SHOP MANUAL

KOMATSU

PC05-6,PC07-1
PC10-6,PC15-2

MACHINE MODEL	SERIAL No.
PC05-6	11301 and up
PC07-1	10001 and up
PC10-6	10501 and up
PC15-2	10001 and up

This shop manual may contain attachments and optional equipment that are not available in your area. Please consult your local Komatsu distributor for those items you may required. Materials and specifications are subject to change without notice.

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The affected pages are indicated by the use of the following marks. It is requested that necessary actions be taken to these pages according to the table below.

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○	Page to be newly added	Add
●	Page to be replaced	Replace
( )	Page to be deleted	Discard

Pages having no marks are those previously revised or made additions.

LIST OF REVISED PAGES

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⚠ IMPORTANT SAFETY NOTICE

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

To prevent injury to workers, the symbols ⚠ and ⚠ are 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.

⚠ SAFETY

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 precautions given on the decals which are fixed to the machine.
2. 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.
3. If welding repairs are needed, always have a trained, experienced welder carry out the work. When carrying out welding work, always wear welding gloves, apron, glasses, cap and other clothes suited for welding work.
4. When carrying out any operation with two 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 signs on the controls in the operator's compartment.
5. Keep all tools in good condition and learn the correct way to use them.
6. 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 or oil on the floor. Smoke only in the areas provided for smoking. Never smoke while working.

PREPARATIONS FOR WORK

7. Before adding oil or making any repairs, park the machine on hard, level ground, and block the wheels or tracks to prevent the machine from moving.
8. Before starting work, lower blade, ripper, bucket or any other work equipment to the ground. If this is not possible, insert the safety 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.
9. When disassembling or assembling, support the machine with blocks, jacks or stands before starting work.
10. 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.

PRECAUTIONS DURING WORK

11. When removing the oil filler cap, drain plug or hydraulic pressure measuring plugs, loosen them slowly to prevent the oil from spurting out.
    Before disconnecting or removing components of the oil, water or air circuits, first remove the pressure completely from the circuit.

12. The water and oil in the circuits are hot when the engine is stopped, so be careful not to get burned.
    Wait for the oil and water to cool before carrying out any work on the oil or water circuits.

13. Before starting work, remove the leads from the battery. Always remove the lead from the negative (−) terminal first.

14. When raising heavy components, use a hoist or crane.
    Check that the wire rope, chains and hooks are free from damage.
    Always use lifting equipment which has ample capacity.
    Install the lifting equipment at the correct places. Use a hoist or crane and operate slowly to prevent the component from hitting any other part. Do not work with any part still raised by the hoist or crane.

15. When removing covers which are under internal pressure or under pressure from a spring, always leave two bolts in position on opposite sides. Slowly release the pressure, then slowly loosen the bolts to remove.

16. When removing components, be careful not to break or damage the wiring. Damaged wiring may cause electrical fires.

17. When removing piping, stop the fuel or oil from spilling out. If any fuel or oil drips on to the floor, wipe it up immediately. Fuel or oil on the floor can cause you to slip, or can even start fires.

18. As a general rule, do not use gasoline to wash parts. In particular, use only the minimum of gasoline when washing electrical parts.

19. Be sure to assemble all parts again in their original places.
    Replace any damaged parts 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 being operated.

20. 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. Also, check that connecting parts are correctly installed.

21. When assembling or installing parts, always use the specified tightening 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.

22. When aligning two holes, never insert your fingers or hand. Be careful not to get your fingers caught in a hole.

23. When measuring hydraulic pressure, check that the measuring tool is correctly assembled before taking any measurements.

24. 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.

FOREWORD

This shop manual has been prepared as an aid to improve the quality of repairs by giving the serviceman an accurate understanding of the product and by showing him the correct way to perform repairs and make judgements. Make sure you understand the contents of this manual and use it to full effect at every opportunity.

This shop manual mainly contains the necessary technical information for operations performed in a service workshop.

For ease of understanding, the manual is divided into chapters for each main group of components; these chapters are further divided into the following sections.

STRUCTURE AND FUNCTION

This 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.

TESTING AND ADJUSTING

This section explains checks to be made before and after performing repairs, as well as adjustments to be made at completion of the checks and repairs.

Troubleshooting charts correlating "Problems" to "Causes" are also included in this section.

DISASSEMBLY AND ASSEMBLY

This section explains the order to be followed when removing, installing, disassembling or assembling each component, as well as precautions to be taken for these operations.

MAINTENANCE STANDARD

This section gives the judgement standards when inspecting disassembled parts.

NOTICE

The specifications contained in this shop manual are subject to change at any time and without any advance notice. Contact your KOMATSU distributor for the latest information.

HOW TO READ THE SHOP MANUAL

VOLUMES

Shop manuals are issued as a guide to carrying out repairs. They are divided as follows:

Chassis volume: Issued for every machine model
Engine volume: Issued for each engine series
Electrical volume :
Attachments volume : } Each issued as one volume to cover all models

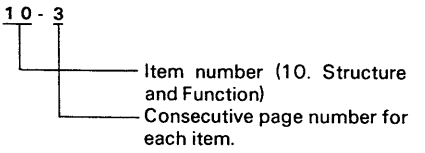
These various volumes are designed to avoid duplicating the same information. Therefore to deal with all repairs for any model, it is necessary that chassis, engine, electrical and attachment volumes are ready.

DISTRIBUTION AND UPDATING

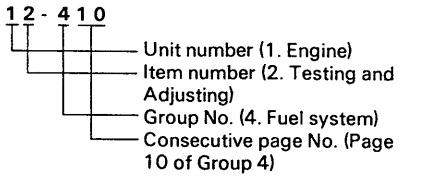
Any additions, amendments or other changes will be sent to KOMATSU distributers. Get the most up-to-date information before you start any work.

FILING METHOD

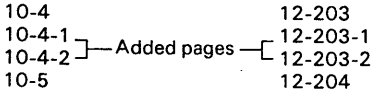
1. See the page number on the bottom of the page. File the pages in correct order.
2. Following examples shows how to read the page number.
   Example 1 (Chassis volume):



   Example 2 (Engine volume):



3. Additional pages: Additional pages are indicated by a hyphen (-) and number after the page number. File as in the example.
   Example:



REVISED EDITION MARK (①②③ ····)

When a manual is revised, an edition mark is recorded on the bottom outside corner of the pages.

REVISIONS

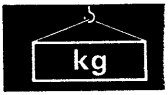
Revised pages are shown at the LIST OF REVISED PAGES on the between the title page and SAFETY page.

SYMBOLS

So that the shop manual can be of ample practical use, important places for safety and quality are marked with the following symbols.

Symbol	Item	Remarks
⚠	Safety	Special safety precautions are necessary when performing the work.
⚠		Extra special safety precautions are necessary when performing the work because it is under internal pressure.
★	Caution	Special technical precautions or other precautions for preserving standards are necessary when performing the work.
kg	Weight	Weight of parts or systems. Caution necessary when selecting hoisting wire, or when working posture is important, etc.
kgm	Tightening torque	Places that require special attention for the tightening torque during assembly.
	Coat	Places to be coated with adhesives and lubricants etc.
	Oil, water	Places where oil, water or fuel must be added, and the capacity.
	Drain	Places where oil or water must be drained, and quantity to be drained.

HOISTING INSTRUCTIONS



⚠ Heavy parts (25 kg or more) must be lifted with a hoist etc. In the **Disassembly and Assembly** section, every part weighing 25 kg or more is indicated clearly with the symbol kg

1. If a part cannot be smoothly removed from the machine by hoisting, the following checks should be made:
   - Check for removal of all bolts fastening the part to the relative parts.
   - Check for existence of another part causing interference with the part to be removed.

2. **Wire ropes**
   1) Use adequate ropes depending on the weight of parts to be hoisted, referring to the table below:

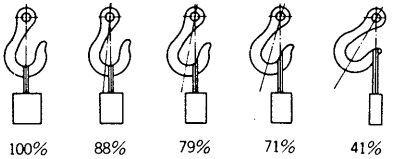
Wire ropes
(Standard "Z" or "S" twist ropes without galvanizing)

Rope diameter (mm)	Allowable load (tons)
10	1.0
11.2	1.4
12.5	1.6
14	2.2
16	2.8
18	3.6
20	4.4
22.4	5.6
30	10.0
40	18.0
50	28.0
60	40.0

The allowable load value is estimated to be one-sixth or one-seventh of the breaking strength of the rope used.

2) Sling wire ropes from the middle portion of the hook.

Slinging near the edge of the hook may cause the rope to slip off the hook during hoisting, and a serious accident can result. Hooks have maximum strength at the middle portion.



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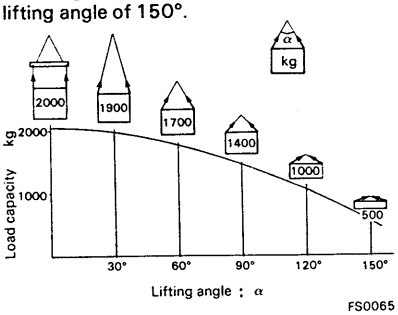
3) Do not sling a heavy load with one rope alone, but sling with two or more ropes symmetrically wound on to the load.

⚠ Slinging with one 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.

4) Do not sling a heavy load with ropes forming a wide hanging angle from the hook.
When hoisting a load with two or more ropes, the force subjected to each rope will increase with the hanging angles. The table below shows the variation of allowable load (kg) when hoisting is made with two ropes, each of which is allowed to sling up to 1000 kg vertically, at various hanging angles.
When two ropes sling a load vertically, up to 2000 kg of total weight can be suspended. This weight becomes 1000 kg when two ropes make a 120° hanging angle. On the other hand, two ropes are subjected to an excessive force as large as 4000 kg if they sling a 2000 kg load at a lifting angle of 150°.



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kgm

STANDARD TIGHTENING TORQUE

1. STANDARD TIGHTENING TORQUE OF BOLTS AND NUTS

The following charts give the standard tightening torques of bolts and nuts. Exceptions are given in sections of **"Disassembly and Assembly"**.

Thread diameter of bolt (mm)	Width across flat (mm)	(T)	(H)
		kgm	Nm
6	10	1.35±0.15	13.2±1.4
8	13	3.2±0.3	31.4±2.9
10	17	6.7±0.7	65.7±6.8
12	19	11.5±1.0	112±9.8
14	22	18.0±2.0	177±19
16	24	28.5±3	279±29
18	27	39±4	383±39
20	30	56±6	549±58
22	32	76±8	745±78
24	36	94.5±10	927±98
27	41	135±15	1320±140
30	46	175±20	1720±190
33	50	225±25	2210±240
36	55	280±30	2750±290
39	60	335±35	3280±340

This torque table does not apply to the bolts with which nylon packings or other non-ferrous metal washers are to be used, or which require tightening to otherwise specified torque.

★ **Nm (newton meter): 1Nm ≒ 0.1 kgm**

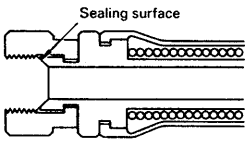
2. TIGHTENING TORQUE OF SPLIT FLANGE BOLTS

Use these torques for split flange bolts.

Thread diameter of bolt (mm)	Width across flats (mm)	Tightening torque	
		kgm	Nm
10	14	6.7±0.7	65.7±6.8
12	17	11.5±1	112±9.8
16	22	28.5±3	279±29

3. TIGHTENING TORQUE FOR NUTS OF FLARED

Use these torques for nut part of flared.



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Thread diameter of nut part (mm)	Width across flats of nut part (mm)	Tightening torque	
		kgm	Nm
14	19	2.5±0.5	24.5±4.9
18	24	5±2	49±19.6
22	27	8±2	78.5±19.6
24	32	14±3	137.3±29.4
30	36	18±3	176.5±29.4
33	41	20±5	196.1±49
36	46	25±5	245.2±49
42	55	30±5	294.2±49

COATING MATERIALS

The recommended coating materials prescribed in Komatsu Shop Manuals are listed below.

Nomenclature	Komatsu code	Applications
Adhesives	LT-1A	Used to apply rubber pads, rubber gaskets, and cork plugs.
	LT-1B	Used to apply resin, rubber, metallic and non-metallic parts when a fast, strong seal is needed.
	LT-2*	Preventing bolts, nuts and plugs from loosening and leaking oil.
	LT-3	Provides an airtight, electrically insulating seal. Used for aluminum surfaces.
Gasket sealant	LG-1	Used with gaskets and packings to increase sealing effect.
	LG-3	Heat-resistant gasket for precombustion chambers and exhaust piping.
	LG-4	Used by itself on mounting surfaces on the final drive and transmission cases. (Thickness after tightening: 0.07 – 0.08 mm)
	LG-5	Used by itself to seal grease fittings, tapered screw fittings and tapered screw fittings in hydraulic circuits of less than 50 mm in diameter.
Antifriction compound (Lubricant including molybdenum disulfide)	LM-P	Applied to bearings and taper shafts to facilitate press-fitting and to prevent sticking, burning or rusting.
Grease (Lithium grease)	G2-LI	Applied to bearings, sliding parts and oil seals for lubrication, rust prevention and facilitation of assembling work.
Vaseline	—	Used for protecting battery electrode terminals from corrosion.

*LT-2 is also called LOCTITE in the shop manuals.

ELECTRIC

ELECTRIC WIRE CODE

In the wiring diagrams, various colors and symbols are employed to indicate the thickness of wires.
This wire code table will help you understand WIRING DIAGRAMS.
Example: 05WB indicates a cable having a nominal number 05 and white coating with black stripe.

CLASSIFICATION BY THICKNESS

Nominal number	Copper wire			Cable O.D. (mm)	Cunnent rating (A)	Applicable circuit
	Number strands	Dia. of strands (mm)	Cross section (mm^2)			
01	11	0.32	0.88	2.4	12	Starting, lighting, signal etc.
02	26	0.32	2.09	3.1	20	Lighting, signal etc.
05	65	0.32	5.23	4.6	37	Charging and signal
15	84	0.45	13.36	7.0	59	Starting (Glow plug)
40	85	0.80	42.73	11.4	135	Starting
60	127	0.80	63.84	13.6	178	Starting
100	217	0.80	109.1	17.6	230	Starting

CLASSIFICATION BY COLOR AND CODE

Priority	Classification \ Circuits		Starting	Charging	Lighting	Signal	Instrument	Other
1	Primary	Code	B	W	R	G	Y	L
		Color	Black	White	Red	Green	Yellow	Blue
2	Auxiliary	Code	BW	WR	RW	GW	YR	LW
		Color	Black & White	White & Red	Red & White	Green & White	Yellow & Red	Blue & White
3		Code	BY	WB	RB	GR	YB	LR
		Color	Black & Yellow	White & Black	Red & Black	Green & Red	Yellow & Black	Blue & Red
4		Code	BR	WL	RY	GY	YG	LY
		Color	Black & Red	White & Blue	Red & Yellow	Green & Yellow	Yellow & Green	Blue & Yellow
5		Code	–	WY	RG	GB	YL	LB
		Color	–	White&Yellow	Red & Green	Green & Black	Yellow & Blue	Blue & Black
6		Code	–	WG	RL	GL	YW	
		Color	–	White & Green	Red & Blue	Green & Blue	Yellow&White	

WEIGHT TABLE

⚠ This weight table is a guide for use when transporting or handling components.

Unit: kg

Machine model	PC05-6		PC07-1	PC10-6	PC15-2
Serial No.	11301–11700	11701 and up	10001 and up	10501 and up	10001 and up
Engine assembly	123	123	123	159	184
·Engine	110	110	110	130	155
·Engine mount	–	–	–	12	12
·PTO	7.5	7.5	7.5	9	9
·Hydraulic pump	5.3	5.3	5.3	7.7	7.7
Radiator assembly	4.2	4.2	4.2	6.6	7.3
Revolving frame	130	200	262	338	478
Canopy	21.5	21.5	21.5	23	23
Operator's cab	–	–	–	155	155
Operator's seat	7.5	7.5	7.5	10	10
Fuel tank	11	11	11	17	17
Hydraulic tank	20	20	20	34	34
1-spool control valve	4.3	4.3	–	–	–
2-spool control valve	–	–	–	6	6
5-spool control valve	–	–	–	14.5	14.5
6-spool control valve	–	–	–	16	16
7-spool control valve	16	16	16	–	–
8-spool control valve	–	18.5	18.5	–	–
Swing-boom swing selector valve					
Swing circle assembly	18	19	19	38.4	38.4
Swing motor assembly	13.5	13.5	13.5	17	28
Center swivel joint	7.5	7.5	7.5	7.5	7.5

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Unit: kg

Machine model	PC05-6		PC07-1	PC10-6	PC15-2
Serial No.	11301–11700	11701 and up	10001 and up	10501 and up	10001 and up
Track frame assembly	257	184	187	359	398
·Track frame	90.5	90.5	93	223	262
·Idler	7.5 x 2	7.5 x 2	7.5 x 2	20 x 2	20 x 2
·Idler cushion	7 x 2	7 x 2	7 x 2	11 x 2	11 x 2
·Track roller	3.5 x 6	3.5 x 6	3.5 x 6	6 x 6	6 x 6
·Sprocket	5.5 x 2	5.5 x 2	5.5 x 2	8 x 2	8 x 2
Travel motor assembly	15 x 2	15 x 2	15 x 2	30 x 2	30 x 2
Track shoe assembly					
·Track shoe	70 x 2	78.5 x 2	78.5 x 2	136 x 2	157 x 2
·Track shoe with rubber	100 x 2	–	–	–	–
·Rubber shoe	43 x 2	57 x 2	57 x 2	112 x 2	112 x 2
Boom swing bracket assembly	14.5	14.5	15.5	37	41
Boom assembly	38.4	38.4	39	73	88
Arm assembly	19.4	19.4	23.2	40	40
Bucket assembly	19	24.3	26.4	45	45
Blade assembly	30.4	39.5	40	108	109
Boom cylinder assembly	10	10	10.7	18.5	20
Arm cylinder assembly	9	9	10.1	18.2	17
Bucket cylinder assembly	8.5	8.5	8.5	14.5	14.5
Boom swing cylinder assembly	8	8	8	18.5	18.5
Blade cylinder assembly	6.3	6.5	6.5	9.8	9.8

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LIST OF LUBRICANT AND WATER

RESERVOIR	KIND OF FLUID	AMBIENT TEMPERATURE 14 32 50 68 86°F / −10 0 10 20 30°C	CAPACITY (ℓ) Specified	Refill
Engine oil pan	Engine oil	SAE 30 / SAE 10W	PC05: 3.65 PC07: 3.65 PC10: 3.1 PC15: 4.7	PC05: 3.65 PC07: 3.65 PC10: 3.1 PC15: 4.7
Final drive case (each)	Engine oil	SAE 30	PC05: 0.3 PC07: 0.3 PC10: 0.6 PC15: 0.6	PC05: 0.3 PC07: 0.3 PC10: 0.6 PC15: 0.6
Track roller (1 piece) Idler (1 piece)	Engine oil	SAE 30	0.02 0.02	– –
Hydraulic tank	Engine oil	SAE 10W / SAE 10W-30 / SAE 15W-40	PC05: 24.8 PC07: 25.3 PC10: 46 PC15: 46	PC05: 18.3 PC07: 18.3 PC10: 29 PC15: 29
Fuel tank	Diesel fuel	ASTM D975 No.2 / ※	PC05: 20 PC07: 20 PC10: 35 PC15: 35	–
Cooling system	Water	Add antifreeze	PC05: 3.6 PC07: 3.6 PC10: 3.7 PC15: 3.7	–

※ ASTM D975 No.1

020M06

ASTM: American Society of Testing and Material
SAE: Society of Automotive Engineers

Specified capacity: Total amount of oil including oil for components and oil in piping.
Refill capacity: Amount of oil needed to refill system during normal inspection and maintenance.

NOTE:

(1) When fuel sulphur content is less than 0.5%, change oil in the oil pan every periodic maintenance hours described in operation and maintenance manual.
Change oil according to the following table if fuel sulphur content is above 0.5%.

Fuel sulphur content	Change interval of oil in engine oil pan
0.5 to 1.0%	1/2 of regular interval
Above 1.0%	1/4 of regular interval

(2) When starting the engine in an atmospheric temperature of lower than 0°C, be sure to use engine oil of SAE10W, SAE10W-30 and SAE15W-40, even through an atmospheric temperature goes up to 10°C more or less in the day time.

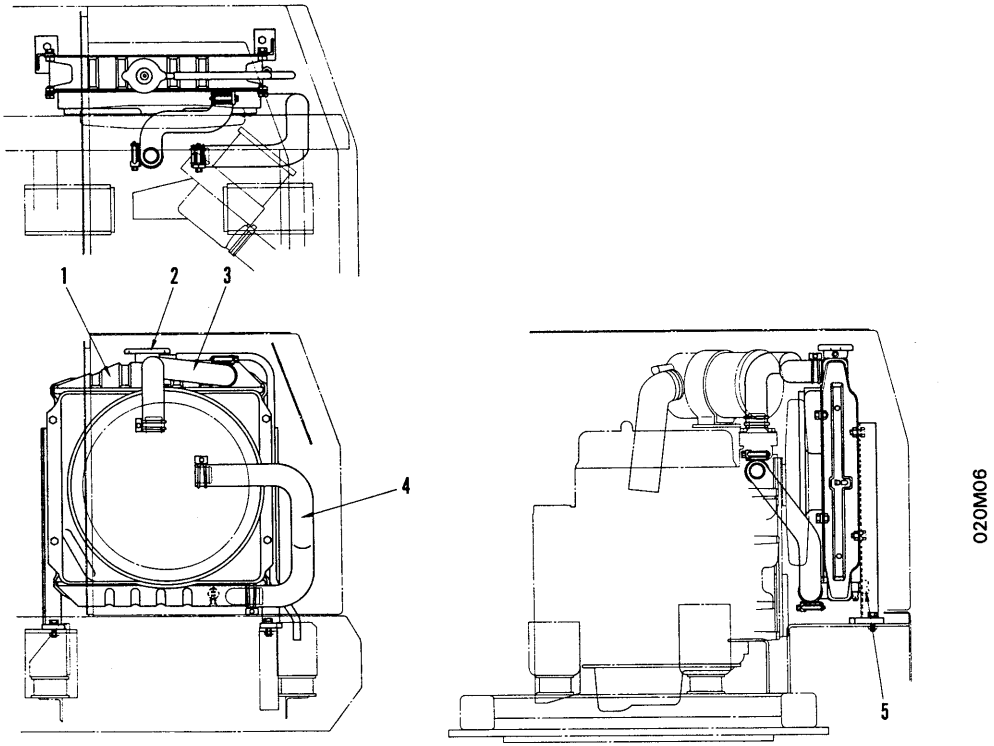
(3) Use API classification CD as engine oil and if API classification CC, reduce the engine oil change interval to half.

10 STRUCTURE AND FUNCTION

020M06

RADIATOR

PC05-6, PC07-1



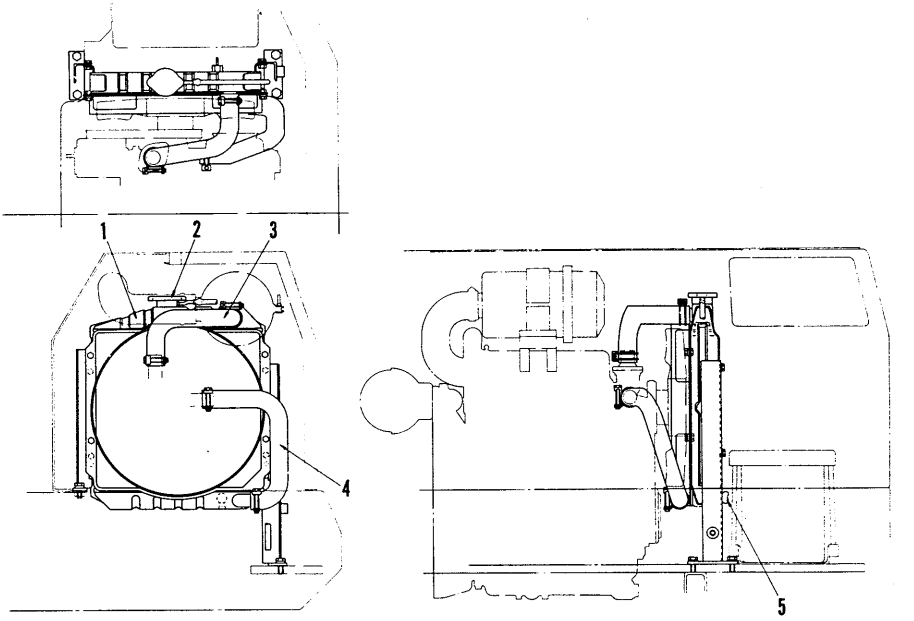
F20M06001

020M06

1. Radiator
2. Cap
3. Radiator inlet hose
4. Radiator outlet hose
5. Drain valve

SPECIFICATIONS

• Type:	CD-2
• Fin pitch:	4.0 mm
• Cap	
Relief set pressure:	0.9 ± 0.15 kg/cm^2
Suction set pressure:	0.05 kg/cm^2
• Capacity:	1.35 ℓ



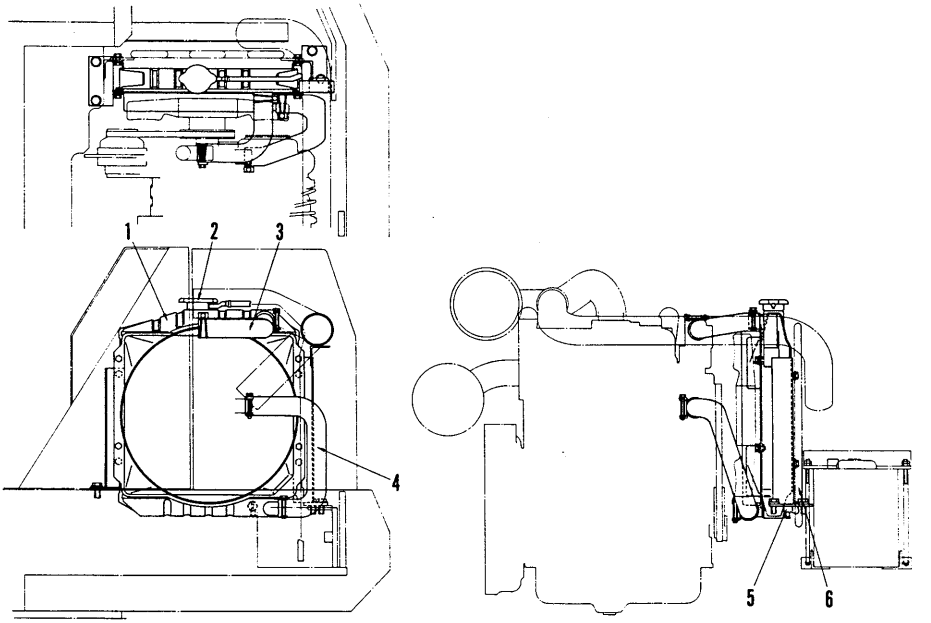
20NF06005

020M06

1. Radiator
2. Cap
3. Radiator inlet hose
4. Radiator outlet hose
5. Drain valve

SPECIFICATIONS

• Type:	CD-2
• Fin pitch:	4.0 mm
• Cap	
Relief set pressure:	0.9 ± 0.15 kg/cm^2
Suction set pressure:	0.05 kg/cm^2
• Capacity:	1.35 ℓ



020M06

20NF06006

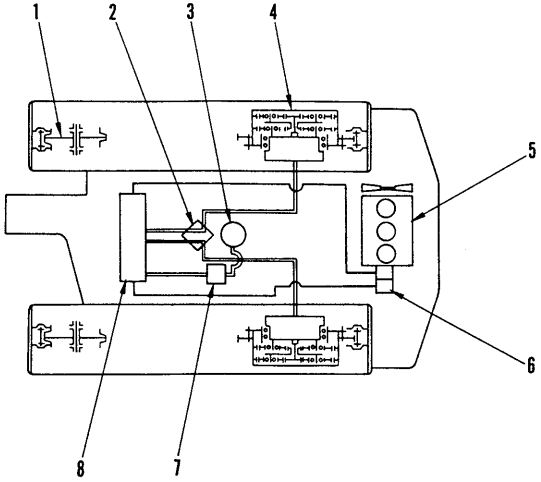
1. Radiator
2. Cap
3. Radiator inlet hose
4. Radiator outlet hose
5. Drain valve
6. Oil cooler (Hydraulic piping)

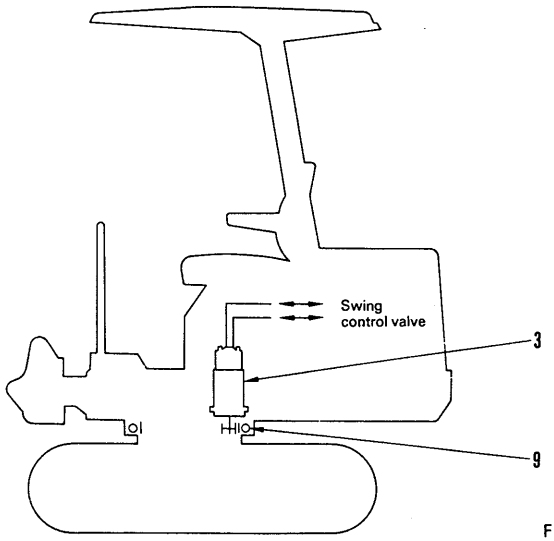
SPECIFICATIONS

• Type:	CD-2
• Fin pitch:	4.0 mm
• Cap	
Relief set pressure:	0.9 ± 0.15 kg/cm^2
Suction set pressure:	0.05 kg/cm^2
• Capacity:	1.35 ℓ

POWER TRAIN

PC05-6, PC07-1



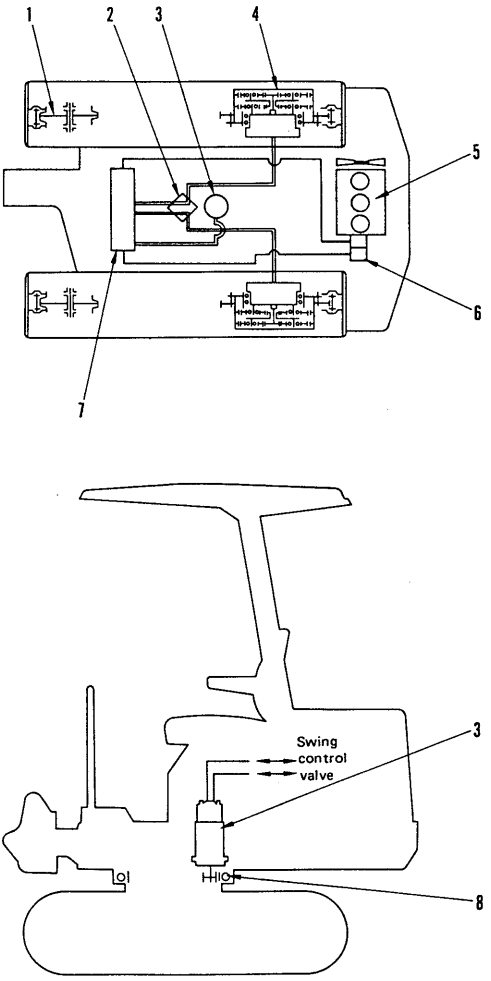


F20M06057

020M06

1. Idler
2. Center swivel joint
3. Swing motor
4. Travel motor
5. Engine
6. Hydraulic pump
7. Swing-boom swing selector valve
8. 7-spool control valve
9. Swing circle

PC05-6, PC07-1



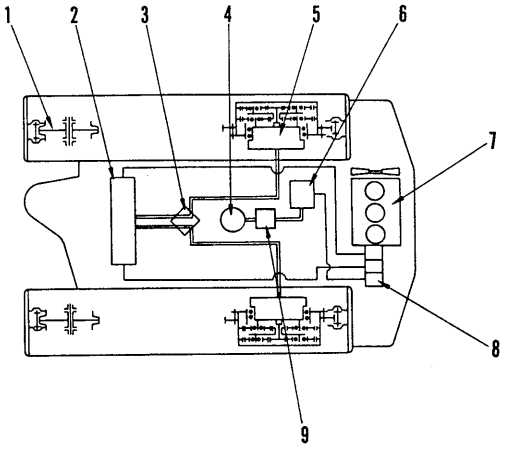
020M06

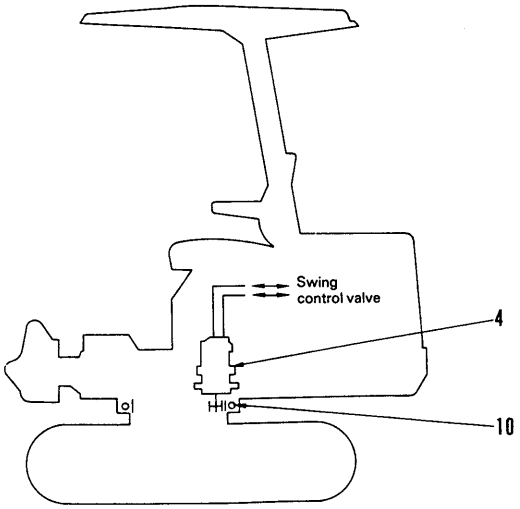
20MF06005

1. Idler
2. Center swivel joint
3. Swing motor
4. Travel motor
5. Engine
6. Hydraulic pump
7. 8-spool control valve
8. Swing circle

★ FOR MACHINE EQUIPPED WITH SWING–BOOM SWING SELECTOR PEDAL

PC10-6, PC15-2



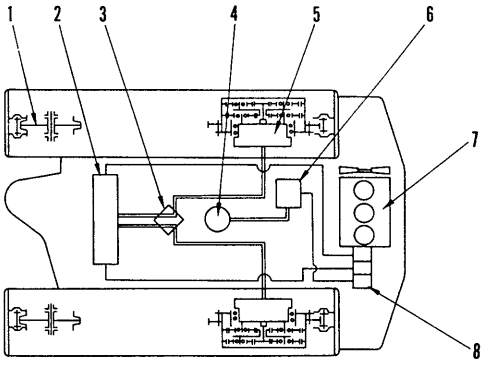


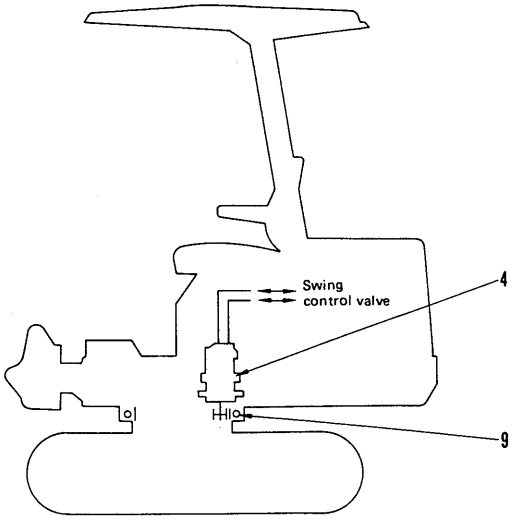
F20M06058

020M06

1. Idler
2. 5-spool control valve
3. Center swivel joint
4. Swing motor
5. Travel motor
6. 2-spool control valve
7. Engine
8. Hydraulic pump
9. Swing-boom swing selector valve
10. Swing circle

PC10-6, PC15-2





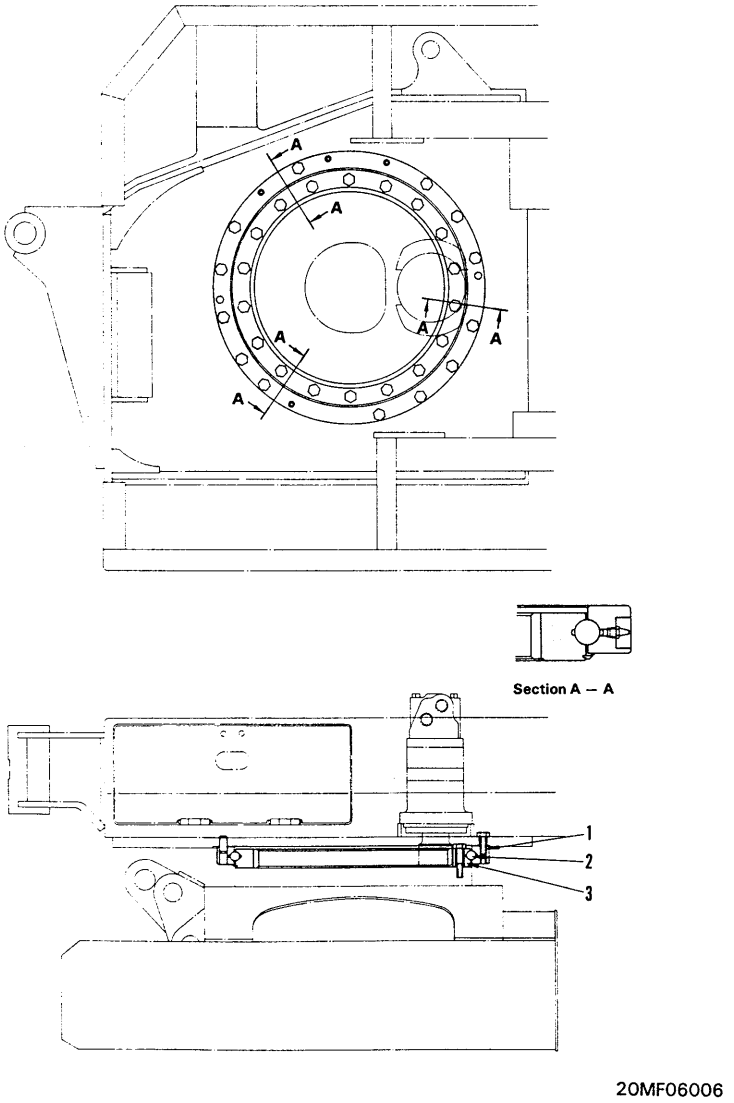
20NF06007

020M06

1. Idler
2. 6-spool control valve
3. Center swivel joint
4. Swing motor
5. Travel motor
6. 2-spool control valve
7. Engine
8. Hydraulic pump
9. Swing circle

SWING CIRCLE

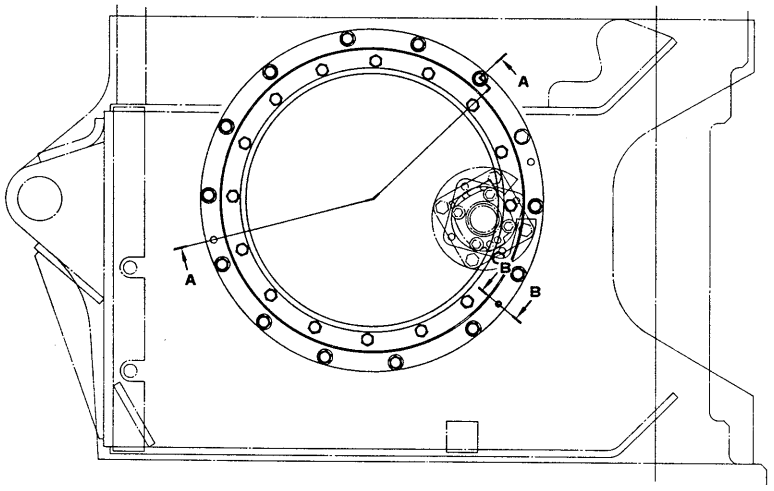
PC05-6, PC07-1



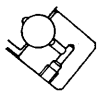
20MF06006

020M06

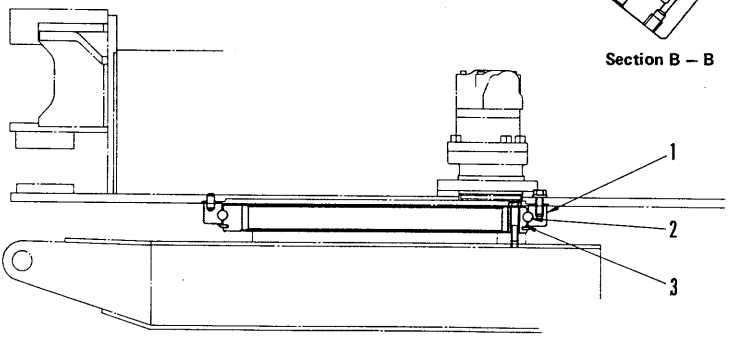
1. Swing circle outer race
2. Ball bearing
3. Swing circle inner race



