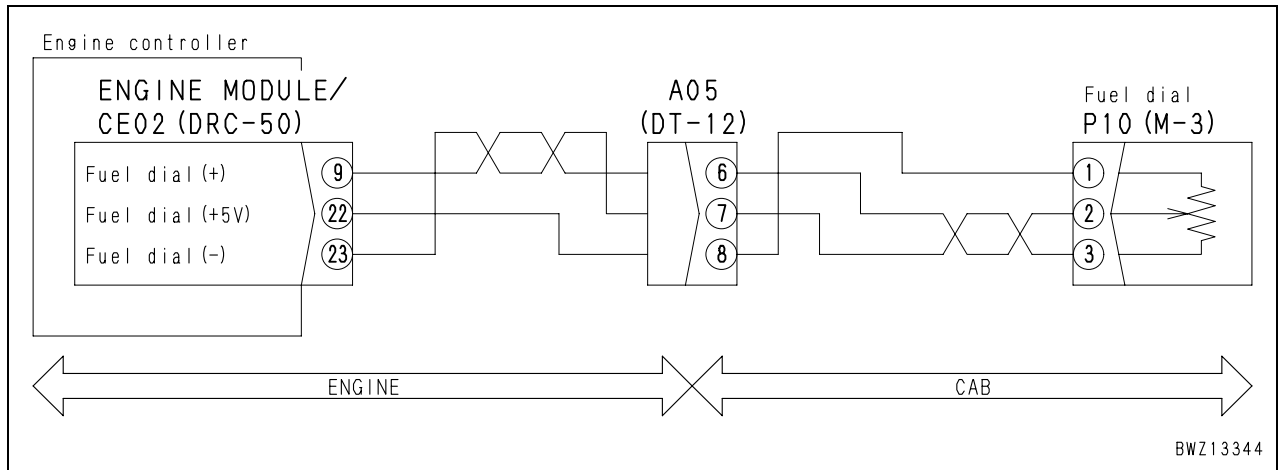


### Failure code [CA132] Throttle sensor too low

User code	Failure code	Trouble	Throttle sensor too low (Engine controller system)
<b>E14</b>	<b>CA132</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal circuit of fuel control dial detected low voltage.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>If trouble occurs while starting switch is in ON position, controller fixes voltage value to level just before detection of trouble and continues operation.</li> <li>If starting switch is turned ON while voltage is abnormally high, controller continues operation with voltage at 100% value.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine speed cannot be controlled with fuel control dial.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage of fuel control dial can be checked with monitoring function. (Code: <b>03000</b>, Fuel Dial Pos Sens Volt)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective throttle sensor power supply system	If failure code [CA2186] is also indicated, carry out troubleshooting for it first.	
2		Defective fuel control dial	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			P10		Voltage
			Between (1) – (3)	Power supply	4.75 – 5.25 V
Voltage is measured with wiring harness connected. Accordingly, if voltage is abnormal, check wiring harness and controller, too, for another cause of trouble, and then judge.					
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
	Wiring harness between CE02 (female) (9) – P10 (female) (2)		Resistance	Min. 100 kΩ	
4	Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
		Wiring harness between CE02 (female) (9) – P10 (female) (2) and between CE02 (female) (23) – P10 (female) (3)	Resistance	Min. 100 kΩ	
5	Defective wiring harness connector	Connecting parts between fuel control dial – machine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>			
6	Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
		CE02		Voltage	
		Between (22) – (23)	Power supply	4.75 – 5.25 V	

Circuit diagram related to fuel control dial

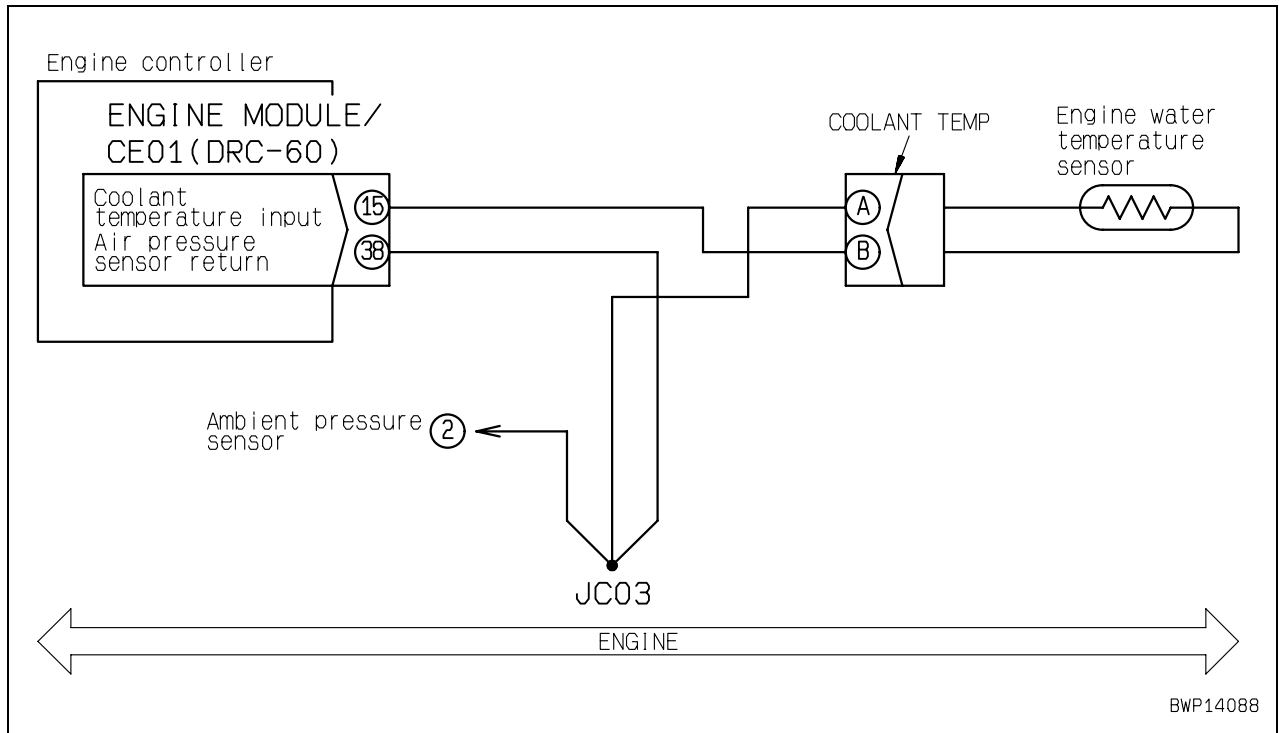


### Failure code [CA144] Coolant temperature sensor too high

User code	Failure code	Trouble	Coolant temperature sensor too high (Engine controller system)
<b>E15</b>	<b>CA144</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal circuit of coolant temperature sensor detected high voltage.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes coolant temperature value and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Exhaust gas becomes white.</li> <li>Overheat prevention function does not work.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage of coolant temperature sensor can be checked with monitoring function. (Code: <b>04105</b>, Eng. Water Temp. Vol. Lo)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective coolant temperature sensor	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
COOLANT TEMP (male)				Resistance		
Between (A) – (B)				0.18 – 160 kΩ		
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE01 (female) (15) – COOLANT TEMP (female) (B)		Resistance	Max. 10 Ω
			Wiring harness between CE01 (female) (38) – JC03 – COOLANT TEMP (female) (A)		Resistance	Max. 10 Ω
3		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE01 (female) (15) – each of CE01 (female) pins (With all wiring harness connectors disconnected)		Resistance	Min. 100 kΩ
4		Defective wiring harness connector	Connecting parts between coolant temperature sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>			
5		Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			CE01 (female)		Resistance	
			Between (15) – (38)		0.18 – 160 kΩ	

Circuit diagram related to coolant temperature sensor

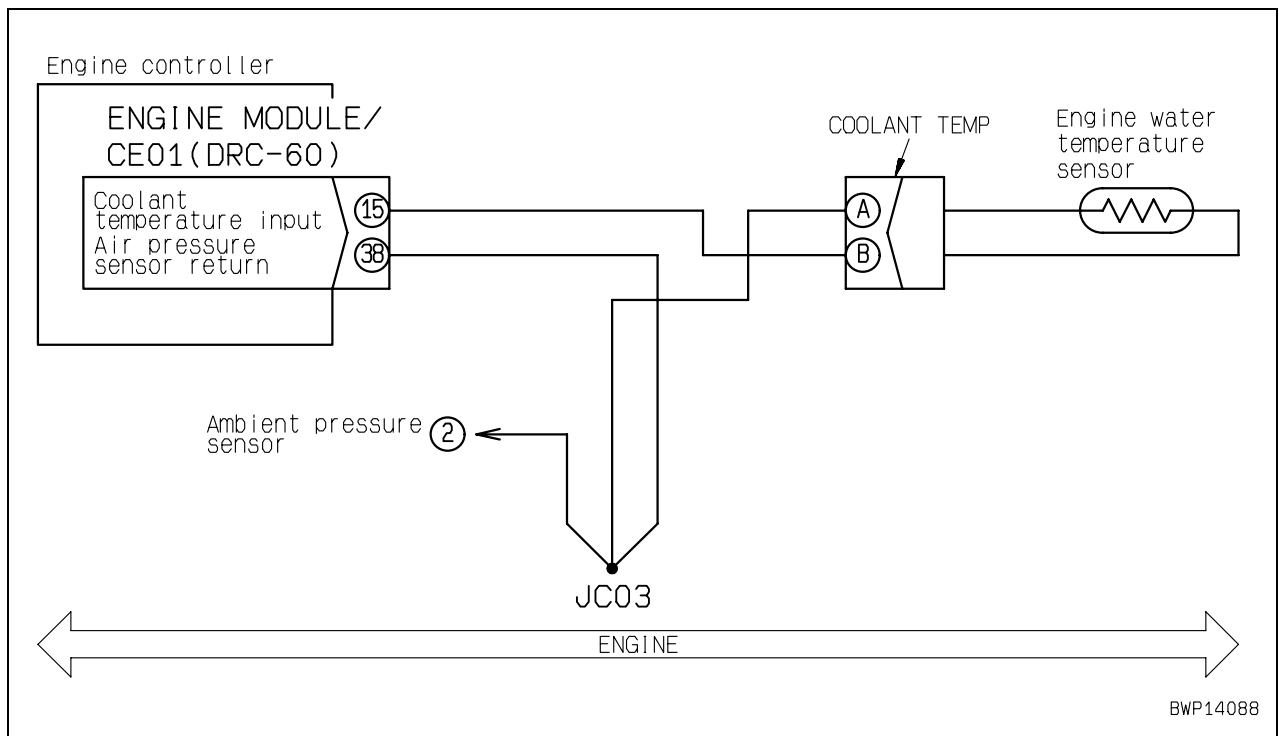


### Failure code [CA145] Coolant temperature sensor too low

User code	Failure code	Trouble	Coolant temperature sensor too low (Engine controller system)
<b>E15</b>	<b>CA145</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal circuit of coolant temperature sensor detected low voltage.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes coolant temperature value and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Exhaust gas becomes white.</li> <li>Overheat prevention function does not work.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage of coolant temperature sensor can be checked with monitoring function. (Code: <b>04105</b>, Eng. Water Temp. Vol. Lo)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective coolant temperature sensor	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
COOLANT TEMP (male)				Resistance	
Between (A) – (B)				0.18 – 160 kΩ	
Between (B) – chassis ground				Min. 100 kΩ	
2		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (15) – COOLANT TEMP (female) (B) and chassis ground	Resistance	Min. 100 kΩ
3		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (15) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance	Min. 100 kΩ
4		Defective wiring harness connector	Connecting parts between coolant temperature sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>		
5		Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			CE01 (male)	Resistance	
			Between (15) – (38)	0.18 – 160 kΩ	
			Between (15) – chassis ground	Min. 100 kΩ	

Circuit diagram related to coolant temperature sensor



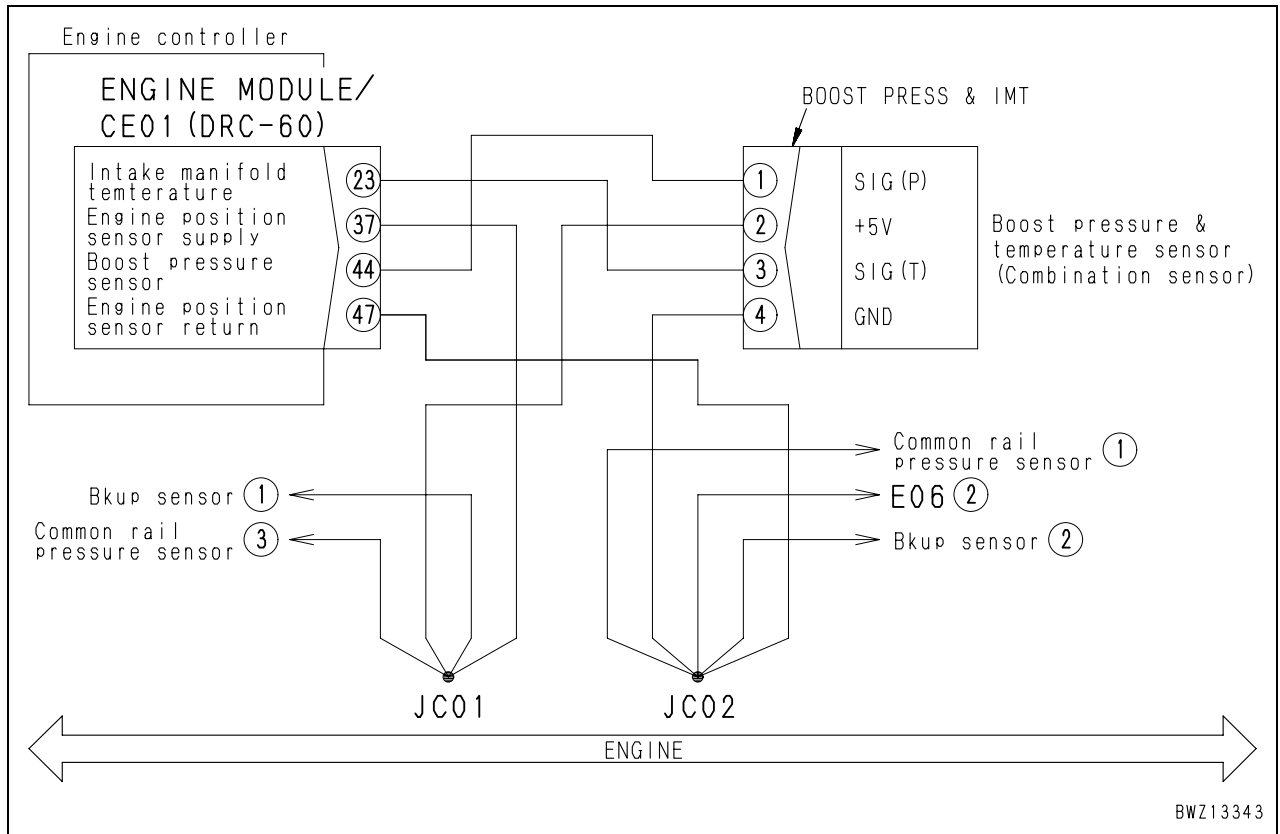
## Failure code [CA153] Charge temperature sensor too high

User code	Failure code	Trouble	Charge temperature sensor too high (Engine controller system)
<b>E15</b>	<b>CA153</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Temperature signal circuit of boost pressure/temperature sensor detected high voltage.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes charge temperature value and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Exhaust gas becomes white.</li> <li>Engine protection function based on boost temperature does not work</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage on boost temperature side of boost pressure/temperature sensor can be checked with monitoring function. (Code: <b>18501</b>, Charge Temp Sens Volt)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective boost pressure/temperature sensor [temperature signal system]	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
BOOST PRESS & IMT (male)				Resistance		
Between (3) – (4)				0.18 – 160 kΩ		
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE01 (female) (23) – BOOST PRESS & IMT (female) (3)		Resistance	Max. 10 Ω
			Wiring harness between CE01 (female) (47) – JC02 – BOOST PRESS & IMT (female) (4)		Resistance	Max. 10 Ω
3		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE01 (female) (23) – each of CE01 (female) pins (With all wiring harness connectors disconnected)		Resistance	Min. 100 kΩ
4		Defective wiring harness connector	Connecting parts between boost pressure/temperature sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>			
5		Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			CE01 (male)		Resistance	
			Between (23) – (47)		0.18 – 160 kΩ	



Circuit diagram related to boost pressure/temperature sensor (Combination sensor)

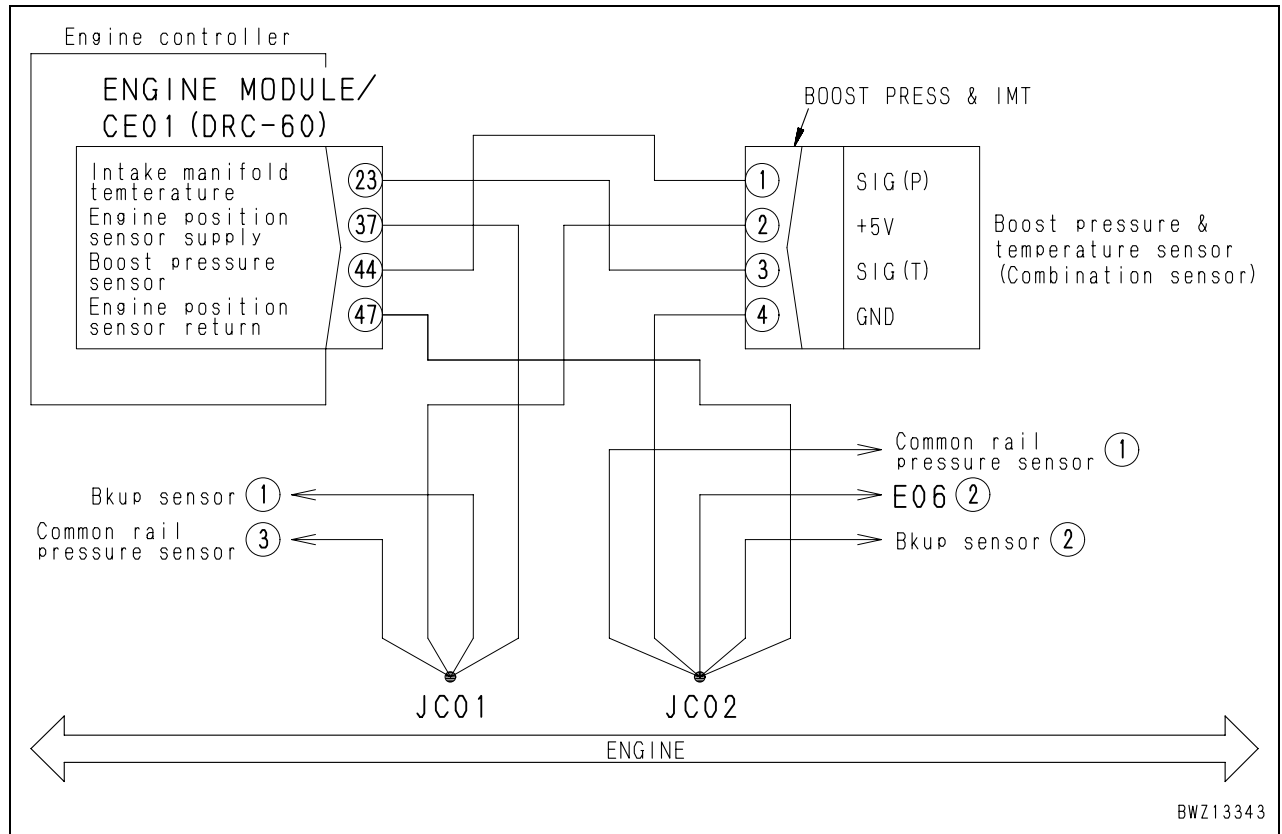


## Failure code [CA154] Charge temperature sensor too low

User code	Failure code	Trouble	Charge temperature sensor too low (Engine controller system)
<b>E15</b>	<b>CA154</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Temperature signal circuit of boost pressure/temperature sensor detected low voltage.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes charge temperature value and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Exhaust gas becomes white.</li> <li>Engine protection function based on boost temperature does not work</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage on boost temperature side of boost pressure/temperature sensor can be checked with monitoring function. (Code: <b>18501</b>, Charge Temp Sens Volt)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective boost pressure/temperature sensor [temperature signal system]	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
BOOST PRESS & IMT (male)				Resistance
Between (3) – (4)				0.18 – 160 kΩ
Between (3) – chassis ground				Min. 100 kΩ
2		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (23) – BOOST PRESS & IMT (female) (3)	Resistance Min. 100 kΩ
3		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (23) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
4		Defective wiring harness connector	Connecting parts between boost pressure/temperature sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
5		Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			CE01 (male)	Resistance
			Between (23) – (47)	0.18 – 160 kΩ
			Between (23) – chassis ground	Min. 100 kΩ

Circuit diagram related to boost pressure/temperature sensor (Combination sensor)



## Failure code [CA155] Charge temperature too high and engine speed derated

User code	Failure code	Trouble	Charge temperature too high and engine speed derated (Engine controller system)
<b>E11</b>	<b>CA155</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Temperature signal of boost pressure/temperature sensor exceeded control upper temperature limit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Limits output and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine output lowers.</li> <li>Engine stops.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Boost temperature can be checked with monitoring function. (Code: <b>18500</b>, Charge Temperature)</li> <li>Method of reproducing failure code: Start engine</li> </ul>		

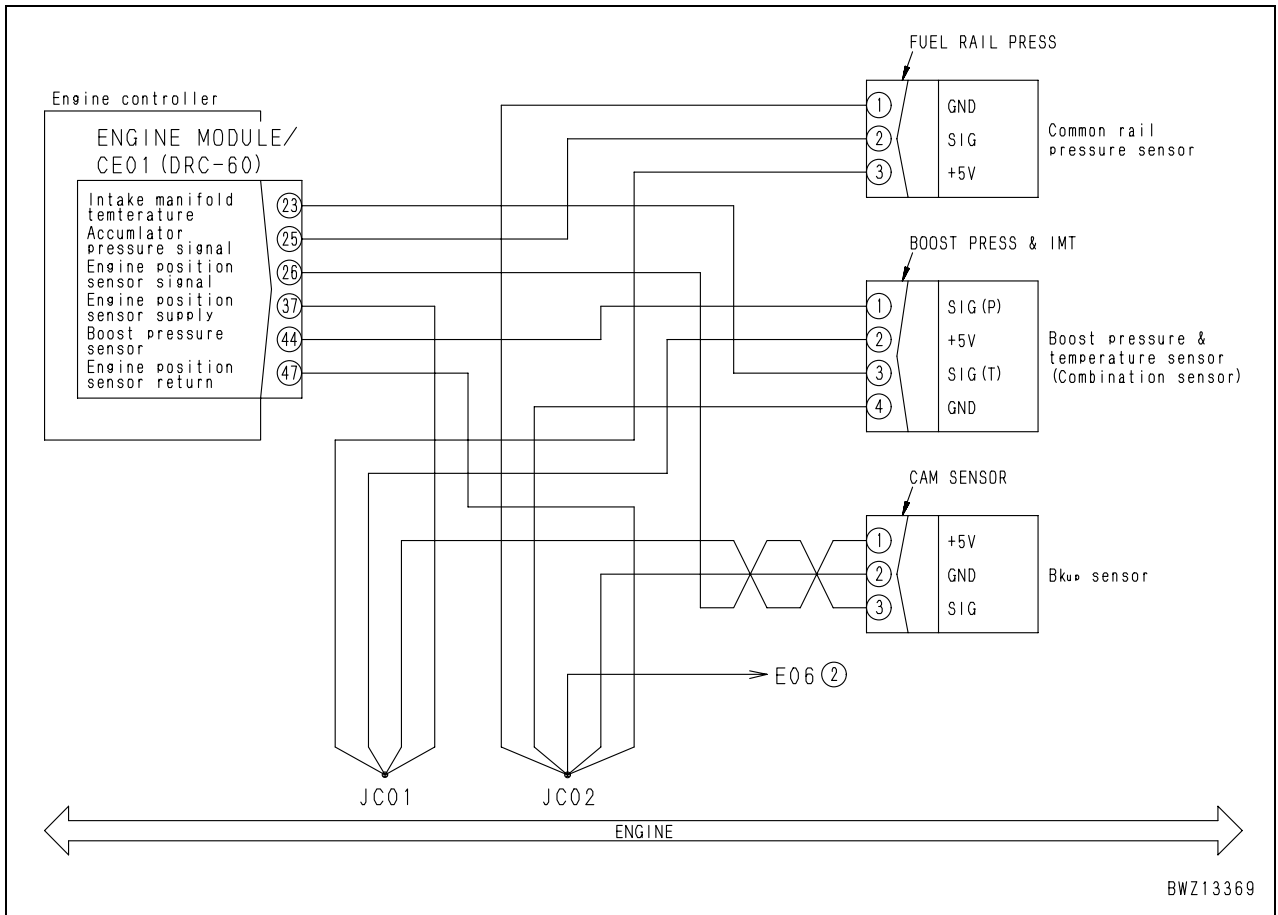
Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Lowering of cooling performance of after-cooler	Cooling performance of aftercooler may be low. Check following points directly. <ul style="list-style-type: none"> <li>Looseness and breakage of fan belt.</li> <li>Insufficiency of cooling air</li> <li>Clogging of aftercooler fins</li> </ul>
2	Abnormal rise of turbo-charger outlet temperature	Outlet temperature of turbocharger may be abnormally high. Check related parts directly.	
3	Defective engine controller	If causes 1 – 2 are not detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)	

### Failure code [CA187] Sensor power source 2 too low

User code	Failure code	Trouble	Sensor power source 2 too low (Engine controller system)
<b>E15</b>	<b>CA187</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Low voltage was detected in sensor power supply 2 circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes boost pressure value and continues operation.</li> <li>Fixes charge temperature value and continues operation.</li> <li>Limits output and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective sensor or wiring harness	★ Disconnect connector with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
Disconnect sensors and wiring harness at right in order and carry out operation to reproduce trouble. If "E" of failure code goes off when a sensor or wiring harness is disconnected, that sensor or wiring harness is defective.				Boost pressure/temperature sensor	BOOST PRESS & IMT
				Common rail pressure sensor	FUEL RAIL PRESS
				Bkup sensor	CAM SENSOR
			Engine wiring harness	CE01	
	2	Defective wiring harness connector	Connecting parts between each sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>		
	3	Defective engine controller	If causes 1 – 2 are not detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

Circuit diagram related to sensor power supply 2

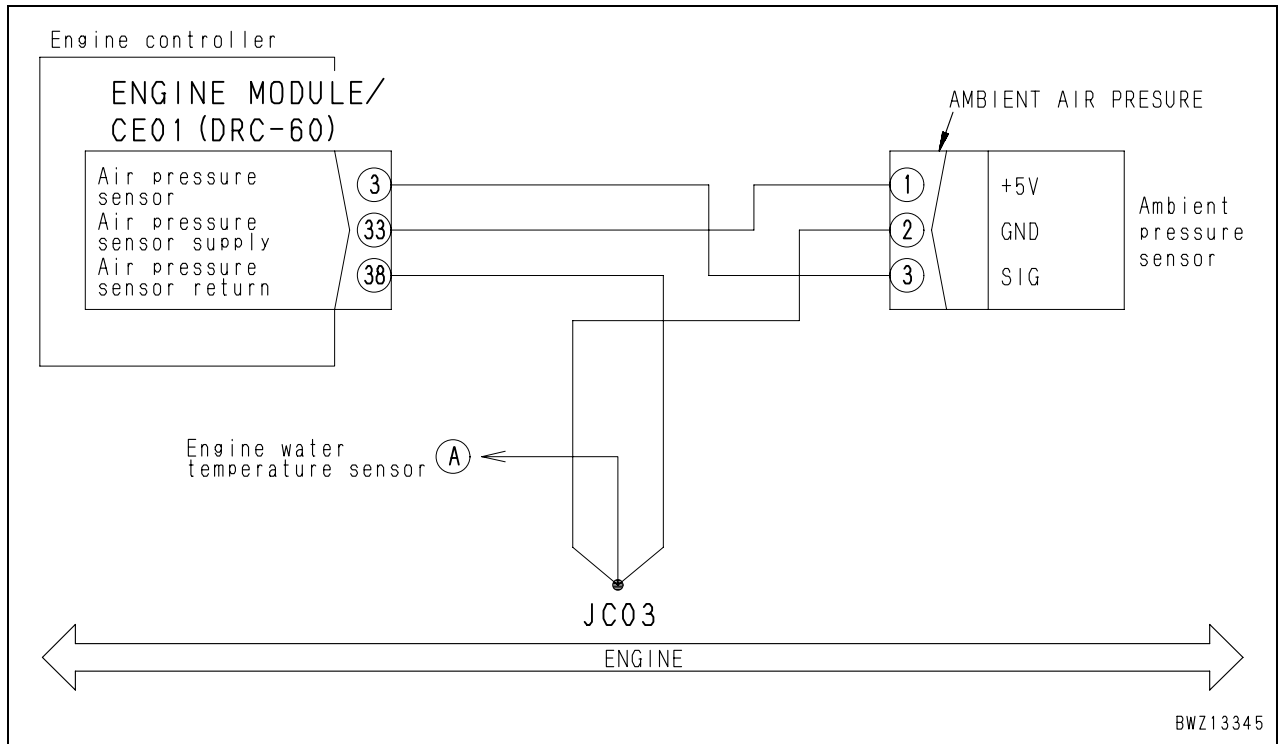


### Failure code [CA221] Ambient pressure sensor too high

User code	Failure code	Trouble	Ambient pressure sensor too high (Engine controller system)
<b>E11</b>	<b>CA221</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>High voltage was detected in signal circuit of ambient pressure sensor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes ambient pressure value and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start easily.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage of ambient pressure sensor can be checked with monitoring function. (Code: <b>37401</b>, Ambient Press Sens Volt)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective sensor power supply 1 system	If failure code [CA386] is also indicated, carry out troubleshooting for it first.	
2		Defective ambient pressure sensor	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			AMBIENT AIR PRESURE		Voltage
			Between (1) – (2)	Power supply	4.75 – 5.25V
			Voltage is measured with wiring harness connected. Accordingly, if voltage is abnormal, check wiring harness and controller, too, for another cause of trouble, and then judge.		
3		Hot short (Short circuit with 5V/24V circuit) in wiring harness	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			Wiring harness between CE01 (female) (3) – AMBIENT AIR PRESURE (female) (3)	Voltage	Max. 1 V
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (3) – AMBIENT AIR PRESURE (female) (3) and between CE01 (female) (33) – AMBIENT AIR PRESURE (female) (1)	Resistance	Min. 100 kΩ
5		Defective wiring harness connector	Connecting parts between ambient pressure sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>		
6		Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			CE01		Voltage
	Between (33) – (38)		Voltage	4.75 – 5.25 V	

Circuit diagram related to ambient pressure sensor



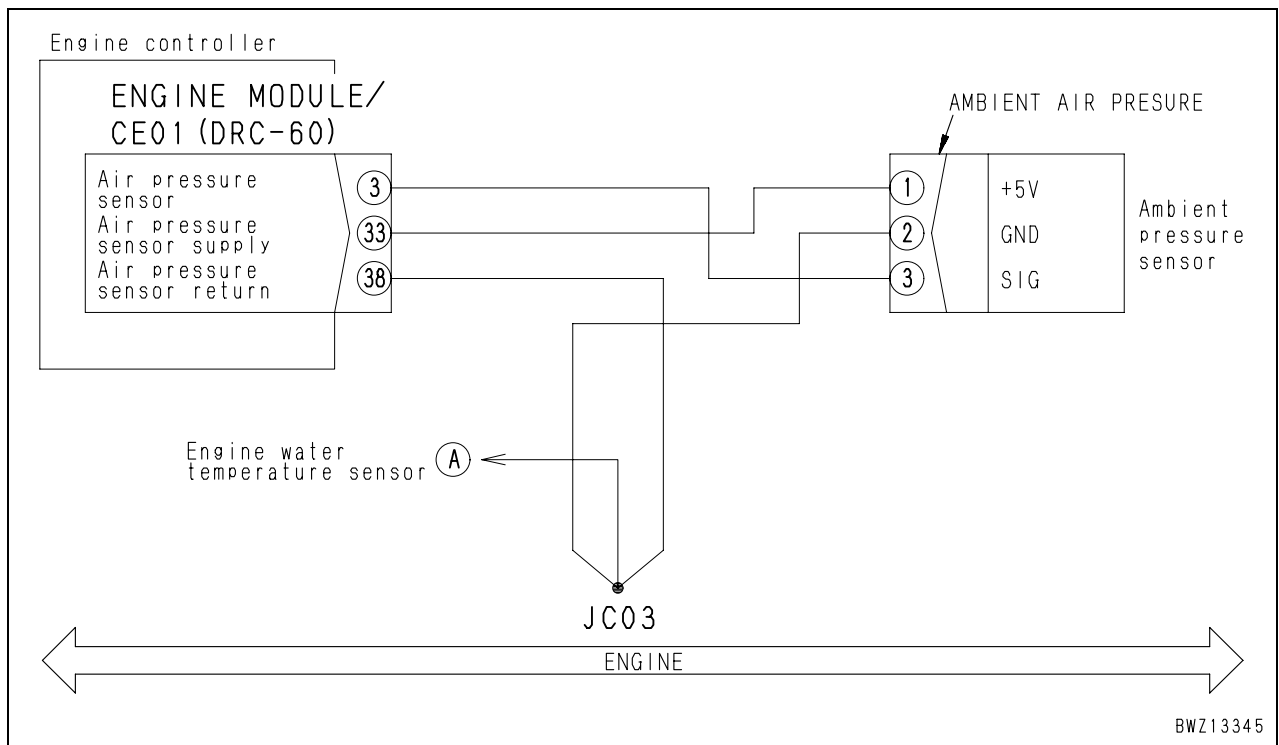


### Failure code [CA222] Ambient pressure sensor too low

User code	Failure code	Trouble	Ambient pressure sensor too low (Engine controller system)
<b>E11</b>	<b>CA222</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Low voltage was detected in signal circuit of ambient pressure sensor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes ambient pressure value and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start easily.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage of ambient pressure sensor can be checked with monitoring function. (Code: <b>37401</b>, Ambient Press Sens Volt)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting									
		1	Defective sensor power supply 1 system	If failure code [CA352] is also indicated, carry out troubleshooting for it first.								
2		Defective ambient pressure sensor	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.									
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">AMBIENT AIR PRESURE</th> <th colspan="2">Voltage</th> </tr> <tr> <td style="width: 25%;">Between (1) – (2)</td> <td style="width: 25%;">Power supply</td> <td style="width: 25%;"></td> <td style="width: 25%;">4.75 – 5.25V</td> </tr> </table>		AMBIENT AIR PRESURE		Voltage		Between (1) – (2)	Power supply		4.75 – 5.25V
			AMBIENT AIR PRESURE		Voltage							
Between (1) – (2)		Power supply		4.75 – 5.25V								
Voltage is measured with wiring harness connected. Accordingly, if voltage is abnormal, check wiring harness and controller, too, for another cause of trouble, and then judge.												
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.									
			Wiring harness between CE01 (female) (3) – AMBIENT AIR PRESSURE (female) (3)	Resistance Min. 100 kΩ								
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.									
			Wiring harness between CE01 (female) (3) – AMBIENT AIR PRESSURE (female) (3) and between CE01 (female) (38) – JC03 – AMBIENT AIR PRESSURE (female) (2)	Resistance Min. 100 kΩ								
5		Defective wiring harness connector	Connecting parts between ambient pressure sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>									
6		Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">CE01</th> <th colspan="2">Voltage</th> </tr> <tr> <td style="width: 25%;">Between (33) – (38)</td> <td style="width: 25%;">Voltage</td> <td style="width: 25%;"></td> <td style="width: 25%;">4.75 – 5.25 V</td> </tr> </table>		CE01		Voltage		Between (33) – (38)	Voltage		4.75 – 5.25 V		
	CE01		Voltage									
Between (33) – (38)	Voltage		4.75 – 5.25 V									
Between (33) – (38)		Voltage	4.75 – 5.25 V									

Circuit diagram related to ambient pressure sensor

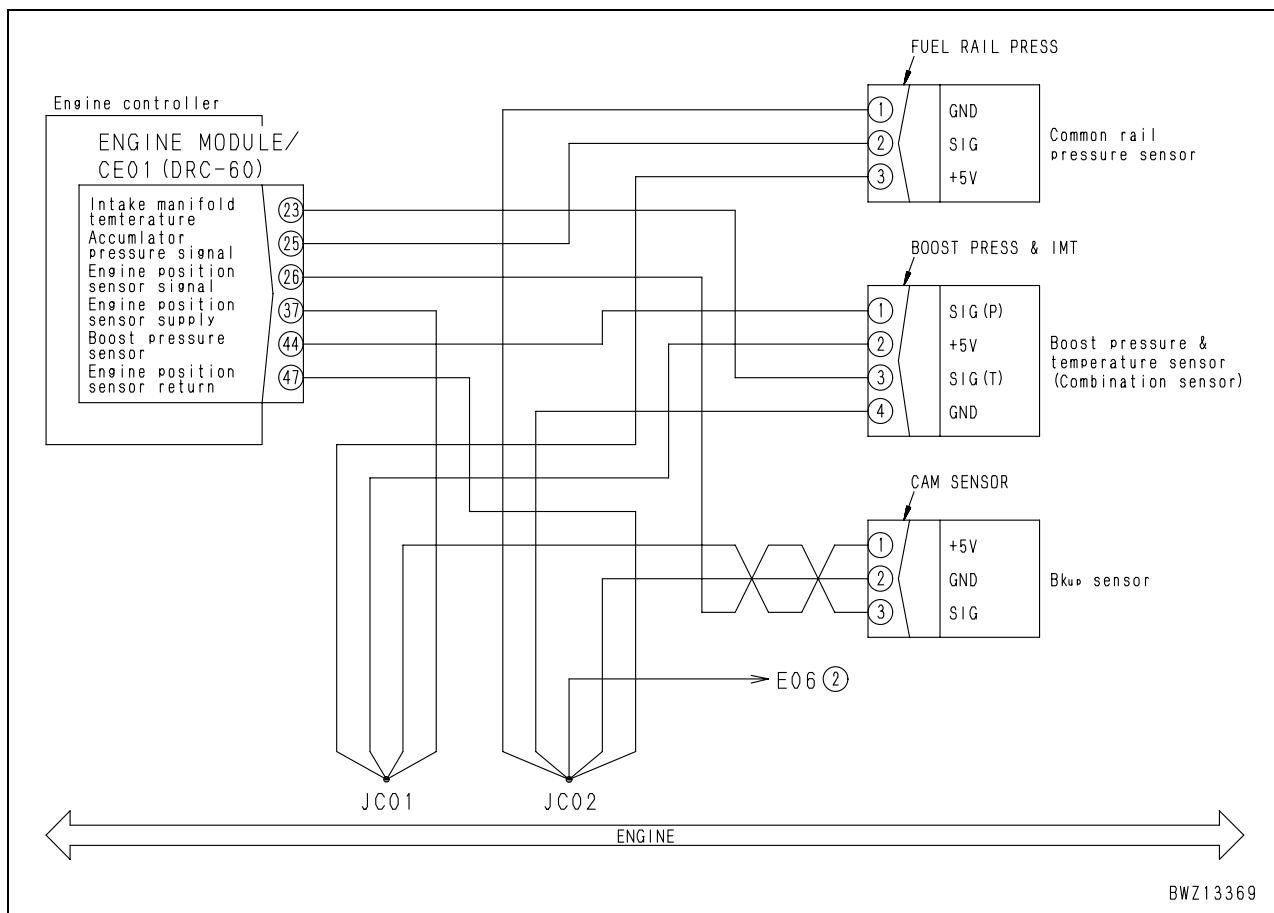


### Failure code [CA227] Sensor power source 2 too high

User code	Failure code	Trouble	Sensor power source 2 too high (Engine controller system)
E15	CA227		
Contents of trouble	<ul style="list-style-type: none"> <li>High voltage was detected in sensor power supply 2 circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes boost pressure value and continues operation.</li> <li>Fixes charge temperature value and continues operation.</li> <li>Limits output and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defective wiring harness connector	Connecting parts between each sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>
2	Defective engine controller	If cause 1 is not detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)	

### Circuit diagram related to sensor power supply 2



## Failure code [CA234] Engine overspeed

User code	Failure code	Trouble	Engine overspeed (Engine controller system)
—	<b>CA234</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>• Engine speed exceeded control upper speed limit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>• Stops injection until engine speed lowers to normal level.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>• Engine speed fluctuates.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>• Engine speed can be checked with monitoring function. (Code: <b>01002</b>, Engine Speed)</li> <li>• Method of reproducing failure code: Run engine at high idle.</li> </ul>		

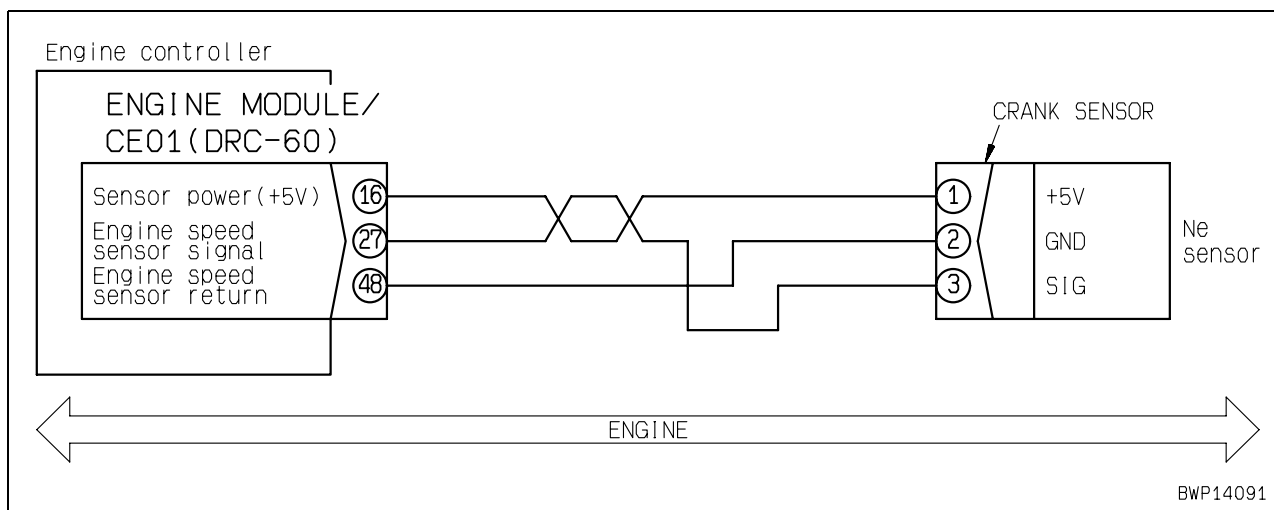
Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Use of improper fuel	Fuel used may be improper. Check it directly.
2	Improper use	Machine may be used improperly. Teach operator proper using method.	
3	Defective engine controller	If causes 1 – 2 are detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)	

### Failure code [CA238] Abnormal power source for Ne speed sensor

User code	Failure code	Trouble	Abnormal power source for Ne speed sensor (Engine controller system)
<b>E15</b>	<b>CA238</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Low voltage was detected in power supply circuit of engine Ne speed sensor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Continues control with signal from engine Bkup speed sensor.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start easily.</li> <li>Engine hunts.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Defective sensor or wiring harness	★ Disconnect connector with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
Ne speed sensor			CRANK SENSOR	
2	Defective wiring harness connector	Engine wiring harness	CE01	
		Connecting parts between each sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>		

#### Circuit diagram related to engine Ne speed sensor

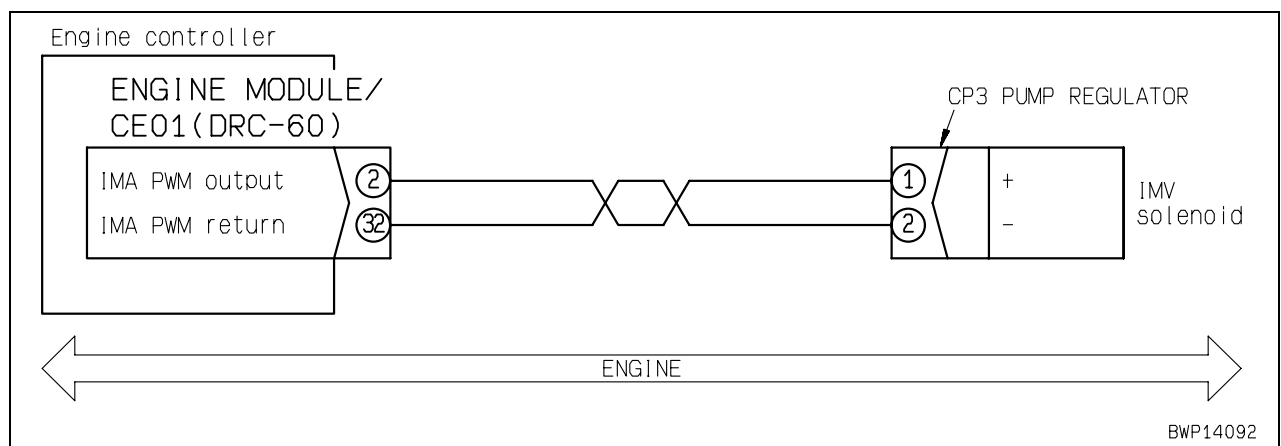


### Failure code [CA271] Short circuit in fuel pump actuator

User code	Failure code	Trouble	Short circuit in fuel pump actuator (Engine controller system)
<b>E10</b>	<b>CA271</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Short circuit was detected in drive circuit of supply pump actuator.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine speed does not rise from low idle.</li> <li>Engine output lowers.</li> <li>Common rail fuel pressure rises above command value.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective supply pump actuator	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
CP3 PUMP REGULATOR (male)				Resistance
Between (1) – chassis ground				Min. 100 kΩ
2		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (2) – CP3 PUMP REGULATOR (female) (1)	Resistance Min. 100 kΩ
3		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (2) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
4		Defective wiring harness connector	Connecting parts between supply pump actuator – engine wiring harness – engine controller may be defective. Check them directly.	
			<ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
5	Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
		CE01 (male)	Resistance	
		Between (2) – chassis ground	Min. 100 kΩ	

#### Circuit diagram related to supply pump actuator (metering unit)

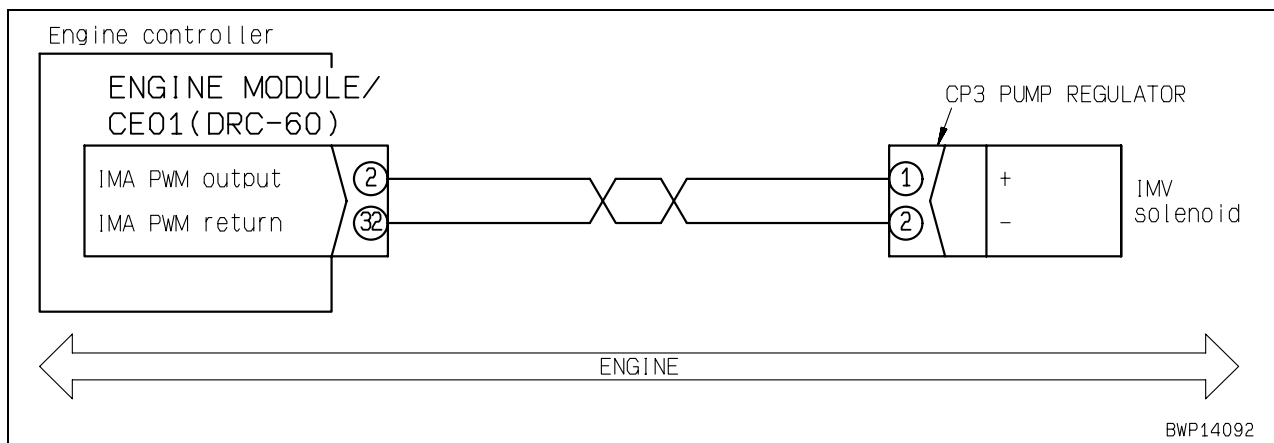


### Failure code [CA272] Disconnection in fuel pump actuator

User code <b>E10</b>	Failure code <b>CA272</b>	Trouble	Disconnection in fuel pump actuator (Engine controller system)
Contents of trouble	<ul style="list-style-type: none"> <li>Opening was detected in drive circuit of supply pump actuator.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine runs but its operation is unstable.</li> <li>Common rail fuel pressure rises above command value.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Defective supply pump actuator	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
CP3 PUMP REGULATOR (male)				Resistance
Between (1) – (2)				Max. 5 Ω
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (2) – CP3 PUMP REGULATOR (female) (1)	Resistance Max. 10 Ω
			Wiring harness between CE01 (female) (32) – CP3 PUMP REGULATOR (female) (2)	Resistance Max. 10 Ω
3		Hot short (Short circuit with 24V circuit) in wiring harness	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
			Wiring harness between CE01 (female) (2) – CP3 PUMP REGULATOR (female) (1)	Voltage Max. 3 V
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (2) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
5		Defective wiring harness connector	Connecting parts between supply pump actuator – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
6		Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
	CE01 (male)		Resistance	
	Between (2) – (32)		Max. 5 Ω	

#### Circuit diagram related to supply pump actuator (metering unit)



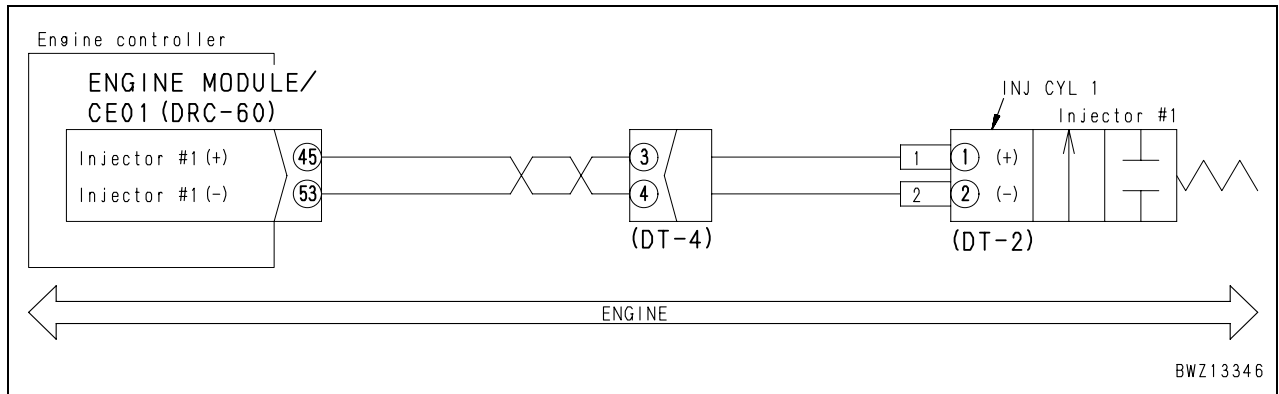
## Failure code [CA322] Disconnection or short circuit in injector No.1

User code	Failure code	Trouble	Disconnection or short circuit in injector No.1 (Engine controller system)
<b>E11</b>	<b>CA322</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Opening or short circuit was detected in drive circuit of No. 1 injector.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Combustion becomes irregular or engine hunts.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Defective No. 1 injector	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
INJ CYL 1 (male)				Resistance
Between (1) – (2)				Max. 2 Ω
Between (1) – chassis ground				Min. 100 kΩ
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (45) – INJ CYL 1 (female) (1)	Resistance Max. 2 Ω
			Wiring harness between CE01 (female) (53) – INJ CYL 1 (female) (2)	Resistance Max. 2 Ω
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (45) – INJ CYL 1 (female) (1)	Resistance Max. 2 Ω
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (45) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
			Wiring harness between CE01 (female) (53) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
5		Defective wiring harness connector	Connecting parts between No. 1 injector – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
6		Defective injector of other cylinder or defective harness	If the failure codes related to injector are indicated, carry out troubleshooting for them, too.	
7	Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
		CE01 (male)	Resistance	
		Between (45) – (53)	Max. 2 Ω	
		Between (45) – chassis ground	Min. 100 kΩ	



Circuit diagram related to No. 1 injector

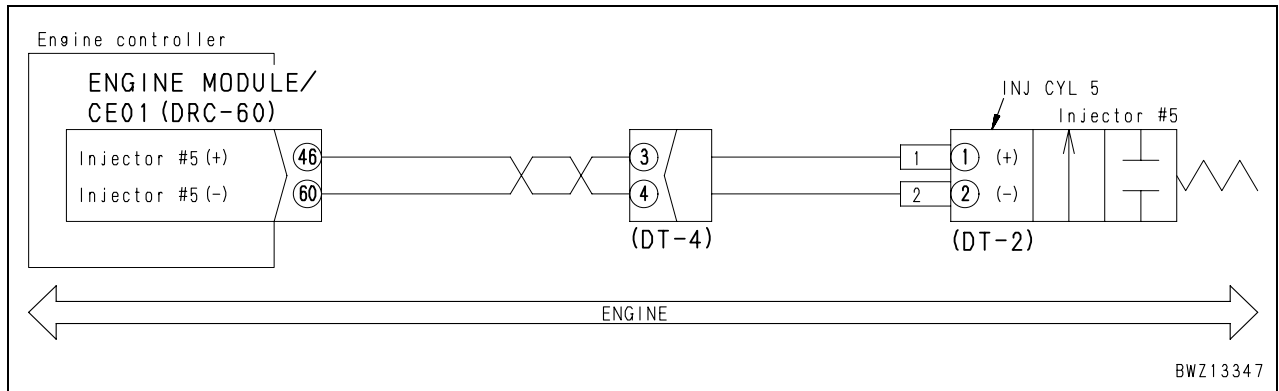


### Failure code [CA323] Disconnection or short circuit in injector No.5

User code	Failure code	Trouble	Disconnection or short circuit in injector No.5 (Engine controller system)
<b>E11</b>	<b>CA323</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Opening or short circuit was detected in drive circuit of No. 5 injector.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Combustion becomes irregular or engine hunts.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Defective No. 5 injector	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
INJ CYL 5 (male)				Resistance
Between (1) – (2)				Max. 2 Ω
Between (1) – chassis ground				Min. 100 kΩ
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (46) – INJ CYL 5 (female) (1)	Resistance Max. 2 Ω
			Wiring harness between CE01 (female) (60) – INJ CYL 5 (female) (2)	Resistance Max. 2 Ω
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (46) – INJ CYL 5 (female) (1)	Resistance Max. 2 Ω
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (46) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
			Wiring harness between CE01 (female) (60) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
5		Defective wiring harness connector	Connecting parts between No. 5 injector – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
6		Defective injector of other cylinder or defective harness	If the failure codes related to injector are indicated, carry out troubleshooting for them, too.	
7	Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
		CE01 (male)	Resistance	
		Between (46) – (60)	Max. 2 Ω	
		Between (46) – chassis ground	Min. 100 kΩ	

Circuit diagram related to No. 5 injector

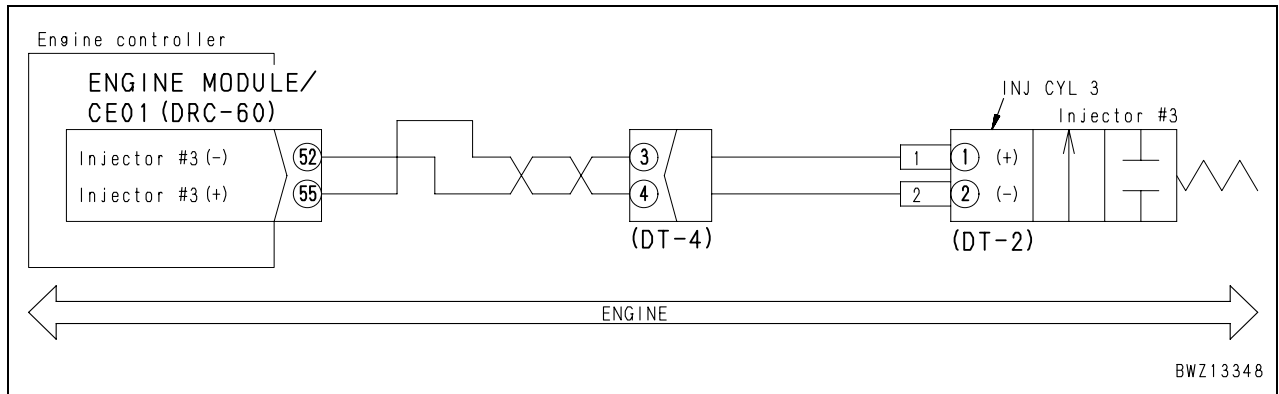


## Failure code [CA324] Disconnection or short circuit in injector No.3

User code	Failure code	Trouble	Disconnection or short circuit in injector No.3 (Engine controller system)
<b>E11</b>	<b>CA324</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Opening or short circuit was detected in drive circuit of No. 3 injector.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Combustion becomes irregular or engine hunts.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Defective No. 3 injector	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
INJ CYL 3 (male)				Resistance
Between (1) – (2)				Max. 2 Ω
Between (1) – chassis ground				Min. 100 kΩ
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (55) – INJ CYL 3 (female) (1)	Resistance Max. 2 Ω
			Wiring harness between CE01 (female) (52) – INJ CYL 3 (female) (2)	Resistance Max. 2 Ω
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (55) – INJ CYL 3 (female) (1)	Resistance Max. 2 Ω
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (55) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
			Wiring harness between CE01 (female) (52) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
5		Defective wiring harness connector	Connecting parts between No. 3 injector – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
6		Defective injector of other cylinder or defective harness	If the failure codes related to injector are indicated, carry out troubleshooting for them, too.	
7	Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
		CE01 (male)	Resistance	
		Between (55) – (52)	Max. 2 Ω	
		Between (55) – chassis ground	Min. 100 kΩ	

Circuit diagram related to No. 3 injector

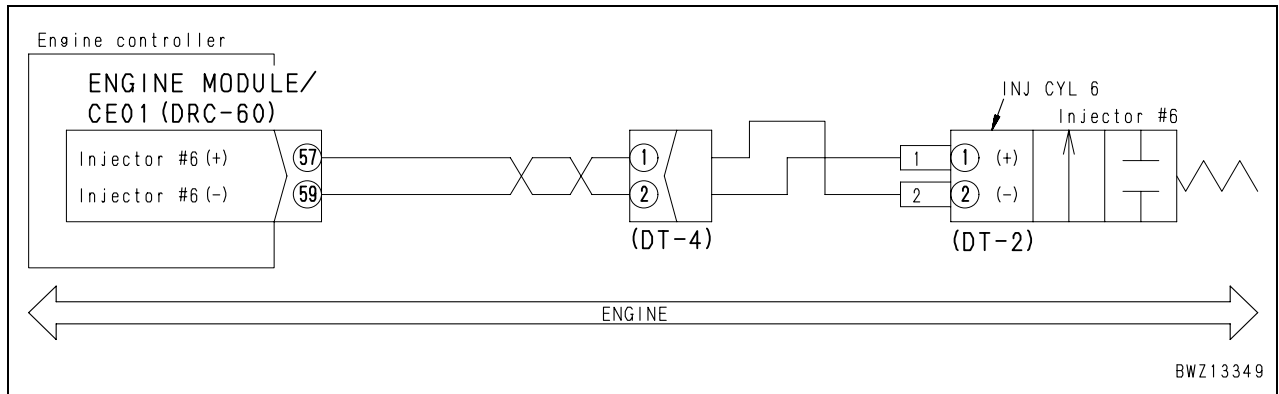


## Failure code [CA325] Disconnection or short circuit in injector No.6

User code	Failure code	Trouble	Disconnection or short circuit in injector No.6 (Engine controller system)
<b>E11</b>	<b>CA325</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Opening or short circuit was detected in drive circuit of No. 6 injector.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Combustion becomes irregular or engine hunts.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Defective No. 6 injector	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
INJ CYL 6 (male)				Resistance
Between (1) – (2)				Max. 2 Ω
Between (1) – chassis ground				Min. 100 kΩ
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (57) – INJ CYL 6 (female) (1)	Resistance Max. 2 Ω
			Wiring harness between CE01 (female) (59) – INJ CYL 6 (female) (2)	Resistance Max. 2 Ω
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (57) – INJ CYL 6 (female) (1)	Resistance Max. 2 Ω
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (57) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
			Wiring harness between CE01 (female) (59) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
5		Defective wiring harness connector	Connecting parts between No. 6 injector – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
6		Defective injector of other cylinder or defective harness	If the failure codes related to injector are indicated, carry out troubleshooting for them, too.	
7	Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
		CE01 (male)	Resistance	
		Between (57) – (59)	Max. 2 Ω	
		Between (57) – chassis ground	Min. 100 kΩ	

Circuit diagram related to No. 6 injector



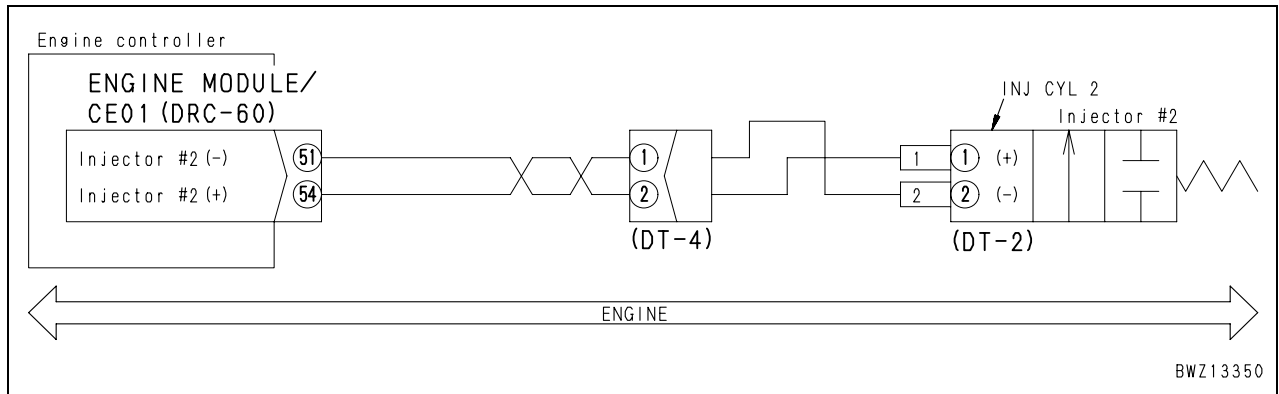
## Failure code [CA331] Disconnection or short circuit in injector No.2

User code	Failure code	Trouble	Disconnection or short circuit in injector No.2 (Engine controller system)
<b>E11</b>	<b>CA331</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Opening or short circuit was detected in drive circuit of No. 2 injector.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Combustion becomes irregular or engine hunts.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective No. 2 injector	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
INJ CYL 2 (male)				Resistance
Between (1) – (2)				Max. 2 Ω
Between (1) – chassis ground				Min. 100 kΩ
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (54) – INJ CYL 2 (female) (1)	Resistance Max. 2 Ω
			Wiring harness between CE01 (female) (51) – INJ CYL 2 (female) (2)	Resistance Max. 2 Ω
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (54) – INJ CYL 2 (female) (1)	Resistance Max. 2 Ω
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (54) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
			Wiring harness between CE01 (female) (51) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
5		Defective wiring harness connector	Connecting parts between No. 2 injector – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
6		Defective injector of other cylinder or defective harness	If the failure codes related to injector are indicated, carry out troubleshooting for them, too.	
7	Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
		CE01 (male)	Resistance	
		Between (54) – (51)	Max. 2 Ω	
		Between (54) – chassis ground	Min. 100 kΩ	



Circuit diagram related to No. 2 injector

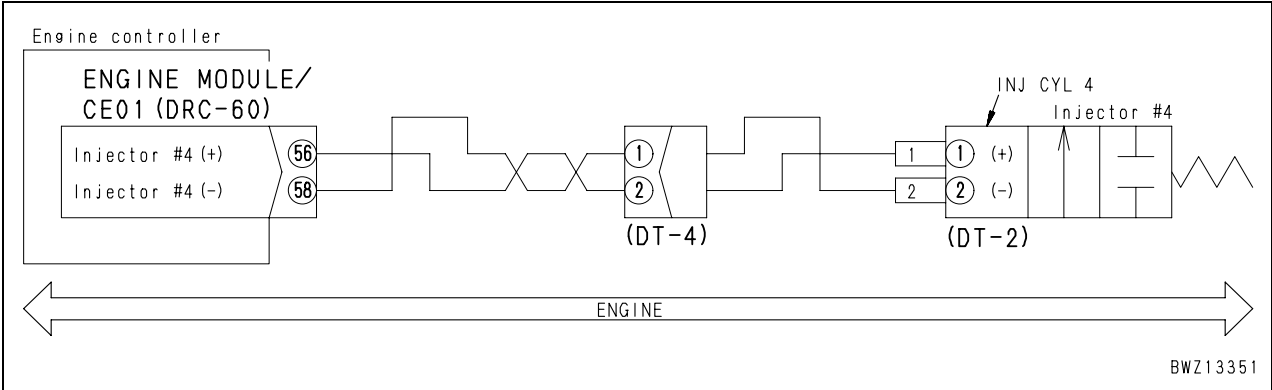


## Failure code [CA332] Disconnection or short circuit in injector No.4

User code	Failure code	Trouble	Disconnection or short circuit in injector No.4 (Engine controller system)
<b>E11</b>	<b>CA332</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Opening or short circuit was detected in drive circuit of No. 4 injector.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Combustion becomes irregular or engine hunts.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Defective No. 4 injector	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
INJ CYL 4 (male)				Resistance
Between (1) – (2)				Max. 2 Ω
Between (1) – chassis ground				Min. 100 kΩ
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (56) – INJ CYL 4 (female) (1)	Resistance Max. 2 Ω
			Wiring harness between CE01 (female) (58) – INJ CYL 4 (female) (2)	Resistance Max. 2 Ω
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (56) – INJ CYL 4 (female) (1)	Resistance Max. 2 Ω
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (56) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
			Wiring harness between CE01 (female) (58) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ
5		Defective wiring harness connector	Connecting parts between No. 4 injector – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
6		Defective injector of other cylinder or defective harness	If the failure codes related to injector are indicated, carry out troubleshooting for them, too.	
7	Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
		CE01 (male)	Resistance	
		Between (56) – (58)	Max. 2 Ω	
		Between (56) – chassis ground	Min. 100 kΩ	

Circuit diagram related to No. 4 injector



BR380JG-1E0 Mobile crusher

---

Form No. SEN02092-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

# MOBILE CRUSHER

## BR380JG-1E0

**Machine model      Serial number**

**BR380JG-1E0          2001 and up**

---

## 40 Troubleshooting

### Troubleshooting by failure code, Part 4

---

Failure code [CA342] Abnormality in engine controller data consistency .....	3
Failure code [CA351] Abnormality in injector drive circuit.....	4
Failure code [CA352] Sensor power source 1 too low .....	6
Failure code [CA386] Sensor power source 1 too high .....	8
Failure code [CA428] Water detection sensor too high.....	10
Failure code [CA429] Water detection sensor too low .....	12
Failure code [CA435] Abnormality in engine oil pressure switch .....	14
Failure code [CA441] Power source voltage too low .....	16
Failure code [CA442] Power source voltage too high .....	18
Failure code [CA449] Common rail pressure sensor too high (2).....	20
Failure code [CA451] Common rail pressure sensor too high .....	22
Failure code [CA452] Common rail pressure sensor too low.....	24
Failure code [CA488] Charge temperature too high and torque derated .....	26
Failure code [CA553] Common rail pressure sensor too high (1).....	26
Failure code [CA559] Supply pump no pressure .....	27
Failure code [CA689] Abnormality in engine Ne speed sensor .....	28

---

Failure code [CA731] Abnormal phase in engine Bkup speed sensor .....	30
Failure code [CA757] Loss of all engine controller data .....	32
Failure code [CA778] Abnormality in engine Bkup speed sensor .....	34
Failure code [CA1633] CAN communication error (engine controller) .....	36
Failure code [CA2185] Throttle pedal sensor power source too high .....	38
Failure code [CA2186] Throttle pedal sensor power source too low .....	39
Failure code [CA2249] Supply pump no pressure (2) .....	40
Failure code [CA2311] Abnormal resistance in pump regulator valve .....	42
Failure code [CA2555] Disconnection in air intake heater relay .....	44
Failure code [CA2556] Short circuit in air intake heater relay .....	46

## Failure code [CA342] Abnormality in engine controller data consistency

User code	Failure code	Trouble	Abnormality in engine controller data consistency (Engine controller system)
E10	<b>CA342</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Incompatibility of data occurred in engine controller.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Continues normal operation.</li> <li>Engine stops or does not start.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defect in related system	
2	Defective engine controller	Engine controller may be defective. (Troubleshooting cannot be carried out.)	

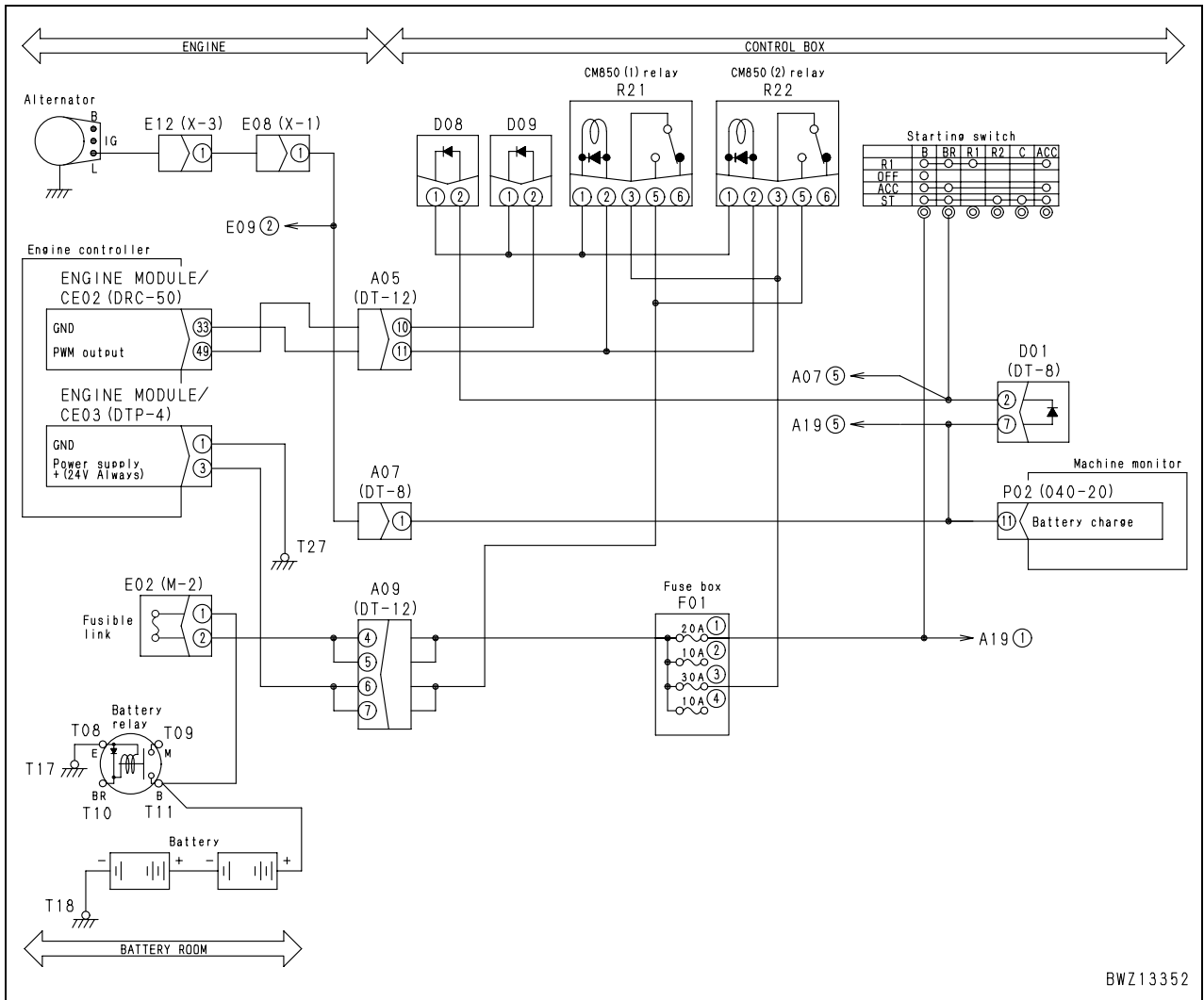
### Failure code [CA351] Abnormality in injector drive circuit

User code	Failure code	Trouble	Abnormality in injector drive circuit (Engine controller system)
<b>E10</b>	<b>CA351</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is error in drive power circuit of injector.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Limits output and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Exhaust gas becomes black.</li> <li>Combustion becomes irregular.</li> <li>Engine output lowers.</li> <li>Engine cannot be started.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defect in related system	If another failure code is displayed, carry out troubleshooting for it.	
2		Defective fuse No. 19	If fuse is broken, circuit probably has ground fault.		
3		Defective relay for engine controller power supply	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			Replace relay (R21, R22) for engine controller with another relay and perform reproducing operation. If "E" of failure code goes off at this time, replaced relay is defective.		
4		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	Wiring harness between B28 No.3 – R21, R22 (female) (3)	Resistance	Max. 0.5 Ω
	Wiring harness between R21, R22 (female) (5) – CE03 (female) (3)		Resistance	Max. 0.5 Ω	
	Wiring harness between CE03 (female) (1) – chassis ground (T27)		Resistance	Max. 10 Ω	
5	Defective engine controller	If causes 1 – 4 are not detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			



Circuit diagram related to engine controller



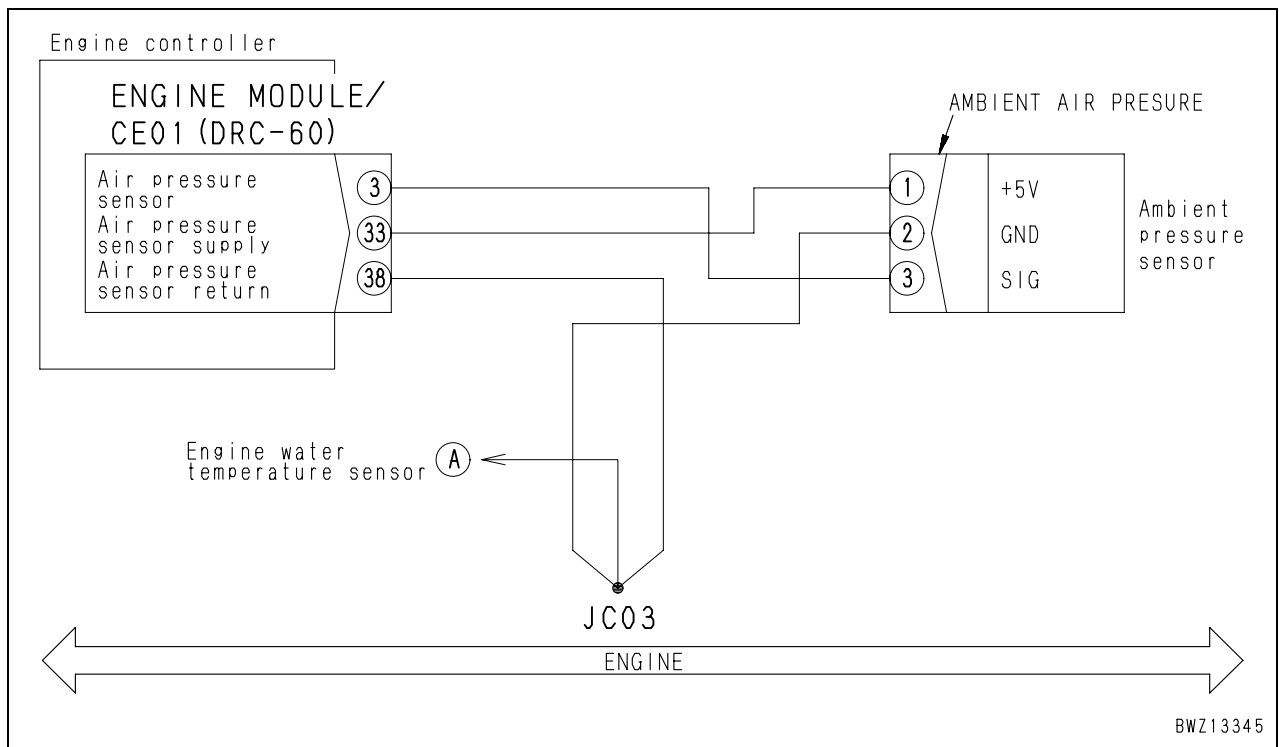
BWZ13352

### Failure code [CA352] Sensor power source 1 too low

User code	Failure code	Trouble	Sensor power source 1 too low (Engine controller system)
<b>E15</b>	<b>CA352</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Low voltage was detected in sensor power supply 1 circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes ambient pressure value and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start easily.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Defective sensor or wiring harness	★ Disconnect connector with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
Disconnect sensor and wiring harness at right in order and carry out operation to reproduce trouble. If "E" of failure code goes off when sensor or wiring harness is disconnected, that sensor or wiring harness is defective.			Ambient pressure sensor	AMBIENT AIR PRESSURE
			Engine wiring harness	CE01
2	Defective wiring harness connector	Connecting parts between ambient pressure sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>		
3	Defective engine controller	If causes 1 – 2 are not detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

Circuit diagram related to sensor power supply 1

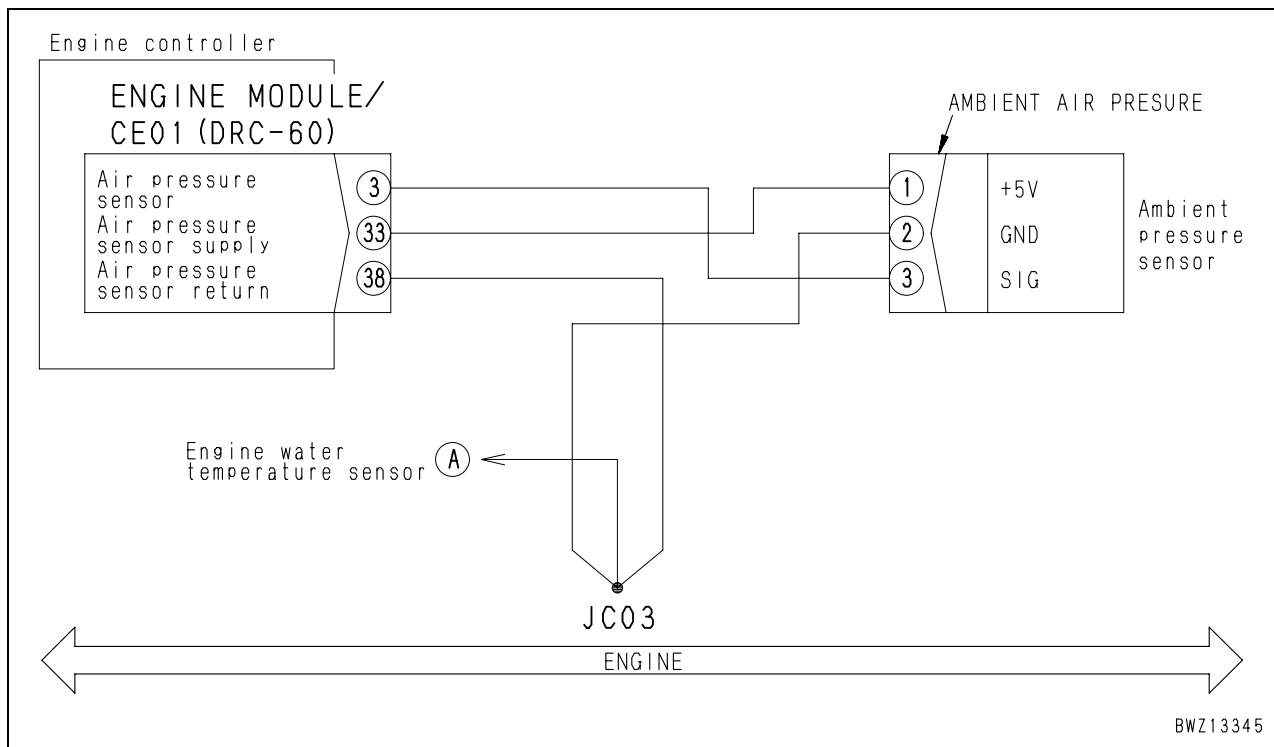


### Failure code [CA386] Sensor power source 1 too high

User code	Failure code	Trouble	Sensor power source 1 too high (Engine controller system)
<b>E15</b>	<b>CA386</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>High voltage was detected in sensor power supply 1 circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes ambient pressure value and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start easily.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defective wiring harness connector	Connecting parts between ambient pressure sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>
2	Defective engine controller	If cause 1 is not detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)	

#### Circuit diagram related to sensor power supply 1

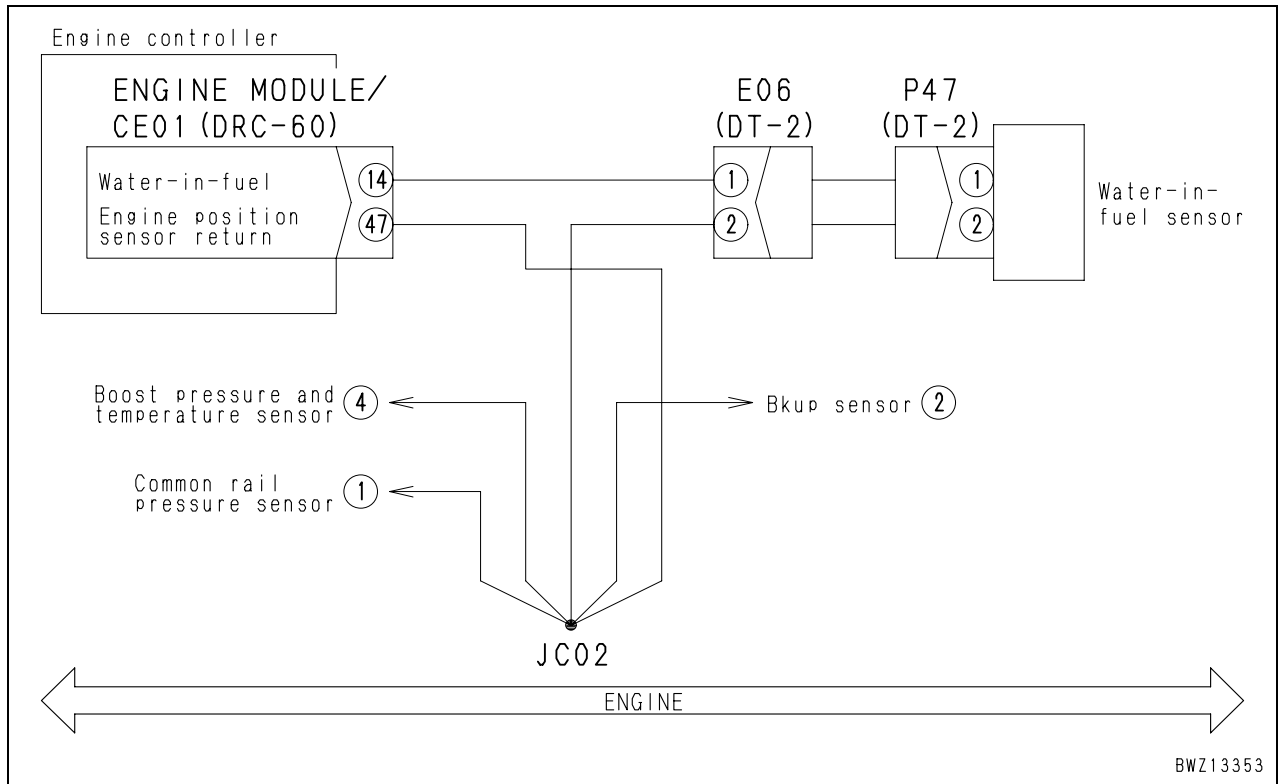


### Failure code [CA428] Water detection sensor too high

User code	Failure code	Trouble	Water detection sensor too high (Engine controller system)
<b>E15</b>	<b>CA428</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>High voltage was detected in signal circuit of water-in-fuel sensor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Water separator monitor does not display normally.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Condition water-in-fuel sensor signal can be checked with monitoring function. (Code: <b>18800</b>, Water In Fuel)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective water-in-fuel sensor	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
P47 (female)				Resistance		
Between (1) – (2)				10 – 100 kΩ		
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE01 (female) (14) – P47 (male) (1)		Resistance	Max. 10 Ω
			Wiring harness between CE01 (female) (47) – JC02 – P47 (male) (2)		Resistance	Max. 10 Ω
3		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE01 (female) (14) – each of CE01 (female) pins (With all wiring harness connectors disconnected)		Resistance	Min. 100 kΩ
4		Defective wiring harness connector	Connecting parts between water-in-fuel sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>			
5		Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			CE01 (male)		Resistance	
			Between (14) – (47)		10 – 100 kΩ	

Circuit diagram related to water-in-fuel sensor

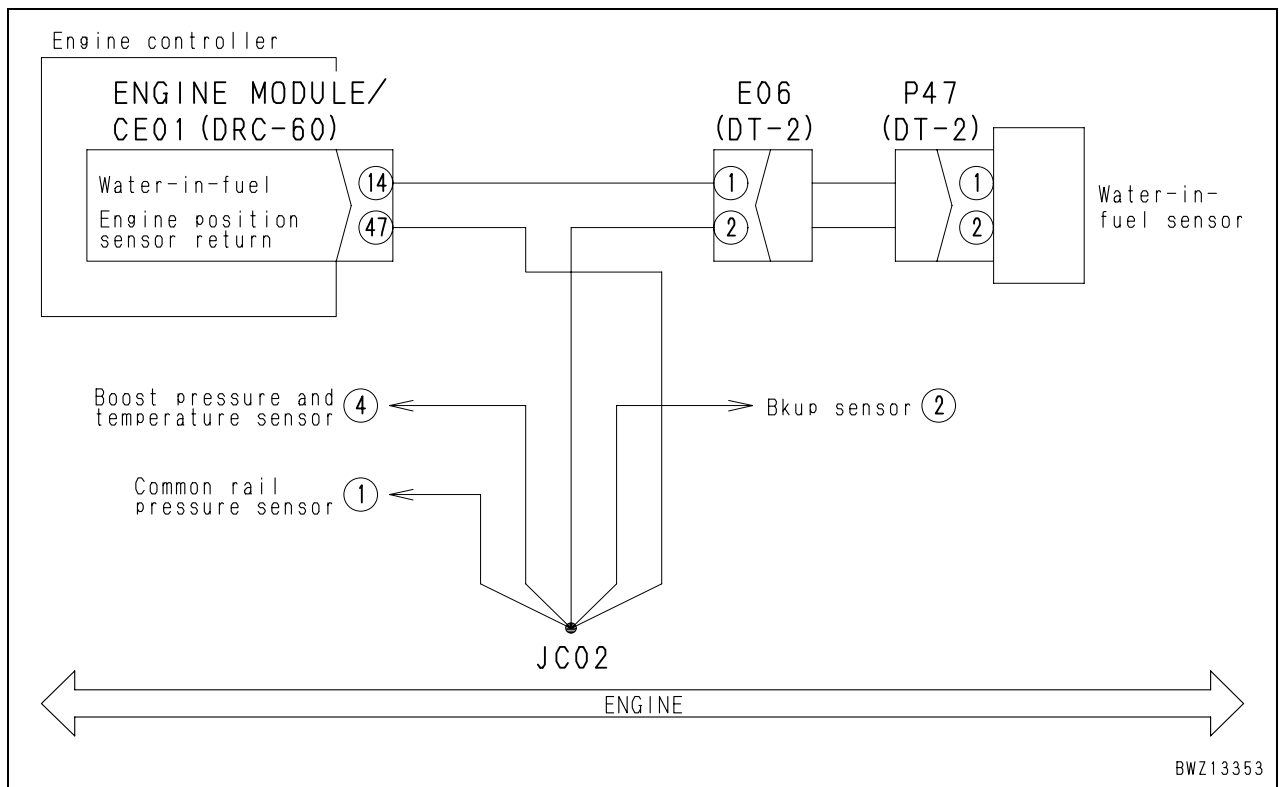


### Failure code [CA429] Water detection sensor too low

User code	Failure code	Trouble	Water detection sensor too low (Engine controller system)
<b>E15</b>	<b>CA429</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Low voltage was detected in signal circuit of water-in-fuel sensor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Water separator monitor does not display normally.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Condition water-in-fuel sensor signal can be checked with monitoring function. (Code: <b>18800</b>, Water In Fuel)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective water-in-fuel sensor	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
P47 (female)				Resistance	
Between (1) – (2)				10 – 100 kΩ	
Between (1) – chassis ground				Min. 100 kΩ	
2		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (14) – P47 (male) (1)	Resistance Min. 100 kΩ	
3		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (14) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance Min. 100 kΩ	
4		Defective wiring harness connector	Connecting parts between water-in-fuel sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>		
5		Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			CE01 (male)	Resistance	
			Between (14) – (47)		10 – 100 kΩ
Between (14) – chassis ground		Min. 100 kΩ			

Circuit diagram related to water-in-fuel sensor



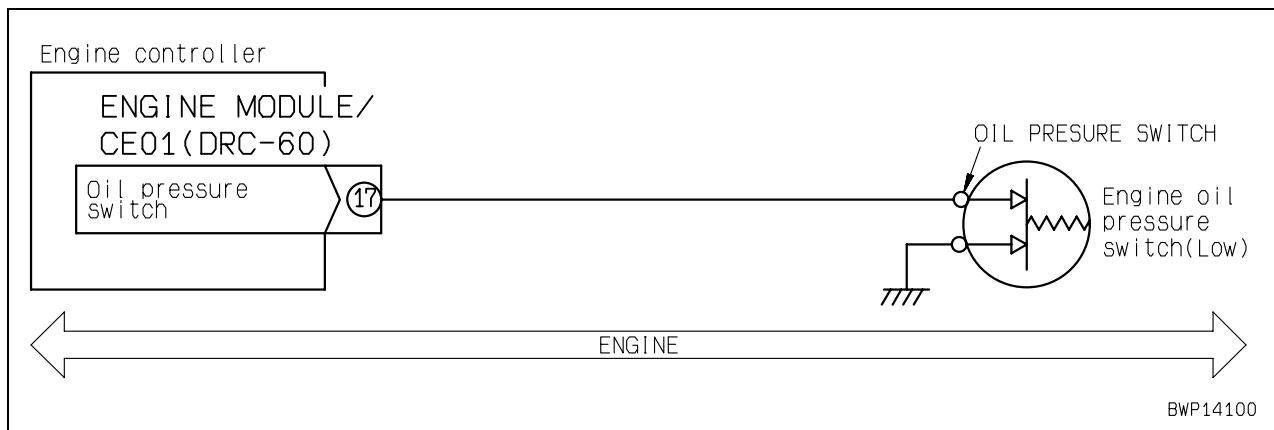


### Failure code [CA435] Abnormality in engine oil pressure switch

User code	Failure code	Trouble	Abnormality in engine oil pressure switch (Engine controller system)
<b>E15</b>	<b>CA435</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is error in signal circuit of engine oil pressure switch.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine protection function based on engine oil pressure does not work.</li> <li>Engine oil pressure monitor does not display normally</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON or start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective engine oil pressure switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
OIL PRESSURE SWITCH (male)				Resistance	
Between (1) – chassis ground				Max. 10 Ω	
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (17) – OIL PRESSURE SWITCH (female) (1)	Resistance	Max. 10 Ω
3		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (17) – each of CE01 (female) pins (With all wiring harness connectors disconnected)	Resistance	Min. 100 kΩ
4		Defective wiring harness connector	Connecting parts between engine oil pressure switch – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>		
5		Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			CE01 (male)	Resistance	
	Between (17) – chassis ground		Max. 10 Ω		

#### Circuit diagram related to engine oil pressure switch



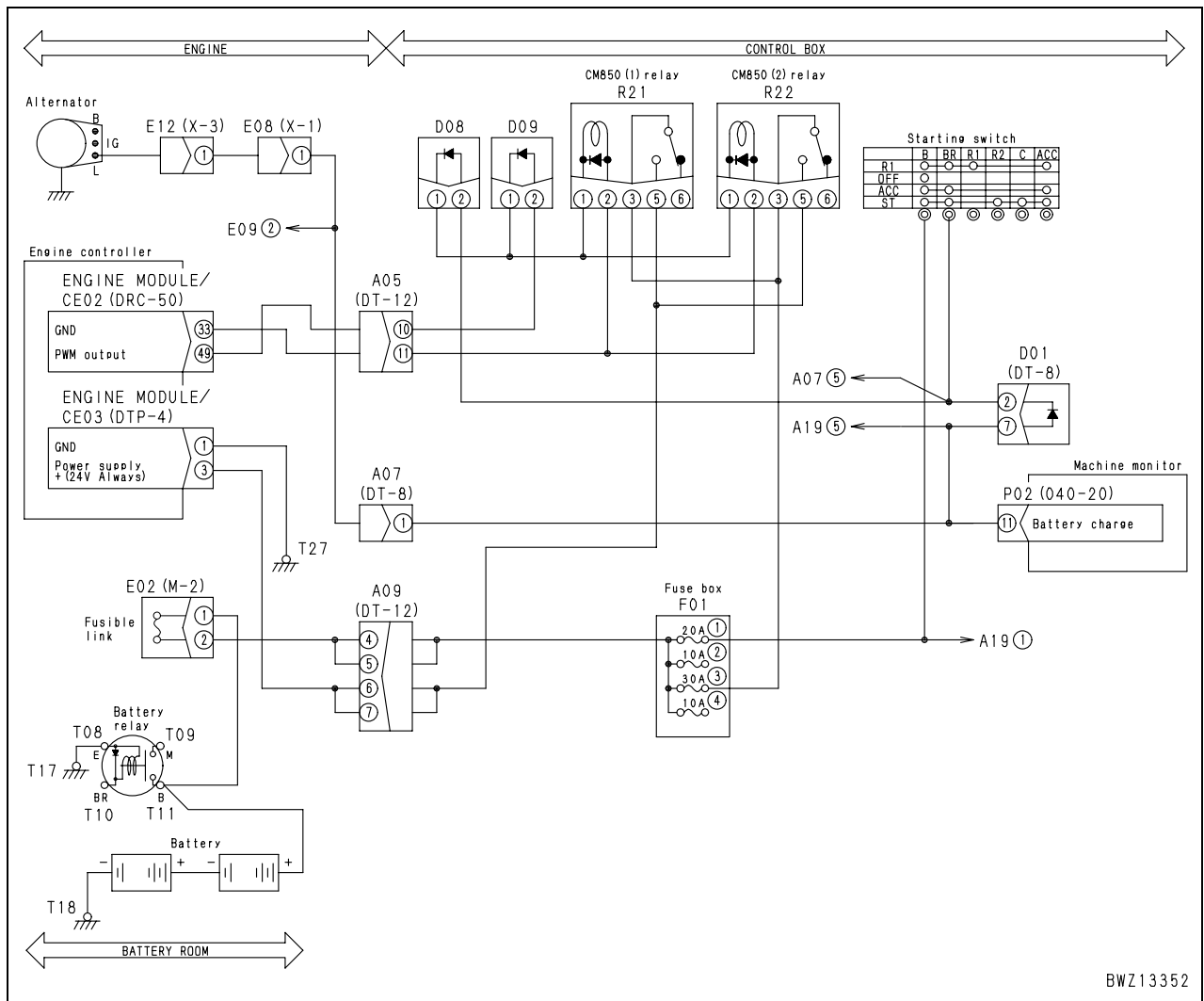
### Failure code [CA441] Power source voltage too low

User code	Failure code	Trouble	Power source voltage too low (Engine controller system)
<b>E10</b>	<b>CA441</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is low voltage in controller power supply circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine stops.</li> <li>Engine does not start easily.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Looseness or corrosion of battery terminal	Battery terminal may be loosened or corroded. Check it directly.	
2		Low battery voltage	★ Prepare with engine starting switch OFF, then keep engine starting switch OFF and start engine and carry out troubleshooting in each case.		
			Battery (1 piece)	Starting switch	Voltage
			Between (+) – (–) terminals	OFF	Min. 12 V
START		Min. 6.2 V			
3		Defective fuse No. 3	If fuse is broken, circuit probably has ground fault. (See Cause 6)		
4		Defective relay for engine controller power supply	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			Replace relay (R21, R22) for engine controller with another relay and perform reproducing operation. If "E" of failure code goes off at this time, replaced relay is defective.		
5		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between B28 No.3 – R21, R22 (female) (3)	Resistance	Max. 10 Ω
			Wiring harness between R21, R22 (female) (5) – CE03 (female) (3)	Resistance	Max. 10 Ω
6		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between B28 No.3 – R21, R22 (female) (3)	Resistance	Min. 100 kΩ
			Wiring harness between R21, R22 (female) (5) – CE03 (female) (3)	Resistance	Max. 10 Ω
7		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE03 (female) (3) – CE03 (female) (1) pin (with battery terminal disconnected)	Resistance	Min. 100 kΩ
			Wiring harness between CE03 (female) (3) – each of CE02 (female) pins (With battery terminal disconnected)	Resistance	Min. 100 kΩ
			Wiring harness between CE03 (female) (1) – each of CE02 (female) pins (With battery terminal disconnected)	Resistance	Min. 100 kΩ

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		8	Defective wiring harness connector	Connecting parts between fuse No. 3 – machine wiring harness – engine controller may be defective. Check them directly.	
<ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>					
9		Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and start engine and carry out troubleshooting in each case.		
			CE03 (male)	Engine starting switch	Voltage
		Between (3) – (1)	ON	Min. 24 V	
			START	Min. 12 V	

Circuit diagram related to engine controller power supply

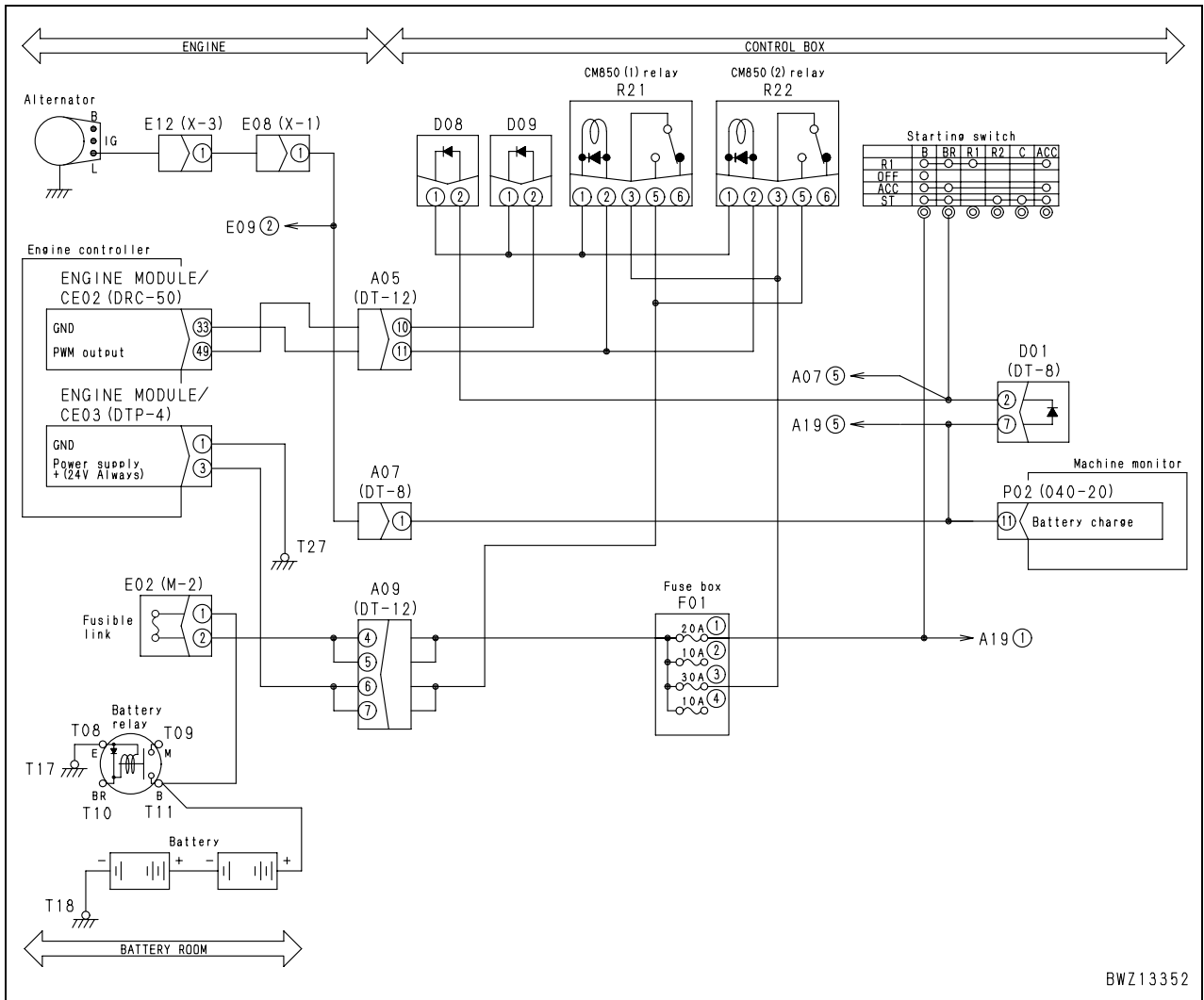


### Failure code [CA442] Power source voltage too high

User code	Failure code	Trouble	Power source voltage too high (Engine controller system)
<b>E10</b>	<b>CA442</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is high voltage (36 V or higher) in controller power supply circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine may stop.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective battery voltage	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Battery				Voltage	
Between (+) – (–) terminals				Max. 32 V	
2		Defective alternator	★ Prepare with engine starting switch OFF, then start engine and carry out troubleshooting.		
			E12 (male)	Engine speed	Voltage
			Between (1) – chassis ground	Medium or higher	27.5 – 29.5 V
3		Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			CE03 (male)		Voltage
			Between (3) – (1)		Max. 32 V

Circuit diagram related to engine controller power supply



BWZ13352

### Failure code [CA449] Common rail pressure sensor too high (2)

User code	Failure code	Trouble	Common rail pressure sensor too high (2) (Engine controller system)
<b>E11</b>	<b>CA449</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is high pressure error in common rail circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Limits output and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine sound becomes large when no or light load is applied.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Common rail pressure can be checked with monitoring function. (Code: <b>36400</b>, Rail Pressure)</li> <li>Method of reproducing failure code: Start engine.</li> </ul>		

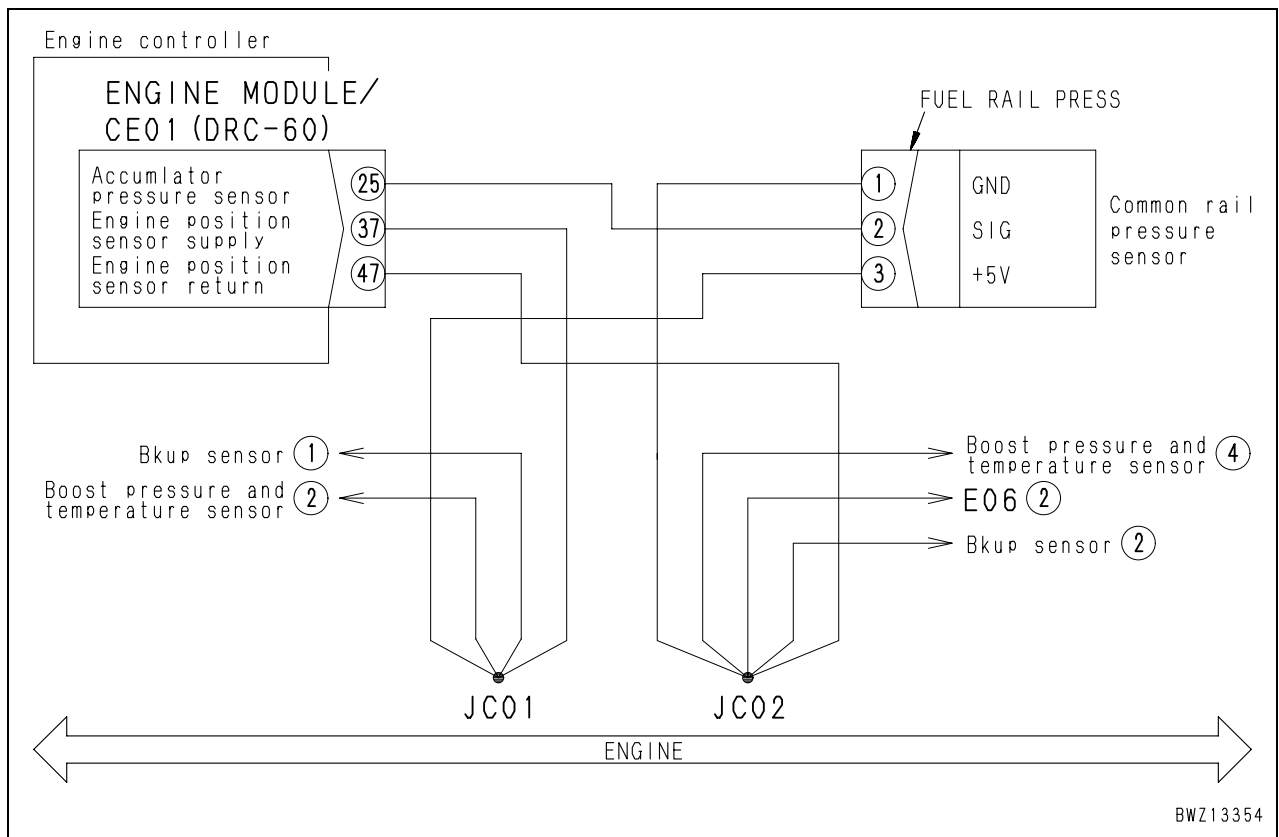
Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	1	Defect in related system	If another failure code is displayed, carry out troubleshooting for it.		
2	Air in low pressure circuit	There may be air in low pressure circuit. Check it directly according to the following procedure. 1) Remove pressure pickup plug (outlet side) of fuel main filter. 2) Operate feed pump of fuel pre-filter. 3) Check pressure pickup plug for leakage of fuel and air.			
3	Defect in fuel return circuit parts	★ For check of fuel return circuit pressure, see Testing and adjusting, Checking fuel pressure.			
		Fuel return circuit pressure	Low idle running or cranking	Max. 0.02 MPa {Max. 0.19 kg/cm <sup>2</sup> }	
4	Defective common rail pressure sensor	★ Prepare with engine starting switch ON, then keep engine starting switch ON and carry out troubleshooting in each case.			
		Monitoring code (Machine monitor)		Monitoring information	
		36400 Common rail pressure	While engine is stopped	0 ± 0.39 MPa {0 ± 4 kg/cm <sup>2</sup> }	
5	Defective pressure limiter	★ For check of leakage through pressure limiter, see Testing and adjusting, Checking fuel return rate and leakage.			
		Leakage through pressure limiter	During low idle	0 cc (No leakage)	
6	Defective supply pump	If causes 1 – 5 are not detected, supply pump may be defective.			

### Failure code [CA451] Common rail pressure sensor too high

User code	Failure code	Trouble	Common rail pressure sensor too high (Engine controller system)
<b>E11</b>	<b>CA451</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is high voltage in signal circuit of common rail pressure sensor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Limits output and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start.</li> <li>Engine speed or output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage of common rail pressure sensor can be checked with monitoring function. (Code: <b>36401</b>, Rail Pressure Sens Volt)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective sensor power supply 2 system	If failure code [CA227] is also displayed, carry out troubleshooting for it first.	
2		Defective common rail pressure sensor	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			FUEL RAIL PRESS		Voltage
			Between (3) – (1)	Power supply	4.75 – 5.25 V
Voltage is measured with wiring harness connected. Accordingly, if voltage is abnormal, check wiring harness and controller, too, for another cause of trouble, and then judge.					
3		Hot short (Short circuit with 5V/24V circuit) in wiring harness	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			Wiring harness between CE01 (female) (25) – FUEL RAIL PRESS (female) (2)	Voltage	Max. 1 V
4	Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
		Wiring harness between CE01 (female) (25) – FUEL RAIL PRESS (female) (2) and between CE01 (female) (37) – JC01 – FUEL RAIL PRESS (female) (3)	Resistance	Min. 100 kΩ	
5	Defective wiring harness connector	Connecting parts between common rail pressure sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>			
6	Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
		CE01		Voltage	
Between (37) – (47)		Power supply	4.75 – 5.25 V		

Circuit diagram related to common rail pressure sensor



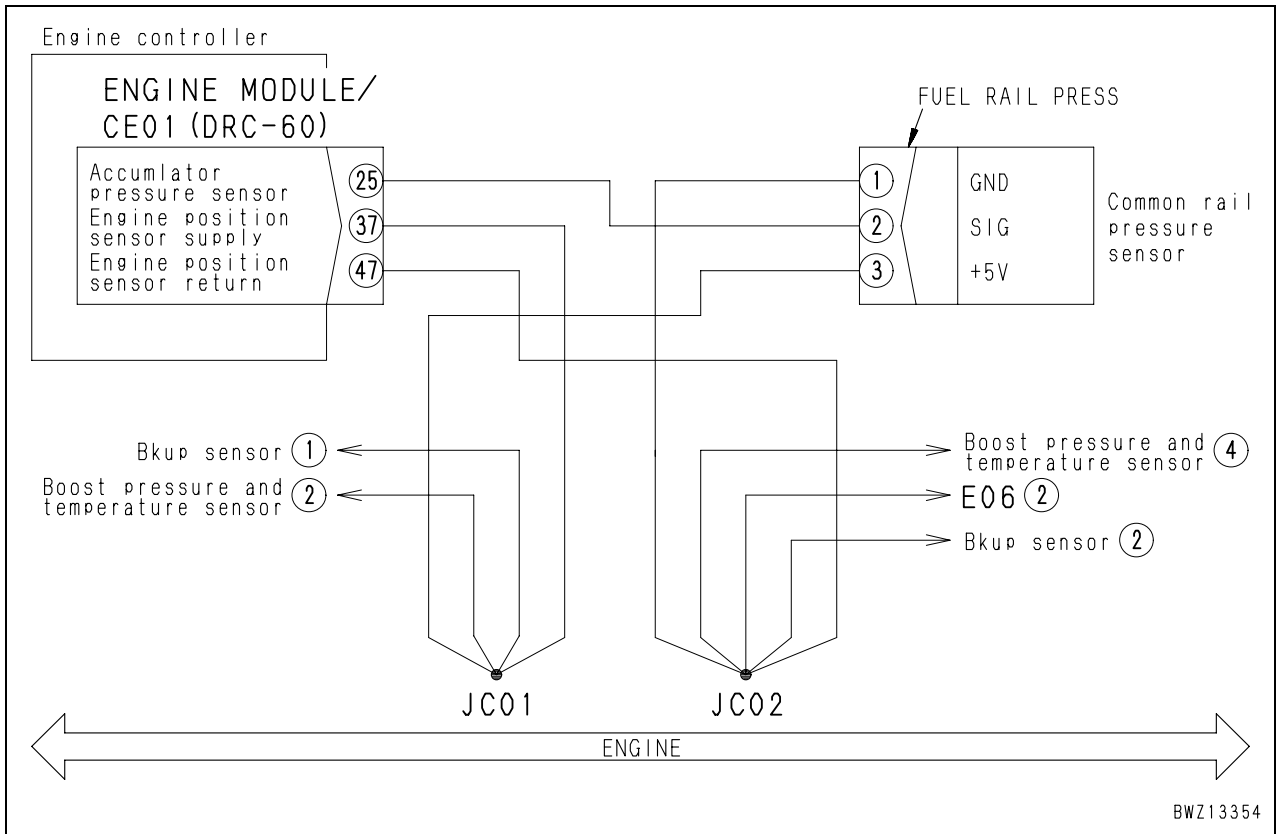


### Failure code [CA452] Common rail pressure sensor too low

User code	Failure code	Trouble	Common rail pressure sensor too low (Engine controller system)
<b>E11</b>	<b>CA452</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is low voltage in signal circuit of common rail pressure sensor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Limits output and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start.</li> <li>Engine speed or output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage of common rail pressure sensor can be checked with monitoring function. (Code: <b>36401</b>, Rail Pressure Sens Volt)</li> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective sensor power supply 2 system	If failure code [CA187] is also displayed, carry out troubleshooting for it first.
2		Defective common rail pressure sensor	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
			FUEL RAIL PRESS	
			Between (3) – (1)	Power supply
		Voltage is measured with wiring harness connected. Accordingly, if voltage is abnormal, check wiring harness and controller, too, for another cause of trouble, and then judge.		
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
			Wiring harness between CE01 (female) (25) – FUEL RAIL PRESS (female) (2)	Resistance
4		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between CE01 (female) (25) – FUEL RAIL PRESS (female) (2) and between CE01 (female) (47) – JC02 – FUEL RAIL PRESS (female) (1)	Resistance
5		Defective wiring harness connector	Connecting parts between common rail pressure sensor – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>	
6		Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.	
			CE01	
	Between (37) – (47)		Power supply	Voltage

Circuit diagram related to common rail pressure sensor



## Failure code [CA488] Charge temperature too high and torque derated

User code	Failure code	Trouble	Charge temperature too high and torque derated (Engine controller system)
<b>E11</b>	<b>CA488</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Temperature signal of boost pressure/temperature sensor exceeded control upper temperature limit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Limits output and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Boost temperature can be checked with monitoring function. (Code: <b>18500</b>, Charge Temperature)</li> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Lowering of cooling performance of after-cooler	Cooling performance of aftercooler may be low. Check following points directly. <ul style="list-style-type: none"> <li>Looseness and breakage of fan belt.</li> <li>Insufficiency of cooling air</li> <li>Clogging of aftercooler fins</li> </ul>
2	Abnormal rise of turbo-charger outlet temperature	Outlet temperature of turbocharger may be abnormally high. Check related parts directly.	
3	Defective engine controller	If causes 1 – 2 are not detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)	

## Failure code [CA553] Common rail pressure sensor too high (1)

User code	Failure code	Trouble	Common rail pressure sensor too high (1) (Engine controller system)
<b>E15</b>	<b>CA553</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is high pressure error in common rail circuit.</li> </ul>		
Action of machine monitor	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine sound becomes large when no or light load is applied.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Common rail pressure can be checked with monitoring function. (Code: <b>36400</b>, Rail Pressure)</li> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defect in related system	If another failure code is displayed, carry out troubleshooting for it.
2	Defective connection of ground terminal	Ground terminal may be connected defectively. Check following terminals directly. <ul style="list-style-type: none"> <li>Ground terminal of machine ((-) terminal of battery)</li> <li>Ground terminal of engine</li> <li>Ground terminal of engine controller</li> <li>Ground terminal of starting motor</li> </ul>	
3	Breakage of O-ring of supply pump actuator	O-ring of supply pump actuator may be broken. Check it directly.	

## Failure code [CA559] Supply pump no pressure

User code	Failure code	Trouble	Supply pump no pressure (Engine controller system)
<b>E15</b>	<b>CA559</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is low pressure error in common rail circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start at all or does not start easily.</li> <li>Exhaust gas becomes black.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Common rail pressure can be checked with monitoring function. (Code: <b>36400</b>, Rail Pressure)</li> <li>Method of reproducing failure code: Start engine.</li> </ul>		

	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	1	Fuel leakage to outside	Fuel may be leaking to outside. Check it directly (Check visually while running engine at low idle).	
2		Defect in low pressure circuit parts	★ For check of pressure in fuel low pressure circuit, see Testing and adjusting, Checking fuel pressure.		
			Pressure in fuel low-pressure circuit	During cranking (if engine cannot be started)	0.3 – 1.1 MPa {3.1 – 11.3 kg/cm <sup>2</sup> }
				During low idle (if engine can be started)	0.5 – 1.3 MPa {5.1 – 13.3 kg/cm <sup>2</sup> }
3		Defective pressure limiter	★ For check of leakage through pressure limiter, see Testing and adjusting, Checking fuel return rate and leakage.		
			Leakage through pressure limiter	During low idle	0 cc (No leakage)
4		Defective injector (including high pressure piping in head)	★ For check of return rate from injector, see Testing and adjusting, Checking fuel return rate and leakage.		
			Return rate from injector	During cranking (if engine cannot be started)	Max. 90 cc/min.
				During low idle (if engine can be started)	Max. 180 cc/min.
5		Defective supply pump	★ For check of return rate from supply pump, see Testing and adjusting, Checking fuel return rate and leakage.		
			Return rate from supply pump	During cranking (if engine cannot be started)	Max. 140 cc/min.
				During low idle (if engine can be started)	Max. 1,000 cc/min.

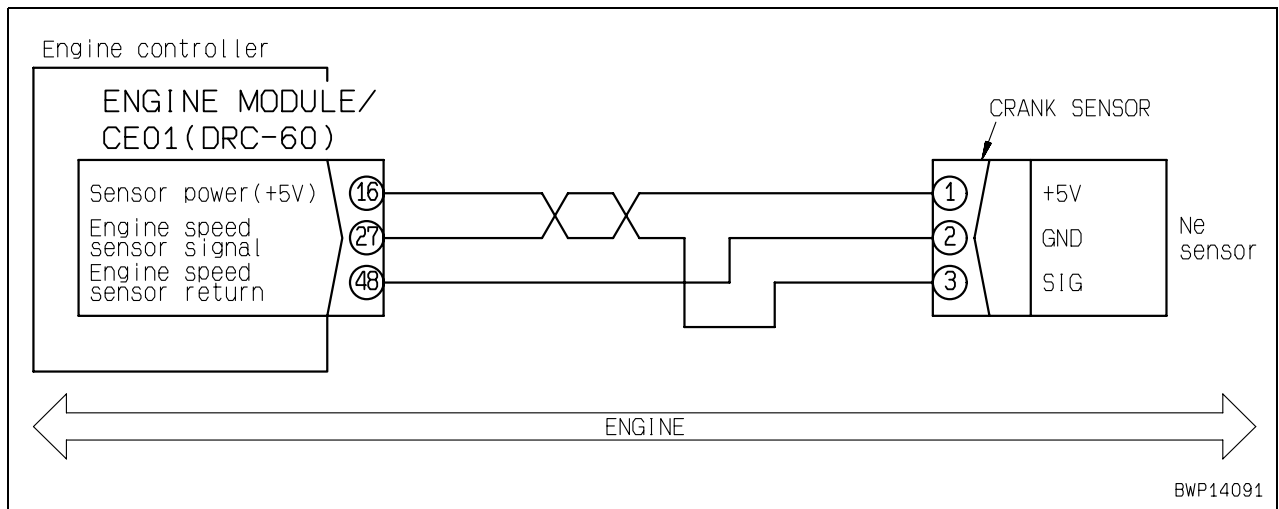
### Failure code [CA689] Abnormality in engine Ne speed sensor

User code	Failure code	Trouble	Abnormality in engine Ne speed sensor (Engine controller system)
<b>E15</b>	<b>CA689</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is error in signal from engine Ne speed sensor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Continues control with signal from engine Bkup speed sensor.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine hunts.</li> <li>Engine does not start easily.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective Ne speed sensor power supply system	If failure code [CA238] is also displayed, carry out troubleshooting for it first.		
2		Defective engine Ne speed sensor	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			CRANK SENSOR		Voltage	
			Between (1) – (2)	Power supply	4.75 – 5.25 V	
			Voltage is measured with wiring harness connected. Accordingly, if voltage is abnormal, check wiring harness and controller, too, for another cause of trouble, and then judge.			
3		Breakage or improper clearance of engine Ne speed sensor	Engine Ne speed sensor may be broken or may have improper clearance. Check it directly.			
4		Breakage of rotation sensor wheel	Rotation sensor wheel may be broken. Check it directly.			
5		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE01 (female) (27) – CRANK SENSOR (female) (3)	Resistance	Max. 10 Ω	
6		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE01 (female) (27) – CRANK SENSOR (female) (3)	Resistance	Min. 100 kΩ	
7		Hot short (Short circuit with 5V/24V circuit) in wiring harness	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			Wiring harness between CE01 (female) (27) – CRANK SENSOR (female) (3)	Voltage	Max. 1 V	
8		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE01 (female) (27) – CRANK SENSOR (female) (3) or between CE01 (female) (16) – CRANK SENSOR (female) (1)	Resistance	Min. 100 kΩ	
	Wiring harness between CE01 (female) (27) – CRANK SENSOR (female) (3) or between CE01 (female) (48) – CRANK SENSOR (female) (2)		Resistance	Min. 100 kΩ		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	9	Defective wiring harness connector	Connecting parts between engine Ne speed sensor – engine wiring harness – engine controller may be defective. Check them directly.	
<ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>				
10			Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.
	CE01			
		Between (16) – (48)	Power supply	Voltage 4.75 – 5.25 V

**Circuit diagram related to engine Ne speed sensor**



## Failure code [CA731] Abnormal phase in engine Bkup speed sensor

User code	Failure code	Trouble	Abnormal phase in engine Bkup speed sensor (Engine controller system)
<b>E15</b>	<b>CA731</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Phase error was detected in signals from engine Ne speed sensor and engine Bkup speed sensor</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Continues control with signal from engine Ne speed sensor.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start at all or does not start easily.</li> <li>Idle speed is unstable.</li> <li>Exhaust gas becomes black.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
		1	Breakage of engine Ne speed sensor
	2	Breakage of engine Bkup speed sensor	Engine Bkup speed sensor may be broken. Check it directly.
	3	Defective installation or breakage of rotation sensor wheel on crankshaft side	Rotation sensor wheel on crankshaft side may be installed defectively or broken. Check it according to the following procedure. 1) Set No. 1 cylinder at compression top dead center (Match stamped mark). 2) If center of oblong hole of rotation sensor wheel is at tip of Ne speed sensor, rotation sensor wheel is installed normally.
	4	Defective installation or breakage of rotation sensor ring on camshaft side	Rotation sensor ring on camshaft side may be installed defectively or broken. Check it according to the following procedure. 1) Set No. 1 cylinder at compression top dead center (Match stamped mark). 2) Remove Bkup speed sensor. 3) If 2 grooves (1 crest) of rotation sensor ring are seen through sensor mounting hole, rotation sensor ring is installed normally.
	5	Defective timing of crankshaft and camshaft	Timing of crankshaft and camshaft may be defective. Check it directly.
	6	Defective connection of ground terminal	Ground terminal may be connected defectively. Check following terminals directly. <ul style="list-style-type: none"> <li>Ground terminal of machine ((-) terminal of battery)</li> <li>Ground terminal of engine</li> <li>Ground terminal of engine controller</li> <li>Ground terminal of starting motor</li> </ul>

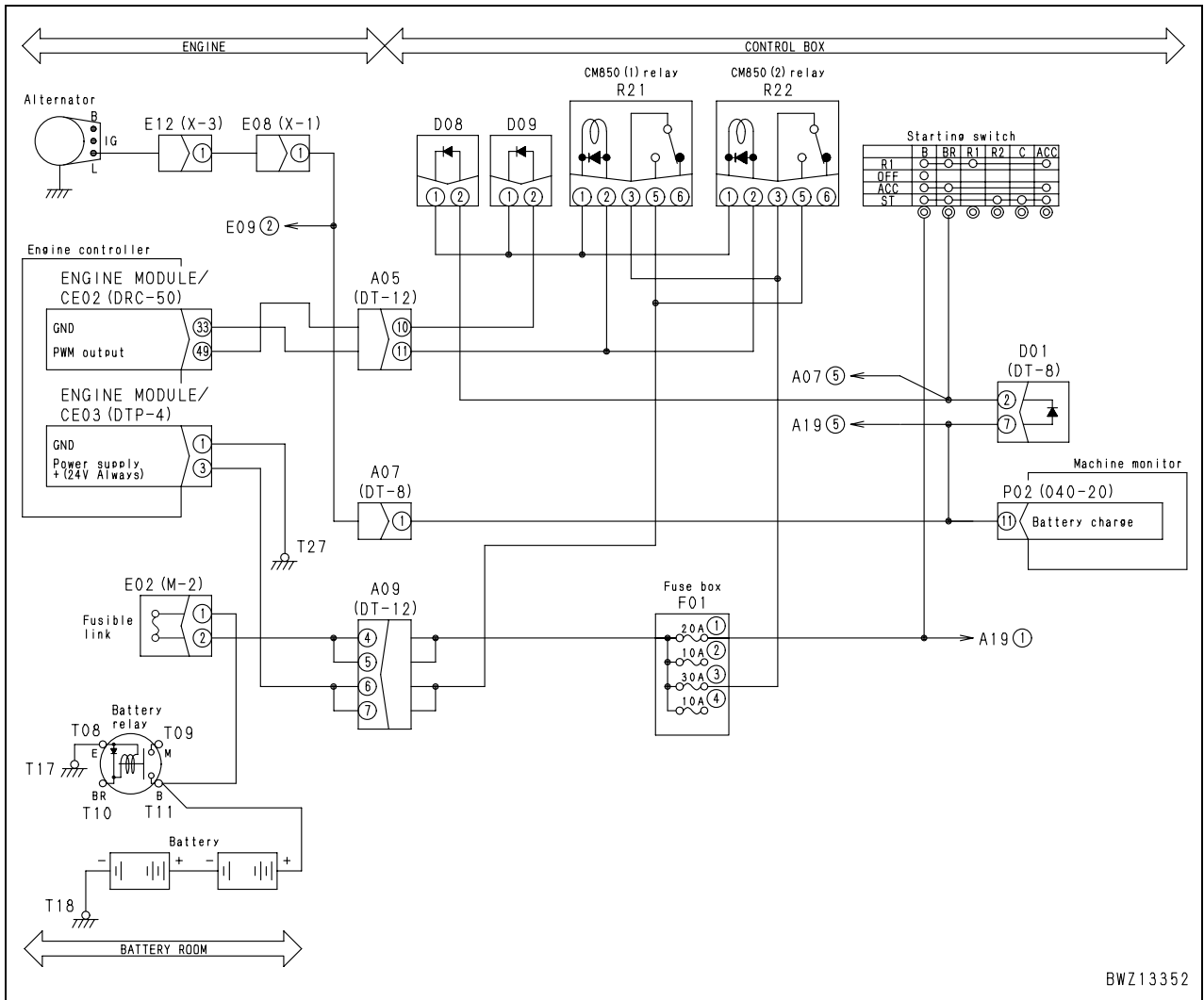
## Failure code [CA757] Loss of all engine controller data

User code	Failure code	Trouble	Loss of all engine controller data (Engine controller system)
<b>E10</b>	<b>CA757</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>All data in engine controller are lost.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine may stop and may not be started again.</li> <li>Monitoring function of machine monitor (engine controller system) may not work normally.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defect in related system	If another failure code is displayed, carry out troubleshooting for it.		
2		Looseness or corrosion of battery terminal	Battery terminal may be loosened or corroded. Check it directly.			
3		Low battery voltage	★ Prepare with starting switch OFF, then keep starting switch OFF and start engine and carry out troubleshooting in each case.			
			Battery (1 piece)	Starting switch	Voltage	
			Between (+) – (–) terminals	OFF	Min. 12 V	
START		Min. 6.2 V				
4		Defective fuse No. 19	If fuse is broken, circuit probably has ground fault.			
5		Defective relay for engine controller power supply	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			Replace relay (R21, R22) for engine controller with another relay and perform reproducing operation. If “E” of failure code goes off at this time, replaced relay is defective.			
6		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	Wiring harness between B28 No.3 – R21, R22 (female) (3)		Resistance	Max. 10 Ω
			Wiring harness between R21, R22 (female) (5) – CE03 (female) (3)		Resistance	Max. 10 Ω
			Wiring harness between CE03 (female) (1) – chassis ground (T27)		Resistance	Max. 10 Ω
7	Defective wiring harness connector	Connecting parts between fuse No.3 – machine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>				
8	Defective engine controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and start engine and carry out troubleshooting in each case.				
		CE03 (male)	Starting switch	Voltage		
		Between (3) – (1)	ON	Min. 24 V		
START	Min. 12 V					



Circuit diagram related to engine controller power supply



BWZ13352

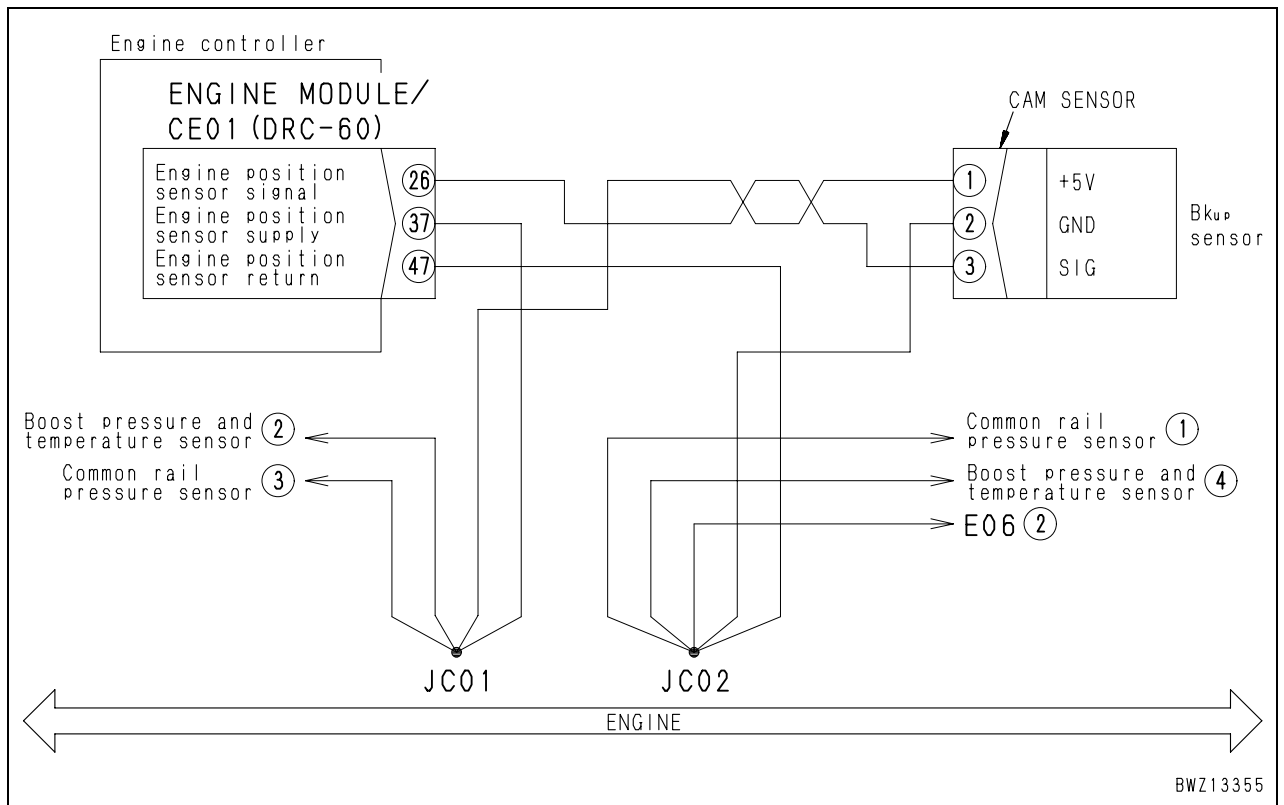
### Failure code [CA778] Abnormality in engine Bkup speed sensor

User code	Failure code	Trouble	Abnormality in engine Bkup speed sensor (Engine controller system)
<b>E15</b>	<b>CA778</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is error in signal from engine Bkup speed sensor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Continues control with signal from engine Ne speed sensor.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start easily.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	1	Defective sensor power supply 2 system	If failure code [CA187] is also displayed, carry out troubleshooting for it first.	
2		Defective engine Bkup speed sensor	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			CAM SENSOR		Voltage
			Between (1) – (2)	Power supply	4.75 – 5.25 V
Voltage is measured with wiring harness connected. Accordingly, if voltage is abnormal, check wiring harness and controller, too, for another cause of trouble, and then judge.					
3		Breakage or improper clearance of engine Bkup speed sensor	Engine Bkup speed sensor may be broken or may have improper clearance. Check it directly.		
4		Breakage of rotation sensor ring	Rotation sensor ring may be broken. Check it directly.		
5		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (26) – CAM SENSOR (female) (3)	Resistance	Max. 10 Ω
6		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
	Wiring harness between CE01 (female) (26) – CAM SENSOR (female) (3)		Resistance	Min. 100 kΩ	
7	Hot short (Short circuit with 5V/24V circuit) in wiring harness	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
		Wiring harness between CE01 (female) (26) – CAM SENSOR (female) (3)	Voltage	Max. 1 V	
8	Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
		Wiring harness between CE01 (female) (26) – CAM SENSOR (female) (3) or between CE01 (female) (37) – JC01 – CAM SENSOR (female) (1)	Resistance	Min. 100 kΩ	
		Wiring harness between CE01 (female) (26) – CAM SENSOR (female) (3) or between CE01 (female) (47) – JC02 – CAM SENSOR (female) (2)	Resistance	Min. 100 kΩ	

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	9	Defective wiring harness connector	Connecting parts between engine Bkup speed sensor – engine wiring harness – engine controller may be defective. Check them directly.	
<ul style="list-style-type: none"> <li>• Looseness of connector, breakage of lock, or breakage of seal</li> <li>• Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>• Moisture or dirt in connector or defective insulation</li> </ul>				
★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.				
10	Defective engine controller	CE01		Voltage
		Between (37) – (47)	Power supply	4.75 – 5.25 V

**Circuit diagram related to engine Bkup speed sensor**



BWZ13355

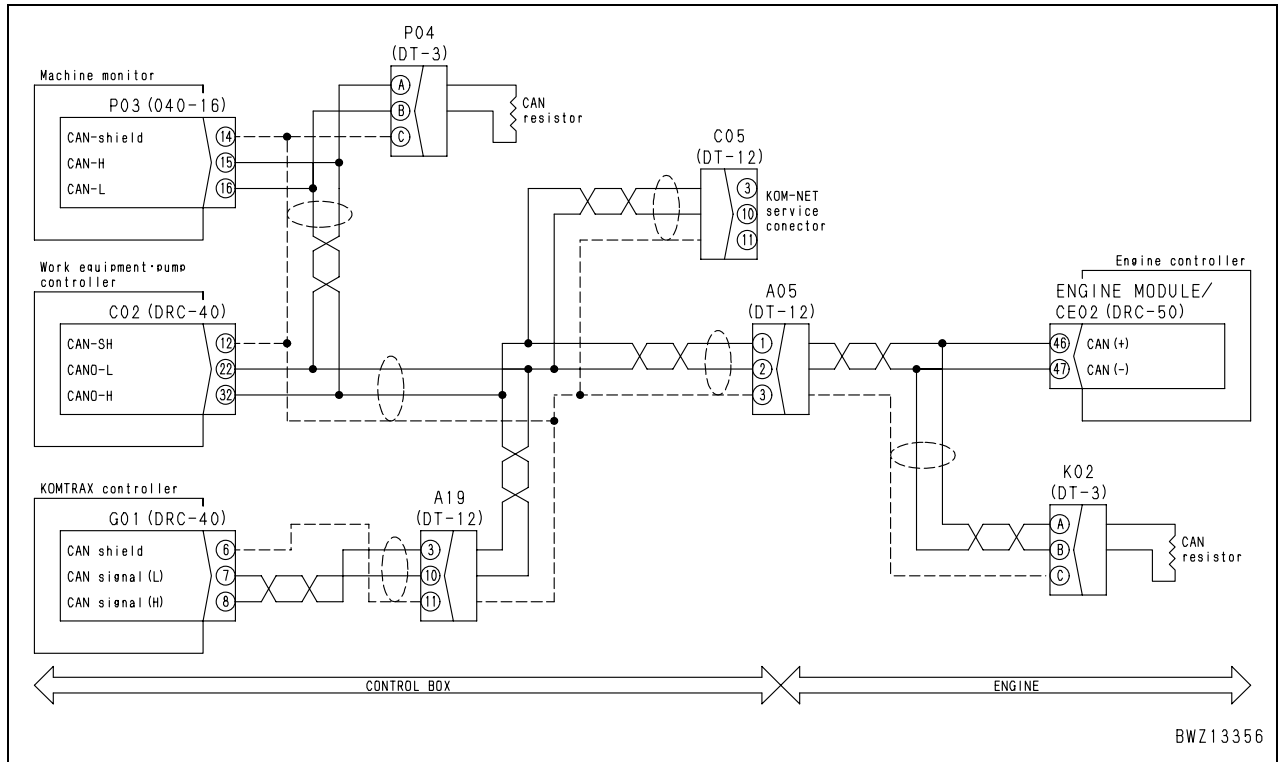
## Failure code [CA1633] CAN communication error (engine controller)

User code	Failure code	Trouble	CAN communication error (engine controller) (Engine controller system)
<b>E0E</b>	<b>CA1633</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Engine controller detected communication error in CAN communication circuit between pump controller and machine monitor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Continues operation in default mode.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Information may not be transmitted normally by CAN communication and machine may not operate normally. (Trouble phenomenon depends on failed section.)</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Wiring harness between P03 (female) (15) – P04 (female) (A), P03 (female) (15) – C02 (female) (32), P03 (female) (15) – G01 (female) (8), P03 (female) (15) – CE02 (female) (46), P03 (female) (15) – K02 (female) (A) and P03 (female) (15) – C05 (male) (3)				Resistance	Max. 1 Ω
Wiring harness between P03 (female) (16) – P04 (female) (B), P03 (female) (16) – C02 (female) (22), P03 (female) (16) – G01 (female) (7), P03 (female) (16) – CE02 (female) (47), P03 (female) (16) – K02 (female) (B) and P03 (female) (16) – C05 (male) (10)				Resistance	Max. 1 Ω
2		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between P03 (female) (15) – P04 (female) (A), P03 (female) (15) – C02 (female) (32), P03 (female) (15) – G01 (female) (8), P03 (female) (15) – CE02 (female) (46), P03 (female) (15) – K02 (female) (A) and P03 (female) (15) – C05 (male) (3), and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between P03 (female) (16) – P04 (female) (B), P03 (female) (16) – C02 (female) (22), P03 (female) (16) – G01 (female) (7), P03 (female) (16) – CE02 (female) (47), P03 (female) (16) – K02 (female) (B) and P03 (female) (16) – C05 (male) (10), and chassis ground	Resistance	Min. 1 MΩ
3		Hot short (Short circuit with 24V circuit) in wiring harness	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			Wiring harness between P03 (female) (15) – P04 (female) (A), P03 (female) (15) – C02 (female) (32), P03 (female) (15) – G01 (female) (8), P03 (female) (15) – CE02 (female) (46), P03 (female) (15) – K02 (female) (A) and P03 (female) (15) – C05 (male) (3), and chassis ground	Voltage	Max. 5.5 V
			Wiring harness between P03 (female) (16) – P04 (female) (B), P03 (female) (16) – C02 (female) (22), P03 (female) (16) – G01 (female) (7), P03 (female) (16) – CE02 (female) (47), P03 (female) (16) – K02 (female) (B) and P03 (female) (16) – C05 (male) (10), and chassis ground	Voltage	Max. 5.5 V

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	4	Defective CAN terminal resistance (Internal short circuit or disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
K02 (male), P03 (male)			Resistance	
Between (A) – (B)			120 ± 12 Ω	
5	Defective engine controller	If causes 1 – 4 are not detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

**Circuit diagram related to CAN communication**

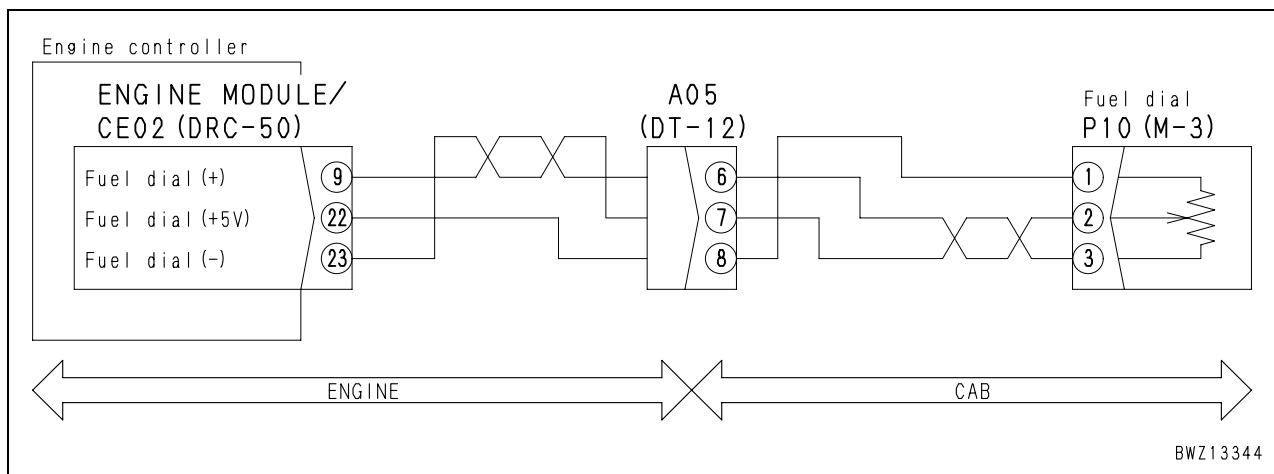


### Failure code [CA2185] Throttle pedal sensor power source too high

User code	Failure code	Trouble	Throttle pedal sensor power source too high (Engine controller system)
<b>E14</b>	<b>CA2185</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>High voltage (5.25 V or higher) was detected in throttle sensor power supply circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>If trouble occurs while starting switch is in ON position, controller fixes voltage value to level just before detection of trouble and continues operation.</li> <li>If starting switch is turned ON while voltage is abnormally high, controller continues operation with voltage at 100% value.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine speed cannot be controlled with fuel control dial.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Wiring harness between CE02 (female) (22) – each of CE02 (female) pins (With P10 disconnected)			Resistance	Min. 100 kΩ
Wiring harness between CE02 (female) (22) – CE03 (female) (3) (With P10 disconnected)			Resistance	Min. 100 kΩ
2	Defective wiring harness connector	Connecting parts between fuel control dial – machine wiring harness – engine controller may be defective. Check them directly.		
		<ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>		
3	Defective engine controller	If causes 1 – 2 are not detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

#### Circuit diagram related to fuel control dial

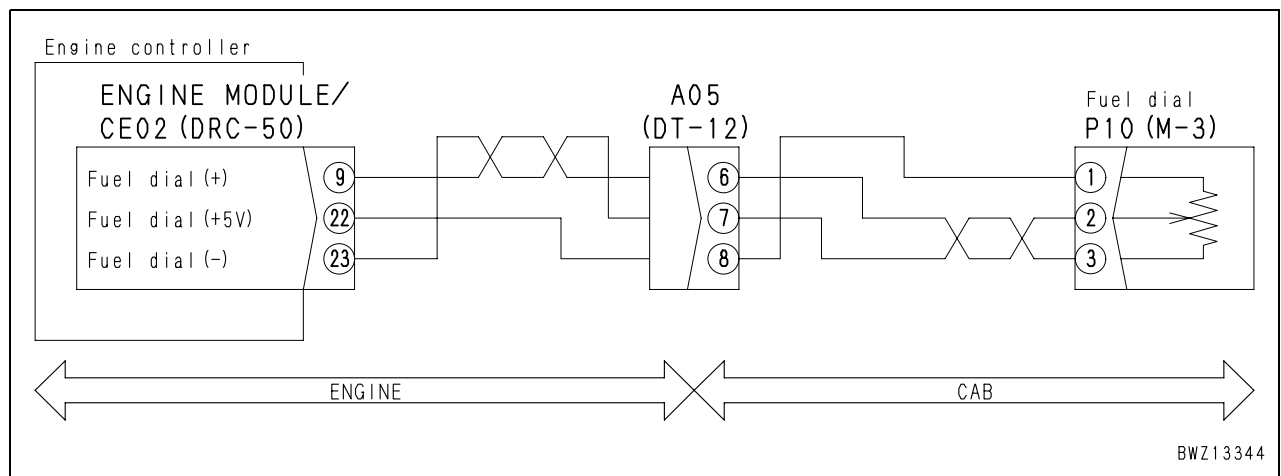


### Failure code [CA2186] Throttle pedal sensor power source too low

User code	Failure code	Trouble	Throttle pedal sensor power source too low (Engine controller system)
<b>E14</b>	<b>CA2186</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Low voltage was detected in throttle sensor power supply circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>If trouble occurs while starting switch is in ON position, controller fixes voltage value to level just before detection of trouble and continues operation.</li> <li>If starting switch is turned ON while voltage is abnormally high, controller continues operation with voltage at 100% value.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine speed cannot be controlled with fuel control dial.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	1	Ground fault in wiring harness (Short circuit with GND circuit)	<ul style="list-style-type: none"> <li>Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.</li> </ul>	Wiring harness between CE02 (female) (22) – P10 (female) (1)	Resistance
2	Short circuit in wiring harness (with another wiring harness)	<ul style="list-style-type: none"> <li>Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.</li> </ul>	Wiring harness between CE02 (female) (9) – each of CE02 (female) pins (With P10 disconnected)	Resistance	Min. 100 kΩ
3	Defective wiring harness connector	Connecting parts between fuel control dial – machine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>			
4	Defective engine controller	If causes 1 – 3 are not detected, engine controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

#### Circuit diagram related to fuel control dial



## Failure code [CA2249] Supply pump no pressure (2)

User code	Failure code	Trouble	Supply pump no pressure (2) (Engine controller system)
<b>E11</b>	<b>CA2249</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>There is low pressure error in common rail circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Limits output and continues operation.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine does not start easily.</li> <li>Exhaust gas becomes black.</li> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Common rail pressure can be checked with monitoring function. (Code: <b>36400</b>, Common rail pressure)</li> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Carry out troubleshooting for failure code [CA559].	