020M06



Section B – B



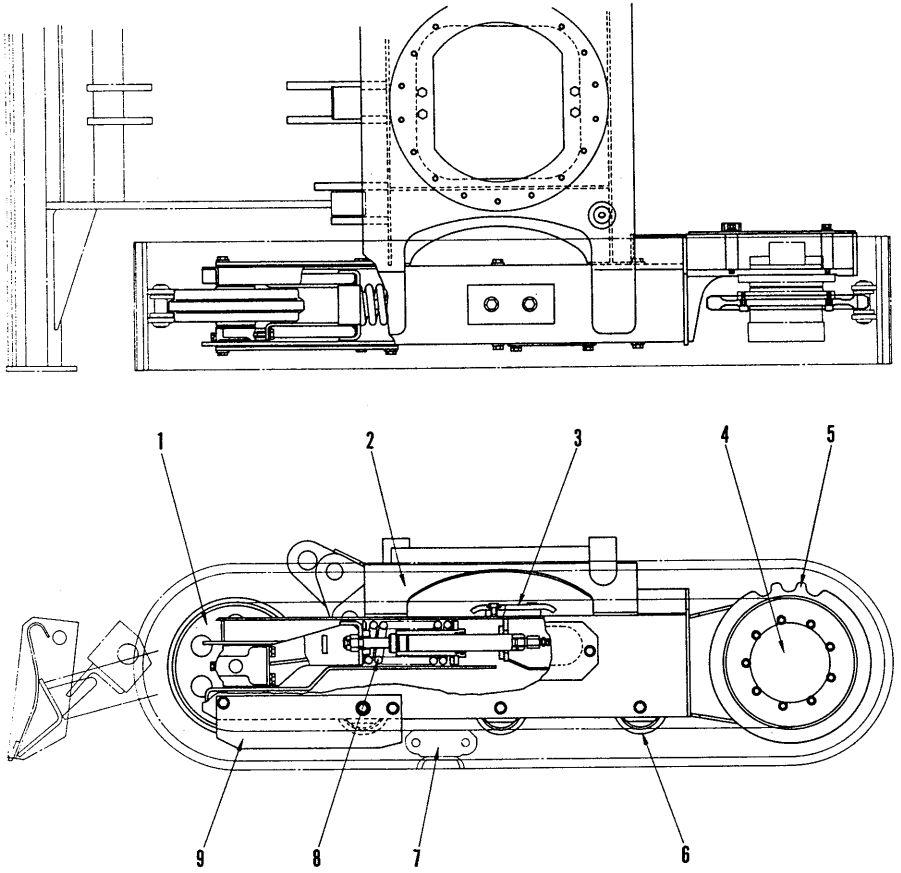
Section A – A

20NF06008

1. Swing circle outer race
2. Ball bearing
3. Swing circle inner race

TRACK FRAME AND RECOIL SPRING

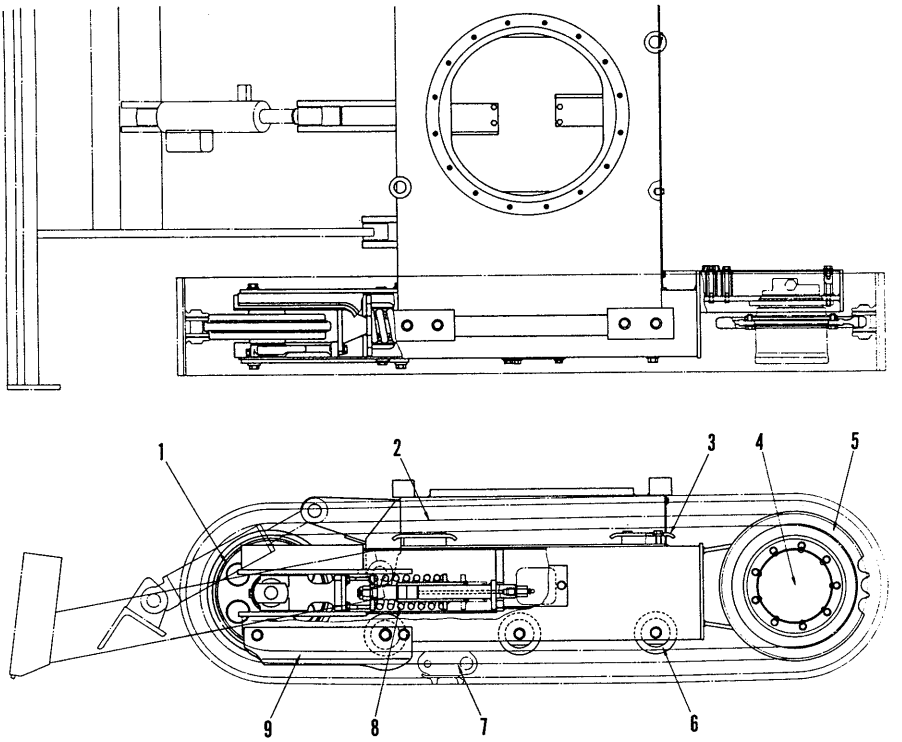
PC05-6, PC07-1



020M06

F20M06002

1. Idler
2. Track frame
3. Sliding plate
4. Travel motor
5. Sprocket
6. Track roller
7. Track shoe
8. Recoil spring
9. Guard



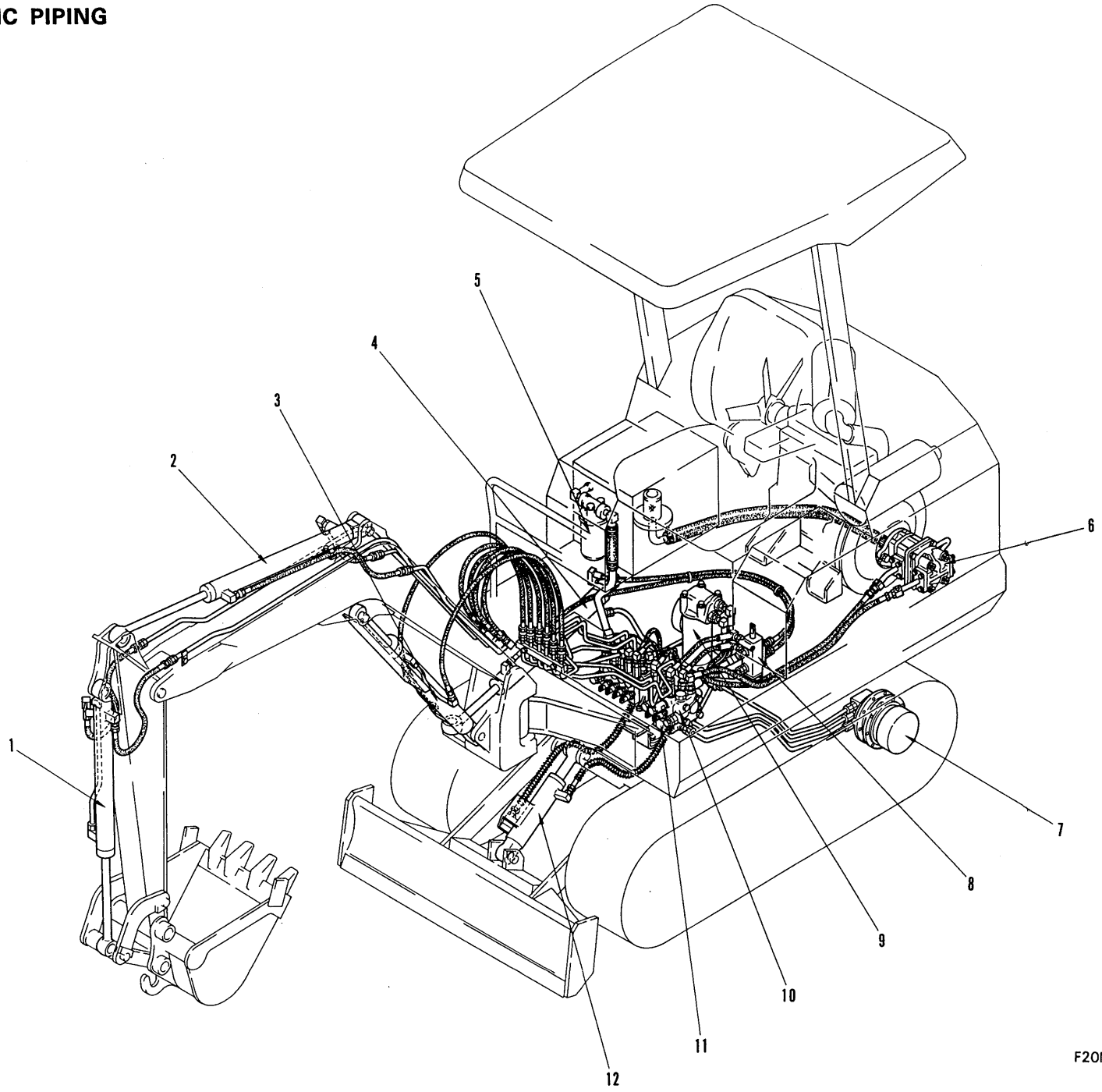
20NF06009

020M06

1. Idler
2. Track frame
3. Sliding plate
4. Travel motor
5. Sprocket
6. Track roller
7. Track shoe
8. Recoil spring
9. Guard

HYDRAULIC PIPING

PC05-6, PC07-1

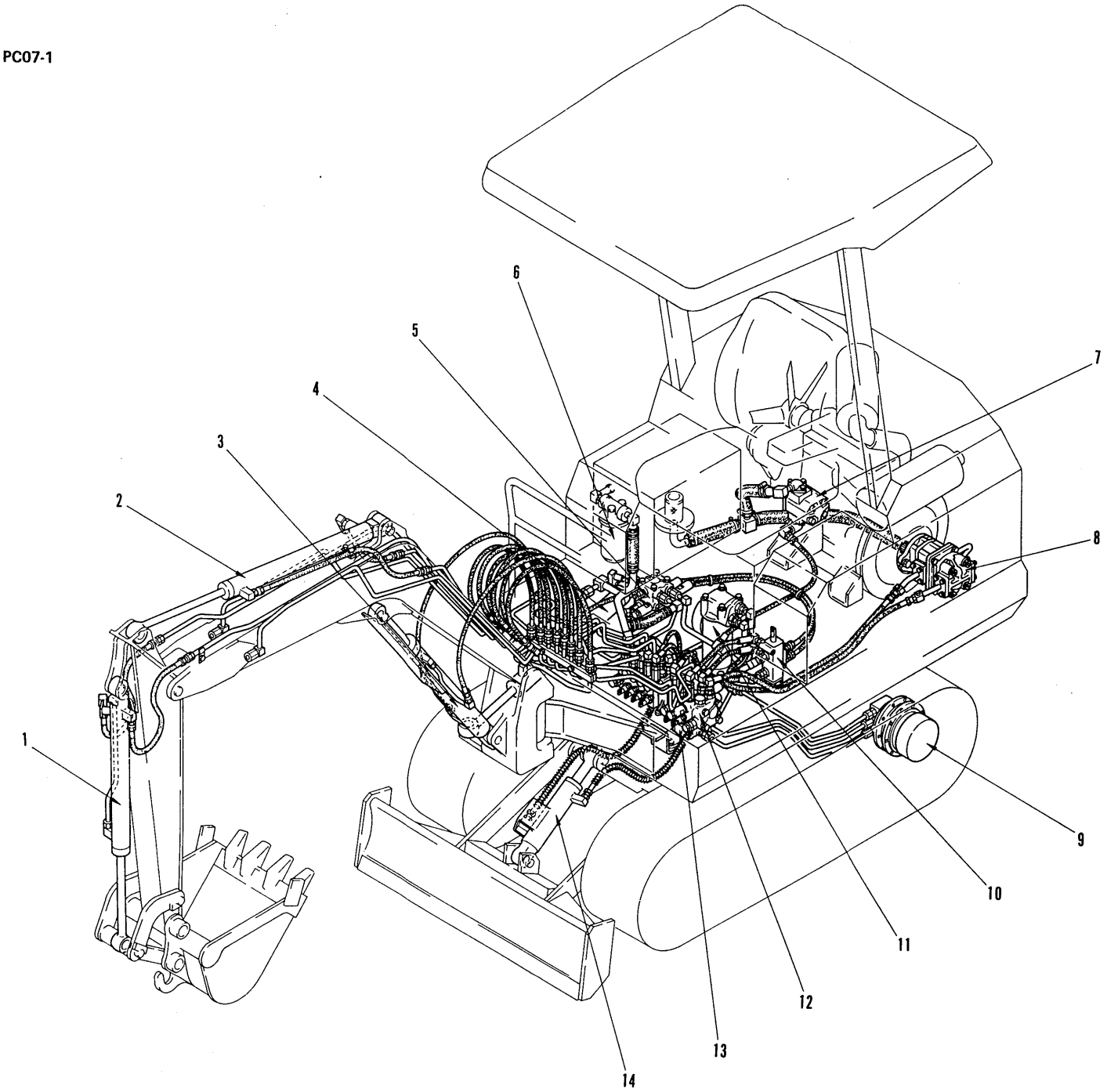


1. Bucket cylinder
2. Arm cylinder
3. Boom cylinder
4. Boom swing cylinder
5. Oil filter
6. Hydraulic pump
7. Travel motor
8. Swing–boom swing selector valve
9. Swing motor
10. 7-spool control valve
11. Center swivel joint
12. Blade cylinder

F20M06003

020M06

★ FOR MACHINE EQUIPPED WITH SWING–BOOM SWING SELECTOR PEDAL, FLOW INCREASING CIRCUIT AND ADDITIONAL CIRCUIT



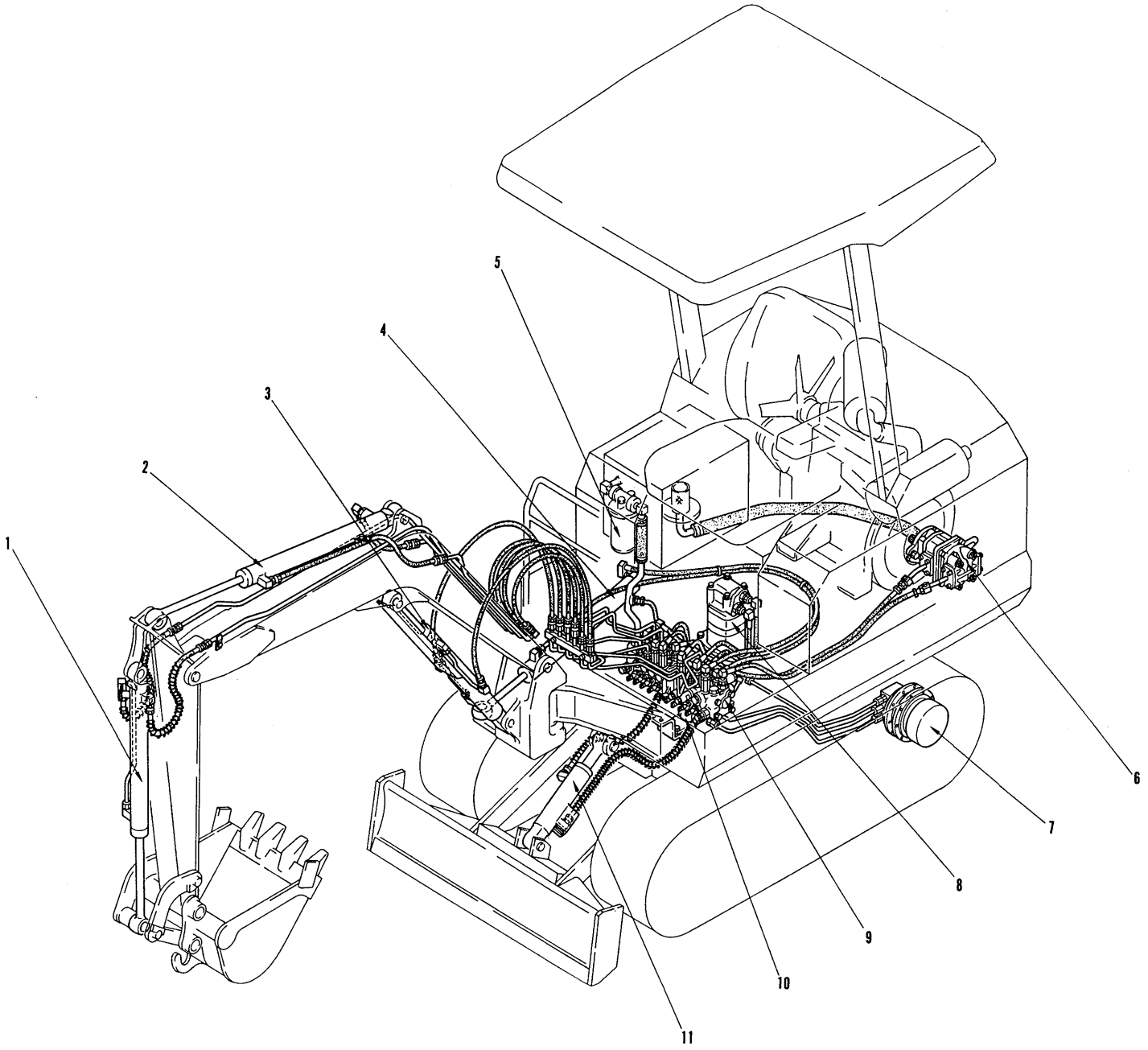
1. Bucket cylinder
2. Arm cylinder
3. Boom cylinder
4. Boom swing cylinder
5. 1-spool control valve
6. Oil filter
7. Flow increasing pump
8. Hydraulic pump
9. Travel motor
10. Swing–boom swing selector valve
11. Swing motor
12. 7-spool control valve
13. Center swivel joint
14. Blade cylinder

020M06

F20M06004

PC05-6, PC07-1

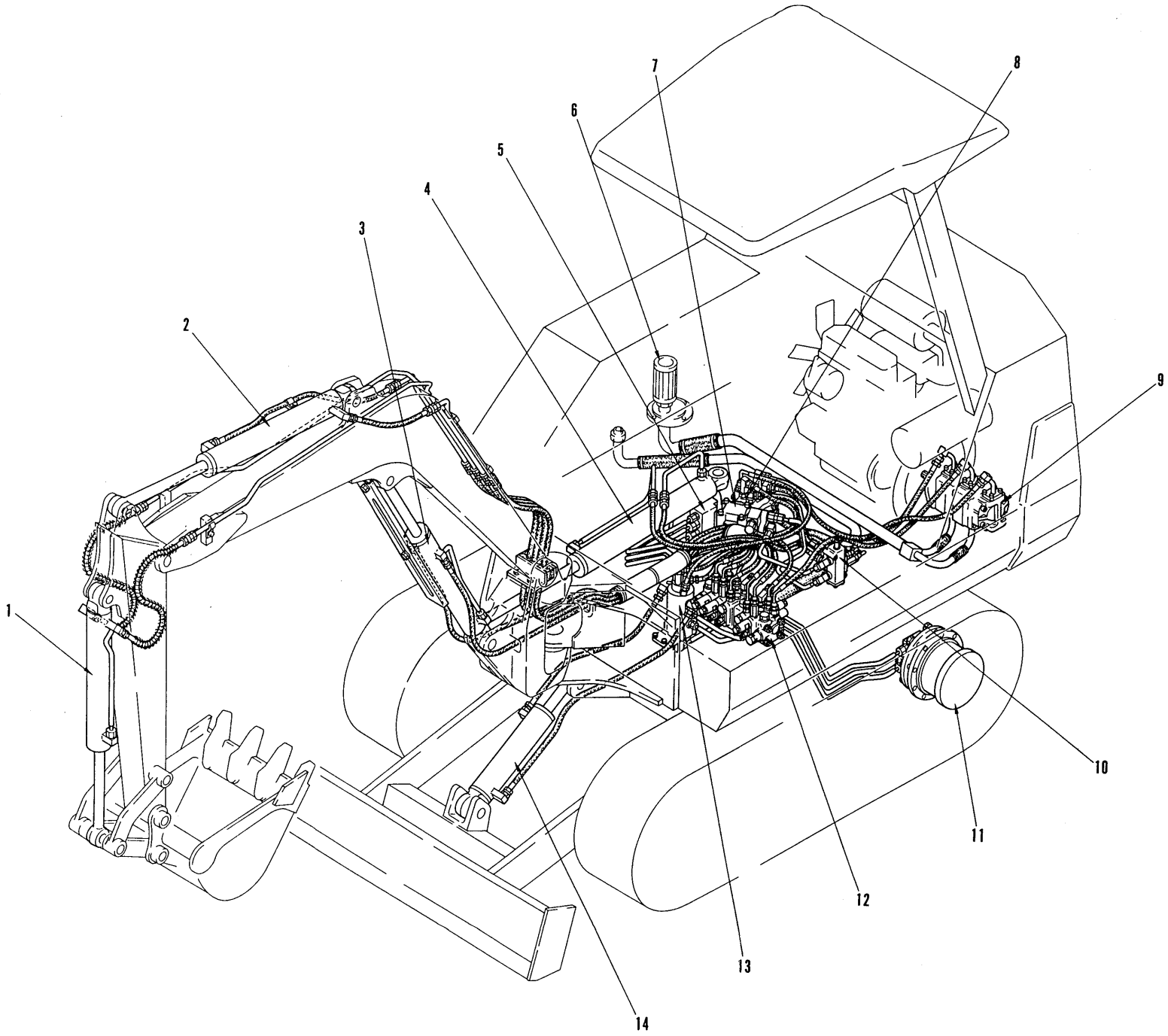
020M06



1. Bucket cylinder
2. Arm cylinder
3. Boom cylinder
4. Boom-swing cylinder
5. Hydraulic filter
6. Hydraulic pump
7. Travel motor
8. Swing motor
9. 8-spool control valve
10. Center swivel joint
11. Blade cylinder

20MF06007

PC10-6, PC15-2



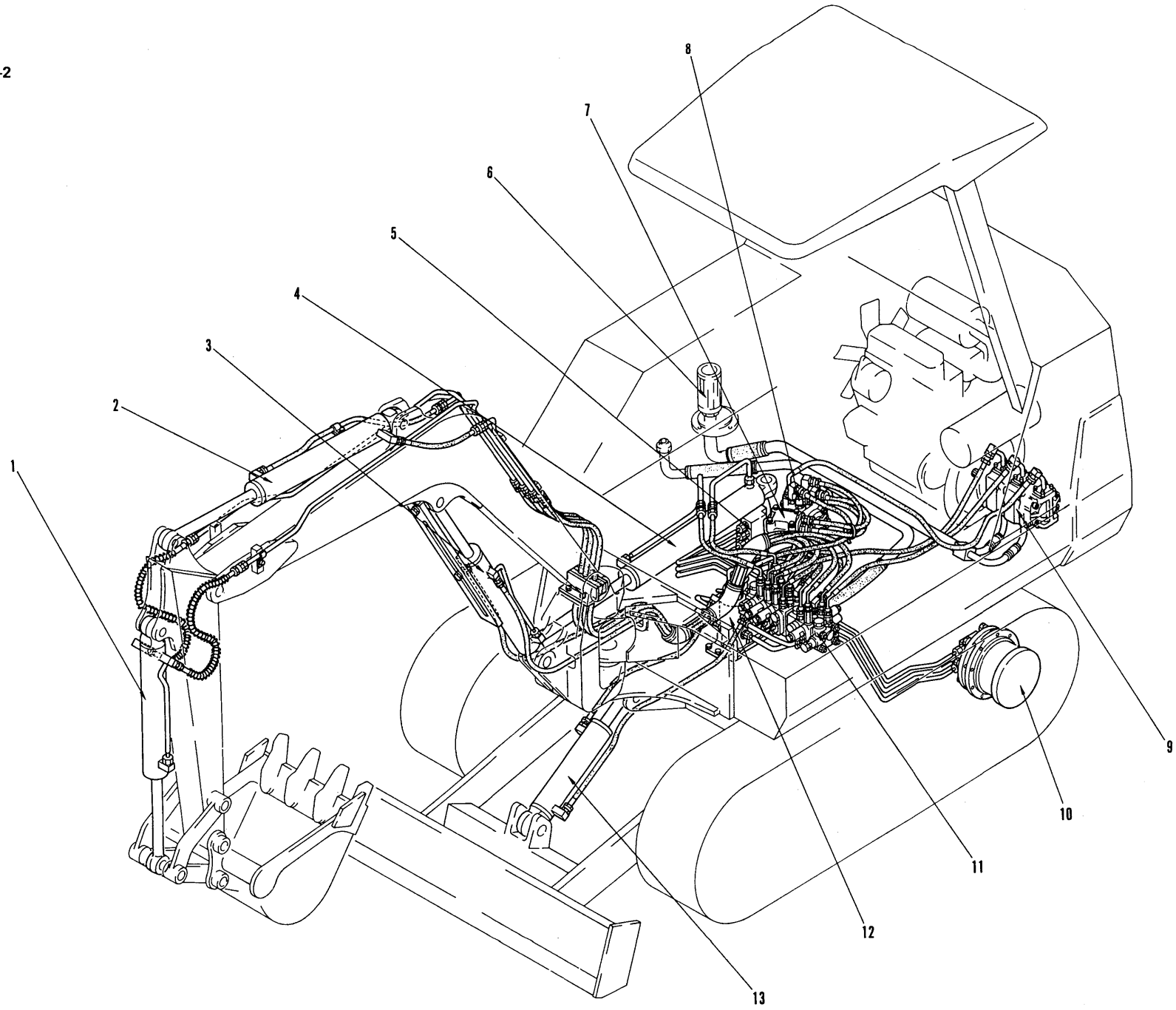
1. Bucket cylinder
2. Arm cylinder
3. Boom cylinder
4. Boom swing cylinder
5. R.H. travel motor
6. Strainer
7. Swing motor
8. 2-spool control valve
9. Hydraulic pump
10. Swing–boom swing selector valve
11. L.H. travel motor
12. 5-spool control valve
13. Center swivel joint
14. Blade cylinder

020M06

F20M06059

PC10-6, PC15-2

020M06

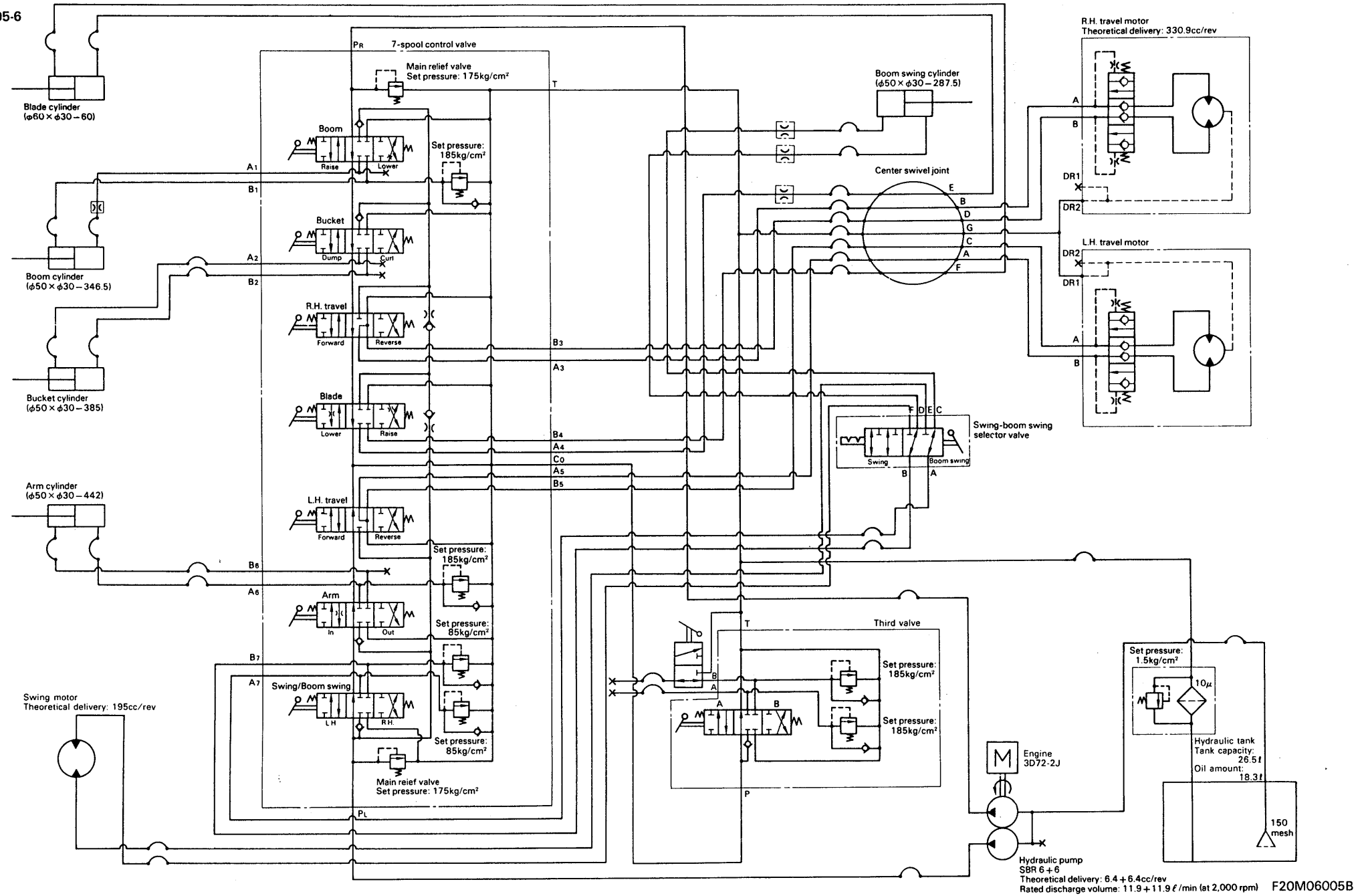


1. Bucket cylinder
2. Arm cylinder
3. Boom cylinder
4. Boom swing cylinder
5. R.H. travel motor
6. Strainer
7. Swing motor
8. 2-spool control valve
9. Hydraulic pump
10. L.H. travel motor
11. 6-spool control valve
12. Center swivel joint
13. Blade cylinder

20NF06010

HYDRAULIC CIRCUIT DIAGRAM

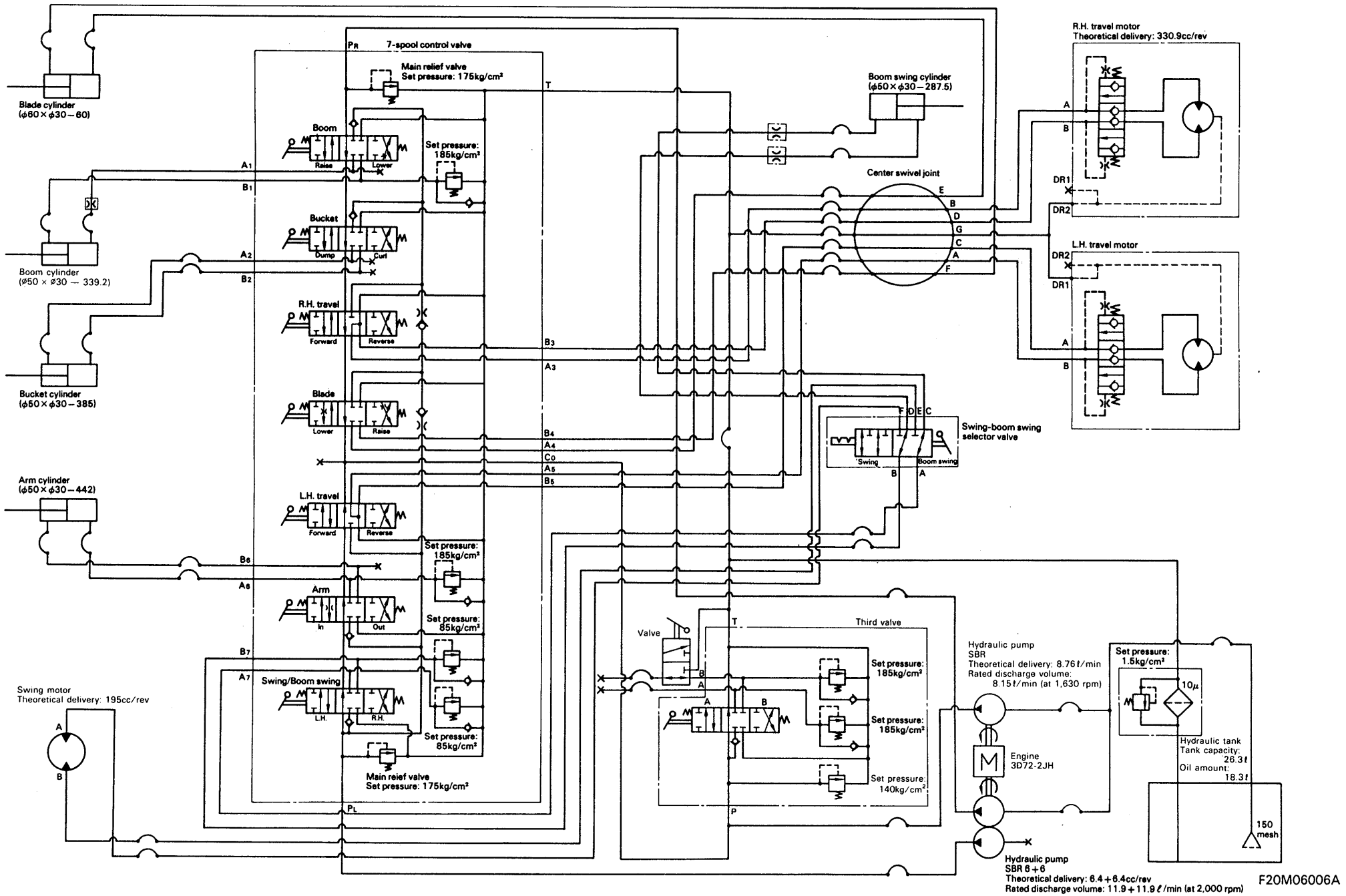
PC05-6



020M06

F20M06005B

PC05-6



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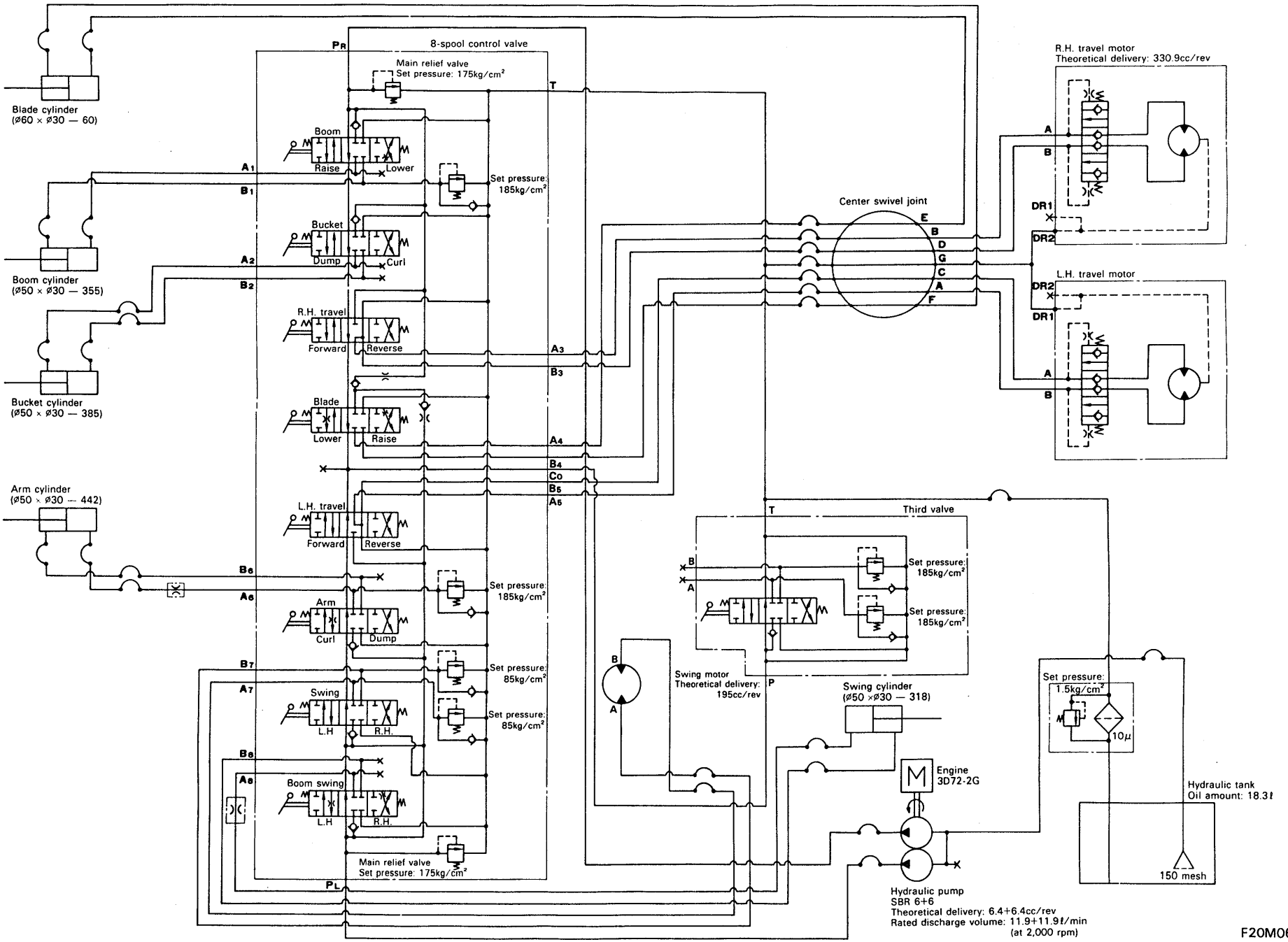
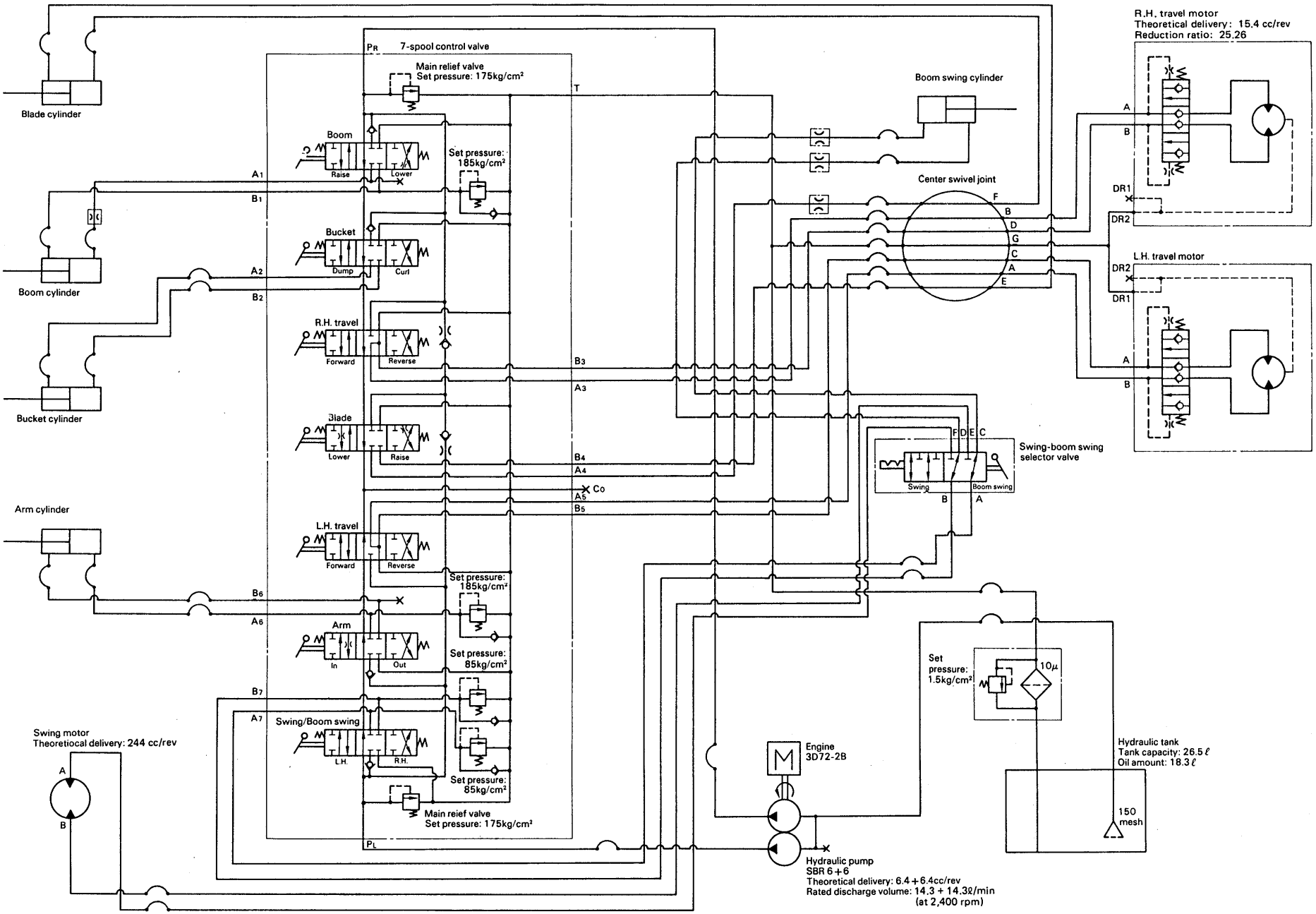