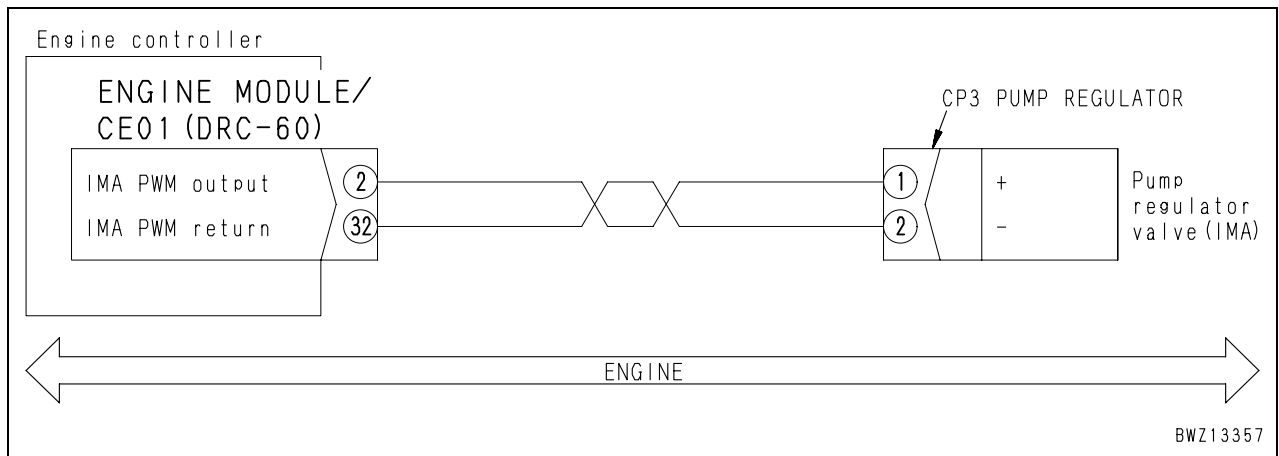


### Failure code [CA2311] Abnormal resistance in pump regulator valve

User code	Failure code	Trouble	Abnormal resistance in pump regulator valve (Engine controller system)
<b>E11</b>	<b>CA2311</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Resistance of supply pump actuator circuit is abnormally high or low.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Engine output lowers.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defect in related system	If another failure code is displayed, carry out troubleshooting for it.	
2		Defective supply pump actuator	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			CP3 PUMP REGULATOR (male)	Resistance	
			Between (1) – (2)	Max. 5 Ω	
		Between (1) – chassis ground	Min. 100 kΩ		
3		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (2) – CP3 PUMP REGULATOR (female) (1)	Resistance	Max. 5 Ω
			Wiring harness between CE01 (female) (32) – CP3 PUMP REGULATOR (female) (2)	Resistance	Max. 5 Ω
4		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between CE01 (female) (2) – CP3 PUMP REGULATOR (female) (1)	Resistance	Min. 100 kΩ
5		Defective wiring harness connector	Connecting parts between supply pump actuator – engine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>		
6		Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			CE01 (male)	Resistance	
			Between (2) – (32)	Max. 5 Ω	
	Between (2) – chassis ground	Min. 100 kΩ			

Circuit diagram related to supply pump actuator (metering unit)

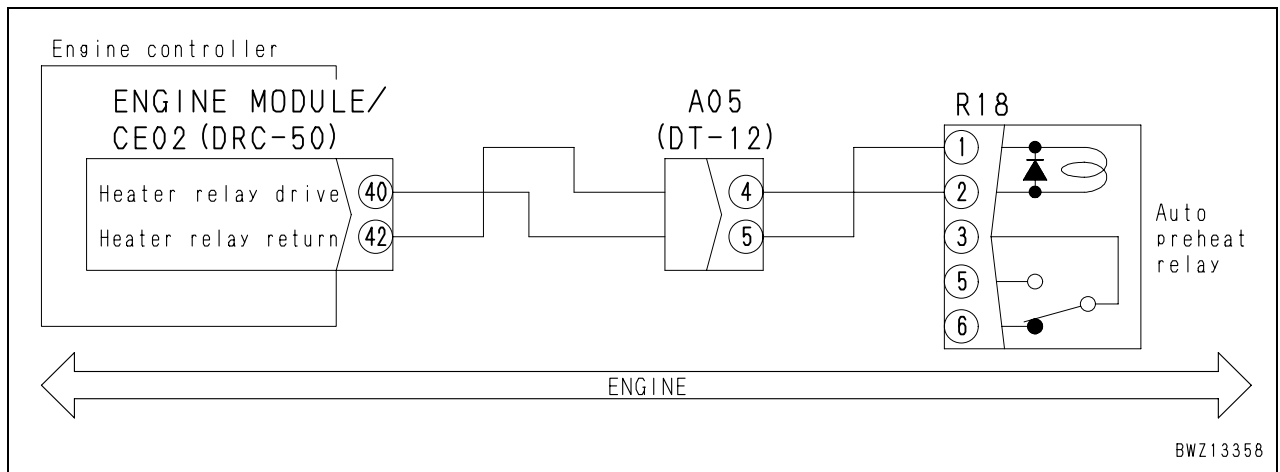


### Failure code [CA2555] Disconnection in air intake heater relay

User code	Failure code	Trouble	Disconnection in air intake heater relay (Engine controller system)
<b>E15</b>	<b>CA2555</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Disconnection was detected in drive circuit of intake air heater relay.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Intake air heater does not work (Engine does not start easily and exhaust gas becomes white at low temperature).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON when engine coolant temperature is below -4°C.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective air intake heater relay (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON. (Troubleshooting for relay unit)		
R18 (male)				Resistance		
Between (1) – (2)				300 – 600 Ω		
★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting. (Troubleshooting by replacement)						
Replace automatic preheater relay (R18) with another relay and perform reproducing operation. If “E” of failure code goes off at this time, replaced relay is defective.						
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE02 (female) (40) – R18 (female) (1)	Resistance	Max. 10 Ω	
			Wiring harness between CE02 (female) (42) – R18 (female) (2)	Resistance	Max. 10 Ω	
3		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE02 (female) (40) – each of CE02 (female) pins (With R18 disconnected)	Resistance	Min. 100 kΩ	
4		Defective wiring harness connector	Connecting parts between automatic preheater relay – machine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>			
5		Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			CE02 (male)	Resistance		
			Between (40) – (42)		300 – 600 Ω	

Related electrical circuit diagram

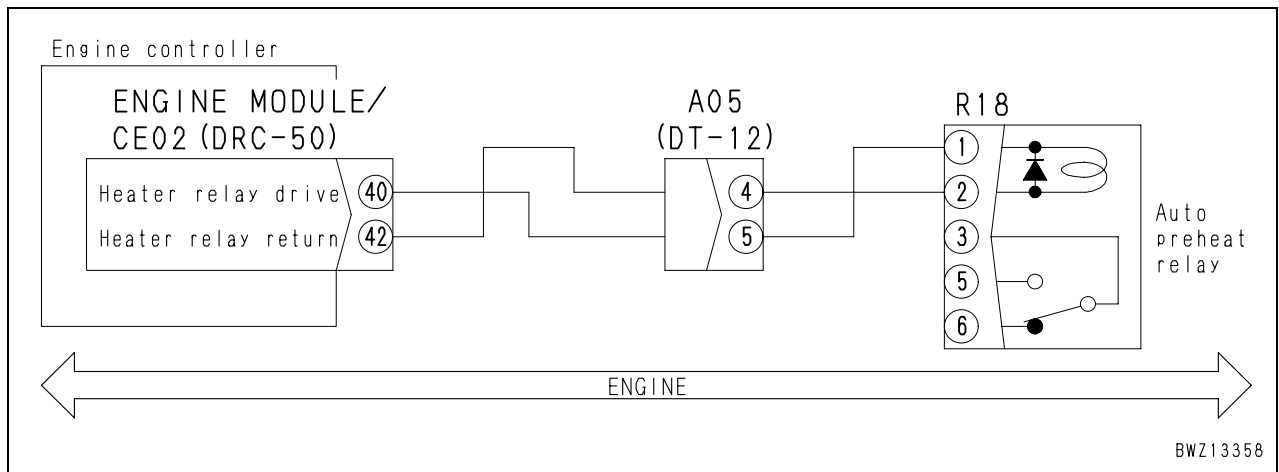


### Failure code [CA2556] Short circuit in air intake heater relay

User code	Failure code	Trouble	Short circuit in air intake heater relay (Engine controller system)
<b>E15</b>	<b>CA2556</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Short circuit was detected in drive circuit of intake air heater relay.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Intake air heater does not work (Engine does not start easily and exhaust gas becomes white at low temperature).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON when engine coolant temperature is below -4°C.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective air intake heater relay (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON. (Troubleshooting for relay unit)		
R18 (male)				Resistance		
Between (1) – (2)				300 – 600 Ω		
★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting. (Troubleshooting by replacement)						
Replace automatic preheater relay (R18) with another relay and perform reproducing operation. If “E” of failure code goes off at this time, replaced relay is defective.						
2		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE02 (female) (40) – R18 (female) (1)	Resistance	Min. 100 kΩ	
3		Short circuit in wiring harness (with another wiring harness)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between CE02 (female) (40) – each of CE02 (female) pins (With R18 disconnected)	Resistance	Min. 100 kΩ	
4		Defective wiring harness connector	Connecting parts between automatic preheater relay – machine wiring harness – engine controller may be defective. Check them directly. <ul style="list-style-type: none"> <li>Looseness of connector, breakage of lock, or breakage of seal</li> <li>Corrosion, bend, breakage, push-in, or expansion of pin</li> <li>Moisture or dirt in connector or defective insulation</li> </ul>			
5	Defective engine controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.				
		CE02 (male)	Resistance			
		Between (40) – (42)		300 – 600 Ω		

Related electrical circuit diagram



BR380JG-1E0 Mobile crusher

---

Form No. SEN02093-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

## 40 Troubleshooting

### Troubleshooting by failure code, Part 5

---

Failure code [D162KY] Short circuit in horn relay .....	4
Failure code [D162KZ] Disconnection or short circuit in horn relay .....	6
Failure code [DA22KK] Solenoid power source too low .....	8
Failure code [DA25KP] Abnormality in pressure sensor power source .....	10
Failure code [DA2RMC] CAN communication error (work equipment and pump controller) .....	14
Failure code [DA2SKQ] Abnormality in model code input .....	16
Failure code [DAFRMC] CAN communication error (monitor controller) .....	18
Failure code [DDA6KA] Disconnection in engine stop switch .....	20
Failure code [DGH2KB] Short circuit in hydraulic oil temperature sensor .....	22
Failure code [DHPAMA] Abnormality in F pump pressure sensor .....	24
Failure code [DHPBMA] Abnormality in R pump pressure sensor .....	26
Failure code [DUB0KY] Short circuit in beacon solid state relay .....	28
Failure code [DUB0KZ] Disconnection or short circuit in beacon solid state relay .....	30
Failure code [DXA0KA] Disconnection in PC-EPC Solenoid .....	32
Failure code [DXA0KB] Short circuit in PC-EPC Solenoid .....	33
Failure code [DXA0KY] Short circuit in PC-EPC Solenoid .....	34



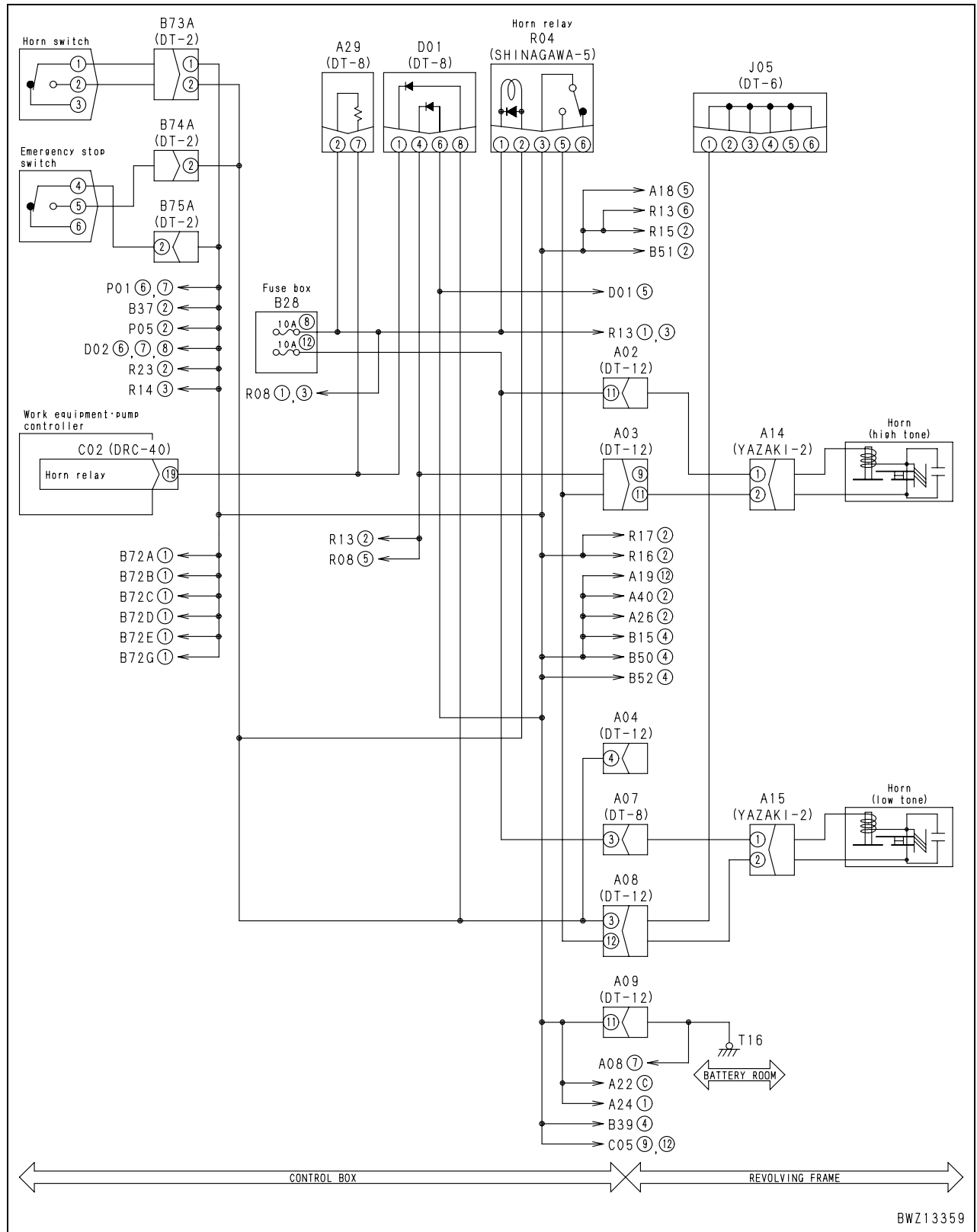
Failure code [DXE0KA] Disconnection in LS-EPC solenoid ..... 35  
Failure code [DXE0KB] Short circuit in LS-EPC solenoid ..... 36  
Failure code [DXE0KY] Short circuit in LS-EPC solenoid ..... 37

## Failure code [D162KY] Short circuit in horn relay

User code	Failure code	Trouble	Short circuit in horn relay (Work equipment and pump controller (work equipment control) system)
—	<b>D162KY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the horn relay drive circuit is driven, hot short of the circuit (contact with 24 V circuit) is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the output to the horn relay circuit OFF.</li> <li>Even if the cause of the failure disappears, the system does not reset itself until the starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Horn does not sound in the following situations. <ul style="list-style-type: none"> <li>When abnormality in mechanical system (abnormal engine coolant etc.) occurs</li> <li>When all functions of work equipment stops due to overload to the equipment</li> <li>When electrical system is failed</li> </ul> </li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Horn relay drive state (ON/OFF) can be checked with monitoring function (Code: <b>25601</b>, Relay Drive 0)</li> <li>Since short circuit is detected while the horn output is turned ON, be sure to turn the horn output ON when checking for reproduction of the failure after repair.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective horn relay (Internal short circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
Horn relay R04 (male)				Continuity/Resistance		
Between (1) and (2)				100 – 500 Ω		
2		Defective resistance (Internal short circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			A29 (male)		Resistance	
			Between (2) and (7)		1.8 – 2.6 kΩ	
3		Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			Between wiring harness between C02 (female) (19) – D01 (female) (1) and chassis ground	Voltage	Max. 5.7 V	
4		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			Short C02 (female) (19) with chassis ground	Horn	Sounds	

Circuit diagram related to horn relay



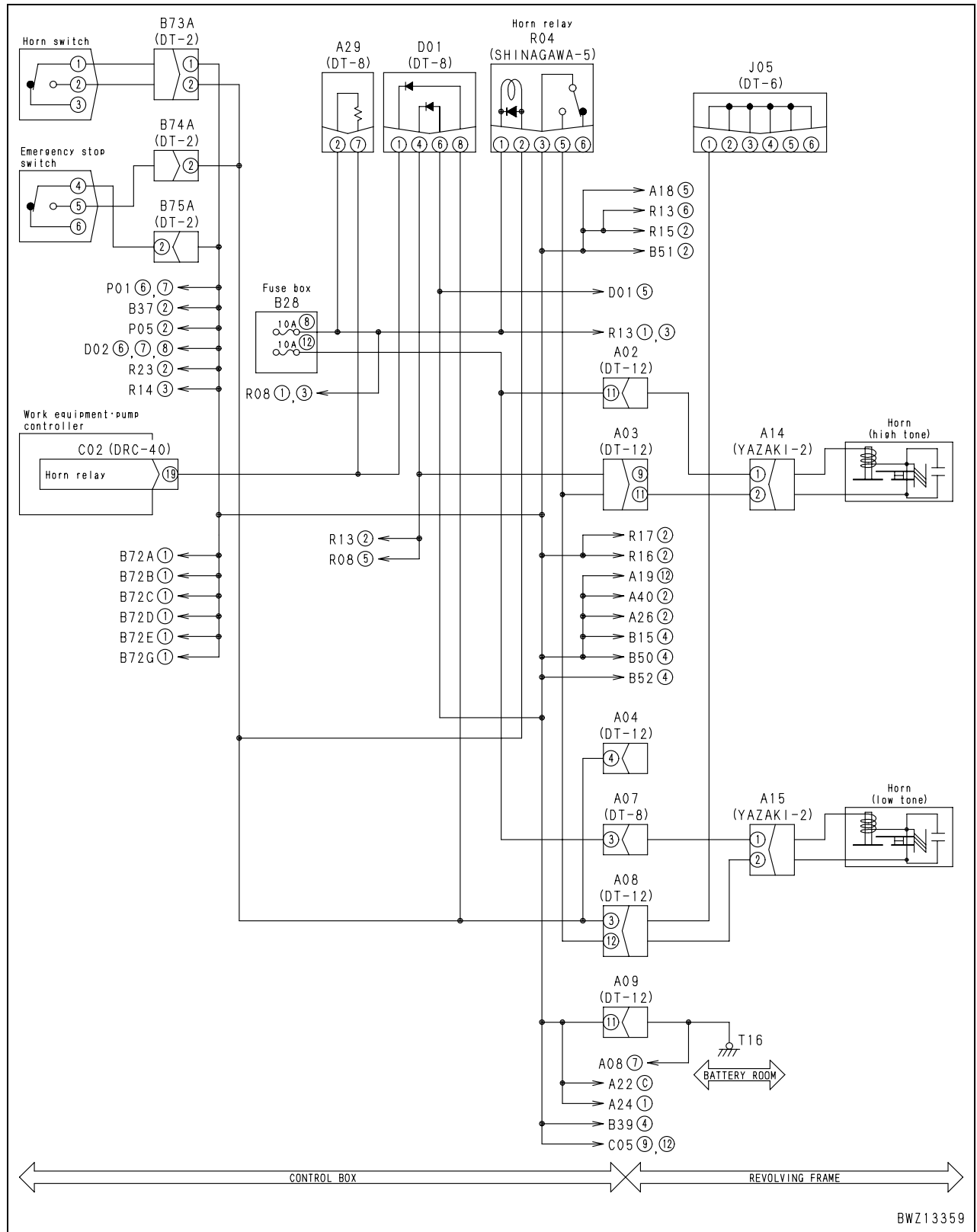
BWZ13359

### Failure code [D162KZ] Disconnection or short circuit in horn relay

User code	Failure code	Trouble	Disconnection or short circuit in horn relay (Work equipment and pump controller (work equipment control) system)
—	<b>D162KZ</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the horn relay drive circuit is driven, disconnection or ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns the current to the horn relay circuit OFF.</li> <li>Even if the cause of the failure disappears, the system does not reset itself until the starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Horn does not sound in the following situations.                             <ul style="list-style-type: none"> <li>When abnormality in mechanical system (abnormal engine coolant etc.) occurs</li> <li>When all functions of work equipment stops due to overload to the equipment</li> <li>When electrical system is failed</li> </ul> </li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective fuse No. 8	If the fuse No. 8 is burn, the circuit probably has a grounding fault, etc.		
	2	Defective horn relay (Ground fault)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			★ Disconnect R04.			
			Horn relay R04 (male)	Resistance		
			Between (1) and (2)	100 – 500 Ω		
	3	Disconnection in wiring harness (Disconnection or defective contact with connector)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting			
			Wiring harness between C02 (female) (19) and D01 (female) (1)	Resistance	Max. 1 Ω	
			Wiring harness between B28 No. 8 – R04 (female) (1), between D01 (female) (8) – R04 (female) (2)	Resistance	Max. 1 Ω	
	4	Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
			Wiring harness between C02 (female) (19) and D01 (female) (1) and chassis ground	Resistance	Min. 1 MΩ	
			Wiring harness between D01 (female) (8) and R04 (female) (2) and chassis ground	Resistance	Min. 1 MΩ	
5	Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting				
		★ Disconnect C02.				
		Short circuit C02 (female) (19) with chassis ground.	Horn	Sounds		

Related electrical circuit diagrams



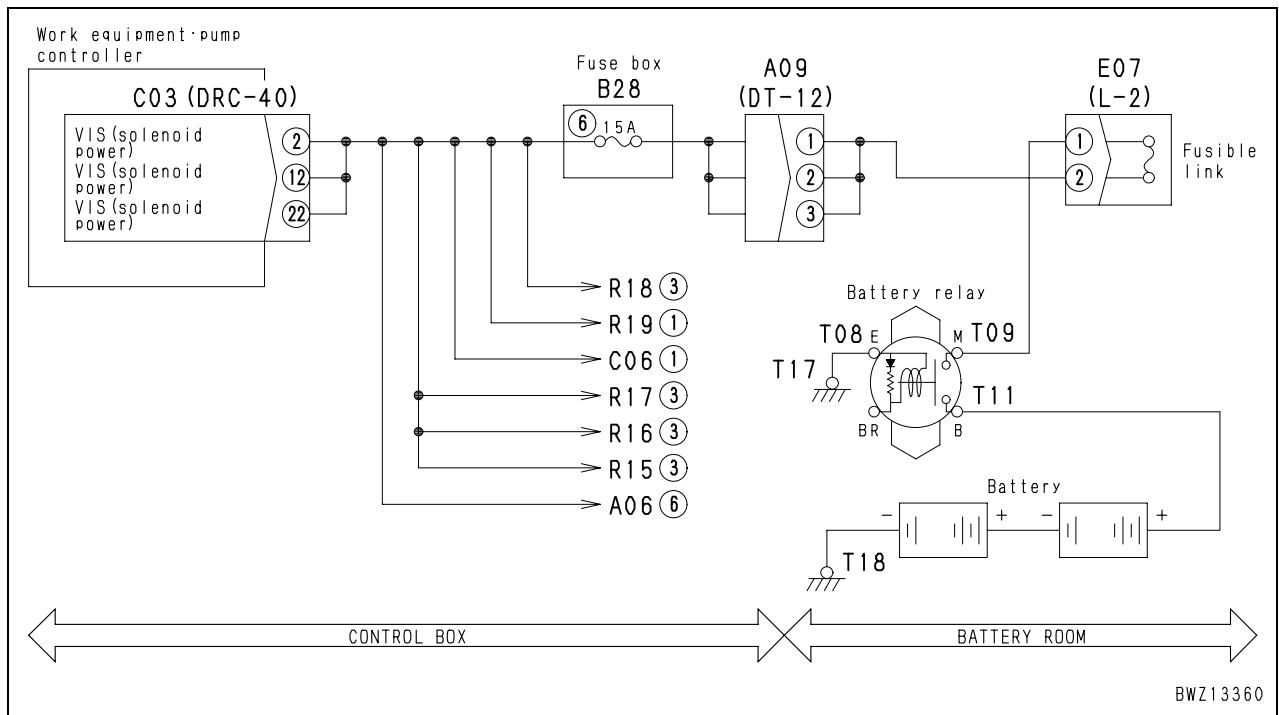
BWZ13359

## Failure code [DA22KK] Solenoid power source too low

User code	Failure code	Trouble	Solenoid power source too low (Work equipment and pump controller (pump control) system)
E0E	DA22KK		
Contents of trouble	<ul style="list-style-type: none"> <li>Solenoid power supply voltage of controller is below 20 V.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>While this failure code is displayed, detection of failure codes (disconnection/short circuit) of all the solenoid systems is stopped.</li> <li>Even if cause of failure disappears, system does not reset itself until starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Since no solenoid valve is driven normally, machine does not operate normally.</li> <li>When the failure is detected, the horn sounds (3 times intermittently)</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective fusible link E07 or fuse No. 6	If fusible link or fuse is broken, circuit probably has ground fault. (See Cause 3.)	
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (2), (12), (22) – B28 No. 6	Resistance	Max. 1 Ω
			Wiring harness between B28 No. 6 – E07 (male) (2)	Resistance	Max. 1 Ω
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (2), (12), (22) – B28 No. 6	Resistance	Min. 1 MΩ
			Wiring harness between B28 No. 6 – E07 (male) (2), – circuit branch end	Resistance	Min. 1 MΩ
			Wiring harness between E07 (male) (1) – T09	Resistance	Min. 1 MΩ
4		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
			C03 (female)	Voltage	
			Between C03 (male) (2), (12), (22) – (13), (21), (23), (31), (32), (33),	20 – 30 V	

Circuit diagram related to pump controller power supply



## Failure code [DA25KP] Abnormality in pressure sensor power source

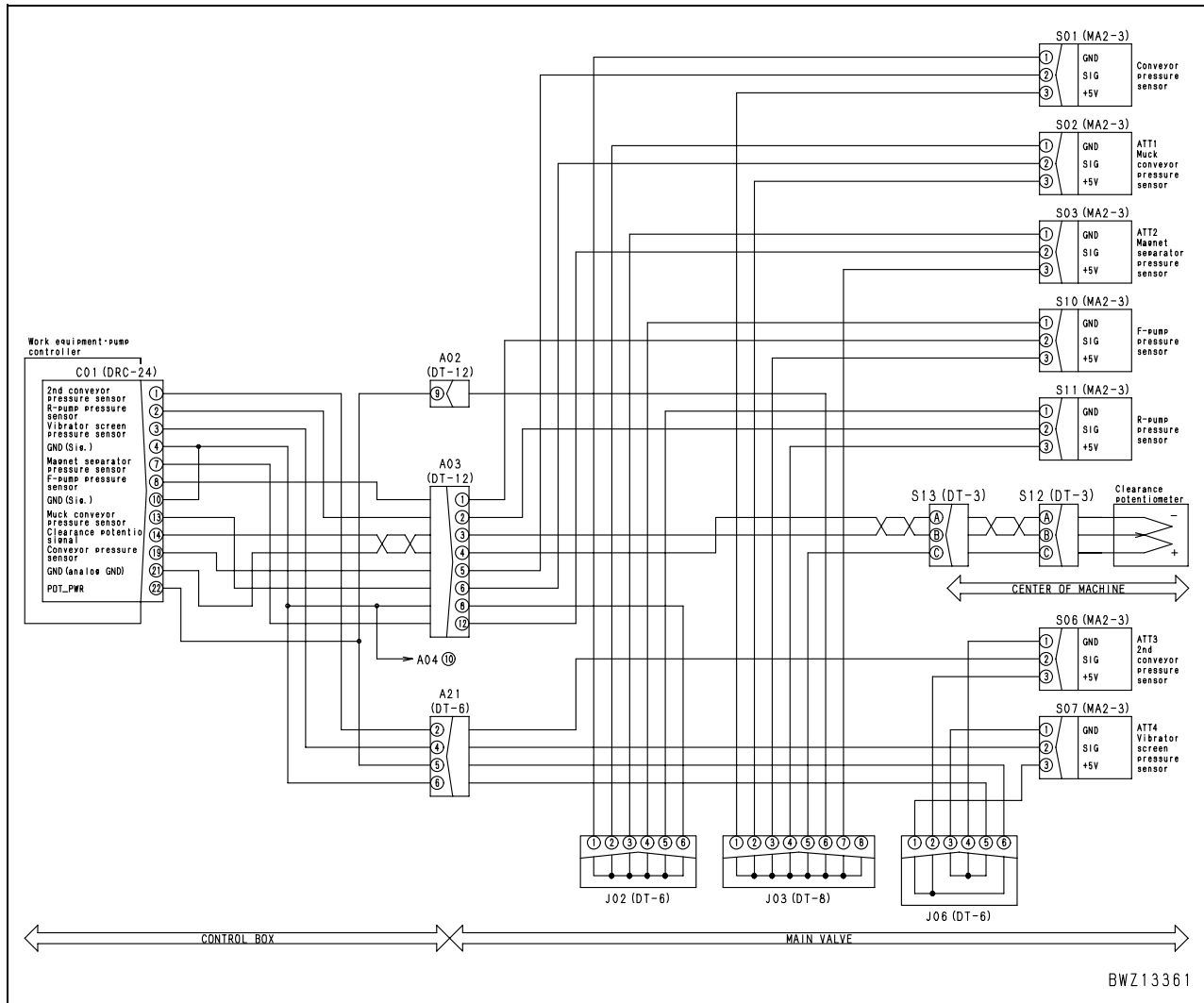
User code	Failure code	Trouble	Abnormality in pressure sensor power source (Work equipment and pump controller (pump control) system)
—	<b>DA25KP</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Voltage from the pressure sensor power supply circuit reads under 2.0 V or above 5.3 V.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turn the pressure sensor power supply OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Overload on work equipment may not be detected but relieved.</li> <li>Due to abnormal pump pressure, overheat prevention function does not work normally.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn the starting switch ON.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	1	Defective pressure sensor or potentiometer (Internal short circuit)	Disconnect devices listed at right sequentially and reproduce the failure. If E-mark of failure code goes off, the device is defective internally.	Primary conveyor pressure sensor	S01
Muck discharge conveyor pressure sensor				S02	
Magnetic separator pressure sensor				S03	
F pump pressure sensor				S10	
R pump pressure sensor				S11	
Clearance detection potentiometer				S12	
Secondary conveyor pressure sensor				S06	
Vibrating sieve pressure sensor				S07	
2		Ground fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C01 (female) (22) – J03 – S01 (female) (3) and chassis ground [Primary conveyor pressure sensor system]	Resistance	Min. 1 MΩ
	Wiring harness between C01 (female) (22) – J03 – S02 (female) (3) and chassis ground [Muck discharge conveyor pressure sensor system]		Resistance	Min. 1 MΩ	
	Wiring harness between C01 (female) (22) – J03 – S03 (female) (3) and chassis ground [Magnetic separator pressure sensor system]		Resistance	Min. 1 MΩ	
	Wiring harness between C01 (female) (22) – J03 – S10 (female) (3) and chassis ground [F pump pressure sensor system]		Resistance	Min. 1 MΩ	
	Wiring harness between C01 (female) (22) – J03 – S11 (female) (3) and chassis ground [R pump pressure sensor system]		Resistance	Min. 1 MΩ	
	Wiring harness between C01 (female) (22) – J03 – S12 (female) (C) and chassis ground [Clearance detection potentiometer system]		Resistance	Min. 1 MΩ	
	Wiring harness between C01 (female) (22) – J06 – S06 (female) (3) and chassis ground [Secondary conveyor pressure sensor system]		Resistance	Min. 1 MΩ	
	Wiring harness between C01 (female) (22) – J06 – S07 (female) (3) and chassis ground [Vibratory pressure sensor system]		Resistance	Min. 1 MΩ	



		Cause	Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	3	Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting		
			Wiring harness between C01 (female) (22) – J03 – S01 (female) (3) and chassis ground [Primary conveyor pressure sensor system]	Voltage	Max. 5.3V
			Wiring harness between C01 (female) (22) – J03 – S02 (female) (3) and chassis ground [Muck discharge conveyor pressure sensor system]	Voltage	Max. 5.3V
			Wiring harness between C01 (female) (22) – J03 – S03 (female) (3) and chassis ground [Magnetic separator pressure sensor system]	Voltage	Max. 5.3V
			Wiring harness between C01 (female) (22) – J03 – S10 (female) (3) and chassis ground [F pump pressure sensor system]	Voltage	Max. 5.3V
			Wiring harness between C01 (female) (22) – J03 – S11 (female) (3) and chassis ground [R pump pressure sensor system]	Voltage	Max. 5.3V
			Wiring harness between C01 (female) (22) – J03 – S12 (female) (C) and chassis ground [Clearance detection potentiometer system]	Voltage	Max. 5.3V
			Wiring harness between C01 (female) (22) – J06 – S06 (female) (3) and chassis ground [Secondary conveyor pressure sensor system]	Voltage	Max. 5.3V
			Wiring harness between C01 (female) (22) – J06 – S07 (female) (3) and chassis ground [Vibratory screen pressure sensor system]	Voltage	Max. 5.3V
	4	Defective work equipment and pump controller	If causes 1 – 3 are not detected, work equipment and pump controller may be defective. (Troubleshooting cannot be carried out since trouble is in system.)		

Related electrical circuit diagram

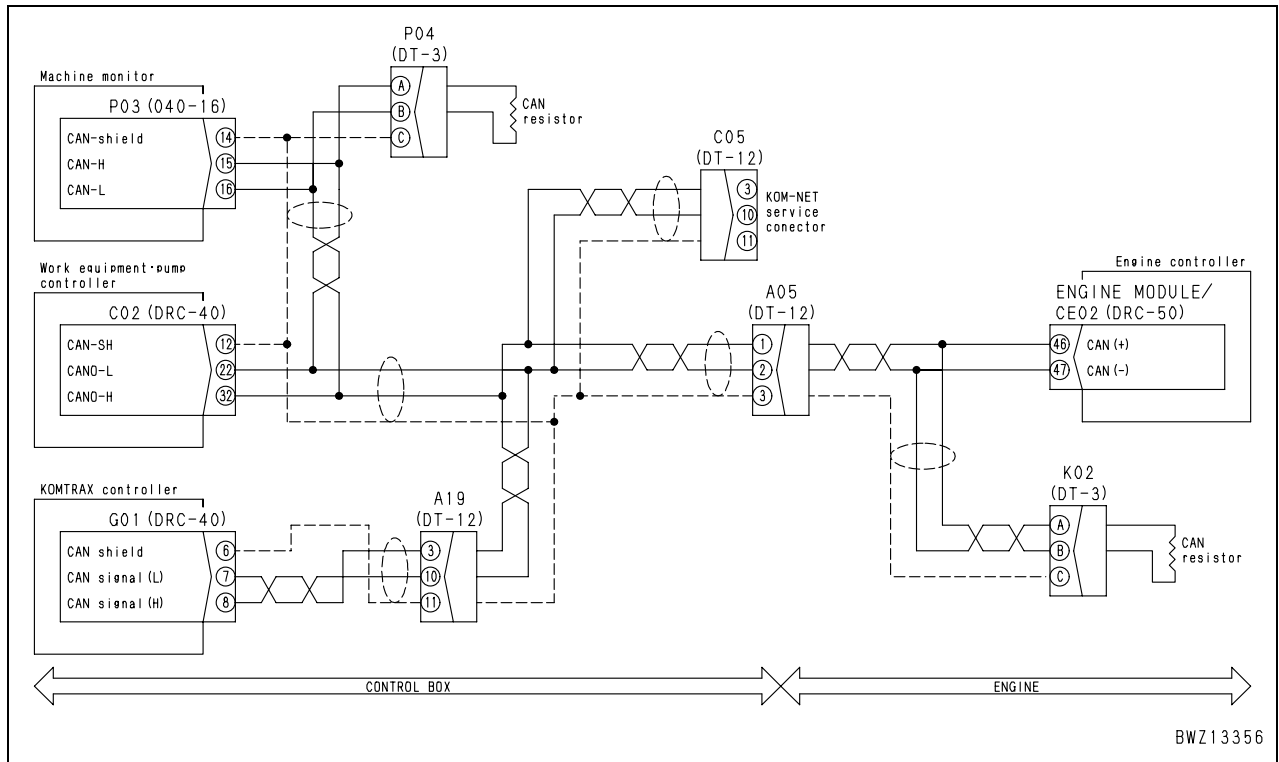


### Failure code [DA2RMC] CAN communication error (work equipment and pump controller)

User code	Failure code	Trouble	CAN communication error (work equipment and pump controller) (Work equipment and pump controller system)
E0E	DA2RMC		
Contents of trouble	<ul style="list-style-type: none"> <li>Work equipment and pump controller detects communication error in CAN communication circuit between engine controller and machine monitor.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Continues control based on the CAN communication information sent immediately before the trouble is detected.</li> <li>Keeps the pump suction torque in a constant value (pump redundant level).</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Pump control becomes equal torque control.</li> <li>Engine control is disabled (deceleration function etc.)</li> <li>Machine information is not updated on the display.</li> <li>Engine speed and coolant temperature cannot be detected.</li> <li>Crusher clearance adjustment is disabled.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn the starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Wiring harness between C02 (female) (32) – P03 (female) (15), – P04 (female) (A), – G01 (female) (8), – CE02 (female) (46), – K02 (female) (A), – C05 (male) (3)				Resistance	Max. 1 Ω
Wiring harness between C02 (female) (22) – P03 (female) (16), – P04 (female) (B), – G01 (female) (7), – CE02 (female) (47), – K02 (female) (B), – C05 (male) (10)				Resistance	Max. 1 Ω
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Between wiring harness C02 (female) (32) – P03 (female) (15), – P04 (female) (A), – G01 (female) (8), – CE02 (female) (46), – K02 (female) (A), – C05 (male) (3), and chassis ground	Resistance	Min. 1 MΩ
			Between wiring harness C02 (female) (22) – P03 (female) (16), – P04 (female) (B), – G01 (female) (7), CE02 (female) (47), – K02 (female) (B), – C05 (male) (10), and chassis ground	Resistance	Min. 1 MΩ
3		Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting		
			Between wiring harness C02 (female) (32) – P03 (female) (15), – P04 (female) (A), – G01 (female) (8), – CE02 (female) (46), – K02 (female) (A), – C05 (male) (3), and chassis ground	Voltage	Max. 5.5 V
			Between wiring harness C02 (female) (22) – P03 (female) (16), – P04 (female) (B), – G01 (female) (7), – CE02 (female) (47), – K02 (female) (B), – C05 (male) (10), and chassis ground	Voltage	Max. 5.5 V
4		Defective CAN terminal resistance (Internal short circuit or disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
	K02 (male), P04 (male)		Resistance	120 ± 12 Ω	
5	Defective work equipment and pump controller	If causes 1 – 4 are not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

Related electrical circuit diagram

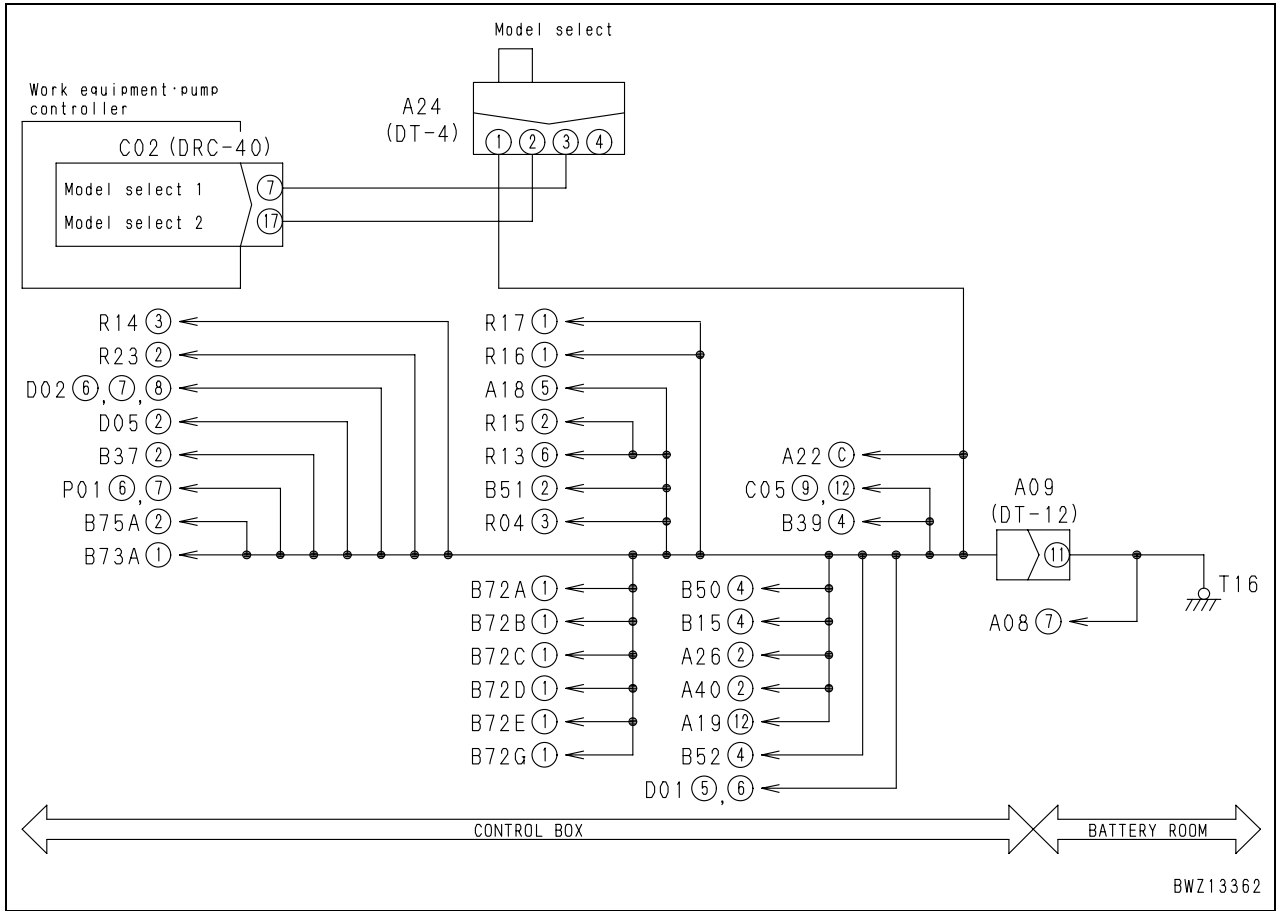


## Failure code [DA2SKQ] Abnormality in model code input

User code	Failure code	Trouble	Abnormality in model code input (Work equipment and pump controller (pump control) system)
—	<b>DA2SKQ</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Model code signal for other model than registered in the controller is input.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Mistakes the model for BR380JG-1E0.</li> <li>Changes the optional setting to initial setting when the machine model selection is changed.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Horn sounds upon detecting a failure (three intermittent sounding, work equipment is still operable).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> <li>The operator can carry out operation of the work equipment.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective model selection connector	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Wiring harness between A24 (male) (1) and (2)				Resistance	Max. 1 Ω
Wiring harness between A24 (male) (1) and (3), (4)				Resistance	Min. 1 MΩ
2		Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C02 (female) (7) and A24 (female) (3)	Resistance	Max. 1 Ω
			Wiring harness between C02 (female) (17) and A24 (female) (2)	Resistance	Max. 1 Ω
			Between A24 (female) (1) and chassis ground	Resistance	Max. 1 Ω
3		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C02 (female) (7) – A24 (male) (3) and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between C02 (female) (17) – A24 (male) (2) and chassis ground	Resistance	Min. 1 MΩ
4		Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting		
			Between C02 (female) (7) and chassis ground	Voltage	Max. 1 V
			Between C02 (female) (17) and chassis ground	Voltage	Max. 9 V
5		Defective work equipment and pump controller	If causes 1 – 4 are not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

Related electrical circuit diagram

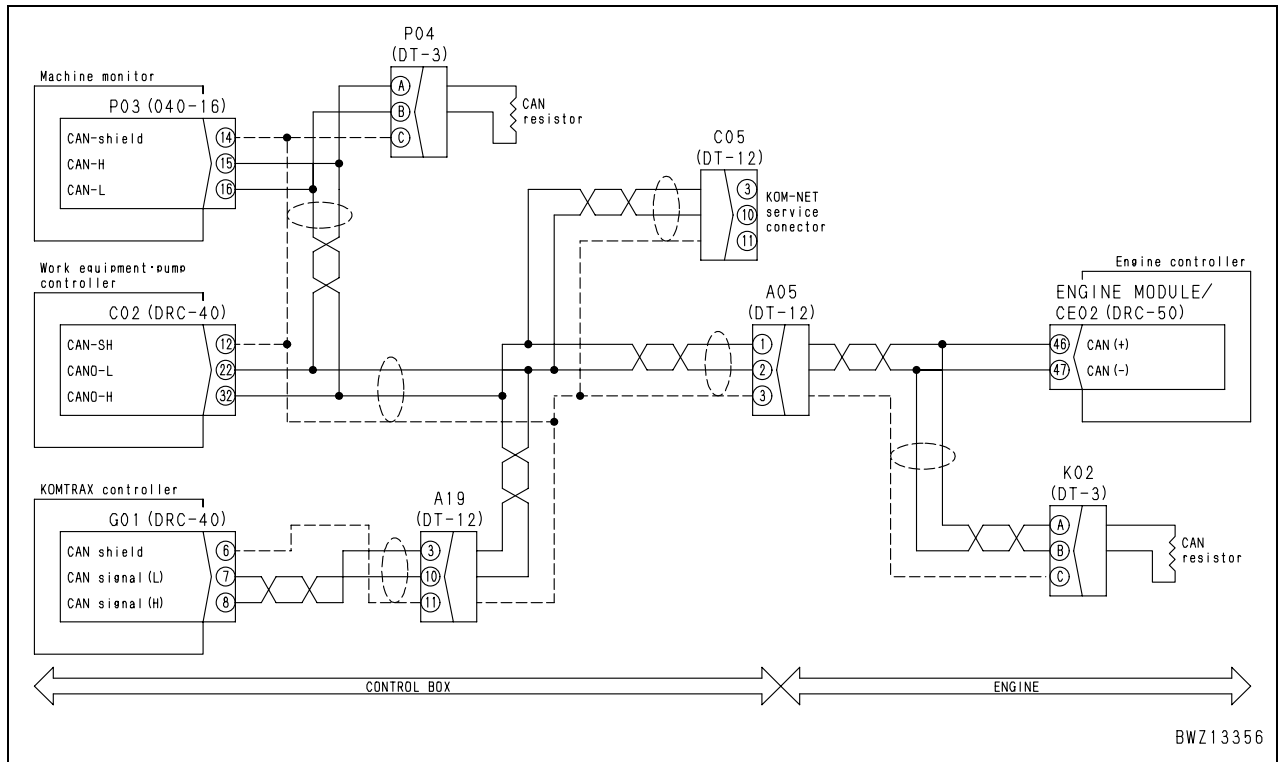


### Failure code [DAFRMC] CAN communication error (monitor controller)

User code	Failure code	Trouble	CAN communication error (monitor controller) (Machine monitor system)
E0E	<b>DAFRMC</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Machine monitor detects communication error in CAN communication circuit between work equipment and pump controller and engine controller.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Operates with default mode.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Information may not transmitted normally by CAN communication and machine may not operate normally.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Method of reproducing failure code: Turn the starting switch ON.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Wiring harness between P03 (female) (15) – C02 (female) (32), – P04 (female) (A), – G01 (female) (8), – CE02 (female) (46), – K02 (female) (A), – C05 (male) (3)				Resistance	Max. 1 Ω
Wiring harness between P03 (female) (16) – C02 (female) (22), – P04 (female) (B), – G01 (female) (7), – CE02 (female) (47), – K02 (female) (B), – C05 (male) (10)				Resistance	Max. 1 Ω
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch.		
			Between wiring harness P03 (female) (15) – C02 (female) (32), – P04 (female) (A), – G01 (female) (8), – CE02 (female) (46), – K02 (female) (A), – C05 (male) (3), and chassis ground	Resistance	Min. 1 MΩ
			Between wiring harness P03 (female) (16) – C02 (female) (22), – P04 (female) (B), – G01 (female) (7), – CE02 (female) (47), – K02 (female) (B), – C05 (male) (10), and chassis ground	Resistance	Min. 1 MΩ
3		Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting		
			Between wiring harness P03 (female) (15) – C02 (female) (32), – P04 (female) (A), – G01 (female) (8), – CE02 (female) (46), – K02 (female) (A), – C05 (male) (3), and chassis ground	Voltage	Max. 5.5V
			Between wiring harness P03 (female) (16) – C02 (female) (22), – P04 (female) (B), – G01 (female) (7), – CE02 (female) (47), – K02 (female) (B), – C05 (male) (10), and chassis ground	Voltage	Max. 5.5V
4		Defective CAN terminal resistance (Internal short circuit or disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
	K02 (male), P04 (male) Between (A) and (B)		Resistance 120 ± 12 Ω		
5	Defective machine monitor	If causes 1 – 4 are not detected, the machine monitor may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

Related electrical circuit diagram



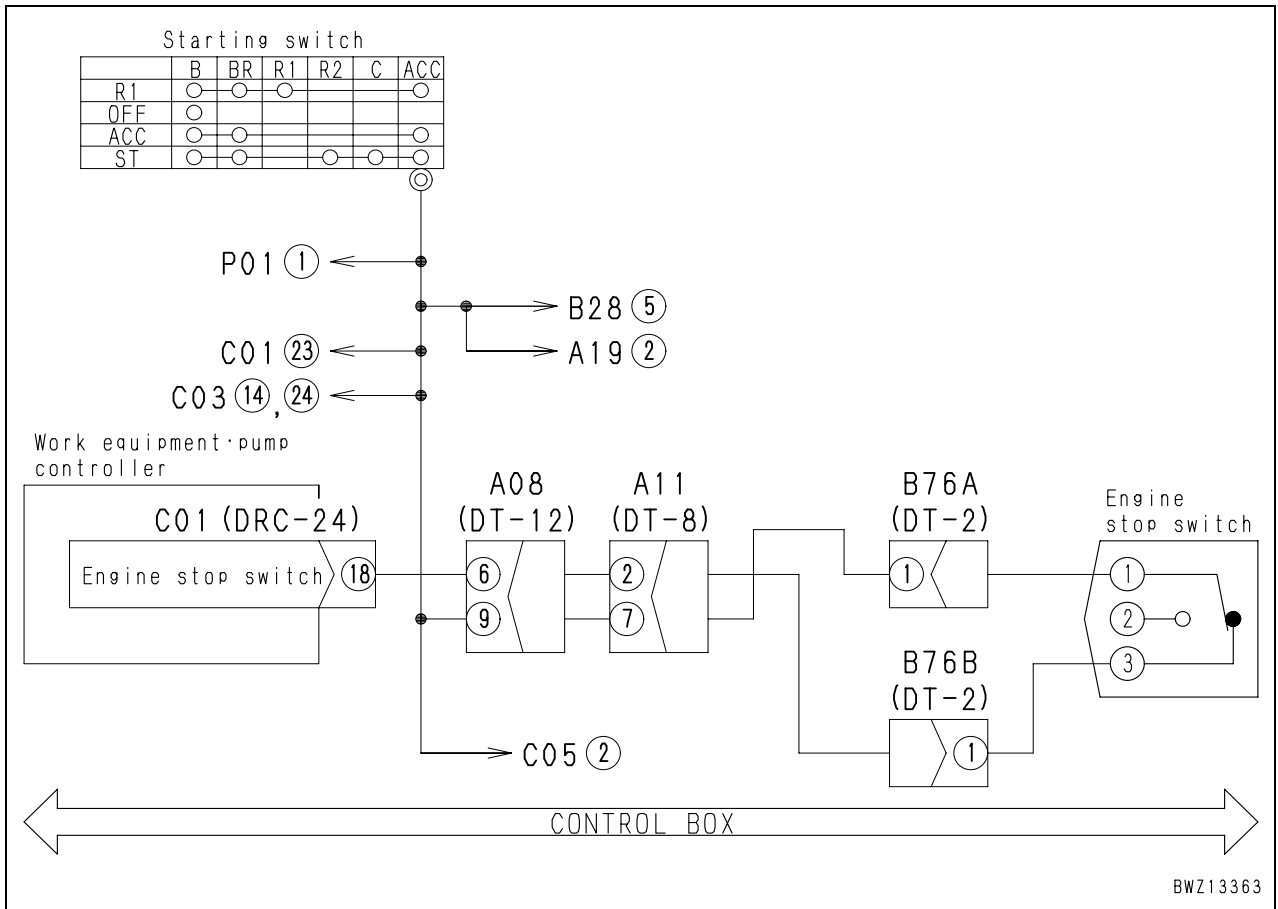


## Failure code [DDA6KA] Disconnection in engine stop switch

User code	Failure code	Trouble	Disconnection in engine stop switch (Work equipment and pump controller (work equipment control) system)
—	<b>DDA6KA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>The engine stop switch input signal circuit is opened (disconnected from the terminal ACC) in 1 second after the engine starting switch is turned ON.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular (The engine stop switch is kept depressed).</li> <li>Even if the cause of the failure disappears, the system does not reset itself until the starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>When this trouble is detected, the horn sounds (3 times intermittently).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The input state (ON/OFF) of the engine stop switch can be checked with monitoring function (Code: <b>25003</b>, Switch Input 3).</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective engine stop switch	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Between B76B (female) (1) and B76A (male) (1)				Engine stop switch	Resistance
				ON	Min. 1 MΩ
			OFF	Max. 1 Ω	
2		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C01 (female) (18) and B76B (male) (1)	Resistance	Max. 1 Ω
			Wiring harness between B76A (female) (1) and terminal ACC	Resistance	Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C01 (female)	Resistance	
	Between (18) and chassis ground		Resistance	Max. 1 Ω	

Circuit diagram related to engine stop switch

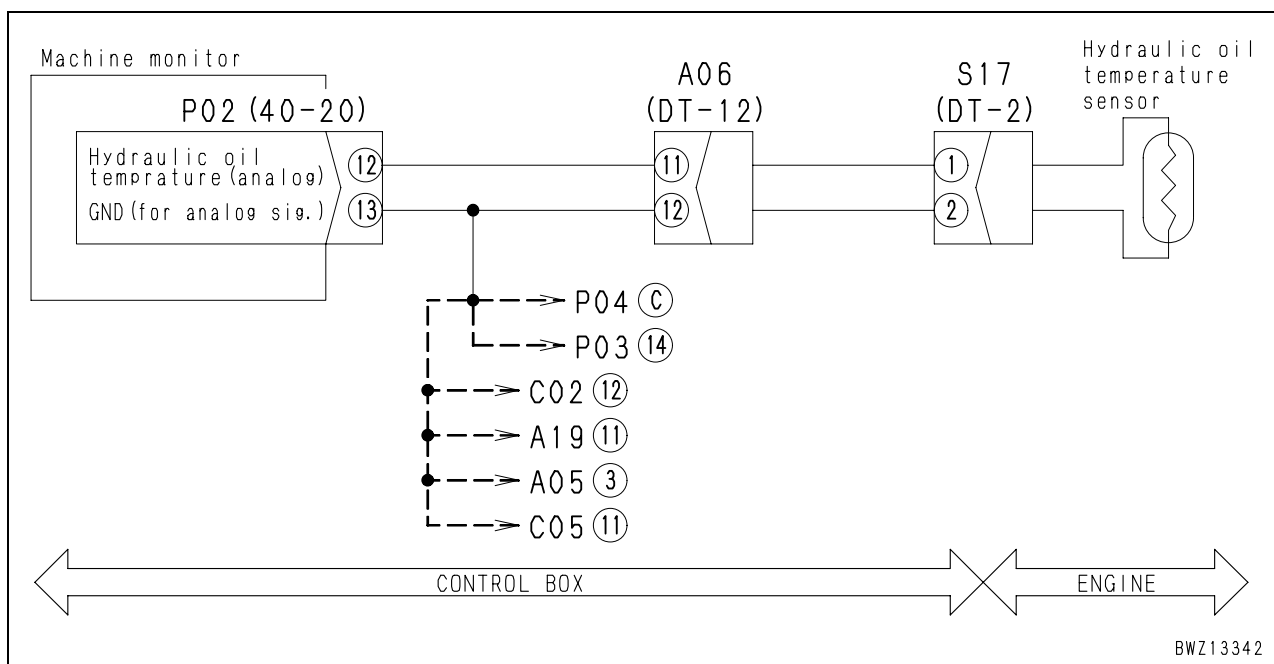


### Failure code [DGH2KB] Short circuit in hydraulic oil temperature sensor

User code	Failure code	Trouble	Short circuit in hydraulic oil temperature sensor (Machine monitor system)
—	<b>DGH2KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Ground fault was detected in hydraulic oil temperature sensor circuit.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes hydraulic oil temperature value at 40°C and continues operation.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>While hydraulic oil temperature rises normally, hydraulic oil temperature gauge does not move from top of white range (bottom of green range).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Signal voltage of hydraulic oil temperature sensor can be checked with monitoring function. (Code: <b>04402</b>, Hydr. Temp. Sensor Vol.)</li> <li>Method of reproducing failure code: Start engine.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective hydraulic oil temperature sensor (Internal disconnection or short circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
S17 (male)				Resistance	
Between (1) – (2)				3.5 – 90 kΩ	
Between (1) – chassis ground				Min. 1 MΩ	
2		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between P02 (female) (12) – S17 (female) (1)	Resistance	Min. 1 MΩ
3		Defective machine monitor	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			P02 (male)		Resistance
	Between (12) – (13)		3.5 – 90 kΩ		
	Between (12) – chassis ground		Min. 1 MΩ		

#### Circuit diagram related to hydraulic oil temperature sensor



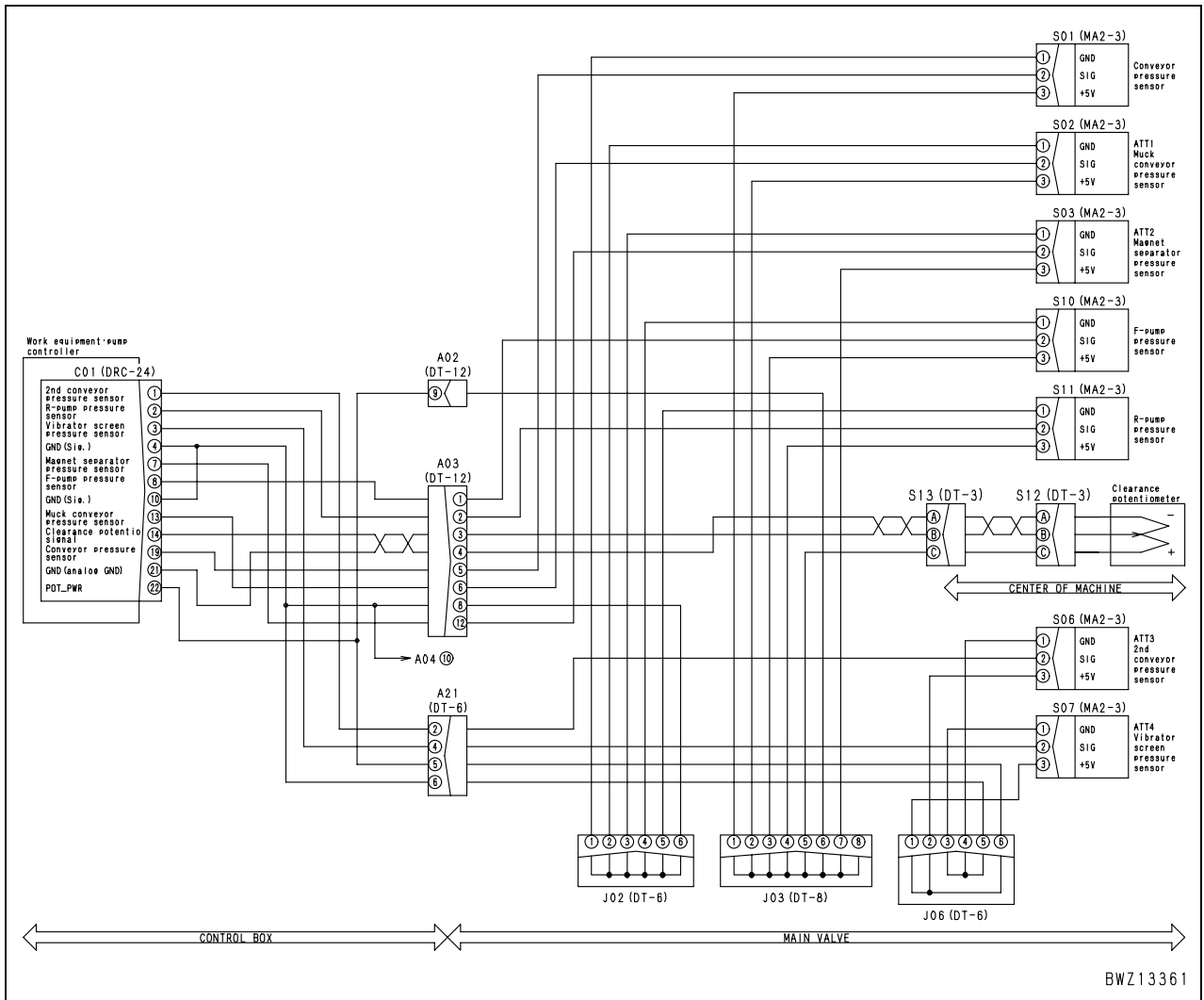
BWZ13342

### Failure code [DHPAMA] Abnormality in F pump pressure sensor

User code	Failure code	Trouble	Abnormality in F pump pressure sensor (Work equipment and pump controller (pump control) system)
—	<b>DHPAMA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal voltage of F pump pressure sensor circuit is below 0.3 V or above 4.5 V.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes F pump pressure at 0 MPa {0 kg/cm<sup>2</sup>} and continues control.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Feeder automatic stop function does not work when overload on the crusher is detected.</li> <li>Overheat prevention function does not work properly (machine will overheat more easily).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>★ If 5V circuit (3) and ground circuit (1) of pressure sensor are connected inversely, pressure sensor will be broken. Accordingly, take extreme care when checking.</li> <li>F pump pressure can be checked with monitoring function. (Code: <b>01100</b>, F Pump Pressure)</li> <li>Method of reproducing failure code: Turn engine starting switch ON or start engine.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective 5V sensor power supply 1 system	★ If failure code [DA25KP] is also displayed, carry out troubleshooting for it first.	
2		Defective F pump pressure sensor (Internal defect)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON or start engine and carry out troubleshooting in each case.		
			S10		Voltage
			Between (3) – (1)	Power supply	4.5 – 5.5 V
			Between (2) – (1)	Signal	0.3 – 4.5 V
If voltage is abnormal, replace F pump pressure sensor with R pump pressure sensor and check failure code. (If “E” of failure code goes off at this time, F pump pressure sensor is defective.)					
3		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C01 (female) (4), (10) – J02 – S10 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between C01 (female) (8) – S10 (female) (2)	Resistance	Max. 1 Ω
4		Ground fault in wiring harness (Short circuit with GND circuit)	Wiring harness between C01 (female) (22) – J03 – S10 (female) (3)	Resistance	Max. 1 Ω
			★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
5		Hot short (Short circuit with 24V circuit) in wiring harness	Wiring harness between C01 (female) (8) – S10 (female) (2)	Resistance	Min. 1 MΩ
	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.				
6	Defective work equipment and pump controller	Wiring harness between C01 (female) (8) – S10 (female) (2)	Voltage	Max. 1 V	
		If causes 1 – 5 are not detected, work equipment and pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

Circuit diagram related to F pump pressure sensor

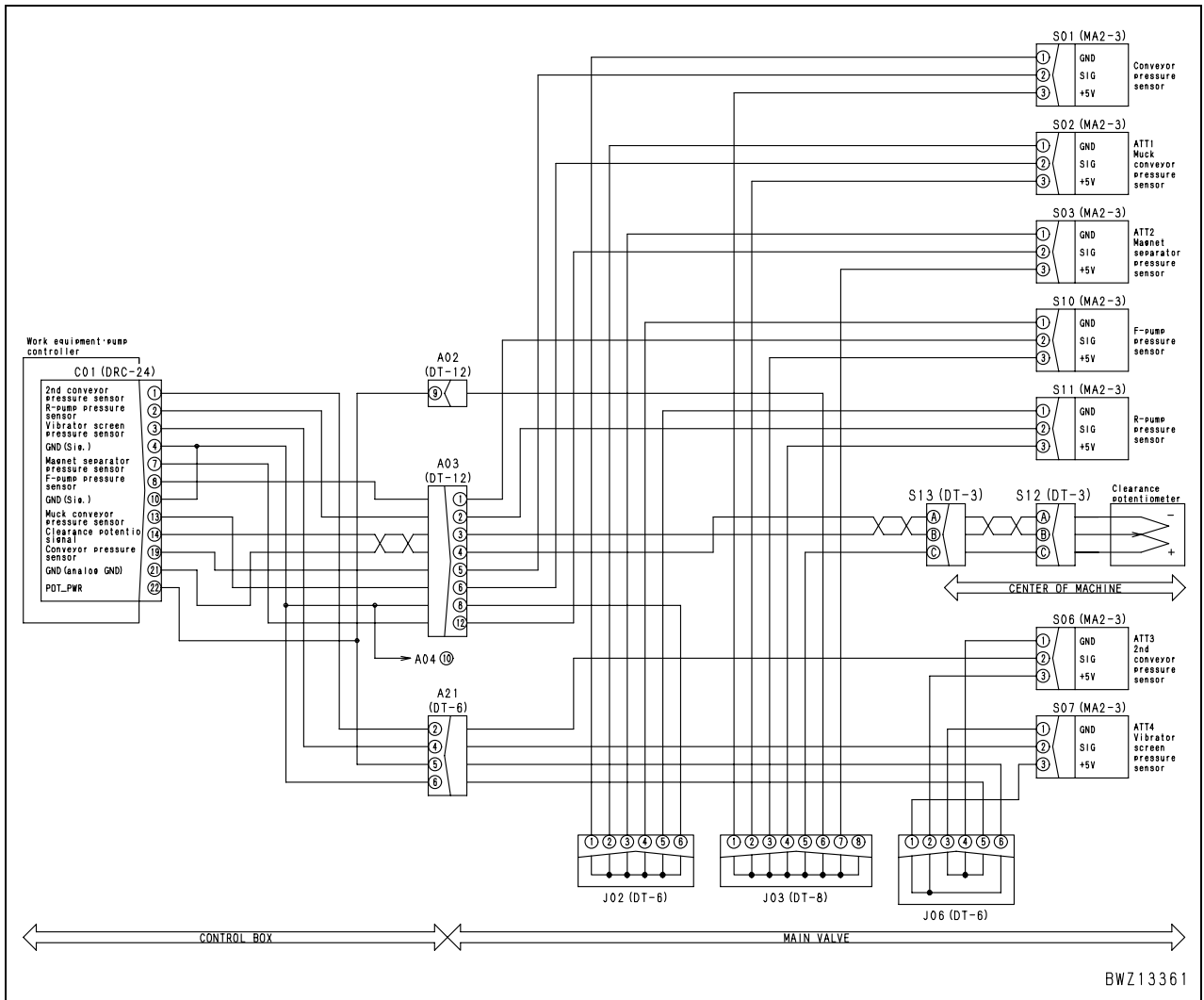


### Failure code [DHPBMA] Abnormality in R pump pressure sensor

User code	Failure code	Trouble	Abnormality in R pump pressure sensor (Work equipment and pump controller (pump control) system)
—	<b>DHPBMA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>Signal voltage of R pump pressure sensor circuit is below 0.3 V or above 4.5 V.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Fixes R pump pressure at 0 MPa {0 kg/cm<sup>2</sup>} and continues control.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Overheat prevention function does not work properly (machine will overheat more easily).</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>★ If 5V circuit (3) and ground circuit (1) of pressure sensor are connected inversely, pressure sensor will be broken. Accordingly, take extreme care when checking.</li> <li>R pump pressure can be checked with monitoring function. (Code: <b>01101</b>, R Pump Pressure)</li> <li>Method of reproducing failure code: Turn engine starting switch ON or start engine.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective 5V sensor power supply 1 system	If failure code [DA25KP] is also displayed, carry out troubleshooting for it first.	
2		Defective R pump pressure sensor (Internal defect)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON or start engine and carry out troubleshooting in each case.		
			S11		Voltage
			Between (3) – (1)	Power supply	4.5 – 5.5 V
			Between (2) – (1)	Signal	0.3 – 4.5 V
If voltage is abnormal, replace R pump pressure sensor with F pump pressure sensor and check failure code. (If “E” of failure code goes off at this time, R pump pressure sensor is defective.)					
3		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C01 (female) (4), (10) – J02 – S11 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between C01 (female) (2) – S11 (female) (2)	Resistance	Max. 1 Ω
4		Ground fault in wiring harness (Short circuit with GND circuit)	Wiring harness between C01 (female) (22) – J03 – S11 (female) (3)	Resistance	Max. 1 Ω
			★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
5		Hot short (Short circuit with 24V circuit) in wiring harness	Wiring harness between C01 (female) (2) – S11 (female) (2)	Resistance	Min. 1 MΩ
			★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.		
6	Defective work equipment and pump controller	Wiring harness between C01 (female) (2) – S11 (female) (2)	Voltage	Max. 1 V	
		If causes 1 – 5 are not detected, pump controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

Circuit diagram related to R pump pressure sensor



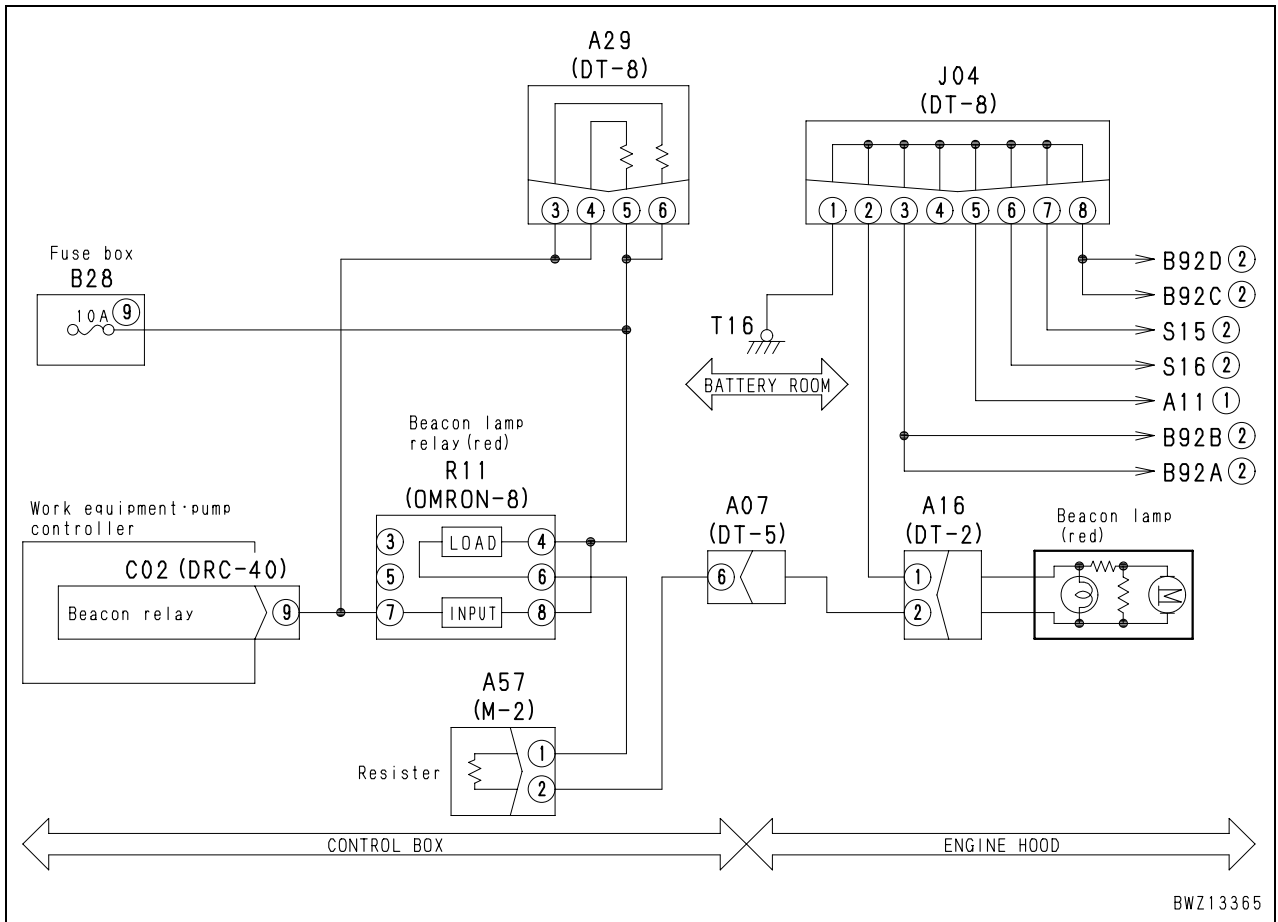
## Failure code [DUB0KY] Short circuit in beacon solid state relay

User code	Failure code	Trouble	Short circuit in beacon solid state relay (Work equipment and pump controller (work equipment control) system)
—	<b>DUB0KY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the rotary lamp relay is driven, hot short circuit (contact with 24 V circuit) is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns electric current to the rotary lamp relay circuit OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Rotary lamp does not light up.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Drive state (ON/OFF) of the rotary lamp SSR can be checked with monitoring function. (Code: <b>25601</b>, Relay Drive 0)</li> <li>Since short circuit is detected when output of the rotary lamp is ON, turn the output ON for reproduction check after recovery.</li> <li>Since this failure code detects the abnormality of the primary side (input side) of rotary lamp SSR (solid state relay), the secondary side (load side) cannot be detected.</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective resistance (Internal short circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Between A29 (male) (4) and (5)				Resistance	2 – 2.4 kΩ
Between A29 (male) (3) and (6)				Resistance	2 – 2.4 kΩ
2		Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with engine starting switch OFF and with A29 and R17 disconnected, then turn engine starting switch ON and carry out troubleshooting.		
			Between C02 (female) (9) and chassis ground	Voltage	Max. 1 V
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF and with C02 (female) (9) disconnected, then turn engine starting switch ON and carry out troubleshooting.		
			This failure code is not displayed in machine monitor.		
4		Defective rotary lamp relay (Internal defect)	If the above items 1 – 3 are normal, the work equipment, pump controller or beacon lamp relay may be defective.		



Related electrical circuit diagram

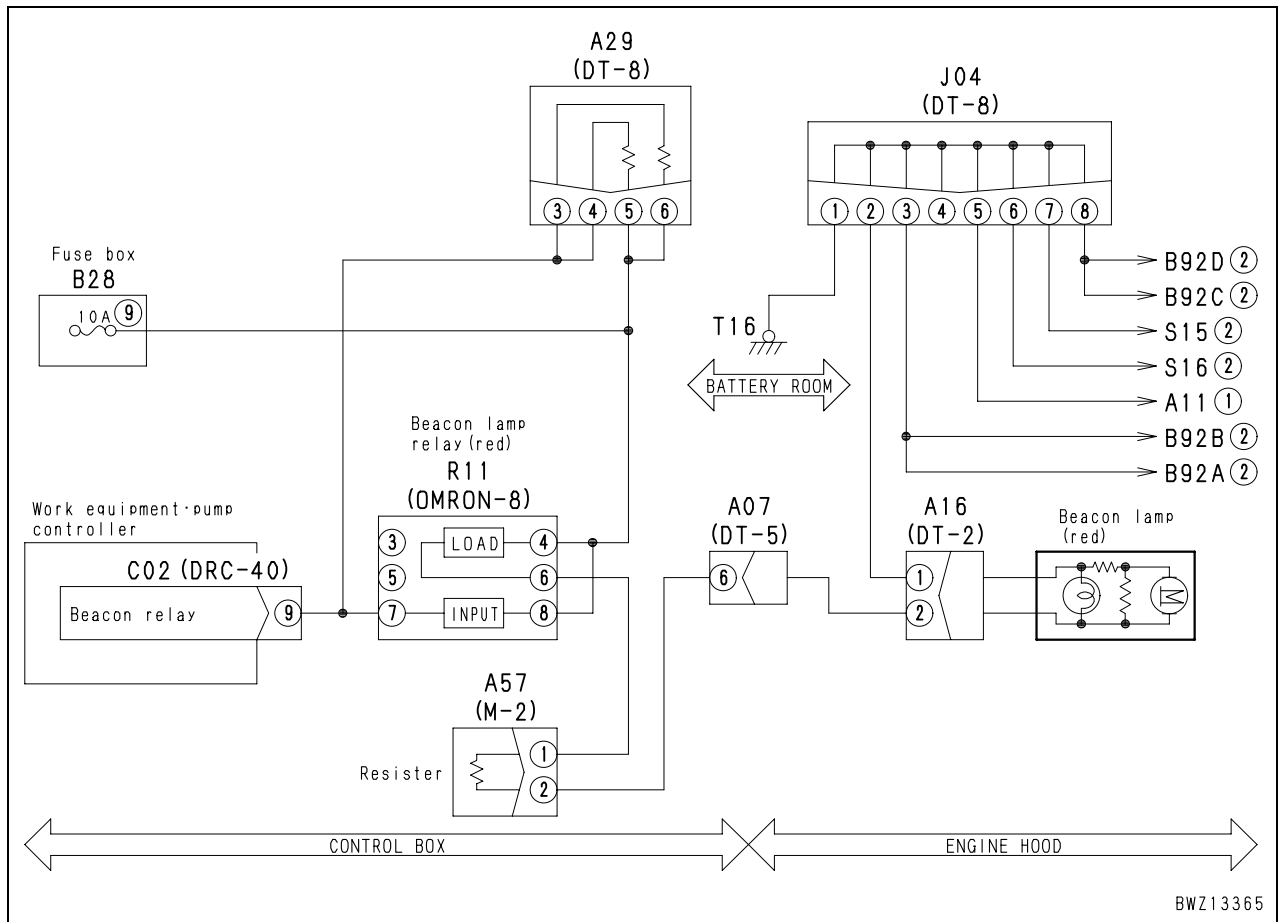


## Failure code [DUB0KZ] Disconnection or short circuit in beacon solid state relay

User code	Failure code	Trouble	Disconnection or short circuit in beacon solid state relay (Work equipment and pump controller (work equipment control) system)
—	<b>DUB0KZ</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the rotary lamp circuit is not driven, disconnection or ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns electric current to the rotary lamp relay circuit OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Rotary lamp does not light up.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>Drive state (ON/OFF) of the rotary lamp relay can be checked with monitoring function. (Code: <b>25601</b>, Relay Drive 0)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Disconnection in wiring harness	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
Wiring harness between C02 (female) (9) – R11 (7)				Resistance	Max. 1 Ω
Wiring harness between R11 (8) – fuse No. 9				Resistance	Max. 1 Ω
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C02 (female) (9) – R11 (7) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller or rotary lamp relay	If the above items 1 – 3 are normal, the work equipment, pump controller or beacon lamp relay may be defective.		

Related electrical circuit diagram

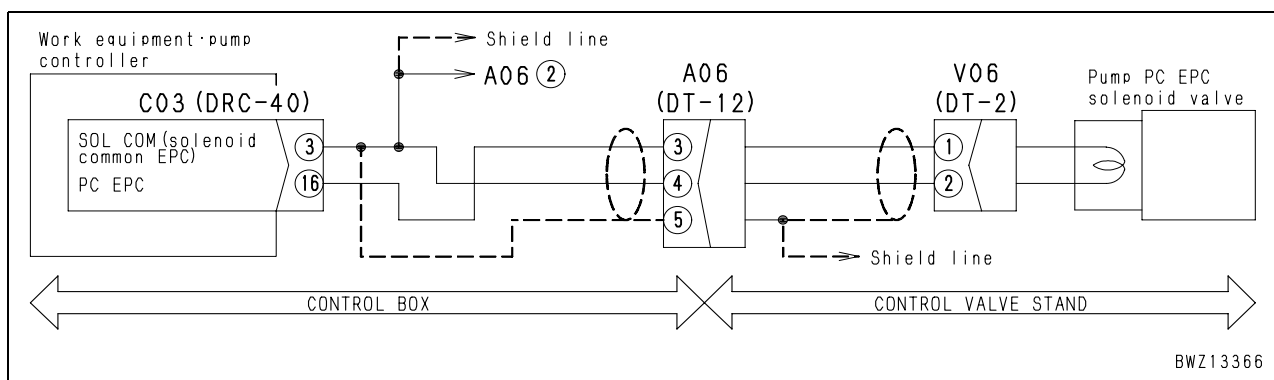


### Failure code [DXA0KA] Disconnection in PC-EPC Solenoid

User code	Failure code	Trouble	Disconnection in PC-EPC Solenoid (Work equipment and pump controller (pump control) system)
E02	<b>DXA0KA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the PC-EPC solenoid is driven, disconnection of the circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular. (Since no current flows, solenoid does not operate.)</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>When the pump load increases, engine speed lowers sharply and may cause engine stall.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>PC-EPC electric current value can be checked with the monitoring function. (Code: <b>01300</b>, PC-EPC Sol. Curr.)</li> <li>The failure history is recorded.</li> <li>Method of reproducing failure code: turn engine starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Defective PC-EPC solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.
V06 (male)				Resistance
Between (1) and (2)				7 – 14 Ω
2		Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			Wiring harness between C03 (female) (16) – V06 (female) (1)	Resistance Max. 1 Ω
			Wiring harness between C03 (female) (3) – V06 (female) (2)	Resistance Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
			C03 (female)	Resistance
			Between (16) and (3)	7 – 14 Ω

#### Related electrical circuit diagram

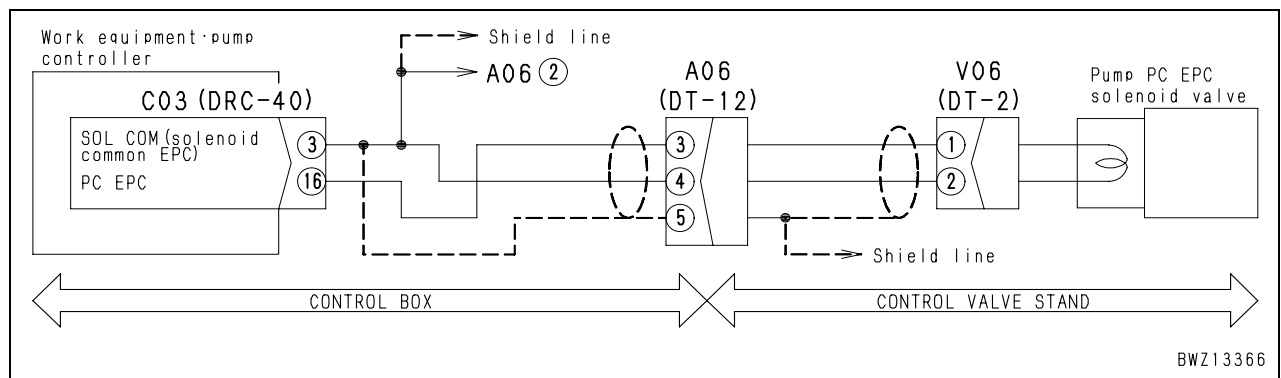


### Failure code [DXA0KB] Short circuit in PC-EPC Solenoid

User code	Failure code	Trouble	Short circuit in PC-EPC Solenoid (Work equipment and pump controller (pump control) system)
E02	<b>DXA0KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the PC-EPC solenoid is driven, ground short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns OFF the PC-EPC solenoid output.</li> <li>Even if cause of failure disappears, system does not reset itself until starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>When the pump load increases, engine speed lowers sharply and may cause engine stall.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>PC-EPC electric current value can be checked with the monitoring function. (Code: <b>01300</b>, PC-EPC Sol. Curr.)</li> <li>The failure history is recorded.</li> <li>Method of reproducing failure code: turn engine starting switch ON.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective PC-EPC solenoid (Internal short circuit or ground fault)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
V06 (male)				Resistance	
Between (1) and (2)				7 – 14 Ω	
		Between (1) and chassis ground	Min. 1 MΩ		
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (16) – V06 (female) (1) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)	Resistance	
			Between (16) and (3)	7 – 14 Ω	

#### Related electrical circuit diagram



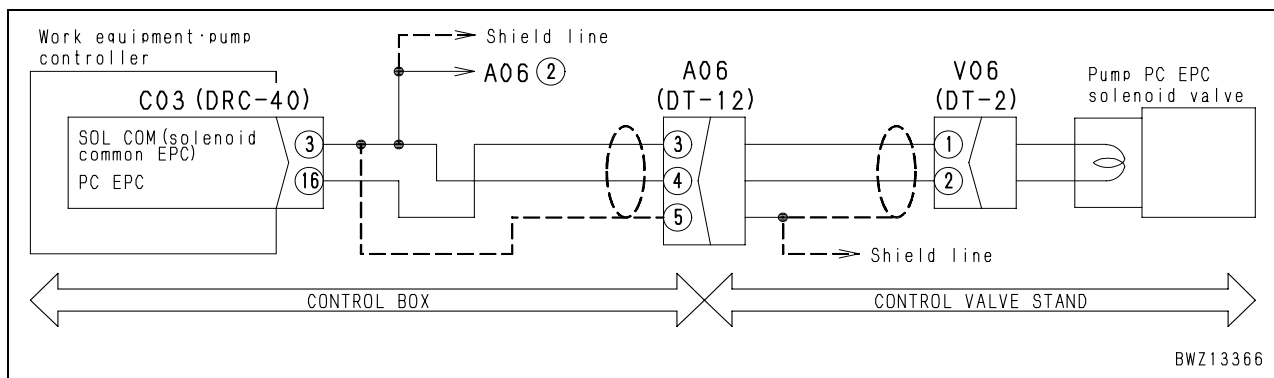
BWZ13366

### Failure code [DXA0KY] Short circuit in PC-EPC Solenoid

User code	Failure code	Trouble	Short circuit in PC-EPC Solenoid (Work equipment and pump controller (pump control) system)
E02	<b>DXA0KY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the PC-EPC solenoid circuit is not driven, hot short (contact with 24 V circuit) is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular.</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Oil flow discharged from pump lowers and the work equipment speed lowers.</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>PC-EPC current value can be checked with monitoring function. (Code: <b>01300</b>, PC-EPC Sol. Curr.)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective PC-EPC solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
V06 (male)				Resistance		
Between (1) and (2)				7 – 14 Ω		
2		Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			Wiring harness between C03 (female) (16) – V06 (female) (1) and chassis ground	Voltage	Max. 1 V	
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
	C03 (female)		Resistance			
	Between (16) and (3)		7 – 14 Ω			

#### Related electrical circuit diagram



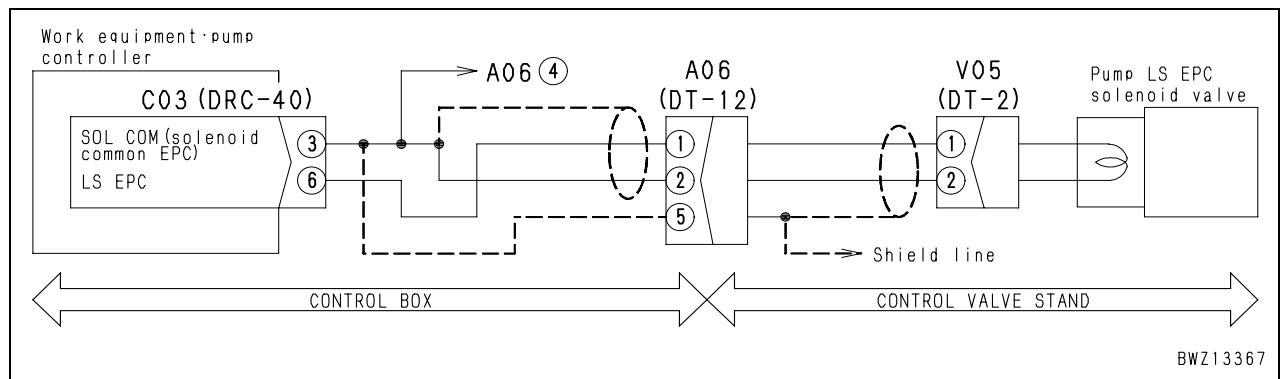
BWZ13366

### Failure code [DXE0KA] Disconnection in LS-EPC solenoid

User code	Failure code	Trouble	Disconnection in LS-EPC solenoid (Work equipment and pump controller (pump control) system)
—	<b>DXE0KA</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the LS-EPC solenoid is driven, disconnection of the circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular. (Since no electric current flows, solenoid does not operate.)</li> <li>If cause of failure disappears, system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Travel Hi/Lo cannot be switched over, or work equipment speed becomes high. (Set pressure for LS valve cannot be controlled.)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> <li>LS-EPC electric current value can be checked with the monitoring function. (Code: <b>01500</b>, LS-EPC Sol. Curr.)</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective LS-EPC solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
V05 (male)					
Resistance				7 – 14 Ω	
2		Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (6) – V05 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between C03 (female) (3) – V05 (female) (2)	Resistance	Max. 1 Ω
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)	Resistance	
	Between (6) and (3)		7 – 14 Ω		

#### Related electrical circuit diagram

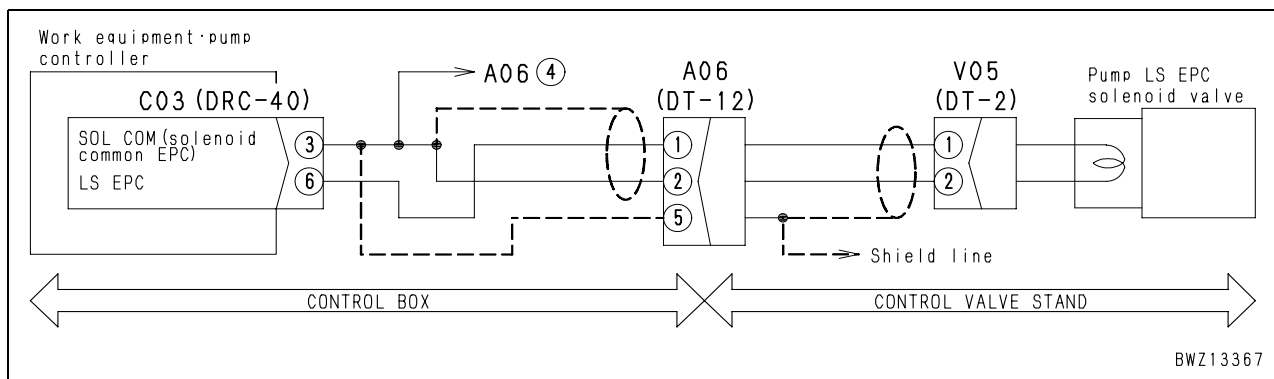


### Failure code [DXE0KB] Short circuit in LS-EPC solenoid

User code	Failure code	Trouble	Short circuit in LS-EPC solenoid (Work equipment and pump controller (pump control) system)
—	<b>DXE0KB</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the LS-EPC solenoid is driven, short circuit is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>Turns output to the LS-EPC solenoid circuit OFF.</li> <li>Even if cause of failure disappears, system does not reset itself until engine starting switch is turned OFF.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Travel Hi/Lo cannot be switched over, or work equipment travel speed becomes high. (Set pressure for LS valve cannot be controlled.)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>The failure history is recorded.</li> <li>LS-EPC electric current value can be checked with the monitoring function. (Code: <b>01500</b>, LS-EPC Sol. Curr.)</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective LS-EPC solenoid (Internal short circuit or ground fault)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.	
V05 (male)				Resistance	
Between (1) and (2)				7 – 14 Ω	
Between (1) and chassis ground				Min. 1 MΩ	
2		Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			Wiring harness between C03 (female) (6) – V05 (female) (1) and chassis ground	Resistance	Min. 1 MΩ
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
			C03 (female)	Resistance	
	Between (6) and (3)		7 – 14 Ω		
	Between (6) and chassis ground		Min. 1 MΩ		

#### Related electrical circuit diagram



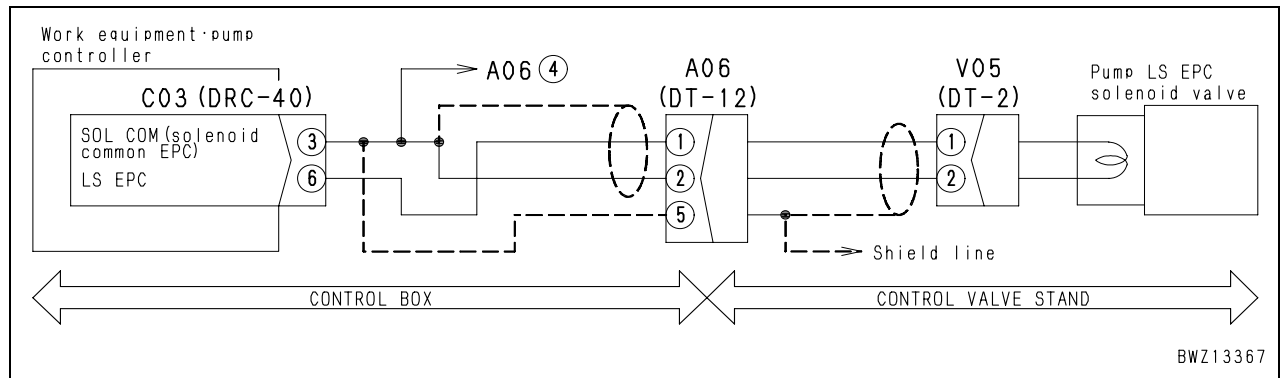


### Failure code [DXE0KY] Short circuit in LS-EPC solenoid

User code	Failure code	Trouble	Short circuit in LS-EPC solenoid (Work equipment and pump controller (pump control) system)
—	<b>DXE0KY</b>		
Contents of trouble	<ul style="list-style-type: none"> <li>When the output to the LS-EPC solenoid circuit is OFF, abnormal voltage is detected.</li> </ul>		
Action of controller	<ul style="list-style-type: none"> <li>None in particular. (Since no current flows, solenoid does not operate.)</li> <li>If cause of failure disappears, the system resets itself.</li> </ul>		
Problem that appears on machine	<ul style="list-style-type: none"> <li>Travel Hi/Lo cannot be changed over, or the work equipment speed lowers. (Set pressure in the LS valve cannot be controlled.)</li> <li>Horn sounds (three intermittent sounding) upon detecting a failure.</li> </ul>		
Related information	<ul style="list-style-type: none"> <li>LS-EPC electric current value can be checked with the monitoring function. (Code: <b>01500</b>, LS-EPC Sol. Curr.)</li> <li>The failure history is recorded.</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective LS-EPC solenoid (Internal disconnection)	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.		
V05 (male)				Resistance		
Between (1) and (2)				7 – 14 Ω		
2		Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with engine starting switch OFF, then turn engine starting switch ON and carry out troubleshooting.			
			Wiring harness between C03 (female) (6) – V05 (female) (1) and chassis ground	Voltage	Max. 1 V	
3		Defective work equipment and pump controller	★ Prepare with engine starting switch OFF, then carry out troubleshooting without turning engine starting switch ON.			
	C03 (female)		Resistance			
	Between (6) and (3)		7 – 14 Ω			

#### Related electrical circuit diagram



BWZ13367

BR380JG-1E0 Mobile crusher

---

Form No. SEN02094-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

## 40 Troubleshooting

### Troubleshooting of electrical system (E-mode)

---

---

Information in troubleshooting table .....	3
E-1 Engine does not start (Engine does not turn) .....	4
E-2 The engine stops while it is running .....	8
E-3 The automatic warm-up function does not work .....	10
E-4 Preheater does not operate .....	12
E-5 The whole work equipment stops suddenly .....	14
E-6 The red mark of emergency stop is indicated just after the engine is started .....	16
E-7 The machine monitor does not display any item .....	20
E-8 Some items are not displayed on the machine monitor .....	22
E-9 Contents of display by machine monitor are different from applicable machine .....	22
E-10 Fuel level monitor was lighted in red while engine running .....	23
E-11 Engine coolant temperature gauge does not indicate normally .....	24
E-12 The fuel level gauge does not display normally .....	26
E-13 The hydraulic oil temperature gauge does not display normally .....	27

---

E-14 The travel, work, and inspection modes do not change. ....	28
E-15 The crusher clearance adjustment mode does not change.....	30
E-16 The crusher rotation direction does not change .....	32
E-17 Machine does not travel .....	34
E-18 Travel cannot be controlled by radio control.....	36
E-19 The feeder cannot be turned ON and OFF by radio control .....	40
E-20 One-touch start, stop switch cannot be operated by radio control .....	44
E-21 The monitor switches do not work .....	47
E-22 The crusher cannot be operated with the crusher manual FORWARD/REVERSE switch on the monitor.....	48
E-23 The conveyor cannot be operated with the conveyor manual FORWARD/REVERSE switch on the monitor.....	49
E-24 KOMTRAX system does not operate normally .....	50

## Information in troubleshooting table

- ★ The following information is summarized in the troubleshooting table and the related electrical circuit diagram. Before carrying out troubleshooting, understand that information fully.

Trouble	Trouble which occurred in the machine	
Related information	Information related to detected trouble or troubleshooting	
Possible causes and standard value in normal state	1	<b>Possible causes of trouble (Given numbers are reference numbers, which do not indicate priority)</b>
	2	
	3	
	4	
		<b>Standard value in normal state/Remarks on troubleshooting</b> <b>&lt;Contents of description&gt;</b> <ul style="list-style-type: none"> <li>• Standard value in normal state to judge possible causes</li> <li>• Remarks on judgment</li> </ul> <b>&lt;Troubles in wiring harness&gt;</b> <ul style="list-style-type: none"> <li>• Disconnection Connector is connected imperfectly or wiring harness is broken.</li> <li>• Ground fault Wiring harness which is not connected to chassis ground circuit is in contact with chassis ground circuit.</li> <li>• Hot short Wiring harness which is not connected to power source (24 V) circuit is in contact with power source (24 V) circuit.</li> <li>• Short circuit Independent wiring harnesses are in contact with each other abnormally.</li> </ul> <b>&lt;Precautions for troubleshooting&gt;</b> <ol style="list-style-type: none"> <li>1) Method of indicating connector No. and handling of T-adapter Insert or connect T-adapter as explained below for troubleshooting, unless otherwise specified. <ul style="list-style-type: none"> <li>• If connector No. has no marks of “male” and “female”, disconnect connector and insert T-adapters in both male side and female side.</li> <li>• If connector No. has marks of “male” and “female”, disconnect connector and connect T-adapter to only male side or female side.</li> </ul> </li> <li>2) Entry order of pin Nos. and handling of tester leads Connect positive (+) lead and negative (–) lead of tester as explained below for troubleshooting, unless otherwise specified. <ul style="list-style-type: none"> <li>• Connect positive (+) lead to pin No. or wiring harness entered on front side.</li> <li>• Connect negative (–) lead to pin No. or harness entered on rear side.</li> </ul> </li> </ol>

### Related circuit diagram

This drawing is a part of the circuit diagram related to troubleshooting.

- Connector No.: Indicates (Model – Number of pins) and (Color).
- “Connector No. and pin No.” from each branching/merging point:  
Shows the ends of branch or source of merging within the parts of the same wiring harness.
- Arrow (↔): Roughly shows the location on the machine.

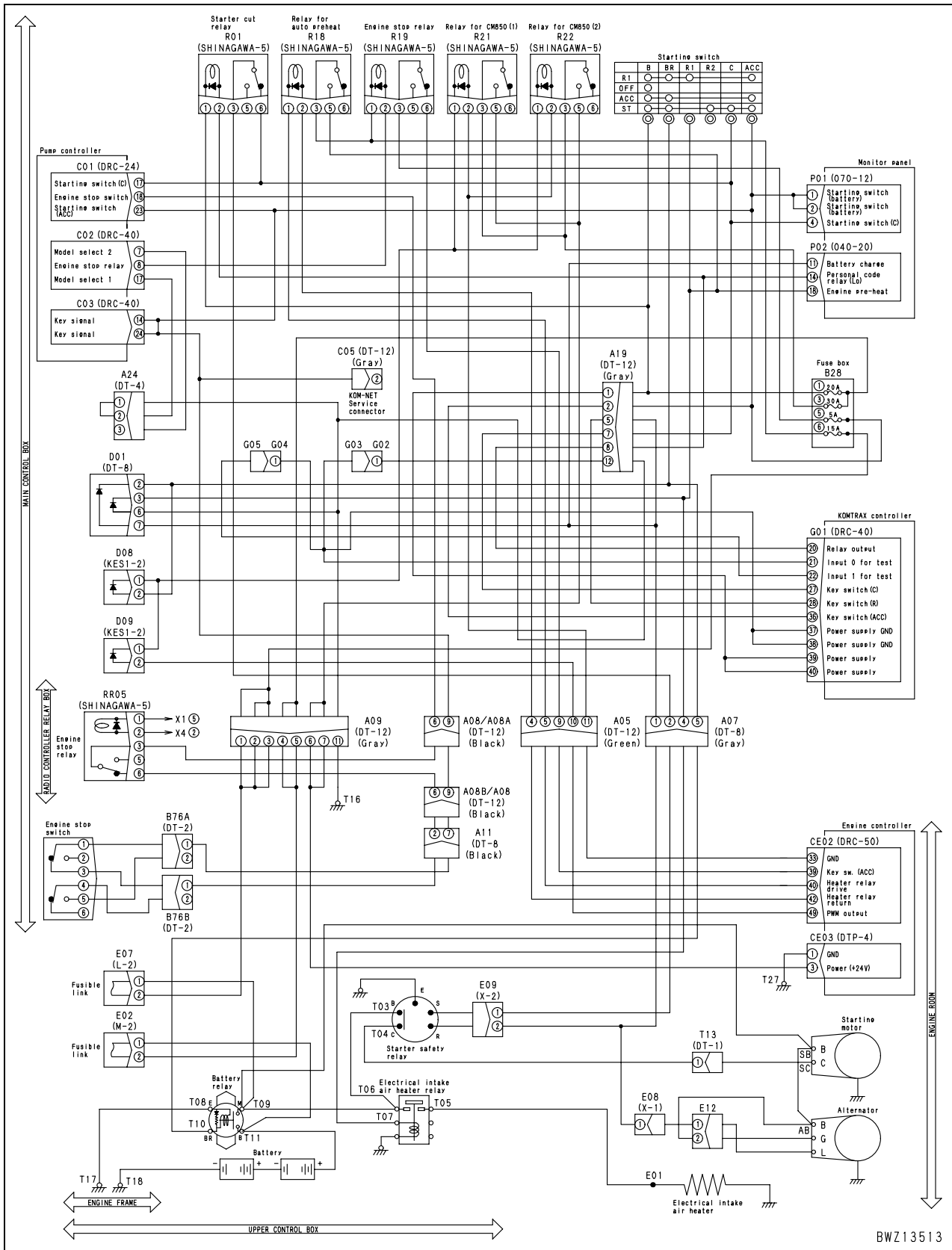
### E-1 Engine does not start (Engine does not turn)

Trouble	• Engine does not start (Engine does not turn).
Related information	• Engine starting circuit has following 2 start lock mechanisms. 1) Start lock with password of machine monitor

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Low charge level of battery	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.	
Battery voltage (2 pieces)				Electrolyte specific gravity (1 piece)	
Min. 24 V				Min. 1.26	
2		Defective fuse No. 1 or fusible link E02	If fuse or fusible link is broken, circuit probably has ground fault. (See cause 10.)		
3		Defective starting switch (Internal disconnection)	★ Prepare with starting switch OFF, then keep starting switch OFF and turn it to START and carry out troubleshooting in each case.		
			H15 (male)	Starting switch	Resistance
			Between (1) – (4)	OFF	Min. 1 MΩ
START		Max. 1 Ω			
4		Defective starting motor cutout relay R01 (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			R01 (male)		Resistance
			Between (1) – (2)		250 – 350 Ω
			Between (3) – (5)		Min. 1 MΩ
5		Defective starting motor safety relay (Internal defect)	★ Prepare with starting switch OFF (with only terminal C disconnected), then turn starting switch to START and carry out troubleshooting.		
			Safety relay terminal		Voltage
			Between B – E	Power supply	20 – 30 V
			Between R (E09-2) – E	Generation input	Max. 1 V
			Between S (E09-1) – E	Starting input	20 – 30 V
			Between C (T04) – E	Starting output	20 – 30 V
If power supply, generation input, and starting input are normal but starting output is not normal, starting motor safety relay is defective.					
6		Defective starting motor (Internal defect)	★ Prepare with starting switch OFF, then turn starting switch to START and carry out troubleshooting.		
			Starting motor terminals		Voltage
	Between B (SB) – chassis ground		Power supply	20 – 30 V	
	Between C (SC) – chassis ground		Starting input	20 – 30 V	
If power supply and starting input are normal but starting motor does not turn, starting motor is defective.					
7	Defective alternator (Internal short circuit)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
		Alternator		Voltage	
		Between L – chassis ground	Generation output	Max. 1 V	

		Cause	Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	8	Defective battery relay (Disconnection or defective tightening of terminal)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
			Battery relay	Starting switch	Voltage
			Between battery relay terminal M and chassis ground	OFF	0 V
	ON	20 – 30 V			
	9	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between starting switch C – R01 (male) (6)	Resistance	Max. 1 Ω
			Wiring harness between R01 (female) (3) – A07 (2) – E09 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between battery (+) – battery relay B – E02 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between starting motor safety relay B – heater relay – battery relay M	Resistance	Max. 1 Ω
			Wiring harness between starting motor safety relay E – chassis ground	Resistance	Max. 1 Ω
			Wiring harness between starting motor safety relay C – starting motor C (SC)	Resistance	Max. 1 Ω
			Wiring harness between E02 (female) (2) – A09 (4) (5) – B28 (1) (power supply side)	Resistance	Max. 1 Ω
			Wiring harness between B28 (1) – starting switch B	Resistance	Max. 1 Ω
Wiring harness between starting switch BR – A07 (5) – battery relay BR			Resistance	Max. 1 Ω	
Wiring harness between battery relay M – starting motor B (SB)	Resistance	Max. 1 Ω			
10	Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
		Wiring harness between starting switch C – R01 (female) (6)	Resistance	Min. 1 MΩ	
		Wiring harness between R01 (female) (3) – A07 (2) – E09 (female) (1)	Resistance	Min. 1 MΩ	
		Wiring harness between R01 (female) (2) – P02 (female) (14)	Resistance	Min. 1 MΩ	
		Wiring harness between starting motor safety relay B – heater relay – battery relay M	Resistance	Min. 1 MΩ	
		Wiring harness between starting motor safety relay C – starting motor C (SC)	Resistance	Min. 1 MΩ	
		Wiring harness between battery (+) – battery relay B – E02 – A09 (1) (2) (3) – B28 (1) (power supply side)	Resistance	Min. 1 MΩ	
		Wiring harness between B28 (1) – starting switch B	Resistance	Min. 1 MΩ	
Wiring harness between starting switch BR – A07 (5) – battery relay BR	Resistance	Min. 1 MΩ			
11	Hot short (Short circuit with 24V circuit) in wiring harness	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
		Wiring harness between E09 (female) (2) – alternator L, – circuit branch end	Voltage	Max. 1 V	

Electrical circuit diagram related to engine preheating, starting, stopping and charging



BWZ13513

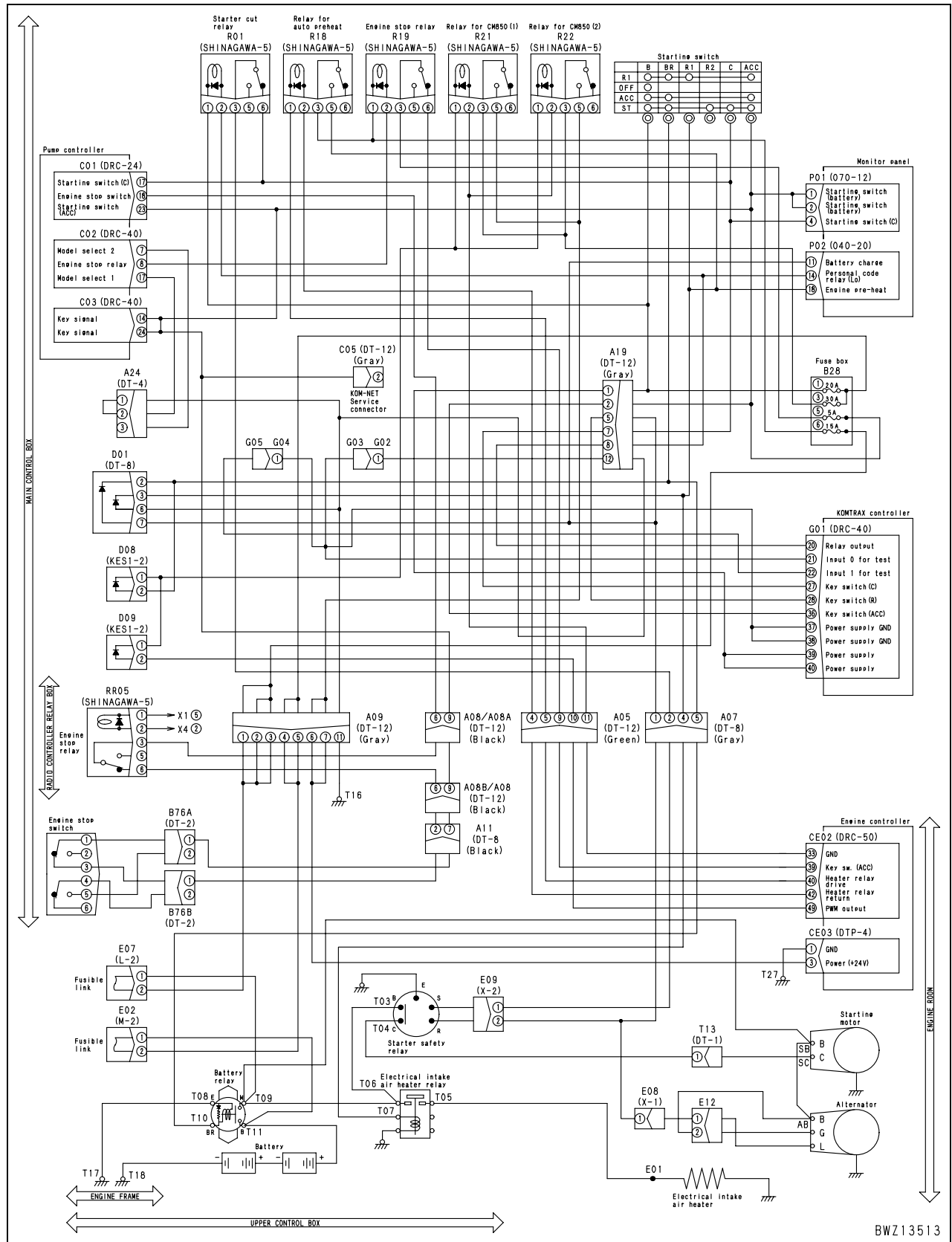


## E-2 The engine stops while it is running

Trouble	<ul style="list-style-type: none"> <li>The engine stops while it is running.</li> </ul>
Related information	<ul style="list-style-type: none"> <li>When the engine stop switch (or radio controller all stop switch) is operated, the machine monitor displays "Engine stopped" for about 10 seconds.</li> <li>If failure code [DDA6KA] is displayed when the key is ON, carry out troubleshooting for it.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Disconnection in ACC line (Defective contact in connector or looseness of round terminal screw)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.	
CE02 (female)			Starting switch	Voltage
		Between (39) – chassis ground	OFF	Max. 1 V
			ACC	20 – 30 V
2	Defective fuse No. 5	If fuse or fusible link is broken, circuit probably has ground fault. (See cause 6.)		
3	Defective engine stop relay R19 or engine stop relay RR05 (with radio controller only) (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
		R19 (male), RR05 (male)	Resistance	
		Between (1) – (2)	250 – 350 Ω	
		Between (3) – (5)	Min. 1 MΩ	
4	Defective engine stop switch (Internal disconnection)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
		Connector	Switch	Resistance
		Between B76A (male) (1) – B76B (female) (1)	Released	Max. 1 Ω
			Pressed	Min. 1 MΩ
5	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
		Wiring harness between starting switch ACC – B28 (5) (power supply side) – circuit branch end	Resistance	Max. 1 Ω
		Wiring harness between starting switch ACC – A08 (9) – A11 (7) – B76A (female) (1)	Resistance	Max. 1 Ω
		Wiring harness between B76B (male) (1) – A11 (2) – A08 (6) – C01 (female) (18)	Resistance	Max. 1 Ω
		Wiring harness between B28 (5) – R19 (female) (3)	Resistance	Max. 1 Ω
		Wiring harness between R19 (female) (6) – A05 (9) – CE02 (female) (39)	Resistance	Max. 1 Ω
6	Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
		Wiring harness between starting switch ACC – B28 (5) (power supply side) – circuit branch end	Resistance	Max. 1 Ω
		Wiring harness between B28 (5) – R19 (female) (3)	Resistance	Max. 1 Ω
		Wiring harness between R19 (female) (6) – A05 (9) – CE02 (female) (39)	Resistance	Max. 1 Ω
		Wiring harness between R19 (female) (2) – C02 (female) (8)	Resistance	Max. 1 Ω
		Between wiring harness connected to RR05 (female) (2) and chassis ground	Resistance	Max. 1 Ω

Electrical circuit diagram related to engine preheating, starting, stopping and charging



### E-3 The automatic warm-up function does not work.

Trouble	<ul style="list-style-type: none"> <li>The automatic warm-up function does not work.</li> </ul>
Related information	<ul style="list-style-type: none"> <li>When the engine coolant temperature is below 30°C, the automatic warm-up device raise the engine speed to 1,200 rpm.</li> <li>If the fuel control dial is opened more than 70% for 3 seconds when the starting switch is turned ON or after the engine is started, the automatic warm-up function is reset.</li> <li>If engine coolant temperature is below 10°C, turbocharge protection function operates to keep the engine speed at low idle.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	1	Defective engine coolant temperature signal	If the monitor does not display normally, go to troubleshooting No. E-11.		
Monitoring code			Monitoring item	Normal display	
		04107	Engine coolant temperature	Compare with actual engine coolant temperature.	
2	Defective engine controller	Troubleshooting cannot be carried out since the defect is in the controller. (If the above cause is not the cause of the failure, the engine controller must be defective.)			

### E-4 Preheater does not operate

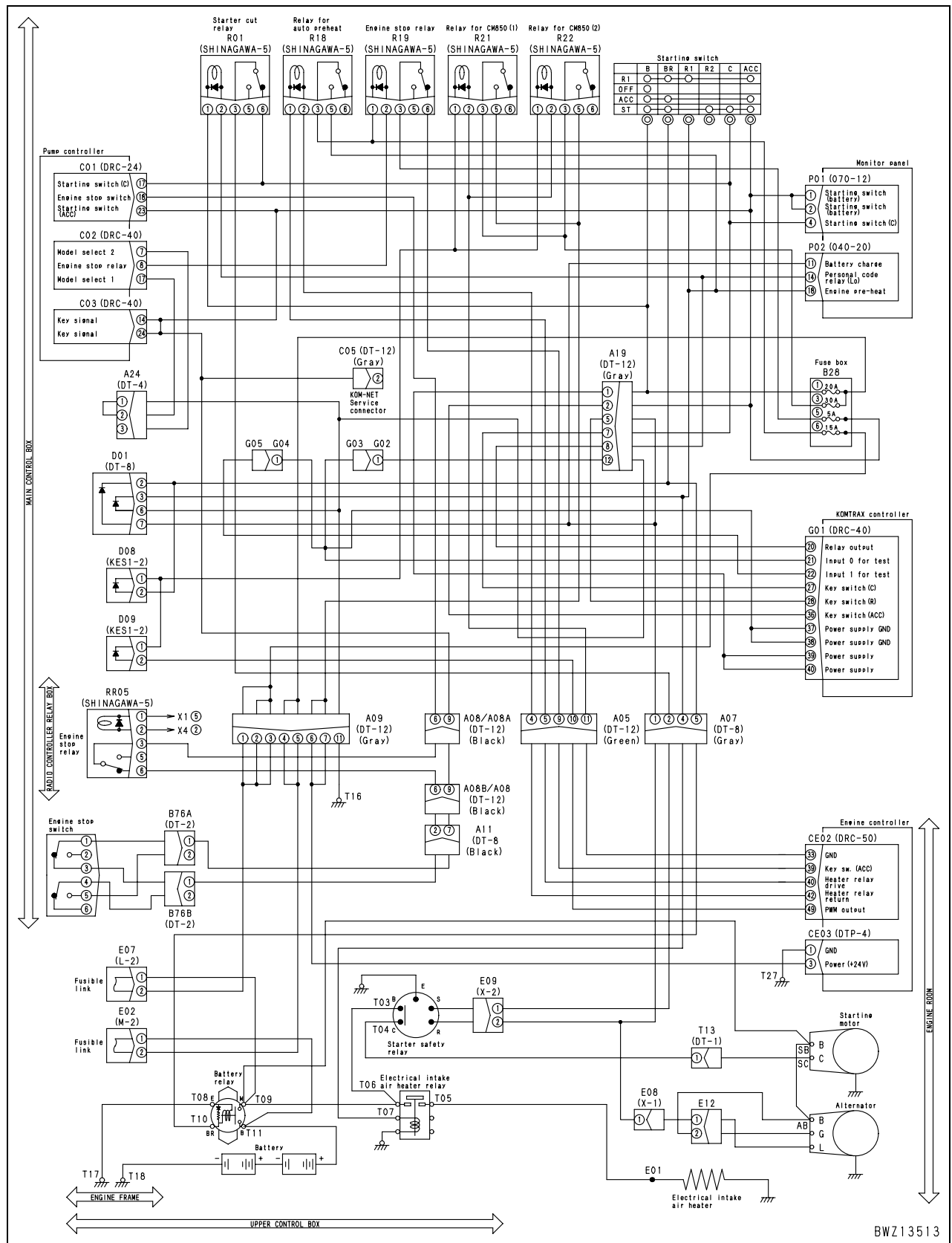
Trouble	(1) When starting switch is turned to HEAT position, preheating monitor does not light up or flash.
Related information	<ul style="list-style-type: none"> <li>Preheater monitor lights up when starting switch is turned to HEAT and starts flashing about 30 seconds after to notify completion of preheating (It stops flashing about 10 seconds after).</li> <li>If engine coolant temperature is below 20°C, automatic warm-up system operates and preheating monitor lights up for up to 30 seconds.</li> <li>Condition of starting switch (preheating) signal can be checked with the monitoring function. (Code <b>04500</b>: Monitor input 1)</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	1	Defective starting switch (Internal disconnection)	★ Prepare with starting switch OFF, then keep starting switch OFF and turn it to HEAT and carry out troubleshooting in each case.	
Starting switch				Starting switch	Resistance
Between B – R1				OFF	Min. 1 MΩ
				HEAT	Max. 1 Ω
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between P02 (female) (18) – starting switch R1	Resistance	Max. 1 Ω
3		Defective machine monitor	★ Prepare with starting switch OFF, then keep starting switch OFF and turn it to HEAT and carry out troubleshooting in each case.		
			P02	Starting switch	Voltage
			Between (18) – chassis ground	OFF	Max. 1 V
				HEAT	20 – 30 V

Trouble	(2) When starting switch is turned to HEAT position, intake air heater mounting part does not become warm.
Related information	<ul style="list-style-type: none"> <li>Check that engine can be turned with starting motor (If engine cannot be turned, carry out troubleshooting for E-1 Engine does not start (Engine does not turn)).</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	1	Defective heater relay (Internal disconnection)	★ Prepare with starting switch OFF (with wiring harness connected), then keep starting switch OFF and turn it to HEAT and carry out troubleshooting in each case.	
Heater relay				Starting switch	Continuity/Resistance
Between T07 – chassis ground				OFF	There is continuity
Between T06 – T05				HEAT	Max. 1 Ω
2		Defective intake air heater (Internal disconnection)	★ Prepare with starting switch OFF (with wiring harness connected), then turn starting switch to HEAT and carry out troubleshooting in each case.		
			E01	Starting switch	Voltage
			Between terminal – chassis ground	HEAT	20 – 30 V
			If voltage is normal but heater mounting part does not become warm, intake air heater is defective.		
3		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between starting switch R1 – heater relay T07	Resistance	Max. 1 Ω
	Wiring harness between battery relay M – heater relay T06		Resistance	Max. 1 Ω	
	Wiring harness between heater relay T05 – electrical intake air heater E01		Resistance	Max. 1 Ω	

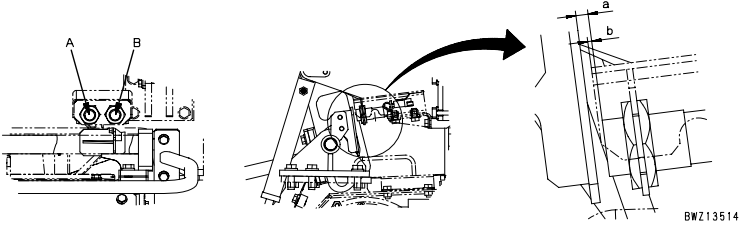
Electrical circuit diagram related to engine preheating, starting, stopping and charging



BWZ13513

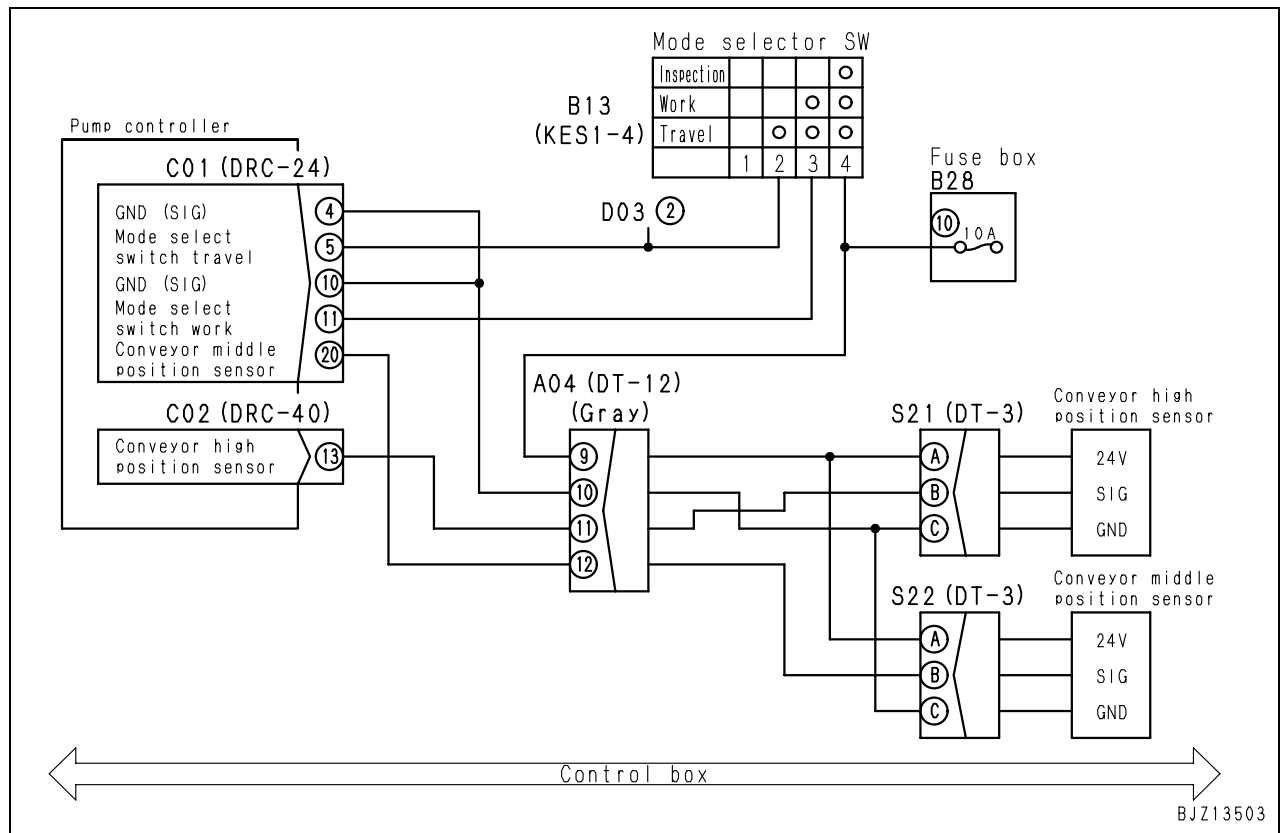
### E-5 The whole work equipment stops suddenly

Trouble	<ul style="list-style-type: none"> <li>The whole work equipment stops suddenly.</li> </ul>
Related information	<ul style="list-style-type: none"> <li>The work equipment stops suddenly while no switches are operated in the following cases;                     <ul style="list-style-type: none"> <li>(1) The work equipment is overloaded.</li> <li>(2) Engine has abnormality. In these cases, the horn sounds.</li> </ul> </li> <li>The work equipment may also stop when the mode selection switch or conveyor height sensor failure is mistakenly detected.</li> <li>Input of the mode selector switch/conveyor position sensor can be checked in the monitoring function of the machine monitor.</li> </ul>

Possible causes and standard value in normal state	Cause	Standard value in normal state/Remarks on troubleshooting			
	Possible causes and standard value in normal state	1 Defective adjustment of conveyor position sensor	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON. Clearance between conveyor position sensor and detection plate 		
Sensor			Clearance	When conveyor is up	When conveyor is middle
Conveyor up position sensor (A)			a	4 – 7 mm	—
			b	1 – 2 mm	—
Conveyor middle position sensor (B)			a	4 – 7 mm	4 – 7 mm
		b	1 – 2 mm	1 – 2 mm	
2 Defective fuse No. 10		If fuse is broken, circuit probably has ground fault. (See cause 6.)			
3 Defective conveyor position sensor		When the state of the conveyor up position sensor and conveyor middle position sensor on the monitor is different from the actual state, and when grounding fault is not found in the below conveyor position sensors, the conveyor position sensor may be defective			
		Sensor	When conveyor is up	When conveyor is middle	When conveyor is low
		Conveyor up position sensor (A)	ON (GND)	OFF (24 V)	OFF (24 V)
		Conveyor middle position sensor (B)	ON (GND)	ON (GND)	OFF (24 V)
4 Defective mode selector switch		★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
	B13 (male)	Mode selector switch	Resistance		
	Between (2) – (4)	Travel	Max. 1 Ω		
		Work	Min. 1 MΩ		
		Inspection	Min. 1 MΩ		
	Between (3) – (4)	Travel	Max. 1 Ω		
		Work	Max. 1 Ω		
Inspection		Min. 1 MΩ			

		Cause	Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	5	Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between B28 (10) – B13 (female) (4)	Resistance	Max. 1 Ω
			Wiring harness between B13 (female) (3) – C01 (female) (11)	Resistance	Max. 1 Ω
	6	Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF (Keep the conveyor lower), then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between B28 (10) – B13 (female) (4) – circuit branch end	Resistance	Min. 1 MΩ
			Wiring harness between B13 (female) (3) – C01 (female) (11) and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between S21 (female) (B) – A04 – C02 (female) (13) and chassis ground	Resistance	Min. 1 MΩ
	7	Hot short in wiring harness (Contact with 24 V)	★ Prepare with starting switch OFF (Turn mode selector switch to work position), then turn starting switch ON and carry out troubleshooting.		
			Wiring harness between B13 (female) (2) – C01 (female) (5) – circuit branch end	Voltage	Max. 1 V

Relative electrical circuit diagram



### E-6 The red mark of emergency stop is indicated just after the engine is started

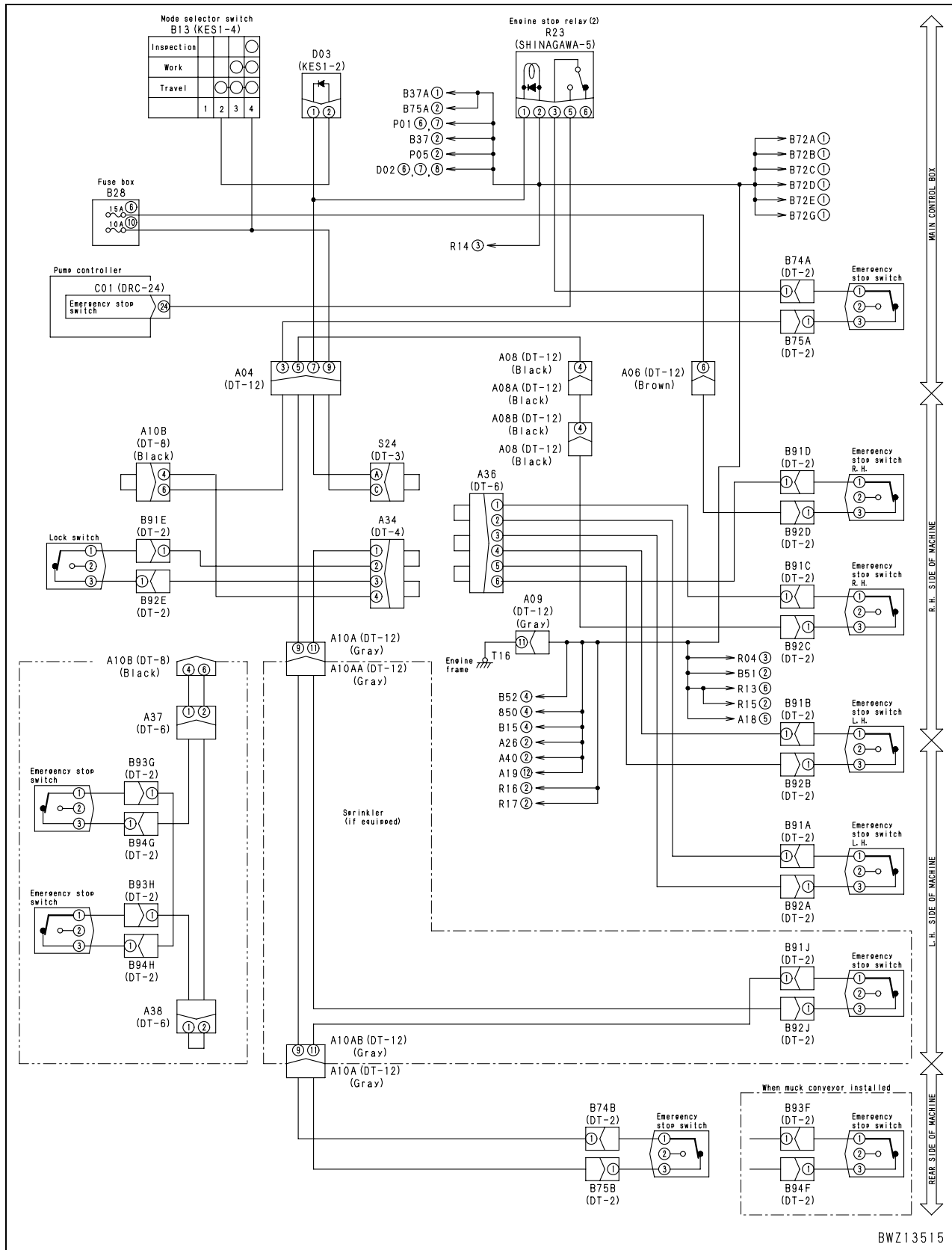
Trouble	<ul style="list-style-type: none"> <li>The red mark of emergency stop is indicated just after the starting switch is turned ON.</li> <li>In this case, the work equipment cannot be started.</li> </ul>
Related information	<ul style="list-style-type: none"> <li>The emergency stop signal can be checked in the monitoring function of the machine monitor. (Code <b>25003</b>: Switch input 3)</li> </ul>

Possible causes and standard value in normal state	Cause	Standard value in normal state/Remarks on troubleshooting		
	1	Defective emergency stop switch (Disconnection in wiring harness or defective contact in connector) (☆: When optional equipment is installed)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.	
Emergency stop switch			Emergency stop switch	Resistance
Wiring harness between B74A (male) (1) – B75A (female) (1)			OFF	Max. 1 Ω
Wiring harness between B74B (male) (1) – B75B (female) (1)			OFF	Max. 1 Ω
☆Wiring harness between B93F (male) (1) – B94F (female) (1)			OFF	Max. 1 Ω
Wiring harness between B91A (male) (1) – B92A (female) (1)			OFF	Max. 1 Ω
Wiring harness between B91B (male) (1) – B92B (female) (1)			OFF	Max. 1 Ω
Wiring harness between B91C (male) (1) – B92C (female) (1)			OFF	Max. 1 Ω
Wiring harness between B91D (male) (1) – B92D (female) (1)			OFF	Max. 1 Ω
Wiring harness between B91E (male) (1) – B92E (female) (1)			OFF	Max. 1 Ω
☆Wiring harness between B91J (male) (1) – B92J (female) (1)			OFF	Max. 1 Ω
☆Wiring harness between B93G (male) (1) – B94G (female) (1)			OFF	Max. 1 Ω
☆Wiring harness between B93H (male) (1) – B94H (female) (1)			OFF	Max. 1 Ω
2			Defective emergency stop relay 2 (R23) (Internal disconnection or short circuit) * : According to connector connecting condition, carry out troubleshooting	★ Prepare with starting switch OFF, then hold starting switch OFF and ON and carry out troubleshooting in each case.
	R23 (male)	Starting switch		Resistance
	Between (1) – (2)	OFF		250 – 350 Ω
	Between (3) – (5)	OFF		Min. 1 MΩ *
		ACC		Max. 1 Ω *
	Between (3) – (6)	OFF		Max. 1 Ω *
ACC		Min. 1 MΩ *		



		Cause	Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	3	Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector) (☆: When optional equipment is installed)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between B28 (6) – A06 (6) – B92D (1) – B91D (1) – A36 (female) (6)	Resistance	Max. 1 Ω
			Wiring harness between A36 (female) (5) – B92B (1) – B91B (1) – A36 (female) (4)	Resistance	Max. 1 Ω
			Wiring harness between A36 (female) (3) – B92A (1) – B91A (1) – A36 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between A36 (female) (1) – B91C (1) – B92C (1) – A08 (4) – A04 (5) – A10A (9) – B74B (1) / ☆B93F (1) – B75B (1) / ☆B94F (1) – A10A (male) (11)	Resistance	Max. 1 Ω
			☆Wiring harness between A10AB (female) (11) – B91J (1) – B92J (1) – A10AA (male) (11)	Resistance	Max. 1 Ω
			Wiring harness between A10A (female) (11) – A34 (female) (11)	Resistance	Max. 1 Ω
			Wiring harness between A34 (female) (2) – B91E (1) – B92E (1) – A34 (female) (3)	Resistance	Max. 1 Ω
			Wiring harness between A34 (female) (4) – A10B – A04 (3) – B75A (1) – B74A (1) – R23 (female) (3)	Resistance	Max. 1 Ω
			☆Wiring harness between A34 (female) (4) – A10B (4) – A37 (1) – B94G (1) – B93G (1) – B94H (1) – B93H (1) – A38 (male) (1)	Resistance	Max. 1 Ω
			☆Wiring harness between A38 (male) (2) – A37 (2) – A10B (male) (6)	Resistance	Max. 1 Ω
			Wiring harness between R23 (female) (5) – C01 (female) (24)	Resistance	Max. 1 Ω
			Wiring harness between R28 (10) – A04 (9) – S24 – A04 (7) – R23 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between R23 (female) (2) – chassis ground	Resistance	Max. 1 Ω
			Wiring harness between A36 (male) (6) – A36 (male) (5)	Resistance	Max. 1 Ω
			Wiring harness between A36 (male) (4) – A36 (male) (3)	Resistance	Max. 1 Ω
			Wiring harness between A36 (male) (2) – A36 (male) (1)	Resistance	Max. 1 Ω
			Wiring harness between A34 (male) (1) – A36 (male) (2)	Resistance	Max. 1 Ω
			Wiring harness between A34 (male) (3) – A34 (male) (4)	Resistance	Max. 1 Ω
	Wiring harness between A10B (male) (4) – A10B (male) (6)	Resistance	Max. 1 Ω		
☆Wiring harness between A38 (female) (1) – A38 (female) (2)	Resistance	Max. 1 Ω			
4	Defective controller	★ Prepare with starting switch OFF (Check that all the emergency stop switches have cancelled), then turn starting switch ON and carry out troubleshooting.			
		C01	Voltage		
		Between (24) – chassis ground	20 – 30 V		

Electrical circuit diagram related to engine emergency stop

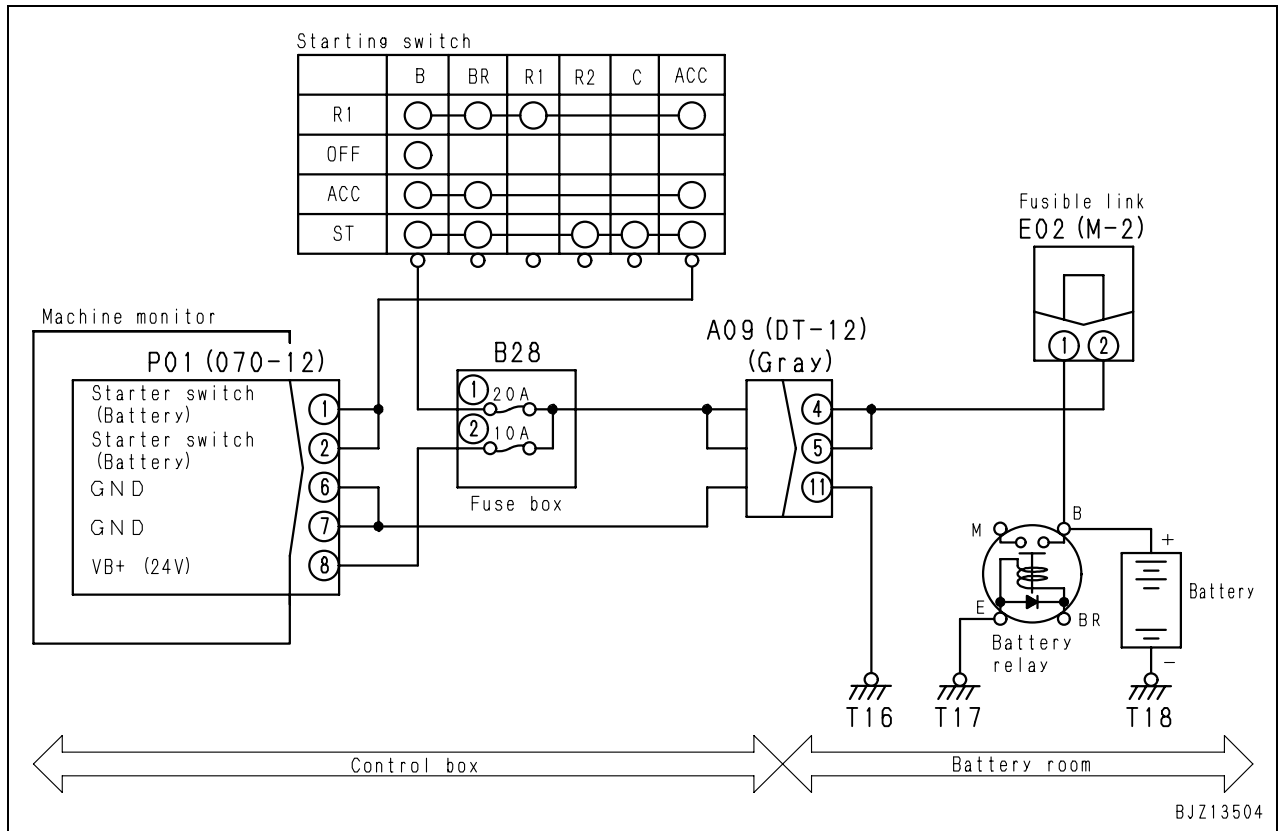


### E-7 The machine monitor does not display any item

Trouble	• When the starting switch is turned ON, the machine monitor does not display any item
Related information	—

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective fuse No. 1	If fuse is broken, the circuit probably has ground fault.	
2		Defective starting switch	★ Prepare with starting switch OFF, then keep starting switch OFF and ON and carry out troubleshooting in each case.		
			Starting switch	Starting switch	Resistance
			Between B – ACC	OFF	Min. 1 MΩ
ON		Max. 1 Ω			
3		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between P01 (female) (1) (2) – starting switch ACC	Resistance	Max. 1 Ω
			Wiring harness between starting switch B – fuse box B28 (1)	Resistance	Max. 1 Ω
			Wiring harness between P01 (female) (6) (7) – A09 – chassis ground	Resistance	Max. 1 Ω
4		Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between P01 (female) (1) (2) – starting switch ACC and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between starting switch B – fuse box B28 (1) and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between P01 (female) (8) – fuse box B28 (2) and chassis ground	Resistance	Min. 1 MΩ
5		Defective machine monitor	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
			P01	Voltage, Resistance	
	Between (1) (2) – chassis ground		20 – 30 V		
	Between (6) (7) – chassis ground		Min. 1 MΩ		
		Between (8) – chassis ground	20 – 30 V		

Electrical circuit diagram related to machine monitor power supply system



## E-8 Some items are not displayed on the machine monitor

Trouble	• When the starting switch is turned ON, some items are not displayed on the machine monitor.
Related information	—

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defective machine monitor	

## E-9 Contents of display by machine monitor are different from applicable machine

Trouble	• Contents of display by machine monitor are different from applicable machine.
Related information	—

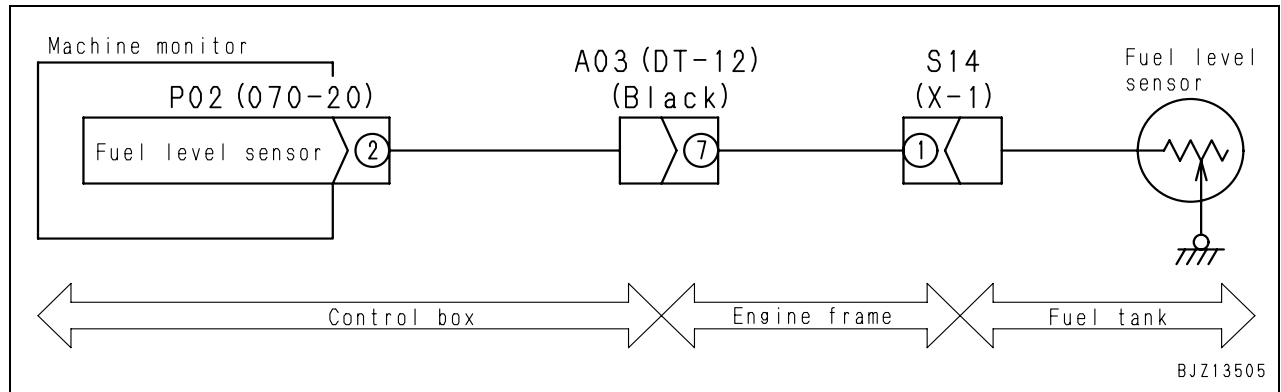
Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
	1	Defective model code signal (Internal defect)	In the case monitoring display is not normal, proceed to failure code [DA2SKQ].			
			Monitoring code	Item	Normal display	
		00200	Controller model code Select model	BR380JG-a		
2	Defective machine monitor	Since trouble is in system, troubleshooting cannot be carried out. (If causes stated above are not detected, engine controller may be defective.)				