F20M06091

020M06

PC07-1



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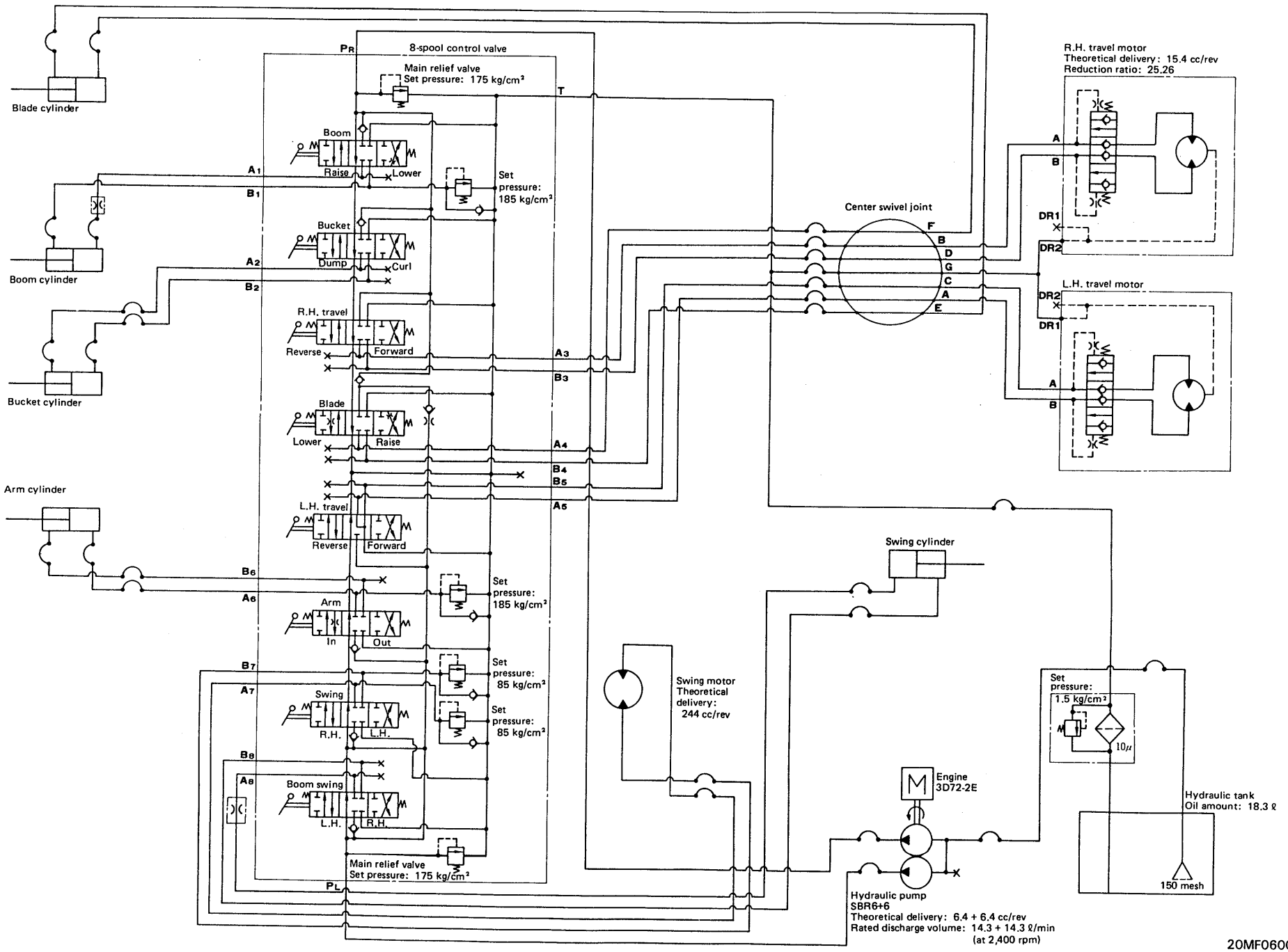

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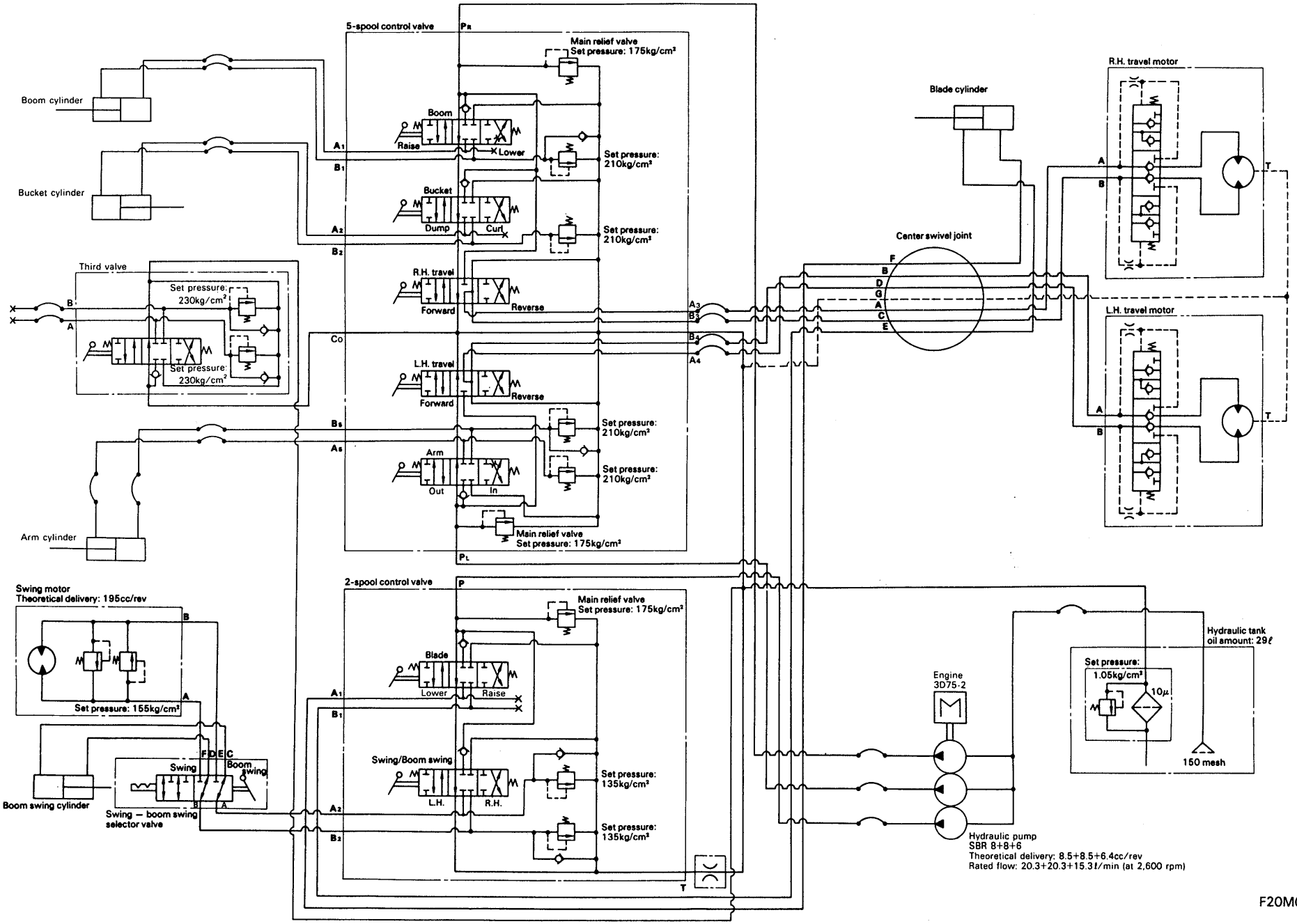
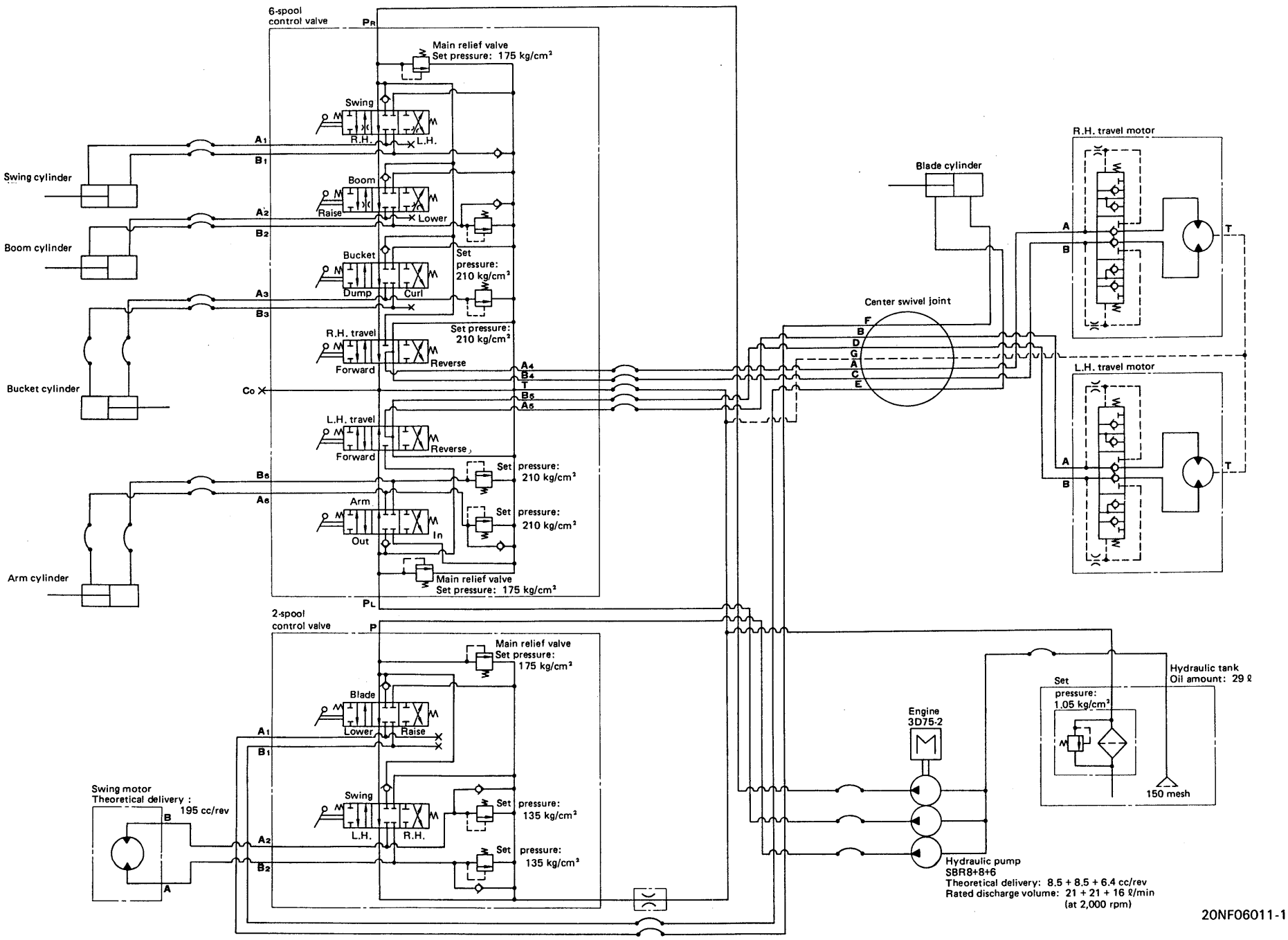
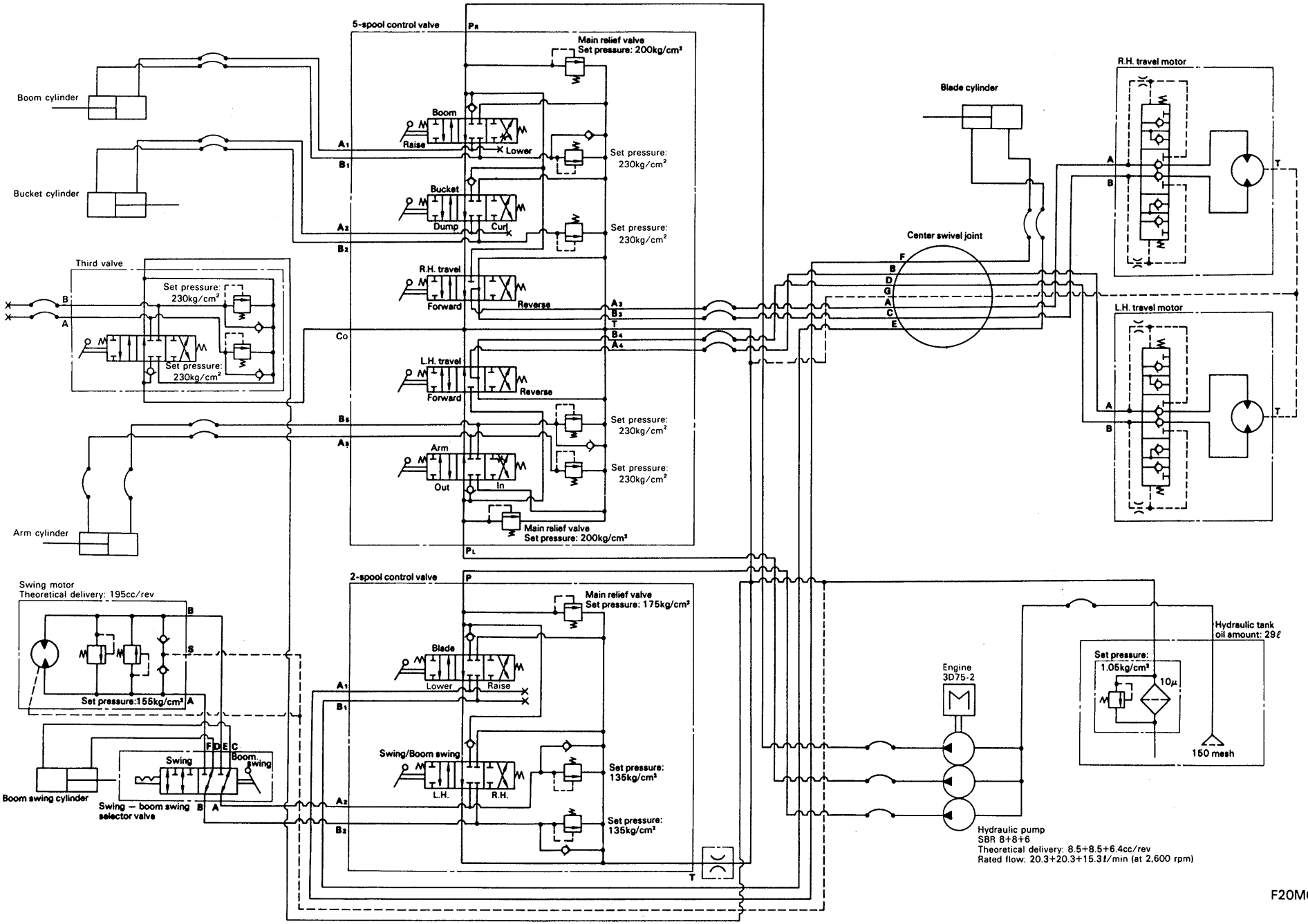

5-spool control valve
Main relief valve
Set pressure: 175kg/cm²
Boom cylinder
Boom
Raise
Lower
Set pressure: 210kg/cm²
Bucket cylinder
Bucket
Dump
Curl
Set pressure: 210kg/cm²
Third valve
Set pressure: 230kg/cm²
Set pressure: 230kg/cm²
R.H. travel
Forward
Reverse
L.H. travel
Forward
Reverse
Set pressure: 210kg/cm²
Arm
Out
In
Set pressure: 210kg/cm²
Arm cylinder
Main relief valve
Set pressure: 175kg/cm²
Blade cylinder
Center swivel joint
R.H. travel motor
L.H. travel motor
2-spool control valve
Main relief valve
Set pressure: 175kg/cm²
Blade
Lower
Raise
Swing/Boom swing
L.H.
R.H.
Set pressure: 135kg/cm²
Set pressure: 135kg/cm²
Swing motor
Theoretical delivery: 195cc/rev
Set pressure: 155kg/cm²
Boom swing cylinder
Swing
Boom swing
Swing – boom swing selector valve
Engine
3D75-2
Hydraulic tank
oil amount: 29ℓ
Set pressure:
1.05kg/cm²
10μ
150 mesh
Hydraulic pump
SBR 8+8+6
Theoretical delivery: 8.5+8.5+6.4cc/rev
Rated flow: 20.3+20.3+15.3ℓ/min (at 2,600 rpm)

F20M06060A

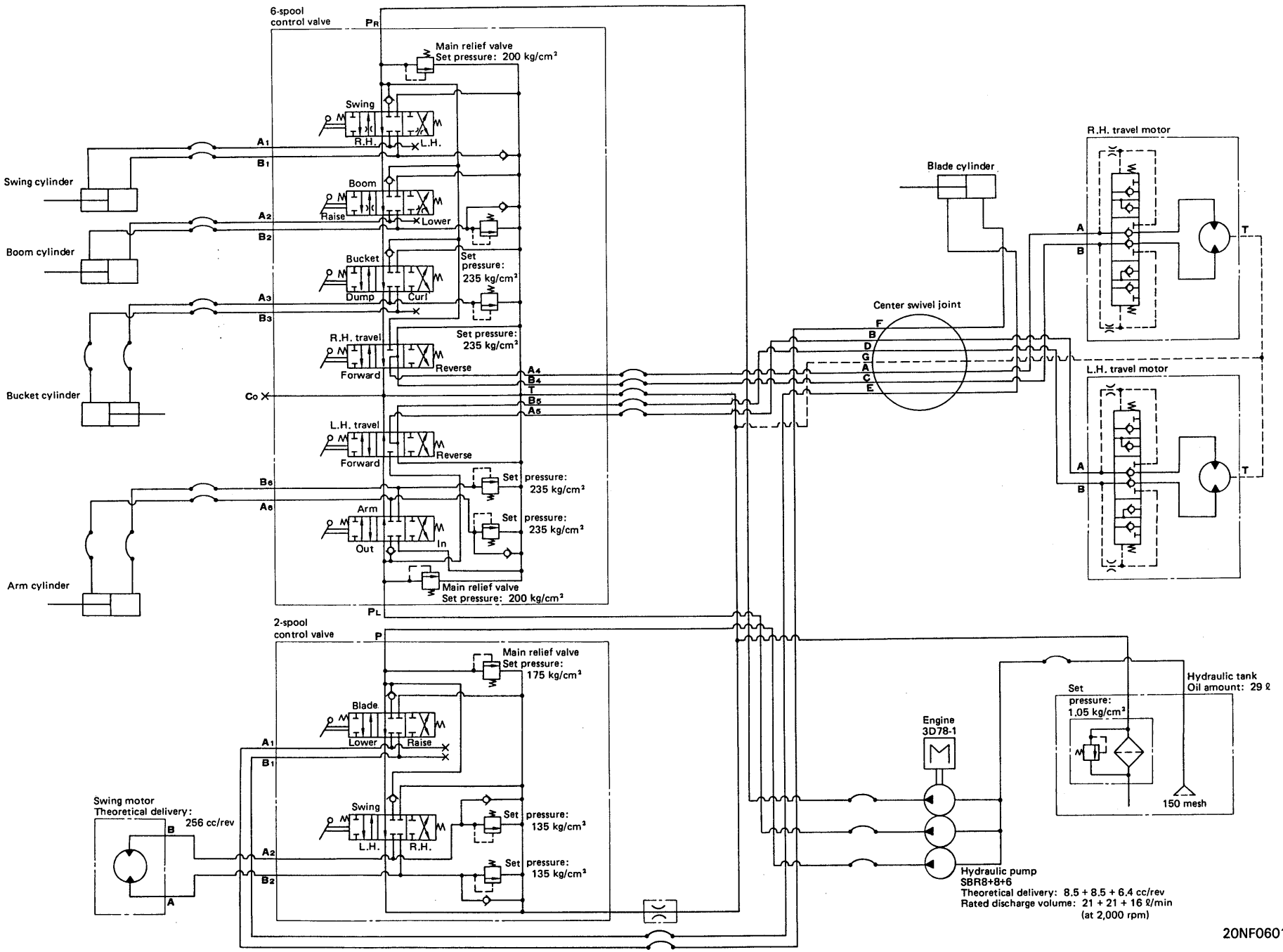

6-spool control valve
PR
Main relief valve
Set pressure: 175 kg/cm²
Swing
R.H.
L.H.
Boom
Raise
Lower
Bucket
Dump
Curl
Set pressure: 210 kg/cm²
R.H. travel
Forward
Reverse
L.H. travel
Arm
In
Out
Main relief valve
Set pressure: 175 kg/cm²
PL
2-spool control valve
P
Main relief valve
Set pressure: 175 kg/cm²
Blade
Lower
Raise
Swing
L.H.
R.H.
Set pressure: 135 kg/cm²
Swing cylinder
Boom cylinder
Bucket cylinder
Arm cylinder
Blade cylinder
Swing motor
Theoretical delivery : 195 cc/rev
Center swivel joint
R.H. travel motor
L.H. travel motor
Engine
3D75-2
Hydraulic pump
SBR8+8+6
Theoretical delivery: 8.5 + 8.5 + 6.4 cc/rev
Rated discharge volume: 21 + 21 + 16 ℓ/min
(at 2,000 rpm)
Hydraulic tank
Oil amount: 29 ℓ
Set pressure: 1.05 kg/cm²
150 mesh
20NF06011-1



020M06

F20M06061A

★ FOR MACHINE WITHOUT SWING–BOOM SWING SELECTOR PEDAL

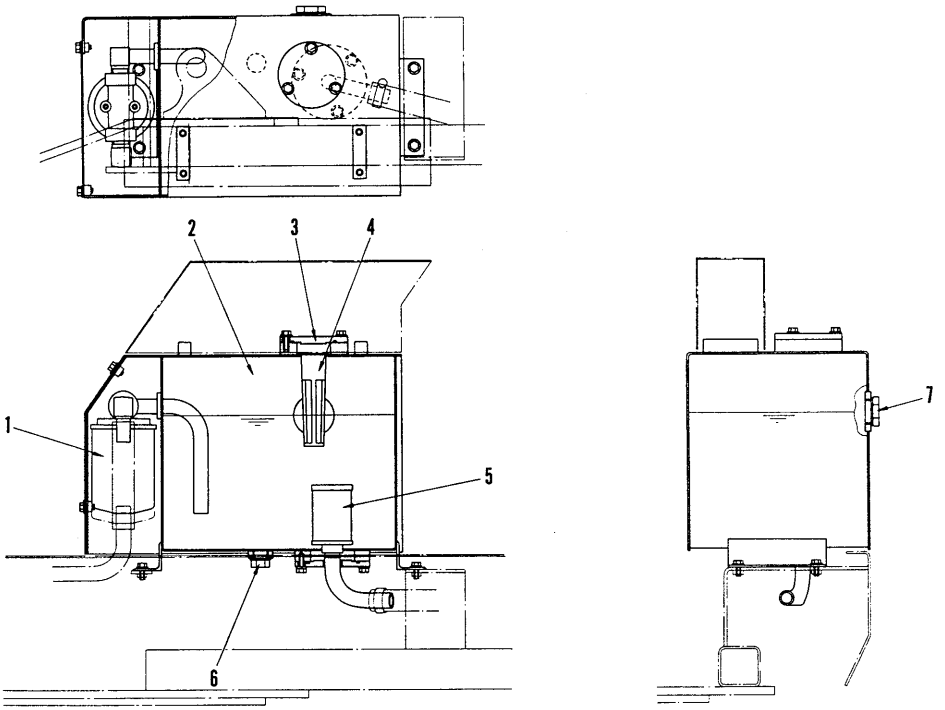


20NF06012-1

020M06

HYDRAULIC TANK

PC05-6, PC07-1



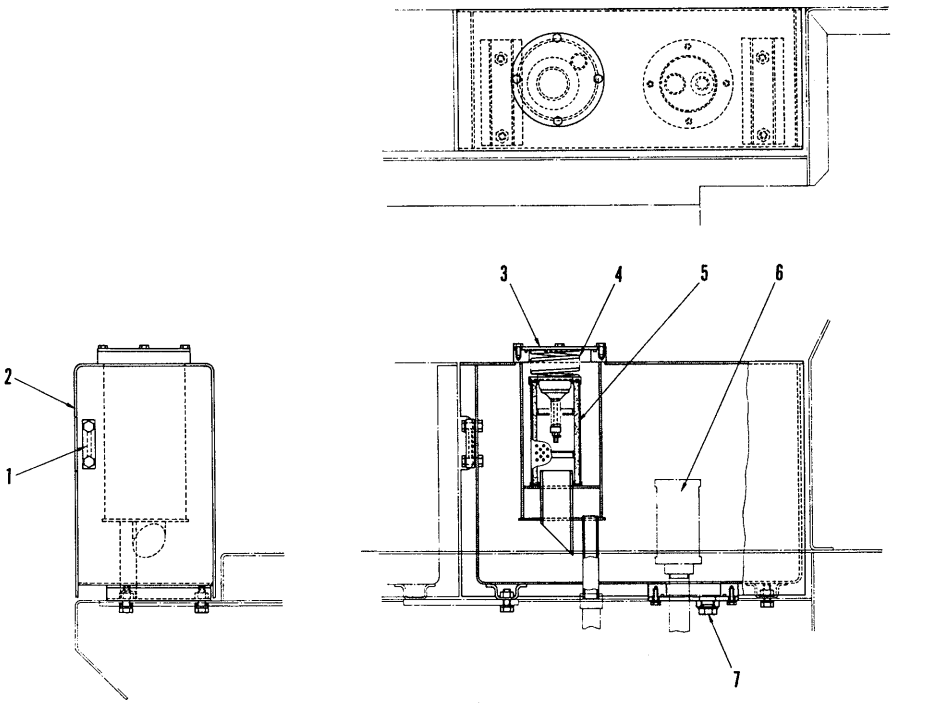
F20M06007

020M06

1. Hydraulic filter
2. Hydraulic tank
3. Cover
4. Strainer
5. Suction strainer
6. Drain plug
7. Sight gauge

SPECIFICATIONS

- Tank capacity : 26.5ℓ
- Oil amount : 18.3ℓ



20NF06013

020M06

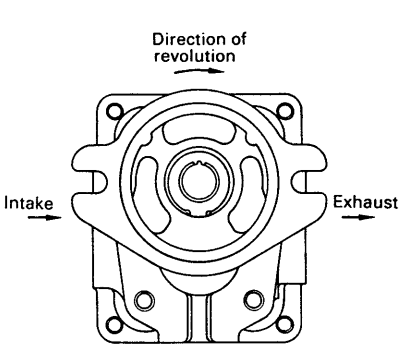
1. Sight gauge
2. Hydraulic tank
3. Cover
4. Safety valve
5. Hydraulic filter
6. Suction strainer
7. Drain plug

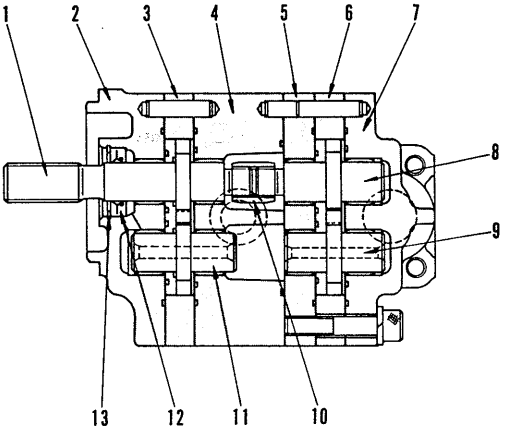
SPECIFICATIONS

- Safety valve
  Set pressure: 1.05 ± 0.2 kg/cm²
- Tank capacity: 46 ℓ
- Oil amount: 29 ℓ

HYDRAULIC PUMP

PC05-6 Serial No. 11301 – 11700





020M06

20MF218

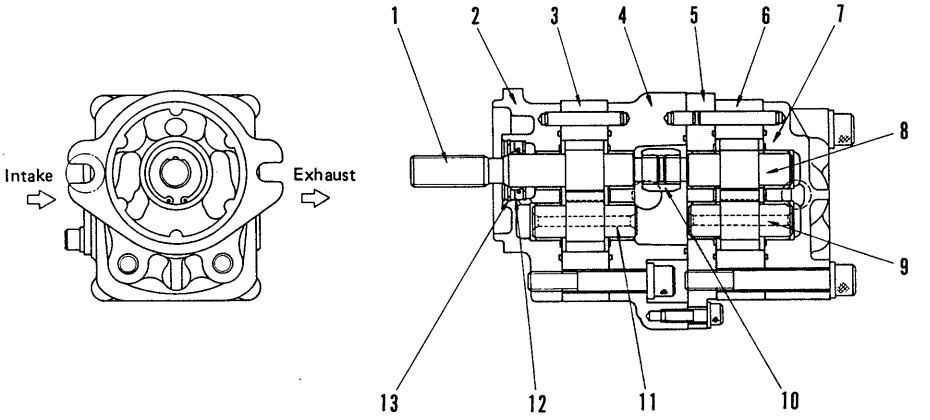
1. Drive gear
2. Bracket
3. Gear case
4. Carrier
5. Bracket
6. Gear case
7. Cover
8. Drive gear
9. Driven gear
10. Coupling
11. Driven gear
12. Oil seal
13. Snap ring

SPECIFICATIONS

- Type: LAR 6 + 6
- Theoretical delivery: 6.4 + 6.4 cc/rev.
- Rated flow: 11.9 + 11.9ℓ/min. (at 2,000 rpm)

HYDRAULIC PUMP

PC05-6 Serial No. 11701 and up
PC07-1



F20M06008-1

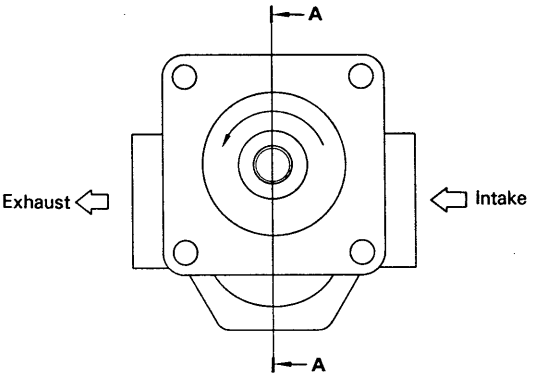
020M06

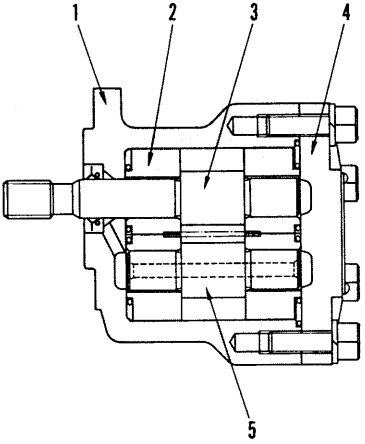
1. Drive gear
2. Bracket
3. Gear case
4. Carrier
5. Bracket
6. Gear case
7. Cover
8. Drive gear
9. Driven gear
10. Coupling
11. Driven gear
12. Oil seal
13. Snap ring

SPECIFICATIONS

• Type:	SBR6+6
• Theoretical delivery:	6.4 + 6.4 cc/rev.
• Rated flow	
PC05-6:	11.9 + 11.9 ℓ/min. (at 2,000 rpm)
PC07-1:	14.3 + 14.3 ℓ/min. (at 2,400 rpm)

2. FLOW INCREASING PUMP





Section A – A

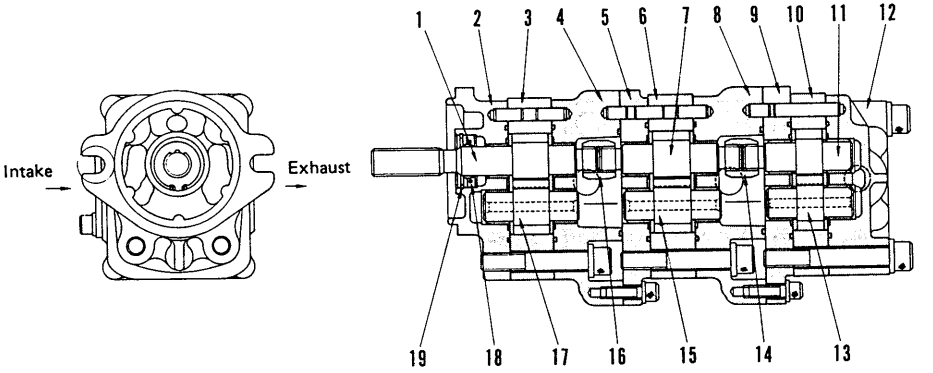
F20M06009

020M06

1. Bracket
2. Side plate
3. Drive gear
4. Cover
5. Driven gear

SPECIFICATIONS

- Theoretical discharge: 7.9 cc/rev
- Max. discharge pressure: 175 kg/cm^2



20NF06014

020M06

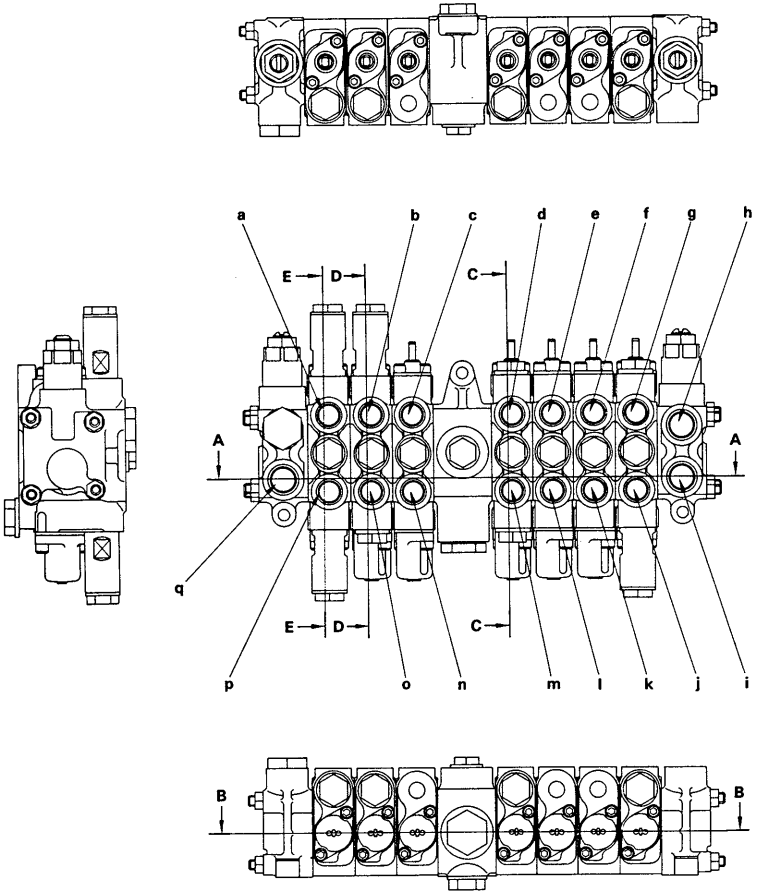
1. Drive gear
2. Bracket
3. Gear case
4. Carrier
5. Bracket
6. Gear case
7. Drive gear
8. Carrier
9. Bracket
10. Gear case
11. Drive gear
12. Cover
13. Driven gear
14. Coupling
15. Driven gear
16. Coupling
17. Driven gear
18. Oil seal
19. Snap ring

SPECIFICATIONS

• Type:	SBR8+8+6
• Theoretical delivery:	8.5 + 8.5 + 6.4 cc/rev.
• Rated flow:	21 + 21 + 16 ℓ/min. (at 2,000 rpm)

7-SPOOL CONTROL VALVE

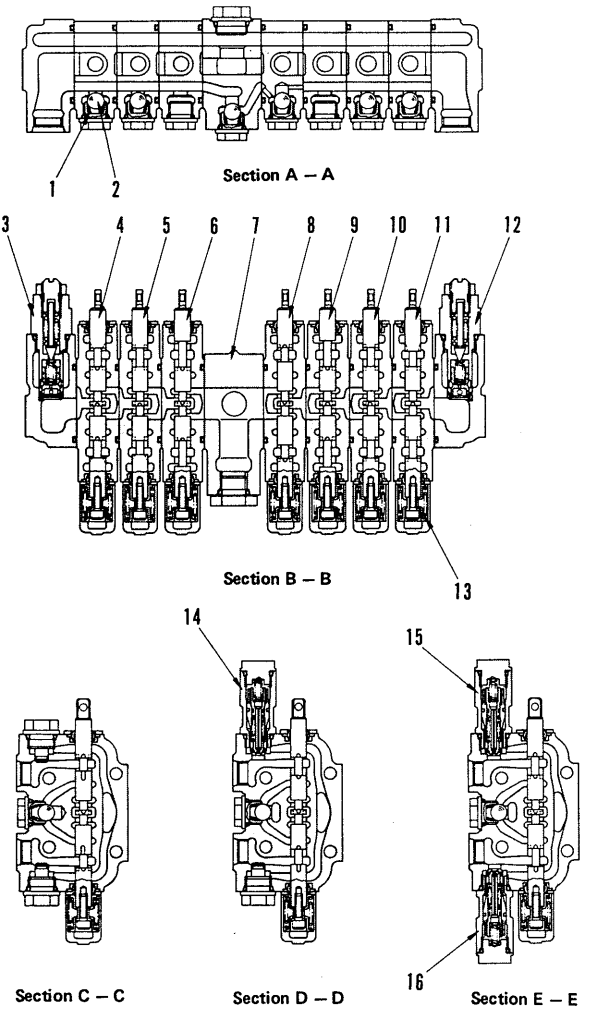
PC05-6, PC07-1



020M06

F20M06010

a. A_7 port (To swing–boom swing selector valve)
b. A_6 port (To arm cylinder bottom side)
c. A_5 port (To L.H. travel motor B Port)
d. A_4 port (To blade cylinder bottom side)
e. A_3 port (To R.H. travel motor A port)
f. A_2 port (To bucket cylinder head side)
g. A_1 port (To boom cylinder bottom side)
h. T port (To tank)
i. P_R port (From hydraulic pump)
j. B_1 port (To boom cylinder head side)
k. B_2 port (To bucket cylinder bottom side)
i. B_3 port (To R.H. travel motor B port)
m. B_4 port (To blade cylinder head side)
n. B_5 port (To L.H. travel motor A port)
o. B_6 port (To arm cylinder head side)
p. B_7 port (To swing–boom swing selector valve)
q. P_L port (From hydraulic pump)



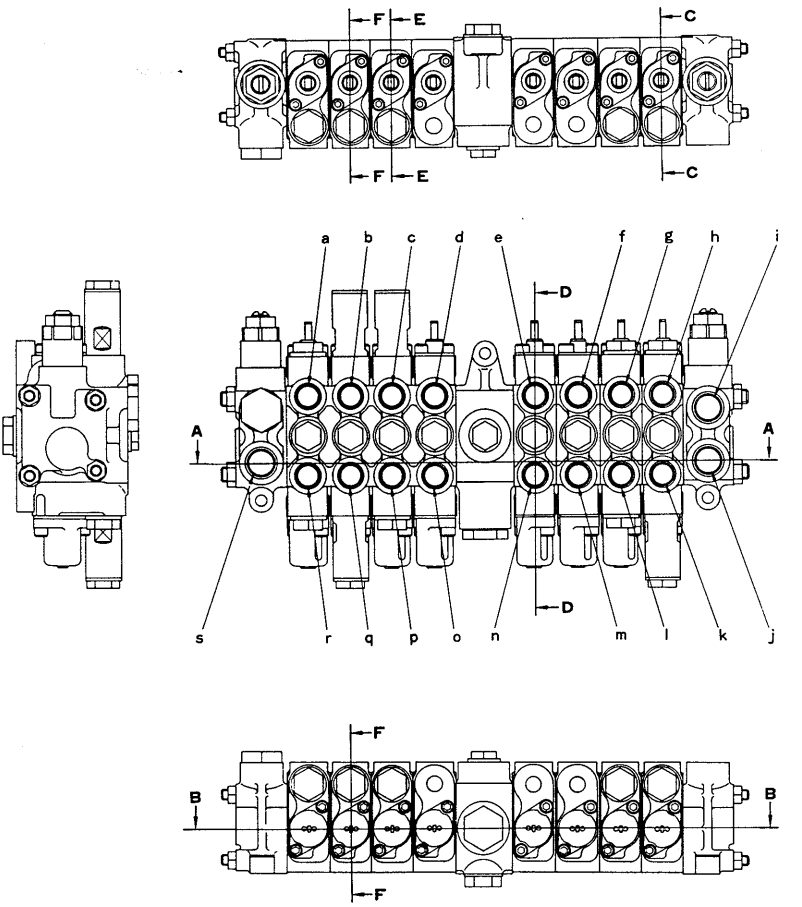
020M06

F20M06011

1. Check valve spring
2. Check valve
3. Main relief valve
4. Spool (Swing/Boom swing)
5. Spool (Arm)
6. Spool (L.H. travel)
7. Center block
8. Spool (Blade)
9. Spool (R.H. travel)
10. Spool (Bucket)
11. Spool (Boom)
12. Main relief valve
13. Spool return spring
14. Safety-suction valve
15. Safety-suction valve
16. Safety-suction valve

8-SPOOL CONTROL VALVE

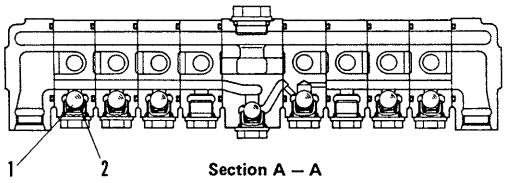
PL05-6, PC07-1



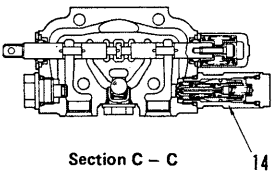
020M06

20MF06010

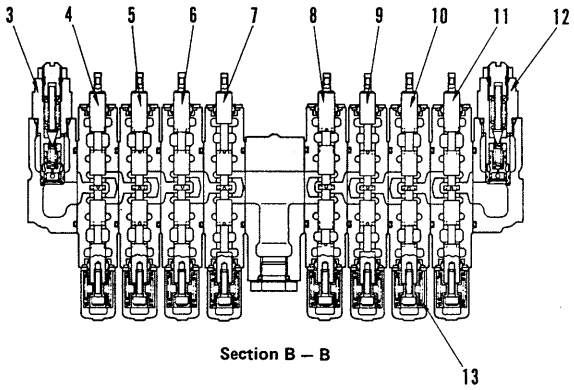
a. A_8 port (To boom swing cylinder bottom side)
b. A_7 port (To swing motor B port)
c. A_6 port (To arm cylinder bottom side)
d. A_5 port (To L.H. travel motor B port)
e. A_4 port (To blade cylinder bottom side)
f. A_3 port (To R.H. travel motor A port)
g. A_2 port (To bucket cylinder head side)
h. A_1 port (To boom cylinder bottom side)
i. T port (To tank)
j. P_R port (From hydraulic pump)
k. B_1 port (To boom cylinder head side)
l. B_2 port (To bucket cylinder bottom side)
m. B_3 port (To R.H. travel motor B port)
n. B_4 port (To blade cylinder head side)
o. B_5 port (To L.H. travel motor A port)
p. B_6 port (To arm cylinder head side)
q. B_7 port (To swing motor A port)
r. B_8 port (To boom swing cylinder head side)
s. P_L port (From hydraulic pump)



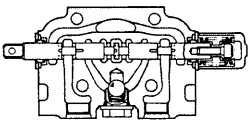
Section A – A



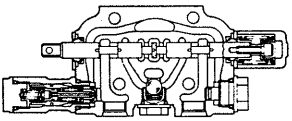
Section C – C



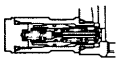
Section B – B



Section D – D



Section E – E



Section F – F

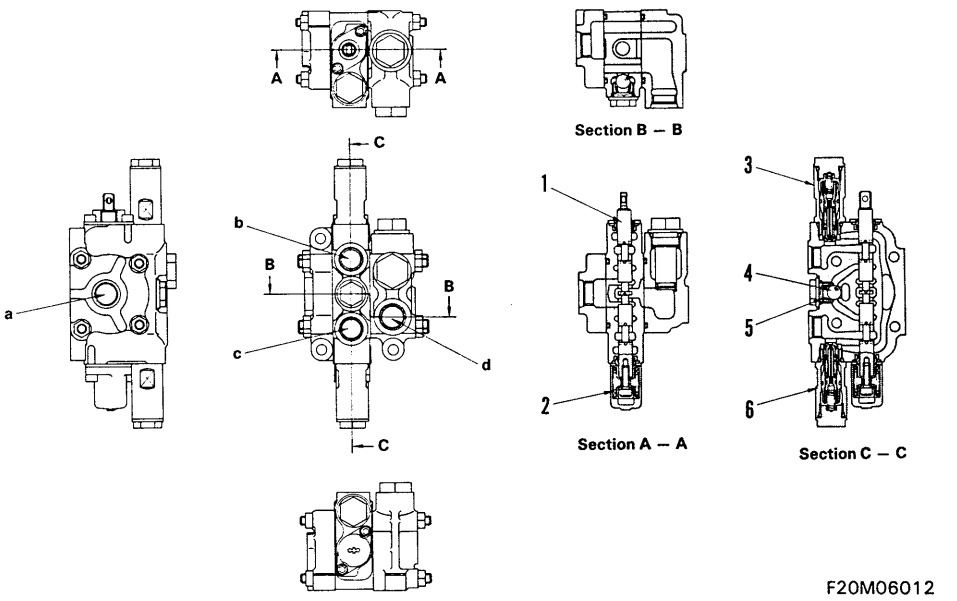
020M06

20MF06011

1. Check valve
2. Check valve spring
3. Main relief valve
4. Spool (boom swing)
5. Spool (swing)
6. Spool (arm)
7. Spool (L.H. travel)
8. Spool (blade)
9. Spool (R.H. travel)
10. Spool (bucket)
11. Spool (boom)
12. Main relief valve
13. Spool return spring
14. Safety–suction valve

1-SPOOL CONTROL VALVE

PC05-6



020M06

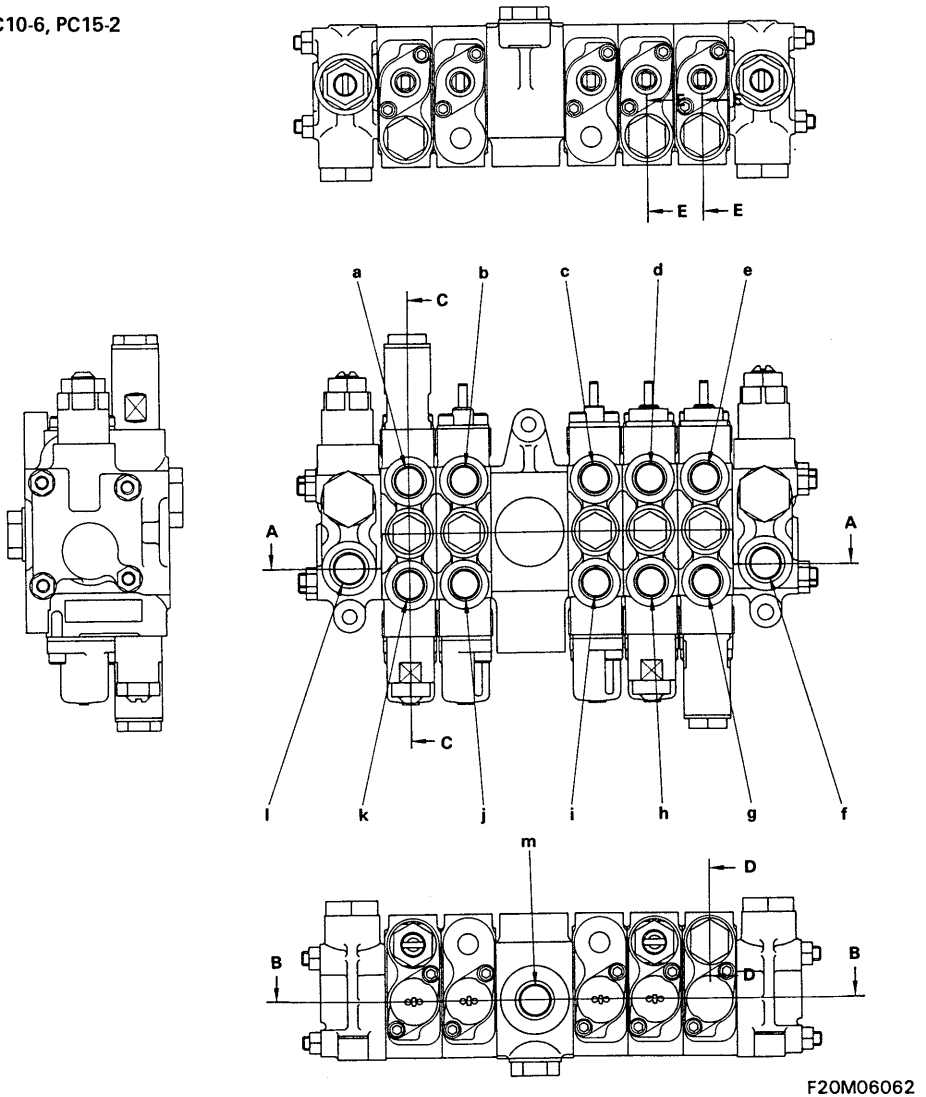
F20M06012

a. T port (To tank)
b. A port (To attachment)
c. B port (To attachment)
d. P port (From hydraulic tank)

1. Spool
2. Spool return spring
3. Safety-suction valve
4. Check valve
5. Check valve spring
6. Safety-suction valve

5-SPOOL CONTROL VALVE

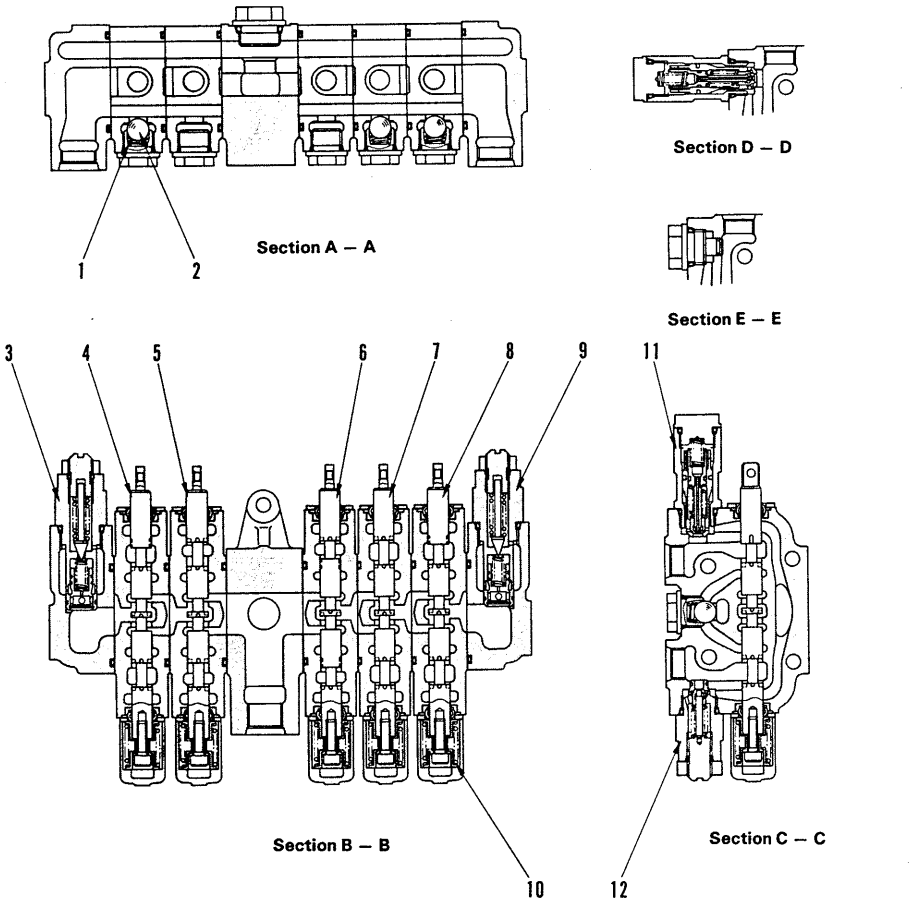
PC10-6, PC15-2



F20M06062

020M06

a. A_5 port (To arm cylinder head side)
b. A_4 port (To L.H. travel motor A port)
c. A_3 port (To R.H. travel motor A port)
d. A_2 port (To bucket cylinder head side)
e. A_1 port (To boom cylinder bottom side)
f. P_R port (Form hydraulic pump)
g. A_1 port (To boom cylinder head side)
h. A_2 port (To bucket cylinder bottom side)
i. A_3 port (To R.H. travel motor B port)
j. A_4 port (To L.H. travel motor B port)
k. A_5 port (To arm cylinder bottom side)
l. P_L port (From hydraulic pump)
m. To port (To tank)



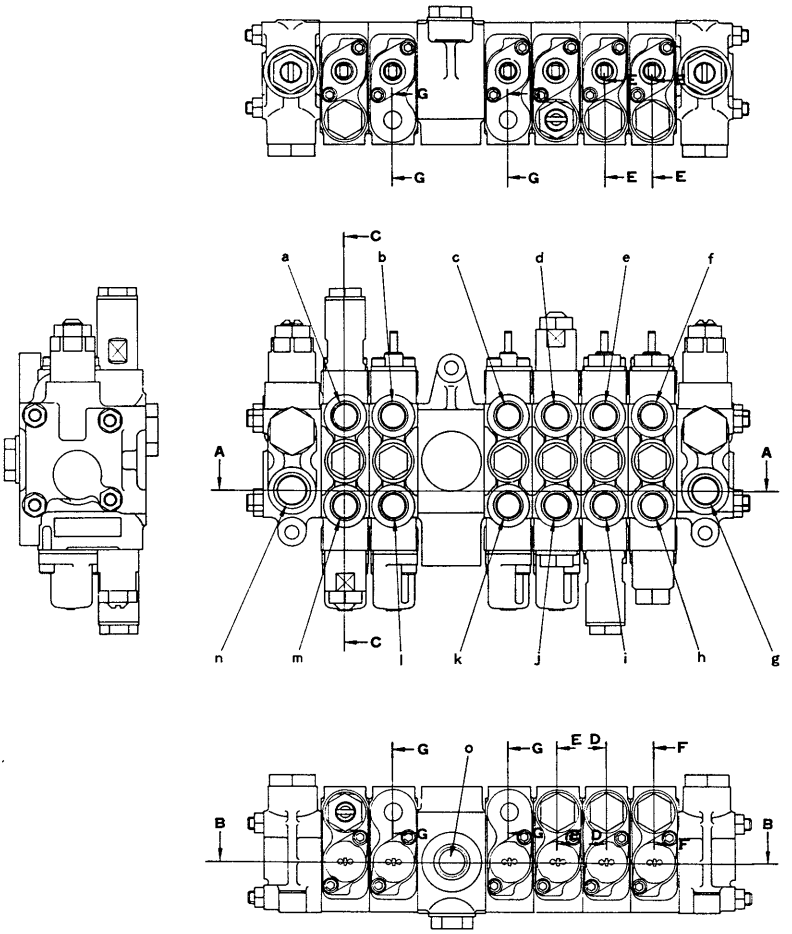
F20M06063

020M06

1. Check valve spring
2. Check valve
3. Main relief valve
4. Spool (Arm)
5. Spool (L.H. travel)
6. Spool (R.H. travel)
7. Spool (Bucket)
8. Spool (Boom)
9. Main relief valve
10. Spool return spring
11. Safety–suction valve
12. Safety valve

6-SPOOL CONTROL VALVE

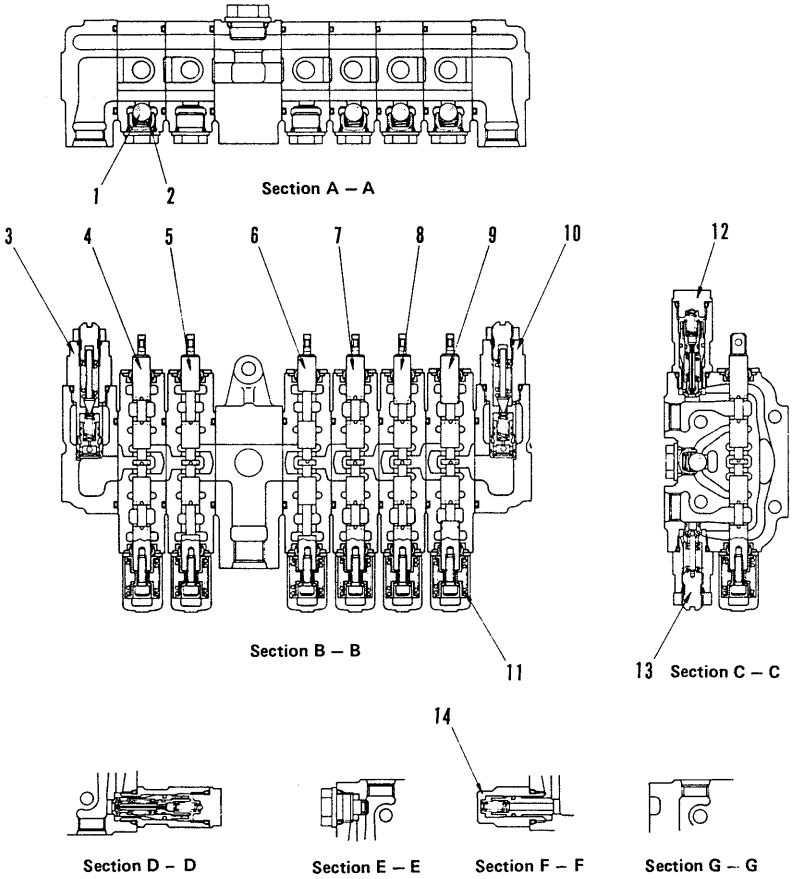
PC10-6, PC15-2



020M06

20NF06015

a. A_6 port (To arm cylinder head side)
b. A_5 port (To L.H. travel motor A port)
c. A_4 port (To R.H. travel motor A port)
d. A_3 port (To bucket cylinder bottom side)
e. A_2 port (To boom cylinder bottom side)
f. A_1 port (To boom swing cylinder head side)
g. P_R port (From hydraulic pump)
h. B_1 port (To boom swing cylinder bottom side)
i. B_2 port (To boom cylinder head side)
j. B_3 port (To bucket cylinder head side)
k. B_4 port (To R.H. travel motor B port)
l. B_5 port (To L.H. travel motor B port)
m. B_6 port (To arm cylinder bottom side)
n. P_L port (From hydraulic pump)
o. T port (To tank)



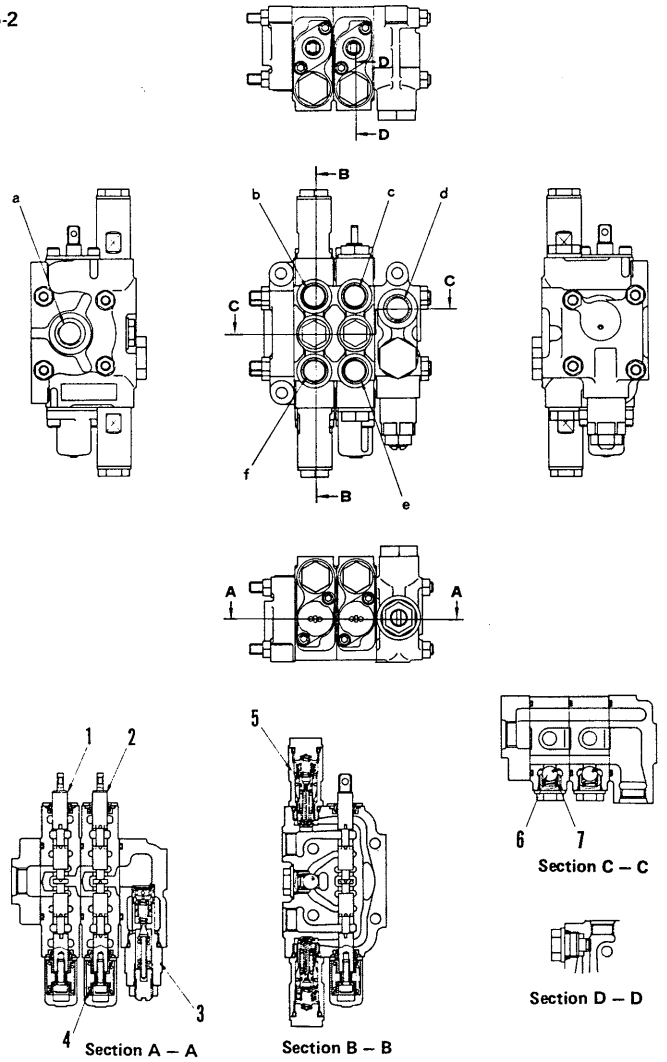
020M06

20NF06016

1. Check valve
2. Check valve spring
3. Main relief valve
4. Spool (Arm)
5. Spool (L.H. travel)
6. Spool (R.H. travel)
7. Spool (Bucket)
8. Spool (Boom)
9. Spool (Boom swing)
10. Main relief valve
11. Spool return spring
12. Safety-suction valve
13. Safety valve
14. Suction valve

2-SPOOL CONTROL VALVE

PC10-6, PC15-2



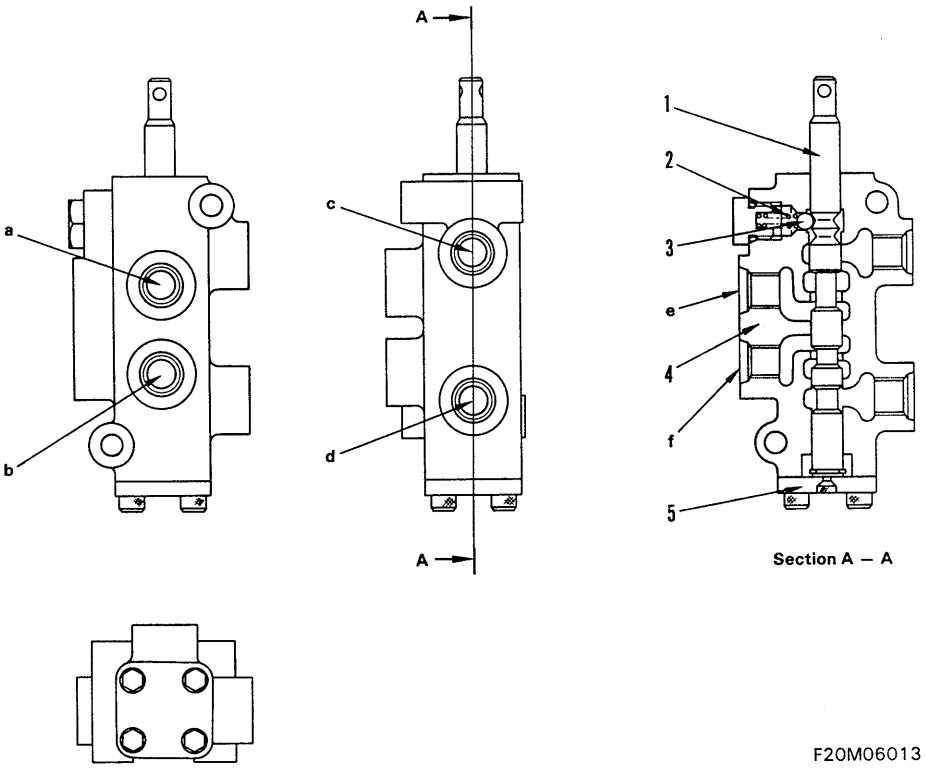
020M06

20NF06017

a. T port (To tank)
b. A_2 port (To swing motor B port)
c. A_1 port (To blade cylinder bottom side)
d. P port (From hydraulic pump)
e. B_1 port (To blade cylinder head side)
f. B_2 port (To swing motor A port)

1. Spool (Swing)
2. Spool (Blade)
3. Main relief valve
4. Spool return spring
5. Safety-suction valve
6. Check valve
7. Check valve spring

SWING – BOOM SWING SELECTOR VALVE



020M06

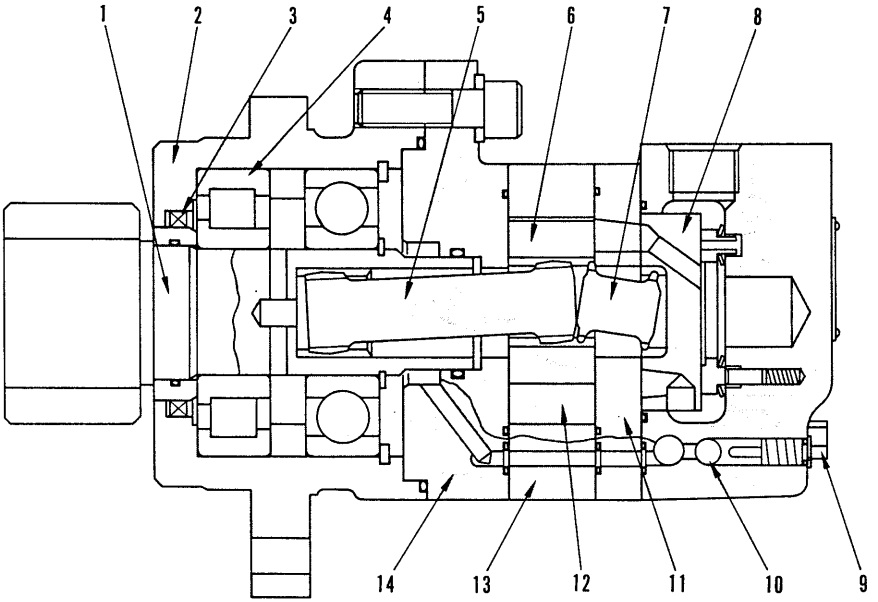
F20M06013

a. B port (From swing/boom swing control valve)
b. A port (From swing/boom swing control valve)
c. D port (To boom swing cylinder head side)
d. C port (To boom swing cylinder bottom side)
e. F port (To swing motor A port)
f. E port (To swing motor B port)

1. Spool
2. Detent spring
3. Detent ball
4. Body
5. Cover

SWING MOTOR

PC05-6, PC07-1, PC10-6



020M06

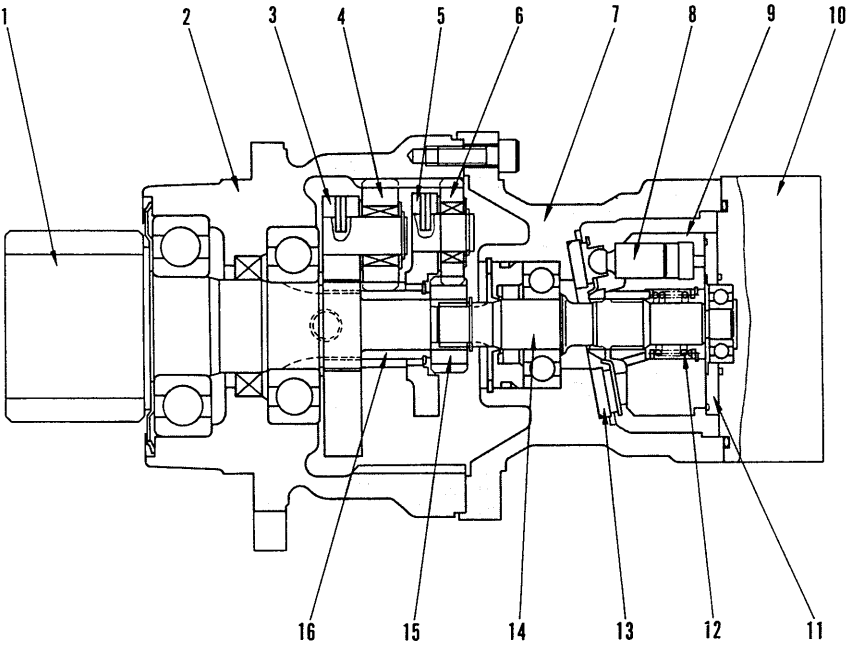
F20M05021

1. Output shaft
2. Flange
3. Oil seal
4. Roller bearing
5. Main drive shaft
6. Geroler star
7. Valve drive shaft
8. Disc valve
9. Bolt
10. Check valve
11. Valve plate
12. Geroler
13. Geroler ring
14. Flange mounting

SPECIFICATIONS

- Type
  - PC05-6: 2-200DOHV-1E
  - PC07-1: 2-250DOHV-1E
  - PC10-6: 2-200CO4HV-E
- Theoretical delivery
  - PC05-6: 195 cc/rev
  - PC07-1: 244 cc/rev
  - PC10-6: 195 cc/rev

PC15-2



020M06

20NF06018

1. Swing pinion
2. Case (ring gear)
3. No.2 planetary carrier
4. No.2 planetary gear
5. No.1 planetary carrier
6. No.1 planetary gear
7. Hosing
8. Piston
9. Cylinder
10. End cap
11. Valve plate
12. Center spring
13. Swash plate
14. Output shaft
15. No.1 sun gear
16. No.2 sun gear

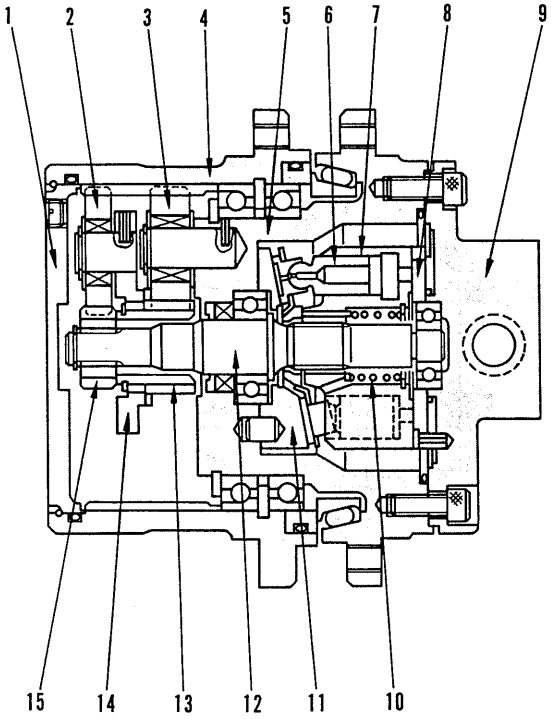
SPECIFICATIONS

- Type: PC-100N-19-6-1027A
- Theoretical delivery: 256 cc/rev
- Reduction ratio: 18.83

TRAVEL MOTOR

PC05-6, PC07-1

1. MOTOR (WITH REDUCTION GEAR)



F20M06014

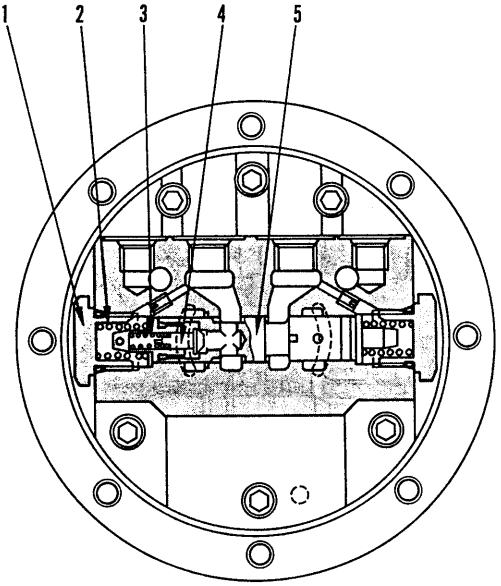
020M06

1. Cover
2. No.2 planetary gear
3. No.1 planetary gear
4. Ring gear
5. Housing
6. Piston
7. Cylinder
8. Valve plate
9. Brake valve
10. Center spring
11. Swash plate
12. Output shaft
13. No.1 sun gear
14. No.2 planetary carrier
15. No.2 sun gear

SPECIFICATIONS

- Type
  PC05-6: PH-100-25-0965A
  PC07-1: PH-100-25-0996A
- Theoretical delivery
  PC05-6: 13.1 cc/rev
  PC07-1: 15.4 cc/rev
- Reduction ratio: 25.26

2. BRAKE VALVE



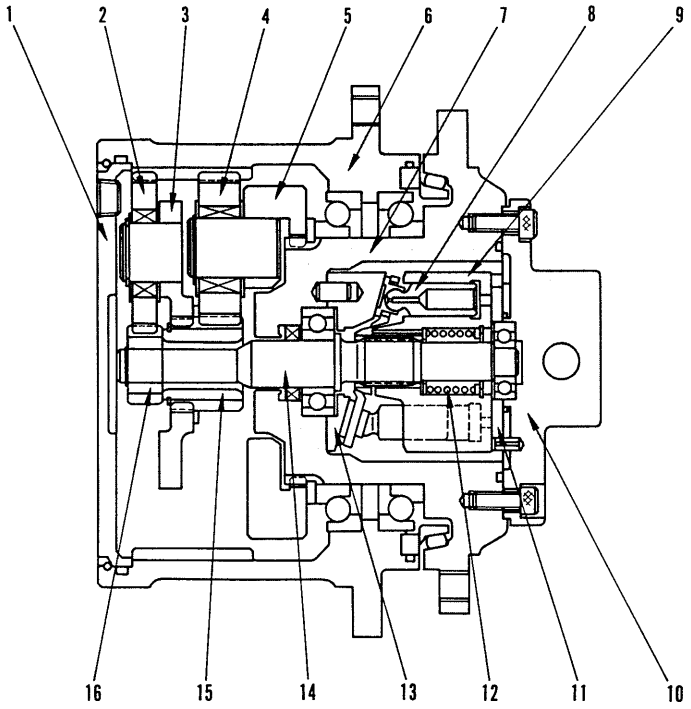
020M06

F20M06016

1. Plug
2. Spool return spring
3. Check valve spring
4. Check valve
5. Spool

PC10-5, PC15-2

1. MOTOR (WITH REDUCTION GEAR)



020M06

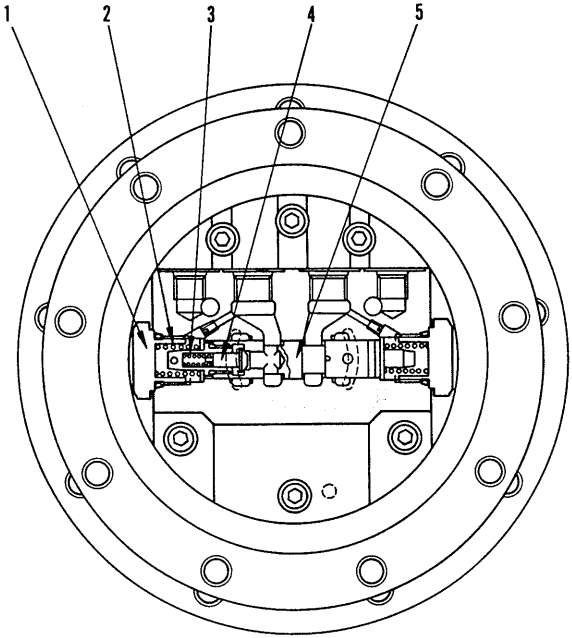
20NF06019

1. Cover
2. No.2 planetary gear
3. No.2 planetary carrier
4. No.1 planetary gear
5. No.1 planetary carrier
6. Ring gear
7. Housing
8. Piston
9. Cylinder
10. Brake valve
11. Valve plate
12. Center spring
13. Swash plate
14. Output shaft
15. No.1 ring gear
16. No.2 ring gear

SPECIFICATIONS

- Type: PH-200N-37-1019A
- Theoretical delivery: 22.1 cc/rev
- Reduction ratio: 36.51

2. BRAKE VALVE



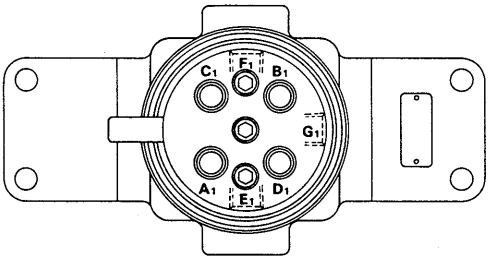
20NF06020

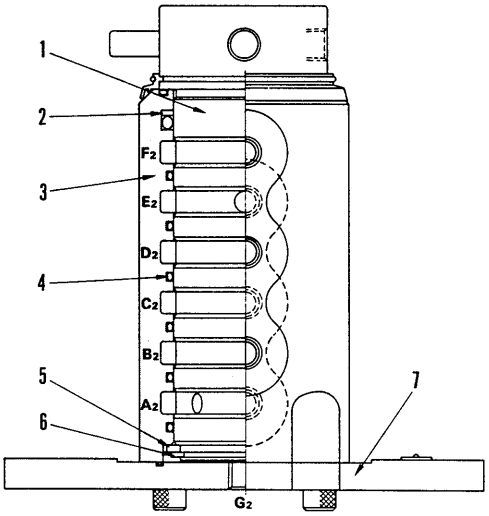
020M06

1. Plug
2. Spool return spring
3. Check valve spring
4. Check valve
5. Spool

CENTER SWIVEL JOINT

PC05-6, PC07-1





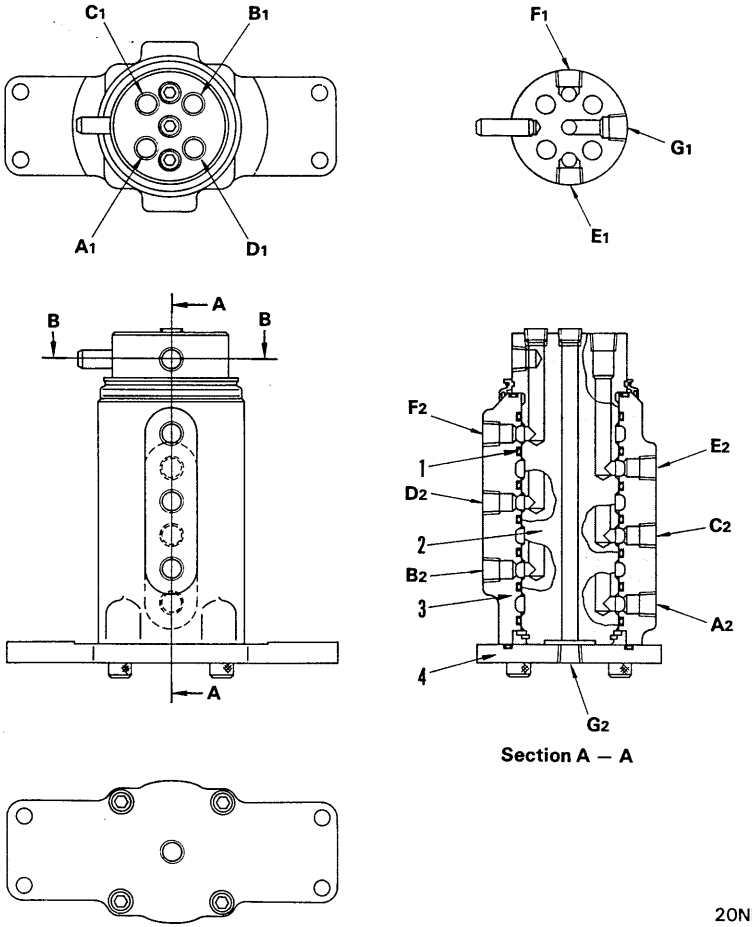
020M06

20MF221

1. Shaft
2. Back up ring
3. Rotor
4. O-ring
5. Thrust washer
6. Snap ring
7. Flange

A_1. From L.H. travel control valve (A port)
A_2. To L.H. travel motor (A port)
B_1. From R.H. travel control valve (B port)
B_2. To R.H. travel motor (B port)
C_1. From L.H. travel control valve (C port)
C_2. To L.H. travel motor (C port)
D_1. From R.H. travel control valve (D port)
D_2. To R.H. travel motor (D port)
E_1. From blade control valve (E port)
E_2. To blade cylinder head side (E port)
F_1. From blade control valve (F port)
F_2. To blade cylinder bottom side (F port)
G_1. To hydraulic tank (G port)
G_2. From travel motor drain port (G port)

PC10-6, PC15-2



020M06

20NF2022

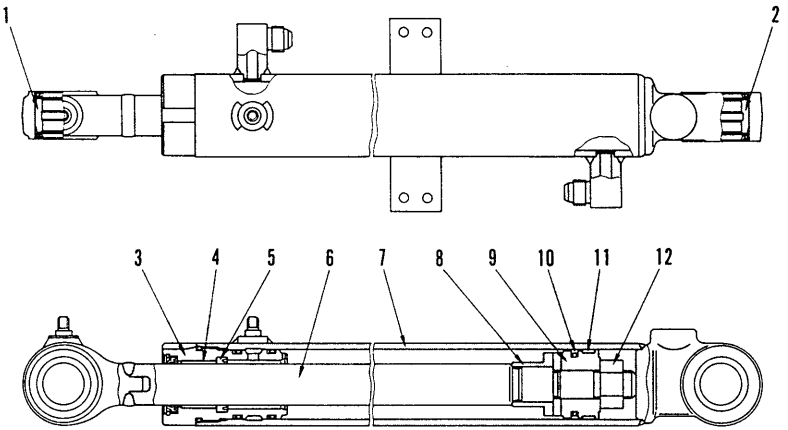
1. O-ring
2. Shaft
3. Rotor
4. Flange

A1. From R.H. travel control valve (A port)
A2. To R.H. travel motor (A port)
B1. From L.H. travel control valve (B port)
B2. To L.H. travel motor (B port)
C1. From R.H. travel control valve (C port)
C2. To R.H. travel motor (C port)
D1. From L.H. travel control valve (D port)
D2. To L.H. travel motor (D port)
E1. From blade control valve (E port)
E2. To blade cylinder head side (E port)
F1. From blade control valve (F port)
F2. To blade cylinder bottom side (F port)
G1. To hydraulic tank (G port)
G2. From travel motor drain port (G port)

HYDRAULIC CYLINDER

1. BOOM CYLINDER

PC05-6

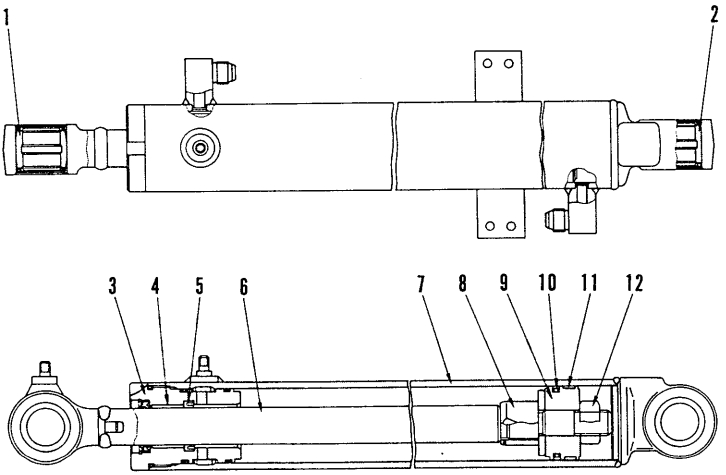


F20M06017

1. Head side bushing
2. Bottom side bushing
3. Cylinder head
4. Bushing
5. Rod packing
6. Piston rod
7. Cylinder
8. Plunger
9. Piston
10. Piston ring
11. Wearing
12. Piston nut