### E-10 Fuel level monitor was lighted in red while engine running

Trouble	<ul style="list-style-type: none"> <li>Fuel level monitor was lighted in red while the engine running</li> </ul>
Related information	<ul style="list-style-type: none"> <li>If fuel level gauge on the machine monitor indicates red range, fuel level monitor turns red.</li> <li>Input signal (voltage) from the fuel level sensor can be checked with monitoring function. (Code <b>04200</b>: Fuel level sensor voltage)</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Low fuel level (When system is normal)	★ Add fuel	
2		Defective fuel level sensor (Internal disconnection)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			S14 (male)	Fuel level	Resistance
			Between (1) – chassis ground	FULL (Upper limit)	Approx. 12 Ω
				EMPTY (Lower limit)	85 – 110 Ω
3		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between P02 (female) (2) – A03 (7) – S14 (female) (1)	Resistance	Max. 1 Ω
4		Defective machine monitor	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			P02 (female)	Fuel level	Resistance
			Between (2) – chassis ground	FULL (Upper limit)	Approx. 12 Ω
			EMPTY (Lower limit)	85 – 110 Ω	

#### Electrical circuit diagram related to fuel level sensor

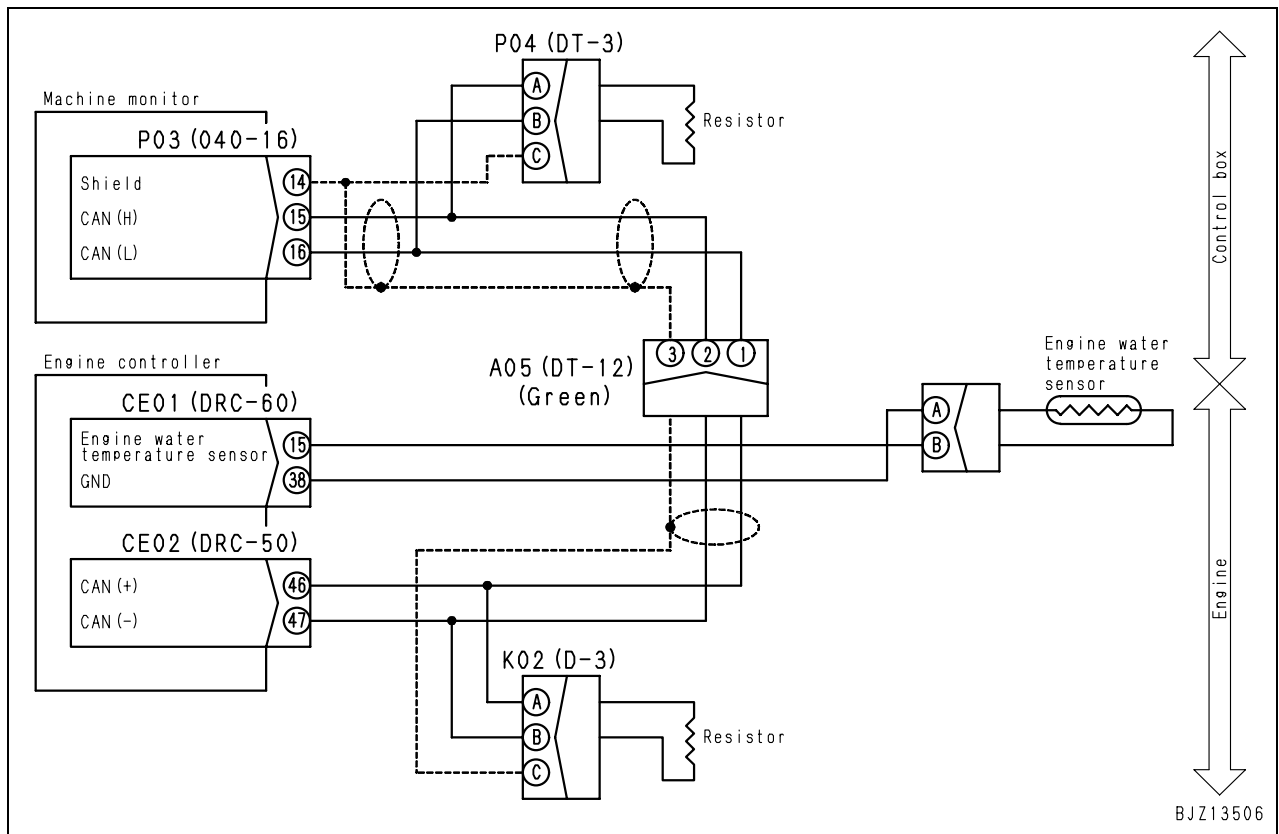


### E-11 Engine coolant temperature gauge does not indicate normally

Trouble	<ul style="list-style-type: none"> <li>While engine coolant temperature is rising normally, temperature gauge does not rise from white range (C).</li> <li>While engine coolant temperature is stabilized normally, temperature gauge rises to red range (H).</li> </ul>
Related information	<ul style="list-style-type: none"> <li>Input from the engine coolant temperature sensor (temperature) can be checked with monitoring function. (Code: <b>04107</b>: Engine coolant temperature)</li> <li>Check if failure code for CAN communication error (machine monitor) system [<b>DAFRMC</b>] is indicated (if yes, diagnose that failure first.)</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	1	Defective coolant temperature sensor (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.	
coolant temperature sensor (male)				Engine coolant temperature	Resistance
Between (B) – (A)				10 – 100°C	0.18 – 160 kΩ
Between (B) – chassis ground					Min. 1 MΩ
2		Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between CE01 (female) (15) – coolant temperature sensor (female) (B)	Resistance	Max. 1 Ω
			Wiring harness between coolant temperature sensor (female) (A) – chassis ground	Resistance	Max. 1 Ω
3		Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between CE01 (female) (15) – coolant temperature sensor (female) (B) and chassis ground	Resistance	Min. 1 MΩ
4		Hot short (Short circuit with 24V circuit) in wiring harness	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
			Wiring harness between CE01 (female) (15) – coolant temperature sensor (female) (B) and chassis ground	Voltage	Max. 1 V
5		Defective engine controller	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			CE01 (female)	Engine coolant temperature	Resistance
			Between (15) – chassis ground	10 – 100°C	0.18 – 160 kΩ

Electrical circuit diagram related to engine coolant temperature sensor



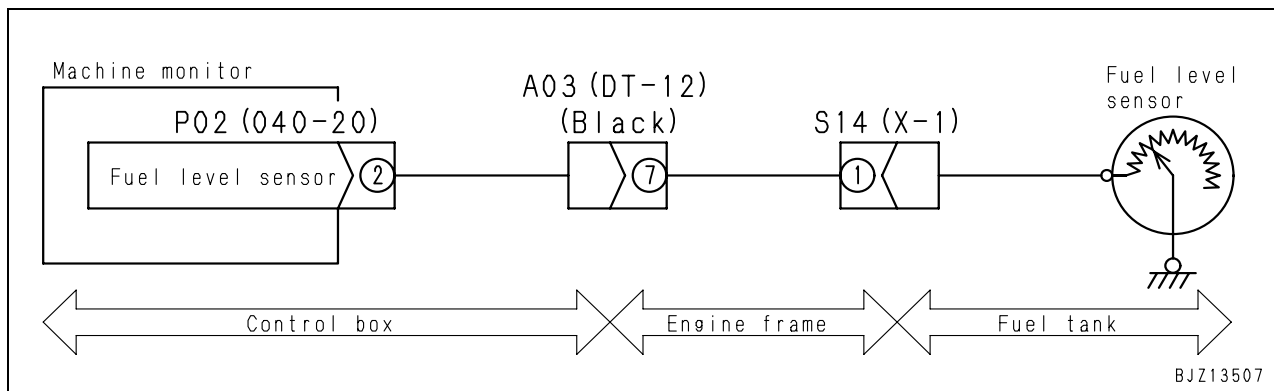


### E-12 The fuel level gauge does not display normally.

Trouble	<ul style="list-style-type: none"> <li>After fuel is added, the fuel level gauge does not rise from the red range (E).</li> <li>After the fuel level lowers, the fuel level gauge does not lower from the green range (F).</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Input from the fuel level sensor (voltage) can be checked in the monitoring function of the machine monitor. (Code: <b>04200</b>: Fuel level sensor voltage)</li> </ul>

Possible causes and standard value in normal state	Cause	Standard value in normal state/Remarks on troubleshooting		
		1 Defective fuel level sensor (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.	
S14 (male)			Fuel level	Resistance
Between (1) – chassis ground			FULL (Upper limit)	Approx. 12 Ω
			EMPTY (Lower limit)	85 – 110 Ω
2 Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)		★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
		Wiring harness between P02 (female) (2) – A03 (7) – S14 (female) (1)	Resistance	Max. 1 Ω
3 Short circuit with chassis ground in wiring harness (Contact with ground circuit)		★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
		Wiring harness between P02 (female) (2) – A03 (7) – S14 (female) (1) and chassis ground	Resistance	Min. 1 MΩ
4 Short circuit with power source in wiring harness (Contact with 24-V circuit)		★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
		Wiring harness between P02 (female) (2) – A03 (7) – S14 (female) (1) and chassis ground	Voltage	Max. 1 V
5 Defective machine monitor		★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
		P02 (female)	Fuel level	Resistance
		Between (2) – chassis ground	FULL (Upper limit)	Approx. 12 Ω
			EMPTY (Lower limit)	85 – 110 Ω

#### Electrical circuit diagram related to fuel level sensor

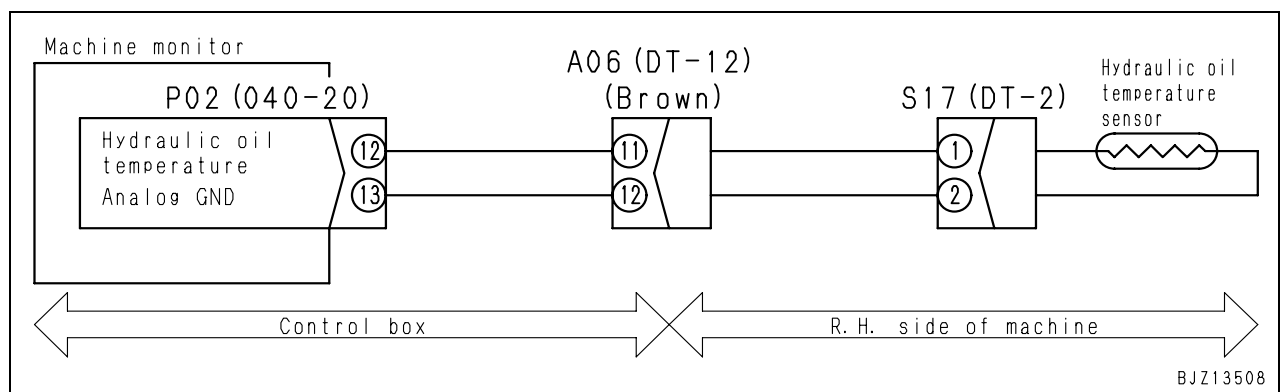


### E-13 The hydraulic oil temperature gauge does not display normally

Trouble	<ul style="list-style-type: none"> <li>While the hydraulic oil temperature rises normally, the temperature gauge does not rise from the white range (C).</li> <li>While the hydraulic oil temperature is stabled normally, the temperature gauge rises to the red range (H).</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Input from the hydraulic oil temperature sensor (temperature) can be checked in the monitoring function of the machine monitor. (Code <b>04402</b>: Hydraulic oil temperature)</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Defective hydraulic oil temperature sensor (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
S17 (male)				Hydraulic oil temperature	Resistance	
Between (1) – (2)				25 – 100°C	3.5 – 90 kΩ	
Between (1) – chassis ground					Min. 1 MΩ	
2		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Between P02 (female) (12) – A06 (11) – S17 (female) (1)	Resistance	Max. 1 Ω	
			Between P02 (female) (13) – A06 (12) – S17 (female) (2)	Resistance	Max. 1 Ω	
3		Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between P02 (female) (12) – A06 (11) – S17 (female) (1)	Resistance	Min. 1 MΩ	
4		Short circuit with power source in wiring harness (Contact with 24-V circuit)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
			Wiring harness between P02 (female) (12) – A06 (11) – S17 (female) (1)	Voltage	Max. 1 V	
5		Defective machine monitor	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			P02 (female)	Hydraulic oil temperature	Resistance	
			Between (12) – (13)	25 – 100°C	3.5 – 90 kΩ	
			Between (12) – chassis ground		Min. 1 MΩ	

#### Electrical circuit diagram related to machine monitor hydraulic oil temperature sensor



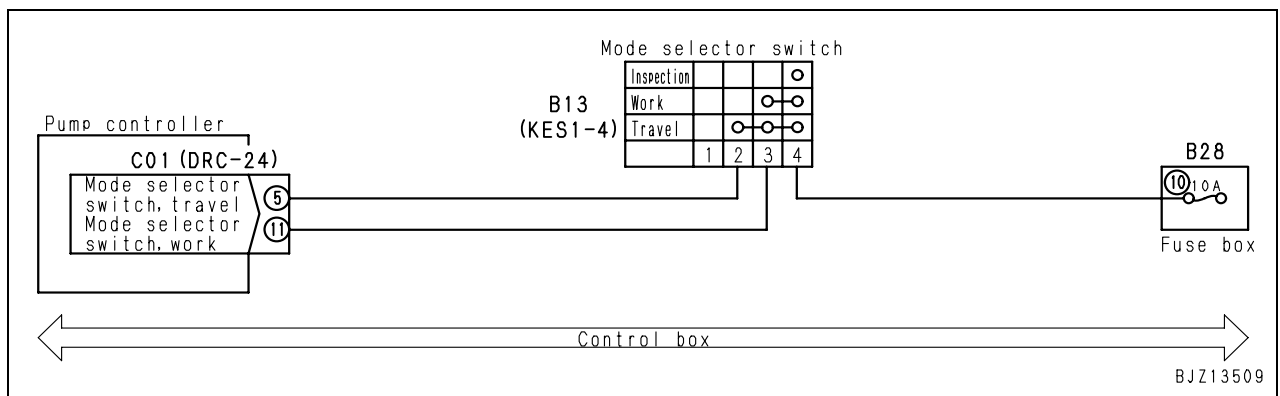
### E-14 The travel, work, and inspection modes do not change.

Trouble	<ul style="list-style-type: none"> <li>When the mode selector switch is changed, the current mode does not change.</li> </ul>		
Relative information	<ul style="list-style-type: none"> <li>The mode selector switches (Mode selector work switch of switch input 2 and mode selector travel switch) can be checked in the monitoring function of the machine monitor. (Code 25002: Mode selector switch, mode selector travel switch)</li> </ul>		
	Mode	Mode selector working switch	Mode selector travel switch
	Work	ON	OFF
	Travel	ON	ON
	Testing	OFF	OFF
	<ul style="list-style-type: none"> <li>Check if failure code for CAN communication error (machine monitor) system [<b>DAFRMC</b>] is indicated (if yes, diagnose that failure first.)</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	1	Defective mode selector switch (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.	
Selector switch B13 (male)				Position of selector switch	Resistance
Between (2) – (4)				Inspection	Min. 1 MΩ
Between (3) – (4)					Min. 1 MΩ
Between (2) – (4)				Work	Min. 1 MΩ
Between (3) – (4)					Max. 1 Ω
Between (2) – (4)				Travel	Max. 1 Ω
Between (3) – (4)					Max. 1 Ω
2		Defective fuse (10)	If the fuse or block fuse is broken, the circuit probably has a grounding fault, etc.		
3		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between fuse box B28 (12) – B13 (female) (4)	Resistance	Max. 1 Ω
			C01 (female) (5) – B13 (female) (2)	Resistance	Max. 1 Ω
			C01 (female) (11) – B13 (female) (3)	Resistance	Max. 1 Ω
4		Hot short in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then turn starting switch ON and turn selector switch to Inspection and carry out troubleshooting.		
			Wiring harness between C01 (female) (5) – B13 (female) (2) and chassis ground	Voltage	Max. 1 V
			Wiring harness between C01 (female) (11) – B13 (female) (3) and chassis ground	Voltage	Max. 1 V
5		Grounding fault in wiring harness (Short circuit with GND circuit)	★ Prepare with starting switch OFF, then turn starting switch ON and turn selector switch to Travel and carry out troubleshooting.		
			Wiring harness between C01 (female) (5) – B13 (female) (2) and chassis ground	Voltage	20 – 30 V
			Wiring harness between C01 (female) (11) – B13 (female) (3) and chassis ground	Voltage	20 – 30 V

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	6 Defective controller			★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.	
C01 (female)				Position of selector switch	Voltage
Between (5) – chassis ground				Inspection	Max. 1 V
Between (11) – chassis ground					Max. 1 V
Between (5) – chassis ground				Work	Max. 1 V
Between (11) – chassis ground					20 – 30 V
Between (5) – chassis ground				Travel	20 – 30 V
Between (11) – chassis ground					20 – 30 V

Electrical circuit diagram related to mode selector switch

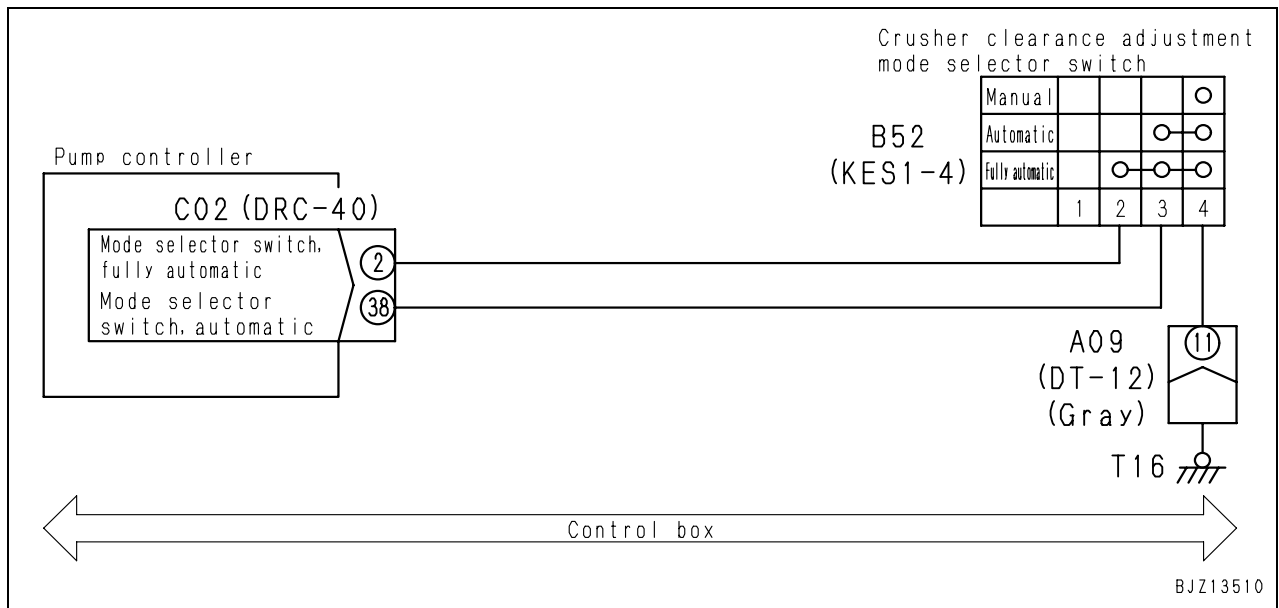


### E-15 The crusher clearance adjustment mode does not change

Trouble	<ul style="list-style-type: none"> <li>When the clearance adjustment selector switch is changed, the current mode does not change.</li> </ul>		
Relative information	<ul style="list-style-type: none"> <li>Clearance adjustment selector switch (The clearance selector (full auto) or clearance selector (auto) of switch input 5 can be checked with the machine monitoring function (See Table below)</li> </ul>		
	Mode	Clearance adjustment selector (automatic)	Clearance adjustment selector (semi-automatic)
	Manual	OFF	OFF
	Semi-automatic	OFF	ON
	Automatic	ON	ON
	<ul style="list-style-type: none"> <li>Check if failure code for abnormal communication (machine monitor) system [DAFRMC] is indicated (if yes, diagnose that failure first.)</li> </ul>		

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	1	Defective mode selector switch (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.	
Selector switch B52 (male)				Position of selector switch	Resistance
Between (2) – (4)				Manual	Min. 1 MΩ
Between (3) – (4)					Min. 1 MΩ
Between (2) – (4)				Semiautomatic	Min. 1 MΩ
Between (3) – (4)					Max. 1 Ω
Between (2) – (4)				Automatic	Max. 1 Ω
Between (3) – (4)					Max. 1 Ω
2		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between C02 (female) (2) – B52 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between C02 (female) (38) – B52 (female) (3)	Resistance	Max. 1 Ω
			Between B52 (female) (4) – chassis ground	Resistance	Max. 1 Ω
3		Grounding fault in wiring harness (Contact with grounding circuit)	★ Prepare with starting switch OFF (Turn clearance adjustment selector switch to manual position), then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between C02 (female) (2) – B52 (female) (2) and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between C02 (female) (38) – B52 (female) (3) and chassis ground	Resistance	Min. 1 MΩ
4		Defective controller	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			C02 (female)	Position of selector switch	Resistance
			Between (2) – chassis ground	Manual	Min. 1 MΩ
			Between (38) – chassis ground		Min. 1 MΩ
			Between (2) – chassis ground	Semiautomatic	Min. 1 MΩ
			Between (38) – chassis ground		Max. 1 Ω
			Between (2) – chassis ground	Automatic	Max. 1 Ω
			Between (38) – chassis ground		Max. 1 Ω

Electrical circuit diagram related to crusher clearance adjustment mode selector switch

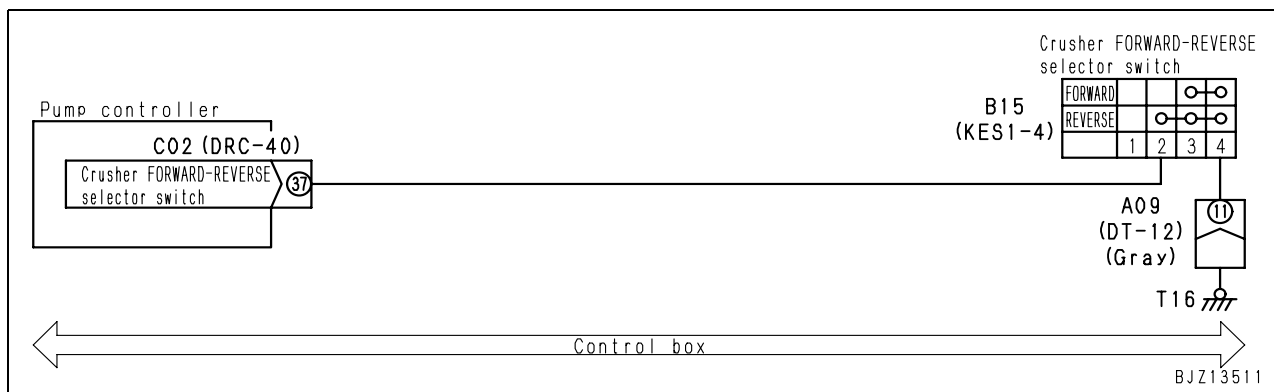


### E-16 The crusher rotation direction does not change

Trouble	<ul style="list-style-type: none"> <li>The crusher rotation direction does not change.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>The signals of the crusher forward-reverse selector switch can be checked in the monitoring function of machine monitor. (Code <b>25002</b>: Crusher rotation direction selector switch (ON = reverse))</li> <li>The operation of the crusher rotation direction selector switch is ignored while the crusher is in operation.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective crusher rotation direction selector switch (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.	
Selector switch B15 (male)				Position of selector switch	Resistance
Between (2) – (4)				FORWARD	Min. 1 MΩ
				REVERSE	Max. 1 Ω
2		Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between C02 (female) (37) – B15 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between B15 (female) (4) – chassis ground	Resistance	Max. 1 Ω
3		Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF (Turn crusher rotation direction selector switch to normal rotation position), then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between C02 (female) (37) – B15 (female) (2)	Resistance	Min. 1 MΩ
4		Defective controller	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			C02 (female)	Position of selector switch	Resistance
	Between (37) – chassis ground		FORWARD	Min. 1 MΩ	
			REVERSE	Max. 1 Ω	

#### Electrical circuit diagram related to crusher forward-reverse selector switch



### E-17 Machine does not travel

Trouble	<ul style="list-style-type: none"> <li>Machine does not travel</li> </ul>							
Related information	<ul style="list-style-type: none"> <li>Travel operation may be interlocked by (1) Mode selector switch or (2) conveyor height, rendering the machine unable to travel. For the machine equipped with the radio controller, radio controller switch can select the method for machine to travel by travel lever or by radio controller.</li> </ul>							
	Mode	Operating method	Radio controller switch	Travel speed selection	Conveyor height			
	Travel	Lever	Panel	Hi	○	※	×	
				Mi	○	○	×	
				Lo	○	○	×	
		Radio controller	—		×	×	×	
			Radio controller	Panel	—		×	×
				Radio controller	Hi	○	※	×
	Radio controller	Mi		○	○	×		
	Work	Radio controller	Panel	Lo	○	○	×	
Radio controller			—		×	×		
			Radio controller	Hi	×	※	×	
	Testing	—		—	×	×		
—		—	×	×				

○ : Machine travels at selected speed.  
 ※ : Machine travels at Mi-speed although Hi is selected.  
 × : Machine does not travel

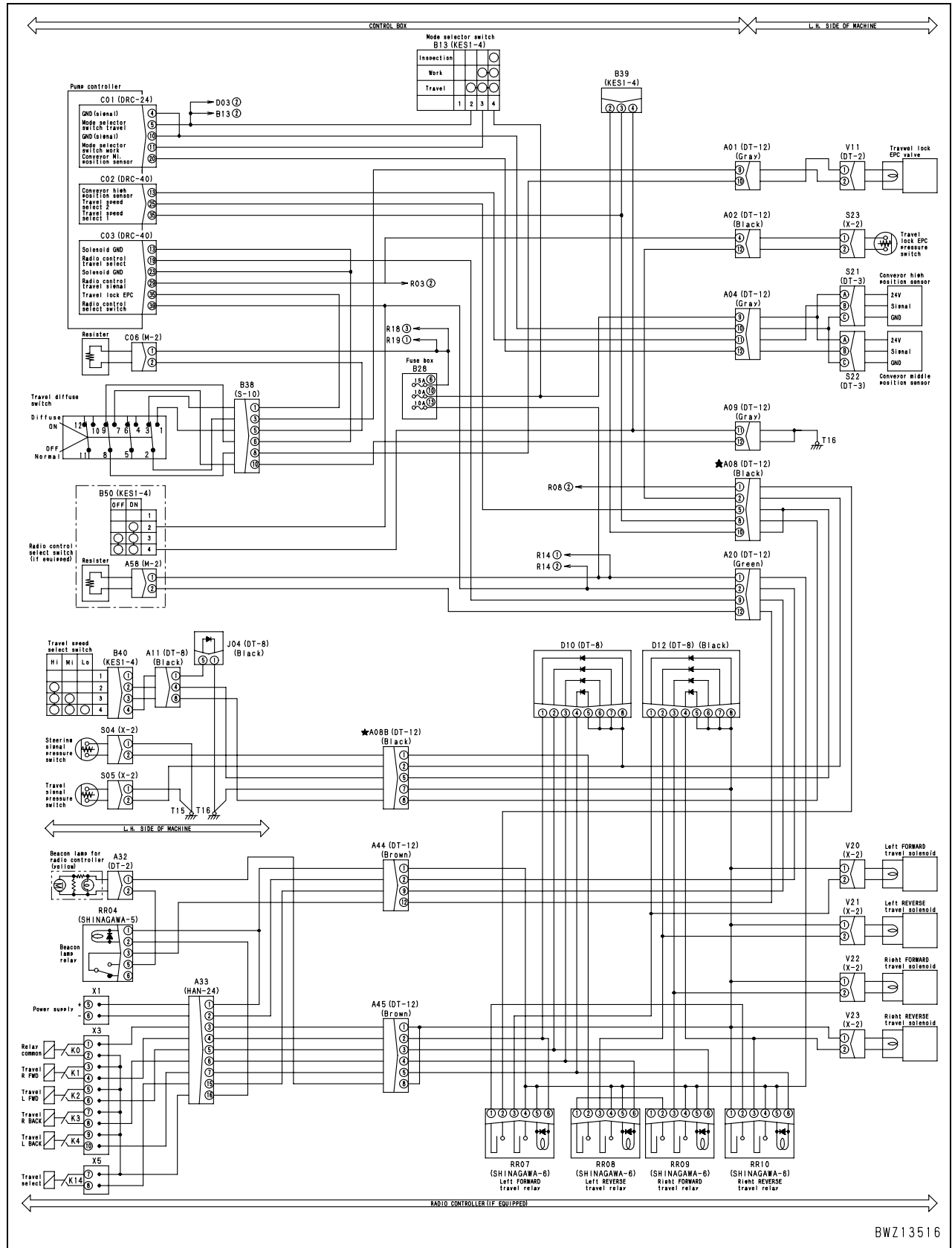
| - The mode selector switch and conveyor height can be checked with the monitoring function. (Code 25002: Mode selector working switch, mode selector travel switch) (Code 25004: conveyor up position sensor, conveyor middle position sensor) - If traveling with the radio controller only does not work, refer to Troubleshooting E-18. | | | | | |

Cause	Standard value in normal state/Remarks on troubleshooting			
1	Defective mode selector switch or conveyor position sensor Defective wiring harness of switch system or sensor system	Carry out troubleshooting related to the mode selector switch and conveyor position sensor, according to the troubleshooting E-5 (Working equipment stops completely in sudden).		
2	Defective emergency travel actuation switch (Internal disconnection or short circuit)	★ Prepare with engine stopped, then run engine at high idle speed and carry out troubleshooting.		Resistance
		Emergency travel actuation switch B38 (male)	Emergency travel actuation switch	Max. 1 Ω
		(1) – (3)	Ordinary side	Min. 1 MΩ
		(6) – (8)	Unordinary side	Max. 1 Ω
3	Disconnection in wiring harness (Disconnection or defective contact)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON. ★ Turn the emergency travel actuation switch to ordinary side and carry out troubleshooting.		Resistance
		Wiring harness between C03 (female) (35) – B38 – A01 (9) – V11 (female) (2)	Resistance	Max. 1 Ω
4	When controller detects a trouble in the related system	Check if the following failures are displayed in the electrical system failure history on the monitor. If displayed, see appropriate troubleshooting. Disconnection in travel lock EPC solenoid valve [7RJAKA] Short circuit in travel lock EPC solenoid valve [7RJAKB], [7RJAKY]		
		★ Prepare with engine stopped, then run engine at high idle speed and carry out troubleshooting.		Resistance
5	Defective controller	C03 (female)	Solenoid valve outlet pressure	
		Between (35) – (13), (23)	7 – 4 Ω	
		Between (35) – chassis ground	Min. 1 MΩ	



Electrical circuit diagram related to travel system

(When the radio controller (OPT) is not equipped, directly connect A08 (marked ★).)



BWZ13516

### E-18 Travel cannot be controlled by radio control

Trouble	<ul style="list-style-type: none"> <li>Travel cannot be controlled by radio control.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Radio control system is an optional specification.</li> <li>(1) Start the engine and turn the radio control selector switch to the remote control position, (2) Turn the power switch of the radio control transmitter ON, and (3) Check that the radio wave from the radio control transmitter is received by the receiver (The antenna of the receiver is built in). If the radio wave is received, the yellow radio control lamp lights up and the machine can be radio-controlled.</li> <li>The machine may be interlocked by either the mode selector switch, travel speed selection or conveyor height. (See Troubleshooting E-17.)</li> <li>The travel switch of the radio controller works under the below conditions.             <ul style="list-style-type: none"> <li>(1) When the travel operation switch is pressed within about 30 seconds after the travel mode selector switch is pressed.</li> <li>(2) When the travel operation switch is pressed again within about 30 seconds after the switch is released from (1).</li> </ul> </li> <li>If any of (1), (2), and (3) above is not established (If the radio control lamp does not light up), the machine cannot be radio-controlled.</li> </ul>

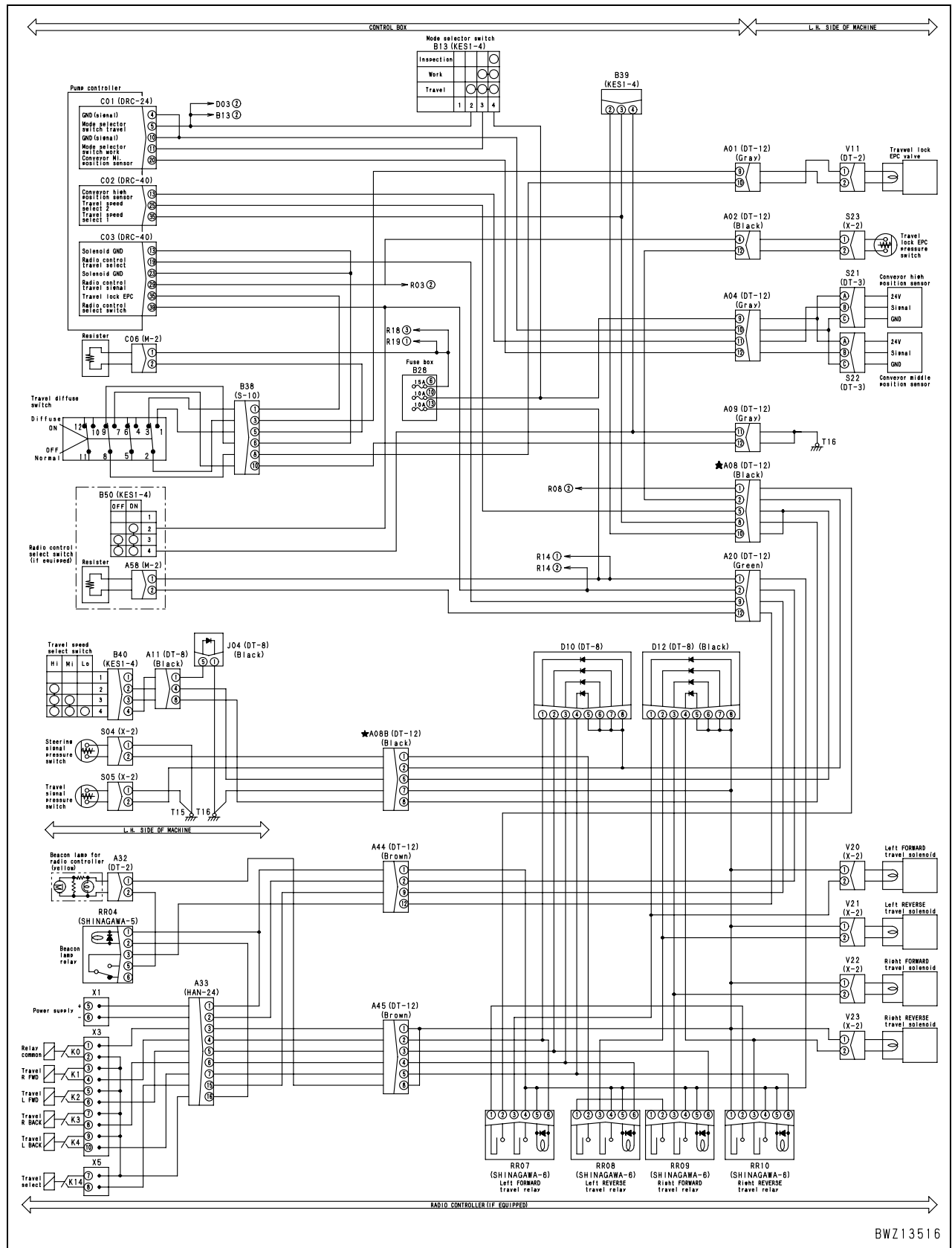
	Cause		Standard value in normal state/Remarks on troubleshooting			
	1	Defective fuse No. 13		If the fuse is broken, the circuit probably has a grounding fault.		
Possible causes and standard value in normal state	2	Defective radio control power supply circuit (Disconnection or short circuit)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
			Receiver connector A33 (female)	Radio control selector switch	Voltage	
			Between (1) – (2)	Panel	Max. 1 V	
				Remote control	20 – 30 V	
	If the above power supply circuit is found to be defective, carry out troubleshooting for 2-1 to 2-4 below.					
	2-1	Defective radio controller selector switch (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Radio controller selector switch B50 (male)	Radio controller selector switch	Resistance	
			(2) – (4)	Panel	Min. 1 MΩ	
	Remote control	Max. 1 Ω				
	2-2	Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Between B28 (13) – A20 (1) – A44 (1) – A33 (female) (1)		Resistance	Max. 1 Ω
			Between B50 (female) (2) – A20 (2) – A44 (2) – A33 (female) (2)		Resistance	Max. 1 Ω
2-3	Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.				
		Between wiring harness B28 (13) – A20 (1) – A44 (1) – A33 (female) (1) and chassis ground		Resistance	Min. 1 MΩ	
2-4	Hot short circuit in wiring harness (Contact with 24V circuit) (Troubleshooting with radio controller selector switch turns to Panel.)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.				
		Between wiring harness B50 (female) (2) – A20 (2) – A44 (2) – A33 (female) (2) and chassis ground		Voltage	Max. 1 V	

		Cause	Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	3	Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between A33 (female) (3) – A45 – A32 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (3) – chassis ground	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (4) – A45 (2) – RR07 (female) (6)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (5) – A45 (3) – RR09 (female) (6)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (6) – A45 (4) – RR08 (female) (6)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (7) – A45 (5) – RR10 (female) (6)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (15) – A44 (9) – A20 (9) – C03 (female) (19)	Resistance	Max. 1 Ω
			Wiring harness between B50 (female) (2) – C03 (female) (39)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (16) – RR4 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (1) – RR04 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (1) – A44 (1) – RR07 (female) (4), (5)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (1) – A44 (1) – RR08 (female) (4), (5)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (1) – A44 (1) – RR09 (female) (4), (5)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (1) – A44 (1) – RR10 (female) (4), (5)	Resistance	Max. 1 Ω
			Wiring harness between RR07 (female) (3) – V20 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between RR08 (female) (3) – V21 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between RR09 (female) (3) – V22 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between RR10 (female) (3) – V23 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between V20 (female) (1) – chassis ground	Resistance	Max. 1 Ω
			Wiring harness between V21 (female) (1) – chassis ground	Resistance	Max. 1 Ω
			Wiring harness between V22 (female) (1) – chassis ground	Resistance	Max. 1 Ω
			Wiring harness between V23 (female) (1) – chassis ground	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (4) – A45 (2) – D10 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (5) – A45 (3) – D10 (female) (2)	Resistance	Max. 1 Ω
			Wiring harness between A33 (female) (6) – A45 (4) – D10 (female) (3)	Resistance	Max. 1 Ω

		Cause	Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	3	Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	Wiring harness between A33 (female) (7) – A45 (5) – D10 (female) (4)	Resistance	Max. 1 Ω
			Wiring harness between S23 (female) (2) – A02 (12) – A08A (2) – D10 (female) (5) (6) (7) (8)	Resistance	Max. 1 Ω
			Wiring harness between S23 (female) (1) – A02 (4) – C03 (female) (29)	Resistance	Max. 1 Ω
	4	Defective solenoid	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			V20 (male), V21 (male), V22 (male), V23 (male)	Resistance	
			Between (1) – (2)	20 – 60 Ω	
			Between (2) – chassis ground	Min. 1 MΩ	
	5	Defective diode	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Check the connector D10 according to "Testing procedure for diodes" in Testing and adjusting.		
	6	Defective travel lock EPC pressure switch (When the machine travels immediately after the switch is pressed but stops soon, travel lock EPC pressure switch may be defective.)	Check with monitoring function of the machine monitor. (Code 25001: Radio controller traveling signal)		
Start the engine and operate with the radio controller, ensuring the safety of surrounding area. (See Troubleshooting E-17, and operate the machine under the operable conditions.)					
Code 25001: Radio controller traveling signal)			The ON display is normal when the radio controller is operating.		
When no fault is found in the troubleshooting 3 and 5 but a fault is found in this troubleshooting, travel lock EPC pressure switch may be defective					
7	Defective transmitter and receiver	If all the results of above checks 1 – 6 are normal, the transmitter or receiver is defective.			

Electrical circuit diagram related to travel system

(When the radio controller (OPT) is not equipped, directly connect A08 (marked ★).)



BWZ13516

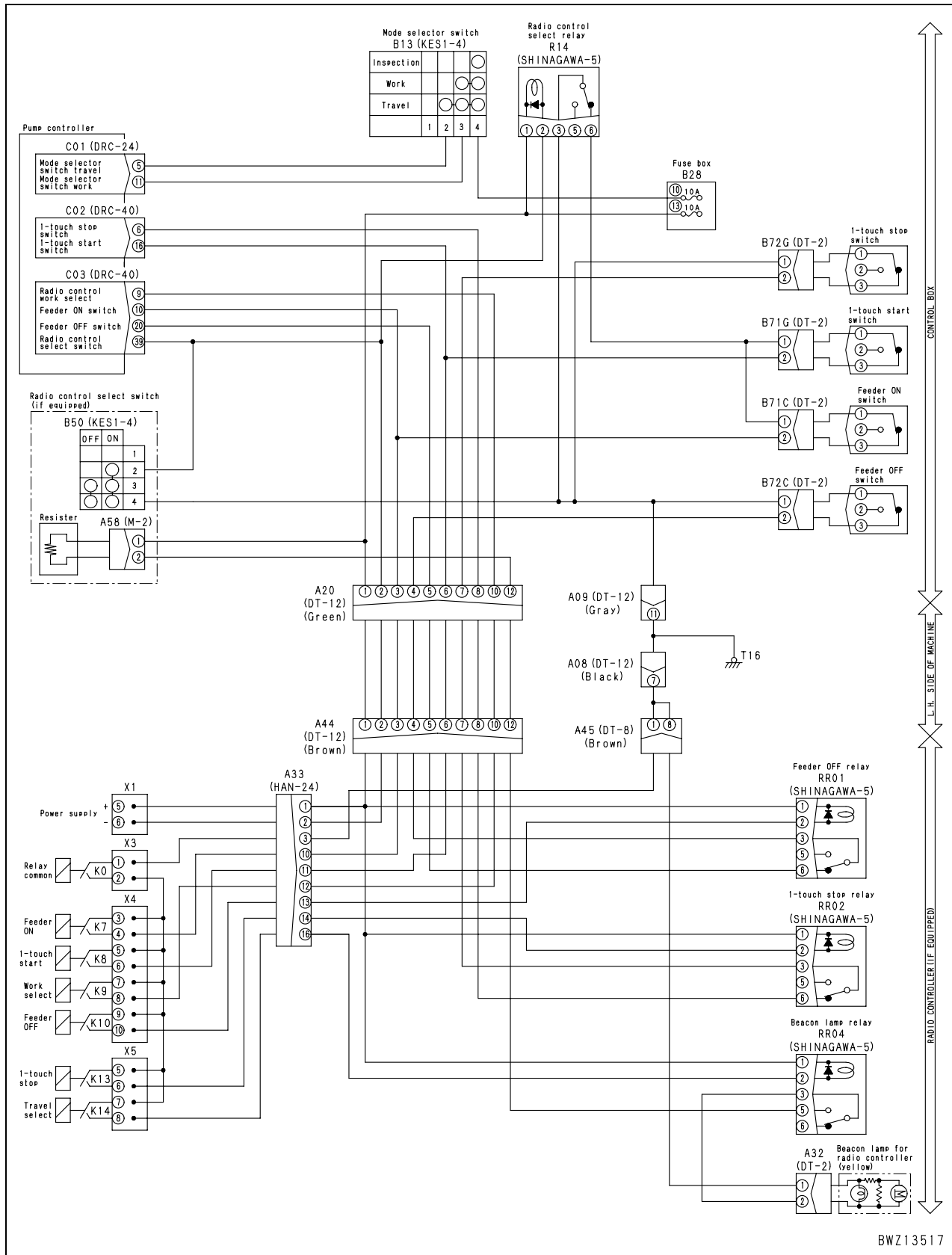
### E-19 The feeder cannot be turned ON and OFF by radio control

Trouble	<ul style="list-style-type: none"> <li>The feeder cannot be turned ON and OFF by radio control.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Radio control system is an optional specification.</li> <li>(1) Start the engine and turn the radio control selector switch to the remote control position, (2) Turn the power switch of the radio control transmitter ON, and (3) Check that the radio wave from the radio control transmitter is received by the receiver (The antenna of the receiver is built in). If the radio wave is received, the yellow radio control lamp lights up and the machine can be radio-controlled.</li> <li>If the mode selector switch is set in the WORK position under the above condition, the feeder can be operated.</li> <li>The machine does not work on the conveyor up position.</li> <li>The feeder works when the feeder ON switch is pressed within about 30 seconds after the working mode selector switch of radio controller is pressed.</li> <li>It is not necessary to press the selector switch beforehand when the feeder OFF switch is being pressed.</li> <li>If any of (1), (2), and (3) above is not established (If the radio control lamp does not light up), the machine cannot be radio-controlled.</li> </ul>

		Cause	Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective fuse No. 13	If the fuse is broken, the circuit probably has a grounding fault.			
		Defective radio control power supply circuit (Disconnection or short circuit)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
			Receiver connector A33 (female)	Radio control selector switch	Voltage	
			Between (1) – (2)	Panel	Max. 1 V	
				Remote control	20 – 30 V	
	If the above power supply circuit is found to be defective, carry out troubleshooting for 2-1 to 2-4 below.					
	2-1	Defective radio controller selector switch (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Radio controller selector switch B50 (male)	Radio controller selector switch	Resistance	
			(2) – (4)	Panel	Min. 1 MΩ	
	Remote control	Max. 1 Ω				
	2	2-2	Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
				Between B28 (13) – A20 (1) – A44 (1) – A33 (female) (1)	Resistance	Max. 1 Ω
		Between B50 (female) (2) – A20 (2) – A44 (2) – A33 (female) (2)	Resistance	Max. 1 Ω		
		2-3	Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
	Between wiring harness B28 (13) – A20 (1) – A44 (1) – A33 (female) (1) and chassis ground			Resistance	Min. 1 MΩ	
Between wiring harness A33 (female) (16) – RR04 (female) (2) and chassis ground	Resistance			Min. 1 MΩ		
2-4	Hot short circuit in wiring harness (Contact with 24V circuit) (Troubleshooting with radio controller selector switch turns to Panel.)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.				
		Between wiring harness B50 (female) (2) – A20 (2) – A44 (2) – A33 (female) (2) and chassis ground	Voltage	Max. 1 V		

	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	3	Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.	
Wiring harness between A33 (female) (3) – A45 – A32 (female) (1)				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (3) – chassis ground				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (10) – A44 (3) – A20 (3) – C03 (female) (10)				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (13) – RR01 (female) (2)				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (1) – RR01 (female) (1), and RR04 (female) (1)				Resistance	Max. 1 Ω
Wiring harness between RR01 (female) (6) – A44 (5) – A20 (5) – C03 (female) (20)				Resistance	Max. 1 Ω
Wiring harness between RR01 (female) (3) – chassis ground				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (12) – A44 (10) – A20 (10) – C03 (female) (19)				Resistance	Max. 1 Ω
Wiring harness between B50 (female) (2) – C03 (female) (39)				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (16) – RR04 (female) (2)				Resistance	Max. 1 Ω
4		Defective relay (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
	RR01 (male)		Resistance		
	Between (1) – (2)		250 – 350 Ω		
	Between (3) – (6)		Max. 1 Ω		
5	When controller detects failure of related section	If any of the following errors is displayed in the electrical system errors on the monitor, see the troubleshooting for it.			
		<ul style="list-style-type: none"> <li>• Short circuit in feeder-ON switch [7RC5KB]</li> <li>• Disconnection in grizzly feeder stop switch [7REPKA]</li> <li>• Disconnection in feeder forward EPC solenoid [7RF4KA]</li> <li>• Short circuit in feeder forward EPC solenoid [7RF4KB], [7RF4KY]</li> </ul>			
6	Defective transmitter or receiver	If all the results of above checks 1 – 5 are normal, the transmitter or receiver is defective.			

Electrical circuit diagram related to radio control system





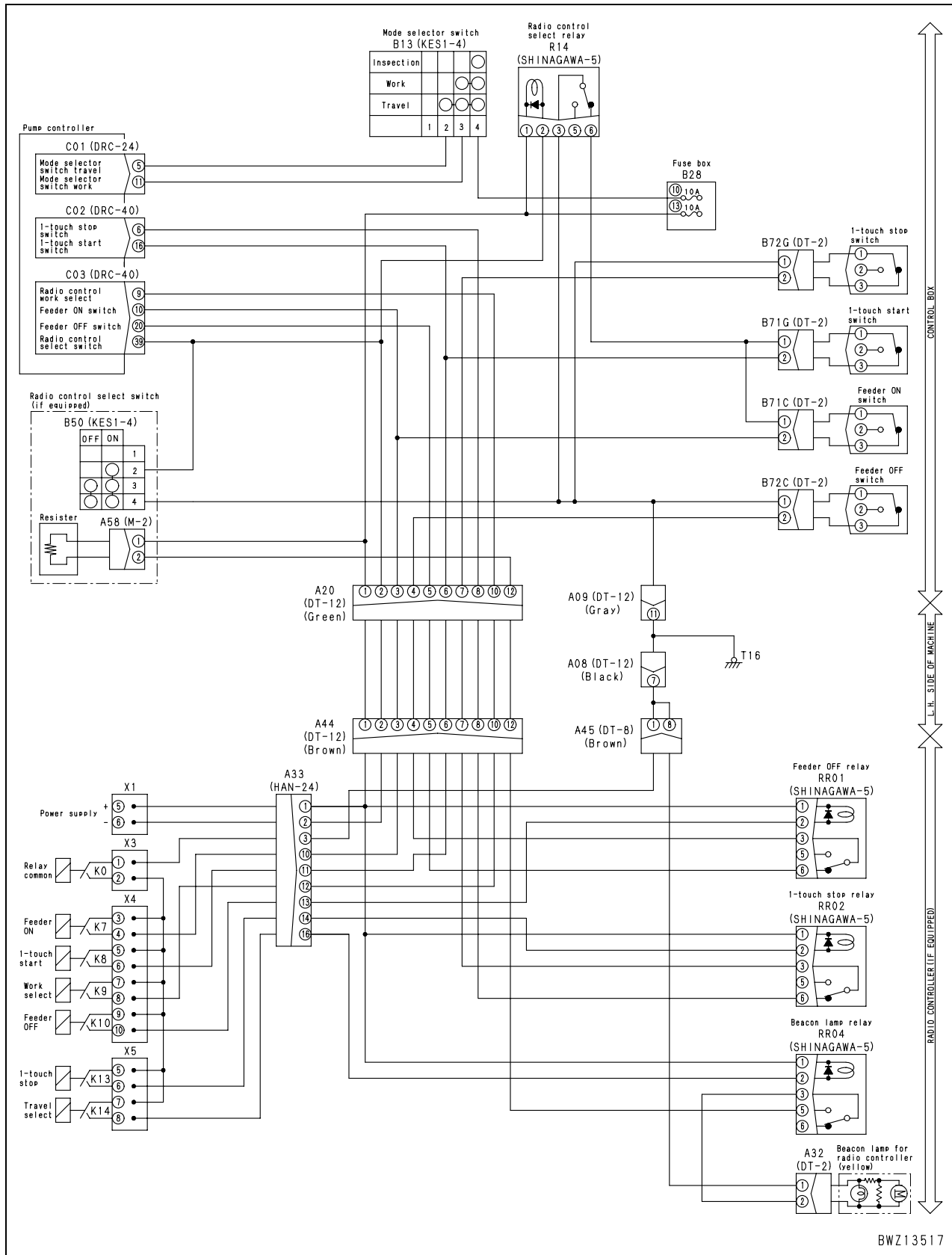
### E-20 One-touch start, stop switch cannot be operated by radio control

Trouble	<ul style="list-style-type: none"> <li>The crusher cannot be turned ON and OFF by radio control.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Radio control system is an optional specification.</li> <li>(1) Start the engine and turn the radio control selector switch to the remote control position, (2) Turn the power switch of the radio control transmitter ON, (3) Check that the radio wave from the radio control transmitter is received by the receiver (The antenna of the receiver is built in). If the radio wave is received, the yellow radio control lamp lights up and the machine can be radio-controlled.</li> <li>If the mode selector switch is set in the WORK position under the above condition, the work equipment can be operated.</li> <li>The machine does not work on the conveyor up position.</li> <li>The work equipment starts up in linear sequence when the one-touch start switch is pressed within about 30 seconds after the working mode selector switch of radio controller is pressed.</li> <li>It is not necessary to press the selector switch beforehand when the one-touch start switch of radio controller is being pressed.</li> <li>If any of (1), (2), and (3) above is not established (If the radio control lamp does not light up), the machine cannot be radio-controlled.</li> </ul>

		Cause	Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective fuse No. 13	If the fuse is broken, the circuit probably has a grounding fault.			
		Defective radio control power supply circuit (Disconnection or short circuit)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
			Receiver connector A33 (female)	Radio control selector switch	Voltage	
			Between (1) – (2)	Panel	Max. 1 V	
				Remote control	20 – 30 V	
	If the above power supply circuit is found to be defective, carry out troubleshooting for 2-1 to 2-4 below.					
	2-1	Defective radio controller selector switch (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Radio controller selector switch B50 (male)	Radio controller selector switch	Resistance	
			(2) – (4)	Panel	Min. 1 MΩ	
	Remote control	Max. 1 Ω				
	2	2-2	Disconnection in wiring harness (Disconnection or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
				Between B28 (13) – A20 (1) – A44 (1) – A33 (female) (1)	Resistance	Max. 1 Ω
		Between B50 (female) (2) – A20 (2) – A44 (2) – A33 (female) (2)	Resistance	Max. 1 Ω		
		2-3	Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
	Between wiring harness B28 (13) – A20 (1) – A44 (1) – A33 (female) (1) and chassis ground			Resistance	Min. 1 MΩ	
Between wiring harness A33 (female) (16) – RR04 (female) (2) and chassis ground	Resistance			Min. 1 MΩ		
2-4	Hot short circuit in wiring harness (Contact with 24V circuit) (Troubleshooting with radio controller selector switch turns to Panel.)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			Voltage	Max. 1 V
Between wiring harness B50 (female) (2) – A20 (2) – A44 (2) – A33 (female) (2) and chassis ground						

	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	3	Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.	
Wiring harness between A33 (female) (3) – A45 – A32 (female) (1)				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (3) – chassis ground				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (11) – A44 (6) – A20 (6) – C02 (female) (16)				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (14) – RR02 (female) (2)				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (1) – RR02 (female) (1), RR04 (female) (1)				Resistance	Max. 1 Ω
Wiring harness between RR02 (female) (6) – A44 (8) – A20 (8) – C02 (female) (6)				Resistance	Max. 1 Ω
Wiring harness between RR02 (female) (3) – chassis ground				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (12) – A44 (10) – A20 (10) – C03 (female) (9)				Resistance	Max. 1 Ω
Wiring harness between B50 (female) (2) – C03 (female) (39)				Resistance	Max. 1 Ω
Wiring harness between A33 (female) (16) – RR04 (female) (2)				Resistance	Max. 1 Ω
4	Defective relay (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
		RR02 (male)	Resistance		
		Between (1) – (2)	250 – 350 Ω		
		Between (3) – (6)	Max. 1 Ω		
5	When controller detects failure of related section	If any of the following errors is displayed in the electrical system errors on the monitor, see the troubleshooting for it. <ul style="list-style-type: none"> <li>• Short circuit in one-touch start switch [7RESKB]</li> <li>• Disconnection in one-touch stop switch [7RETKA]</li> </ul>			
6	Defective transmitter or receiver	If all the results of above checks 1 – 5 are normal, the transmitter or receiver is defective.			

Electrical circuit diagram related to radio control system



## E-21 The monitor switches do not work

Trouble (1)	<ul style="list-style-type: none"> <li>When the maintenance switch is operated, the item screen does not appear.</li> <li>When the contrast/brightness setting screen selector switch is operated, the screen does not change.</li> </ul>
Relative information	—

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defective machine monitor	

Trouble (2)	<ul style="list-style-type: none"> <li>When the crusher speed setting screen selector switch is operated, the setting screen does not appear.</li> </ul>
Relative information	—

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defective machine monitor	

Trouble (3)	<ul style="list-style-type: none"> <li>When the feeder speed setting screen selector switch is operated, the setting screen does not appear.</li> </ul>
Relative information	—

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defective machine monitor	

Trouble (4)	<ul style="list-style-type: none"> <li>When the crusher load setting screen selector switch is operated, the setting screen does not appear.</li> </ul>
Relative information	—

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Defective machine monitor	

## E-22 The crusher cannot be operated with the crusher manual FORWARD/REVERSE switch on the monitor

Trouble	<ul style="list-style-type: none"> <li>The crusher cannot be rotated forward or in reverse with the crusher manual FORWARD/REVERSE switch on the monitor.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>The crusher can be operated with the crusher manual FORWARD/REVERSE switch under the following condition:               <ol style="list-style-type: none"> <li>The mode selector switch is in the WORK or INSPECTION position and the crusher is stopped.</li> <li>The radio control selector switch is in the PANEL position.</li> </ol> </li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Communication abnormality	If failure code [DA2RMC] (CAN communication error (pump controller)) is displayed, carry out troubleshooting for it first.
2	Disconnection in crusher forward EPC valve	If failure code [7RF2KA] (Disconnection in crusher forward EPC solenoid) is displayed, carry out troubleshooting for it first.	
3	Short circuit in crusher forward EPC valve	If failure code [7RF2KB], [7RF2KY] (Short circuit in crusher forward EPC solenoid) is displayed, carry out troubleshooting for it first.	
4	Disconnection in crusher reverse EPC valve	If failure code [7RF3KA] (Disconnection in crusher reverse EPC solenoid) is displayed, carry out troubleshooting for it first.	
5	Short circuit in crusher reverse EPC valve	If failure code [7RF3KB], [7RF3KY] (Short circuit in crusher reverse EPC solenoid) is displayed, carry out troubleshooting for it first.	
6	Defective monitor	If the results of above checks 1 – 5 are normal, the monitor is probably defective.	

## E-23 The conveyor cannot be operated with the conveyor manual FORWARD/REVERSE switch on the monitor

Trouble	<ul style="list-style-type: none"> <li>The conveyor cannot be rotated forward or in reverse with the conveyor manual FORWARD/REVERSE switch on the monitor.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>The conveyor can be operated with the conveyor manual FORWARD/REVERSE switch under the following condition:               <ol style="list-style-type: none"> <li>The mode selector switch is in the INSPECTION position and the conveyor is stopped.</li> <li>The radio control selector switch is in the PANEL position.</li> </ol> </li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	1	Communication abnormality	
2	Short circuit in conveyor forward relay		If failure code <b>[7RFHKB]</b> , <b>[7RFHXY]</b> (Short circuit in conveyor forward relay) is displayed, carry out troubleshooting for it first.
3	Disconnection or short circuit in conveyor reverse relay		If failure code <b>[7RD2KZ]</b> (Disconnection or short circuit in conveyor reverse relay) is displayed, carry out troubleshooting for it first.
4	Short circuit in conveyor reverse relay		If failure code <b>[7RD2KB]</b> (Short circuit in conveyor reverse relay) is displayed, carry out troubleshooting for it first.
5	Defective monitor		If the results of above checks 1 – 5 are normal, the monitor is probably defective.

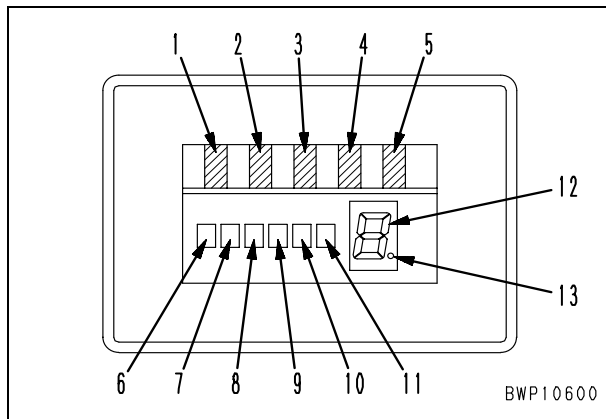
### E-24 KOMTRAX system does not operate normally

Trouble	<ul style="list-style-type: none"> <li>• KOMTRAX system does not operate normally.</li> </ul>
Related information	<ul style="list-style-type: none"> <li>• If KOMTRAX system administrator makes request for checking system on machine side for trouble, carry out following troubleshooting.</li> <li>• Even if KOMTRAX system has trouble, it does not particularly appear on machine.</li> </ul>

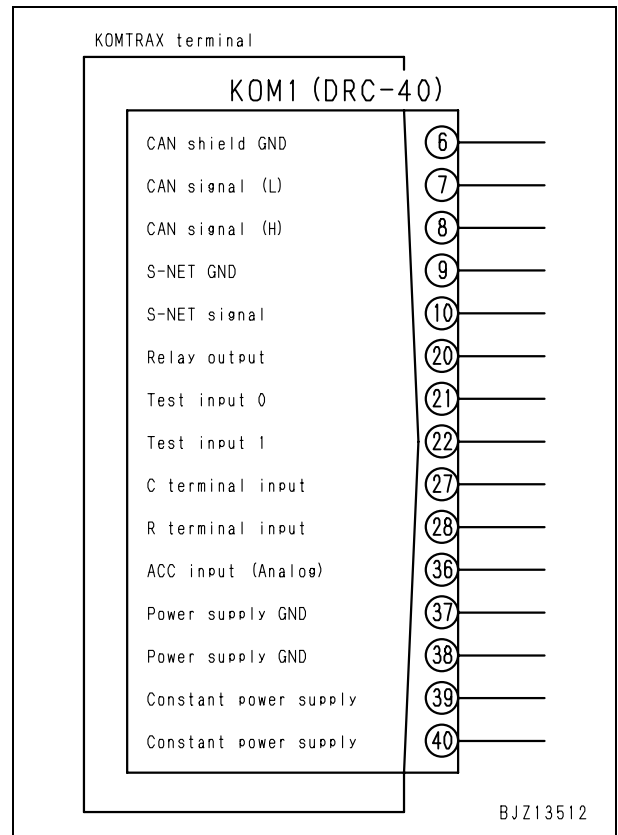
Possible causes and standard value in normal state	Cause	Standard value in normal state/Remarks on troubleshooting		
		1 Defective power supply	★ Turn starting switch OFF, then carry out troubleshooting.	
LED (1)			Normal state	
LED-A1			Lighted up	
★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.				
G01			Signal	Voltage
Between (39), (40) – (37), (38)			Constant power supply	20 – 30 V
2 Defective GPS		★ Turn starting switch ON and carry out troubleshooting.		
		LED (2)	Normal state	
		LED-A2	Lighted up	
3 Defective starting switch ACC signal and alternator R signal		★ Start engine and carry out troubleshooting.		
		LED (6)	Normal state	
		LED-C1	Lighted up	
		★ Prepare with starting switch OFF, then start engine and carry out troubleshooting.		
		G01	Signal	Voltage
		Between (36) – (37), (38)	Starting switch ACC	20 – 30 V
4 Defective starting switch C signal		★ Turn starting switch ON and carry out troubleshooting.		
		LED (8)	Normal state	
		LED-C3	Lighted up	
		★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
		G01	Signal	Voltage
	Between (10) – (9)	S-NET	6 – 9 V	
	Between (27) – (37), (38)	Starting switch C	Max. 1 V	
5 Defective state of CAN connection	★ Turn starting switch ON and carry out troubleshooting.			
	LED (9)	Normal state		
	LED-C4	Lighted up		
	★ Prepare with starting switch OFF and carry out troubleshooting.			
	G01	Signal	Resistance	
	Between (7) – (8)	CAN	40 – 80 Ω	

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		6	Number of mails not transmitted yet	★ Turn starting switch ON and carry out troubleshooting.
LED (12)				Normal state
7-segment				0 – 9
7		Defective state of positioning with GPS	★ Turn starting switch ON and carry out troubleshooting (See *)	
			LED (13)	Normal state
			Dot	ON
	* In an outdoor location within radio waves' penetration range, it sometimes takes more than a minute from turning on of the starting switch to completion of the positioning.			

LED display unit



G01 connector





BR380JG-1E0 Mobile crusher

---

Form No. SEN02095-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

## 40 Troubleshooting

### Troubleshooting of hydraulic and mechanical system (H-mode)

---

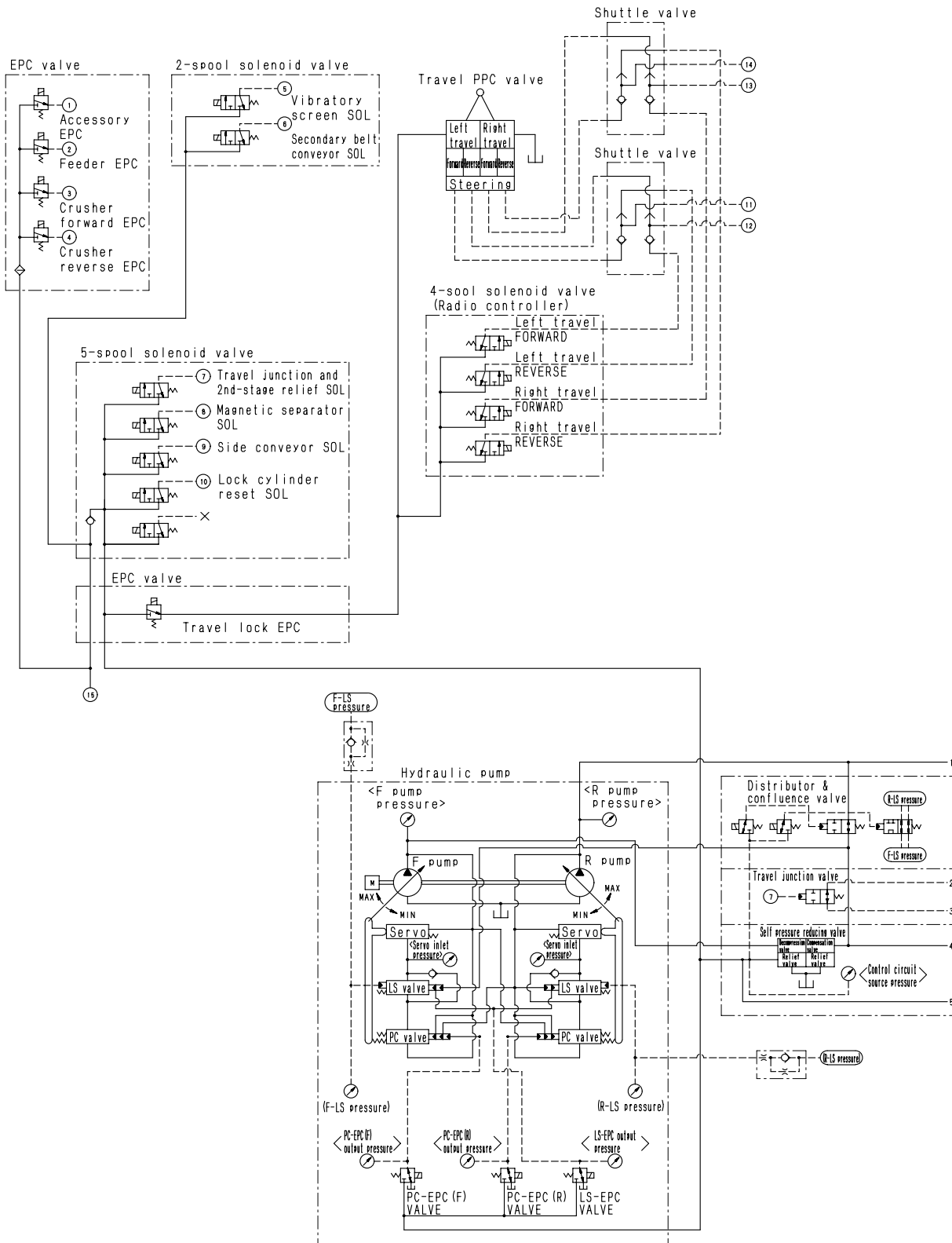
---

System chart for hydraulic and mechanical systems .....	4
Information contained in troubleshooting table .....	6
H-1 The speed or power of the whole work equipment and travel is low.....	8
H-2 The engine speed lowers extremely or the engine stalls .....	10
H-3 The work equipment and travel systems do not work .....	11
H-4 Abnormal sound comes out from around the hydraulic pump.....	11
H-5 Fine control performance or response is low .....	12
H-6 The conveyor does not operate .....	13
H-7 The speed or power of the conveyor is low.....	14
H-8 The crusher does not operate .....	15
H-9 The speed or power of crusher is low .....	16
H-10 The feeder does not operate .....	16
H-11 The feeder does not feed smoothly (Vibration frequency is low).....	17
H-12 The magnetic separator does not operate .....	17

---

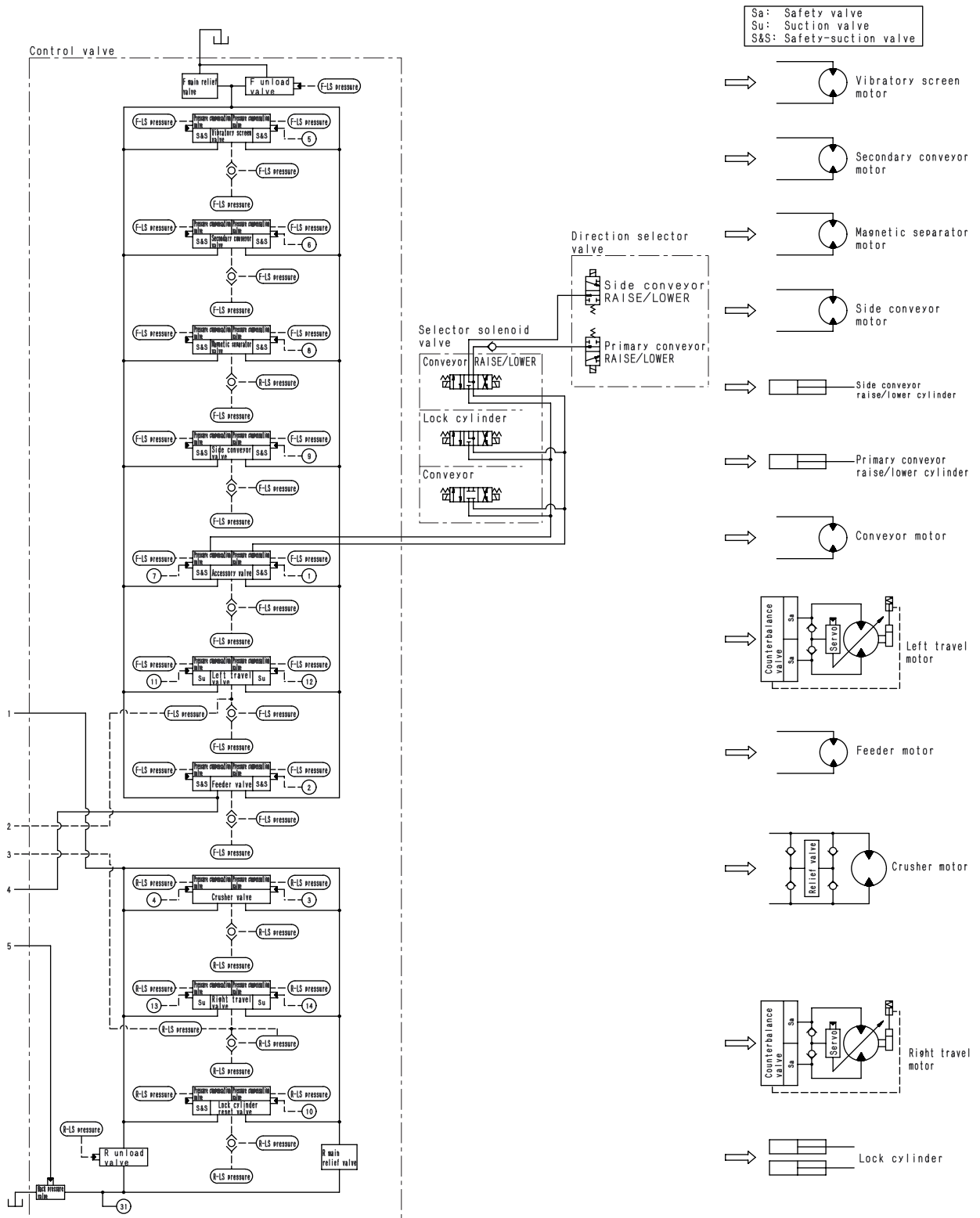
H-13 The speed of magnetic separator belt is low .....	18
H-14 The side conveyor does not operate .....	18
H-15 The speed or power of the side conveyor is low .....	19
H-16 The primary conveyor and the side conveyor do not move up and down .....	20
H-17 The machine deviates during travel .....	21
H-18 The travel speed is low.....	23
H-19 The machine is not steered well or steering power is low .....	25
H-20 The travel motor does not work (only one side) .....	26
H-21 When the travel switch of the radio controller is depressed, the machine does not travel.....	26
H-22 The crusher clearance cannot be adjusted .....	27

# System chart for hydraulic and mechanical systems



BJZ13502

- ★ This is a system chart that has been drawn up by simplifying the whole hydraulic and mechanical circuit chart.  
Use it as a reference material when troubleshooting the hydraulic and mechanical systems.



TJZ01688

### Information contained in troubleshooting table

★ The troubleshooting table and the related circuit diagrams contain the following information. Grasp their contents fully before proceeding to actual troubleshooting work.

Trouble	Phenomena occurring on machine	
Related information	Information on occurred failures and troubleshooting	
Possible causes and standard value in normal state	Cause	
	1	Cause that presumably triggered failure in question (The assigned No. is for filing purpose only. It does not stand for any priority)
	2	
	3	
	4	
	5	
5		
		Standard value in normal state/Remarks on troubleshooting  <Content Included> <ul style="list-style-type: none"> <li>• Standard value in normalcy by which to pass “Good” or “No good” judgement over the presumed cause</li> <li>• Reference for passing the above “Good” or “No Good” judgement</li> </ul>

### H-1 The speed or power of the whole work equipment and travel is low

Trouble	<ul style="list-style-type: none"> <li>The speed or power of the whole work equipment and travel is low.</li> </ul>
Related information	<ul style="list-style-type: none"> <li>Carry out troubleshooting in the WORK or TRAVEL mode.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Malfunction of unload valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.		
Work equipment switches and travel lever				Unload pressure		
Turn all switches OFF and set lever in neutral.				3.9 ± 1.0 MPa {40 ± 10 kg/cm <sup>2</sup> }		
2		Defective adjustment or malfunction of main relief valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.			
			Measurement condition	Main relief pressure		
			Relieve travel circuit (Note 1).	39.2 <sup>+1.0</sup> <sub>-2.5</sub> MPa {400 <sup>+10</sup> <sub>-25</sub> kg/cm <sup>2</sup> }		
			If the oil pressure does not become normal after adjustment, the main relief valve may have a malfunction or a defect in it. Check the main relief valve directly.			
3		Malfunction of self-reducing pressure valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.			
			Work equipment switches and travel lever	Control circuit basic pressure		
			Turn all switches OFF and set lever in neutral.	2.83 – 3.43 MPa {29 – 35 kg/cm <sup>2</sup> }		
4		Defective adjustment or malfunction of PC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.			
			Oil pressure to be measured	Measurement condition	Ratio of oil pressure	
			Pump discharge pressure	Relieve travel circuit	1	
			PC valve output pressure		Approx. 3/5	
			If the oil pressure does not become normal after adjustment, the PC valve may have a malfunction or a defect in it. Check the PC valve directly.			
5	Malfunction of LS-EPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.				
		Mode	Travel speed	Travel lever	LS-EPC output pressure	
		Travel	High speed	Neutral position	Approx. 0.39 MPa {Approx. 4 kg/cm <sup>2</sup> }	
			Medium or Low speed	Neutral position	Approx. 2.34 MPa {Approx. 23.9 kg/cm <sup>2</sup> }	

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	6	Defective adjustment or malfunction of LS valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.		
Oil pressure to be measured			Ratio of oil pressure		
			Turn all work equipment switches OFF	Turn all work equipment switches ON (with no load)	
Pump discharge pressure			Almost same	1	
LS valve output pressure				Approx. 3/5	
If the oil pressure does not become normal after adjustment, the LS valve may have a malfunction or a defect in it. Check the LS valve directly.					
7	Malfunction of servo piston	The servo piston may have malfunction. Check it directly.			
8	Defective piston pump	If all the results of the above checks are normal, the cause may be lowering of performance, malfunction, or internal defect of the piston pump.			

Note 1: Disconnect the hydraulic hose and piping (travel main circuit) and install adapters to block the ends.



## H-2 The engine speed lowers extremely or the engine stalls

Trouble	<ul style="list-style-type: none"> <li>The engine speed lowers extremely or the engine stalls.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Carry out troubleshooting in the WORK or TRAVEL mode.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
		1	Defective adjustment or malfunction of main relief valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.	
Measurement condition				Main relief pressure	
Relieve travel circuit (Note 1).				39.2 <sup>+1.0</sup> <sub>-2.5</sub> MPa {400 <sup>+10</sup> <sub>-25</sub> kg/cm <sup>2</sup> }	
If the oil pressure does not become normal after adjustment, the main relief valve may have a malfunction or a defect in it. Check the main relief valve directly.					
2		Defective adjustment or malfunction of PC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.		
			Oil pressure to be measured	Measurement condition	Ratio of oil pressure
			Pump discharge pressure	Relieve travel circuit (Note 1).	1
			PC valve output pressure		Approx. 3/5
			If the oil pressure does not become normal after adjustment, the PC valve may have a malfunction or a defect in it. Check the PC valve directly.		
3		Defective adjustment or malfunction of LS valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.		
			Oil pressure to be measured	Ratio of oil pressure	
				Turn all work equipment switches OFF	Turn all work equipment switches ON (with no load)
			Pump discharge pressure	Almost same	1
	LS valve output pressure		Approx. 3/5		
	If the oil pressure does not become normal after adjustment, the LS valve may have a malfunction or a defect in it. Check the LS valve directly.				
4	Clogging of orifice or filter in servo equipment	An orifice or a filter in the pump servo equipment may be clogged. Check them directly.			
5	Malfunction of servo piston	The servo piston may have malfunction. Check it directly.			