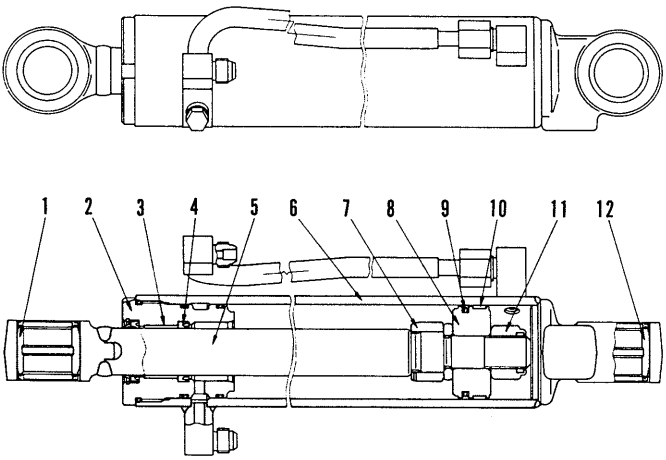
020M06

PC07-1



F20M06064

PC10-6

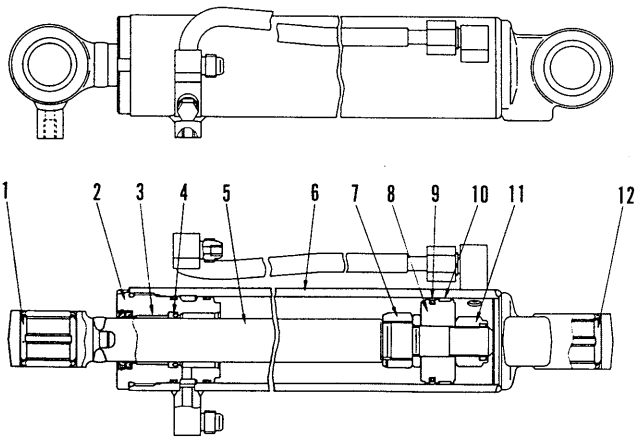


F20M06065

1. Head side bushing
2. Cylinder head
3. Bushing
4. Rod packing
5. Piston rod
6. Cylinder
7. Plunger
8. Piston
9. Piston ring
10. Wearing
11. Piston nut
12. Bottom side bushing

020M06

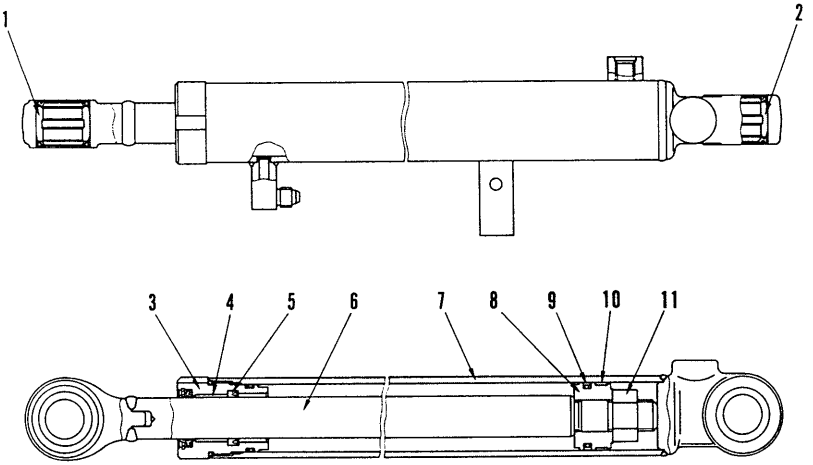
PC15-2 (WITH CANOPY)



F20M06066

2. ARM CYLINDER

PC05-6

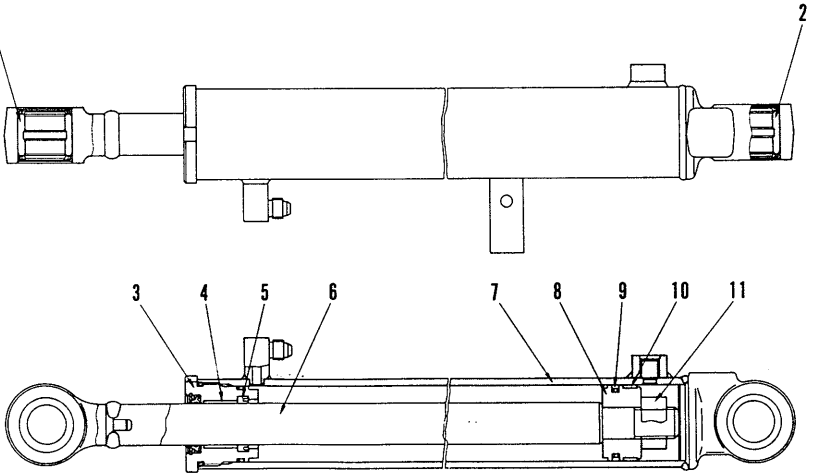


F20M06018A

1. Head side bushing
2. Bottom side bushing
3. Cylinder head
4. Bushing
5. Rod packing
6. Piston rod
7. Cylinder
8. Piston
9. Piston ring
10. Wearing
11. Piston nut

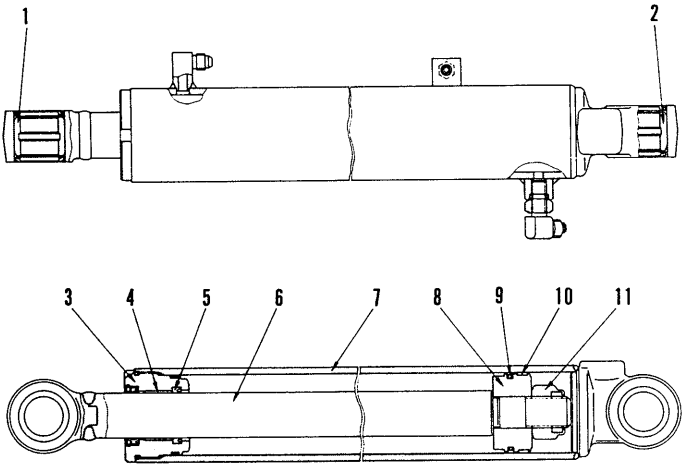
020M06

PC07-1



F20M06067

PC10-6

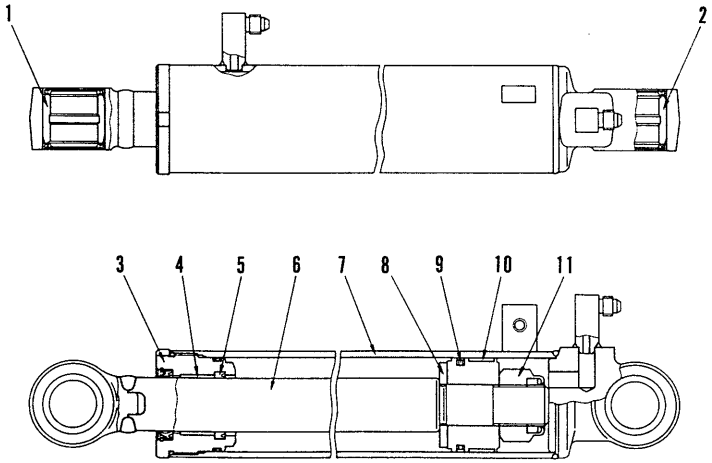


F20M06068

1. Head side tube
2. Bottom side tube
3. Cylinder head
4. Bushing
5. Rod packing
6. Piston rod
7. Cylinder
8. Piston
9. Piston ring
10. Wearing
11. Piston nut

020M06

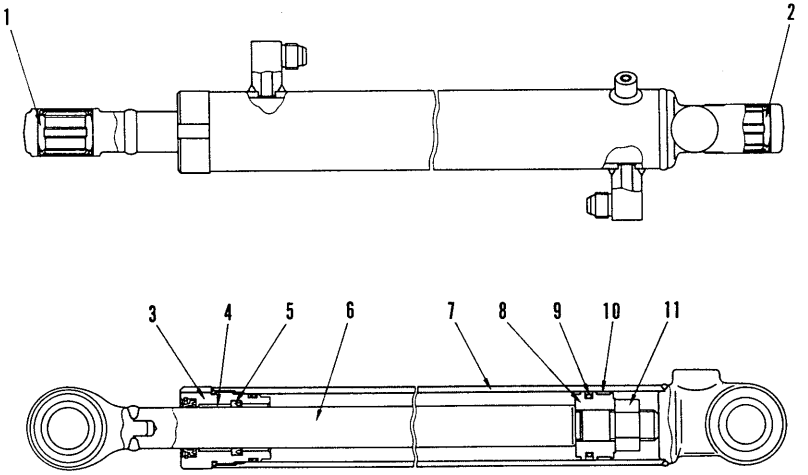
PC15-2



F20M06069

3. BUCKET CYLINDER

PC05-6, PC07-1

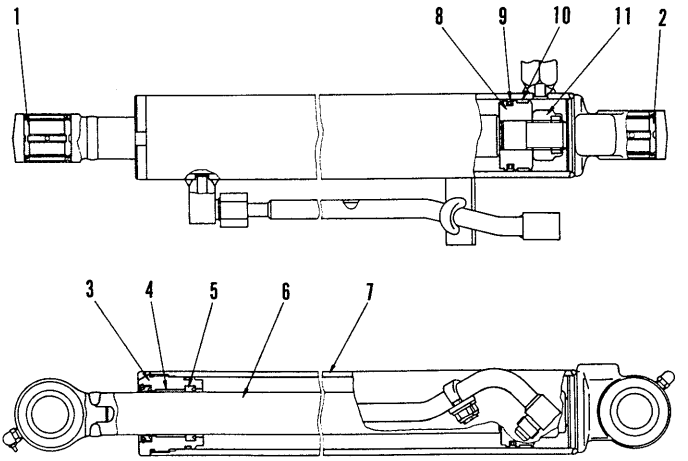


F20M06019

1. Head side bushing
2. Bottom side bushing
3. Cylinder head
4. Bushing
5. Rod packing
6. Piston rod
7. Cylinder
8. Piston
9. Piston ring
10. Wearing
11. Piston nut

020M06

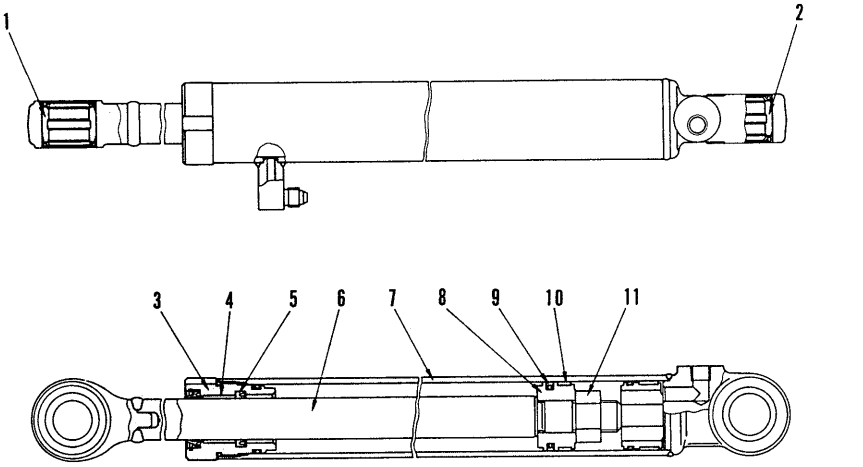
PC10-6, PC15-2



F20M06070

4. BOOM SWING CYLINDER

PC05-6 Serial No. 11301 – 11700

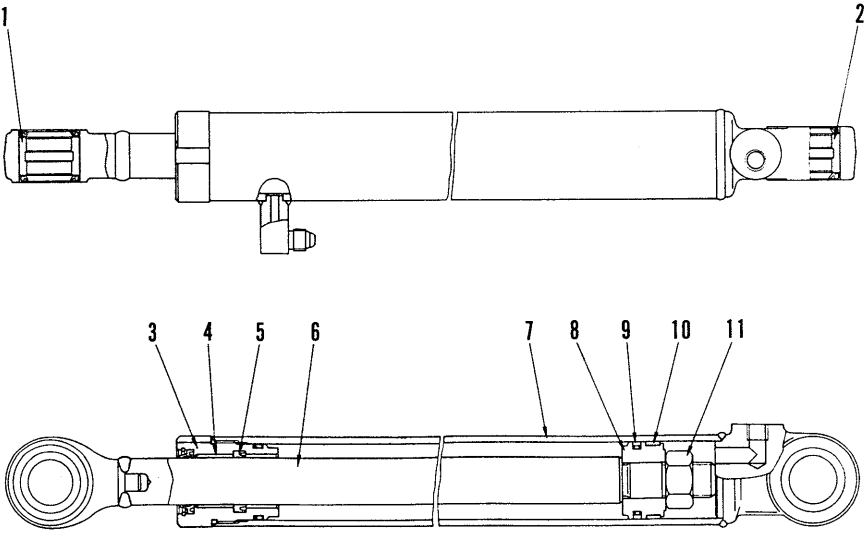


F20M06020

1. Head side bushing
2. Bottom side bushing
3. Cylinder head
4. Bushing
5. Rod packing
6. Piston rod
7. Cylinder
8. Piston
9. Piston ring
10. Wearing
11. Piston nut

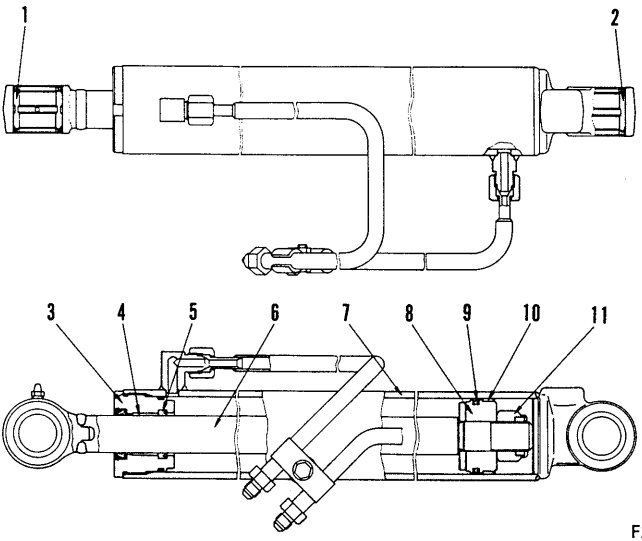
020M06

PC05-6 Serial No. 11701 and up
PC07-1



F20M06071

PC10-6, PC15-2



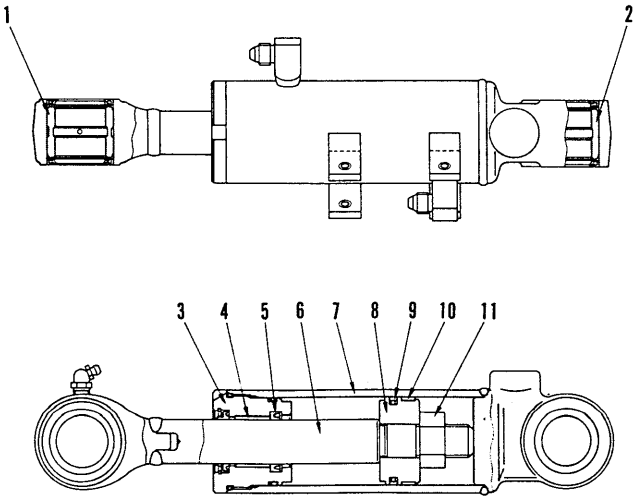
F20M06072

1. Head side tube
2. Bottom side tube
3. Cylinder head
4. Bushing
5. Rod packing
6. Piston rod
7. Cylinder
8. Piston
9. Piston ring
10. Wearing
11. Piston nut

020M06

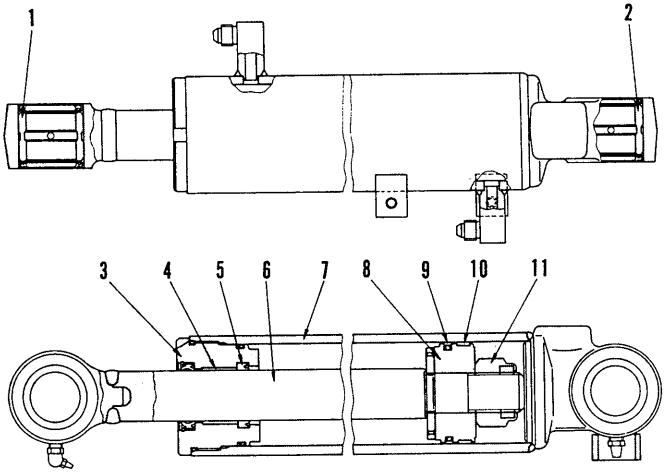
5. BLADE CYLINDER

PC05-6, PC07-1



F20M06021

PC10-6, PC15-2



F20M06073

020M06

1. Head side bushing
2. Bottom side bushing
3. Cylinder head
4. Bushing
5. Rod packing
6. Piston rod
7. Cylinder
8. Piston
9. Piston ring
10. Wearing
11. Piston nut

SPECIFICATIONS

PC05-6 (FOR MACHINE EQUIPPED WITH SWING–BOOM SWING SELECTOR PEDAL)

Unit: mm

Item \ Cylinder	Boom		Arm	Bucket	Boom swing	Blade
	With canopy	With cab				
Piston rod outside diameter	30 (30)	–	30	30	30 (30)	30
Cylinder inside diameter	50 (50)	–	50	50	50 (50)	60
Piston stroke	339.2 (353)	–	442	385	287.5 (318)	60
Cylinder max. length	974.2 (988)	–	1,048	1,034	908 (908)	393
Cylinder min. length	635 (635)	–	706	649	620.5 (590)	333
Piston nut width across flat	32 (32)	–	32	32	32 (32)	32

( ): 90° right boom swing specification.

PC05-6 (FOR MACHINE WITHOUT SWING–BOOM SWING SELECTOR PEDAL)

Unit: mm

Item \ Cylinder	Boom		Arm	Bucket	Boom swing	Blade
	With canopy	With cab				
Piston rod outside diameter	30	30	30	30	30	30
Cylinder inside diameter	50	50	50	50	50	60
Piston stroke	353	339.2	442	385	318	60
Cylinder max. length	988	974.2	1,048	1,034	908	393
Cylinder min. length	635	635	706	649	590	333
Piston nut width across flat	32	32	32	32	32	32

PC07-1

Unit: mm

Item \ Cylinder	Boom		Arm	Bucket	Boom swing	Blade
	With canopy	With cab				
Piston rod outside diameter	30	–	30	30	30	30
Cylinder inside diameter	60	–	55	50	50	60
Piston stroke	355	–	435	385	318	60
Cylinder max. length	982	–	1,141	1,034	908	393
Cylinder min. length	627	–	706	649	590	333
Piston nut width across flat	30	–	32	32	32	32

020M06

PC10-6

Unit: mm

Item \ Cylinder	Boom		Arm	Bucket	Boom swing	Blade
	With canopy	With cab				
Piston rod outside diameter	35	35	40	35	35	35
Cylinder inside diameter	70	70	70	60	70	70
Piston stroke	510	465	475	480	520	135
Cylinder max. length	1,280	1,235	1,210	1,200	1,300	545
Cylinder min. length	770	770	735	720	780	410
Piston nut width across flat	36	36	41	36	41	41

PC15-2

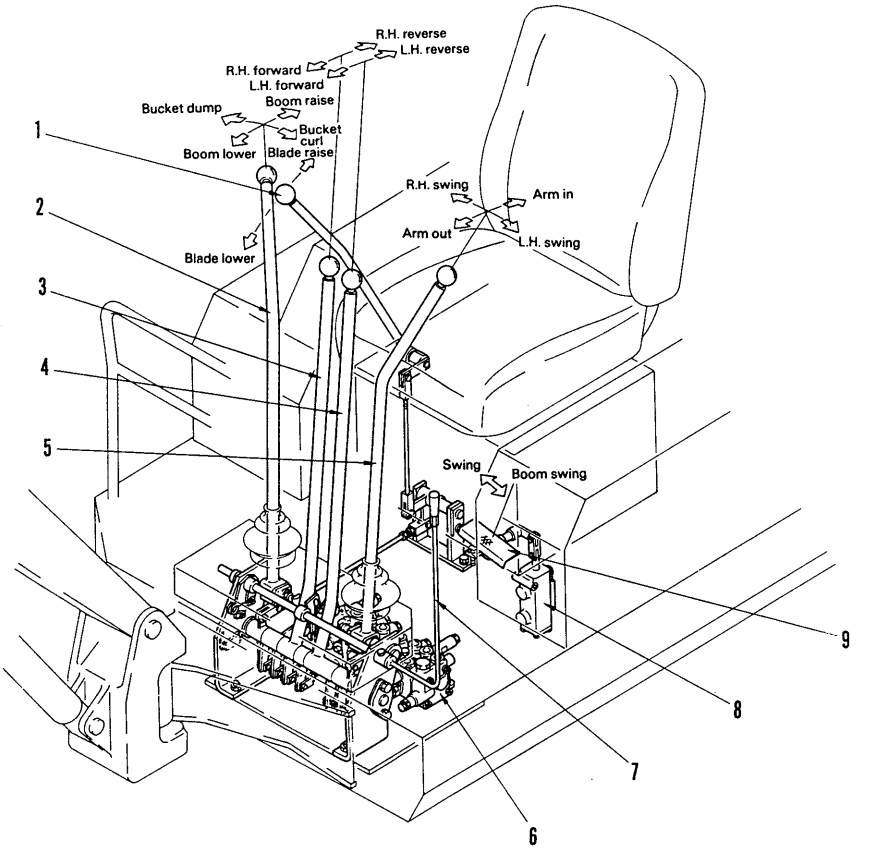
Unit: mm

Item \ Cylinder	Boom		Arm	Bucket	Boom swing	Blade
	With canopy	With cab				
Piston rod outside diameter	40	40	40	35	35	35
Cylinder inside diameter	70	70	70	60	70	70
Piston stroke	525	485	475	480	520	135
Cylinder max. length	1,315	1,275	1,215	1,200	1,300	545
Cylinder min. length	790	790	740	720	780	410
Piston nut width across flat	41	41	46	36	41	41

020M06

VALVE CONTROL

PC05-6, PC07-1

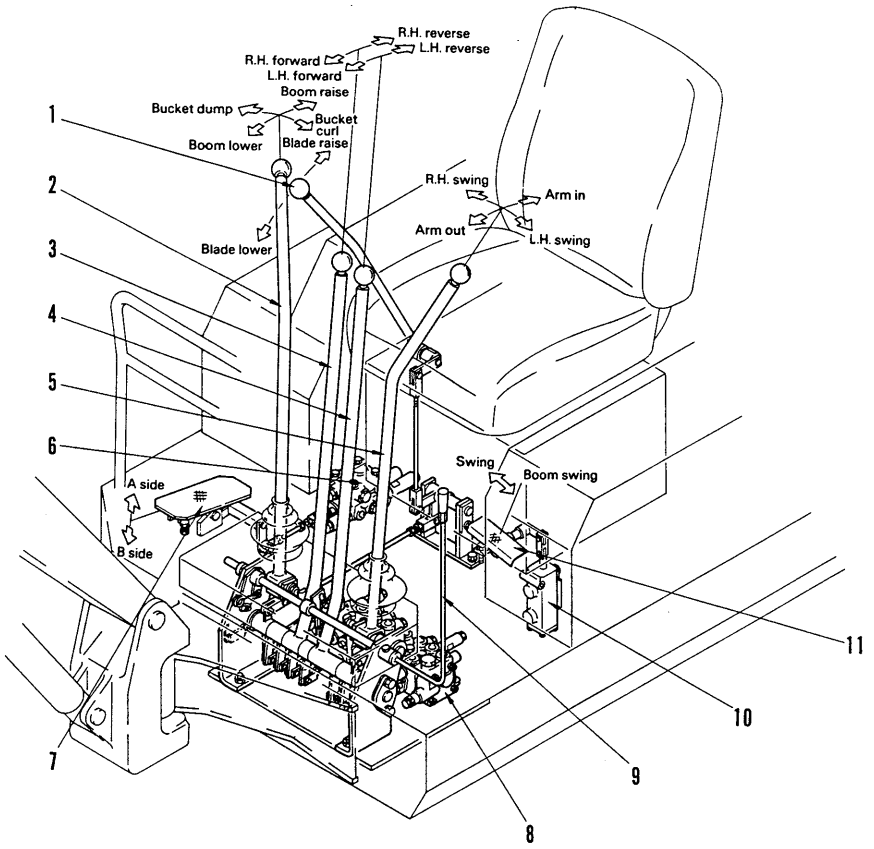


F20M06022

020M06

1. Blade control lever
2. R.H. work equipment control lever
3. R.H. travel control lever
4. L.H. travel control lever
5. L.H. work equipment control lever
6. 7-Spool control valve
7. Safety lock lever
8. Swing–boom swing selector valve
9. Swing–boom swing selector pedal

PC05-6, PC07-1

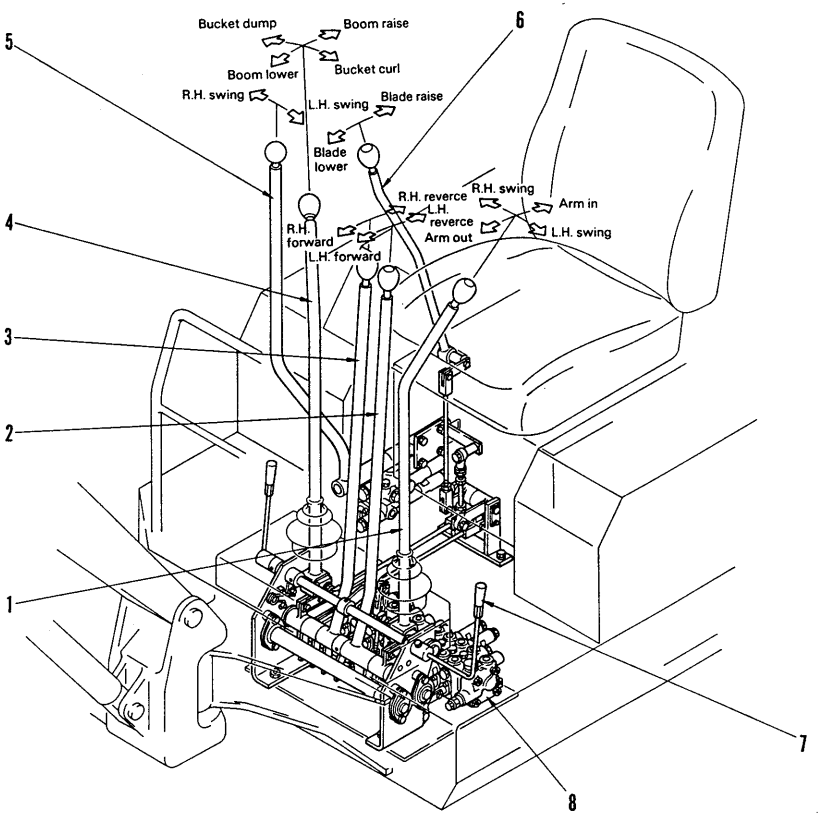


F20M06023

020M06

1. Blade control lever
2. R.H. work equipment control lever
3. R.H. travel control lever
4. L.H. travel control lever
5. L.H. work equipment control lever
6. 1-spool control valve
7. Additional control pedal
8. 7-spool control lever
9. Safety lock lever
10. Swing–boom swing selector valve
11. Swing–boom swing selector pedal

PC05-6, PC07-1

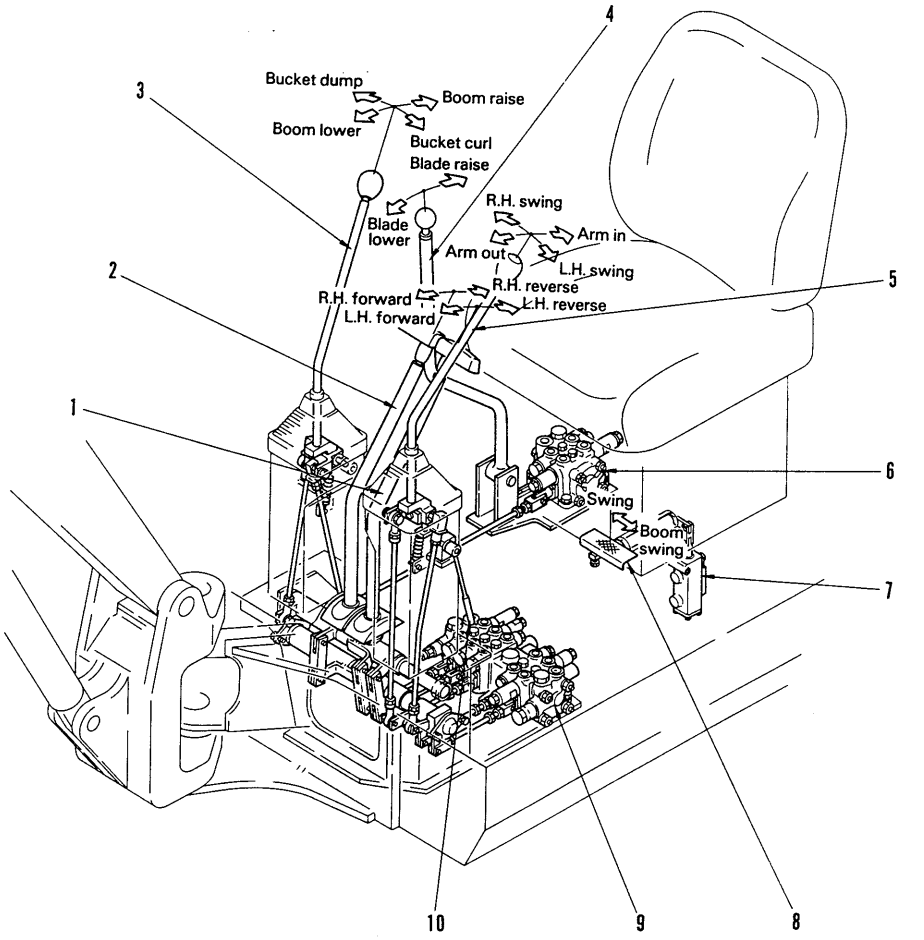


020M06

F20M06074

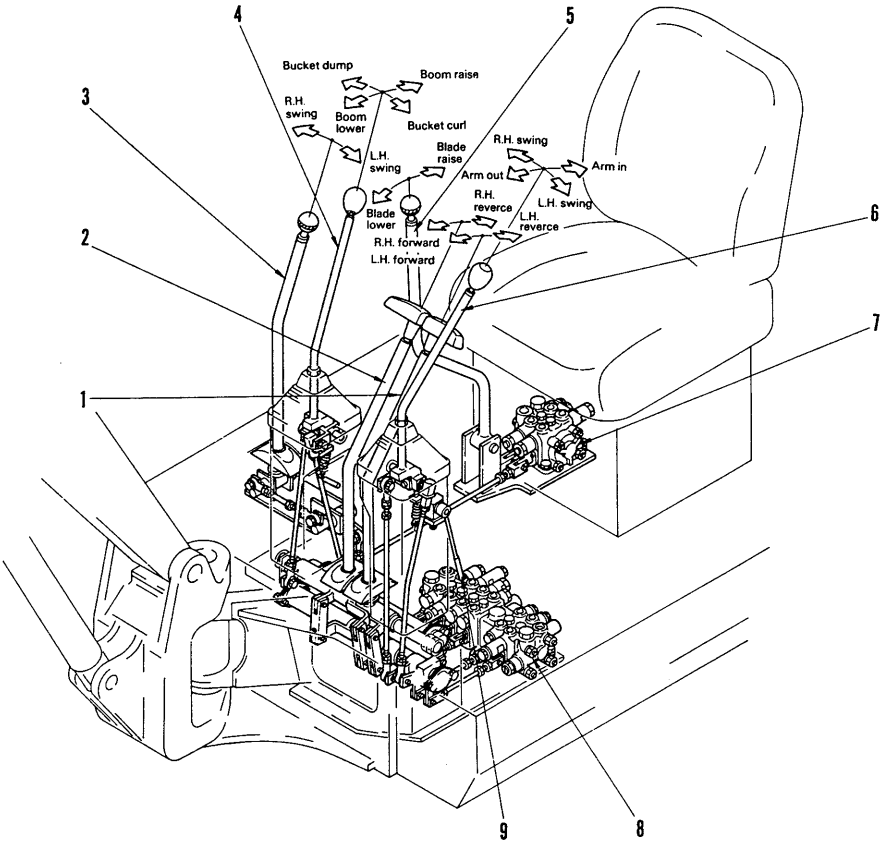
1. L.H. work equipment control lever
2. L.H. travel control lever
3. R.H. travel control lever
4. R.H. work equipment control lever
5. Boom swing control lever
6. Blade control lever
7. Safety lock lever
8. 8-spool control lever

PC10-6, PC15-2



1. L.H. travel control lever
2. R.H. travel control lever
3. R.H. work equipment control lever
4. Blade control lever
5. L.H. work equipment control lever
6. 2-spool control valve
7. Swing–boom swing control valve
8. Swing–boom swing control pedal
9. 5-spool control valve
10. Safety lock lever

PC10-6, PC15-2



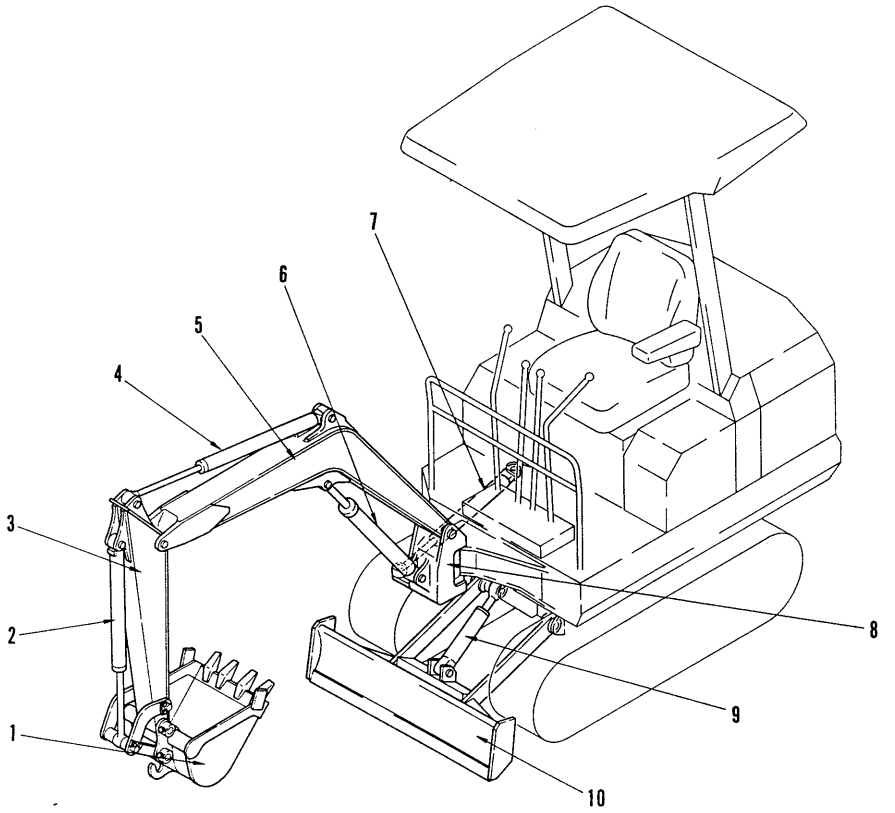
020M06

F20M06076

1. L.H. travel control lever
2. R.H. travel control lever
3. Boom swing control lever
4. R.H. work equipment control lever
5. Blade control lever
6. L.H. work equipment control lever
7. 2-spool control lever
8. 6-spool control lever
9. Safety lock lever

WORK EQUIPMENT

PC05-6, PC15-2

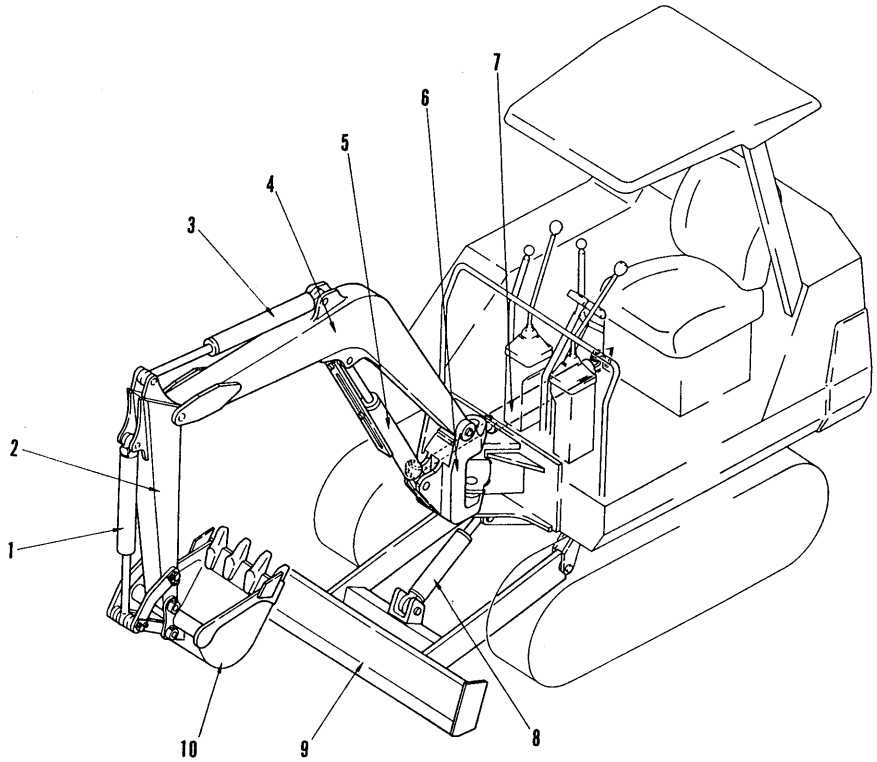


020M06

F20M06024

1. Bucket
2. Bucket cylinder
3. Arm
4. Arm cylinder
5. Boom
6. Boom cylinder
7. Boom swing cylinder
8. Boom swing bracket
9. Blade cylinder
10. Blade

020M06

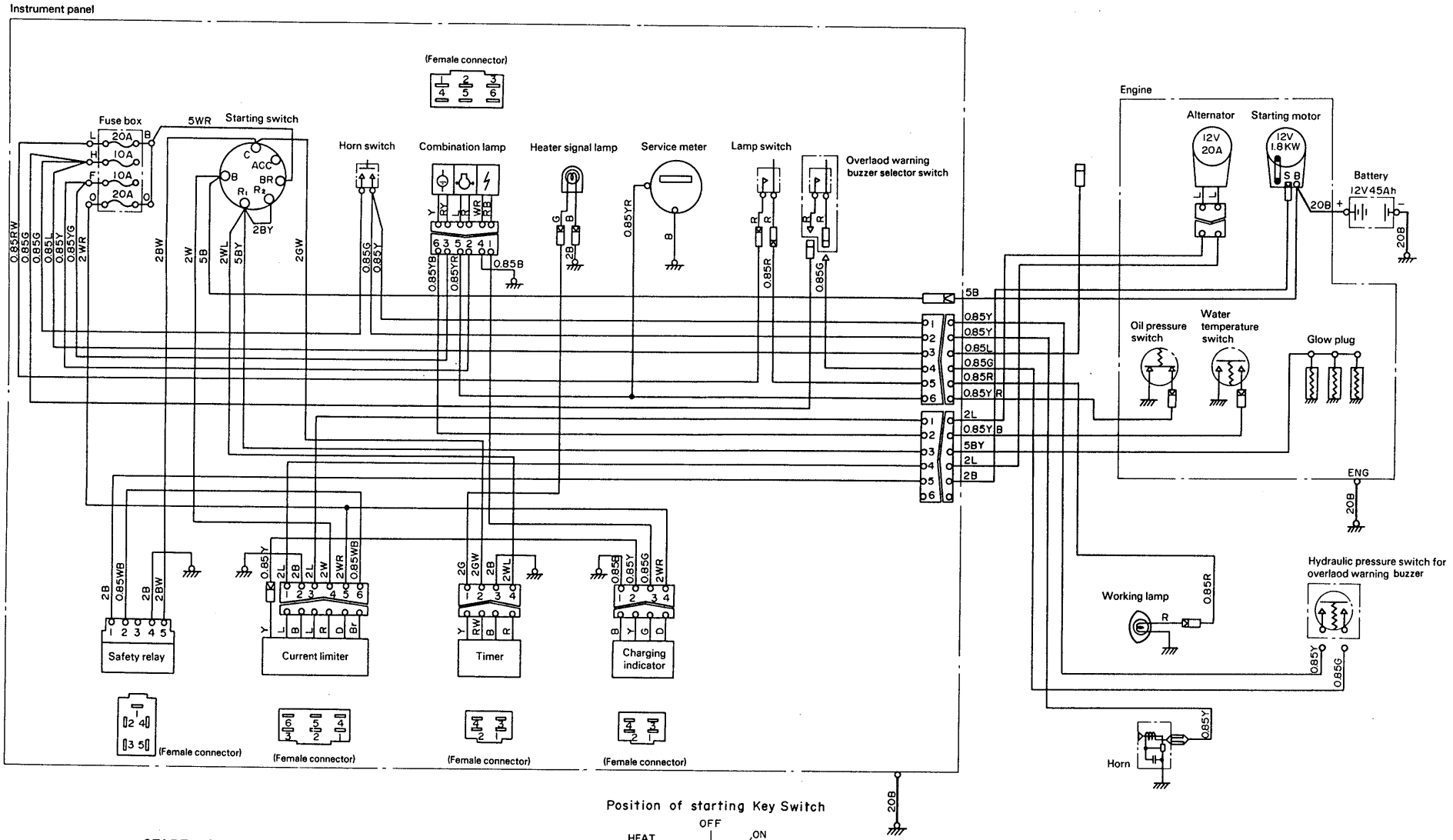


20NF06022

1. Bucket cylinder
2. Arm
3. Arm cylinder
4. Boom
5. Boom cylinder
6. Swing bracket
7. Swing cylinder
8. Blade cylinder
9. Blade
10. Bucket