Note 1: Disconnect the hydraulic hose and piping (travel main circuit) and install adapters to block the ends.

### H-3 The work equipment and travel systems do not work

Trouble	• The work equipment and travel systems do not work.
Relative information	—

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Malfunction of self-reducing pressure valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.	
Work equipment switches and travel lever			Control circuit basic pressure	
Turn all switches OFF and set lever in neutral			2.83 – 3.43 MPa {29 – 35 kg/cm <sup>2</sup> }	
2	Defective piston pump	The piston pump may have a malfunction or a defect in it. Check it by the following method. • Remove the oil pressure pickup plug and crank the engine. If oil flows out, the piston pump is normal.		
3	Defective damper	The pump shaft may not rotate because of a defect in the damper. Check the damper directly.		

### H-4 Abnormal sound comes out from around the hydraulic pump

Trouble	• Abnormal sound comes out from around the hydraulic pump.
Relative information	—

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Lowering of hydraulic oil level	Check directly.	
2	Defective hydraulic oil	Hydraulic oil may contain air. Check it directly.		
3	Clogging of hydraulic tank cap	The hydraulic tank cap may be clogged and negative pressure may be applied to the tank. Check the cap directly.		
4	Clogging of hydraulic tank strainer	The hydraulic tank strainer may be clogged and negative pressure may be applied to the suction circuit. Check the strainer directly.		
5	Defective piston pump	The piston pump may have a defect in it. Check it directly.		

### H-5 Fine control performance or response is low

Trouble	<ul style="list-style-type: none"> <li>Fine control performance or response is low.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Carry out troubleshooting in the WORK mode.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting			
		1	Malfunction of LS-EPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.		
Mode				Travel speed	Travel lever	LS-EPC output pressure
Travel				High speed	Neutral position	Approx. 0.39 MPa {Approx. 4 kg/cm <sup>2</sup> }
				Medium or Low speed	Neutral position	Approx. 2.34 MPa {Approx. 23.9 kg/cm <sup>2</sup> }
2		Clogging of LS circuit orifice	The LS circuit orifice may be clogged. Check it directly.			
3		Defective adjustment or malfunction of LS valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.			
			Oil pressure to be measured	Ratio of oil pressure		
				Turn all work equipment switches OFF	Turn all work equipment switches ON (with no load)	
			Pump discharge pressure	Almost same	1	
			LS valve output pressure		Approx. 3/5	
If the oil pressure does not become normal after adjustment, the LS valve may have a malfunction or a defect in it. Check the LS valve directly.						
4	Malfunction of servo piston	The servo piston may have a malfunction. Check it directly.				

## H-6 The conveyor does not operate

Trouble	• The conveyor does not operate.			
Relative information	• Carry out the following troubleshooting when the travel system and other work equipment are normal.			
Possible causes and standard value in normal state	Cause			
	1	Malfunction of accessory EPC valve		
			Standard value in normal state/Remarks on troubleshooting	
			Operation	EPC valve output pressure
	Turn conveyor switch ON		Min. 2.5 MPa {Min. 26 kg/cm <sup>2</sup> }	
2	Malfunction of accessory control valve (spool)	The accessory control valve spool may have a malfunction. Check it directly.		
3	Malfunction of conveyor rotation solenoid valve	The conveyor rotation solenoid valve may have a malfunction. Check it directly.		
4	1) Disconnection or short circuit in conveyor-ON/OFF switch system	1) Carry out troubleshooting according to failure codes [7RC1KB] and [7RC2KA].		
	2) Disconnection or short circuit in accessory EPC valve system	2) Carry out troubleshooting according to failure codes [7RFLKB] and [7RFLKY].		
	3) Short circuit in conveyor forward relay system	3) Carry out troubleshooting according to failure codes [7RFHKB] and [7RFHKY].		
	4) Disconnection in conveyor forward relay system	4) The conveyor relay system may have a disconnection. Check it directly.		

## H-7 The speed or power of the conveyor is low

Trouble	<ul style="list-style-type: none"> <li>The speed or power of the conveyor is low.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Carry out the following troubleshooting when the travel speed is normal.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Malfunction of LS-EPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.
Operation				LS-EPC output pressure
Turn conveyor switch ON				Approx. 2.34 MPa {Approx. 23.9 kg/cm <sup>2</sup> }
2		Malfunction of accessory control valve (spool)	The accessory control valve spool may have a malfunction. Check it directly.	
3		Malfunction of pressure compensation valve or pressure compensation piston	The pressure compensation valve or pressure compensation piston of the control valve may have a malfunction. Check them directly.	
4		Disconnection in accessory EPC valve system	Carry out troubleshooting according to failure code [7RFLKB].	
5	Defective operation of safety valve and suction valve for accessory control valve.	The safety valve and suction valve for control valve accessory port may be defective. Check it directly.		
6	Defective conveyor motor	Conveyor speed: 97 – 150 m/min		

## H-8 The crusher does not operate

Trouble	<ul style="list-style-type: none"> <li>The crusher does not operate.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Carry out the following troubleshooting when the travel system and other work equipment are normal.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Malfunction of crusher EPC valve (Forward or reverse)	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting. ★ Carry out troubleshooting in the WORK mode.	
Operation			EPC valve output pressure	
Set the crusher speed to the maximum rotation speed			Min. 2.55 MPa {Min. 26 kg/cm <sup>2</sup> }	
2	Malfunction of crusher control valve (spool)	The crusher control valve spool may have a malfunction. Check it directly.		
3	1) Disconnection or short circuit in crusher-ON/OFF switch system 2) Disconnection or short circuit in crusher forward EPC valve system 3) Disconnection or short circuit in crusher reverse EPC valve system	1) Carry out troubleshooting according to failure codes [7RE1KB] and [7RE2KA].		
		2) Carry out troubleshooting according to failure codes [7RF2KA], [7RF2KB], [7RF2KY].		
		3) Carry out troubleshooting according to failure codes [7RF3KA], [7RF3KB], [7RF3KY].		

## H-9 The speed or power of crusher is low

Trouble	• The speed or power of crusher is low.
Relative information	• Carry out the following troubleshooting when the travel speed is normal.

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	1	Malfunction of LS-EPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.	
Operation				LS-EPC output pressure	
Turn crusher switch ON				Approx. 2.34 ± 0.15 MPa {Approx. 23.9 ± 1.5 kg/cm <sup>2</sup> }	
2		Malfunction of crusher control valve (spool)	The crusher control valve spool may have a malfunction. Check it directly.		
3		Malfunction of pressure compensation valve or pressure compensation piston	The pressure compensation valve or pressure compensation piston of the control valve may have a malfunction. Check them directly.		
4	Disconnection in crusher EPC valve system (Forward or reverse)	Carry out troubleshooting according to failure codes [7RF2KA] and [7RF3KA].			
5	Defective crusher motor	Pulley	Rotation direction	Crusher speed (Maximum speed)	
		Standard	Normal rotation	280 – 380 rpm	
			Reverse rotation	224 – 336 rpm	
		Small (torque up)	Normal rotation	246 – 334 rpm	
Reverse rotation	196 – 295 rpm				

## H-10 The feeder does not operate

Trouble	• The feeder does not operate.
Relative information	• Carry out the following troubleshooting when the travel system and other work equipment are normal.

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	1	Malfunction of feeder EPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting. ★ Carry out troubleshooting in the WORK mode.	
Operation				EPC valve output pressure	
Set the feeder speed to the maximum rotation speed				Min. 2.2 MPa {Min. 22 kg/cm <sup>2</sup> }	
2	Malfunction of feeder control valve (spool)	The feeder control valve spool may have a malfunction. Check it directly.			
3	1) Disconnection or short circuit in feeder-ON/OFF switch system 2) Disconnection or short circuit in feeder forward EPC valve system	1) Carry out troubleshooting according to failure codes [7RC5KB] and [7REPKA].			
		2) Carry out troubleshooting according to failure codes [7RF4KA], [7RF4KB], [7RF4KY].			

## H-11 The feeder does not feed smoothly (Vibration frequency is low)

Trouble	• The feeder does not feed smoothly (Vibration frequency is low).
Relative information	• Carry out the following troubleshooting when the travel speed is normal.

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Malfunction of LS-EPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.
Operation				LS-EPC output pressure
Turn feeder switch ON				Approx. 2.34 MPa {Approx. 23.9 kg/cm <sup>2</sup> }
2		Malfunction of feeder control valve (spool)	The feeder control valve spool may have a malfunction. Check it directly.	
3		Malfunction of pressure compensation valve or pressure compensation piston	The pressure compensation valve or pressure compensation piston of the control valve may have a malfunction. Check them directly.	
4		Disconnection in feeder EPC valve system	Carry out troubleshooting according to failure code [7RF4KA].	
5	Defective operation of safety valve and suction valve for feeder	The safety valve and suction valve for control valve feeder may be defective. Check it directly.		
6	Defective feeder motor	Feeder vibration frequency (Maximum vibration): 1,000 – 1,100 cpm		

## H-12 The magnetic separator does not operate

Trouble	• The magnetic separator does not operate.
Relative information	• Carry out the following troubleshooting when the travel system and other work equipment are normal.

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Malfunction of magnetic separator solenoid valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.
★ Carry out troubleshooting in the WORK mode.				
Operation				Solenoid valve output pressure
		Turn magnetic separator switch ON	2.83 – 3.43 MPa {29 – 35 kg/cm <sup>2</sup> }	
2	Malfunction of magnetic separator control valve (spool)	The magnetic separator control valve spool may have a malfunction. Check it directly.		
3	1) Disconnection or short circuit in magnetic separator-ON/OFF switch system	1) Carry out troubleshooting according to failure codes [7RE8KB] and [7RE9KA].		
	2) Disconnection or short circuit in magnetic separator solenoid valve system	2) Carry out troubleshooting according to failure codes [7RFCKA], [7RFCKB], [7RFCKY].		



### H-13 The speed of magnetic separator belt is low

Trouble	<ul style="list-style-type: none"> <li>The speed of magnetic separator belt is low.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Carry out the travel speed is normal.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Malfunction of LS-EPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.
Operation				LS-EPC output pressure
Turn magnetic separator switch ON				Approx. 2.34 MPa {Approx. 23.9 kg/cm <sup>2</sup> }
2		Malfunction of magnetic separator control valve (spool)	The magnetic separator control valve spool may have a malfunction. Check it directly.	
3		Malfunction of pressure compensation valve or pressure compensation piston	The pressure compensation valve or pressure compensation piston of the control valve may have a malfunction. Check them directly.	
4	Malfunction of magnetic separator safety valve and suction valve	The magnetic separator safety valve and suction valve of the control valve may have a malfunction. Check it directly.		
5	Defective magnetic separator motor	Magnetic separator belt speed: 66 – 108 m/min		

### H-14 The side conveyor does not operate

Trouble	<ul style="list-style-type: none"> <li>The side conveyor does not operate.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Carry out the following troubleshooting when the travel system and other work equipment are normal.</li> <li>Muck discharge conveyor does not work when it is folded.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Malfunction of side conveyor solenoid valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.
★ Carry out troubleshooting in the WORK mode.				
Operation				Solenoid valve output pressure
			Turn side conveyor switch ON	2.83 – 3.43 MPa {29 – 35 kg/cm <sup>2</sup> }
2		Malfunction of side conveyor control valve (spool)	The side conveyor control valve spool may have a malfunction. Check it directly.	
3	Malfunction of side conveyor proximity switch	The side conveyor proximity switch may have a malfunction. Check it directly.		
4	1) Short circuit, disconnection, or defective contact in side conveyor-ON/OFF switch system 2) Disconnection or short circuit in side conveyor solenoid system	1) Carry out troubleshooting according to failure codes [7RE6KB] and [7RE7KA]. 2) Carry out troubleshooting according to failure codes [7RFBKZ] and [7RFBKB].		

## H-15 The speed or power of the side conveyor is low

Trouble	• The speed or power of the side conveyor is low.
Relative information	• Carry out the travel speed is normal.

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Malfunction of LS-EPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.
Operation				LS-EPC output pressure
Turn side conveyor switch ON				Approx. 2.34 MPa {Approx. 23.9 kg/cm <sup>2</sup> }
2		Malfunction of side conveyor control valve (spool)	The side conveyor control valve spool may have a malfunction. Check it directly.	
3		Malfunction of pressure compensation valve or pressure compensation piston	The pressure compensation valve or pressure compensation piston of the control valve may have a malfunction. Check them directly.	
4	Malfunction of side conveyor safety valve and suction valve	The side conveyor safety valve and suction valve of the control valve may have a malfunction. Check it directly.		
5	Defective side conveyor motor	Conveyor speed: 90 – 135 m/min		

### H-16 The primary conveyor and the side conveyor do not move up and down

Trouble	<ul style="list-style-type: none"> <li>The primary conveyor and the side conveyor do not move up and down.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Carry out the following troubleshooting when the travel system and other work equipment are normal.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	Possible causes and standard value in normal state	1	Malfunction of accessory EPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting. ★ Carry out troubleshooting in the WORK mode.	
Operation				EPC valve output pressure	
Turn conveyor elevator switch ON				Min. 2.5 MPa {Min. 26 kg/cm <sup>2</sup> }	
2		Malfunction of accessory control valve (spool)	The accessory control valve spool may have a malfunction. Check it directly.		
3	Malfunction of conveyor elevator solenoid valve	The conveyor elevator solenoid valve may have a malfunction. Check it directly.			
4	1) Short circuit in conveyor elevator switch system	1) Carry out troubleshooting according to failure code [7REAKB].			
	2) Disconnection or short circuit in accessory EPC valve	2) Carry out troubleshooting according to failure codes [7RFLKA], [7RFLKB], [7RFLKY].			

## H-17 The machine deviates during travel

Trouble	<ul style="list-style-type: none"> <li>The machine deviates during travel.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Before carrying out the troubleshooting, set the mode selector switch in the TRAVEL mode.</li> <li>Set the conveyor to up position (travel position) and carry out troubleshooting.</li> <li>Set the travel speed selector switch at high-speed and carry out troubleshooting.</li> <li>Carry out the following troubleshooting when the work equipment speed is normal.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Malfunction of travel PPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.
Travel lever				PPC valve output pressure
FORWARD or REVERSE				Min. 2.5 MPa {Min. 26 kg/cm <sup>2</sup> }
Output difference between forward and lateral directions				Max. 0.39 MPa {Max. 4 kg/cm <sup>2</sup> }
2		Malfunction of self-reducing pressure valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.	
			Travel lever	Control circuit basic pressure
			All levers in neutral	2.84 – 3.43 MPa {29 – 35 kg/cm <sup>2</sup> }
3		Defective adjustment or malfunction of LS valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.	
	★ Set the mode selector switch in the WORK mode and carry out troubleshooting.			
	Oil pressure to be measured		Ratio of oil pressure	
			Turn all work equipment switches OFF	Turn all work equipment switches ON (with no load)
Pump discharge pressure	Almost same	1		
LS valve output pressure		Approx. 3/5		
4	Malfunction of travel junction solenoid valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.		
		Travel lever	Solenoid output pressure	
		Both sides are operated or neutral	0 MPa {0 kg/cm <sup>2</sup> }	
		Operate one side	2.84 – 3.43 MPa {29 – 35 kg/cm <sup>2</sup> }	
5	Malfunction of shuttle valve	The shuttle valve may have a malfunction. Check it directly. (When radio control specification is installed)		
6	Malfunction of travel junction valve	The travel junction valve may have a malfunction. Check it directly.		
7	Malfunction of travel control valve (spool)	The travel control valve spool may have a malfunction. Check it directly.		
8	Defective travel motor	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.		
		Travel lever	Main relief pressure	
		Relieve travel circuit. (Note 1)	39.2 <sup>+1.0</sup> <sub>-2.5</sub> MPa {400 <sup>+10</sup> <sub>-25</sub> kg/cm <sup>2</sup> }	

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting
	9	Defective final drive	The final drive may have a defect in it. Check it directly. ★ You may check the final drive by abnormal sound, abnormal heating, metal powder in drain oil, etc.

Note 1: Disconnect the hydraulic hose and piping (travel main circuit) and install adapters to block the ends.

### H-18 The travel speed is low

Trouble	<ul style="list-style-type: none"> <li>The travel speed is low.</li> </ul>						
Relative information	<ul style="list-style-type: none"> <li>Travel operation may be interlocked by (1) Mode selector switch or (2) conveyor height, rendering the machine unable to travel.</li> </ul>						
	Mode	Operating method	Radio controller switch	Travel speed selection	Conveyor height		
	Travel	Lever	Panel	Hi	○	※	×
				Mi	○	○	×
				Lo	○	○	×
		Radio controller	Radio controller	—	×	×	×
				Panel	—	×	×
				Radio controller	Hi	○	※
	Work	Radio controller	Radio controller	Mi	○	○	×
				Lo	○	○	×
				Testing	—	—	—

○ : Machine travels at selected speed.  
 ※ : Machine travels at Mi-speed although Hi is selected.  
 × : Machine does not travel

- Before carrying out the troubleshooting, set the mode selector switch in the TRAVEL mode.
- Carry out the following troubleshooting when the work equipment speed is normal.

Cause		Standard value in normal state/Remarks on troubleshooting				
Possible causes and standard value in normal state	1	Malfunction of travel PPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.			
			Travel lever		PPC valve output pressure	
			FORWARD or REVERSE		Min. 2.5 MPa {Min. 26 kg/cm <sup>2</sup> }	
			Output difference between forward and lateral directions		Max. 0.39 MPa {Max. 4 kg/cm <sup>2</sup> }	
	2	Malfunction of self-reducing pressure valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.			
			Travel lever		Control circuit basic pressure	
			Set lever in neutral		2.83 – 3.43 MPa {29 – 35 kg/cm <sup>2</sup> }	
3	Malfunction of LS-EPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.				
		Mode	Travel speed	Travel lever	LS-EPC output pressure	
		Travel	High speed	Neutral position	Approx. 0.39 MPa {Approx. 4 kg/cm <sup>2</sup> }	
Medium or Low speed	Neutral position		Approx. 2.34 MPa {Approx. 23.9 kg/cm <sup>2</sup> }			
4	Malfunction of travel control valve (spool)	The travel control valve spool may have a malfunction. Check it directly.				
5	Malfunction of pressure compensation valve or pressure compensation piston	The pressure compensation valve or pressure compensation piston of the control valve may have a malfunction. Check them directly.				
6	Malfunction of travel control valve (suction valve)	The suction valve of the travel control valve may have a malfunction. Check it directly.				
7	Malfunction of shuttle valve	The shuttle valve may have a malfunction. Check it directly. (When radio control specification is installed)				

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	8	Defective travel motor	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.	
Travel lever			Leakage from travel motor	
Relieve travel circuit. (Note 1)			Max. 27.2 ℓ/min	
9	Defective final drive	The final drive may have a defect in it. Check it directly. ★ You may check the final drive by abnormal sound, abnormal heating, metal powder in drain oil, etc.		

Note 1: Disconnect the hydraulic hose and piping (travel main circuit) and install adapters to block the ends.

## H-19 The machine is not steered well or steering power is low

Trouble	<ul style="list-style-type: none"> <li>The machine is not steered well or steering power is low.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>The steering may be heavy on rough grounds.</li> <li>The steering may be heavy on rough grounds when the travel speed is low.</li> <li>Before carrying out the troubleshooting, set the mode selector switch in the TRAVEL mode.</li> <li>Carry out the following troubleshooting when the work equipment speed is normal.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
		1	Malfunction of travel PPC valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.
Travel lever				PPC valve output pressure
Set lever in neutral				0 MPa {0 kg/cm <sup>2</sup> }
2		Malfunction of travel junction solenoid valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.	
			Travel lever	Solenoid output pressure
			Both sides are operated or neutral	0 MPa {0 kg/cm <sup>2</sup> }
			Operate one side	2.84 – 3.43 MPa {29 – 35 kg/cm <sup>2</sup> }
3		Malfunction of travel junction valve	The travel junction valve may have a malfunction. Check it directly.	
4		Malfunction of travel control valve (spool)	The travel control valve spool may have a malfunction. Check it directly.	
5		Malfunction of travel control valve (pressure compensation valve)	The pressure compensation valve of the travel control valve may have a malfunction. Check it directly.	
6	Malfunction of travel control valve (suction valve)	The suction valve of the travel control valve may have a malfunction. Check it directly.		
7	Malfunction of shuttle valve	The shuttle valve may have a malfunction. Check it directly. (When radio control specification is installed)		
8	Defective seal of check valve of LS pressure pickup plug	The seal of the check valve of the LS pressure pickup plug may be defective. Check it directly.		
9	Malfunction of travel motor (safety valve)	The seal of the safety valve of travel motor may be defective. Check it directly. ★ You may judge by replacing the same motors between the forward and reverse units or between right and left units and checking the change of the phenomenon.		
10	Malfunction of travel motor (Check valve)	The seal of the check valve of travel motor may be defective. Check it directly. ★ You may judge by replacing the same motors between the forward and reverse units or between right and left units and checking the change of the phenomenon.		



## H-20 The travel motor does not work (only one side)

Trouble	<ul style="list-style-type: none"> <li>The travel motor does not work (only one side).</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Before carrying out the troubleshooting, set the mode selector switch in the TRAVEL mode.</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Defective seal of travel control valve (suction valve)	The suction valve seal of the travel control valve may be malfunction. Check it directly.	
2	Defective seal of travel motor (safety valve)	The safety valve seal of the travel motor may be malfunction. Check it directly. ★ Motors of same type on forward and reverse sides or on right and left sides may be checked by replacing the valves with each other and seeing change of condition.		
3	Defective seal of travel motor (check valve)	The check valve seal of the travel motor may be malfunction. Check it directly. ★ Motors of same type on forward and reverse sides or on right and left sides may be checked by replacing the valves with each other and seeing change of condition.		
4	Malfunction of travel motor (parking brake)	Parking brake of travel motor may have malfunction. Check it directly.		
5	Defective travel motor	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.		
		Travel lever	Leakage from travel motor	
		Relieve travel circuit. (Note 1)	Max. 27.2 ℓ/min	
6	Defective final drive	The final drive may have a defect in it. Check it directly. ★ You may check the final drive by abnormal sound, abnormal heating, metal powder in drain oil, etc.		

Note 1: Disconnect the hydraulic hose and piping (travel main circuit) and install adapters to block the ends.

## H-21 When the travel switch of the radio controller is depressed, the machine does not travel

Trouble	<ul style="list-style-type: none"> <li>When the travel switch of the radio controller is depressed, the machine does not travel</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Carry out the following troubleshooting when the machine travels when the travel lever is operated.</li> <li>Before carrying out the troubleshooting, set the mode selector switch in the TRAVEL mode.</li> <li>Before carrying out the troubleshooting, turn the radio control selector switch ON (RADIO CONTROL position).</li> </ul>

Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting	
	1	Malfunction of radio control travel solenoid	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.	
Operation			Solenoid valve output pressure	
Turn radio control travel switch ON (each position).			2.84 – 3.43 MPa {29 – 35 kg/cm <sup>2</sup> }	
2	Malfunction of shuttle valve	The shuttle valve may have a malfunction. Check it directly.		
3	Disconnection or short circuit in travel solenoid system	The travel solenoid system may have a short circuit or disconnection. Check it directly.		

## H-22 The crusher clearance cannot be adjusted

Trouble	<ul style="list-style-type: none"> <li>The crusher clearance cannot be adjusted.</li> </ul>
Relative information	<ul style="list-style-type: none"> <li>Carry out the following troubleshooting when no foreign matter is caught between the fixed jaw and swing jaw of the crusher.</li> <li>Before carrying out the troubleshooting, set the mode selector switch in the INSPECTION mode.</li> <li>Carry out the following troubleshooting when the travel system and other work equipment are normal.</li> </ul>

	Cause		Standard value in normal state/Remarks on troubleshooting	
	Possible causes and standard value in normal state	1	Malfunction of lock cylinder extension/retraction solenoid valve	The lock cylinder extension/retraction solenoid valve may have a malfunction. Check it directly.
2		Malfunction of lock cylinder reset solenoid valve	★ Prepare with engine stopped, then run engine at high idle and carry out troubleshooting.	
			Operation	Solenoid valve output pressure
			Turn crusher clearance open or close switch on monitor ON	2.84 – 3.43 MPa {29 – 35 kg/cm <sup>2</sup> }
3		Malfunction of lock cylinder reset control valve (spool)	The lock cylinder reset control valve spool may have a malfunction. Check it directly.	
4		Malfunction of pressure compensation valve or pressure compensation piston	The pressure compensation valve or pressure compensation piston of the control valve may have a malfunction. Check them directly.	
5		Malfunction of lock cylinder reset suction valve	The suction valve of the lock cylinder reset control valve may have a malfunction. Check it directly.	
6		Malfunction of lock cylinder	The lock cylinder may have a malfunction. Check it directly.	
7	1) Communication error 2) Short circuit in lock cylinder extension relay system 3) Short circuit in lock cylinder retraction relay system 4) Disconnection or short circuit in lock cylinder reset solenoid valve system	1) Carry out troubleshooting according to failure code [DAFRMC]. 2) Carry out troubleshooting according to failure codes [7RFPKB] and [7RFPKY]. 3) Carry out troubleshooting according to failure codes [7RFKKB] and [7RFKKY]. 4) Carry out troubleshooting according to failure codes [7RFNKA], [7RFNKB], [7RFNKY].		

BR380JG-1E0 Mobile crusher

---

Form No. SEN02306-01

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

# MOBILE CRUSHER

## BR380JG-1E0

**Machine model      Serial number**

**BR380JG-1E0          2001 and up**

---

## 40 Troubleshooting

### Troubleshooting of engine (S-mode)

---

Method of using troubleshooting chart.....	3
S-1 Starting performance is poor .....	6
S-2 Engine does not start .....	7
S-3 Engine does not pick up smoothly.....	10
S-4 Engine stops during operations .....	11
S-5 Engine does not rotate smoothly.....	12
S-6 Engine lack output (or lacks power) .....	13
S-7 Exhaust smoke is black (incomplete combustion).....	14
S-8 Oil consumption is excessive (or exhaust smoke is blue) .....	15
S-9 Oil becomes contaminated quickly .....	16
S-10 Fuel consumption is excessive.....	17
S-11 Oil is in coolant (or coolant spurts back or coolant level goes down) .....	18
S-12 Oil pressure drops .....	19
S-13 Oil level rises (Entry of coolant/fuel).....	20
S-14 Coolant temperature becomes too high (overheating) .....	21
S-15 Abnormal noise is made.....	22

S-16 Vibration is excessive ..... 23

## Method of using troubleshooting chart

The troubleshooting chart consists of the “questions”, “check items”, “causes”, and “troubleshooting” blocks. The questions and check items are used to pinpoint high probability causes by simple inspection or from phenomena without using troubleshooting tools. Next, troubleshooting tools or direct inspection are applied to check the narrowed causes in order from the most probable one to make final confirmation according to the troubleshooting procedure.

### Questions

Items to be drawn from the user or operator. They correspond to **A** and **B** in the chart on the right. The items in **A** are basic ones. The items in **B** can be drawn from the user or operator, depending on their level.

### Check items

Simple check items used by the serviceman to narrow the causes. They correspond to **C** in the chart on the right.

### Causes

Items to be narrowed from the questions and check items. The serviceman narrows down the probable causes from **A**, **B**, and **C**.

### Troubleshooting

Items used to find out the true cause by verifying the narrowed causes finally in order from the most probable one by applying troubleshooting tools or direct inspection.

		Causes			
		1	2	3	4
A	Questions	1			
		2	△		△
		3			
		4	⊙		
B	Check items	5			⊙
		6		⊙	
		7		○	
		8			○
		9	○	⊙	
		10			○
		11	⊙		
C	Troubleshooting	a	●		
		b		●	
		c			●
		d			●

BJE10168

Items listed in the [Questions] and [Check items] and related to the [Causes] are marked with △, ○, and ⊙.

△ : Causes to be referred to for questions and check items

○ : Causes related to questions and check items

⊙ : Causes highly probable among ones marked with ○

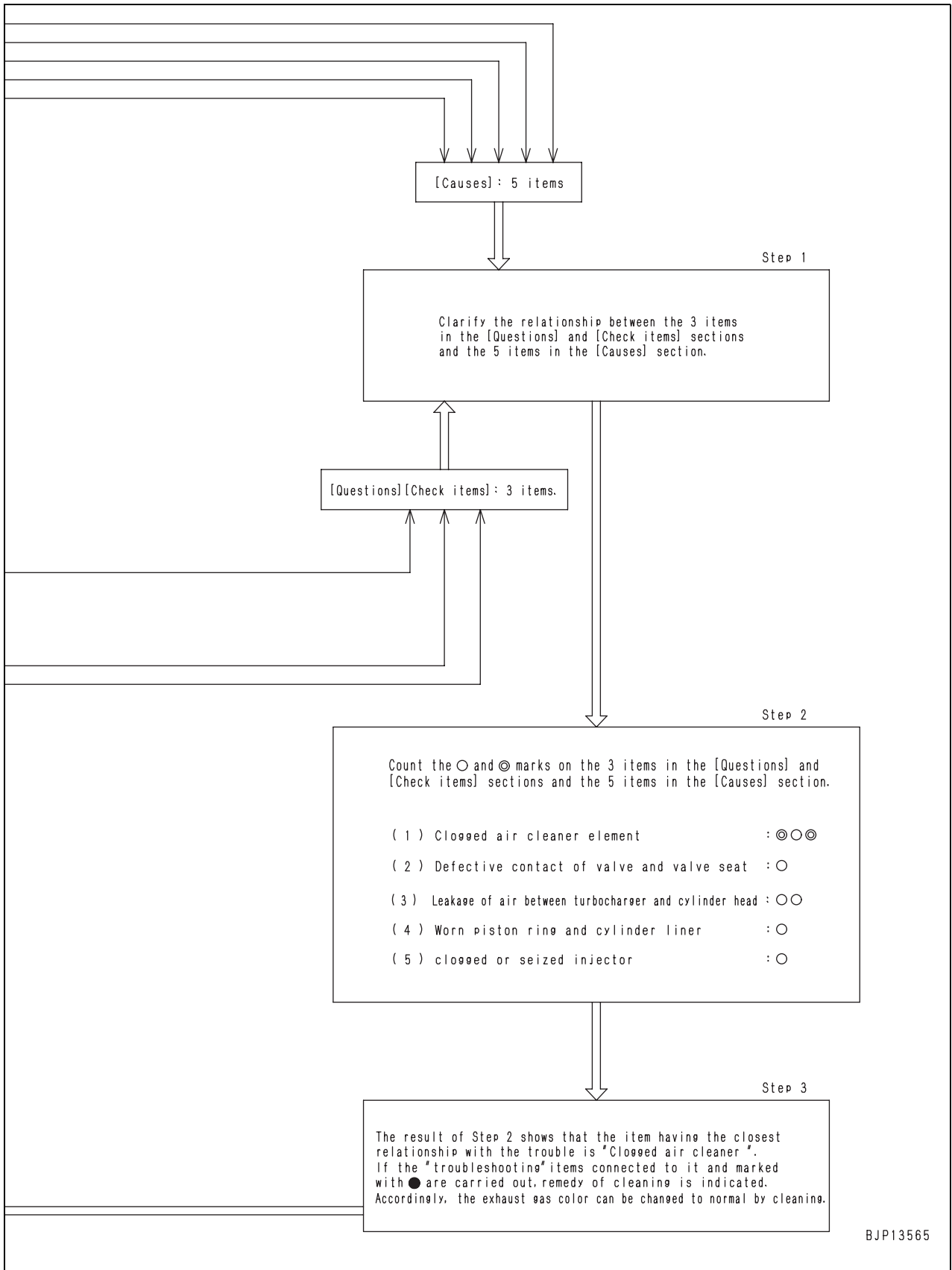
★ When narrowing the “causes”, apply the items marked with ⊙ before those marked with ○.

When narrowing the causes, do not apply the items marked with △. (If no items have other marks and the causes cannot be narrowed, however, you may apply them.)



There is a causal relationship between 3 items in the [Questions] and [Check items] sections and 5 items in the [Causes] section.

The method of pinpointing the “cause” from the causal relationship and approaching the “troubleshooting” is explained according to Step 1 – Step 3 shown below.





### S-1 Starting performance is poor

General causes why starting performance is poor

- Defective electrical system
- Insufficient supply of fuel
- Insufficient intake of air
- Improper selection of fuel
- ★ The common rail fuel injection system (CRI) recognizes the fuel injection timing electrically. Accordingly, even if the starting operation is carried out, the engine may not start until the crankshaft revolves 2 turns at maximum. This phenomenon does not indicate a trouble, however.

		Causes												
		Clogged air cleaner element	Defective contact of valve, valve seat	Worn piston ring, cylinder	Clogged air breather hole of fuel tank cap	Leaking or clogged fuel piping, entry of air	Clogged fuel filter, element	Stuck, seized supply pump plunger	Defective injector	Defective intake air heater system	Defective alternator (regulator section)	Defective alternator (generator section)	Defective, deteriorated battery	
Questions	Confirm recent repair history													
	Degree of use of machine	Operated for long period	△					△						△
	Starting performance	Became worse gradually	○	○	○			○						
		Engine starts easily when warm								○				○
	Non-specified fuel is being used						○	○	○					
	Replacement of filters has not been carried out according to Operation and Maintenance Manual		○				○	○	○					
	Engine oil must be added more frequently			○										
	When engine is preheated or when temperature is low, preheating monitor does not indicate normally									○				
	During operation, charge level monitor indicates abnormal charge										○	○		
	Dust indicator is red		○											
	Air breather hole of fuel tank cap is clogged				○									
	Fuel is leaking from fuel piping					○		○						
	When priming pump is operated, it makes no reaction or it is heavy					○	○							
	Starting motor cranks engine slowly												○	
Check items	While engine is cranked with starting motor	If air bleeding plug of fuel filter is removed, fuel does not flow out						○						
		There are a lot of return rates from injector							○					
	When exhaust manifold is touched immediately after starting engine, temperature of some cylinders is low								○					
	Engine does not pick up smoothly and combustion is irregular		○	○						○				
	There is hunting from engine (rotation is irregular)				○	○	○							
	Blow-by gas is excessive			○										

Troubleshooting	Inspect air cleaner directly		●												
	When compression pressure is measured, it is found to be low			●	●										
	When air is bled from fuel system, air comes out					●									
	Inspect fuel filter, strainer directly							●							
	Carry out troubleshooting according to "Rail Press (Very) Low Error (*1)" indicated by code								●						
	When a cylinder is cut out for reduced cylinder mode operation, engine speed does not change									●					
	When starting switch is turned to HEAT, intake air heater mount does not become warm										●				
	Is voltage 20 – 30 V between alternator terminal B and terminal E with engine at low idle?	Yes										●			
		No											●		
	When specific gravity of electrolyte and voltage of battery are measured, they are low													●	
	Remedy	Clean	Replace	Replace	Clean	correct	Clean	Replace	Replace	Replace	Adjust	Replace	Replace		

\*1: Displayed failure codes [CA559] and [CA2249]

## S-2 Engine does not start

### a) Engine does not turn

General causes why engine does not turn

- Internal parts of engine seized  
→ See “S-4 Engine stops during operations”
- Defective electrical system

		Causes							
		Broken flywheel ring gear	Defective or deteriorated battery	Defective connection of battery terminal	Defective battery relay	Defective starting switch	Defective safety relay	Defective starting motor (motor section)	Defective starting circuit wiring
Questions	Confirm recent repair history								
	Degree of use of machine	Operated for long period	△	△					
Check items	Condition of horn when starting switch is turned ON	Horn does not sound			○		○		○
		Horn volume is low		○					
	Battery electrolyte is low		○						
	Battery terminal is loose			○					
	When starting switch is turned ON, there is no operating sound from battery relay			○		○			
	When starting switch is turned to START, starting pinion does not move out			○			○		○
	When starting switch is turned to START, starting pinion moves out, but	Speed of rotation is low		○					
		Makes grating noise	○						○
Soon disengages again							○		
Makes rattling noise and does not turn			○				○	○	

		●							
Troubleshooting	Inspect flywheel ring gear directly	●							
	When specific gravity of electrolyte and voltage of battery are measured, they are low		●						
	Turn starting switch OFF, connect cord, and carry out troubleshooting at ON	There is not voltage (20 – 30 V) between battery relay terminal B and terminal E				●			
		When terminal B and terminal C of starting switch are connected, engine starts					●		
		When terminal B and terminal C at safety relay outlet are connected, engine starts						●	
		Even if terminal B and terminal C at safety relay outlet are connected, engine does not start							●
When safety switch terminal and terminal B of starting motor are connected, engine starts							●		
Remedy	Replace	Replace	Correct	Replace	Replace	Replace	Replace	—	

Carry out troubleshooting on E-mode

**b) Engine turns but no exhaust smoke comes out**

General causes why engine turns but no exhaust smoke comes out

- Fuel is not being supplied
- Supply of fuel is extremely small
- Improper selection of fuel (particularly in winter)

		Causes											
		Use of improper fuel	Insufficient fuel in tank	Clogged air breather hole of fuel tank cap	Leaking or clogged fuel piping, entry of air	Clogged fuel filter element	Seized, abnormally worn feed pump	Broken supply pump shaft	Stuck, seized supply pump plunger	Defective supply pump MPROP	Defective operation of overflow valve (Does not close)	Defective common rail pressure limiter	Defective fuel injector
Questions	Confirm recent repair history												
	Degree of use of machine	Operated for long period			△	△							
Check items	Exhaust smoke suddenly stopped coming out (when starting again)						○	○	○	○			△
	Replacement of filters has not been carried out according to Operation and Maintenance Manual						○			△			○
	When fuel tank is inspected, it is found to be empty			○									
	Air breather hole of fuel tank cap is clogged			○	○								
	Rust and water are found when fuel tank is drained						○	△		△	△		
	When fuel filter is removed, there is not fuel in it		○			○							
	Fuel is leaking from fuel piping					○							
	When priming pump is operated, it makes no reaction or it is heavy					○	○						
	While engine is cranked with starting motor		If air bleeding plug of fuel filter is removed, fuel does not flow out			○	○		○	○			
			If spill hose from injector is disconnected, little fuel spills				○			○	○	○	
Troubleshooting	When air is bled from fuel system, air comes out					●							
	Inspect fuel filter directly								●				
	Inspect feed pump directly								●				
	Carry out troubleshooting according to "Rail Press (Very) Low Error (*1)" indicated by code								●	●			
	Carry out troubleshooting according to "IMV/PCV1 Short (Open) Error (*2)" indicated by code										●		
	Inspect pressure relief valve directly											●	
	If pressure limiter return pipe is disconnected, fuel flows out												●
Remedy		Replace	Add	Correct	Correct	Replace	Replace	Replace	Replace	Replace	Replace	Replace	Replace

\*1: Displayed failure codes [CA559] and [CA2249]

\*2: Displayed failure codes [CA271] and [CA272]

**c) Exhaust smoke comes but engine does not start (fuel is being injected)**

General causes why exhaust smoke comes out but engine does not start

- Lack of rotating force due to defective electrical system
- Insufficient supply of fuel
- Insufficient intake of air
- Improper selection of fuel

Causes										
Clogged air cleaner element	Worn dynamic valve system (Valve, rocker lever, etc.)	Worn piston ring, cylinder liner	Use of improper fuel	Clogged air breather hole of fuel tank cap	Leaking or clogged fuel system, entry of air	Clogged fuel filter	Stuck, seized supply pump plunger	Clogged injector, defective spray	Defective, deteriorated battery	Defective coolant temperature sensor, wiring harness

Questions	Confirm recent repair history																			
	Degree of use of machine	Operated for long period			△				△		△									
	Suddenly failed to start			○							○								○	
	Non-specified fuel is being used										○	○								
	Replacement of filters has not been carried out according to Operation and Maintenance Manual		○							○										
	Engine oil must be added more frequently				○															
	When engine is preheated or when temperature is low, preheating monitor does not indicate normally																			○
	Dust indicator is red		○																	
	Air breather hole of fuel tank cap is clogged								○											
	Rust and water are found when fuel tank is drained										○									
	Fuel is leaking from fuel piping									○										
	When priming pump is operated, it makes no reaction or it is heavy									○	○									
	Starting motor cranks engine slowly																			○
Check items	When engine is cranked, abnormal sound is generated around cylinder head			○																
	While engine is cranked with starting motor,	If air bleeding plug of fuel filter is removed, fuel does not flow out			○						○									
		If spill hose from injector is disconnected, little fuel spills										○								

Troubleshooting	Inspect air cleaner directly			●																	
	Inspect dynamic valve system directly				●																
	When compression pressure is measured, it is found to be low					●															
	When air is bled from fuel system, air comes out									●											
	Inspect fuel filter directly											●									
	Carry out troubleshooting according to "Rail Press (Very) Low Error (*1)" indicated by code												●								
	When specific gravity of electrolyte and voltage of battery are measured, they are low																			●	
	Coolant temperature gauge does not indicate normally																				●
	When starting switch is turned to HEAT, intake air heater mount does not become warm																				●
Remedy		Clean	Replace	Replace	Replace	Clean	Correct	Clean	Replace	Replace	Replace	Replace	Replace	Replace	Replace	Replace	Replace	Replace	Replace	Replace	

\*1: Displayed failure codes [CA559] and [CA2249]

### S-3 Engine does not pick up smoothly

General causes why engine does not pick up smoothly

- Insufficient intake of air
- Insufficient supply of fuel
- Defective condition of fuel spray
- Improper selection of fuel
- Controller is controlling in derate mode (limiting injection rate (output) because of an error in electrical system)

		Causes										
		Clogged air cleaner element	Defective contact of valve and valve seat	Improper valve clearance	Seized turbocharger, interference of turbocharger	Worn piston ring, cylinder liner	Clogged air breather hole of fuel tank cap	Leaking or clogged fuel piping, entry of air	Clogged fuel filter	Stuck, seized supply pump plunger	Clogged injector, defective spray	
Questions	Confirm recent repair history											
	Degree of use of machine	Operated for long period	△	△			△		△			
	Engine pick-up suddenly became worse				○		○	○			○	
	Non-specified fuel is being used								○	○	○	
	Replacement of filters has not been carried out according to Operation and Maintenance Manual		○						○			
	Oil must be added more frequently					○						
	Dust indicator is red		○									
	Air breather hole of fuel tank cap is clogged						○					
	Rust and water are found when fuel tank is drained								○			
	Fuel is leaking from fuel piping							○				
	When priming pump is operated, it makes no reaction or it is heavy							○	○			
	When exhaust manifold is touched immediately after starting engine, temperature of some cylinders is low									○	○	
	Check items	Color of exhaust gas	Blue under light load				○					
			Black	○	○		○					○
When engine is cranked, abnormal sound is generated around cylinder head				○								
When engine is cranked, interference sound is generated around turbocharger					○							
High idle speed under no load is normal, but speed suddenly drops when load is applied							○		○			
There is hunting from engine (rotation is irregular)							○		○		○	
Blow-by gas is excessive						○						
Troubleshooting	Inspect air cleaner directly	●										
	When compression pressure is measured, it is found to be low		●			●						
	Inspect valve clearance directly			●								
	When turbocharger is rotated by hand, it is found to be heavy				●							
	When air is bled from fuel system, air comes out							●				
	Inspect fuel filter, strainer directly								●			
	Carry out troubleshooting according to "Rail Press (Very) Low Error (*1)" indicated by code									●		
	When a cylinder is cut out for reduced cylinder mode operation, engine speed does not change										●	
Remedy	Clean	Replace	Adjust	Replace	Replace	Clean	Correct	Clean	Replace	Replace		

\*1: Displayed failure codes [CA559] and [CA2249]

### S-4 Engine stops during operations

General causes why engine stops during operations

- Seized parts inside engine
- Insufficient supply of fuel
- There is overheating
- Problem in drive devices on applicable machine side  
→ Carry out troubleshooting for devices on applicable machine

Causes									
Broken dynamic valve system (valve, rocker arm, etc.)									
Broken, seized piston, connecting rod									
Broken, seized crankshaft bearing									
Broken, seized gear train									
Insufficient fuel in tank									
Clogged air breather hole of fuel tank cap									
Leaking, clogged fuel piping									
Clogged fuel filter									
Broken, seized feed pump									
Broken supply pump shaft									
Stuck, seized supply pump plunger									
Broken auxiliary equipment (pump, compressor, etc.)									
Problem in drive devices on applicable machine side									

Questions													
Confirm recent repair history													
Degree of use of machine		Operated for long period											
Condition when engine stopped	Abnormal noise was heard and engine stopped suddenly		○	○	○	○					○	○	
	Engine overheated and stopped			○	○							○	
	Engine stopped slowly						○	○					
	There was hunting and engine stopped						○	○					
Non-specified fuel is being used									○	○			
Replacement of filters has not been carried out according to Operation and Maintenance Manual									○				
Fuel level monitor indicates low level (if monitor is installed)							○						
When fuel tank is inspected, it is found to be empty							○						
Air breather hole of fuel tank cap is clogged								○					
Fuel is leaking from fuel piping									○				
When priming pump is operated, it makes no reaction or it is heavy								○	○				
Rust and water are found when fuel tank is drained									○				
Metal particles are found when oil is drained			○	○	○					○			
Check items	When engine is cranked by hand	Does not turn at all		○	○								
		Turns in opposite direction		○									
		Moves by amount of gear backlash				○						○	
		Supply pump shaft does not turn									○		
Engine turns, but stops when load is applied to machine												○	

Troubleshooting												Remedy
Inspect dynamic valve system directly			●									
Inspect piston, connecting rod directly				●								
Inspect crankshaft bearing directly					●							
Inspect gear train directly						●						
Inspect fuel filter, strainer directly									●			
Inspect feed pump directly										●		
Carry out troubleshooting according to "Rail Press (Very) Low Error (*1)" indicated by code											●	●
Engine rotates when pump auxiliary equipment (pump, compressor, etc.) is removed												●
												Carry out troubleshooting on applicable machine
												—

\*1: Displayed failure codes [CA559] and [CA2249]

### S-5 Engine does not rotate smoothly

General causes why engine does not rotate smoothly

- Air in fuel system
- Defective speed sensor (Error at degree that it is not indicated)

Causes							

Questions			Causes								
	Confirm recent repair history										
	Degree of use of machine	Operated for long period				△					
	Condition of hunting	Occurs at a certain speed range							○	○	
		Occurs at low idle			○	○	○	○	○	○	
		Occurs even when speed is raised								○	○
		Occurs on slopes		○							
	Replacement of filters has not been carried out according to Operation and Maintenance Manual					○					
Check items	When fuel tank is inspected, it is found to be empty			○							
	Air breather hole of fuel tank cap is clogged				○						
	Rust and water are found when fuel tank is drained					○					
	Fuel is leaking from fuel piping					○					
	When priming pump is operated, it makes no reaction or it is heavy					○	○				

Troubleshooting			Causes							
	When air is bled from fuel system, air comes out				●					
	Inspect fuel filter, strainer directly					●				
	When a cylinder is cut out for reduced cylinder mode operation, engine speed does not change						●			
	Carry out troubleshooting according to "Eng Ne Speed Sensor Error (*1)" indicated by code								●	
	Carry out troubleshooting according to "Eng Bkup Speed Sensor Error (*2)" indicated by code									●
	Remedy		Add	Clean	Replace	Replace	Replace	Replace	Replace	Replace

\*1: Displayed failure codes [CA689]

\*2: Displayed failure code [CA778]





### S-7 Exhaust smoke is black (incomplete combustion)

General causes why exhaust smoke is black

- Insufficient intake of air
- Defective condition of fuel injection
- Improper selection of fuel
- There is overheating  
→ See “S-14 Coolant temperature becomes too high (Overheating)”.
- Controller is controlling in derate mode (limiting injection rate (output) because of an error in electrical system)

		Causes													
		Clogged air cleaner element	Seized turbocharger, interference of turbocharger	Defective contact of valve and valve seat	Improper valve clearance	Leakage of air between turbocharger and cylinder head	Crushed, clogged muffler	Worn piston ring, cylinder liner	Stuck, seized supply pump plunger	Clogged, seized injector	Abnormally worn injector	Improper fuel injection timing	Improper fuel injection pressure	Defective coolant temperature sensor, wiring harness	
Questions	Confirm recent repair history														
	Degree of use of machine	Operated for long period	△	△				△	△						
	Color of exhaust gas	Suddenly became black		○			○		○	○	○				
		Gradually became black	○				○			○					
		Blue under light load							○						
	Non-specified fuel is being used								○	○					
	Oil must be added more frequently							○							
	Power was lost	Suddenly		○				○	○	○					
		Gradually	○		○		○		○						
	Dust indicator is red		○												
Muffler is crushed							○								
Air leaks between turbocharger and cylinder head, clamp is loosened						○									
Engine is operated in low-temperature mode at normal temperature												○	○	○	
When exhaust manifold is touched immediately after starting engine, temperature of some cylinders is low									○	○					
When engine is cranked, interference sound is generated around turbocharger			○												
When engine is cranked, abnormal sound is generated around cylinder head					○										
Pump relief speed is high (Fuel is injected excessively)											○				
Exhaust noise is abnormal			○					○		○					
Engine does not pick up smoothly and combustion is irregular			○		○	○	○		○	○					
Blow-by gas is excessive								○							
There are a lot of return rates from injector										○					
Troubleshooting	Inspect air cleaner directly	●													
	When turbocharger is rotated by hand, it is found to be heavy		●												
	When compression pressure is measured, it is found to be low			●				●							
	Inspect valve clearance directly				●										
	When muffler is removed, exhaust sound improves						●								
	Carry out troubleshooting according to “Rail Press (Very) Low Error (*1)” indicated by code								●		●				
	When a cylinder is cut out for reduced cylinder mode operation, engine speed does not change									●					
	Carry out troubleshooting according to “Coolant Temp Sens High (Low) Error (*2)” indicated by code													●	
	Check with monitoring function										●		●		
	Remedy	Clean	Replace	Replace	Adjust	Correct	Replace	Replace	Replace	Replace	Replace	Adjust	Replace	Replace	

\*1: Displayed failure codes [CA559] and [CA2249]

\*2: Displayed failure codes [CA144] and [CA145]

### S-8 Oil consumption is excessive (or exhaust smoke is blue)

General causes why oil consumption is excessive

- Abnormal consumption of oil
- Long-time operation of engine at low idle or high idle (Do not run engine at idle for more than 20 minutes continuously)
- External leakage of oil
- Wear of parts in lubrication system

Causes													
Dust sucked in from intake system	Worn, damaged valve (stem, guide, seal)	Turbocharger		Clogged breather, breather hose	Broken piston ring	Worn piston ring, cylinder liner	Worn, damaged rear oil seal	Broken oil cooler	Oil leakage from oil cooler	Oil leakage from oil filter	Oil leakage from oil piping	Oil leakage from oil drain plug	Oil leakage from oil pan, cylinder head, etc.

Questions													
	Confirm recent repair history												
Degree of use of machine	Operated for long period		△	△	△			△					
Oil consumption suddenly increased						○			○				
Oil must be added more frequently						○			○				
Oil becomes contaminated quickly					○	○	○						
Outside of engine is dirty with oil									○	○	○	○	○
There are loose piping clamps in intake system		○											
Inside of turbocharger intake outlet pipe is dirty with oil				○									
Inside of turbocharger exhaust outlet pipe is dirty with oil			○	○									
There is oil in coolant									○				
Oil level in damper chamber of applicable machine is high								○					
Exhaust smoke is blue under light load						○	○						
Amount of blow-by gas	Excessive		○	○		○	○						
	None					○							

Troubleshooting														
	When intake manifold is removed, dust is found inside		●											
	When intake manifold is removed, inside is found to be dirty abnormally		●											
	Excessive play of turbocharger shaft			●	●									
	Check breather and breather hose directly					●								
	When compression pressure is measured, it is found to be low						●	●						
	Inspect rear oil seal directly								●					
	Pressure-tightness test of oil cooler shows there is leakage									●	●			

Remedy	Correct	Correct	Replace	Replace	Clean	Replace	Replace	Correct	Replace	Replace	Correct	Correct	Correct	Correct

### S-9 Oil becomes contaminated quickly

General causes why oil becomes contaminated quickly

- Entry of exhaust gas into oil due to internal wear
- Clogging of lubrication passage
- Use of improper fuel
- Use of improper oil
- Operation under excessive load

		Causes								
		Defective seal at turbocharger turbine end	Worn valve, valve guide	Worn piston ring, cylinder liner	Clogged breather, breather hose	Clogged oil cooler	Clogged oil filter	Defective oil filter safety valve	Clogged turbocharger lubrication drain tube	Exhaust smoke is bad
Questions	Confirm recent repair history									
	Degree of use of machine	Operated for long period	△	△	△					
	Non-specified fuel is being used				○		○			
	Engine oil must be added more frequently			○						
	Metal particles are found when oil is drained			○	○		○			
	Inside of exhaust pipe is dirty with oil			○						
	Engine oil temperature rises quickly					○				
Check items	Color of exhaust gas color	Blue under light load			○					
		Black								○
	Amount of blow-by gas	Excessive	○	○	○				○	
		None				○				

		Defective seal at turbocharger turbine end	Worn valve, valve guide	Worn piston ring, cylinder liner	Clogged breather, breather hose	Clogged oil cooler	Clogged oil filter	Defective oil filter safety valve	Clogged turbocharger lubrication drain tube	Exhaust smoke is bad
Troubleshooting	Excessive play of turbocharger shaft	●								
	When compression pressure is measured, it is found to be low		●	●						
	Check breather and breather hose directly				●					
	Inspect oil cooler directly					●				
	Inspect oil filter directly						●			
	Spring of oil filter safety valve is hitched or broken							●		
	Inspect turbocharger lubrication drain tube directly								●	
Remedy		Replace	Replace	Replace	Clean	Clean	Replace	Replace	Clean	—

See S-7

### S-10 Fuel consumption is excessive

General causes why fuel consumption is excessive

- Leakage of fuel
- Defective condition of fuel injection (fuel pressure, injection timing)
- Excessive injection of fuel

		Causes									
		Fuel leakage inside head cover	Fuel leakage from fuel filter, piping, etc.	Defective supply pump oil seal	Defective supply pump plunger	Defective common rail pressure	Defective spray by injector	Defective operation of injector	Improper fuel injection timing	Defective coolant temperature sensor, wiring harness	
Questions	Confirm recent repair history										
	Degree of use of machine	Operated for long period			△	△		△			
	Condition of fuel consumption	More than for other machines of same model					○		○	○	○
		Gradually increased					○		○		
	Suddenly increased	○	○								
Check items	There is external leakage of fuel from engine			○							
	Combustion is irregular							○			
	Engine oil level rises and oil smells of diesel fuel		○		○						
	When exhaust manifold is touched immediately after starting engine, temperature of some cylinders is low							○			
	Low idle speed is high								○		
	Pump relief speed is high								○		
	Exhaust smoke color	Black					○	○		○	○
		White	○								
Troubleshooting	Remove and inspect head cover directly		●								
	Inspect supply pump oil seal directly				●						
	Carry out troubleshooting according to "Rail Press (Very) Low Error (*1)" indicated by code					●					
	When a cylinder is cut out for reduced cylinder mode operation, engine speed does not change								●		
	There are lot of return rates from injector									●	
	Carry out troubleshooting according to "Coolant Temp Sens High (Low) Error (*2)" indicated by code										●
	Check with monitoring function						●			●	
Remedy		Correct	Correct	Replace	Replace	Correct	Replace	Replace	Replace	Replace	

\*1: Displayed failure codes [CA559] and [CA2249]

\*2: Displayed failure codes [CA144] and [CA145]

### S-11 Oil is in coolant (or coolant spurts back or coolant level goes down)

General causes why oil is in coolant

- Internal leakage in lubrication system
- Internal leakage in cooling system

		Causes				
		Broken cylinder head, head gasket	Internal cracks in cylinder block	Holes caused by pitting	Broken oil cooler core, O-ring	Broken hydraulic oil cooler on applicable machine side
Questions	Confirm recent repair history					
	Degree of use of machine	Operated for long period		△	△	
	Oil level	Suddenly increased	○			○
		Gradually increased		○	○	
Check items	Hard water is being used as coolant			○	○	
	Oil level has risen, oil is milky		○	○	⊙	
	There are excessive air bubbles in radiator, coolant spurts back	⊙				
	Hydraulic oil on applicable machine side is milky					○
	When hydraulic oil on applicable machine side is drained, water is found					○
Troubleshooting	Pressure-tightness test of cylinder head shows there is leakage	●				Carry out troubleshooting on applicable machine side
	Inspect cylinder block directly		●	●		
	Pressure-tightness test of oil cooler shows there is leakage				●	
	Remedy	Replace	Replace	Replace	Replace	—

### S-12 Oil pressure drops

General causes why oil pressure drops

- Leakage, clogging, wear of lubrication system
- Defective oil pressure control
- Improper selection of fuel (improper viscosity)
- Deterioration of oil due to overheating

		Causes										
		Worn journal of bearing	Lack of oil in oil pan	Coolant, fuel in oil	Clogged strainer in oil pan	Clogged, broken pipe in oil pan	Defective oil pump	Defective regulator valve	Clogged oil filter	Leaking, crushed, clogged hydraulic piping	Defective oil level sensor, wiring harness	
Questions	Confirm recent repair history											
	Degree of use of machine	Operated for long period	△				△		△			
	Oil pressure monitor indicates low oil pressure							○	◎			
	Non-specified oil is being used		○						○			
	Replacement of filters has not been carried out according to Operation and Maintenance Manual								◎			
	Oil pressure monitor (if installed)	Indicates pressure drop at low idle	◎									
		Indicates pressure drop at low, high idle		○		◎	◎	◎	○			
		Indicates pressure drop on slopes		◎								
		Sometimes indicates pressure drop							◎			○
	Oil level monitor indicates oil level drop		◎								◎	
Oil level in oil pan is low		◎										
External hydraulic piping is leaking, crushed									◎			
Oil is milky or smells of diesel oil			◎									
Metal particles are found when oil pan is drained		◎										
Metal particles are found when oil filter is drained		◎					○					
Troubleshooting	Metal particles are found in oil filter		●									
	Inspect oil pan strainer, pipe directly					●	●					
	Oil pump rotation is heavy, there is play in oil pump							●				
	Valve spring of regulator valve is fatigued, damaged							●				
	Inspect oil filter directly								●			
	If oil level sensor is replaced, oil pressure monitor indicates normally										●	
		Remedy	Clean	Add	—	Clean	Clean	Replace	Adjust	Clean	Correct	Replace

### S-13 Oil level rises (Entry of coolant/fuel)

General causes why oil level rises

- Coolant in oil (milky)
- Fuel in oil (smells diluted diesel fuel)
- ★ If oil is in coolant, carry out troubleshooting for “S-11 Oil is in coolant”

		Causes								
		Broken cylinder head, head gasket	Broken injector O-ring	Cracks inside cylinder block	Holes caused by pitting	Worn, damaged rear oil seal	Broken oil cooler core, O-ring	Defects in supply pump	Defective seal of auxiliary equipment (pump, compressor)	
Questions	Confirm recent repair history									
	Degree of use of machine	Operated for long period		△		△	△		△	
	Fuel must be added more frequently		○					○		
	Coolant must be added more frequently		○		○					
	There is oil in coolant		○	○	○	○		○		
	Oil smells of diesel fuel			○				○		
	Oil is milky		○			○				
	When engine is started, drops of water come from muffler		○							
	Check items	When radiator cap is removed and engine is run at low idle, an abnormal number of bubbles appear, or coolant spurts back		○		○				
		Exhaust smoke is white			○					
		Oil level in damper chamber of applicable machine is low						○		
		Oil level in hydraulic tank of applicable machine is low								○
	Troubleshooting	When compression pressure is measured, it is found to be low		●						
Remove injector and inspect O-ring				●						
Inspect cylinder block directly					●	●				
Inspect rear oil seal directly							●			
Pressure-tightness test of oil cooler shows there is leakage								●		
Remove and inspect supply pump directly									●	
Inspect seal of auxiliary equipment directly									●	
	Remedy	Replace	Correct	Replace	Replace	Correct	Replace	Replace	Replace	

### S-14 Coolant temperature becomes too high (overheating)

General causes why coolant temperature becomes too high

- Lack of cooling air (deformation, damage of fan)
- Drop in heat dissipation efficiency
- Problem in coolant circulation system
- Rise in hydraulic oil temperature  
→ Carry out troubleshooting for machine

Causes												
Broken cylinder head, head gasket	Holes caused by pitting	Clogged, broken oil cooler	Lack of coolant	Broken water pump	Defective operation of thermostat	Clogged, crushed radiator fins	Clogged radiator core	Defective radiator cap (pressure valve)	Defective fan pulley bearing	Slipping fan belt, worn fan pulley	Defective coolant temperature gauge	Rise of hydraulic oil temperature on applicable machine side

Questions	Questions											
	Confirm recent repair history											
Degree of use of machine	Operated for long period	△	△					△	△			
Condition of overheating	Sudden overheated				○	◎					○	
	Always tends to overheat					○	◎	◎		○		
Coolant temperature gauge (if installed)	Rises quickly				○	◎						
	Does not go down from red range										◎	
Check items	Radiator coolant level monitor indicates drop of coolant level (if monitor is installed)				◎							
	Engine oil level has risen and oil is milky		◎	○								
	Fan belt tension is low									◎		
	When fan belt is turned, it has play								◎			
	Milky oil is floating on coolant			◎								
	There are excessive air bubbles in radiator, coolant spurts back	◎										
	When light bulb is held behind radiator core, no light passes through						◎					
	Radiator shroud, inside of underguard on applicable machine side are clogged with dirt or mud						◎			◎		
	Coolant is leaking because of cracks in hose or loose clamps				◎							
	Coolant flows out from radiator overflow hose								◎			
	Fan belt whines under sudden acceleration									◎		
	Hydraulic oil temperature enters red range faster than engine coolant temperature											◎

Troubleshooting	Troubleshooting											
	When compression pressure is measured, it is found to be low	●										
	Inspect cylinder bore directly		●									
	Inspect oil cooler directly			●								
	Temperature difference between upper and lower tanks of radiator is large				●							
	When operation of thermostat is carried out, it does not open at cracking temperature					●						
	Temperature difference between upper and lower tanks of radiator is slight						●					
	Inspect radiator core directly							●				
	When operation of radiator cap is carried out, its cracking pressure is low								●			
	Inspect fan belt, pulley directly									●		
When coolant temperature is measured, it is found to be normal										●		
Remedy	Replace	Replace	Replace	Add	Replace	Replace	Correct	Correct	Replace	Replace	Correct	Replace
	Carry out troubleshooting on applicable machine side											



### S-15 Abnormal noise is made

General causes why abnormal noise is made

- Abnormality due to defective parts
- Abnormal combustion
- Air sucked in from intake system
- ★ Judge if the noise is an internal noise or an external noise before starting troubleshooting.
- ★ The engine is operated in the low-temperature mode while it is not warmed up sufficiently. Accordingly, the engine sound becomes a little larger. This does not indicate abnormality, however.
- ★ When the engine is accelerated, it is operated in the acceleration mode and its sound becomes a little larger for up to about 3 seconds. This does not indicate abnormality, however.

		Causes											
		Leakage of air between turbocharger and cylinder head	Interference of turbocharger, seized turbocharger	Broken dynamic valve system (valve, rocker lever)	Defective inside of muffler (dividing board out of position)	Improper valve clearance	Excessive wear of piston ring, cylinder liner	Improper gear train backlash	Removed, seized bushing	Deformed cooling fan, loose fan belt, interference of fan belt	Clogged, seized injector	Dirt caught in injector	Improper fuel injection timing (abnormality in coolant low temperature sensor, boost temperature sensor)
Questions	Confirm recent repair history												
	Degree of use of machine	Operated for long period						△					
	Condition of abnormal noise	Gradually occurred						○		○			
		Sudden occurred		○	○					○			
	Non-specified fuel is being used										○		
	Oil must be added more frequently						○						
	Metal particles are found when oil filter is drained						○	○					
	Air leaks between turbocharger and cylinder head		○										
	When engine is cranked, interference sound is generated around turbocharger			○									
	When engine is cranked, abnormal sound is generated around cylinder head				○	○							
When engine is cranked, beat noise is generated around muffler					○								
Check items	When exhaust manifold is touched immediately after starting engine, temperature of some cylinders is low										○	○	
	Color of exhaust gas	Blue under light load						○					
		Black	○	○			○						
	Engine does not pick up smoothly and combustion is irregular										○		
	Abnormal noise is loud when engine is accelerated					○		○		○	○		
	Blow-by gas is excessive							○					
Troubleshooting	When turbocharger is rotated by hand, it is found to be heavy		●										
	Inspect dynamic valve system directly			●									
	When muffler is removed, abnormal noise disappears				●								
	Inspect valve clearance directly					●							
	When compression pressure is measured, it is found to be low						●						
	Inspect gear train directly							●	●				
	Inspect fan and fan belt directly									●			
	When a cylinder is cut out for reduced cylinder mode operation, engine speed does not change										●	●	
	Abnormal noise is heard only when engine is started											●	
	Confirm with INSITE or monitoring function on applicable machine side												●
	Remedy	Replace	Replace	Correct	Replace	Adjust	Replace	Replace	Replace	Correct	Replace	Replace	Replace

### S-16 Vibration is excessive

General causes why vibration is excessive

- Defective parts (abnormal wear, breakage)
- Misalignment between engine and chassis
- Abnormal combustion
- ★ If abnormal noise is made and vibration is excessive, carry out troubleshooting for "S-15 Abnormal noise is made", too.

		Causes							
		Stuck dynamic valve system (valve, rocker lever)	Worn main bearing, connecting rod bearing	Improper gear train backlash	Worn camshaft bushing	Improper injection timing (Abnormality in coolant temperature sensor, boost temperature sensor)	Loose engine mounting bolts, broken cushions	Misalignment between engine and devices on applicable machine side	Broken output shaft, parts in damper on applicable machine side
Questions	Confirm recent repair history								
	Degree of use of machine	Operated for long period		△		△		△	
	Condition of vibration	Suddenly increased	○						○
		Gradually increased		○		○		○	
Check items	Non-specified oil is being used		○		○				
	Metal particles are found when oil filter is drained		◎		◎				
	Metal particles are found when oil pan is drained		◎		◎				
	Oil pressure is low at low idle		○		○				
	Vibration occurs at mid-range speed						○		○
	Vibration follows engine speed			○			○	○	○
	Exhaust smoke is black	◎				○			
Troubleshooting	Inspect dynamic valve system directly	●							
	Inspect main bearing and connecting rod bearing directly		●						
	Inspect gear train directly			●					
	Inspect camshaft bushing directly				●				
	Check with monitoring function					●			
	Inspect engine mounting bolts and cushions directly						●		
	When alignment is checked, radial runout or facial runout is detected							●	
	Inspect inside of damper directly								●
	Remedy	Replace	Replace	Replace	Replace	Replace	Adjust	Replace	

BR380JG-1E0 Mobile crusher

---

Form No. SEN02307-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---

---

# **MOBILE CRUSHER**

## **BR380JG-1E0**

<b>Machine model</b>	<b>Serial number</b>
BR380JG-1E0	2001 and up

---

### **50 Disassembly and assembly**

#### **General information on disassembly and assembly**

---

---

How to read this manual .....	2
Coating materials list.....	4



## How to read this manual

### 1. Removal and installation of assemblies




#### Special tools

- Special tools which are deemed necessary for removal or installation of parts are described as **A1,•••X1** etc. and their part names, part numbers and quantities are described in the special tool list.
- Also the following information is described in the special tool list.
  - 1) Necessity
    - : Special tools that cannot be substituted and should always be used (installed).
    - : Special tools that will be useful if available and are substitutable with commercially available tools.
  - 2) Distinction of new and existing special tools
    - N: Tools newly developed for this model. They respectively have a new part number.
    - R: Tools with upgraded part numbers. They are remodeled from already available tools for other models.
    - Blank: Tools already available for other models. They can be used without any modification.
  - 3) Circle mark ○ in sketch column:
    - The sketch of the special tool is presented in the section of "Sketches of special tools".
    - Part No. of special tools starting with 79\*T-\*\*\*-\*\*\*\*: means that they can not be supplied from Komatsu in Japan (i.e. locally made parts).
- ★ General tools that are necessary for removal or installation are described as [1],[2]••etc. and their part names, part numbers and quantities are not described.

#### Removal

- The [Removal] section contains procedures and precautions for implementing the work, know how and the amount of oil or coolant to be drained.
- Various symbols used in the Removal Section are explained and listed below.
  - ⚠ : **This mark indicates safety-related precautions that must be followed when implementing the work.**
  - ★ : Know-how or precautions for work
  - [\*1] : This mark shows that there are instructions or precautions for installing parts.
  -  : This mark shows the amount of oil or coolant to be drained.
  -  : Weight of part or component

#### Installation

- Except where otherwise instructed, installation of parts is done in the reverse order of removal.
- Instructions and precautions for installing parts are shown with [\*1] mark in the Installation Section, identifying which step the instructions are intended for.
- Marks shown in the Installation Section stand for the following.
  - ⚠ : **Precautions related to safety in execution of work.**
  - ★ : This mark gives guidance or precautions when doing the procedure.
  -  : Type of coating material
  -  : Tightening torque
  -  : Quantity of oil or coolant to be added

#### Sketches of special tools


- Various special tools are illustrated for the convenience of local manufacture.

## 2. Disassembly and assembly of assemblies




### Special tools

- Special tools which are deemed necessary for disassembly and assembly of parts are described as **A1,••X1** etc. and their part names, part numbers and quantities are described in the special tool list.
- Also the following information is described in the special tool list.
  - 1) Necessity
    - : Special tools that cannot be substituted and should always be used (installed).
    - : Special tools that will be useful if available and are substitutable with commercially available tools.
  - 2) Distinction of new and existing special tools
    - N : Tools newly developed for this model. They respectively have a new part number.
    - R : Tools with upgraded part numbers. They are remodeled from already available tools for other models.
    - Blank: Tools already available for other models. They can be used without any modification.
  - 3) Circle mark ○ in sketch column:
    - The sketch of the special tool is presented in the section of "Sketches of special tools".
    - Part No. of special tools starting with 79\*T-\*\*\*-\*\*\*: means that they can not be supplied from Komatsu in Japan (i.e. locally made parts).
    - ★ General tools that are necessary for disassembly and assembly are described as [1],[2]••etc. and their part names, part numbers and quantities are not described.

### Disassembly

- In Disassembly section, the work procedures, precautions and know-how for carrying out those procedures, and quantity of the oil and coolant drained are described.
- The meanings of the symbols used in Disassembly section are as follows.
  - ⚠ : **This mark indicates safety-related precautions that must be followed when implementing the work.**
  - ★ : Know-how or precautions for work
  -  : Quantity of oil or coolant drained

### Assembly

- In Assembly section, the work procedures, precautions and know-how for carrying out those procedures, and quantity of the oil and coolant added are described.
- The meanings of the symbols used in Assembly section are as follows.
  - ⚠ : **Precautions related to safety in execution of work.**
  - ★ : This mark gives guidance or precautions when doing the procedure.
  -  : Type of coating material
  -  : Tightening torque
  -  : Quantity of oil or coolant to be added

### Sketches of special tools

- Various special tools are illustrated for the convenience of local manufacture.

## Coating materials list

- ★ The recommended coating materials such as adhesives, gasket sealants, and greases used for disassembly and assembly are listed below.
- ★ For coating materials not listed below, use the equivalent of products shown in this manual.