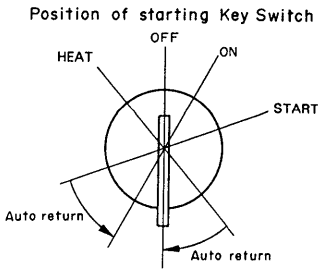
ELECTRICAL CIRCUIT DIAGRAM

PC05-6 Serial No. 11301 – 11700



STARTING SWITCH CONNECTING TABLE

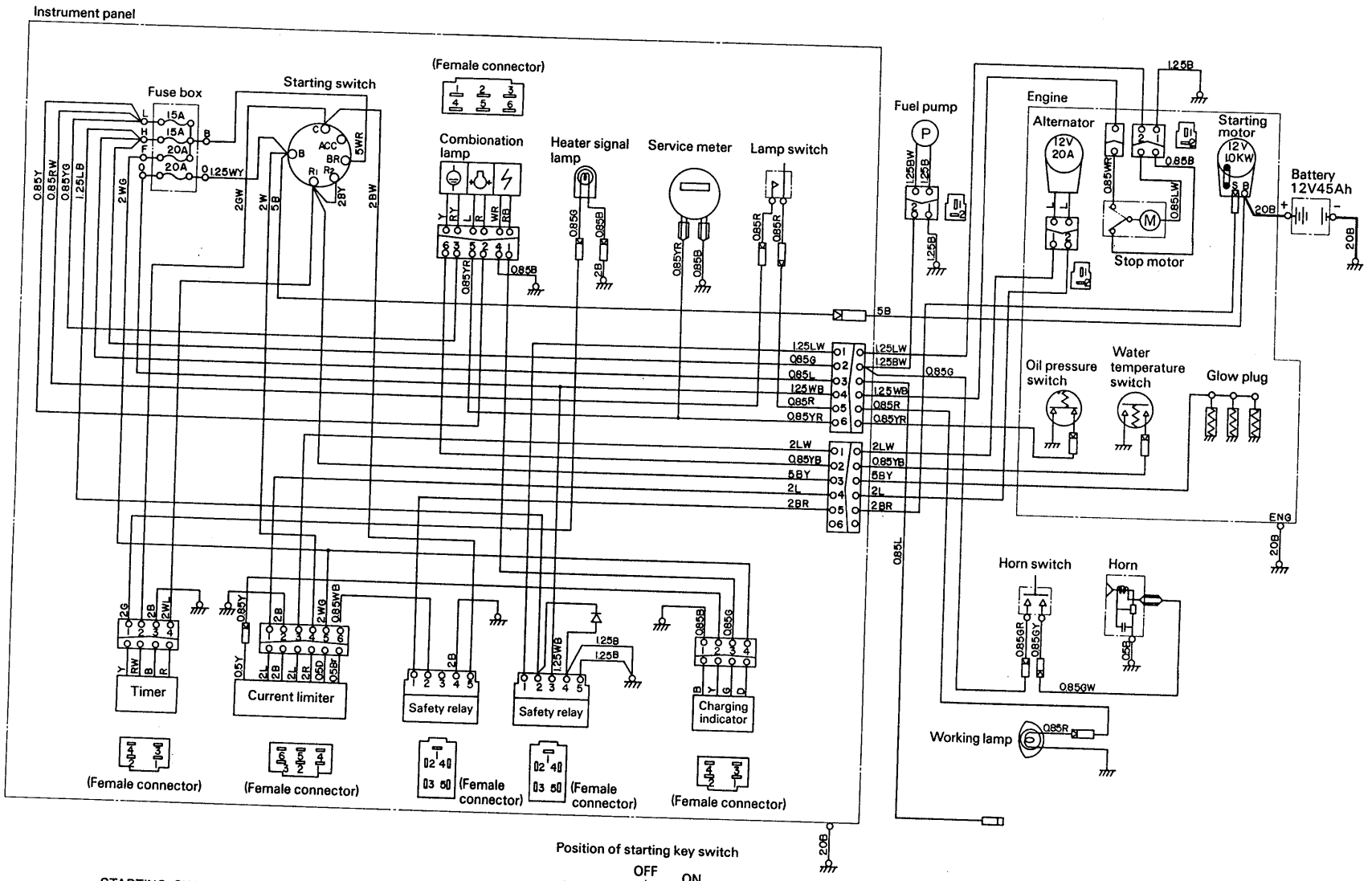
Key position \ Terminal	B	BR	R_1	R_2	C	ACC
HEAT	○	○	○			○
OFF	○					
ON	○	○				○
START	○	○		○	○	○



F20M06025

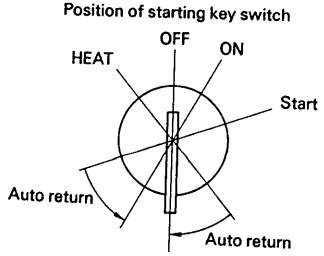
020M06

020M06

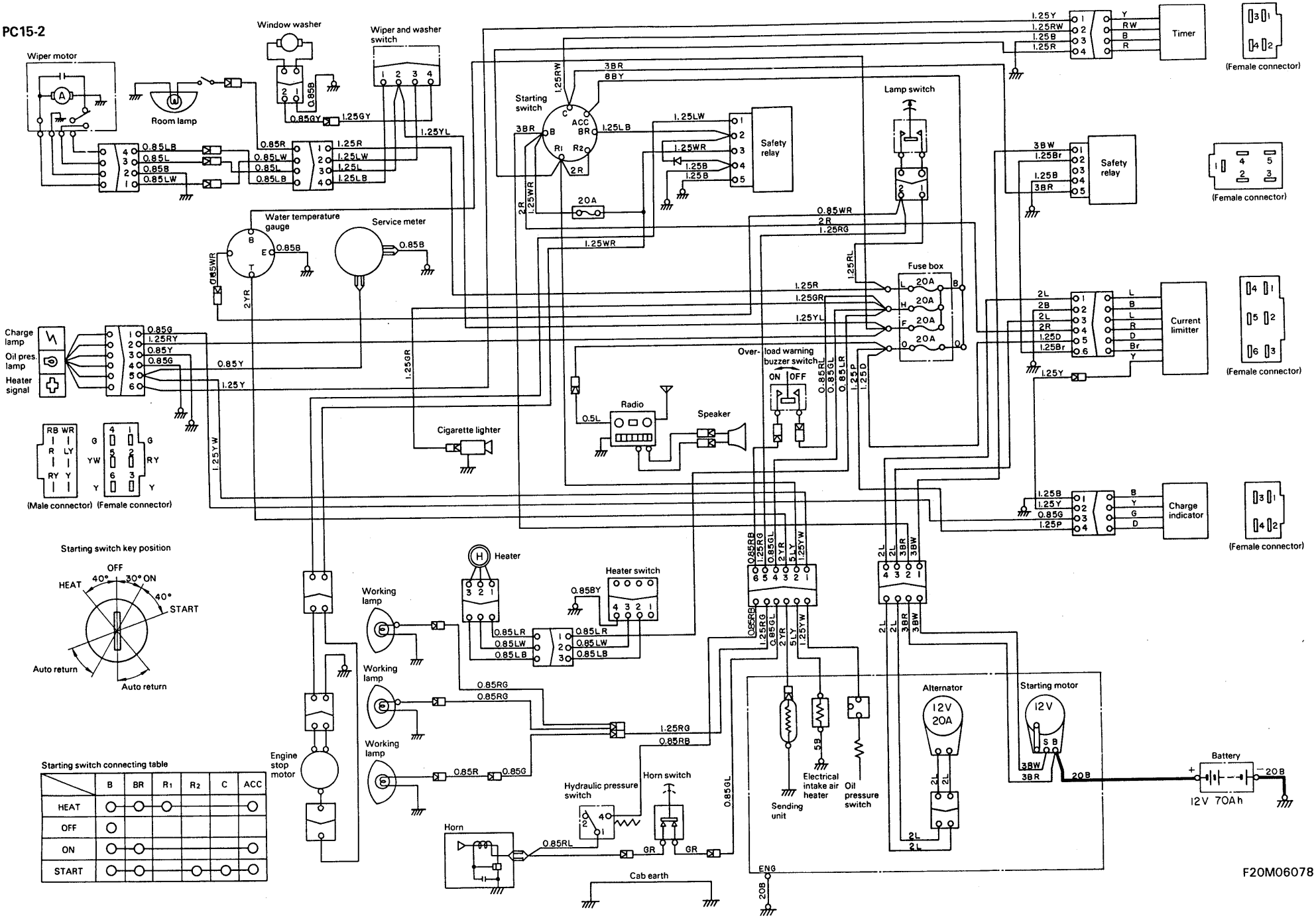


STARTING SWITCH CONNECTING TABLE

Key position \ Terminal	B	BR	R_1	R_2	C	ACC
HEAT	○	○	○			○
OFF	○					
ON	○	○				○
START	○	○		○	○	○



F20M06077


Wiper motor
Window washer
Wiper and washer switch
Room lamp
Starting switch
Lamp switch
Safety relay
Timer
(Female connector)
Water temperature gauge
Service meter
Fuse box
Current limitter
Charge indicator
Charge lamp
Oil pres. lamp
Heater signal
Over-load warning buzzer switch
ON OFF
Radio
Speaker
Cigarette lighter
(Male connector)
(Female connector)
Starting switch key position
OFF
HEAT
30° ON
START
Auto return
Heater
Heater switch
Working lamp
Engine stop motor
Hydraulic pressure switch
Horn switch
Horn
Cab earth
Alternator
12V 20A
Starting motor
12V
Battery
12V 70Ah
Sending unit
Electrical intake air heater
Oil pressure switch
ENG
Starting switch connecting table
B BR R1 R2 C ACC
HEAT
OFF
ON
START
020M06
F20M06078

20 TESTING AND ADJUSTING

020M06

TABLE OF JUDGEMKENT STANDARD VALUE

• FOR ENGINE

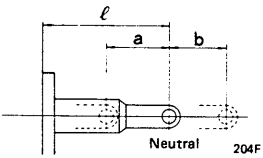
Engine model			3D72-2	
Machine model			PC05-6	
Check item	Conditions, etc.	Unit	Standard value	Permissible value
Engine speed	High idling Low idling Rated speed	rpm rpm rpm	2,150±50 900±50 2,000±50	2,150±50 900±50 2,000±50
Exhaust gas color	Sudden acceleration At high idling	Bosch index Bosch index		
Valve clearance	Intake valve (at 20°C) Exhaust valve (at 20°C)	mm mm	0.20 0.20	— —
Compression pressure	Oil temperature: 40 — 60°C, SAE30 oil ( ): Engine speed	kg/cm^2 (rpm)	35 (250)	30 (250)
Blow-by pressure	Water temperature in operating range At high idling, SAE30 oil	mmH_2O		
Oil pressure	Water temperature in operating range At high idling (SAE30 oil, Min. 80°C) At low idling (SAE30 oil, Min. 80°C) At high idling (SAE10W oil, Min. 80°C) At low idling (SAE10W oil, Min. 80°C)	 kg/cm^2 kg/cm^2 kg/cm^2 kg/cm^2	 — Min. 1.5 — —	 — Min. 1.5 — —
Oil temperature	Whole speed range (inside oil pan)	°C		Max. 105
Fuel injection pressure	Nozzle tester	kg/cm^2	120	120 — 125
Fuel injection timing	Compression B.T.D.C.	degree	11	
Fan belt tension	Slack when pushed with finger force of 6 kg	mm	12	10 — 16

020M06

3D72-2		3D75-2		3D78-1	
PC07-1		PC10-6		PC15-2	
Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value
2,570±50 900±50 2,400±50	2,570±50 900±50 2,400±50	2,800±50 900±50 2,600	2,800±50 900±50 2,600	2,750±50 900±50 2,600	2,750±50 900±50 2,600
0.20 0.20	— —	0.20 0.20	— —	0.20 0.20	— —
35 (250)	30 (250)			30 (250)	26 (250)
— Min. 1.5 — —	— Min. 1.5 — —	3.5 Min. 1.0 — —	3.0 — 4.0 — —	3.5 Min. 1.0 — —	3.0 — 4.0 — —
—	Min. 105				
11	—	16	—	16	—
12	10 — 16	10 — 16		10 — 16	

020M06

• FOR CHASSIS

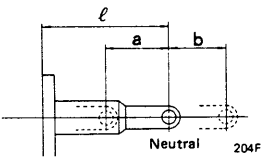
Machine model				PC05-6					
Serial No.				11301 — 11700					
Classification	Item	Condition, etc.	Unit	Standard value			Permissible value		
Engine	Engine speed when one pump circuit oil is relief.	• Oil temperature: 45 — 55°C • Engine coolant temperature: in correct range • Engine oil pressure: in correct range • At one pump relief: Bucket circuit relief • At two pump relief: Bucket and arm circuits relief	rpm	2,080±50			2,080±50		
	Engine speed when two pump circuit oil is relief.			2,000±50			2,000±50		
Spool travel	Boom control valve		mm	ℓ	a	b	ℓ	a	b
	Arm control valve			20	6	6	20	6	6
	Bucket control valve								
	★ Swing — boom swing control valve								
	★ Swing — boom swing selector valve								
	☆ Swing control valve			—	—	—	—	—	—
	☆ Boom swing control valve								
	Blade control valve			20	6	6	20	6	6
	Travel control valve								
Travel of control levers and pedals	Boom control lever	• At center of lever knob • At tip of pedal • Measure at end of travel • Engine speed: Stopped	Neutral → Raise and lower	mm	68.5			61.7 — 75.4	
	Arm control lever		Neutral → In and out		68.5			61.7 — 75.4	
	Bucket control lever		Neutral → Curl and dump		76.5			68.9 — 84.2	
	★ Swing — boom swing control lever		Neutral → L.H. and R.H. swing		76.5			68.9 — 84.2	
	★ Swing — boom swing selector pedal		Swing ⟷ Boom swing		10.5			9.5 — 11.5	
	☆ Swing control lever		Neutral ⟷ L.H. and R.H. swing		—			—	
	☆ Boom swing control lever		Neutral ⟷ L.H. and R.H. swing		—			—	
	Blade control lever		Neutral → Raise and lower		70.0			63.0 — 77.0	

Note) ★: For machine equipped with swing — boom swing selector pedal.
☆: For machine without swing — boom swing selector pedal.

020M06

PC05-6						PC07-1						PC10-6					
11701 and up						10001 and up						10501 and up					
Standard value			Permissible value			Standard value			Permissible value			Standard value			Permissible value		
												2,690			2,690		
												2,600			2,600		
ℓ	a	b	ℓ	a	b	ℓ	a	b	ℓ	a	b	ℓ	a	b	ℓ	a	b
20	6	6	20	6	6	20	6	6	20	6	6	20	6	6	20	6	6
Max. 75						Max. 75						90					
												90					
Max. 80						Max. 80						95					
												105					
Max. 70						Max. 70						90					
Max. 80						Max. 80						70					

020M06

Machine model				PC15-2					
Serial No.				10001 and up					
Classification	Item	Condition, etc.	Unit	Standard value			Permissible value		
Engine	Engine speed when one pump circuit oil is relief.	• Oil temperature: 45 — 55°C • Engine coolant temperature: in correct range • Engine oil pressure: in correct range • At one pump relief: Bucket circuit relief • At two pump relief: Bucket and arm circuits relief	rpm	2,680			2,680		
	Engine speed when two pump circuit oil is relief.			2,620			2,620		
Spool travel	Boom control valve		mm	ℓ	a	b	ℓ	a	b
	Arm control valve			20	6	6	20	6	6
	Bucket control valve								
	★ Swing — boom swing control valve								
	★ Swing — boom swing selector valve								
	☆ Swing control valve								
	☆ Boom swing control valve								
	Blade control valve								
	Travel control valve								
Travel of control levers and pedals	Boom control lever	• At center of lever knob • At tip of pedal • Measure at end of travel • Engine speed: Stopped	Neutral → Raise and lower	mm	90				
	Arm control lever		Neutral → In and out		90				
	Bucket control lever		Neutral → Curl and dump		95				
	★ Swing — boom swing control lever		Neutral → L.H. and R.H. swing						
	★ Swing — boom swing selector pedal		Swing ⟷ Boom swing						
	☆ Swing control lever		Neutral ⟷ L.H. and R.H. swing		105				
	☆ Boom swing control lever		Neutral ⟷ L.H. and R.H. swing		90				
	Blade control lever		Neutral → Raise and lower		70				

Note) ★: For machine equipped with swing — boom swing selector pedal.
☆: For machine without swing — boom swing selector pedal.

020M06

Standard value			Permissible value			Standard value			Permissible value			Standard value			Permissible value		
ℓ	a	b	ℓ	a	b	ℓ	a	b	ℓ	a	b	ℓ	a	b	ℓ	a	b

020M06

Machine model				PC05-6	
Serial No.				11301 — 11700	
Classification	Item	Condition, etc.	Unit	Standard value	Permissible value
Travel of control levers and pedals	Travel control lever	• At center of lever knob • At tip of pedal • Measure at end of travel • Engine speed: Stopped Neutral → Forward and reverse	mm	68.0	61.5 — 75.0
	Fuel control lever	Stop ⟷ Low idling Low idling ⟷ High idling		145	130.5 — 159.5
Control lever and pedal operating force	Boom control lever	• Engine speed: High idling • Oil temperature: 45 — 55°C • Hook push-pull scale on center of control lever knob to measure • Measure maximum value in traveling		1.5 — 2.5	1.5 — 2.5
	Arm control lever			1.5 — 2.5	1.5 — 2.5
	Bucket control lever			1.4 — 2.4	1.4 — 2.4
	★ Swing — boom swing control lever			1.4 — 2.4	1.4 — 2.4
	★ Swing — boom swing selector pedal			13.7 — 15.4	13.7 — 15.4
	☆ Swing control lever			—	—
	☆ Boom swing control lever			—	—
	Blade control lever			1.3 — 2.3	1.3 — 2.3
	Travel control lever			1.5 — 2.5	1.5 — 2.5
	Fuel control lever			2.5 — 3.5	2.5 — 3.5
Hydraulic pressure	Boom circuit	• Engine speed: High idling • Oil temperature: 45 — 55°C • 1 pump relileved, other pump no load	kg/cm²	175 — 180	175 — 180
	Arm circuit			175 — 180	175 — 180
	Bucket circuit			175 — 180	175 — 180
	Boom swing circuit			82 — 88	82 — 88
	Swing circuit			82 — 88	82 — 88
	Blade circuit			175 — 180	175 — 180
	Travel circuit			175 — 180	175 — 180
	Lowered hydraulic pressure	• Oil temperature: 45 — 55°C • Difference oil relief pressure between at engine high idling and at engine a half speed. (Measure pressure when one pump circuit oil is relieved.)		0	0

Note) ★: For machine equipped with swing — boom swing selector pedal.
☆: For machine without swing — boom swing selector pedal.

020M06

PC05-6		PC07-1		PC10-6	
11701 and up		10001 and up		10501 and up	
Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value
Max. 75		Max. 75		80	
				—	—
80		80		185	
0.8 — 2.5	3.0	0.8 — 2.5	3.0	1.2 — 2.5	1.2 — 2.5
0.8 — 2.5	3.0	0.8 — 2.5	3.0	1.2 — 2.5	1.2 — 2.5
0.8 — 2.5	3.0	0.8 — 2.5	3.0	1.2 — 2.5	1.2 — 2.5
0.8 — 2.5	3.0	0.8 — 2.5	3.0	1.2 — 2.5	1.2 — 2.5
0.8 — 2.5	3.0	0.8 — 2.5	3.0	1.2 — 2.5	1.2 — 2.5
0.8 — 2.5	3.0	0.8 — 2.5	3.0	1.2 — 2.5	1.2 — 2.5
0.8 — 2.5	3.0	0.8 — 2.5	3.0	1.2 — 2.5	1.2 — 2.5
2.5 — 3.5	4.0	2.5 — 3.5	4.0	2.5 — 4.5	2.5 — 4.5
175^{+5}_{0}	175±5	175^{+5}_{0}	175±5	175^{+5}_{0}	175^{+5}_{0}
175^{+5}_{0}	175±5	175^{+5}_{0}	175±5	175^{+5}_{0}	175^{+5}_{0}
175^{+5}_{0}	175±5	175^{+5}_{0}	175±5	175^{+5}_{0}	175^{+5}_{0}
175^{+5}_{0}	175±5	175^{+5}_{0}	175±5	175^{+5}_{0}	175^{+5}_{0}
85^{+5}_{0}	85±5	85^{+5}_{0}	85±5	135^{+5}_{0}	135^{+5}_{0}
175^{+5}_{0}	175±5	175^{+5}_{0}	175±5	175^{+5}_{0}	175^{+5}_{0}
175^{+5}_{0}	175±5	175^{+5}_{0}	175±5	175^{+5}_{0}	175^{+5}_{0}
Max. 10	Max. 10	Max. 10	Max. 10		

020M06

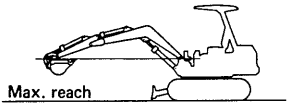
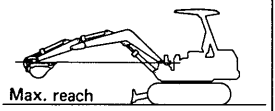
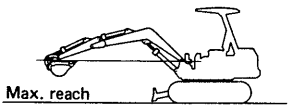
Machine model				PC15-2	
Serial No.				10001 and up	
Classification	Item	Condition, etc.	Unit	Standard value	Permissible value
Travel of control levers and pedals	Travel control lever	• At center of lever knob • At tip of pedal • Measure at end of travel • Engine speed: Stopped	Neutral → Forward and reverse	80	
	Fuel control lever		Stop ⟷ Low idling	—	—
			Low idling ⟷ High idling	170	
Control lever and pedal operating force	Boom control lever	• Engine speed: High idling • Oil temperature: 45 — 55°C • Hook push-pull scale on center of control lever knob to measure • Measure maximum value in traveling		1.2 — 2.5	1.2 — 2.5
	Arm control lever			1.2 — 2.5	1.2 — 2.5
	Bucket control lever			1.2 — 2.5	1.2 — 2.5
	★ Swing — boom swing control lever				
	★ Swing — boom swing selector pedal				
	☆ Swing control lever			1.2 — 2.5	1.2 — 2.5
	☆ Boom swing control lever			1.2 — 2.5	1.2 — 2.5
	Blade control lever			1.2 — 2.5	1.2 — 2.5
	Travel control lever			1.2 — 2.5	1.2 — 2.5
	Fuel control lever			2.5 — 4.5	2.5 — 4.5
Hydraulic pressure	Boom circuit	• Engine speed: High idling • Oil temperature: 45 — 55°C • 1 pump relileved, other pump no load	kg/cm²	200^{+5}_{0}	200^{+5}_{0}
	Arm circuit			200^{+5}_{0}	200^{+5}_{0}
	Bucket circuit			200^{+5}_{0}	200^{+5}_{0}
	Boom swing circuit			200^{+5}_{0}	200^{+5}_{0}
	Swing circuit			135^{+5}_{0}	135^{+5}_{0}
	Blade circuit			175^{+5}_{0}	175^{+5}_{0}
	Travel circuit			200^{+5}_{0}	200^{+5}_{0}
	Lowered hydraulic pressure	• Oil temperature: 45 — 55°C • Difference oil relief pressure between at engine high idling and at engine a half speed. (Measure pressure when one pump circuit oil is relieved.)		0	0

Note) ★: For machine equipped with swing — boom swing selector pedal.
☆: For machine without swing — boom swing selector pedal.

020M06

Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value

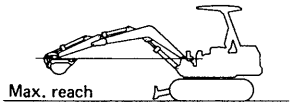
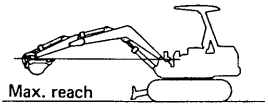
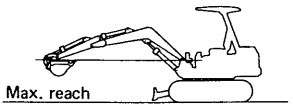
020M06

Machine model				PC05-6	
Serial No.				11301 — 11700	
Classification	Item	Condition, etc.	Unit	Standard value	Permissible value
Swing	Swing brake angle	• Measuring posture  20RF5104 • Engine speed: High idlinlg • Oil temperature: 45 — 55°C • Put match marks on the swing circle outer race and the track frame. Swing the upper structure 360°, then stop it. Measure the distance between the match marks after the upper structure comes to a stop.	degree (mm)	Max. 25 (Max. 109)	Max. 25 (Max. 109)
	Time taken to start swing	• Measuring posture  20RF5104 • Engine speed: High idling • Oil temperature: 45 — 55°C • Measure time taken for 90° and 180° swing from starting point.	90° / sec.	Max. 2.4	Max. 2.7
			180° / sec.	—	—
	Time taken to swing	• Measuring posture  20RF5104 • Engine speed: High idling • Oil temperature: 45 — 55°C • Measure time taken to swing for 5 turns, after swinging one turn as an approach swing.	sec.	Max. 30	Max. 33

020M06

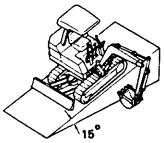
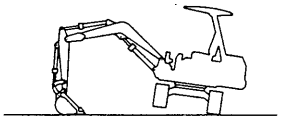
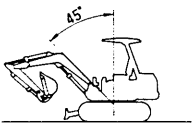
PC05-6		PC07-1		PC10-6	
11701 and up		10001 and up		10501 and up	
Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value
30	30	30	30	Max. 20 (Max. 105)	
Max. 2.4	Max. 2.7	Max. 2.5	Max. 2.8	Max. 3.0	
—	—	—	—	Max. 4.5	
Max. 32.8	Max. 35.8	Max. 33.7	Max. 36.8	Max. 35.0	

020M06

Machine model				PC15-2	
Serial No.				10001 and up	
Classification	Item	Condition, etc.	Unit	Standard value	Permissible value
Swing	Swing brake angle	• Measuring posture  20RF5104 • Engine speed: High idling • Oil temperature: 45 — 55°C • Put match marks on the swing circle outer race and the track frame. Swing the upper structure 360°, then stop it. Measure the distance between the match marks after the upper structure comes to a stop.	degree (mm)	Max. 25 (Max. 130)	
	Time taken to start swing	• Measuring posture  20RF5104 • Engine speed: High idling • Oil temperature: 45 — 55°C • Measure time taken for 90° and 180° swing from starting point.	90°	Max. 3.0	
			180°	Max. 4.5	
	Time taken to swing	• Measuring posture  20RF5104 • Engine speed: High idling • Oil temperature: 45 — 55°C • Measure time taken to swing for 5 turns, after swinging one turn as an approach swing.	sec.	Max. 35.0	

Standard value	Permissible value	Standard vallue	Permissible value	Standard value	Permissible value

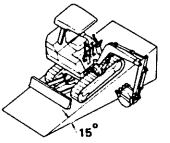
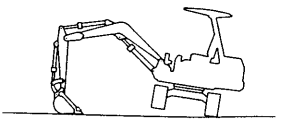
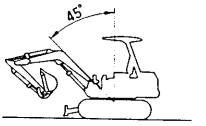
020M06

Machine model				PC05-6	
Serial No.				11301 — 11700	
Classification	Item	Condition, etc.	Unit	Standard value	Permissible value
Swing	Hydraulic drift of swing	• Measuring posture  20RF5105 • Engine speed: Stopped • Oil temperature: 45 — 55°C • Stop the machine on 15° slope and set boom at 45° angle across the slope. • Write the mach marks on the swing circle outer race and track frame. After 15 minutes, measure the lag of match marks.	degree (mm)	Max. 90	Max. 90
	Leakage from swing motor	• Engine speed: High idling • Oil temperature: 45 — 55°C • Relieve oil in swing circuit	ℓ/min		
Travel	Travel speed (1)	• Measuring posture  20RF5106 • Engine speed: High idling • Oil temperature: 45 — 55°C • Raise one track off the ground, let it spin one revolution, then measure the time required for it to spin 5 revolutions. Repeat this procedure for the other track.	sec.	Max. 28	Max. 30
	Travel speed (2)	• Measuring posture  20RF5107 • Engine speed: High idling • Oil temperature: 45 — 55°C • On a flat surface, make an approache run of at least 10 m, then measure the time required for the machine to travel 20 m.	sec.	Max. 39	Max. 41

020M06

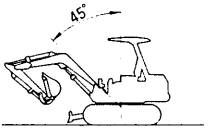
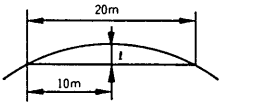
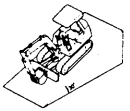
PC05-6		PC07-1		PC10-6	
11701 and up		10001 and up		10501 and up	
Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value
(Max. 180)	(Max. 180)	(Max. 180)	(Max. 180)	(Max. 180)	
Max. 28	Max. 35	Max. 28	Max. 35	36±4	36±8
Max. 37.6	Max. 43.7	Max. 37.6	Max. 43.7	37±4	37±8

020M06

Machine model				PC15-2	
Serial No.				10001 and up	
Classification	Item	Condition, etc.	Unit	Standard value	Permissible value
Swing	Hydraulic drift of swing	• Measuring posture  20RF5105 • Engine speed: Stopped • Oil temperature: 45 — 55°C • Stop the machine on 15° slope and set boom at 45° angle across the slope. • Write the mach marks on the swing circle outer race and track frame. After 15 minutes, measure the lag of match marks.	degree (mm)	(Max. 250)	
	Leakage from swing motor	• Engine speed: High idling • Oil temperature: 45 — 55°C • Relieve oil in swing circuit	ℓ/min		
Travel	Travel speed (1)	• Measuring posture  20RF5106 • Engine speed: High idling • Oil temperature: 45 — 55°C • Raise one track off the ground, let it spin one revolution, then measure the time required for it to spin 5 revolutions. Repeat this procedure for the other track.	sec.	38±4	38±8
	Travel speed (2)	• Measuring posture  20RF5107 • Engine speed: High idling • Oil temperature: 45 — 55°C • On a flat surface, make an approach run of at least 10 m, then measure the time required for the machine to travel 20 m.	sec.	37±4	37±8

Standard value	Permissible value	Standard value	Permissible value	Standard vaule	Permissible value

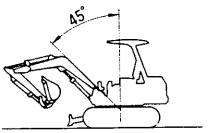
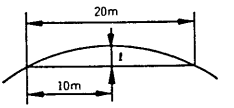
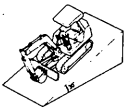
020M06

Machine model				PC05-6	
Serial No.				11301 — 11700	
Classification	Item	Condition, etc.	Unit	Standard value	Permissible value
Travel	Travel deviation	• Measuring posture  • Engine speed: High idling • Oil temperature: 45 — 55°C • On a flat surface, make an approach run of at least 10 m, then travel another 20 m. Measure the travel deviation.  202F2303 ★ Measure dimension ℓ.	mm	Max. 500	Max. 550
	Hydraulic drift of travel	• Measuring posture  20RF5108 • Engine speed: Stopped • Oil temperature: 45 — 55°C • Stop the machine on 30° slope with setting sprocket on uphill. • Measure distance moved by machine in 5 min.	mm	Max. 500	Max. 550
	Leakage from travel motor	• Engine speed: High idling • Oil temperature: 45 — 55°C • Relieve travel circuit. • Measure leakage from travel motor with measuring cylinder.	ℓ/min.	—	—

020M06

PC05-6		PC07-1		PC10-6	
11701 and up		10001 and up		10501 and up	
Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value
500	550	500	550	Max. 500	Max. 550
				Max. 100	

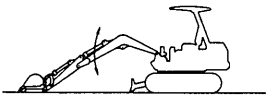
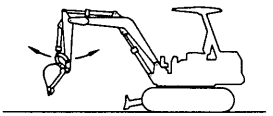
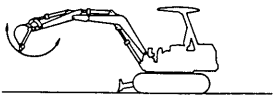
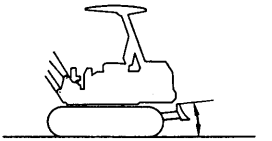
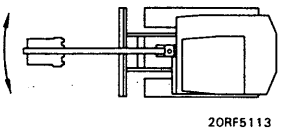
020M06

Machine model				PC15-2	
Serial No.				10001 and up	
Classification	Item	Condition, etc.	Unit	Standard value	Permissible value
	Travel deviation	• Measuring posture  • Engine speed: High idling • Oil temperature: 45 — 55°C • On a flat surface, make an approach run of at least 10 m, then travel another 20 m. Measure the travel deviation.  202F2303 ★ Measure dimension ℓ.	mm	Max. 500	Max. 550
	Hydraulic drift of travel	• Measuring posture  20RF5108 • Engine speed: Stopped • Oil temperature: 45 — 55°C • Stop the machine on 30° slope with setting sprocket on uphill. • Measure distance moved by machine in 5 min.	mm	Max. 120	
	Leakage from travel motor	• Engine speed: High idling • Oil temperature: 45 — 55°C • Relieve travel circuit. • Measure leakage from travel motor with measuring cylinder.	ℓ/min.		

020M06

Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value

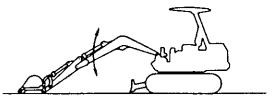
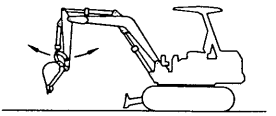
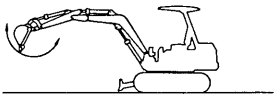
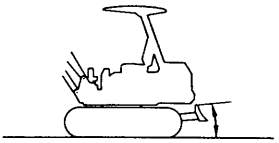
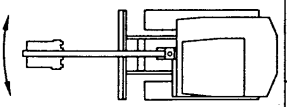
020M06

Machine model					PC05-6	
Serial No.					11301 — 11700	
Classification	Item	Condition, etc.		Unit	Standard value	Permissible value
Work equipment	Work equipment speed	Boom Bucket teeth on the ground ↕ Cylinder fully extended	• Measuring posture  20RF5109 • Engine speed: High idling • Oil temperature: 45 — 55°C	RAISE	sec.	2.2 — 2.6	2.2 — 2.6
				LOWER		1.9 — 2.3	1.9 — 2.3
		Arm Cylinder fully retracted ↕ Cylinder fully extended	• Measuring posture  20RF5110 • Engine speed: High idling • Oil temperature: 45 — 55°C	ARM IN		3.7 — 4.4	3.7 — 4.4
				ARM OUT		2.7 — 3.1	2.7 — 3.1
		Bucket Cylinder fully retracted ↕ Cylinder fully extended	• Measuring posture  20RF5111 • Engine speed: High idling • Oil temperature: 45 — 55°C	CURL		3.4 — 4.0	3.4 — 4.0
				DUMP		2.3 — 2.7	2.3 — 2.7
		Blade Blade on the ground ↕ Cylinder fully extended	• Measuring posture  20RF5112 • Engine speed: High idling • Oil temperature: 45 — 55°C	RAISE		0.9 — 1.1	0.9 — 1.1
				LOWER		1.0 — 1.2	1.0 — 1.2
		Boom swing Cylinder fully retracted ↕ Cylinder fully extended	• Measuring posture  20RF5113 • Engine speed: High idling • Oil temperature: 45 — 55°C	L.H. SWING		3.1 — 3.7	3.1 — 3.7
				R.H. SWING		3.8 — 4.4	3.8 — 4.4

020M06

PC05-6		PC07-1		PC10-6	
11701 and up		10001 and up		10501 and up	
Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value
Max. 3.3	Max. 3.6	Max. 3.4	Max. 3.7	3.5±0.5	3.5±1.0
Max. 3.2	Max. 3.5	Max. 2.9	Max. 3.2	2.7±0.4	2.7±0.8
Max. 4.5	Max. 4.8	Max. 4.5	Max. 4.8	5.1±0.6	5.1±1.2
Max. 3.2	Max. 3.5	Max. 3.5	Max. 3.8	3.9±0.5	3.9±1.0
Max. 3.9	Max. 4.2	Max. 3.4	Max. 3.7	3.8±0.5	3.8±1.0
Max. 2.8	Max. 3.1	Max. 2.4	Max. 2.7	2.6±0.4	2.6±0.8
Max. 1.1	Max. 1.4	Max. 1.1	Max. 1.4	0.8±0.2	0.8±0.4
Max. 1.3	Max. 1.6	Max. 1.3	Max. 1.6	0.9±0.2	0.9±0.4
Max. 4.5	Max. 4.8	Max. 5.5	Max. 5.8	6.6±0.8	6.6±1.6
Max. 5.1	Max. 5.4	Max. 6.7	Max. 7.0	7.7±0.9	7.7±1.8

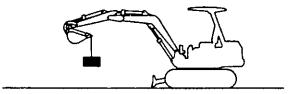
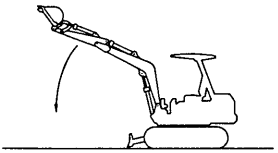
020M06

Machine model					PC15-2	
Serial No.					10001 and up	
Classification	Item	Condition, etc.		Unit	Standard value	Permissible value
Work equipment	Work equipment speed	Boom Bucket teeth on the ground ↕ Cylinder fully extended	• Measuring posture  20RF5109 • Engine speed: High idling • Oil temperature: 45 — 55°C	RAISE	3.5±0.5	3.5±1.0
				LOWER	2.6±0.4	2.6±0.8
		Arm Cylinder fully retracted ↕ Cylinder fully extended	• Measuring posture  20RF5110 • Engine speed: High idling • Oil temperature: 45 — 55°C	ARM IN	5.1±0.6	5.1±1.2
				ARM OUT	3.7±0.5	3.7±1.0
		Bucket Cylinder fully retracted ↕ Cylinder fully extended	• Measuring posture  20RF5111 • Engine speed: High idling • Oil temperature: 45 — 55°C	CURL	3.7±0.5	3.7±1.0
				DUMP	2.6±0.4	2.6±0.8
		Blade Blade on the ground ↕ Cylinder fully extended	• Measuring posture  20RF5112 • Engine speed: High idling • Oil temperature: 45 — 55°C	RAISE	0.8±0.2	0.8±0.4
				LOWER	0.9±0.2	0.9±0.4
		Boom swing Cylinder fully retracted ↕ Cylinder fully extended	• Measuring posture  20RF5113 • Engine speed: High idling • Oil temperature: 45 — 55°C	L.H. SWING	6.3±0.7	6.3±1.4
				R.H. SWING	7.1±0.8	7.1±1.6

sec.

020M06

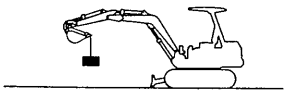
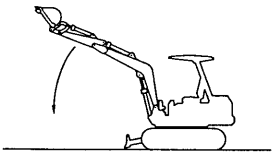
Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value

Machine model					PC05-6	
Serial No.					11301 — 11700	
Classification		Item	Condition, etc.	Unit	Standard value	Permissible value
Work equipment	Hydraulic drift	Entire work equipment (Hydraulic drift at the tip of bucket teeth)	• Measuring posture  20RF5114 • In the posture shown above, measure the extension and retraction of each cylinder as well as the hydraulic drift at the tip of the bucket teeth. • Work equipment rated load: • Flat level surface • Control levers in neutral • Engine: Stopped • Oil temperature: 45 — 55°C • Start measuring immediately after setting • Measure the hydraulic drift every 5 minutes, and make judgement after 15 minutes.	mm	Max. 400	Max. 400
		Boom cylinder (Retraction of cylinder)			Max. 21	Max. 21
		Arm cylinder (Extension of cylinder)			Max. 24	Max. 24
		Bucket cylinder (Retraction of cylinder)			Max. 6	Max. 6
		Blade (Hydraulic drift at the tip of blade)			Max. 12	Max. 12
	Time lag	Boom	• Measuring posture  20RF5116 • Engine speed: Low idling • Oil temperature: 45 — 55°C • Measure the time it takes for the front of the machine to be lifted off the ground, starting from the time the bucket contacts the ground.	sec.	Max. 2.0	Max. 2.0

020M06

PC05-6		PC07-1		PC10-6	
11701 and up		10001 and up		10501 and up	
Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value
Max. 175	350	Max. 175	350	Max. 400	
21	42	21	42	Max. 20	Max. 22
24	48	24	48	Max. 15	Max. 17
6	12	6	12	Max. 10	Max. 11
				Max. 5	Max. 6
0	Max. 1	0	Max. 1	Max. 5	Max. 5

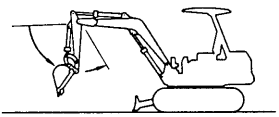
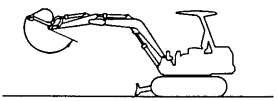
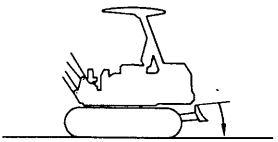
020M06

Machine model					PC15-2	
Serial No.					10001 and up	
Classification	Item		Condition, etc.	Unit	Standard value	Permissible value
Work equipment	Hydraulic drift	Entire work equipment (Hydraulic drift at the tip of bucket teeth)	• Measuring posture  20RF5114 • In the posture shown above, measure the extension and retraction of each cylinder as well as the hydraulic drift at the tip of the bucket teeth. • Work equipment rated load: • Flat level surface • Control levers in neutral • Engine: Stopped • Oil temperature: 45 — 55°C • Start measuring immediately after setting • Measure the hydraulic drift every 5 minutes, and make judgement after 15 minutes.	mm	Max. 400	
		Boom cylinder (Retraction of cylinder)			Max. 25	Max. 28
		Arm cylinder (Extension of cylinder)			Max. 15	Max. 17
		Bucket cylinder (Retraction of cylinder)			Max. 10	Max. 11
		Blade (Hydraulic drift at the tip of blade)			Max. 5	Max. 6
	Time lag	Boom	• Measuring posture  20RF5116 • Engine speed: Low idling • Oil temperature: 45 — 55°C • Measure the time it takes for the front of the machine to be lifted off the ground, starting from the time the bucket contacts the ground.	sec.	Max. 5	Max. 5

020M06

Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value

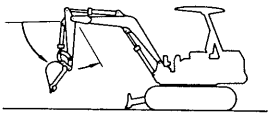
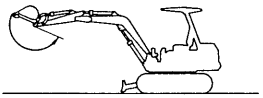
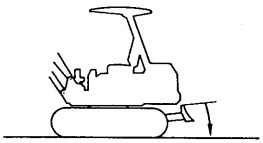
020M06

Machine model					PC05-6	
Serial No.					11301 — 11700	
Classification		Item	Condition, etc.	Unit	Standard value	Permissible value
Work equipment	Time lag	Arm	• Measuring posture  20RF5117 • Engine speed: Low idling • Oil temperature: 45 — 55°C • Time required to momentarily stop the arm.	sec.	Max. 2.0	Max. 2.0
		Bucket	• Measuring posture  20RF5118 • Engine speed: Low idling • Oil temperature: 45 — 55°C • Time required to momentarily stop the bucket.		Max. 1.0	Max. 1.0
		Blade	• Measuring posture  20RF5119 • Engine speed: Low idling • Oil temperature: 45 — 55°C • Measure the time it takes for the rear of the machine to be lifted off the ground, starting from the time the blade contacts the ground.		Max. 1.0	Max. 1.0
	Internal leakage	Each cylinder	• Oil temperature: 45 — 55°C • Oil pressure: 175 kg/cm^2	cc/ min.		
		Swivel joint				

020M06

PC05-6		PC07-1		PC10-6	
11701 and up		10001 and up		10501 and up	
Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value
0	Max. 1	0	Max. 1	Max. 5	Max. 5
0	Max. 1	0	Max. 1	Max. 4	Max. 4
0	Max. 1	0	Max. 1	Max. 2	Max. 2
				Max. 1.1	Max. 1.1
				Max. 10	Max. 10

020M06

Machine model					PC15-2	
Serial No.					10001 and up	
Classification	Item		Condition, etc.	Unit	Standard value	Permissible value
Work equipment	Time lag	Arm	• Measuring posture  20RF5117 • Engine speed: Low idling • Oil temperature: 45 — 55°C • Time required to momentarily stop the arm.	sec.	Max. 5	Max. 5
		Bucket	• Measuring posture  20RF5118 • Engine speed: Low idling • Oil temperature: 45 — 55°C • Time required to momentarily stop the bucket.		Max. 4	Max. 4
		Blade	• Measuring posture  20RF5119 • Engine speed: Low idling • Oil temperature: 45 — 55°C • Measure the time it takes for the rear of the machine to be lifted off the ground, starting from the time the blade contacts the ground.		Max. 2	Max. 2
	Internal leakage	Each cylinder	• Oil temperature: 45 — 55°C • Oil pressure: 175 kg/cm^2	cc/min.	Max. 1.1	Max. 1.1
		Swivel joint			Max. 10	Max. 10

020M06

Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value

020M06

TESTING AND ADJUSTING TOOL LIST

• FOR ENGINE

No.	Check item	Tool	Part No.	Remarks
1	Engine speed	Multi-tachometer	799-203-8000	Digital display L: 60 — 2,000 rpm H: 60 — 19,999 rpm
2	Water and oil temperature	Thermistor kit	799-101-6000	-50 — 1,200°C
3	Oil pressure	Analog hydraulic tester	799-101-5000	25, 60, 400, 600 kg/cm^2
		Digital hydraulic tester	790-261-1100	500 kg/cm^2
4	Compression pressure	Compression gauge • Adapter (3D72-2, 3D75-2) • Adapter (3D78-1)	795-502-1205 795-101-1560 795-502-1530	0 — 70 kg/cm^2
5	Blow-by pressure	Blow-by checker	799-201-1504	0 — 500 mmH_2O
6	Valve clearance	Feeler gauge		0.20 mm
7	Exhaust color	Handy smoke checker	799-201-9000	Discoloration 0 — 70% With standard color (Discoloration % x 1/10 = Bosch index)
		Smoke meter	Commercially available	

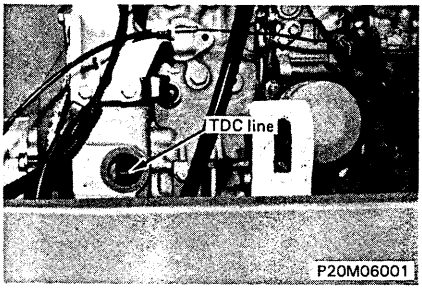
020M06

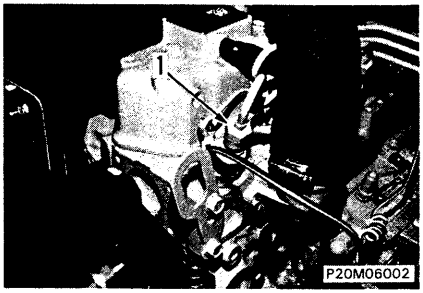
• FOR CHASISS

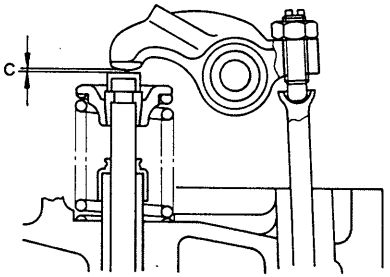
No.	Check item	Tool	Part No.	Remarks
1	Oil temperature	Thermistor kit	799-101-6000	-50 — 1200°C
2	Oil pressure	Analog hydraulic tester D	799-101-5000	25, 60, 400, 600 kg/cm^2
		Digital hydraulic tester	790-261-1100	500 kg/cm^2
3	Engine speed	Multi-tachometer	799-203-8000	Digital display L: 60 — 2,000 rpm H: 60 — 19,999 rpm
4	Operating force	Push-pull scale	Commercially available	—
5	Stroke, hydraulic drift	Scale	Commercially available	—
6	Work equipment speed	Stopwatch	Commercially available	—
5	Pump performance	Flowmeter kit	790-303-1002	—

ADJUSTING VALVE CLEARANCE (PC05-6, PC07-1)

1. Remove the cylinder head cover.
2. Rotate the crankshaft in the normal direction (clockwise as seen from the fan) and when No. 3 cylinder (flywheel end) is at compression top dead center, look through the hole in the flywheel housing, and align the line (TDC) on the outside of the flywheel with the position that can be seen.
   ★ When the crankshaft is rotated, the intake and exhaust valves of the cylinder near the compression top dead center position do not move.
   If the intake and exhaust valves of No. 1 cylinder move, rotate further and set to the compression top dead center position.
3. To adjust, loosen locknut (1), and turn adjustment screw (2). Then insert specified feeler gauge A in clearance "c" between the rocker arm and the valve stem and turn the adjustment screw until the clearance is a sliding fit.
   ★ To check, insert the feeler gauge between rocker arm (3) and valve stem (4) to check if the clearance (gauge thickness) is a sliding fit.
4. Tighten the locknut to hold the adjustment screw in position.
   kgm Locknut: 2.6 ± 0.1 kgm
   ★ After tightening the locknut, check the valve clearance again.
5. Rotate turn the crankshaft 240° each time, and use the same procedure to check and adjust the valve clearance of next cylinder according to the firing order.
   ★ Firing order: 3 – 1 – 2







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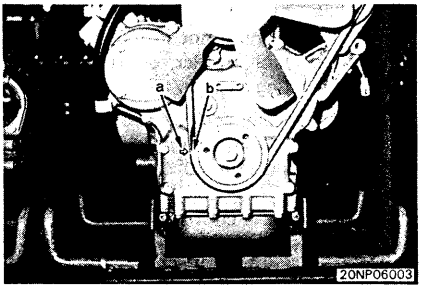
020M06

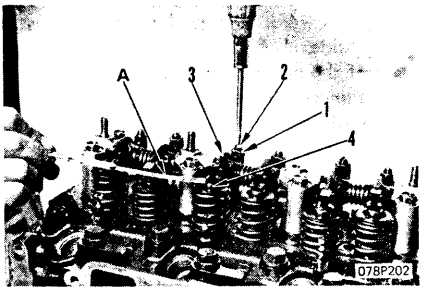
ADJUSTING VALVE CLEARANCE (PC10-6, PC15-2)

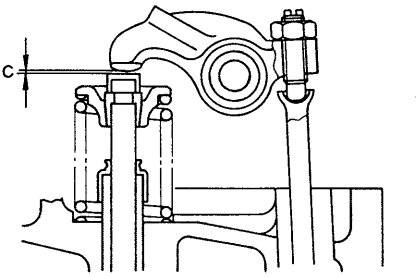
1. Remove the cylinder head cover.
2. Rotate the crankshaft in the normal direction (clockwise as seen from the fan) to align timing mark (a) with the top dead center (TDC) line (b) on the crankshaft pulley when No. 3 cylinder (at the flywheel end) is at compression top dead center.
   ★ When the crankshaft is rotated, the intake and exhaust valves of the cylinder near compression top dead center do not move. If the intake and exhaust valves of No. 3 cylinder move, rotate further to alilgn at the compression top dead center.
3. To adjust, loosen locknut (1), and adjustment screw (2), insert feeler gauge **A** in clearance (C) between the rocker arm and the valve stem, and screw in adjustment screw (2) until the clearance is a sliding fit.
   ★ When checking, before loosening the locknut, insert feeler gauge between rocker arm (3) and valve stem (4), and check if it is a sliding fit.
4. Tighten the locknut to hold the adjustment screw in position.

   kgm Locknut 2.6±0.1 kgm

   ★ After tightening the locknut, check the clearance again.
5. Turn the crankshaft 240° each time and check and adjust the valve clearance of the next cylinder in the firing order in the same way.
   ★ Firing order: 3 — 1 — 2







020M06

MEASURING COMPRESSION PRESSURE (PC05-6, PC07-1)

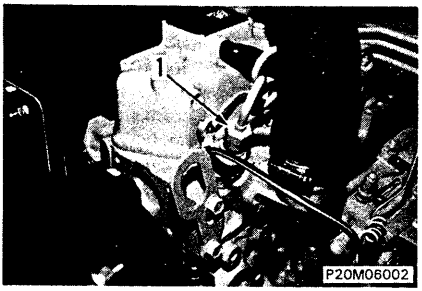
⚠ When measuring the compression pressure, be careful not to touch the exhaust manifold or muffler, or to get caught in the rotating parts.

★ Measure the compression pressure with the engine warmed up.
(Oil temperature 40°C – 60°C)

1. Adjust the valve clearance.
   For details, see Adjusting valve clearance.
2. Disconnect the fuel injection pipe.
3. Remove the nozzle holder assembly (1) from each cylinder.
   ★ Be careful not to let dirt or dust get inside.
   ★ If the nozzle holder assembly is removed, replace the seat gasket.
4. Install adapter A in the nozzle holder mount of the cylinder to be measured, and tighten to the specified tightening torque.
   Tightening torque: 5.2 ± 0.2 kgm
5. Connect compression gauge A to the adapter. Place the fuel control lever at the NO INJECTION position. Crank the engine with the starting motor and measure the compression pressure at the point where the indicator remains steady.

⚠ If the fuel control lever is not placed at the NO INJECTION position, fuel will spurt out.

★ Leakage can be reduced if the adapter mount is coated with a small amount of oil.



020M06

MEASURING COMPRESSION PRESSURE (PC10-6, PC15-2)

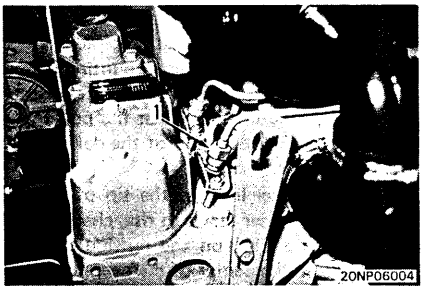
⚠ When measuring the compression pressure, be careful not to touch the exhaust manifold or muffler, or to get caught in rotating parts.

★ Measure the compression pressure with the engine warmed up. (Oil temperature 40 — 60°C).

1. Adjust the valve clearance.
   ★ For details, see ADJUSTING VALVE CLEARANCE.
2. Disconnect fuel injection pipe.
3. Remove nozzle holder assembly (1) from each cylinder.
   ★ Be careful no to let any dirt or dust get in.
   ★ If the nozzle holder assembly is removed, replace the seat gasket.
4. Install the adapter in the nozzle holder mount of the cylinder to be measured.
5. Connect the compression gauge to the adapter.
6. Place the fuel control lever in the NO INJECTION position. Crank the engine with the starting motor and measure the comporession pressure.
   ★ Measure the compression pressure at the point where the pressure gauge indicator remains steady.

   ⚠ If the fuel control lever is not placed in the NO INJECTION position, fuel will spurt out.

   ★ Coat the adapter mount with a small amount of oil to make it more difficult for the pressure to leak out.



020M06

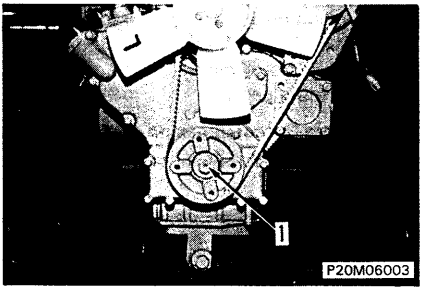
TESTING AND ADJUSTING FUEL INJECTION TIMING (PC05-6, PC07-1)

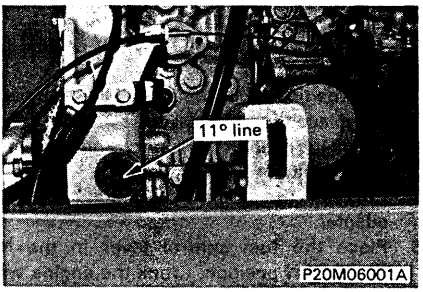
1. Disconnect the fuel injection pipe.
2. Using crankshaft pulley mounting nut (1), rotate the crankshaft in the normal direction and stop the crankshaft at the point where the fuel level at the tip of the delivery valve holder starts to rise.
3. When the fuel level at the tip of the delivery valve holder starts to rise, check that the line (11° BTDC) on the outside of the flywheel is in the center of the peephole.
4. If the injection timing is not correct, adjust the thickness of the shim (fuel injection timing adjustment plate) between the fuel injection pump and gear case.

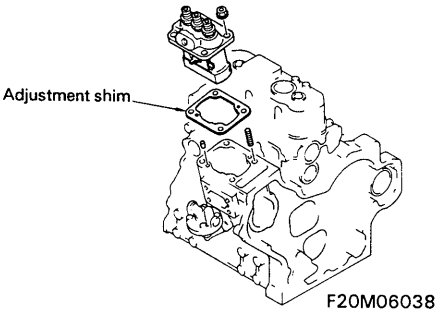
   INCREASE shim thickness, to RETARD timing

   DECREASE shim thickness, to ADVANCE timing

   ★ When adjusting, be careful of the following points.
   (1) The standard thickness of the shims used for adjusting the fuel injection timing is 0.5 mm.
   (2) The adjustment shims have a silicon coating, so use thinner to remove any oil on both faces of the shim or on the pump mounting surface.
   (3) A shim thickness of 0.1 mm changes the position by approx. 1°; the available shim thicknesses are 0.2 mm and 0.3 mm.







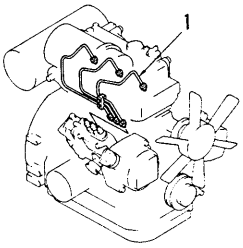
020M06

TESTING AND ADJUSTING FUEL INJECTION TIMING (PC10-6, PC15-2)

1. Disconnect fuel injection pipe (1).
2. To bleed the air, run the engine until no more bubbles come out from delivery valve holder (2).
3. Place the fuel control lever at the FULL position, and rotate the crankshaft slowly in the normal direction. Check the point where fuel starts flowing from the delivery valve holder.
4. Check that fuel injection timing line (b) on the crankshaft pulley and timing mark (a) are aligned at the point where the fuel starts flowing.
   ★ BEYOND injection timing line:
   Timing RETARDED
   ★ BEFORE injection timing line:
   Timing ADVANCED

★ If the test shows that the fuel injection timing is not correct, adjust as follows.
   1) Loosen the mounting nut of the fuel injection pump and adjust the mounting angle of the pump while watching timing lines (c) and (d) on the front plate.
   2) Rotate the crankshaft slowly in the normal direction and adjust the mounting angle of the pump until fuel injection timing line (b) on the crankshaft pulley and timing mark (a) are alignerd correctly at the point where the fuel starts flowing.
   3) Tighten the injection pump mounting nut.
      ★ Check the fuel injection timing again to confirm that the injection timing is correctly adjusted.
   4) Make match marks.

020M06



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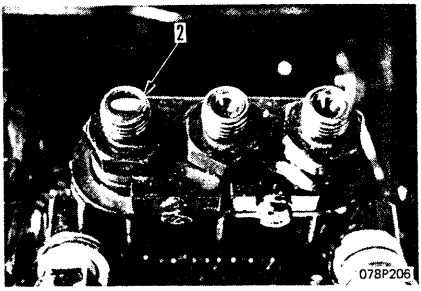

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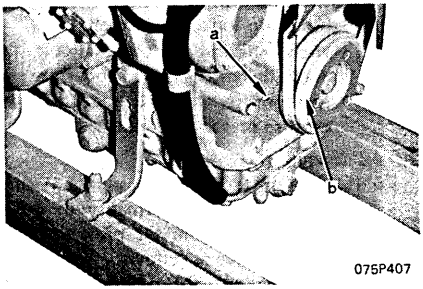

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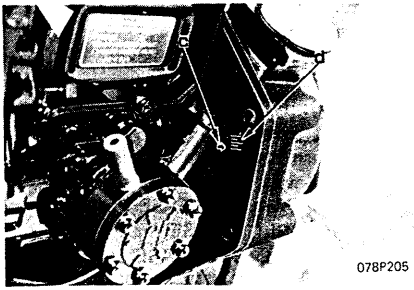
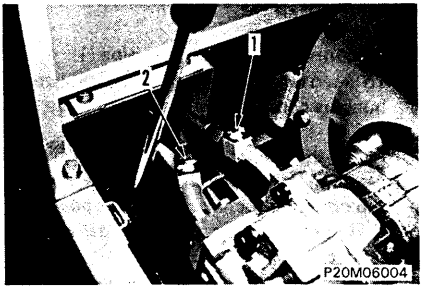

078P205

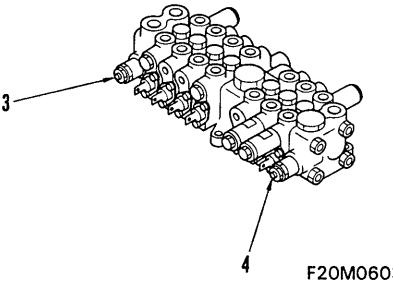
TESTING AND ADJUSTING HYDRAULIC PRESSURE (PC05-6, PC07-1)

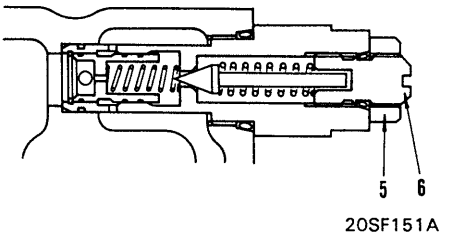
Lower the work equipment completely to the ground and stop the engine. Operate the control levers several times to release the remaining pressure in the hydraulic piping. Then loosen the oil filler plate slowly to release the pressure inside the hydraulic tank.

1. **Measuring**
   1) Remove the pressure pick-up plugs (1) or (2) from the side to be measured, and install hydraulic pressure gauge **A** (350 kg/cm^2).
      ★ Plug (1): For boom, bucket, R.H. travel, blade
      Plug (2): For L.H. travel, arm, swing, boom swing
   2) Run the engine, operate the circuit to be measured, and measure the relief pressure.
      ★ With the swing circuit, the set pressure of the safety valve is lower than the set pressure of the main relief valve, so the main relief valve is not actuated.
      ★ When relieving the swing circuit, insert the swing lock pin securely.
      When relieving the travel circuit, fit a block (height: 300mm) under the track shoe grouser to lock the track, and measure one side at a time.

2. **Adjusting**
   ★ If the result of the measurement shows that there is an abnormality in the set pressure, adjust the set pressure of the main relief valve as follows.
   1) Loosen locknut (5) of the main relief valve (3) or (4) on the side to be adjusted, turn adjustment screw (6), and adjust the set procedure.
      ★ (3): For boom, bucket, R.H. travel, blade
      (4): For L.H. travel, arm, swing, boom swing
      ★ Turn the adjustment screw to adjust as follows.
      To INCREASE pressure, turn CLOCKWISE
      To DECREASE pressure, turn COUNTERCLOCKWISE
      ★ One turn of the adjustment screw adjusts by:







020M06

TESTING AND ADJUSTING HYDRAULIC PRESSURE (PC10-6, PC15-2)

Lower the work equipment to the ground and stop the engine. Operate the control levers several times to release the remaining pressure in the hydraulic piping. Then loosen the oil filler cap slowly to release the pressure inside the hydraulic tank.

1. Measuring

1) Remove pressure pick-up plugs (1), (2), or (3) from the circuit to be measured, and install oil pressure gauge **A** (350 kg/cm^2).
   - Plug (1): For boom swing, boom, bucket, R.H. travel
   - Plug (2): For arm, L.H. travel
   - Plug (3): For blade, swing
2) Start the engine, operate the circuit to be measured, and measure the relief pressure.
   ★ With the swing circuit, the set pressure of the safety valve is lower than the set pressure of the main relief valve, so the main relief valve is not actuated.
   ★ When relieving the swing circuit, insert the swing lock pin securely. When relieving the travel circuit, fit a block (height: 300 mm) under the track shoe grouser and measure one side at a time.

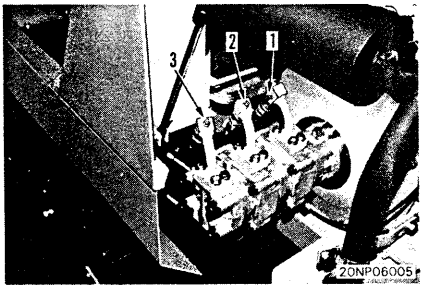
2. Adjusting

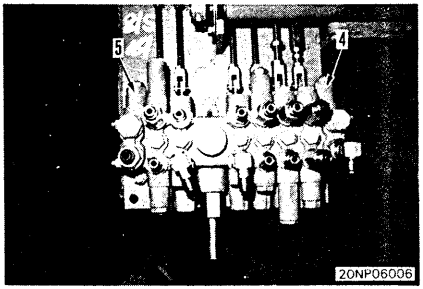
★ If the results of the check show that there is an abnormality in the set pressure, adjust the set pressure of the main relief valve as follows.

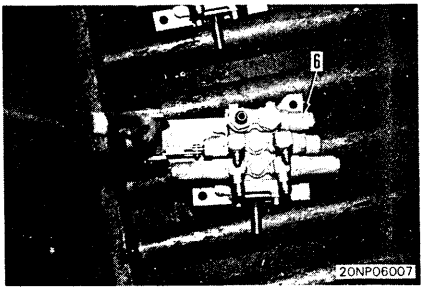
1) Loosen locknut (7) of main relief valve (4), (5), or (6) of the circuit to be adjusted, then turn adjustment screw (8) to adjust the set pressure.
   - (4): For boom swing, boom, bucket, R.H. travel
   - (5): For arm, L.H. travel
   - (6): For blade, swing

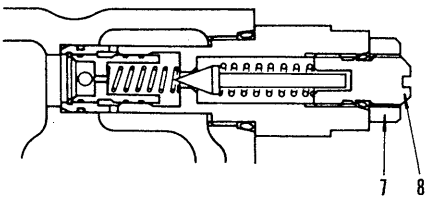
★ Turn the adjustment screw to adjust as follows.
To INCREASE pressure, turn CLOCKWISE.
To DECREASE pressure, turn COUNTER-CLOCKWISE.

★ One turn of the adjustment screw adjusts by:









20SF151B

020M06

30 DISASSEMBLY AND ASSEMBLY

020M06

★ Take the following method for air bleeding when you start to operate hydraulic cylinders after reassembling cylinders, pumps and pipings.
1. Start engine and run at low idling.
2. Operate hydraulic cylinder 4 to 5 times, stopping 100 mm from stroke end.
3. Next, operate cylinder 3 to 4 times to stroke end.
4. After doing this, run engine at normal speed.

★ After repair or long storage, follow the same procedure.

REMOVAL OF RADIATOR ASSEMBLY (PC05-6, PC07-1)

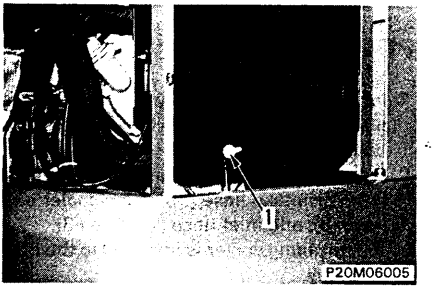
1. Loosen drain valve (1) and drain cooling water. (See P1)
   ★ If the coolant contains antifreeze, dispose of it correctly.
2. Open hood (2), and remove gas damper spring (3). (See P2)
3. Remove 4 mounting bolts (4) of hood, then remove hood (2). (See P2)
4. Remove 6 mounting bolts (5) of canopy, then remove canopy assembly (6). (See F1)
5. Disconnect radiator inlet hose (7) and radiator outlet hose (8). (See F2)
6. Remove radiator assembly (9). (See F2)

INSTALLATION OF RADIATOR ASSEMBLY (PC05-6, PC07-1)

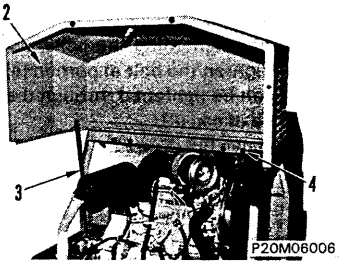
1. Install radiator assembly (9). (See F2)
2. Connect radiator inlet hose (7) and radiator outlet hose (8). (See F2)
3. Align canopy assembly (6) with mounting position, and tighten with bolts (5). (See F1)
4. Align hood (2) with mounting position, and tighten with bolts (4). (See P2)
5. Install gas damper spring (3). (See P2)
6. Tighten drain valve (1) and add water through water filler to the specified level. (See P1)
   ★ Run the engine to circulate the water through the system. Then check the water level again.

020M06

P1

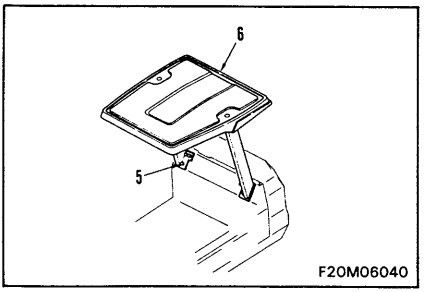


P2

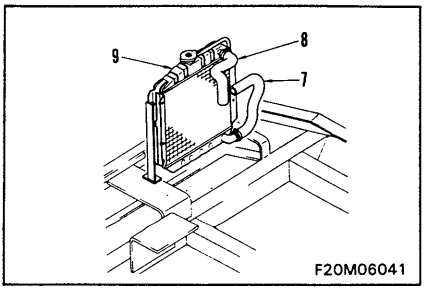


020M06

F1



F2



REMOVAL OF RADIATOR ASSEMBLY (PC10-6, PC15-2)

1. Remove gas spring (1), then remove hood (2). (See P1)

2. Remove canopy (3). (See F1)

3. Engine cover
   1) Remove cap (4). (See F2)
   2) Remove 7 mounting bolts (5), then remove engine cover (6). (See F2)

   kg Engine cover:

   ★ When removing the bolts, do not forget to remove the bolt at portion (a).
   It can be removed through the mounting hole of cap (4).

4. Radiator assembly
   1) Loosen drain valve and drain cooling water.
      ★ If the coolant contains antifreeze, dispose of it correctly.
   2) Disconnect piping cooler inlet hose (7), outlet hose (8), air intake hose (9), radiator inlet hose (10), and outlet hose (11), then remove bracket mounting bolts (12), and remove radiator assembly (13) together with piping cooler. (See F3)
      ★ The piping cooler is installed to the PC15-2 only.

INSTALLATION OF RADIATOR ASSEMBLY (PC10-6, PC15-2)

1. Install radiator assembly (13) together with piping cooler, then install bracket mounting bolts (12). (See F3)
2. Install radiator outlet hose (11), inlet hose (10), air intake hose (9), piping cooler outlet hose (8), and inlet hose (7). (See F3)
   ★ The piping cooler is installed to the PC15-2 only.

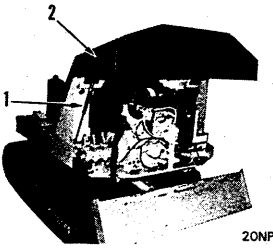
3. Align engine cover (6) with mounting position, and tighten 7 mounting bolts (5). (See F2)
   ★ When tightening the bolts, do not forget to tighten the bolt at portion (a).
   It can be tightened through the mounting hole of cap (4).
4. Install cap (4). (See F2)

5. Install canopy (3). (See F1)

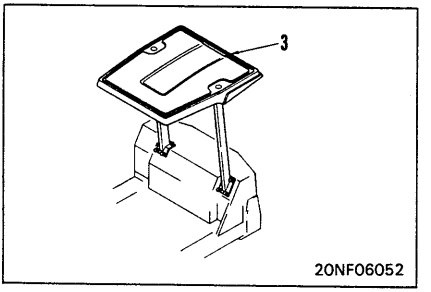
6. Install hood (2), then install gas spring (1). (See P1)
7. Tighten drain valve and add water through water filler.
   ★ Run the engine to circulate the water through the system. Then check the water level again.

020M06

P1

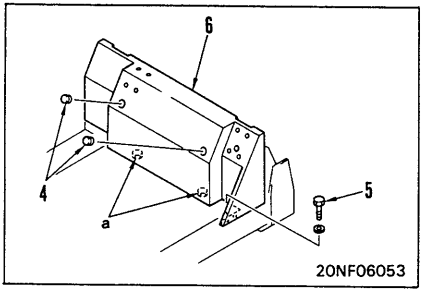


F1

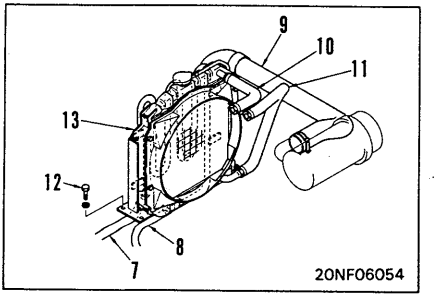


020M06

F2



F3



REMOVAL OF ENGINE ASSEMBLY (PC05-6 Serial No: 11301-11700)

1. Remove radiator assembly.
   For details, see REMOVAL OF RADIATOR ASSEMBLY.
2. Disconnect fuel hose (1). (See P1)
3. Loosen lock bolt (2), and disconnect fuel control cable (3). (See P1)
4. Disconnect cable from negative (—) terminal (4) of battery. (See P2)
5. Disconnect alternator wiring (5). (See P3)
6. Disconnect oil pressure switch wiring (6). (See P4)
7. Disconnect water temperature switch wiring (7). (See P4)
8. Disconnect glow plug wiring (8). (See P5)
9. Disconnect starting motor wiring (9), (10), and (11). (See F1)
10. Disconnect engine ground connection wiring (12). (See P6)
11. Disconnect spill hose (13). (See P7)
12. Hydraulic pump piping

    Loosen the oil filler plate slowly to release the pressure inside the hydraulic tank.

    1) Remove drain plug (1) and drain oil from hydraulic tank.

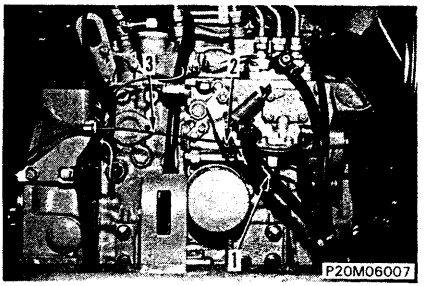
       Hydraulic tank: Approx. 18.5 ℓ

    2) Disconnect piping (14), (15), and (16). (See P8)
13. Sling engine assembly, and remove nuts (17) of mount bolts. (See F2)
14. Lift off engine assembly (18). (See F2)

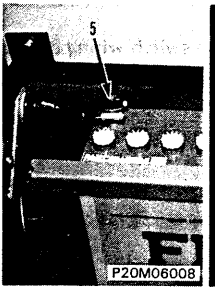
    kg Engine assembly: 123 kg

020M06

P1



P2



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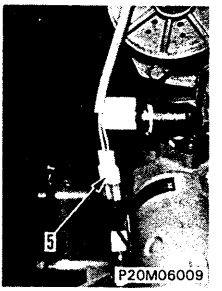
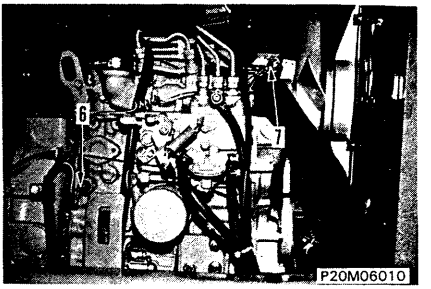
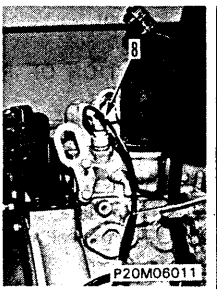


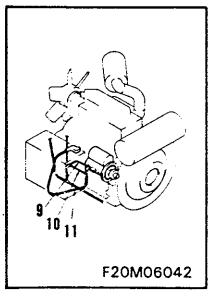
P4



P5

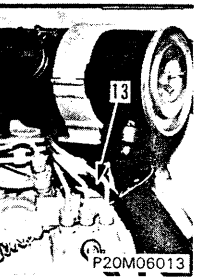


F1

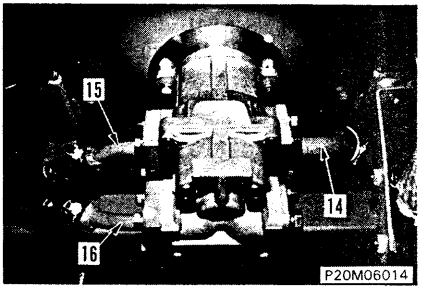


P6

P7



P8



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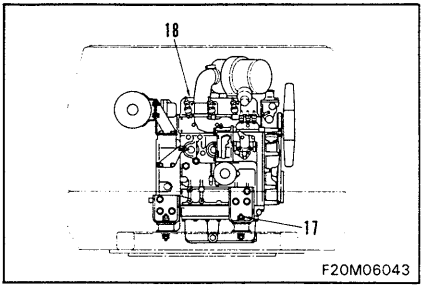


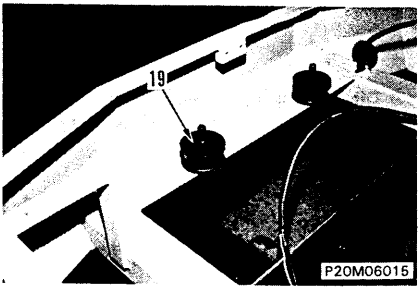
020M06

INSTALLATION OF ENGINE ASSEMBLY (PC05-6 Serial No: 11301-11700)

1. Install cushion (19). (See P1)
2. Raise engine assembly (18) and set in mounting position. (See F1)
3. Tighten nuts (17) of mount bolts. (See F1)
4. Fit O-rings and connect piping (16), (15), and (14). (See P2)
5. Connect spill hose (13). (See P3)
6. Connect engine ground connection wiring (12). (See P4)
7. Connect starting motor wiring (11), (10), and (9). (See F2)
8. Connect glow plug wiring (8). (See P5)
9. Connect water temperature switch wiring (7). (See P6)
10. Connect oil pressure switch wiring (6). (See P6)
11. Connect alternator wiring (5). (See P7)
12. Connect cable to negative (–) terminal (4) of battery. (See P8)
13. Connect fuel control cable (3). (See P9)
14. Connect fuel hose (1). (See P9)
15. Install radiator assembly.
    For details, see INSTALLATION OF RADIATOR ASSEMBLY.
16. Tighten drain plug and add oil through oil filler to the specified level.
    Hydraulic tank: Approx. 18.5 ℓ
    ★ Run the engine to circulate the oil through the system. Then check the oil level again.

020M06

P1



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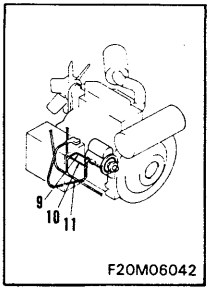

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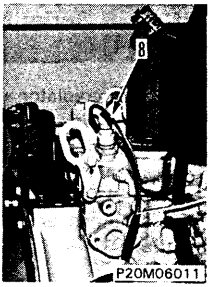

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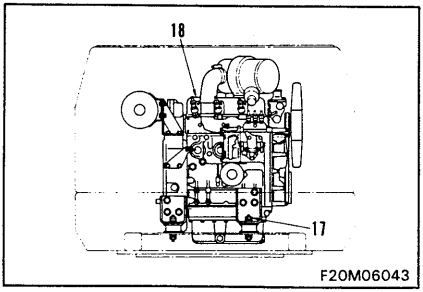

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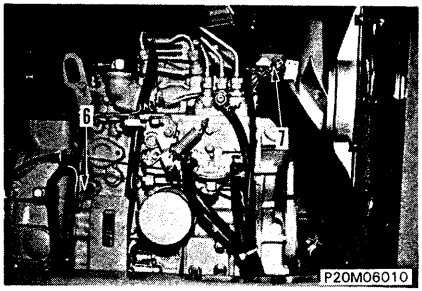
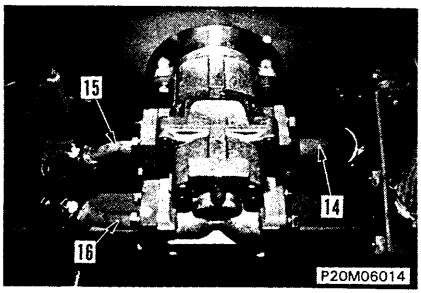


020M06

P2



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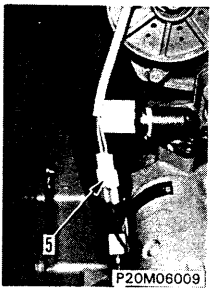

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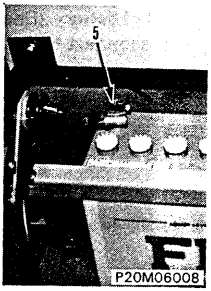

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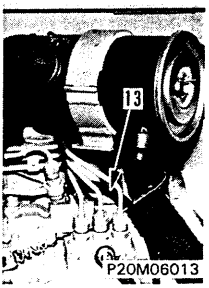
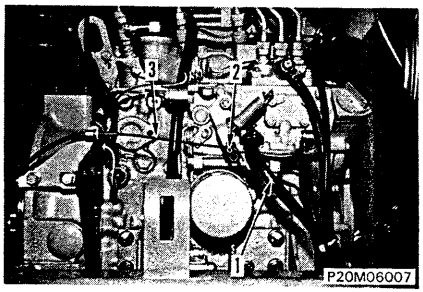


P4

P9



REMOVAL OF ENGINE ASSEMBLY (PC05-6 Serial No: 11701 and up, PC07-1)

1. Remove radiator assembly.
   For details, see REMOVAL OF RADIATOR ASSEMBLY.
2. Loosen lock bolt (1), and disconnect fuel control cable (2). (See P1)
3. Disconnect engine stop motor wiring (3). (See P1)

4. Disconnect fuel hoses (4), (5), and (6). (See F1)

5. Disconnect cable from negative (–) terminal (7) of battery. (See P2)
6. Disconnect alternator wiring (8). (See P3)

7. Disconnect oil pressure switch wiring (9). (See P4).
8. Disconnect water temperature switch wiring (10). (See P4)

9. Disconnect glow plug wiring (11). (See P5)
10. Disconnect starting motor wiring (12), (13), and (14). (See F2)

11. Disconnect engine ground connection wiring (15). (See P6)
12. Disconnect spill hose (16). (See P7)

13. Hydraulic pump piping

    Loosen the oil filler cap slowly to release the pressure inside the hydraulic tank.