Category	Komatsu code	Part number	Q'ty	Container	Main features and applications
Adhesive	LT-1A	790-129-9030	150 g	Tube	<ul style="list-style-type: none"> <li>• Used to prevent rubber gaskets, rubber cushions, and cork plugs from coming out.</li> </ul>
	LT-1B	790-129-9050	20 g (2 pcs.)	Polyethylene container	<ul style="list-style-type: none"> <li>• Used for plastic (except polyethylene, polypropylene, tetrafluoroethylene and vinyl chloride), rubber, metal, and non-metal parts which require immediate and strong adhesion.</li> </ul>
	LT-2	09940-00030	50 g	Polyethylene container	<ul style="list-style-type: none"> <li>• Features: Resistance to heat and chemicals.</li> <li>• Used to fix and seal bolts and plugs.</li> </ul>
	LT-3	790-129-9060 (Set of adhesive and hardener)	Adhesive: 1 kg Hardener: 500 g	Can	<ul style="list-style-type: none"> <li>• Used to stick and seal metal, glass, and plastics.</li> </ul>
	LT-4	790-129-9040	250 g	Polyethylene container	<ul style="list-style-type: none"> <li>• Used to seal plugs.</li> </ul>
	Holtz MH 705	790-129-9120	75 g	Tube	<ul style="list-style-type: none"> <li>• Heat-resistant seal used to repair engines.</li> </ul>
	ThreeBond 1735	790-129-9140	50 g	Polyethylene container	<ul style="list-style-type: none"> <li>• Quick-setting adhesive.</li> <li>• Setting time: Within 5 sec. to 3 min.</li> <li>• Used mainly to stick metals, rubbers, plastics, and woods.</li> </ul>
	Aron-alpha 201	790-129-9130	2 g	Polyethylene container	<ul style="list-style-type: none"> <li>• Quick-setting adhesive.</li> <li>• Quick-setting type. (max. strength is obtained after 30 minutes)</li> <li>• Used mainly to stick rubbers, plastics, and metals.</li> </ul>
	Loctite 648-50	79A-129-9110	50 cc	Polyethylene container	<ul style="list-style-type: none"> <li>• Features: Resistance to heat and chemicals.</li> <li>• Used for fitted portions used at high temperatures.</li> </ul>
Gasket sealant	LG-1	790-129-9010	200 g	Tube	<ul style="list-style-type: none"> <li>• Used to stick or seal gaskets and packings of power train case, etc.</li> </ul>
	LG-5	790-129-9080	1 kg	Polyethylene container	<ul style="list-style-type: none"> <li>• Used to seal various threaded portions, pipe joints, and flanges.</li> <li>• Used to seal tapered plugs, elbows, and nipples of hydraulic piping.</li> </ul>
	LG-6	790-129-9020	200 g	Tube	<ul style="list-style-type: none"> <li>• Features: Silicon-based heat and cold-resistant sealant.</li> <li>• Used to seal flange surfaces and threaded portions.</li> <li>• Used to seal oil pan, final drive case, etc.</li> </ul>
	LG-7	790-129-9070	1 kg	Tube	<ul style="list-style-type: none"> <li>• Features: Silicon-based quick-setting sealant.</li> <li>• Used to seal flywheel housing, intake manifold, oil pan, thermostat housing, etc.</li> </ul>
	ThreeBond 1211	790-129-9090	100 g	Tube	<ul style="list-style-type: none"> <li>• Gasket sealant used to repair engine.</li> </ul>
	ThreeBond 1207B	419-15-18131	100 g	Tube	<ul style="list-style-type: none"> <li>• Features: Silicon-based, heat and cold-resistant, vibration-resistant, impact-resistant sealant.</li> <li>• Used to seal transfer case, etc.</li> </ul>

Category	Komatsu code	Part number	Q'ty	Container	Main features and applications
Molybdenum disulfide lubricant	LM-G	09940-00051	60 g	Can	<ul style="list-style-type: none"> <li>Used to lubricate sliding portions. (to prevent squeaking)</li> </ul>
	LM-P	09940-00040	200 g	Tube	<ul style="list-style-type: none"> <li>Used to prevent scuffing and seizure of press-fitted portions, shrink-fitted portions, and threaded portions.</li> <li>Used to lubricate linkages, bearings, etc.</li> </ul>
Grease	G2-LI G0-LI (*) *: For cold district	SYG2-400LI SYG2-350LI SYG2-400LI-A SYG2-160LI SYGA-160CNLI SYG0-400LI-A (*) SYG0-16CNLI (*)	Various	Various	<ul style="list-style-type: none"> <li>General purpose type.</li> </ul>
	G2-CA	SYG2-400CA SYG2-350CA SYG2-400CA-A SYG2-160CA SYGA-160CNCA	Various	Various	<ul style="list-style-type: none"> <li>Used for bearings used at normal temperature under light load in contact with water or steam.</li> </ul>
	Molybdenum disulfide grease LM-G (G2-M)	SYG2-400M SYG2-400M-A SYGA-16CNM	400 g x 10 400 g x 20 16 kg	Bellows-type container Can	<ul style="list-style-type: none"> <li>Used for parts under heavy load.</li> </ul> <p>Caution:</p> <ul style="list-style-type: none"> <li>Do not apply grease to ball bearings like swing circle bearings, etc.</li> <li>The grease should be applied to work equipment pins at their assembly only, not applied for greasing afterwards.</li> </ul>
	Hyper White Grease G2-T, G0-T (*) *: For cold district	SYG2-400T-A SYG2-16CNT SYG0-400T-A (*) SYG0-16CNT (*)	400 g 16 kg	Bellows-type container Can	<ul style="list-style-type: none"> <li>Seizure resistance and heat resistance higher than molybdenum disulfide grease.</li> <li>Not conspicuous on machine since color is white.</li> </ul>
	Biogrease G2-B, G2-BT (*) *: For use at high temperature and under high load	SYG2-400B SYGA-16CNB SYG2-400BT (*) SYGA-16CNBT (*)	400 g 16 kg	Bellows-type container Can	<ul style="list-style-type: none"> <li>Since this grease is decomposed by natural bacteria in short period, it has less effects on microorganisms, animals, and plants.</li> </ul>
	SUNSTAR PAINT PRIMER 580 SUPER	417-926-3910	20 ml	Glass container	Adhesive for cab glass
SUNSTAR GLASS PRIMER 580 SUPER	20 ml		Glass container	<ul style="list-style-type: none"> <li>Used as primer for glass side. (Using limit: 4 months after date of manufacture)</li> </ul>	
SUNSTAR PAINT PRIMER 435-95	22M-54-27230	20 ml	Glass container	<ul style="list-style-type: none"> <li>Used as primer for painted surface on cab side. (Using limit: 4 months after date of manufacture)</li> </ul>	
SUNSTAR GLASS PRIMER 435-41	22M-54-27240	150 ml	Can	<ul style="list-style-type: none"> <li>Used as primer for black ceramic-coated surface on glass side and for hard polycarbonate-coated surface. (Using limit: 4 months after date of manufacture)</li> </ul>	
SUNSTAR SASH PRIMER GP-402	22M-54-27250	20 ml	Glass container	<ul style="list-style-type: none"> <li>Used as primer for sash (Almite). (Using limit: 4 months after date of manufacture)</li> </ul>	



Category	Komatsu code	Part number	Q'ty	Container	Main features and applications
Adhesive	SUNSTAR PENGUINE SEAL 580 SUPER "S" or "W"	417-926-3910	320 ml	Polyethylene container	<ul style="list-style-type: none"> <li>• "S" is used for high-temperature season and "W" for low-temperature season as adhesive for glass. (Using limit: 4 months after date of manufacture)</li> </ul>
	Sika Japan, Sikaflex 256HV	20Y-54-39850	310 ml	Polyethylene container	<ul style="list-style-type: none"> <li>• Used as adhesive for glass. (Using limit: 6 months after date of manufacture)</li> </ul>
	SUNSTAR PENGUINE SUPER 560	22M-54-27210	320 ml	Ecocart (Special container)	<ul style="list-style-type: none"> <li>• Used as adhesive for glass. (Using limit: 6 months after date of manufacture)</li> </ul>
Caulking material	SUNSTAR PENGUINE SEAL No. 2505	417-926-3920	320 ml	Polyethylene container	<ul style="list-style-type: none"> <li>• Used to seal joints of glass parts. (Using limit: 4 months after date of manufacture)</li> </ul>
	SEKISUI SILICONE SEALANT	20Y-54-55130	333 ml	Polyethylene container	<ul style="list-style-type: none"> <li>• Used to seal front window. (Using limit: 6 months after date of manufacture)</li> </ul>
	GE TOSHIBA SILICONES TOSSEAL 381	22M-54-27220	333 ml	Cartridge	<ul style="list-style-type: none"> <li>• Used to seal joint of glasses. Translucent white seal. (Using limit: 12 months after date of manufacture)</li> </ul>



BR380JG-1E0 Mobile crusher

Form No. SEN02737-00

---

© 2007 KOMATSU  
All Rights Reserved  
Printed in Japan 02-07 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

---

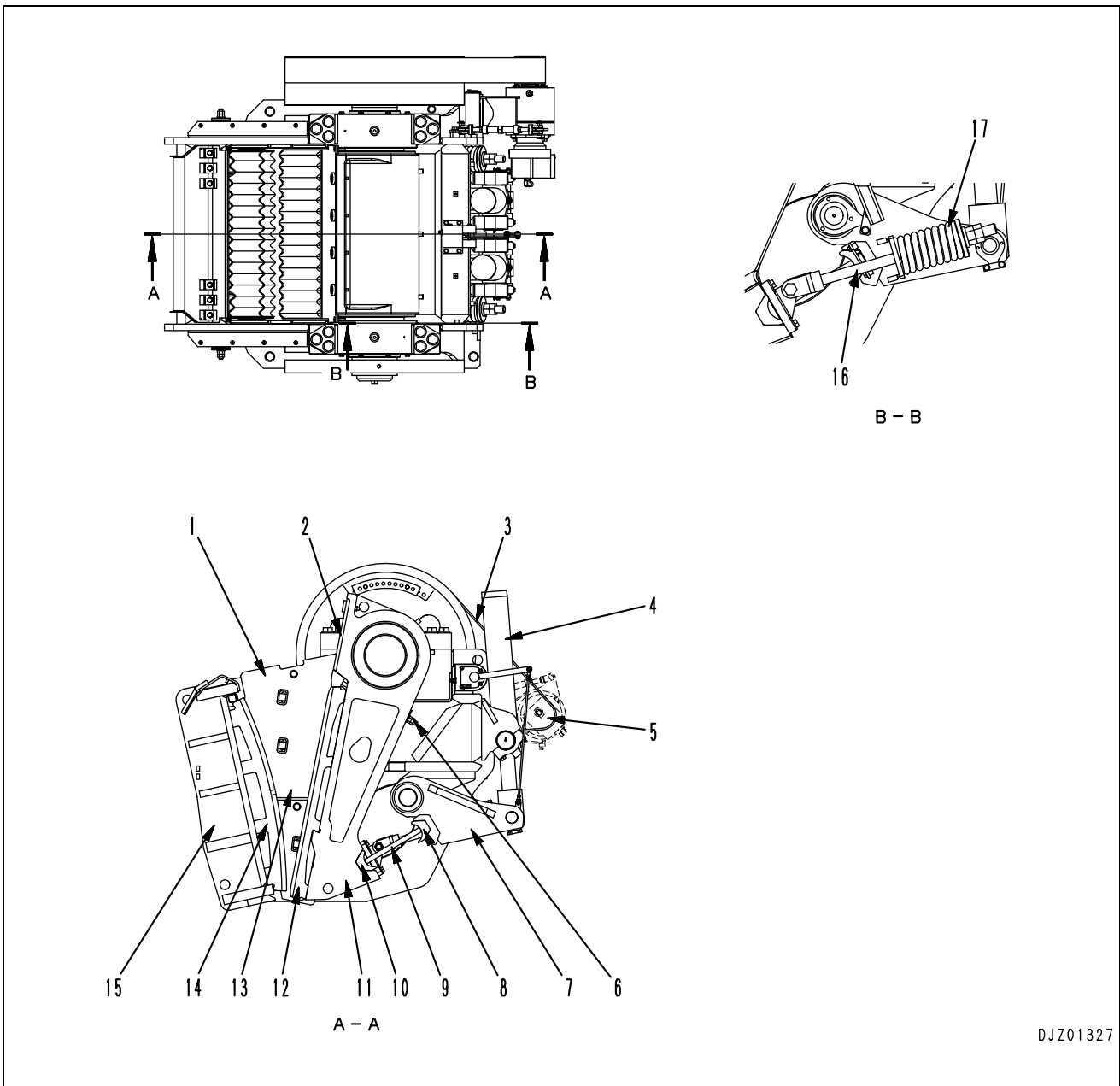
## 50 Disassembly and assembly

### Work equipment

---

Disassembly and assembly of crusher .....	2
Replacing cheek plates .....	3
Turning over and replacing fixed jaw plate .....	4
Turning over and replacing swing jaw plate .....	5
Replacing toggle plate .....	7
Replacing toggle seats .....	10
Disassembly and assembly of lock cylinder .....	11
Removal and installation of primary conveyor assembly .....	15
Replacement of belt .....	18
Replacement procedure for primary belt conveyor motor .....	20
Replacement procedure for primary belt conveyor head pulley frame .....	22
Procedure for folding engine front cover .....	31

### Disassembly and assembly of crusher




DJZ01327

- |                               |                     |
|-------------------------------|---------------------|
| 1. Cheek plate                | 10. Toggle seat     |
| 2. Protector                  | 11. Swing jaw       |
| 3. V-belt                     | 12. Swing jaw plate |
| 4. Lock cylinder              | 13. Crusher chamber |
| 5. Crusher motor              | 14. Fixed jaw plate |
| 6. Swing jaw plate wedge bolt | 15. Front frame     |
| 7. Fixing link                | 16. Tension rod     |
| 8. Toggle seat                | 17. Tension spring  |
| 9. Toggle plate               |                     |


## Replacing cheek plates

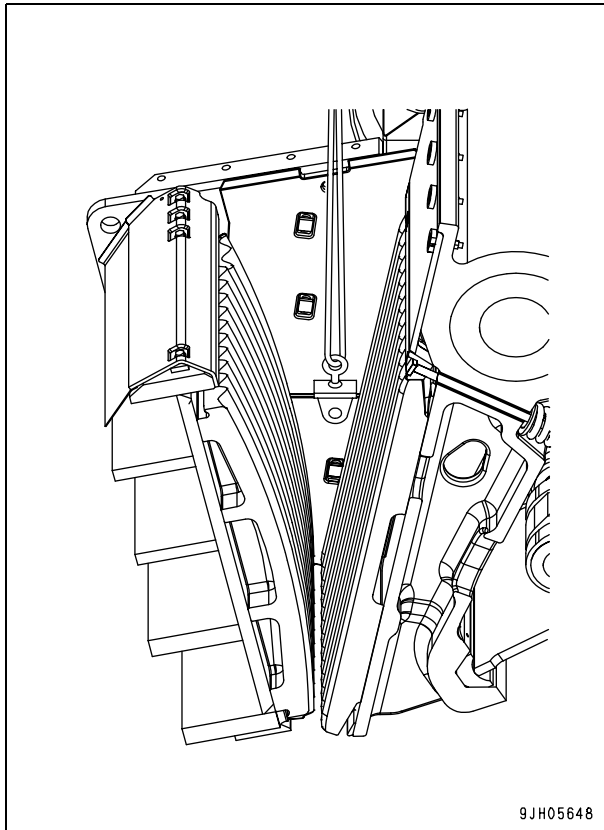
- Prepare the special tools for the cheek plate.  
Part No. of eyebolt: 04530-11628  
Part No. of bracket: 8240-98-1130  
Part No. of clamping bolt: 01016-51240

1. Remove dirt and sand in hanging hole **A** of upper cheek plate (1) with an air gun or a wire brush, then lift off upper cheek plate (1) with the special tool.

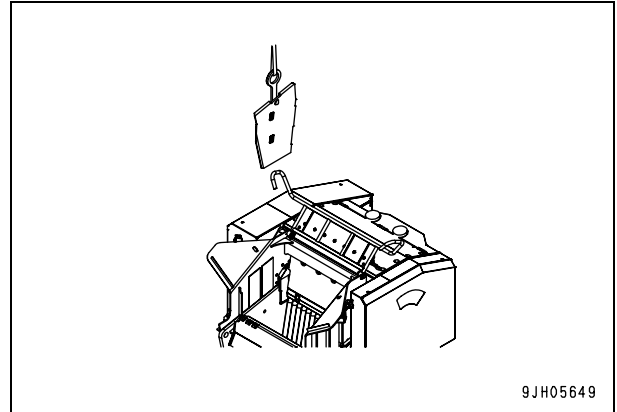
 Upper cheek plate: **74 kg**

2. Remove dirt and sand in hanging hole **A** of lower cheek plate (2) with an air gun or a wire brush, then lift off upper cheek plate (2) with the special tool.

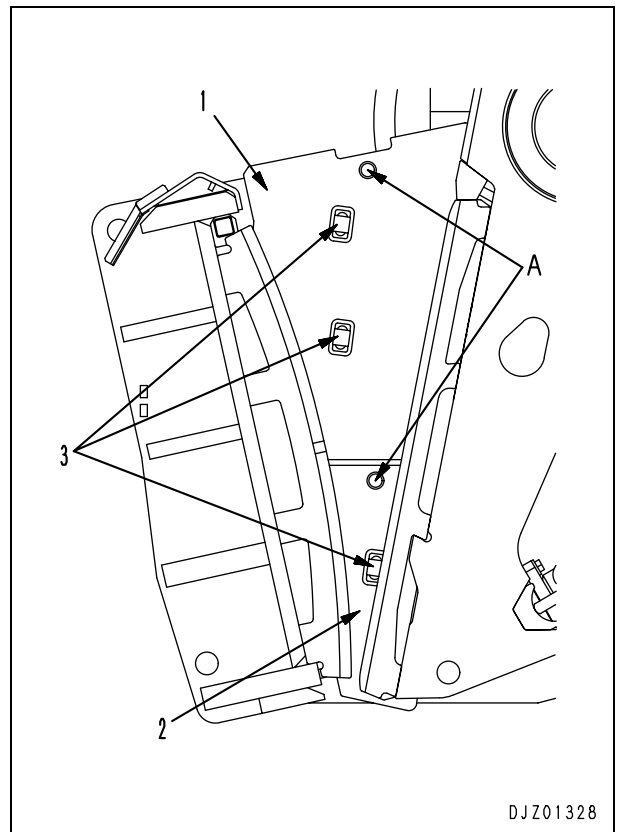
 Lower cheek plate: **36 kg**



3. After removing the upper and lower cheek plates, remove all dirt and sand from the cheek plate mounting faces (front, rear, right, and left).
  - ★ In particular, remove all dirt and sand from both sides of the fixed jaw plate.
4. Insert new cheek plates in order from the lowest one along the fixed jaw plate and guide of the side frame.

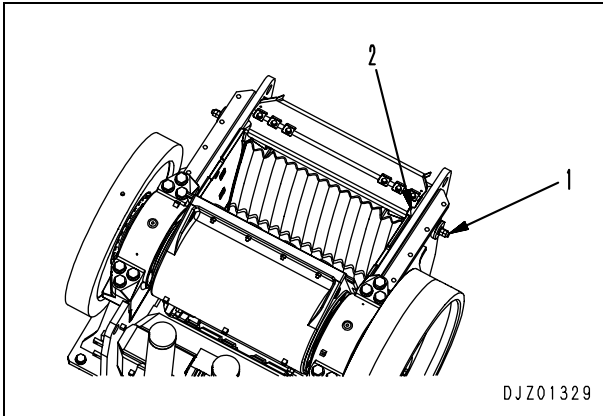


5. After installing upper and lower cheek plates (1) and (2), tighten clamping bolts (3).

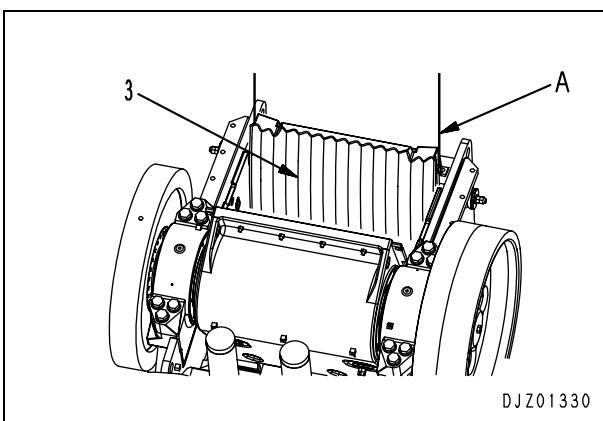


## Turning over and replacing fixed jaw plate

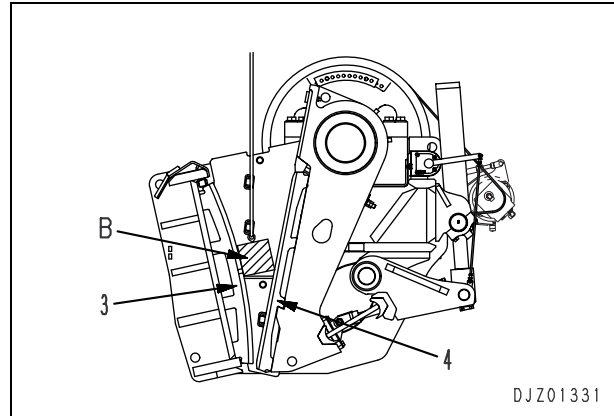
1. Remove the cheek plates.  
See "Replacing cheek plates".
2. Using the attached tools, remove fixed jaw plate wedge bolt (1) and fixed jaw plate wedge block (2).



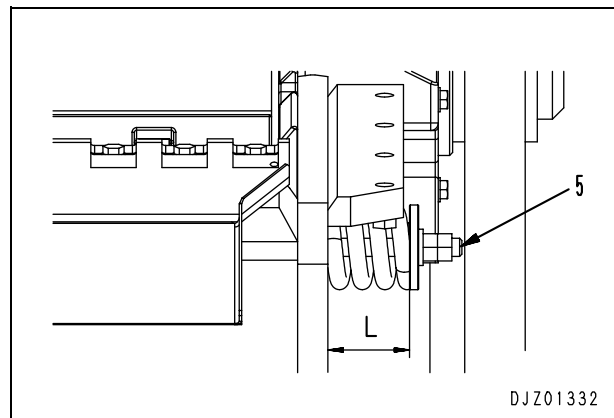
3. Sling fixed jaw plate (3) with wires (A).  
**When turning over**  
Lower fixed jaw plate (3) on a stand. Install the wires on the opposite side and insert the fixed jaw plate in the crusher frame.  
**When replacing**  
Remove fixed jaw plate (3) and install new one in the crusher frame.  
★ After removing the fixed jaw plate, remove all dirt and sand from the fixed jaw plate mounting faces (the front frame and the top of the fixed jaw plate mount stopper).



4. Measure the clearance on each side of fixed jaw plate (3) and determine the point where the fixed jaw plate is aligned with the crusher frame.
5. Insert block (B) (wood block, etc.) between fixed jaw plate (3) and swing jaw plate (4).



6. Referring to the method of adjusting the clearance of discharge setting, push out swing jaw plate (4) to press fixed jaw plate (3) against the front frame.
7. Install the fixed jaw plate wedge and fixed jaw plate wedge bolt (5).  
★ Length (L) of fixed jaw plate wedge bolt spring: 108 – 110 mm

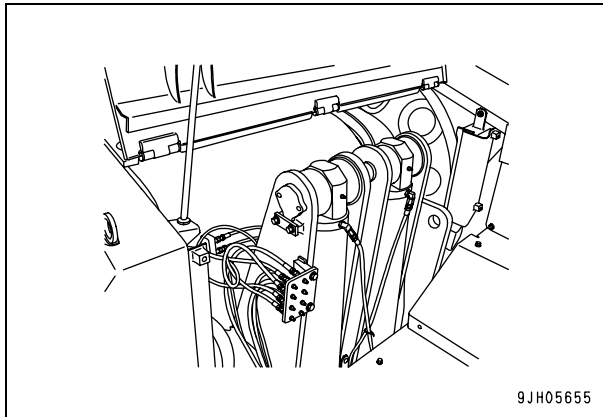


8. Install the cheek plates.  
See "Replacing".

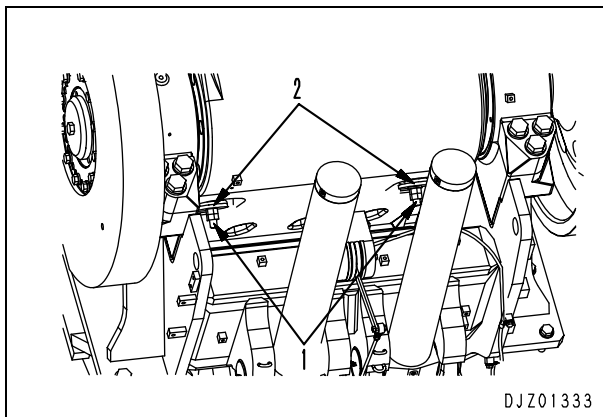
## Turning over and replacing swing jaw plate

### Removal

1. Loosen the bolt of the crusher inspection hatch, open the crusher inspection hatch, and fix it to the hook.

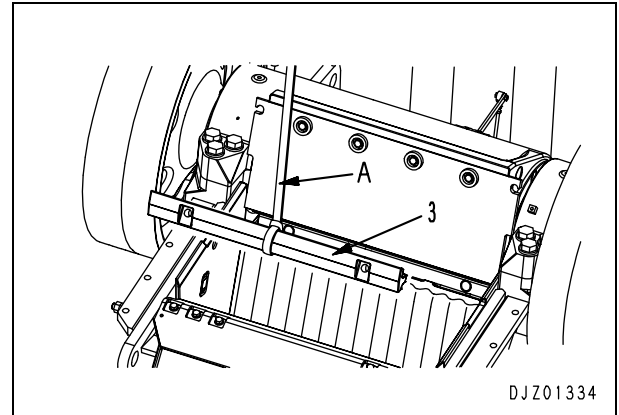


2. Loosen 2 swing jaw plate wedge bolts (1) and remove one of them. After removing swing jaw plate wedge spring (2), install the nut to the remaining bolt and keep that bolt inserted.




3. Check that swing jaw plate wedge (3) is loosened fully. Install wire (A) to the center, remove the remaining bolt, and sling the swing jaw plate wedge.

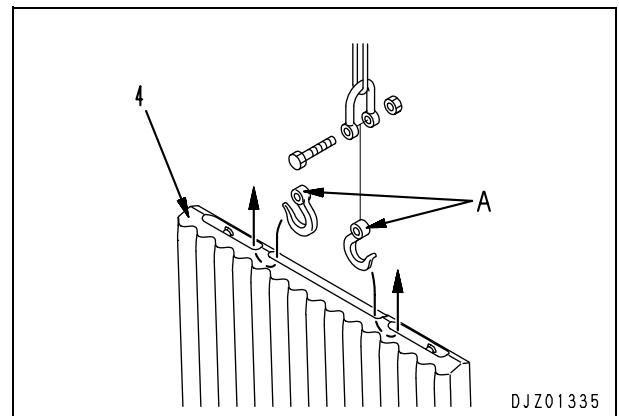
- ★ Push out the swing jaw plate about 30 mm so that you can easily install wire (A) to it.



4. Install hooks (A) to the hooks on the top of the swing jaw plate (4) and sling the swing jaw plate.

 Swing jaw plate: **735 kg**

- ★ After removing the swing jaw plate, remove all dirt and sand from the mounting face. Dirt and sand on the mounting face can cause a play of the swing jaw plate.



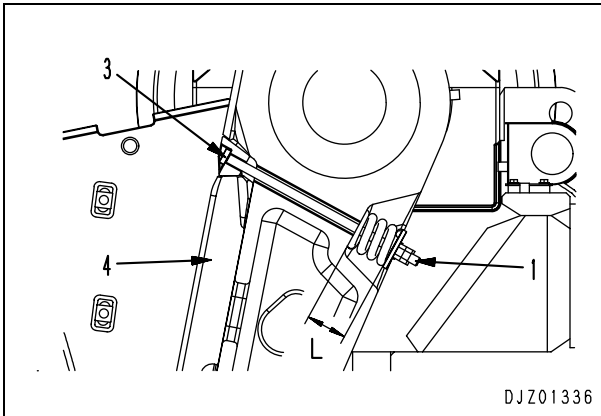


**Installation**

1. When turning over swing jaw plate (4), lower it to the stand. Install the wires on the opposite side and insert the swing jaw plate in the crusher frame.

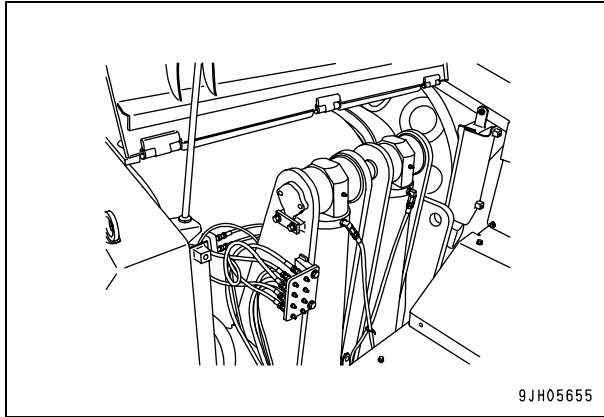
When replacing swing jaw plate (4), lower it to the stand. Sling a new swing jaw plate with the wires and insert it in the crusher frame.

2. Install swing jaw plate wedge (2) and swing jaw plate wedge bolt (1). Set length (L) of the swing jaw plate wedge spring to 108 – 110 mm.

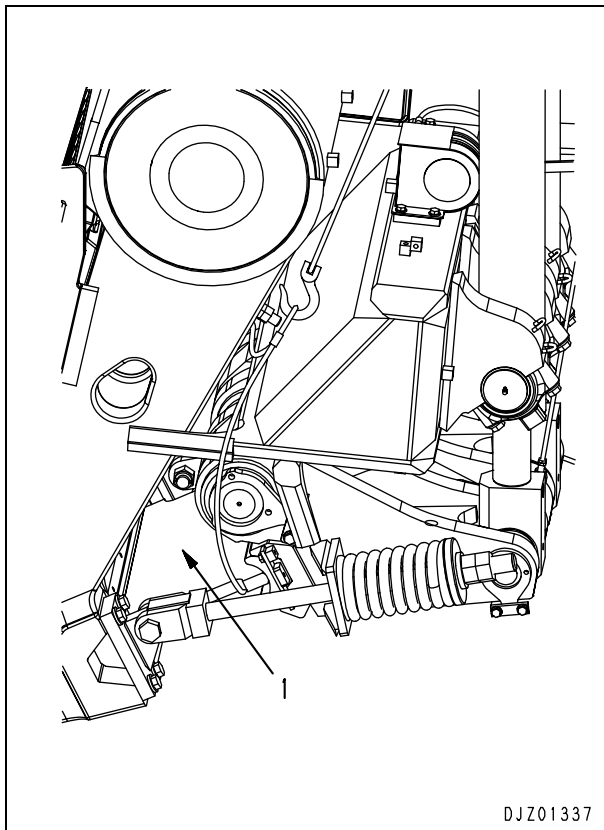


### Replacing toggle plate

1. Loosen the bolt of the crusher inspection hatch, open the crusher inspection hatch, and fix it to the hook.
2. Remove the dust prevention rubber plates on the sides (right and left) of the crusher.

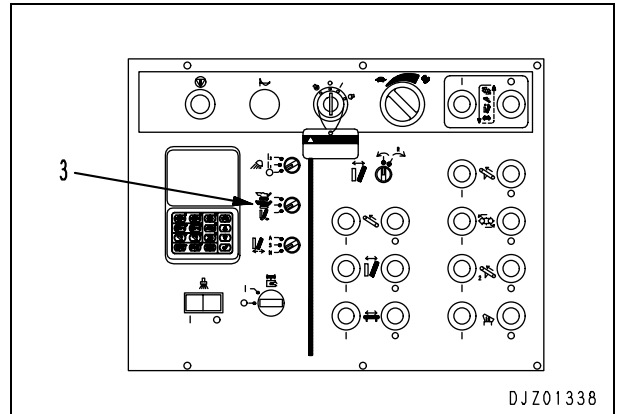


3. Wind nylon sling onto toggle plate (1) and lift it up temporarily.

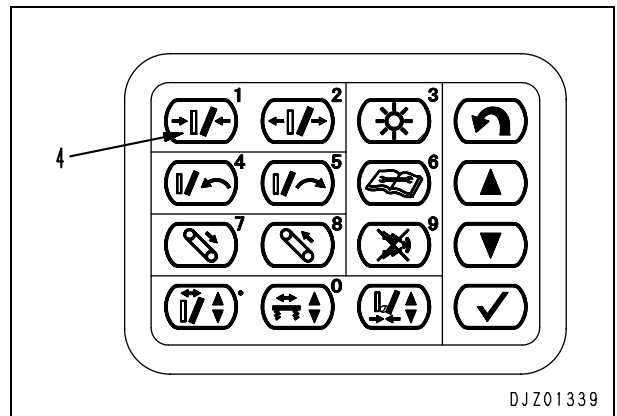


4. Start the engine.
5. Set mode selector switch (3) in the inspection position.

**⚠ Put a warning tag to the starting switch to notify the persons around the machine that you are working on the machine.**



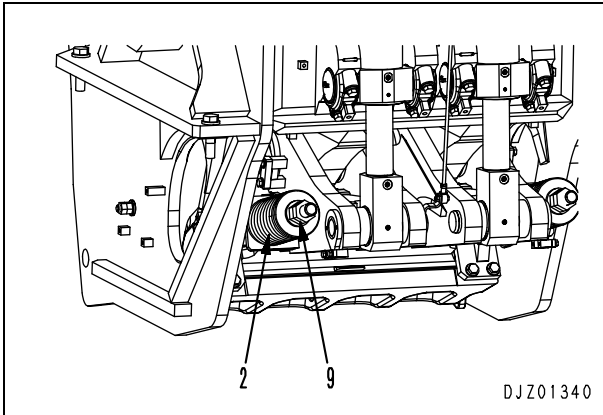
6. Press crusher clearance decrease switch (4) on the control box to move the fixing link until the swing jaw plate touches the fixed jaw plate.



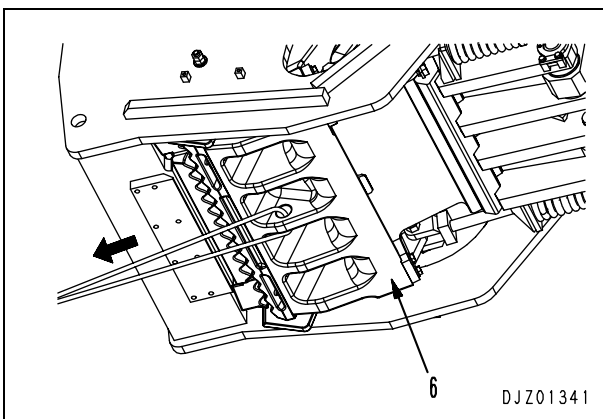
7. Stop the engine.

- Fully loosen tension springs (2) (M42 on both sides).

**⚠ It is very dangerous to go to the following step without fully loosening tension springs (2). Accordingly, remove tension spring nuts (9) from the rod.**

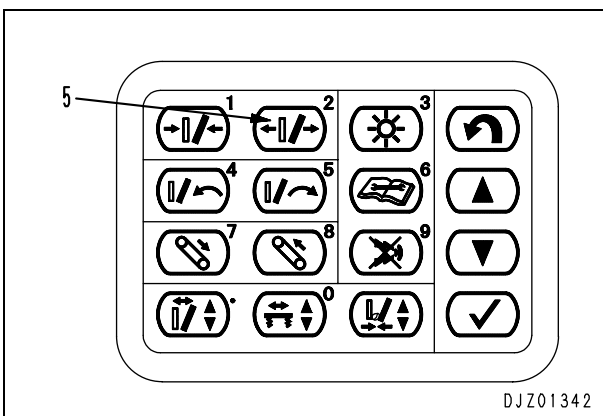


- Pass the wire through the hole in the bottom of the swing jaw (6), then use a chain block to pull the crusher case and the track frame and fix them in position.




- Start the engine.

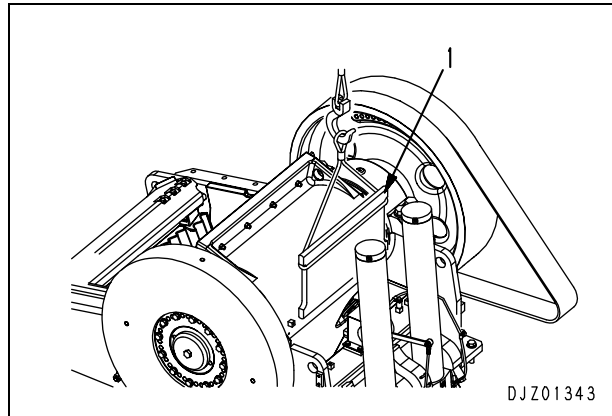
- Press the crusher clearance increase switch (5) on the control box to pull the fixing link slowly.



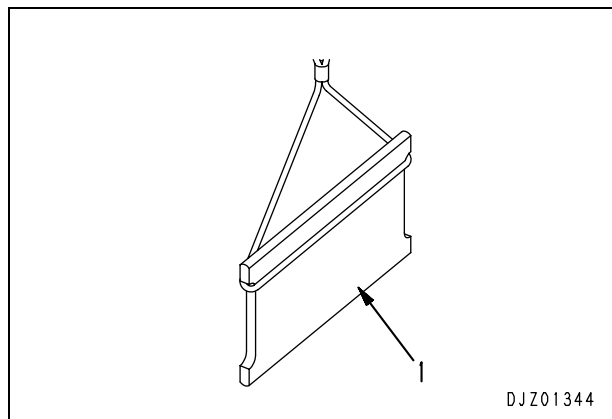
- Stop the engine.

- Take out toggle plate (1).

 Toggle plate: **101 kg**



- Wind the nylon sling onto new toggle plate (1). Lower the toggle plate to set it to the center of the seat on the fixing link side.

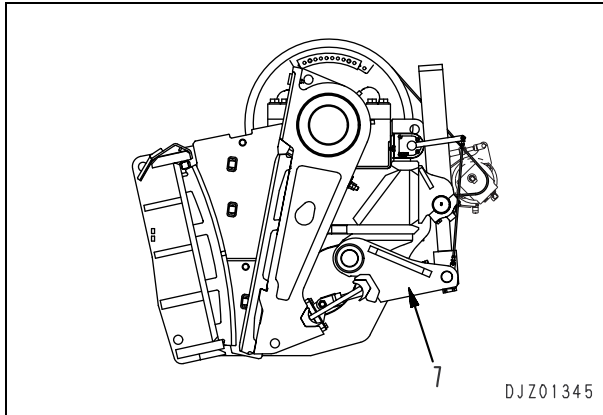


- Start the engine.

- Set mode selector switch (3) in the inspection position.

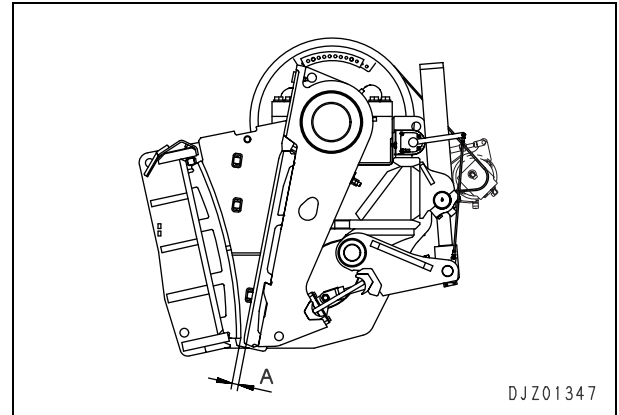
**⚠ Put a warning tag to the starting switch to notify the persons around the machine that you are working on the machine.**

17. Press crusher clearance decrease switch (4) on the control box to push out fixing link (7) and adjust the hanging height of the wire simultaneously. Set the center of the front contact surface of the toggle plate to that of the swing jaw seat.



25. Check clearance of discharge setting (A) and adjust it to the desired value.

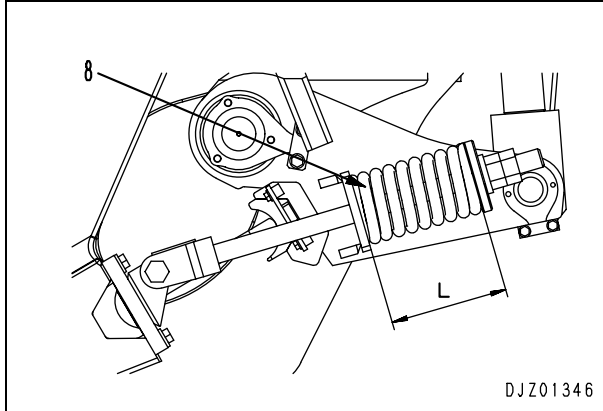
For the method of adjust the clearance of discharge setting, see Testing and adjusting, "Testing and adjusting clearance of discharge setting".



18. Stop the engine.

19. Remove the nylon sling from the toggle plate.

20. Install tension spring (8) and compress it to the specified tightening length. Set tightening length  $L$  of the tension spring to 258 – 260 mm when the crusher outlet clearance is 50 (OSS).



21. Install rubber cover (1 piece) to the top of the toggle plate.
22. Loosen the chain block installed under the swing jaw and remove the wire.
23. Close the crusher inspection hatch and fix it with the bolt.
24. Install the dust prevention rubber plates to the sides (right and left) of the crusher.

## Replacing toggle seats

Before replacing the toggle seats, be sure to perform the following items.

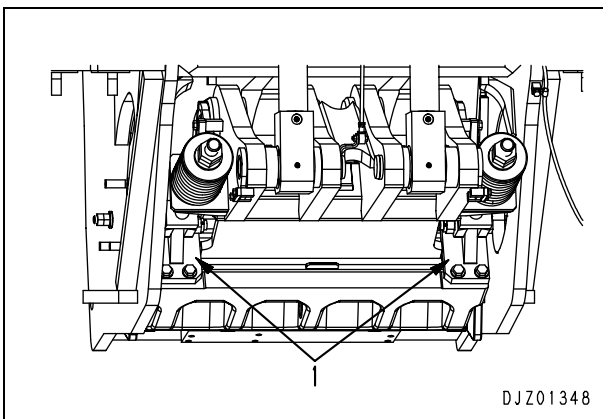
- Since the toggle seats are not interchangeable, take care not to mistake them when installing.

Toggle seat on swing jaw side: The height of the projection is 32.5 mm (at the center). The projection is on the lower side.

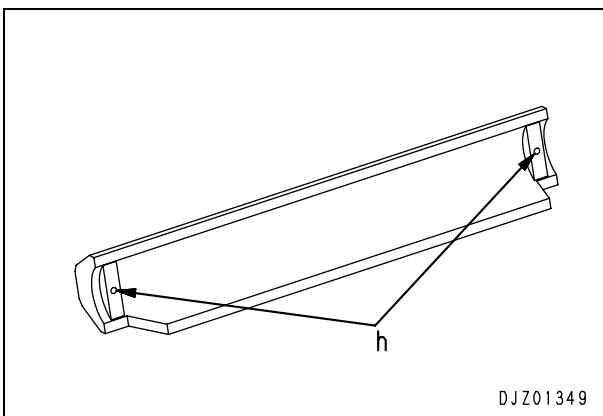
Toggle seat on fixing link side: The height of the projection is 47 mm. The projection is on the lower side.

- Perform the work with the lock cylinder extracted fully so that the toggle seat on the fixing link side will not fall.

1. Referring to “Replacing toggle plate”, remove the toggle plate.
2. Remove toggle seat holding plates (1) on both sides on the swing jaw side.

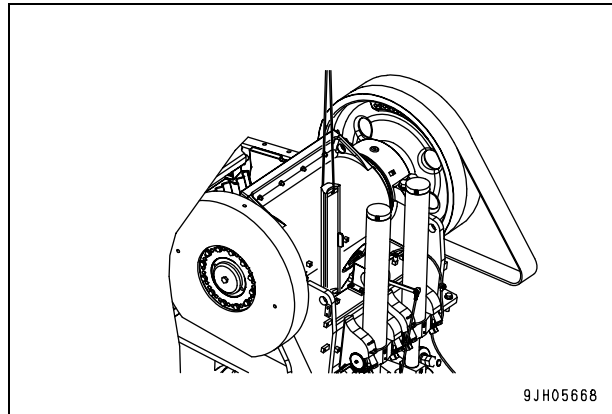


3. Tighten eyebolts in tap holes **h** on both sides of the toggle seat and install a wire to them.

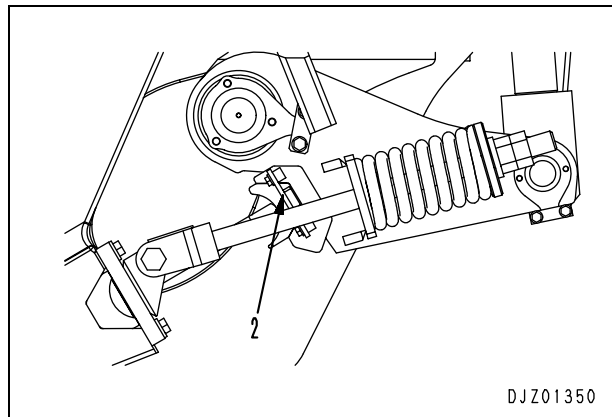


4. Sling the toggle seat.


 Toggle seat on swing jaw side: **44.3 kg**



5. Remove toggle seat holding plate (2) from only one side on the fixing link side.



6. Tighten an eyebolt into the side where the holding plate was removed and sling the toggle seat temporarily to prevent it from falling.
7. After slinging the toggle seat temporarily, remove the toggle seat holding plate on the opposite side.
8. Insert eyebolts into both sides on the toggle block side and sling the toggle seat.

 Toggle seat on toggle block side: **40.0 kg**

9. Insert a new toggle seat by performing the above procedures in the reverse order.

## Disassembly and assembly of lock cylinder

⚠ Do not disassemble the parts other than those described in this section.

### Disassembly

#### 1. Removal of clevis and flange

1) Remove the lock screw of clevis (1) and flange (2).

- Screw size: **M10**

★ After removing the lock screw, be sure to clean the screw hole with compressed air and apply anti-seizure compound to it.

 Lock screw hole:

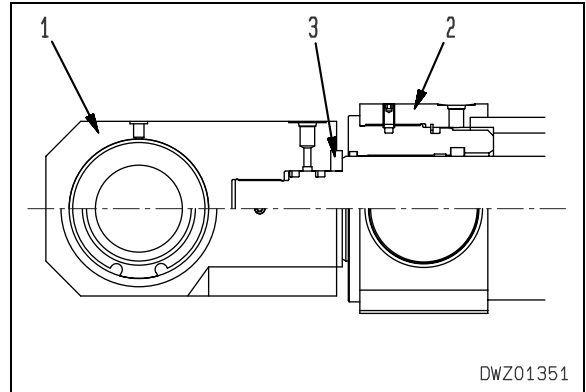
**Anti-seizure compound  
(Molybdenum spray, etc.)**



2) Using a pipe of a proper size, remove clevis (1) and washer (3).

★ Protect the pipe contact parts with cloths.

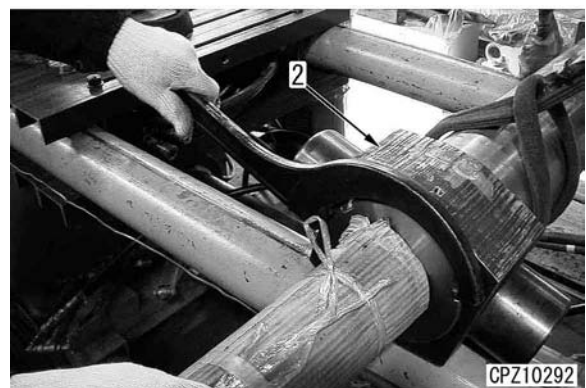
★ After clevis (1) is loosened, disconnect it slowly so that it will not be seized.



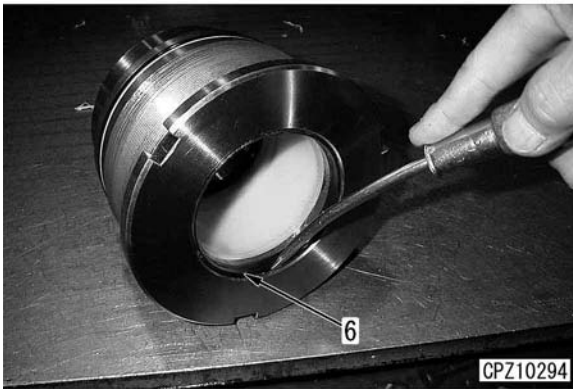
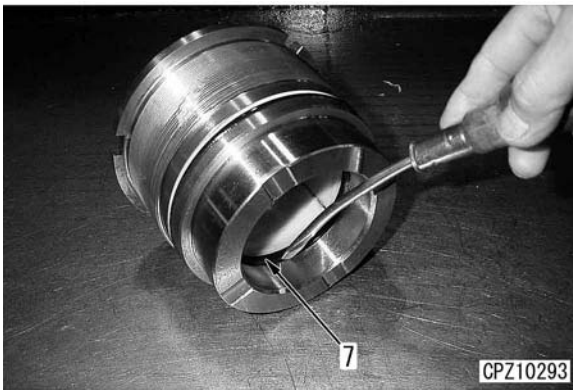
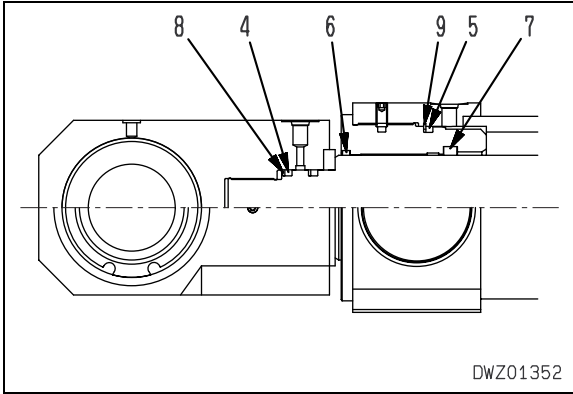
3) Fit the hook spanner to flange (2) and hit it with a hammer to loosen the flange, and then remove the flange.

- Nominal diameter of hook spanner:

**155/165 (mm)**

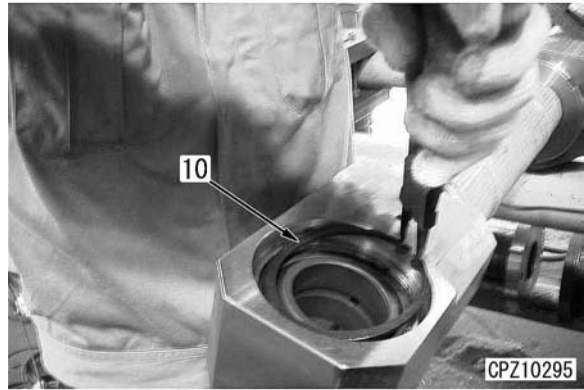


- 4) Remove seals (4), (5), (6), and (7).  
 ★ Take care that rings (8) and (9) will not be damaged.  
 ★ Check the positions of the seal and ring and the direction of the lip.



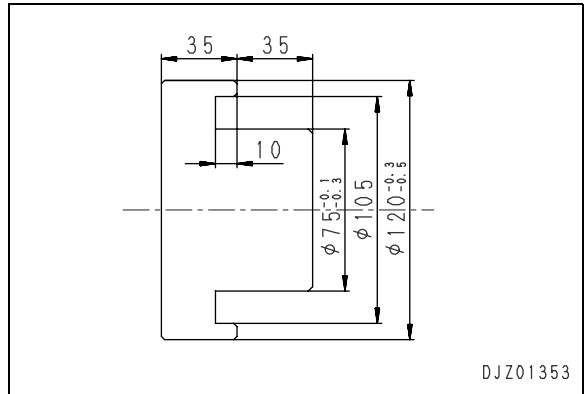
2. Disassembly of clevis

- 1) Remove ring (10) with snap ring pliers.

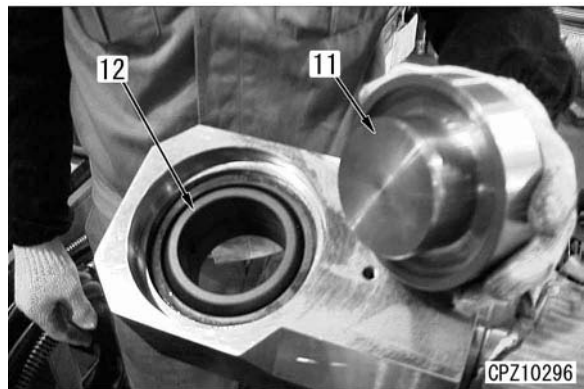


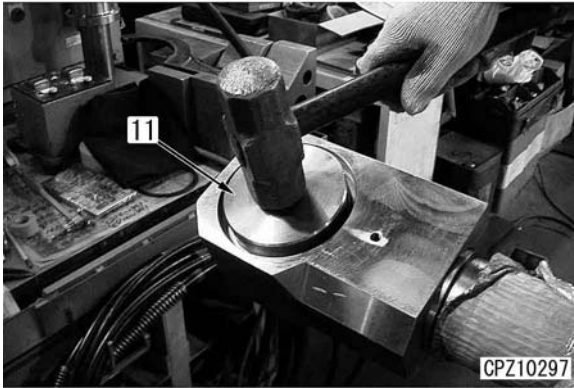
- 2) Using tool (11) (shown below) and a hammer, remove bushing (12).

Tool (11)



- Material: **SS400 or equivalent**
- Heat treatment: **Unnecessary**





**Assembly**

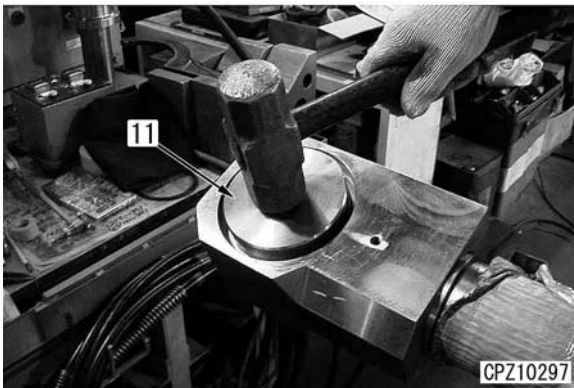
**1. Assembly of clevis**

- 1) Clean the part to fit bushing (12).

 Fitting part:

**Anti-seizure compound  
(Molybdenum spray, etc.)**

- 2) Using tool (11) and a hammer, press fit bushing (12).
  - ★ Adjusting the center of the bushing, press fit the bushing slowly.



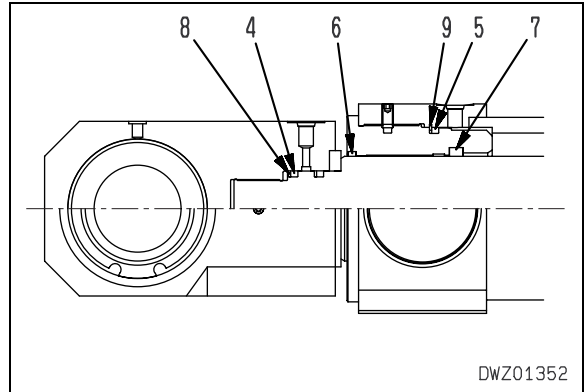
- 3) Install ring (10) with snap ring pliers.



**2. Installation of clevis and flange**

- 1) Install seals (4), (5), (6), and (7).


- ★ Take care not to mistake the positions of the seal and ring or the direction of the lip.
- ★ If there is rust or a flaw on the fitting part, remove it.




- 2) Install flange (2) with the hook spanner.

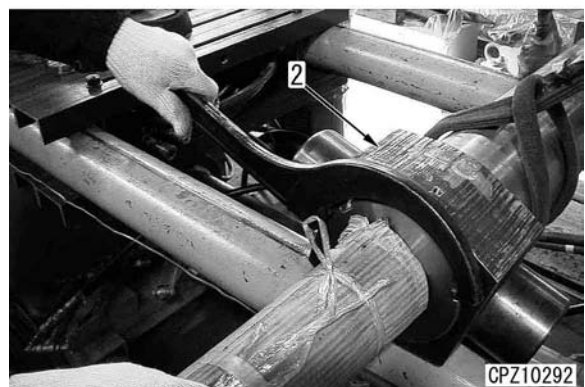
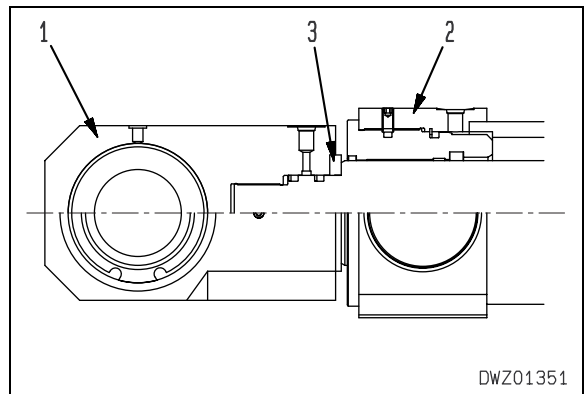
 Fitting part:

**Same oil as currently applied  
one, grease, etc. (Apply thinly)**

 Threaded part:

**Anti-seizure compound  
(Molybdenum spray, etc.)**

- ★ Tighten the flange slowly so that it will not be seized.
  - ★ Retighten the flange by using a hammer.
-  Flange: **980 Nm {100 kgm}**






- 3) Using a pipe, install clevis (1) and washer (3).

- ★ Protect the pipe contact parts with cloths.

 Fitting part:

**Same oil as currently applied one, grease, etc. (Apply thinly)**

 Threaded part:

**Anti-seizure compound (Molybdenum spray, etc.)**

- ★ Tighten the flange slowly so that it will not be seized or will not catch something.
- ★ Retighten the clevis by using a hammer.

 Clevis:

**706 – 784 Nm {72 – 80 kgm}**



- 4) Tighten the lock screw of clevis (1) and flange (2).

 Screw: **59 Nm {6 kgm}**

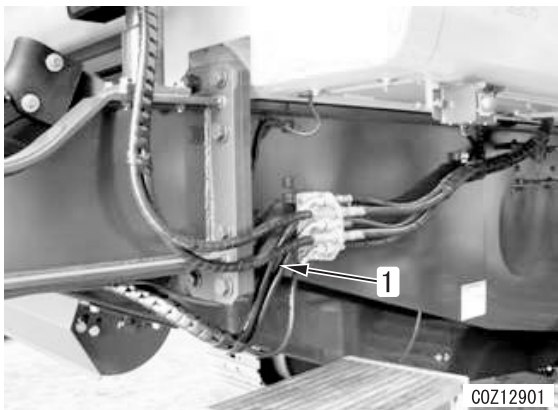
- ★ Do not reuse the used lock screw.
- ★ If the lock screw hole is deviated by retightening, make a new lock screw hole.



## Removal and installation of primary conveyor assembly

### Disassembly

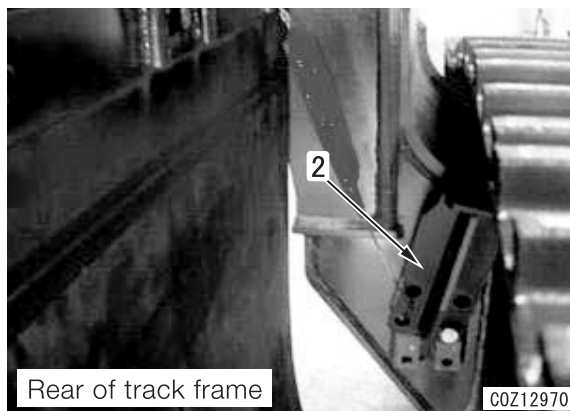
1. Remove conveyor hose (1).
  - ★ Put male and female plugs to the removed hose and elbow.
    - Size 03  
(Flat face-to-face O-ring seal) ..1 set
    - Size 04  
(Flat face-to-face O-ring seal) ..2 sets



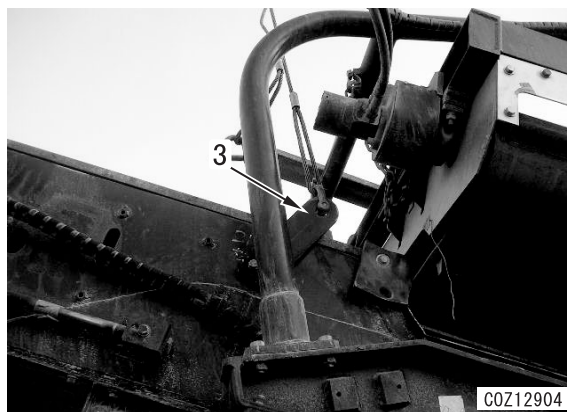
2. Install a dummy plug to the block on the machine side.



3. Remove either lock bracket (2).  
(Prevention of interference when the conveyor is inserted)
  - ★ Bolt size: M16 × 4 pieces



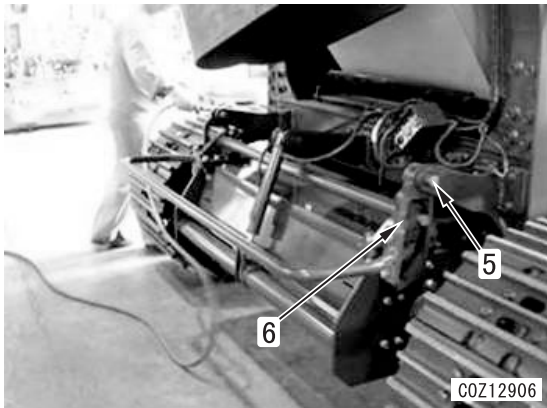
4. Install slings to conveyor sling bracket (3) and lift up the conveyor assembly.
  - ★ Note that sling hook positions depend on the serial No.
  - Weight of conveyor assembly:  
**Approx. 1,310 kg**



5. Remove magnetic separator chutes (4).  
(2 places on the right and left sides)
  - ★ Bolt size: M12 × 4 pieces  
(2 places on the right and left sides)



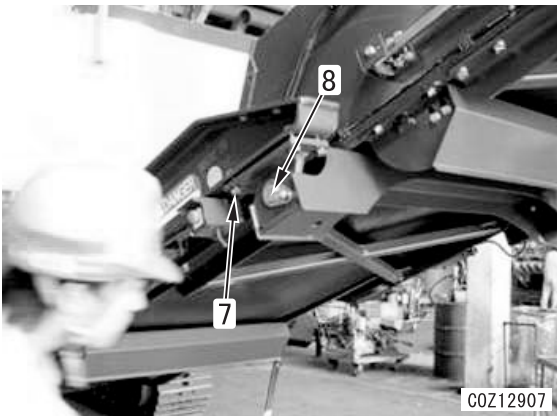
6. Remove pin (5) and rear sling bracket (6).  
 ★ Bolt size: M12 × 4 pieces



9. Lower the cylinder.  
 ★ Place wooden blocks under the conveyor in advance.




7. Loosen sling bracket mounting bolt (7) and remove conveyor lock pin (8).  
 ★ Bolt size: M16 × 4 pieces  
 (2 places on the bright and left sides)



10. Remove the pin.



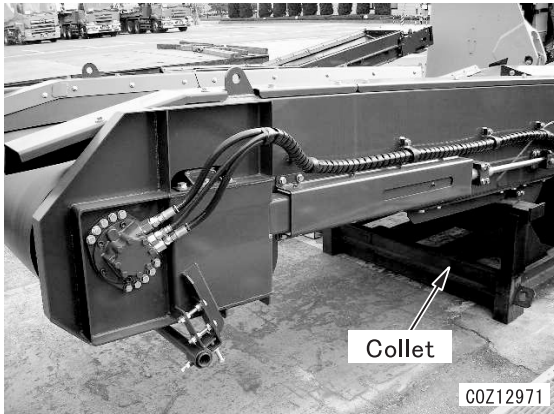
8. Lower the crane to lower the conveyor.  
 ★ Note that sling hook positions depend on the serial No.  
 Weight of conveyor assembly:  
**Approx. 1,310 kg**



11. Move the machine in reverse to remove the conveyor assembly.  
 ★ Take care that the conveyor will not collide with the machine.



12. Place stable stands under the conveyor and lift off the conveyor assembly.



### Installation

- Carry out installation in the reverse order to removal.

## Replacement of belt

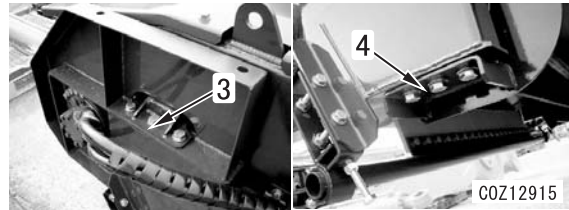
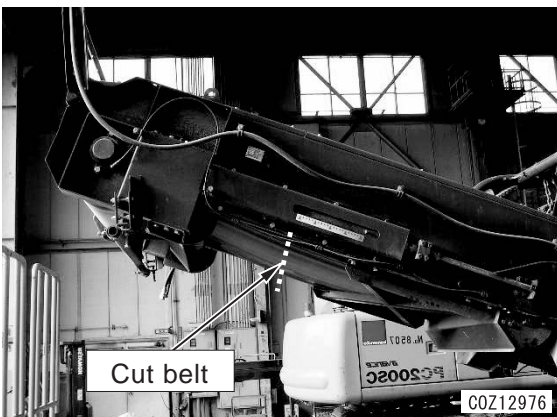
When performing the following work, call a belt sticking work subcontractor (Operation and Maintenance Manual 7-15) as a supervisor. Ask the subcontractor to carry out the sticking work (vulcanization at normal temperature) in the field.

1. Loosen right and left tension adjustment bolts (1) alternately to reduce the belt tension.
  - ★ Loosen the tension adjustment bolts fully.
  - ★ Make a mark at the original tension point in advance.

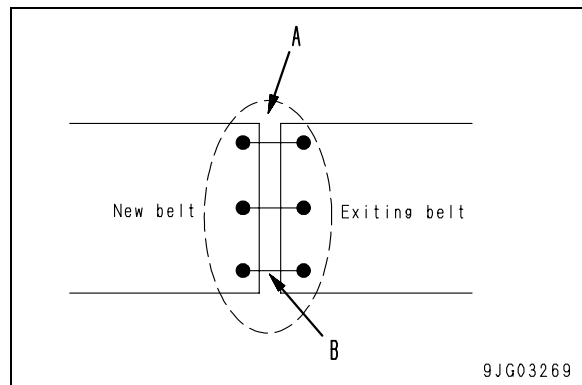


(The following is shown for reference: Contents of work performed by the subcontractor)

2. Cut the belt
  - ★ The cut point shown in the figure is for reference only.
  - ★ Cut the belt in a place where you can work easily.
  - ★ If right and left head pulley joints (3) and (4) are removed, the motor will be misaligned and may be broken. Accordingly, do not remove those joints.

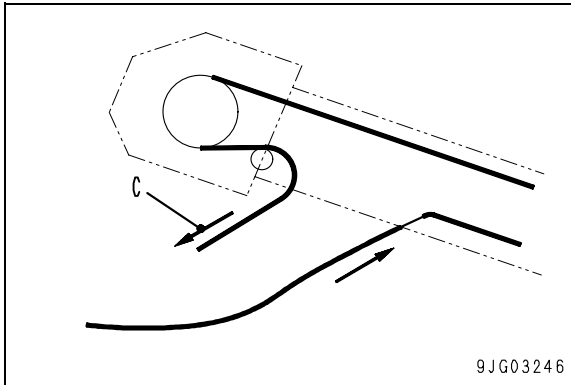


3. Connect the existing belt and the new belt by strong lines (or wires).



- (A) Connect by strong lines (or wires) at minimum of 3 points (both ends and center).
- (B) Strong line (or wire)

4. Pull out the cut belt (C).
  - ★ At this time, do not remove the right and left joints of the head pulley assembly.

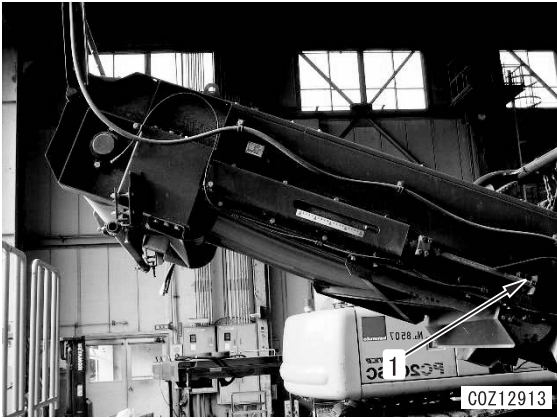


5. Stick the belt.
  - ★ Ask the belt sticking work subcontractor (See Operation and Maintenance Manual 7-15) to stick the belt.
6. Referring to the value marked in step 1, adjust the belt tension.



### Replacement procedure for primary belt conveyor motor

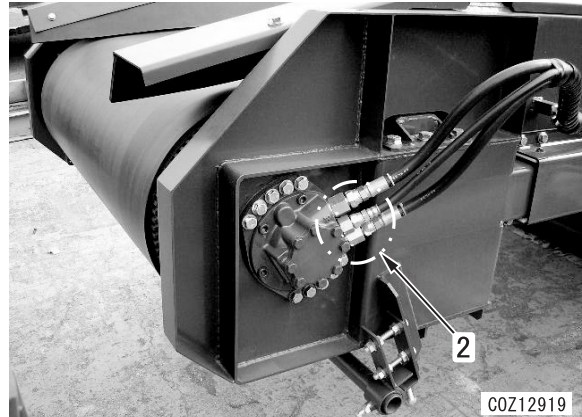
1. Loosen tension adjustment bolt (1) to reduce the belt tension.
  - ★ Loosen the tension adjustment bolts fully.
  - ★ Make a mark at the original tension point in advance.



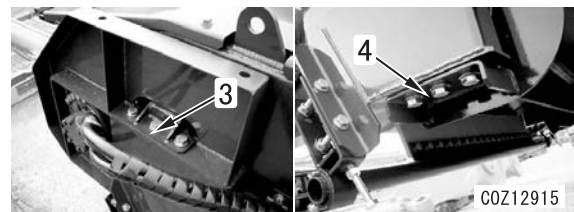
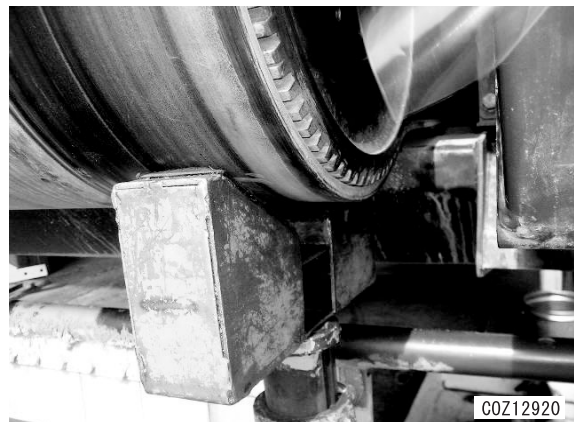
2. Lower the conveyor assembly.  
(For removal, see "Removal and installation of primary belt conveyor".)

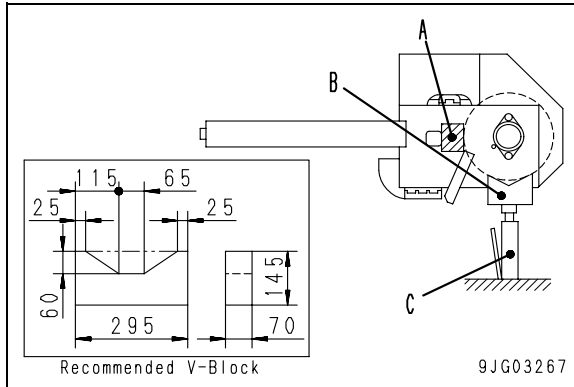


3. Disconnect conveyor motor hoses (2) from the body.
  - ★ After removing the hoses, put dummy plugs to their ends and motor ports.
    - Size 03  
(Flat face-to-face O-ring seal)...1 set
    - Size 04  
(Flat face-to-face O-ring seal)...2 sets



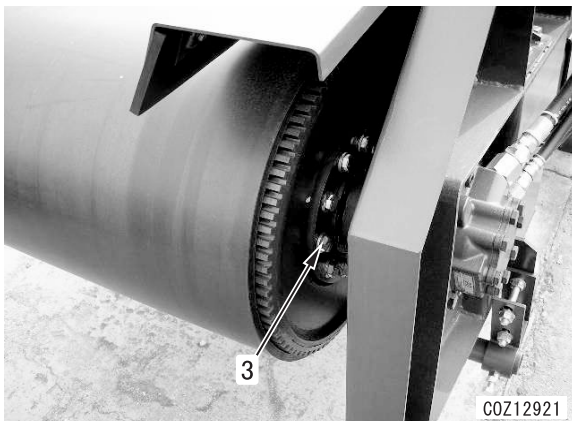
4. Fix the head pulley with a block so that it will not be misaligned with the frame.
  - ★ If right and left frame joints (3) and (4) are removed, the motor will be misaligned and may be broken. Accordingly, do not remove those joints.



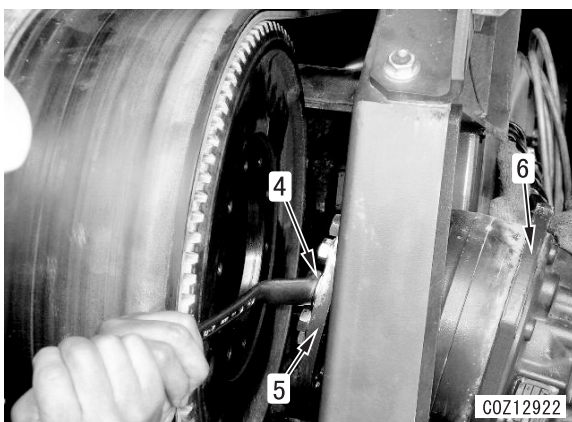


- (A) Insert wooden block to fix pulley.
- (B) Fix head pulley assembly with V-block to prevent misalignment.
- (C) Adjust height with jack.

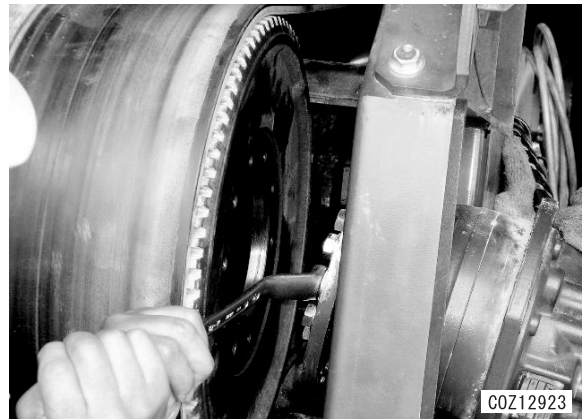
5. Remove flange bolts (3) from the pulley.
  - ★ Bolt size: M12 × 10 pieces
  - ★ At this time, take care that the pulley shaft will not move from the frame.



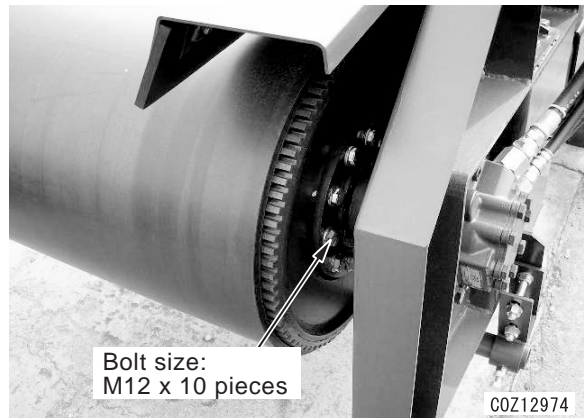
6. Remove motor flange mounting bolts (4) to remove flange (5) from motor (6).
  - ★ Bolt size: M12 × 10 pieces



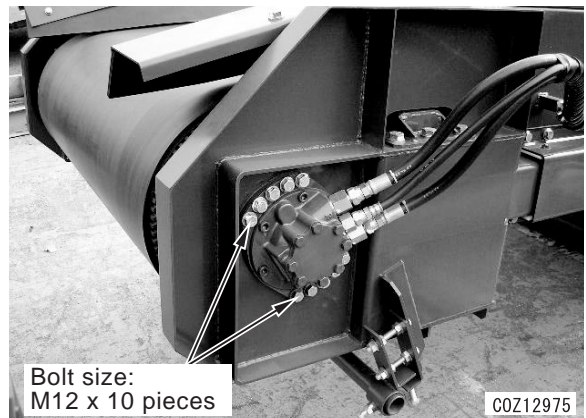
7. Replace the motor and install the flange to the new motor.
  - ★ Bolt size: M12 × 10 pieces



8. Install the flange to the pulley.
  - ★ At this time, take care that the pulley shaft will not move from the frame.



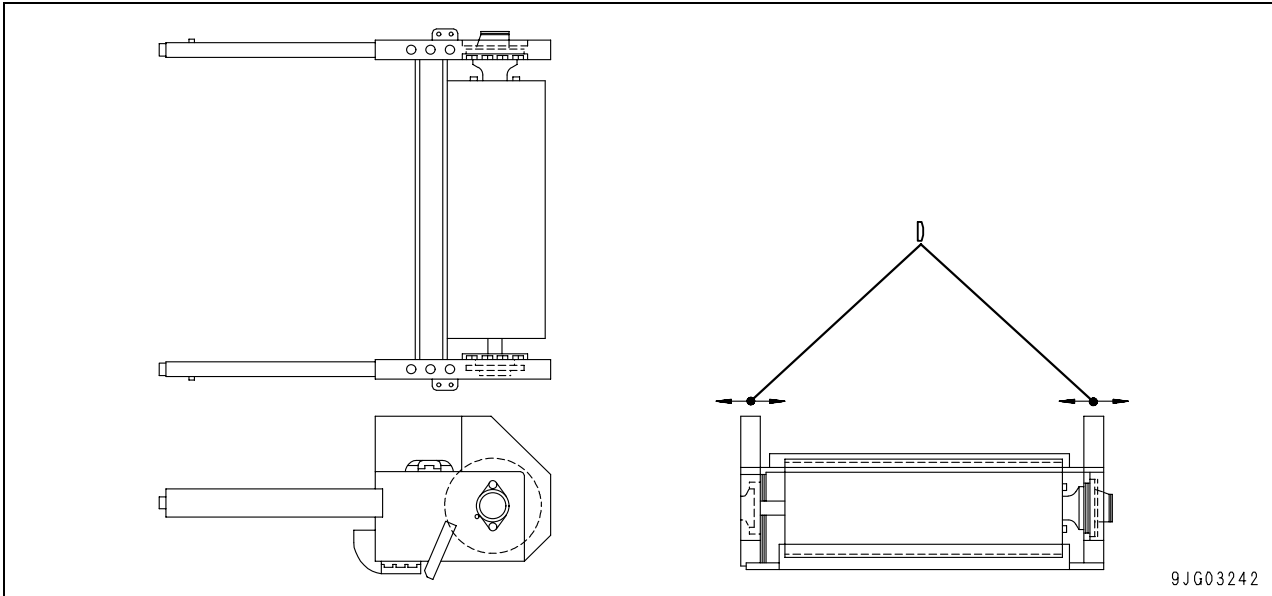
9. Install the motor flange to the frame.
10. Increase the belt tension to the value marked in step 1.
11. Install the conveyor assembly to the body.





## Replacement procedure for primary belt conveyor head pulley frame

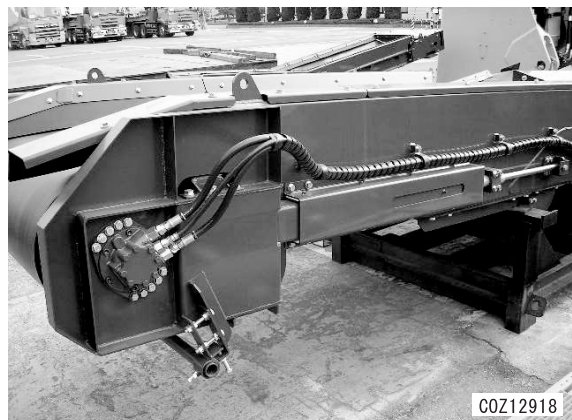
- ★ If the belt conveyor head pulley frame has been deformed or its parts have been removed, perform the following check and then adjust or replace the parts.



1. Rotate the belt conveyor.
  - ★ Engine speed: High idle
2. Visually check the frame for lateral swing (D).
  - ★ If lateral swing is detected, replace the pulley frame according to the following procedure.

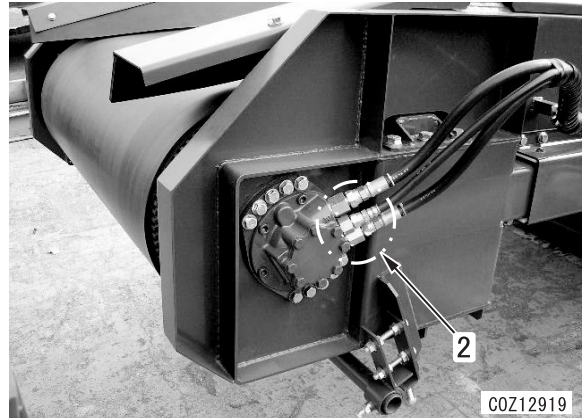
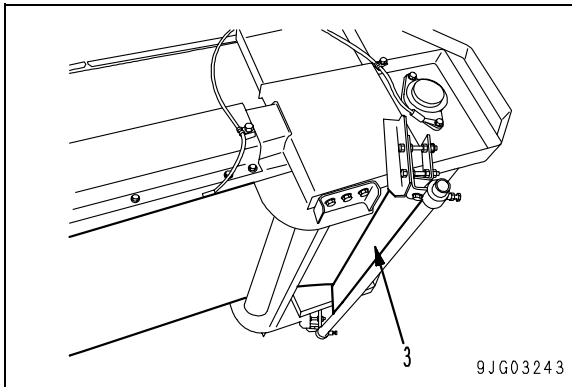
Reference:  
If lateral swing is 3 mm or larger, it can be checked visually.
3. Loosen tension adjustment bolt (1) to reduce the belt tension.
  - ★ Loosen the tension adjustment bolts fully.
  - ★ Make a mark at the original tension point in advance.

4. Lower the conveyor assembly.  
(For removal, see "Removal and installation of primary belt conveyor".)

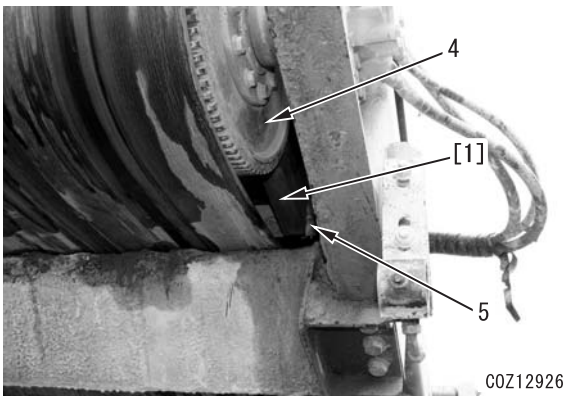


- ★ When replacing the frame without removing the conveyor assembly, fix the head pulley according to the following steps 1) – 3).

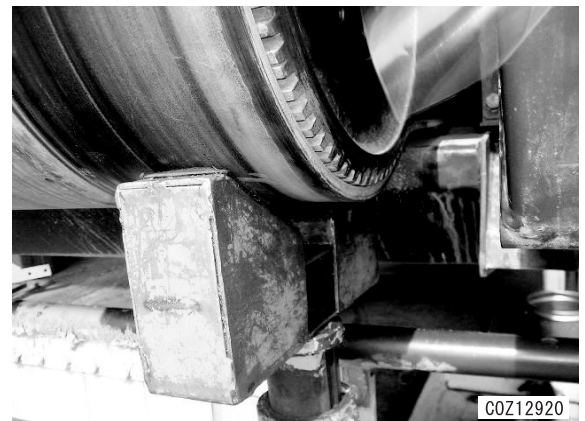
- 1) Remove belt cleaner (3).



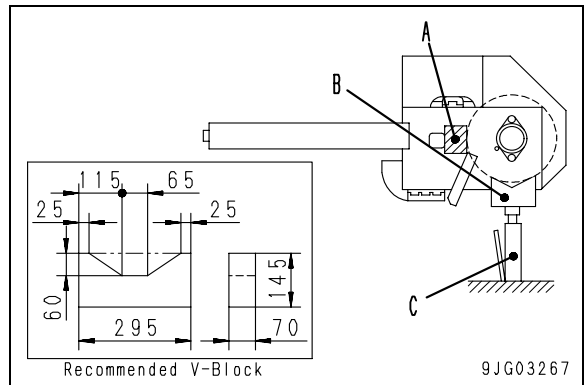
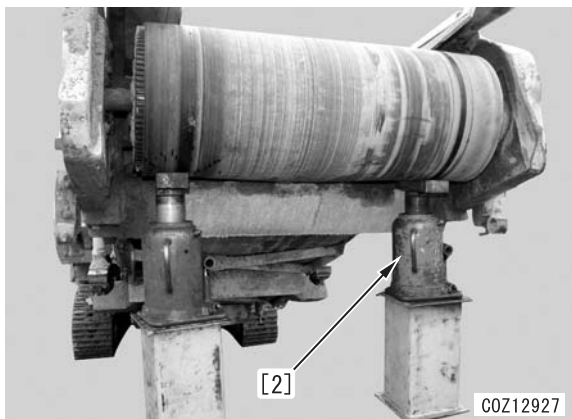
- 2) Set blocks [1] between head pulley (4) and guard (5) on both sides of the head pulley.



6. Fix the head pulley with a V-block and wooden block as shown below so that it will not be misaligned with the frame.



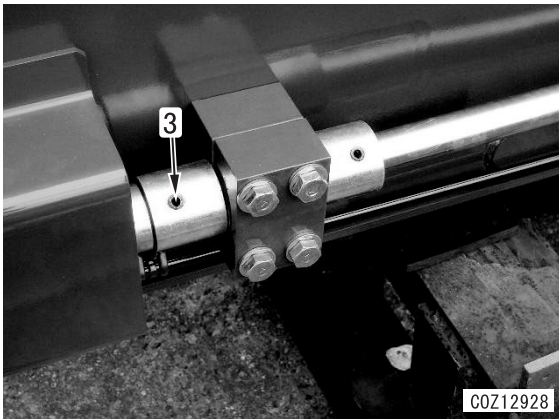
- 3) Support the head pulley with jack [2].



5. Disconnect conveyor motor hoses (2) from the body.
  - ★ After removing the hoses, put dummy plugs to their ends and motor ports.
    - Size 03 (Flat face-to-face O-ring seal) .. 1 set
    - Size 04 (Flat face-to-face O-ring seal) .. 2 sets

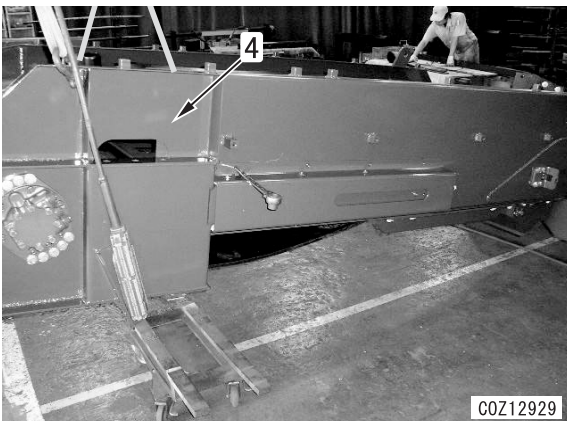
- (A) Insert wooden block to fix pulley.
- (B) Fix head pulley assembly with V-block to prevent misalignment.
- (C) Adjust height with jack.

7. Remove spring pin (3).

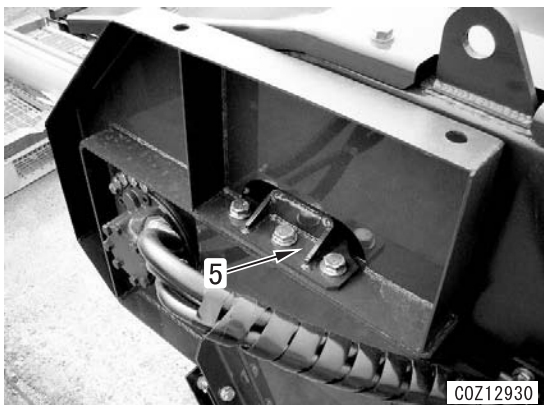


**When replacing frame on motor side**

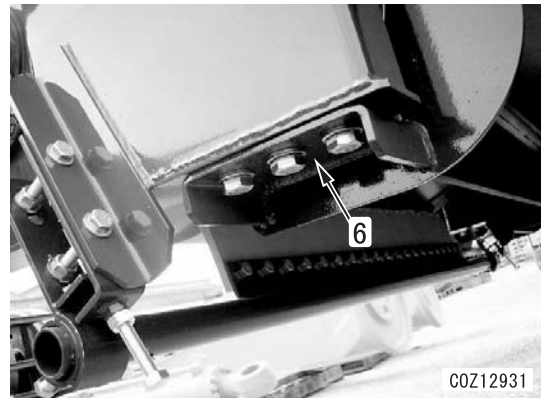
8. Sling frame (4) with a crane in advance.  
★ Bolt size: M12 × 10 pieces



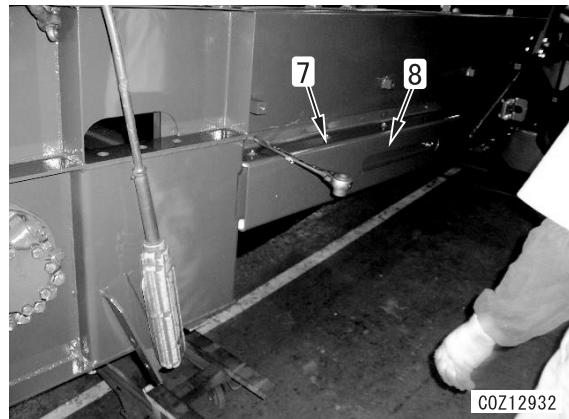
9. Remove upper bracket (5).  
★ M16 × 3 (2 places on right and left sides)



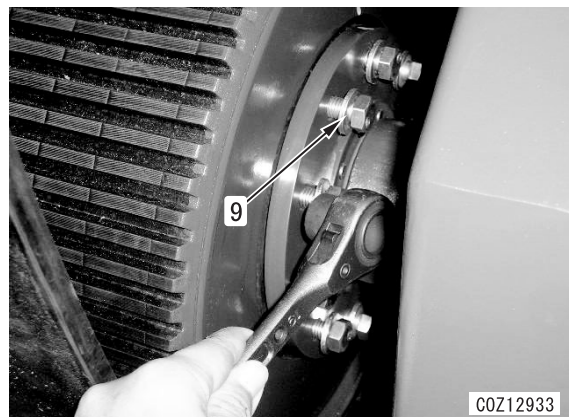
10. Remove lower bracket (6).  
★ M16 × 3 (2 places on right and left sides)



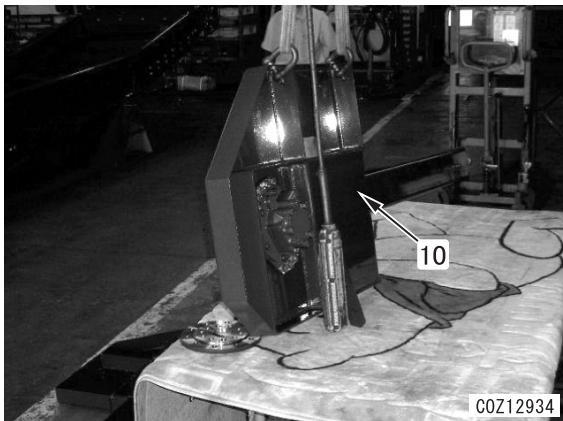
11. Remove bolts (7) and cover (8).  
★ Bolt size: M12 × 8 pieces



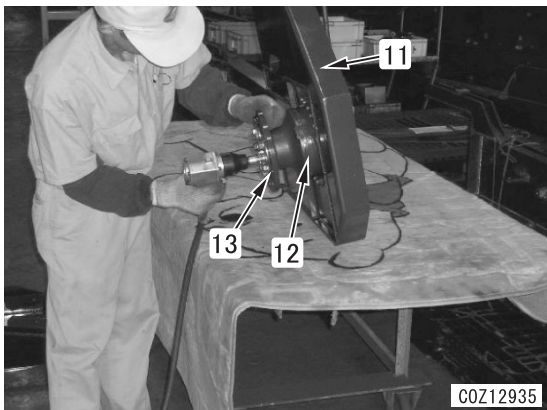
12. Remove bolts (9), pulley and motor flange.  
★ Bolt size: M12 × 10 pieces



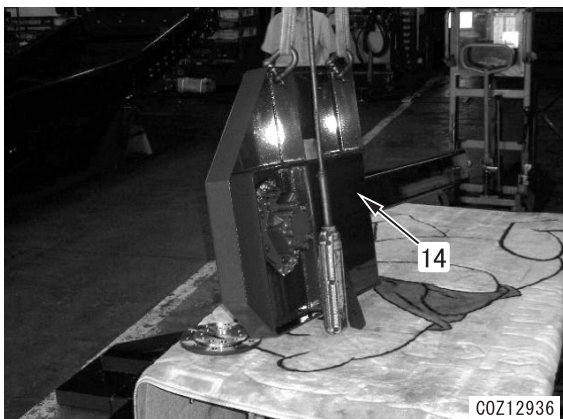
13. Remove frame assembly (10) as a unit.



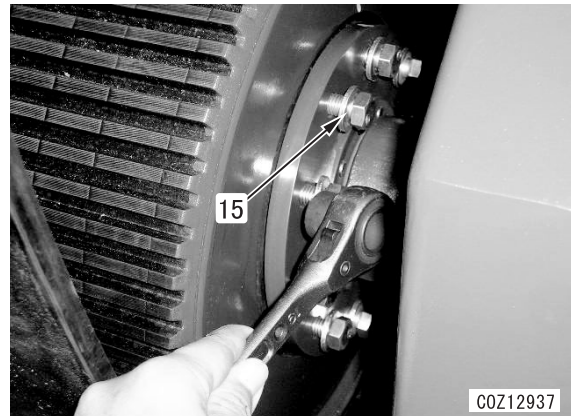
14. Install motor (12) and flange (13) to new frame (11).



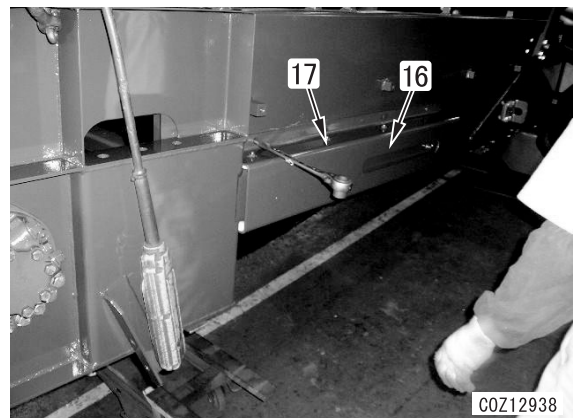
15. Sling frame assembly (14) with the crane.



16. Position the head pulley and motor flange and connect them with bolts (15).



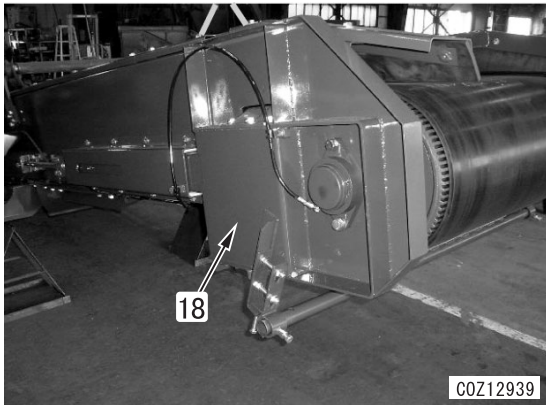
17. Install cover (16) to the head pulley frame and secure it with bolts (17).



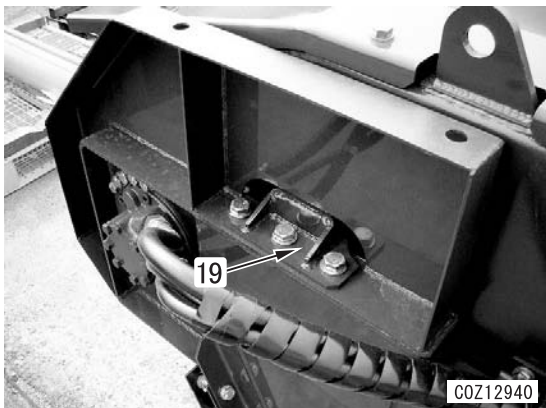
18. Go to step 29 (Sub-assembly of head pulley frame).

**When replacing frame on bearing side**

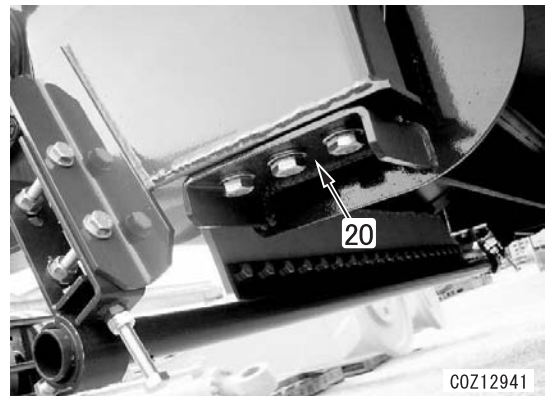
19. Sling frame (18) with the crane in advance.



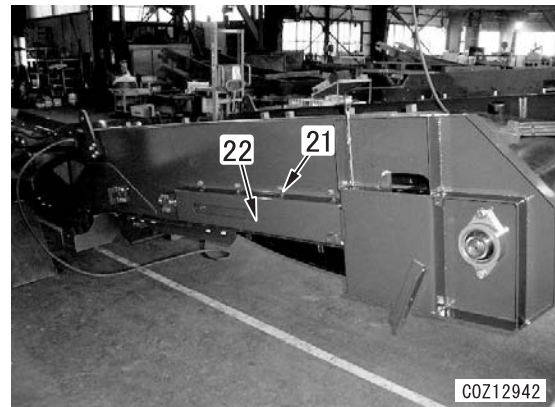
20. Remove upper bracket (19).  
★ M16 × 3 (2 places on right and left sides)



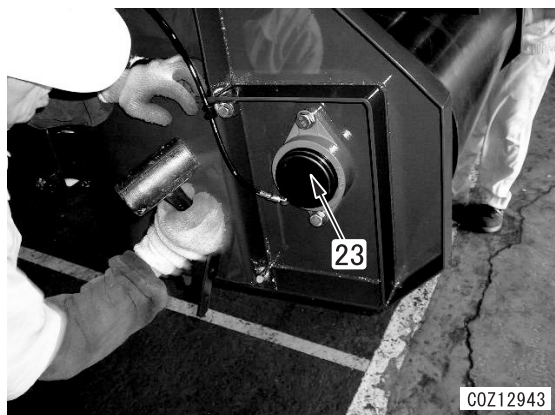
21. Remove lower bracket (20).  
★ M16 × 3 (2 places on right and left sides)



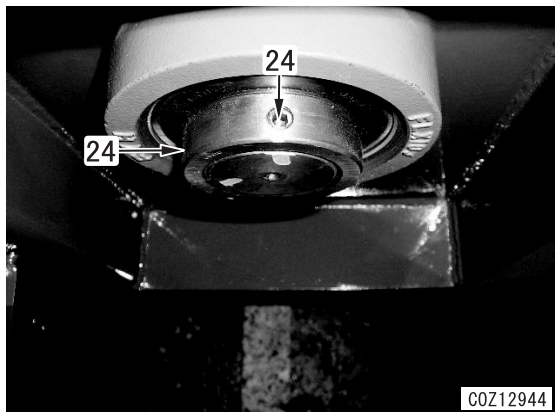
22. Remove bolts (21) and cover (22).



23. Remove bearing cover (23).



24. Loosen bearing lock screws (24).  
(2 places in total)



25. Remove bolts (25) to remove the bearing from the frame.



COZ12945

26. Remove the frame and replace it with a new one.



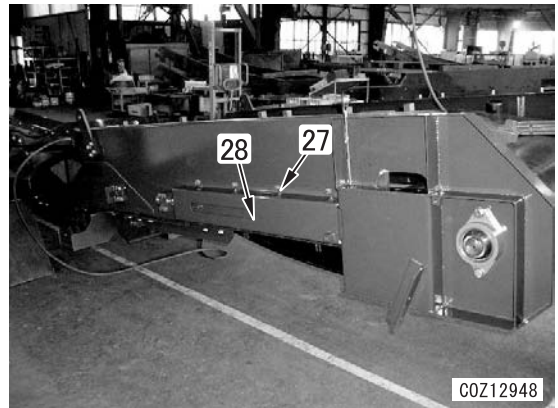
COZ12946

27. Connect the bearing and frame by bolts (26).



COZ12947

28. Install cover (27) to the head pulley frame and secure it with bolts (28).



COZ12948

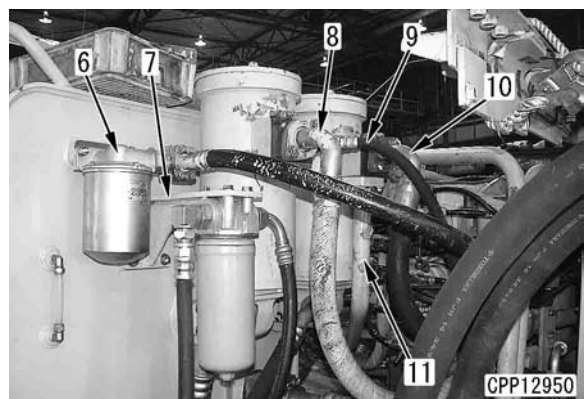
**Sub-assembly of head pulley frame**

29. Apply jig (29) to measuring points f1 (E), f2 (F) and f3 (G) in the figure and adjust the frame width.

- ★ When adjusting the frame width, adjust the bearing side with a jack.



COZ12949



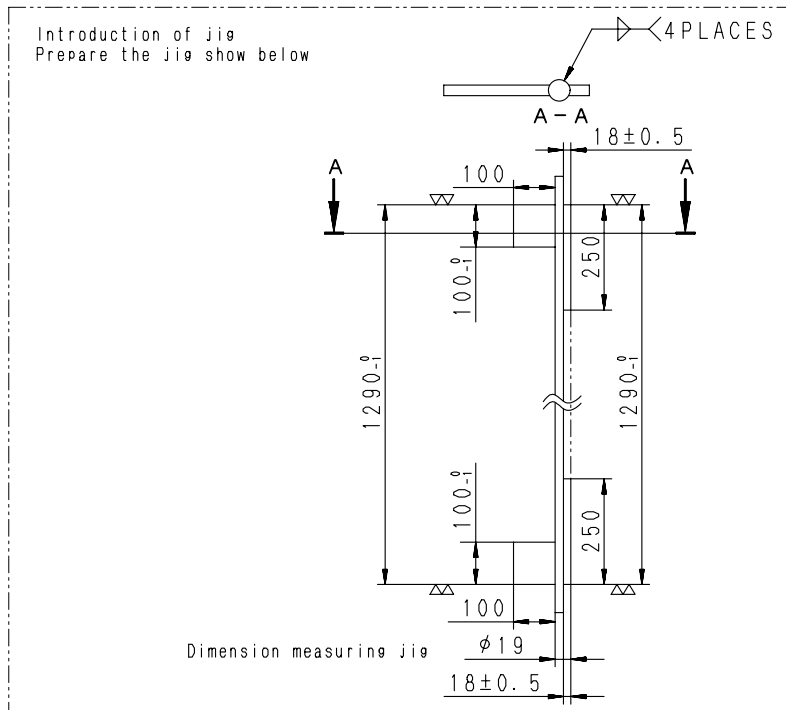
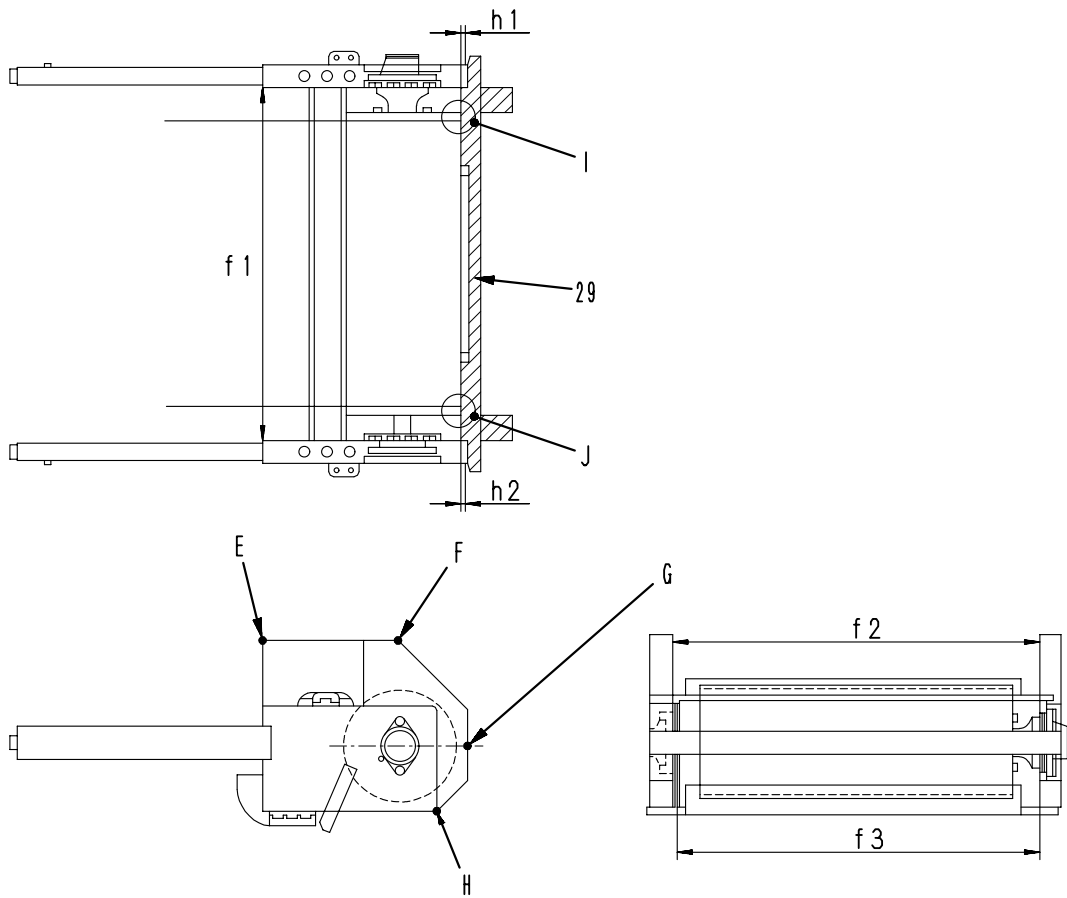
CPP12950

30. Apply jig (29) to measuring points h1 and h2 and check that contact of jig (29) and belt is even at points (J) and (K).

- ★ If contact is uneven, adjust the position.

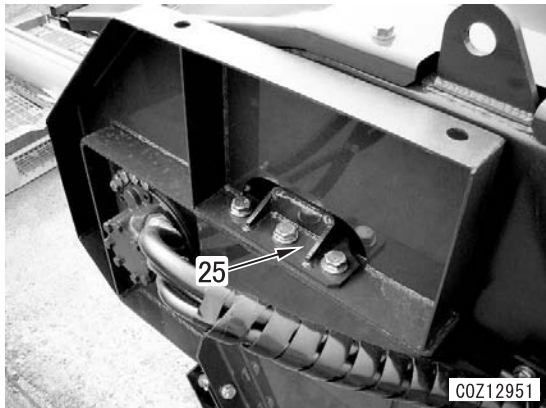
- ★ Dimension in the figure is as follows:

$$h1 = h2 = 18 \text{ mm}$$

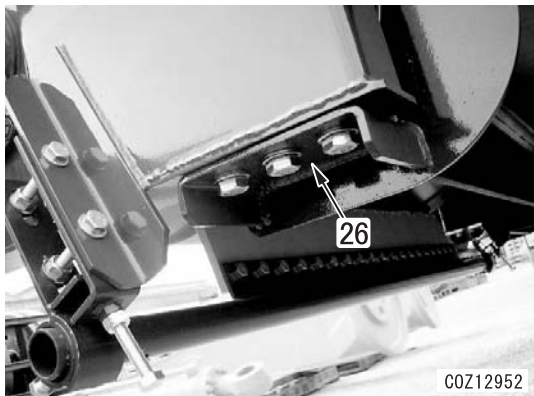


9JG03271

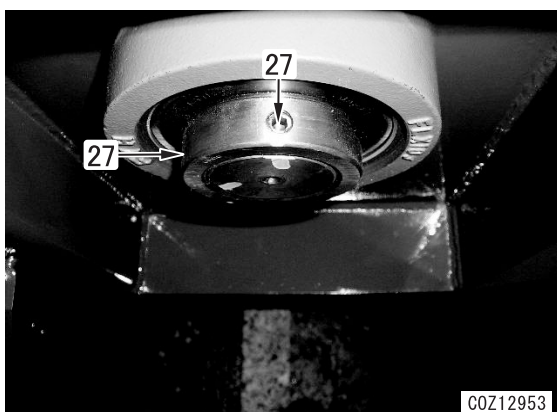
31. Install upper bracket (25).  
★ M16 × 3 (2 places on right and left sides)



32. Install lower bracket (26).  
★ M16 × 3 (2 places on right and left sides)



33. Tighten bearing lock screws (27).  
(2 places in total)  
★ Before tightening the screws, see steps 29 and 30 and check the dimensions again.



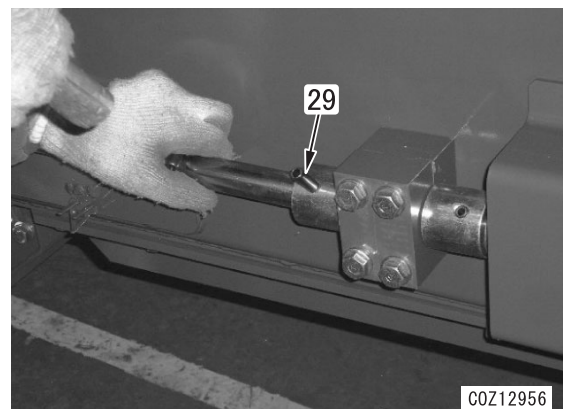
34. Remove bearing cover (28).  
★ Before tightening the screws, see steps 29 and 30 and check the dimensions again.



35. Install the shaft to the frame.



36. Insert spring pin (29).



37. Install conveyor assembly to the body.



38. Rotate tension adjustment bolt (1) to increase the belt tension.
- ★ Increase the belt tension to the mark made when the belt was loosened.



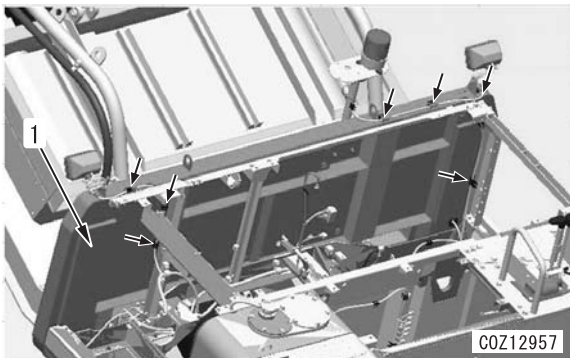
39. Referring to steps 29 and 30, check again that the distance between the head pulley and frame is in the standard range.
40. Start the belt conveyor and check that it rotates smoothly.
- ★ Engine speed: High idle

## Procedure for folding engine front cover

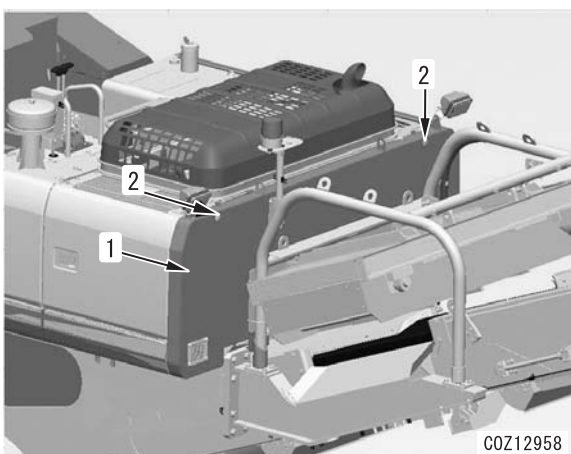
When the engine fuel supply pump or engine controller needs to be replaced, the engine front cover can be folded toward the magnetic separator to make a work space in front of the engine.

- ★ The magnetic separator is constantly generating strong magnetism.  
A person using a heart pace maker or another medical device must not approach the magnetic separator.  
Since an ATM card, watch, cellular phone, digital camera or another electric/electronic device can be troubled by the magnetism, do not take them near the magnetic separator.

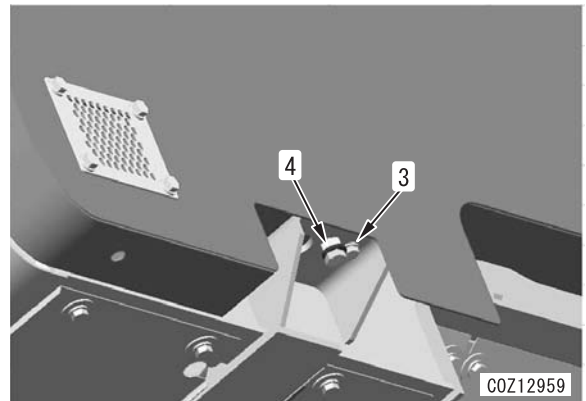
1. Remove the wiring harnesses from the wiring harness clamps of the headlamp and rotary lamp installed to engine front cover (1) in advance.



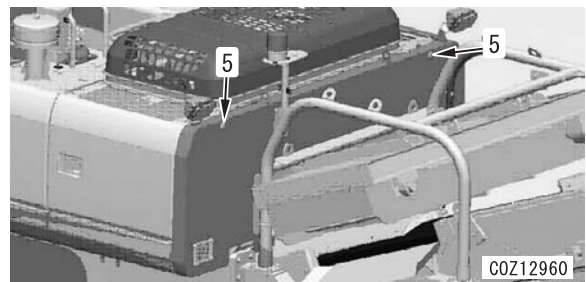
2. Remove 2 caps (2) from the front side of engine front cover (1).



3. Remove engine front cover bottom mounting bolts (3).  
Right and left side: 1 place each  
M12: 2 pieces (Width across flats: 19 mm)  
★ Do not remove M16 bolts (4) (1 place each on the right and left sides).  
(These bolts prevent the folded engine front cover from falling.)



4. While supporting the engine front cover, remove mounting bolts (5).  
Right and left side: 1 place each  
M12: 2 pieces (Width across flats: 19 mm)

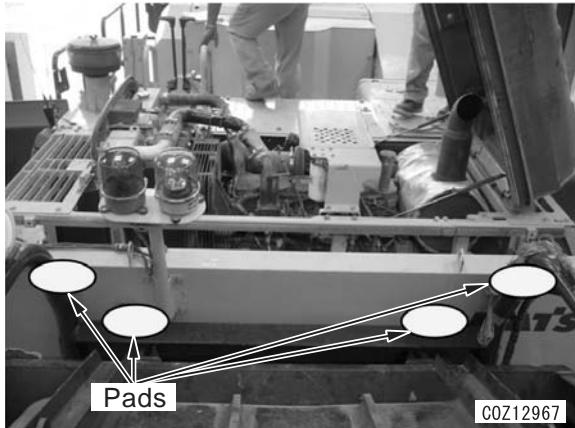


5. Slowly fold the engine front cover toward the magnetic separator and rest it against the magnetic separator frame.

- ★ Weight of engine front cover assembly:

**Approx. 130 kg**

- ★ Put pads between the cover and magnetic separator frame to protect the paint of the cover.



- ★ Clearance (A) about 200 mm wide can be secured by the above work.





BR380JG-1E0 Mobile crusher

Form No. SEN02738-00

---

© 2007 KOMATSU  
All Rights Reserved  
Printed in Japan 02-07 (01)

---

---

# **MOBILE CRUSHER**

## **BR380JG-1E0**

<b>Machine model</b>	<b>Serial number</b>
<b>BR380JG-1E0</b>	<b>2001 and up</b>

---

## **90 Diagrams and drawings**

### **Hydraulic diagrams and drawings**

---

Hydraulic circuit diagram (1/2) .....	3
Hydraulic circuit diagram (2/2) .....	5







BR380JG-1E0 Mobile crusher

---

Form No. SEN01361-00

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 10-06 (01)

---

---

# MOBILE CRUSHER

## BR380JG-1E0

Machine model	Serial number
BR380JG-1E0	2001 and up

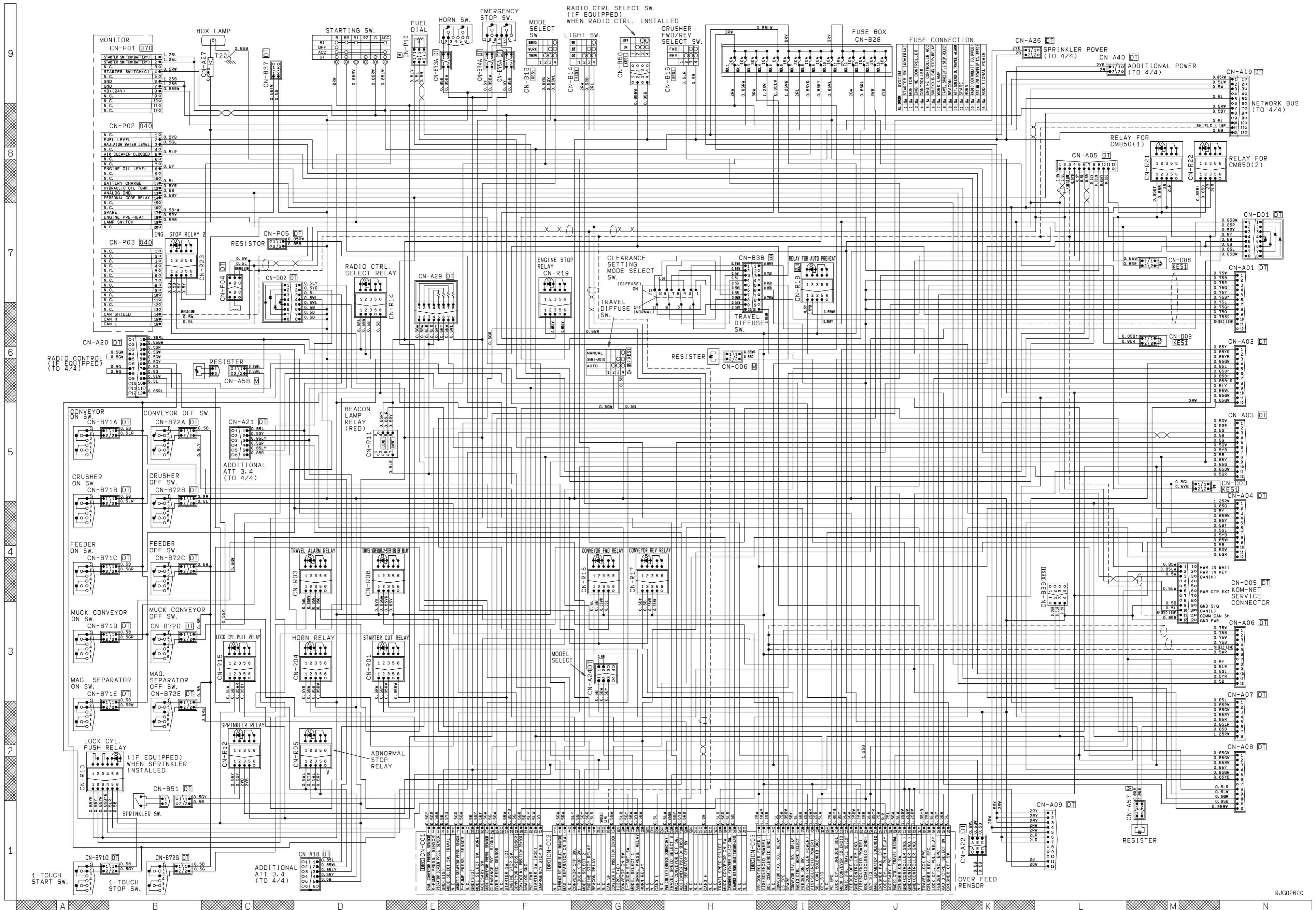
---

## 90 Diagrams and drawings

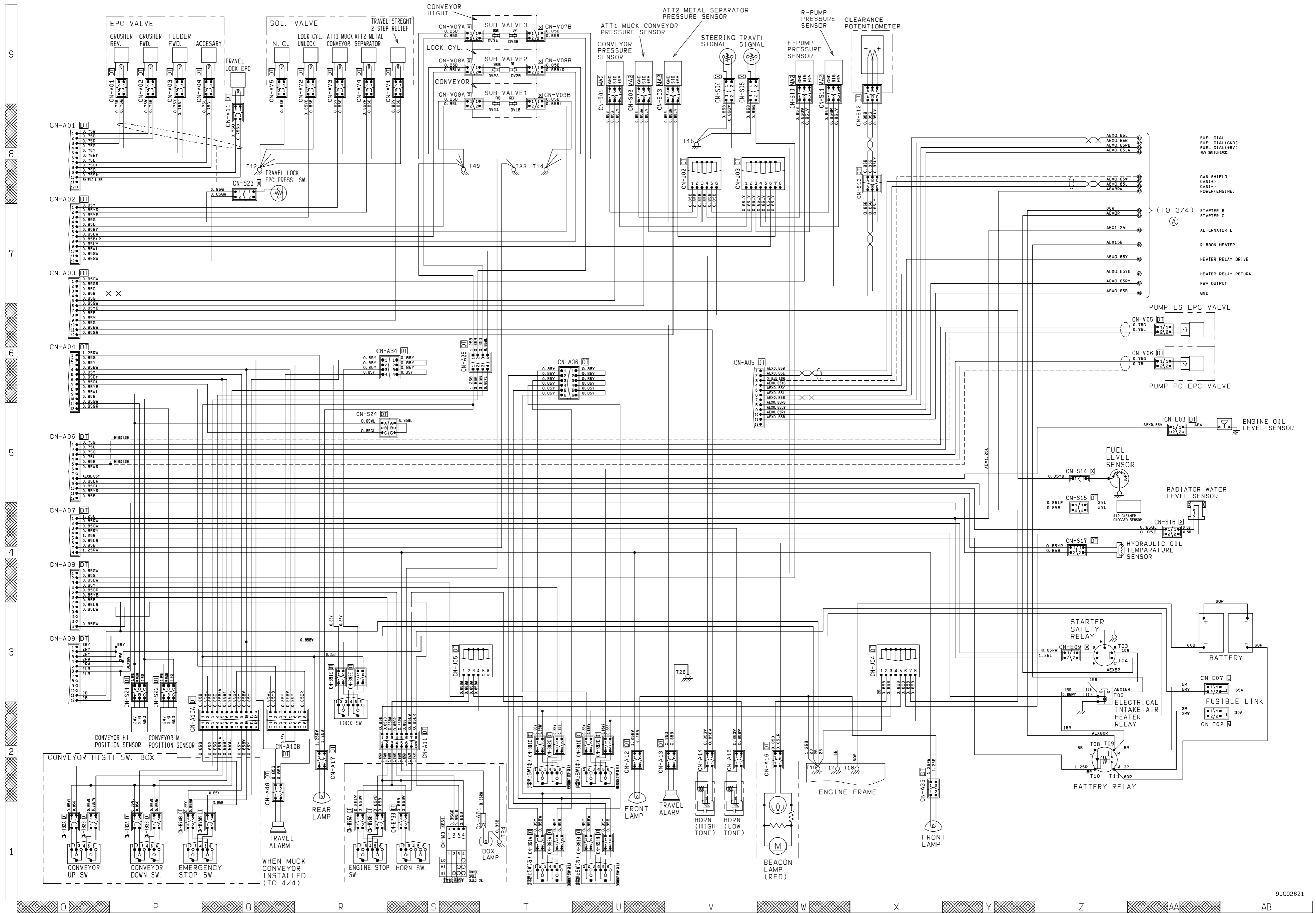
### Electrical diagrams and drawings

---

Electrical circuit diagram (1/4).....	3
Electrical circuit diagram (2/4).....	5
Electrical circuit diagram (3/4).....	7
Electrical circuit diagram (4/4).....	9
Connector arrangement diagram (1/2).....	11
Connector arrangement diagram (2/2).....	13

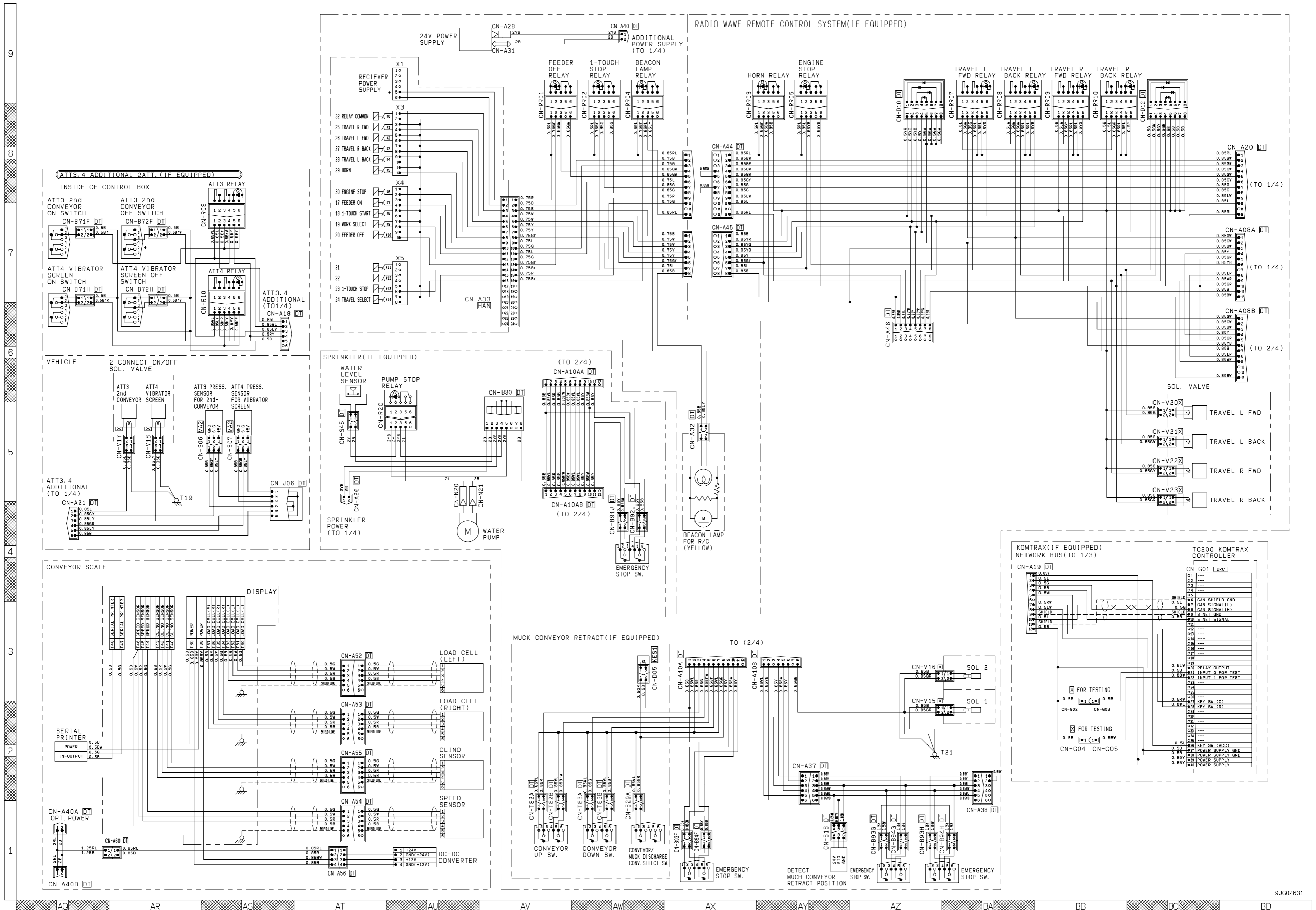


9JG02620



9JG02621





9JG02631

Connector arrangement diagram (1/2)

Connector No.	Model	Number of pins	Component name	Address of stereogram
A01	DT (Gray)	12	Intermediate connector	C-6
A02	DT (Black)	12	Intermediate connector	C-6
A03	DT (Black)	12	Intermediate connector	C-6
A04	DT (Gray)	12	Intermediate connector	C-9
A05	DT (Green)	12	Intermediate connector	D-9
A06	DT (Brown)	12	Intermediate connector	D-9
A07	DT (Gray)	8	Intermediate connector	E-6
A08	DT (Black)	12	Intermediate connector	E-9
A08A	DT (Black)	12	Intermediate connector (Radio controller, If equipped)	FA-4
A08B	DT (Black)	12	Intermediate connector (Radio controller, If equipped)	AT-4
A09	DT (Gray)	12	Intermediate connector	F-6
A10A	DT (Gray)	12	Intermediate connector (Belt conveyor up/down control box)	F-1, DC-6
A10AA	DT (Gray)	12	Intermediate connector (Water sprinkler, If equipped)	CS-1
A10AB	DT (Gray)	12	Intermediate connector (Water sprinkler, If equipped)	CP-7
A10B	DT (Black)	8	Intermediate connector	X-3
A11	DT (Black)	8	Intermediate connector	AT-9
A12	DT	2	Headlamp (Right)	X-5
A13	DT	2	Travel alarm	Z-4
A14	YAZAKI	2	Horn (High tone)	AB-4
A15	YAZAKI	2	Horn (Low tone)	AC-3
A16	DT	2	Red revolving warning lamp	V-8
A17	DT	2	Rear lamp	E-1
A18	DT	6	Intermediate connector (Addition of attachment)	BL-5
A19	DT (Gray)	12	Intermediate connector (Network path)	BN-3
A20	DT (Green)	12	Intermediate connector (Connection of radio controller, If equipped)	C-9
A21	DT	6	Intermediate connector (Addition of attachment)	F-9
A22	DT	3	Over-feed sensor	A-7
A24	DT	4	Model selector	BR-3
A25	DT	4	Intermediate connector (Sub valve)	U-1
A26	DT	2	Water sprinkler power supply (If equipped)	BN-9
A27	One-pin connector	1	Control box lamp	BN-3
A28	One-pin connector	1	24V power supply	AR-1
A29	DT (Black)	8	Centralized resistor	BL-8
A31	DT	1	24V power supply	AD-1
A32	DT	2	Yellow revolving warning lamp (Radio controller, If equipped)	AX-9
A33	HAN	24	Receiver (Radio controller, If equipped)	AQ-4
A34	DT	4	Emergency stop (Troubleshooting)	A-7
A35	DT	2	Headlamp (Left)	R-8
A36	DT	6	Emergency stop (Troubleshooting)	B-8
A37	DT	6	Intermediate connector (Muck discharge conveyor, If equipped)	DN-7
A38	DT	6	Intermediate connector (Muck discharge conveyor, If equipped)	DK-4
A40	DT	2	Additional power supply	B-9
A40A	DT	2	Intermediate connector (Power supply, Conveyor scale, If equipped)	EO-9
A40B	DT	2	Intermediate connector (Power supply, Conveyor scale, If equipped)	EO-6
A44	DT	12	Intermediate connector (Radio controller, If equipped)	AV-4
A45	DT	8	Intermediate connector (Radio controller, If equipped)	AW-4
A48	DT	8	Intermediate connector	AW-1
A49	DT	2	Travel alarm	J-2
A51	One-pin connector	1	Box lamp	A-2
A52	DT	6	Intermediate connector (Load cell left, Conveyor scale, If equipped)	EU-5
A53	DT	6	Intermediate connector (Load cell right, Conveyor scale, If equipped)	EV-5
A54	DT	6	Intermediate connector (Speed sensor, Conveyor scale, If equipped)	EU-1
A55	DT	6	Intermediate connector (Clino sensor, Conveyor scale, If equipped)	EU-1
A56	DT	4	Intermediate connector (DC converter, Conveyor scale, If equipped)	EC-1
A57	M	2	Red revolving warning lamp resistor	BN-8
A58	M	2	Yellow revolving warning lamp resistor (Radio controller, If equipped)	BN-7
A60	DT	2	Intermediate connector (Power supply, Conveyor scale, If equipped)	EW-8
AB	Terminal	1	Alternator (Terminal B)	FC-8
AMB, AIR PRESSURE	Terminal	1	Starter switch (Terminal ACC)	BK-3
FE-3	Terminal	3	Ambient pressure sensor	FE-3
AV1	DT	2	Travel straight 2-stage relief solenoid valve	AP-4
AV2	DT	2	Lock cylinder unlock solenoid valve	AP-3
AV3	DT	2	Muck discharge conveyor solenoid valve (If equipped)	AP-3
AV4	DT	2	Magnetic separator solenoid valve	AP-4
AV5	DT	2	Solenoid valve (Spare)	AP-3
B	Terminal	1	Starter switch (Terminal B)	BL-3
B13	KES1	4	Model selector switch	BM-7
B14	KES1	4	Lamp switch	BM-4
B15	KES1	4	Crusher rotation direction selector switch	BK-9
B28	—	15	Fuse box	BN-5
B29A	DT	2	Intermediate connector (Belt conveyor selector switch, Muck discharge conveyor, If equipped)	DH-8
B30	DT (Black)	8	Intermediate connector (Water sprinkler, If equipped)	C-9
B37	DT	2	Switch connector (Spare)	BM-5
B38	S	10	Travel diffuse switch	BQ-5
B39	KES1	4	Intermediate connector	BM-6
B40	KES1	4	Travel speed select switch	B-2
B50	KES1	4	Radio controller select switch (If equipped)	BL-5
B51	DT	2	Sprinkler switch (If equipped)	BM-5
B52	KES2	4	Clearance setting mood select switch	BM-6
B71A	DT	2	Conveyor on switch	BL-5
B71B	DT	2	Clearance on switch	BL-5
B71C	DT	2	Feeder on switch	BL-5
B71D	DT	2	Muck discharge conveyor on switch (If equipped)	BL-7
B71E	DT	2	Magnetic separator on switch	BL-7
B71F	DT	2	Secondary conveyor on switch	BL-6
B71G	DT	2	1-touch start switch	BL-9
B71H	DT	2	Vibrator screen on switch	BL-6
B72A	DT	2	Conveyor off switch	BL-5
B72B	DT	2	Clearance off switch	BK-5
B72C	DT	2	Feeder off switch	BL-5
B72D	DT	2	Muck discharge conveyor off switch (If equipped)	BL-6
B72E	DT	2	Magnetic separator off switch	BL-7
B72F	DT	2	Secondary conveyor off switch	BL-6
B72G	DT	2	1-touch stop switch	BL-9
B72H	DT	2	Vibrator screen off switch	BL-6
B73A	M	2	Horn switch	BM-8
B73B	DT	2	Horn switch	B-3
B74A	DT	2	Emergency stop switch	BL-9

Connector No.	Model	Number of pins	Component name	Address of stereogram
B74B	DT	2	Emergency stop switch	L-2
B75A	DT	2	Auto preheat relay	BL-9
B75B	DT	2	Emergency stop switch	BL-1
B76A	DT	2	Emergency stop switch	B-3
B76B	DT	2	Engine stop switch	B-3
B81A	DT	2	Emergency stop switch (Left)	V-2
B81B	DT	2	Emergency stop switch (Right)	Y-4
B81C	DT	2	Emergency stop switch (Right)	AL-2
B81D	DT	2	Emergency stop switch (Right)	WB-8
B91E	DT	2	Lock switch	AT-4
B91J	DT	2	Emergency stop switch (Water sprinkler, If equipped)	CN-1
B92A	DT	2	Emergency stop switch (Left)	V-2
B92B	DT	2	Emergency stop switch (Left)	Y-5
B92C	DT	2	Emergency stop switch (Right)	AL-2
B92D	DT	2	Emergency stop switch (Right)	AL-2
B92E	DT	2	Lock switch	I-1
B92J	DT	2	Emergency stop switch (Water sprinkler, If equipped)	CN-1
B93F	DT	2	Emergency stop switch (Muck discharge conveyor retract, If equipped)	CW-1, DC-6
B93G	DT	2	Emergency stop switch (Muck discharge conveyor retract, If equipped)	DK-6
B93H	DT	2	Emergency stop switch (Muck discharge conveyor retract, If equipped)	DU-2
B94F	DT	2	Emergency stop switch (Muck discharge conveyor retract, If equipped)	CV-1, DF-6
B94G	DT	2	Emergency stop switch (Muck discharge conveyor retract, If equipped)	DK-7
B94H	DT	2	Emergency stop switch (Muck discharge conveyor retract, If equipped)	DU-3
BOOST PRESS & TEMP	—	3	Boost pressure/temperature sensor	FI-7
BR	Terminal	1	Starting motor switch (Terminal B)	BK-2
C	Terminal	1	Starting motor switch (Terminal C)	BK-3
C01	DRC	24	Work equipment and pump controller	BR-6
C02	DRC	40	Work equipment and pump controller	BR-6
C03	DRC	40	Work equipment and pump controller	BR-7
C05	DT (Gray)	12	KOM-NE service connector	A-8
C06	M	2	Resistor	BP-6
CAM SENSOR	—	3	Engine Bkup speed sensor	FE-2
CE01	DRC	60	Engine controller	FE-2
CE02	DRC	60	Engine controller	FE-1
CE03	DRP	4	Engine controller	FI-1
COOLANT TEMP	—	2	Engine coolant temperature sensor	FE-4
CPU PUMP REGULATOR	—	2	Supply pump solenoid (MV)	FK-3
CRANK SENSOR	—	3	Engine Ne speed sensor	FF-1
DT1	DT (Black)	8	Assembled-type diode	BP-4
D02	DT (Black)	8	Assembled-type diode	BQ-4
D03	KES1	2	Diode	BN-2
D05	KES1	2	Diode (Muck discharge conveyor retract, If equipped)	DC-8
D08	KES1	2	Diode (CM850 relay)	BQ-4
D09	KES1	2	Diode (CM850 relay)	JP-2
D10	DT (Black)	8	Assembled-type diode (Radio controller, If equipped)	AX-1
D12	DT (Black)	8	Assembled-type diode (Radio controller, If equipped)	AV-1
E01	Terminal	1	Ribbon heater	FG-7
E02	M	2	Fusible link	Y-1
E03	DT	2	Engine oil level sensor	FA-3
E06	DT	2	Intermediate connector (Water in fuel sensor)	FJ-1
E07	L	2	Fusible link	Y-1
E08	X	1	Intermediate connector (Alternator)	FB-8
E09	X	2	Starting motor safety relay (Terminal B)	AB-1
E12	Connector	3	Alternator	FC-7
FUEL RAIL PRESS.	—	3	Common rail pressure sensor	FK-7
G01	DRC	40	KOMTRA controller (If equipped)	BN-7
G02	X	1	KOMTRA test connector (If equipped)	BN-8
G03	X	1	KOMTRA test connector (If equipped)	BN-6
G04	X	1	KOMTRA test connector (If equipped)	BN-7
G05	X	1	KOMTRA test connector (If equipped)	BN-7
INJ CYL 1	DT	2	Injector #1	FE-6
INJ CYL 2	DT	2	Injector #2	FF-6
INJ CYL 3	DT	2	Injector #3	FF-7
INJ CYL 4	DT	2	Injector #4	FG-7
INJ CYL 5	DT	2	Injector #5	FI-8
INJ CYL 6	DT	2	Injector #6	FI-8
J02	DT (Black)	8	Junction connector	AP-1
J03	DT (Black)	8	Junction connector	AP-1
J04	DT (Black)	8	Junction connector	D-6
J05	DT	6	Junction connector	D-6
J06	DT	6	Junction connector (Addition of attachment)	AP-9
K02	DT	3	CAN terminal resistor	FI-1
N20	One-pin connector	1	Water sprinkler pump (If equipped)	CG-6
N21	One-pin connector	1	Water sprinkler pump (If equipped)	CG-6
OIL PRESSURE SWITCH	Terminal	1	Engine oil pressure switch	FJ-2
P01	G70	12	Machine monitor	BM-7
P02	G40	20	Machine monitor	BM-6
P03	G40	16	Machine monitor	BM-7
P04	DT	3	CAN terminal resistor	BN-9
P05	DT	2	Accessory connector	BK-9
P10	M	3	Fuel control dial	BM-8
P47	DT	2	Water-in-fuel sensor	AI-2
R01	SHINAGAWA	5	Starting motor	BR-1
R1	Terminal	1	Starting motor switch (Terminal R1)	BL-2
R2	Terminal	1	Starting motor switch (Terminal R2)	BK-2
R03	SHINAGAWA	5	Travel alarm relay	BO-1
R04	SHINAGAWA	5	Horn relay	BO-1
R05	SHINAGAWA	5	Abnormally stop relay	BO-1
R08	SHINAGAWA	5	Travel straight 2-stage relief relay	BP-1
R09	SHINAGAWA	6	Addition of attachment relay	BR-2
R10	SHINAGAWA	6	Addition of attachment relay	BR-2
R11	OMRON	8	Red revolving warning lamp relay	BK-5
R12	SHINAGAWA	5	Water sprinkler relay (If equipped)	BO-1
R13	SHINAGAWA	6	Lock cylinder push relay	BO-1
R14	SHINAGAWA	5	Radio controller select relay (If equipped)	BP-1
R15	SHINAGAWA	5	Lock cylinder pull relay	BO-1
R16	SHINAGAWA	5	Conveyor normal rotation relay	BN-1

Connector No.	Model	Number of pins	Component name	Address of stereogram
R17	SHINAGAWA	5	Conveyor reverse rotation relay	BN-1
R18	SHINAGAWA	5	Auto preheat relay	BP-1
R19	SHINAGAWA	5	Engine stop relay	BR-1
R21	SHINAGAWA	5	Pump stop relay (Water sprinkler, If equipped)	CH-0
R21	SHINAGAWA	5	CM850 relay	BO-1
R22	SHINAGAWA	5	CM850 relay	BP-1
R23	SHINAGAWA	5	Emergency stop relay	BN-2
RR01	SHINAGAWA	5	Feeder off relay	BA-1
RR02	SHINAGAWA	5	1-touch stop relay	BB-1
RR03	SHINAGAWA	5	Horn relay (Radio controller, If equipped)	BB-1
RR04	SHINAGAWA	5	Yellow revolving warning lamp relay (Radio controller, If equipped)	BC-1
RR05	SHINAGAWA	5	Engine stop relay (Radio controller, If equipped)	BC-1
RR07	SHINAGAWA	6	Left travel forward relay (Radio controller, If equipped)	BB-3
RR08	SHINAGAWA	6	Left travel reverse relay (Radio controller, If equipped)	BB-3
RR09	SHINAGAWA	6	Right travel forward relay (Radio controller, If equipped)	BB-3
RR10	SHINAGAWA	6	Right travel reverse relay (Radio controller, If equipped)	BB-3
S01	MA2	3	Conveyor pressure sensor	Z-8
S02	MA2	3	Muck discharge conveyor pressure sensor (If equipped)	AN-3
S03	MA2	3	Magnetic separator pressure sensor (If equipped)	AN-3
S04	X	2	Steering signal switch	AU-9
S05	X	2	Travel signal switch	AU-9
S06	MA2	3	Secondary conveyor pressure sensor (If equipped)	AN-4
S07	MA2	3	Vibrator screen pressure sensor	AN-4
S10	MA2	3	F pump pressure sensor	AN-7
S11	MA2	3	R pump pressure sensor	AN-8
S12	DT	3	Clearance potentiometer	EO-3
S13	DT	3	Intermediate connector (Clearance potentiometer)	O-2
S14	X	1	Fuel level sensor	O-4
S15	DT	2	Air cleaner clogging sensor	U-1
S16	X	2	Radiator coolant level sensor	R-1
S17	DT	2	Hydraulic oil temperature sensor	AJ-1
S18	DT	3	Muck discharge conveyor retract sensor (If equipped)	DT-8
S21	DT	3	Conveyor H1 position sensor	CO-2
S22	DT	3	Conveyor M1 position sensor	CE-2
S23	X	2	Travel lock EPC pressure switch	AP-2
S24	DT	3	Emergency stop connector (Spare)	J-3
S45	DT	2	Float sensor (Water sprinkler, If equipped)	CJ-6
S8	Terminal	1	Starting motor (Terminal B)	EY-4
SC	Terminal	1	Starting motor (Terminal C)	FA-9
T03	Terminal	1	Starting motor safety relay (Terminal B)	AA-4
T04	Terminal	1	Starting motor safety relay (Terminal C)	Z-4
T05	Terminal	1	Ribbon heater relay	Z-1
T06	Terminal	1	Ribbon heater relay	Z-4
T07	Terminal	1	Ribbon heater relay	AA-1
T08	Terminal	1	Battery relay (Terminal E)	R-1
T09	Terminal	1	Battery relay (Terminal M)	AB-4
T10	Terminal	1	Battery relay (Terminal BR)	R-1
T11	Terminal	1	Battery relay (Terminal B)	AB-4
T12	Terminal	1	GND (Solenoid valve)	P-9
T13	DT	1	Intermediate connector (Starting motor)	EZ-3
T14	Terminal	1	GND (Sub valve)	P-9
T15	Terminal	1	GND (Travel signal)	Z-1
T16	Terminal	1	GND (Engine frame)	Z-1
T17	Terminal	1	GND (Battery relay)	AA-1
T18	Terminal	1	GND (Battery)	AB-1
T19	Terminal	1	GND (Addition of attachment)	P-9
T21	Terminal	1	GND (Muck discharge conveyor retract, If equipped)	CE-5
T22	Terminal	1	GND (Box lamp)	BO-4
T23	Terminal	1	GND (Box lamp)	P-9
T24	Terminal	1	GND (Box lamp)	A-3
T26	Terminal	1	GND (Travel alarm)	Z-6
T27	Terminal	1	GND (Engine cylinder block)	FI-1
T30	Terminal	1	Load cell left (Conveyor scale, If equipped)	EJ-2
T31	Terminal	1	Load cell left (Conveyor scale, If equipped)	EJ-2
T32	Terminal	1	Load cell left (Conveyor scale, If equipped)	EJ-2
T33	Terminal	1	Load cell left (Conveyor scale, If equipped)	EI-2
T34	Terminal	1	Load cell right (Conveyor scale, If equipped)	EI-2
T35	Terminal	1	Load cell right (Conveyor scale, If equipped)	EI-2
T36	Terminal	1	Load cell right (Conveyor scale, If equipped)	EI-2
T37	Terminal	1	Load cell right (Conveyor scale, If equipped)	EI-2
T38	Terminal	1	Power supply (Conveyor scale, If equipped)	EI-1
T39	Terminal	1	Power supply (Conveyor scale, If equipped)	EI-1
T40	Terminal	1	Clino sensor (Conveyor scale, If equipped)	EH-1
T41	Terminal	1	Clino sensor (Conveyor scale, If equipped)	EH-1
T42	Terminal	1	Clino sensor (Conveyor scale, If equipped)	EG-1
T43	Terminal	1	Clino sensor (Conveyor scale, If equipped)	EG-1
T44	Terminal	1	Speed sensor (Conveyor scale, If equipped)	EG-2
T45	Terminal	1	Speed sensor (Conveyor scale, If equipped)	EG-2
T46	Terminal	1	Speed sensor (Conveyor scale, If equipped)	EG-2
T47	Terminal	1	Serial printer (Conveyor scale, If equipped)	EF-1
T48	Terminal	1	Serial printer (Conveyor scale, If equipped)	EF-1





BR380JG-1E0 Mobile crusher

---

Form No. SEN01362-01

© 2006 KOMATSU  
All Rights Reserved  
Printed in Japan 12-06 (01)

---