    1) Remove drain plug and drain oil from hydraulic tank.

       Hydraulic tank: Approx. 18.5 ℓ

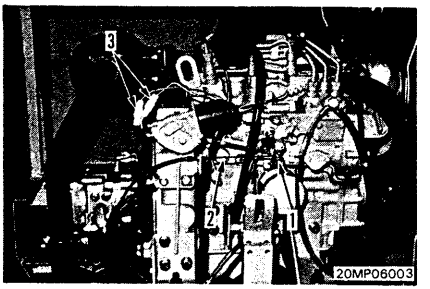
    2) Disconnect piping (17), (18), and (19). (See P8)

14. Sling engine assembly, and remove nuts (20) of mounting bolts. (See F3)
15. Lift off engine assembly (21). (See F3)

    kg Engine assembly: 123 kg

020M06

P1



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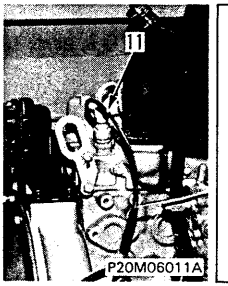
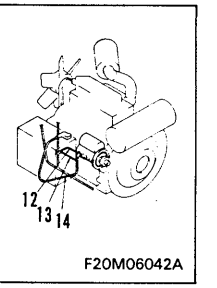


F2



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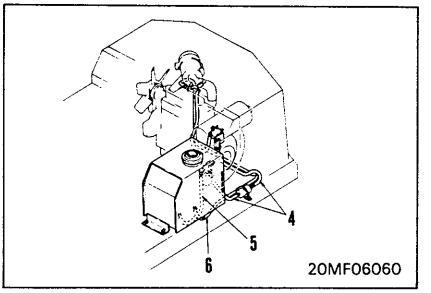
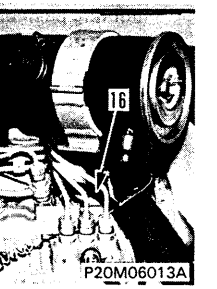


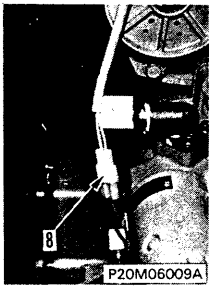
P6

P7



P2

P3



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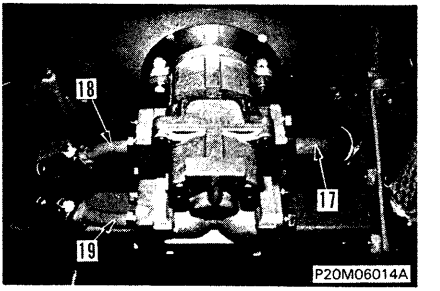

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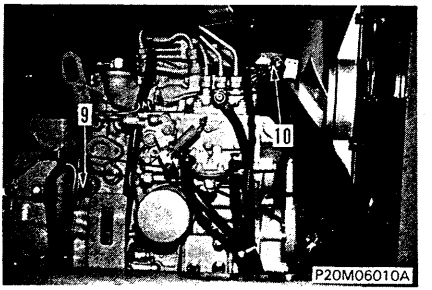

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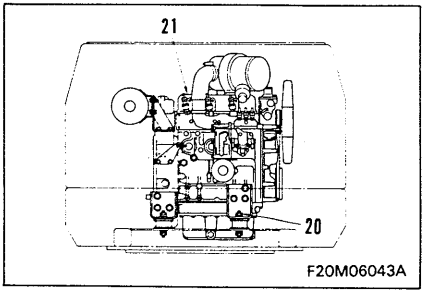


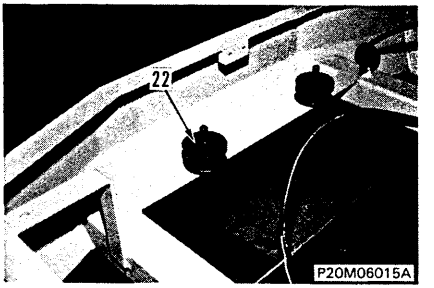
020M06

INSTALLATION OF ENGINE ASSEMBLY (PC05-6 Serial No: 11701 and up, PC07-1)

1. Install cushion (22). (See P1)
2. Raise engine assembly (21) and set in mounting position. (See F1)
3. Tighten nuts (20) of mounting bolts. (See F1)
4. Fit O-ring and connect piping (19), (18), and (17). (See P2)
5. Connect spill hose (16). (See P3)
6. Connect engine ground connection wiring (15). (See P4)
7. Connect starting motor wiring (14), (13), and (12). (See F2)
8. Connect glow plug wiring (11). (See P5)
9. Connect water temperature switch wiring (10). (See P6)
10. Connect oil pressure switch wiring (9). (See P6)
11. Connect alternator wiring (8). (See P7)
12. Connect cable to negative (–) terminal (7) of battery. (See P8)
13. Connect fuel hoses (6), (5), and (4). (See F3)

020M06

P1



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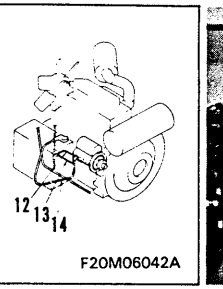

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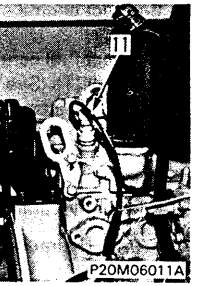

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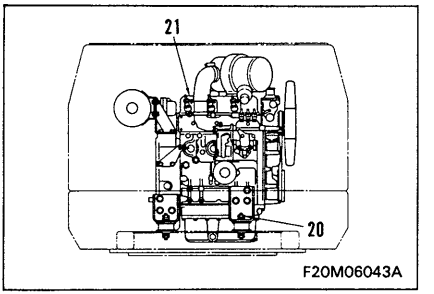

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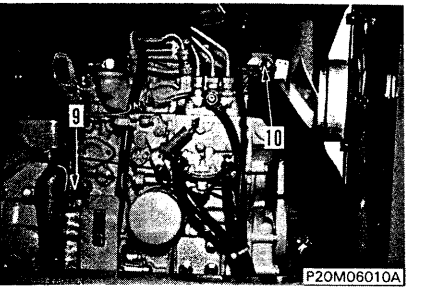
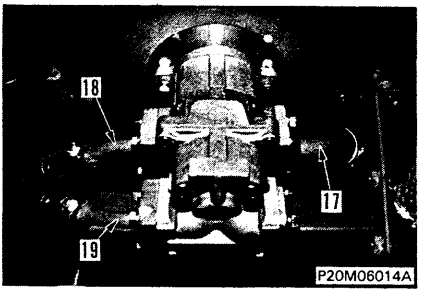


020M06

P2



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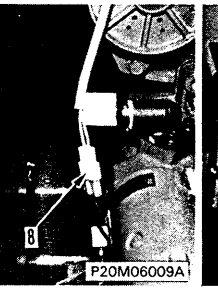

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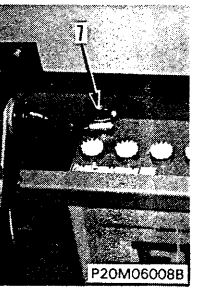
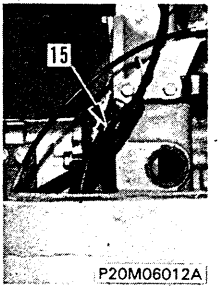
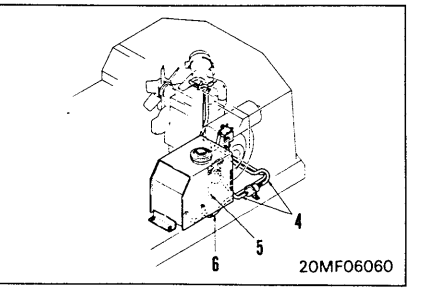


P3

P4



F3



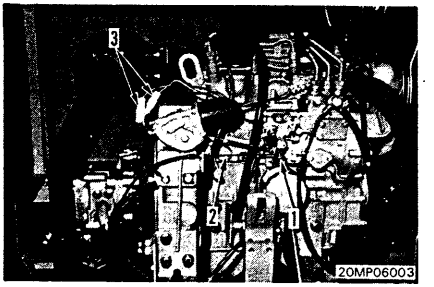
14. Connect engine stop motor wiring (3). (See P1)
15. Connect fuel control cable (2), and lock with lock bolt (1). (See P1)
16. Install radiator assembly.
    For details, see INSTALLATION OF RADIATOR ASSEMBLY.
17. Tighten drain plug and add oil through oil filler of hydraulic tank.

    Hydraulic tank: Approx. 18.5 ℓ

    ★ Run the engine to circulate the oil through the system. Then check the oil level again.

020M06

P1



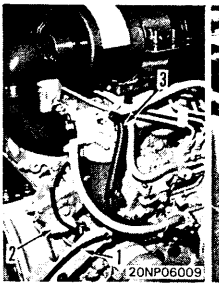
020M06

REMOVAL OF ENGINE ASSEMBLY (PC10-6, PC15-2)

1. Remove radiator assembly.
   For details, see REMOVAL OF RADIATOR ASSEMBLY.
2. Disconnect fuel control cable (1). (See P1)
3. Disconnect engine stop motor wiring (2). (See P1)
4. Disconnect fuel hoses (3) and (4). (See P1, P2)
   ★ Fuel will leak out. So fit blind plugs.
5. Disconnect cable from negative (–) terminal (5) of battery. (See P3)
6. Disconnect water temperature sensor wiring (6), alternator wiring (7), and starting motor wiring (8). (See P4)
7. Disconnect oil pressure switch wiring (9). (See P5)
8. Disconnect heater wiring (10). (See P6)
9. Disconnect engine ground connection (11). (See P7)
10. Remove 2 clamps, and disconnect muffler tail pipe (12). (See P8)
11. Pump piping
    1) Remove drain plug and drain oil from hydraulic tank.
       Hydraulic tank: Approx. 30 ℓ
    2) Remove 2 pump inlet tubes (13) and 3 outlet tubes (14). (See P9)
       ★ Oil will come out, so loosen the mounting bolts slowly and catch the oil in an oil pan or other container.
12. Remove nuts (15) of mounting bolts, and lift off engine assembly (16). (See F1)
    kg Engine assembly: 159kg (PC10-6)
    184kg (PC15-2)

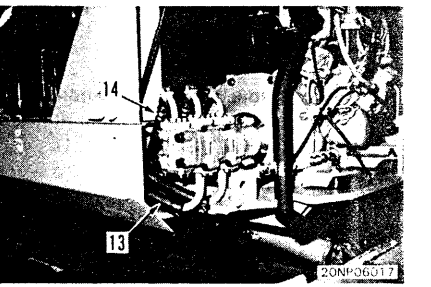
020M06

P1



P2

P9



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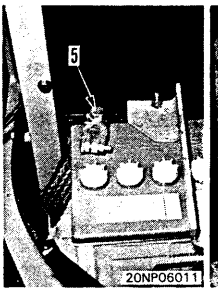

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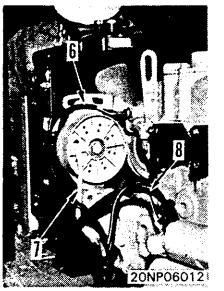
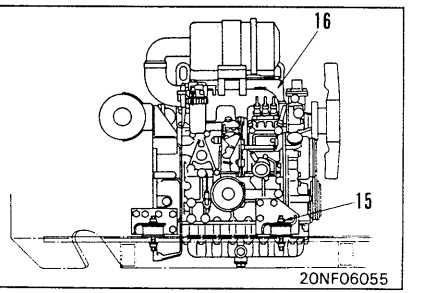
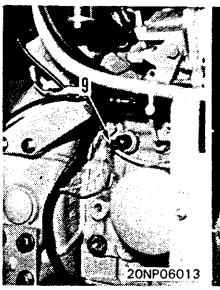


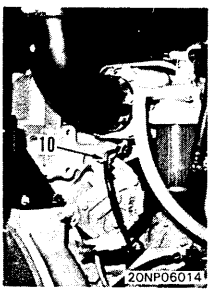
F1



P5



P6



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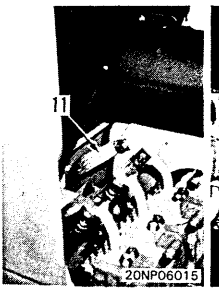
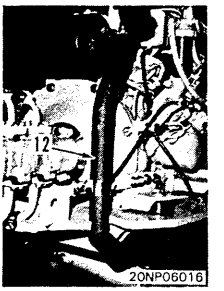


P8



020M06

INSTALLATION OF ENGINE ASSEMBLY (PC10-6, PC15-2)

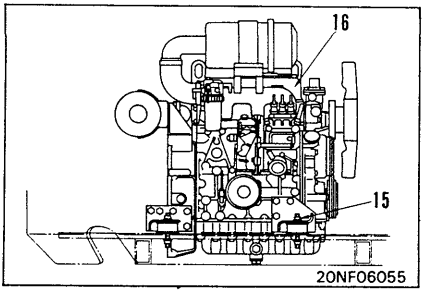
1. Raise engine assembly (16) and align with mounting position, then tighten nuts (15) of mounting bolts. (See F1)
2. Fit O-rings and connect 2 pump inlet tubes (13) and 3 outlet tubes (14). (See P1)
3. Install muffler tail pipe (12), and secure with 2 clamps (See P2)
4. Connect engine ground connection (11). (See P3)
5. Connect heater wiring (10). (See P4)
6. Connect oil pressure switch wiring (9). (See P5)
7. Connect starting motor wiring (8), alternator wiring (7), and water temperature sensor wiring (6). (See P6)
8. Connect cable to negative (−) terminal (5) of battery. (See P7)
9. Connect fuel hoses (4) and (3). (See P8, P9)
10. Connect engine stop motor wiring (2). (See P9)
11. Connect fuel control cable (1). (See P9)
12. Install radiator assembly.
    For details, see INSTALLATION OF RADIATOR ASSEMBLY.
13. Tighten drain plug and add oil through oil filler of hydraulic tank.

    Hydraulic tank: Approx. 30 ℓ

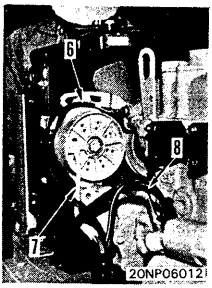
    ★ Run the engine to circulate the oil through the system. Then check the oil level again.

020M06

F1



P6



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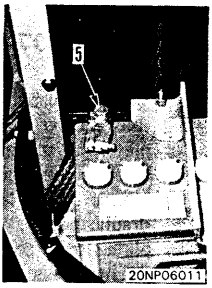
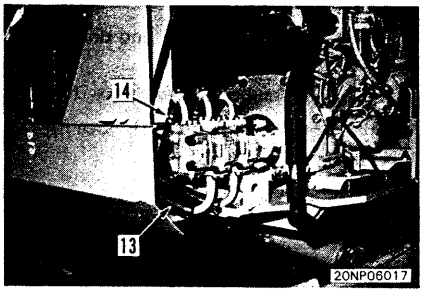
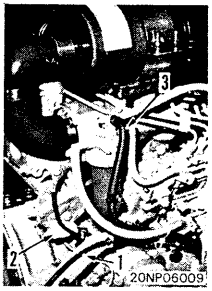


P1



P8

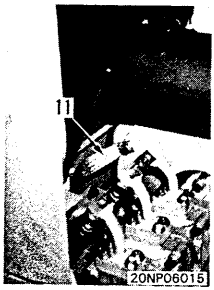
P9



020M06

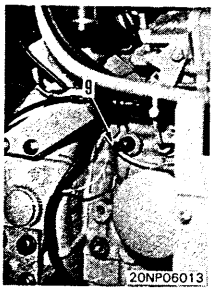
P2

P3



P4

P5



REMOVAL OF SWING CIRCLE ASSEMBLY (PC05-6, PC07-1)

Retract the bucket and arm cylinder rods fully, lower the work equipment completely to the ground and stop the engine. Operate the control levers several times to release the remaining pressure in the hydraulic piping. Then loosen the oil filler plate slowly to release the pressure inside the hydraulic tank.

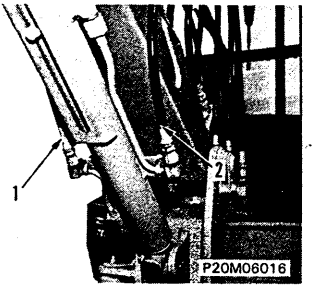
1. Disconnect boom cylinder hoses (1) and (2). (See P1)
2. Raise boom cylinder assembly (3) and remove connecting pin (4), then lower on to block (height: approx. 500 mm) (See P2)
3. Disconnect 4 arm and bucket cylinder hoses (5). (See P3)
4. Disconnect head lamp wiring (6). (See P3)
5. Sling work equipment assembly, and remove connecting pin (7). (See F1)
6. Lift off work equipment assembly (8). (See F1)

   kg Work equipment assembly: Approx. 130 kg
7. Pull out connecting pin (9), and remove boom cylinder assembly (3). (See F2)
8. Remove drain plug (10) and drain oil from hydraulic tank. (See F3)

   Hydraulic tank: Approx. 18.5 ℓ
9. Remove operator's seat (11). (See P4)
10. Remove lever knob (12) and boot (13). (See P4)
11. Remove plate (14). (See F4)
12. Remove safety lock lever (15) and stay (16). (See F4)
13. Remove floor plate (17). (See F4)
14. Remove mounting bolts (18), then remove canopy assembly (19). (See F5)

020M06

P1



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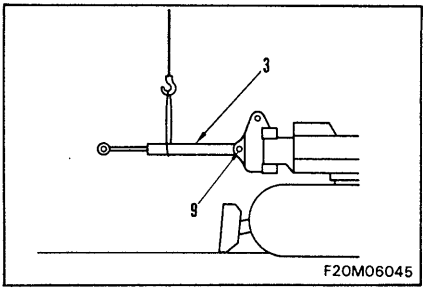

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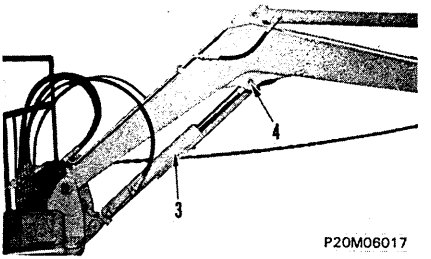

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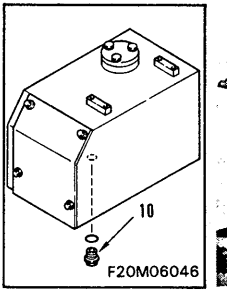

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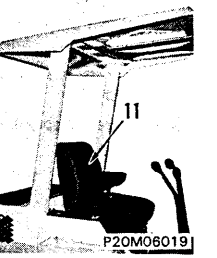

020M06

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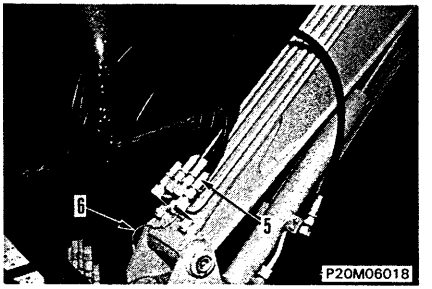

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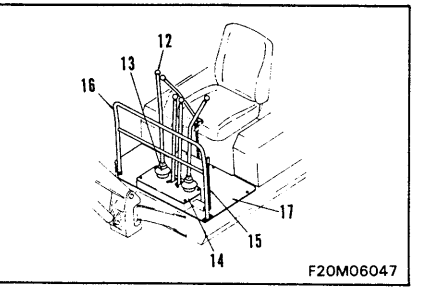

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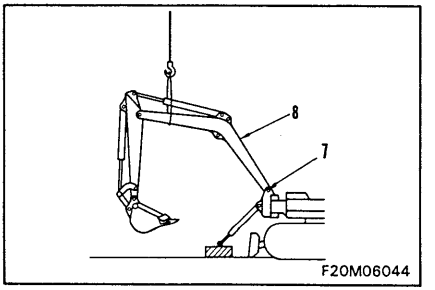

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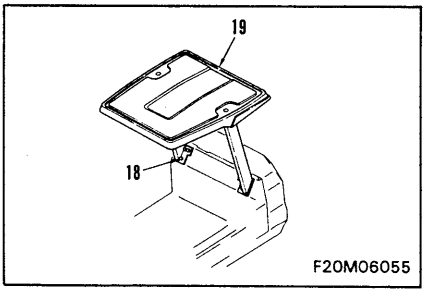


15. Remove battery (20). (See P1)
    ★ Disconnect the cable from the negative (−) terminal of the battery.

16. Disconnect 7 hoses (21) at top of swivel joint (See P2)
17. Remove stopper (22). (See P2)
18. Disconnect swing motor hoses (23) and (24), and remove swing motor assembly (25). (See P2)
19. Remove 7-spool control valve assembly and valve control.
    For details, see REMOVAL OF 7-SPOOL CONTROL VALVE ASSEMBLY.

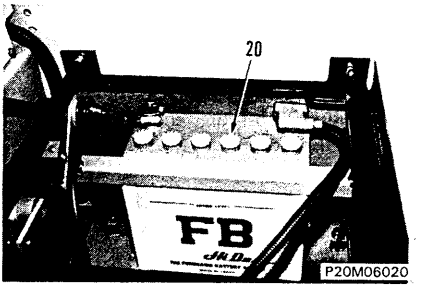
20. Rotate revolving frame assembly, and remove mounting bolts (26). (See P3)
    ★ If all the mounting bolts are removed, the revolving frame will fall over, so leave 2 or 3 mounting bolts in position.

21. Sling revolving frame (27), and remove remaining mounting bolts, then remove revolving frame. (See P4)
    kg Revolving frame assemby:

22. Remove swing circle mounting bolts (28). (See P5)
23. Using lifting tool, lift off swing circle assembly (29). (See P5)
    kg Swing circle assembly: 29 kg

020M06

P1



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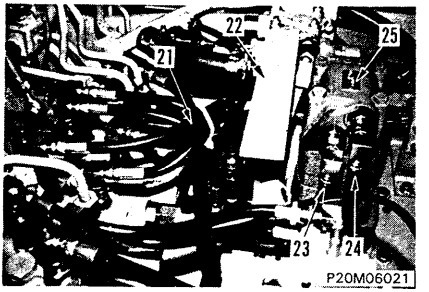

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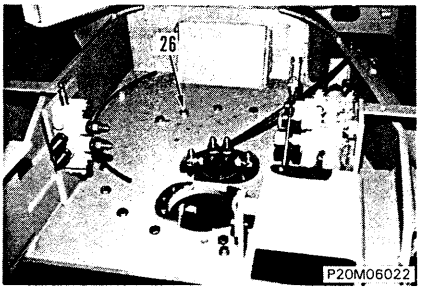

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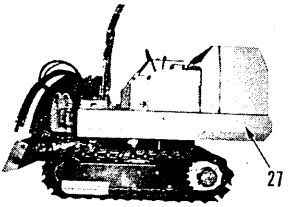
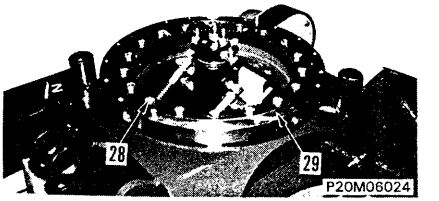


P20M06023

P5



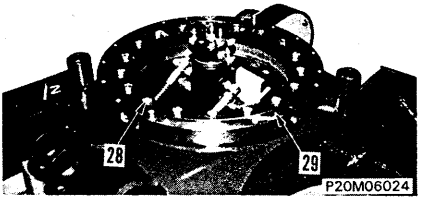
020M06

INSTALLATION OF SWING CIRCLE ASSEMBLY (PC05-6, PC07-1)

1. Using lifting tool, raise swing circle assembly 290, and set to track frame. (See P1)
   ★ Set so that the soft zone (S marks) on both the inside and outside rings are the right side.
2. Tighten swing circle mounting bolts (28). (See P1)
   Mounting bolt: Thread tightener (LT-2)
   Mounting bolt: 6.75 ± 0.75 kgm
   ★ After installing, coat the inside tooth surface of the swing circle with grease (G2-LI).
3. Raise revolving frame assembly (27), and install. (See P2)
   ★ Be careful not to catch the swivel joint or hoses when installing the revolving frame.
   ★ Temporarily tighten 2 or 3 mounting bolts of the revolving frame.
4. Rotate revolving frame assembly, and install mounting bolts (26). (See P3)
   Mounting bolt: 6.75 ± 0.75 kgm
5. Install 7-spool control valve assembly and valve control.
   For details, see INSTALLATION OF 7-SPOOL CONTROL VALVE ASSEMBLY.
6. Install swing motor assembly (25), and connect hoses (24) and (23). (See P4)
7. Connect stopper (22). (See P4)
8. Connect 7 hoses (21) at top of swivel. (See P4)
9. Align boom cylinder assembly (3) with mounting position, and install connecting pin (9). (See F1)
10. Raise work equipment assembly (8) and align with mounting position. (See F2)
11. Install connecting pin (7), and lock with bolt. (See F2)
12. Connect 4 arm and bucket cylinder hoses (5). (See P5)
13. Connect head lamp wiring (6). (See P5)
14. Sling boom cylinder assembly (3), then extend piston rod, and install connecting pin (4). (See P6)

020M06

P1



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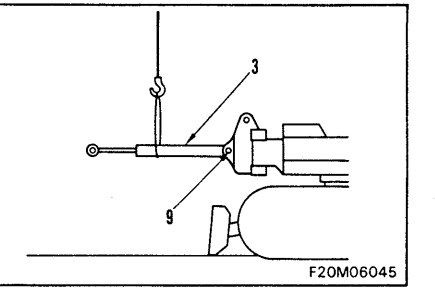

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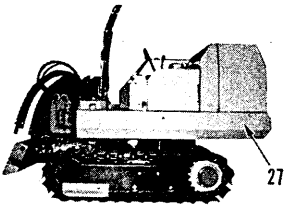

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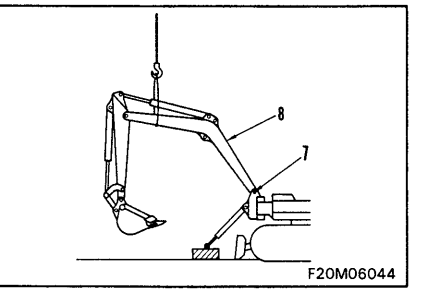

F20M06044

020M06

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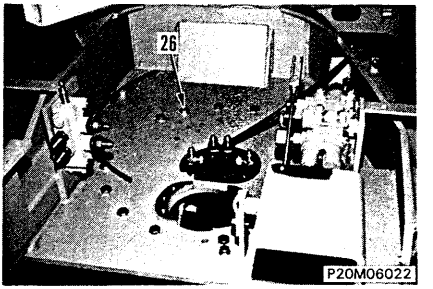

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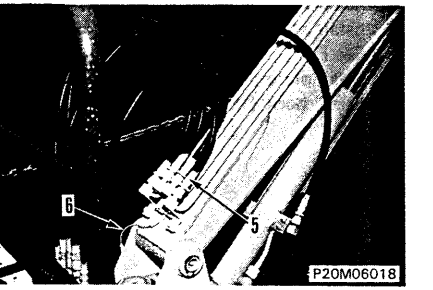

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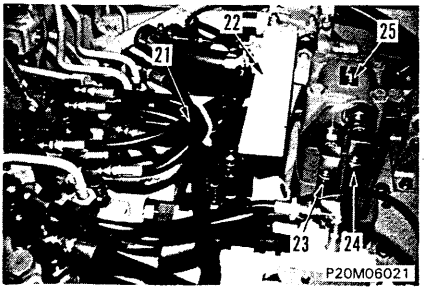

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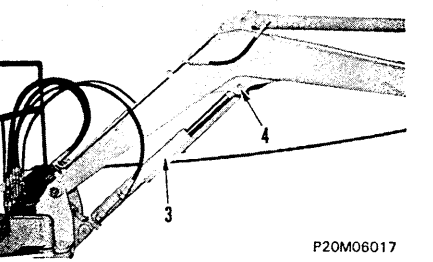
P6



P20M06017

15. Connect boom cylinder hoses (2) and (1). (See P1)

16. Raise canopy assembly (19) and align with mounting position, then install bolts (18). (See F1)

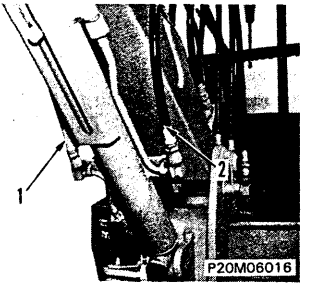
17. Install floor plate (17). (See F2)
18. Install stay (16) and safety lock lever (15). (See F2)
19. Install plate (14). (See F2)
20. Install boot (13) and lever knob (12). (See F2)

21. Install battery (20). (See P2)
    ★ Connect the cable to the negative (–) terminal of the battery.

22. Install operator's seat (11). (See P3)
23. Tighten drain plug (10) and add oil through oil filler to the specified level. (See F3)
    ★ Run the engine to circulate the oil through the system. Then check the oil level again.

020M06

P1



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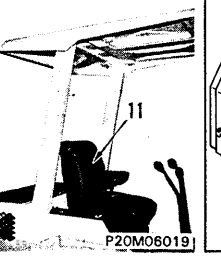

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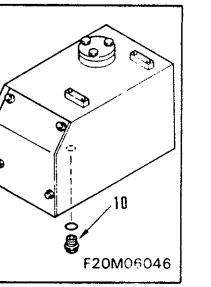
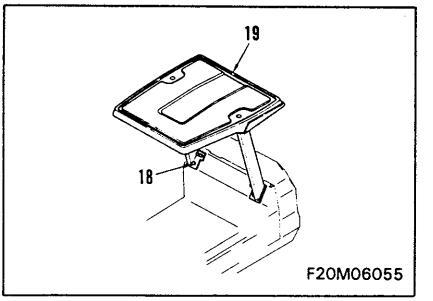


F1



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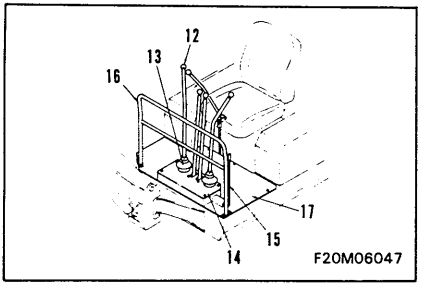

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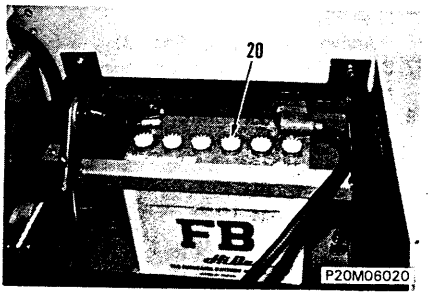


020M06

REMOVAL OF SWING CIRCLE ASSEMBLY (PC10-6, PC15-2)

Retract the piston rods of the bucket and arm cylinders fully, then lower the work equipment to the ground and stop the engine. Operate the control levers several times to release the remaining pressure in the hydraulic piping. Then loosen the oil filler cap slowly to release the pressure inside the hydraulic tank.

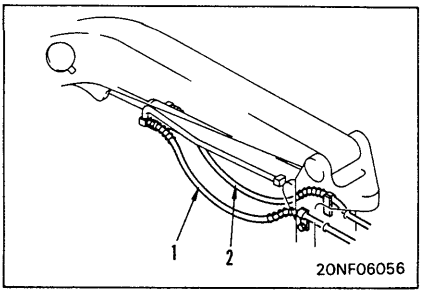
1. Disconnect boom cylinder hoses (1) and (2). (See F1)
2. Raise boom cylinder assembly (3) and remove connecting pin (4), then lower on block (height: approx. 500 mm). (See P1)
3. Disconnect 4 arm and bucket cylinder hoses (5). (See F2)
4. Disconnect head lamp wiring (6). (See F2)
5. Sling work equipment assembly, and remove connecting pin (7). (See F3)
6. Lift off work equipment assembly (8). (See F3)

   kg Work equipment assembly:
   191 kg (PC10-6)
   205 kg (PC15-2)
7. Pull out connecting pin (9), and remove boom cylinder assembly (3). (See F4)
8. Remove canopy assembly (10). (See P2)
9. Remove operator's seat (11). (See P2)
10. Remove drain plug (12) and drain oil from hydraulic tank. (See F5)

    Hydraulic tank: Approx. 30 ℓ
11. Remove seat (13). (See F6)
12. Remove boom swing lever knob (14). (See F6)
13. Remove floor plates (15) and (16). (See F6)
14. Remove seat bracket (17). (See F6)
15. Disconnect 7 hoses (18) at top of swivel. (See P3)
16. Remove stopper (19). (See P3)
17. Disconnect swing motor hose (20), and remove swing motor assembly (21). (See P4)
18. Remove 6-spool control valve assembly, 2-spool control valve assembly, and valve control.
    For details, see REMOVAL OF CONTROL VALVE ASSEMBLY.

020M06

F1



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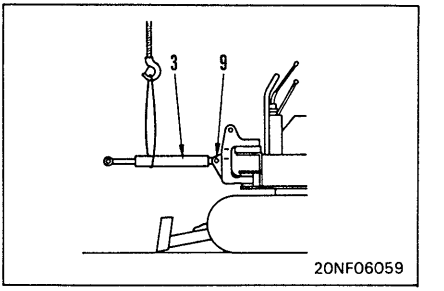

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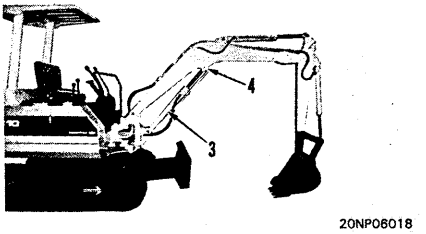

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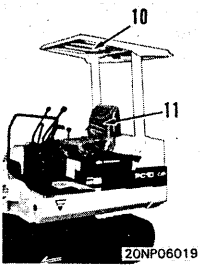
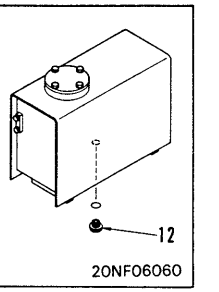


F5



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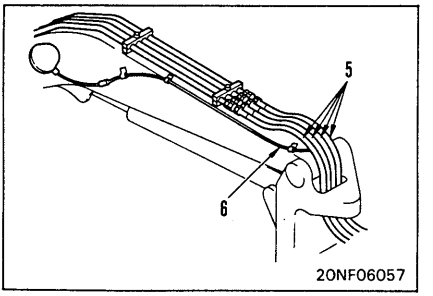
F2



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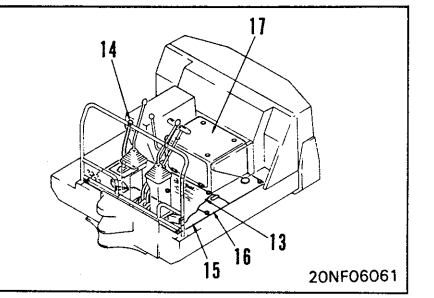

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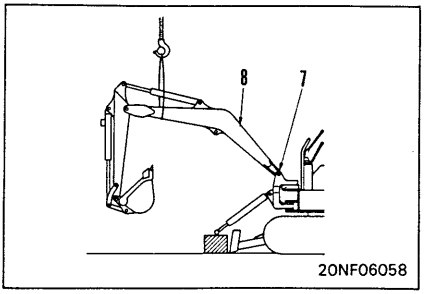

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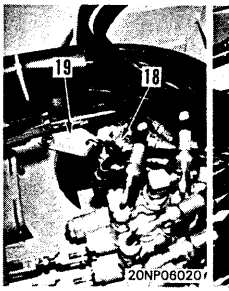

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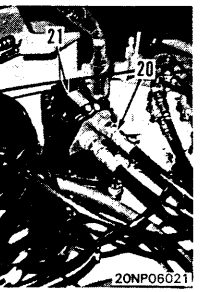


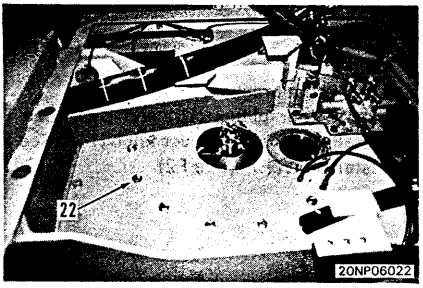
19. Rotate revolving frame assembly, and remove mounting bolts (22). (See P1)
    ★ If all the mounting bolts are removed, the revolving frame will tip over, so leave 2 or 3 mounting bolts in position.

20. Sling revolving frame assembly (23), remove remaining mounting bolts, then remove revolving frame assembly carefully. (See F1)
    ★ Be careful not to catch the center swivel joint or hoses.
    kg Revolving frame assembly:

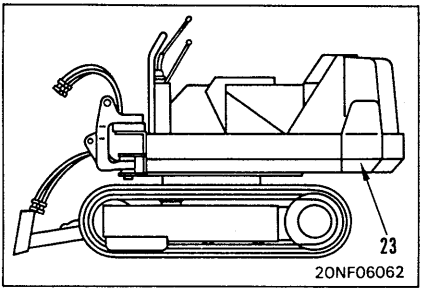
21. Remove swing circle mounting bolts (24).
22. Using lifting tool, lift off swing circle assembly (25). (See P2)
    kg Swing circle assembly: 29 kg

020M06

P1

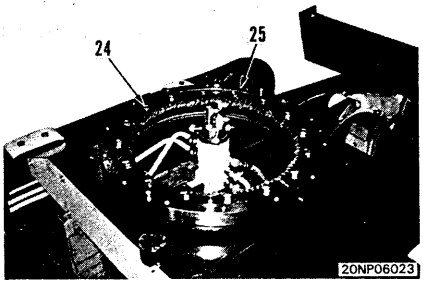


F1



020M06

P2



INSTALLATION OF SWING CIRCLE ASSEMBLY (PC10-6, PC15-2)

1. Using lifting tool, raise swing circle assembly (25), and install to track frame. (See P1)
   ★ Install so that the soft zones (marked S) of both the inside and outside circles are on the left side.
2. Install swing circle mounting bolts (24). (See P1)

   Mounting bolt: Thread tightener (LT-2)

   Mounting bolt: 11.5 ± 1.0 kgm

   ★ After installing, coat the surface of the swing circle inside teeth with grease (G2-LI).

3. Raise revolving frame assembly (23), and install. (See F1)
   ★ Be careful not to catch the center swivel joint or hoses.
   ★ Tighten 2 or 3 mounting bolts of the revolving frame temporarily.

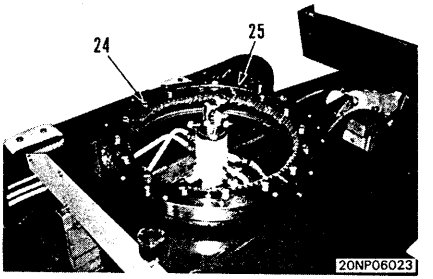
4. Rotate revolving frame assembly and install remaining mounting bolts (22). (See P2)

   Mounting bolt: 11.5 ± 1.0 kgm

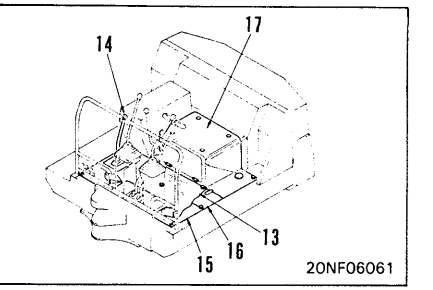
5. Install 6-spool control valve assembly, 2-spool control valve assembly, and valve control.
   For details, see INSTALLATION OF CONTROL VALVE ASSEMBLY.
6. Install swing motor assembly (21), and connect motor hose (20). (See P3)
7. Install stopper (19). (See P4)
8. Connect 7 hoses (18) at top of swivel. (See P4)
9. Install seat bracket (17). (See F2)
10. Install floor plates (15) and (16). (See F2)
11. Install boom swing lever knob (14). (See F2)
12. Install seat (13). (See F2)
13. Align boom cylinder assembly (3) with mounting position, and install connecting pin (9). (See F3)
14. Raise work equipment assembly (8) and align with mounting position. (See F4)
15. Install connecting pin (7), and lock with bolt. (See F4)
16. Connect 4 arms and bucket cylinder hoses (5). (See F5)
17. Connect head lamp wiring (6). (See F5)

020M06

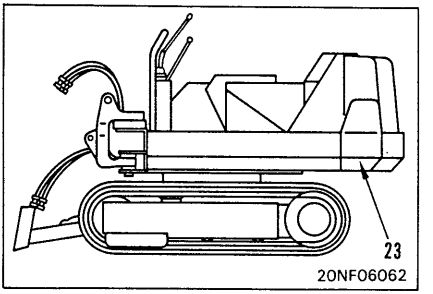
P1



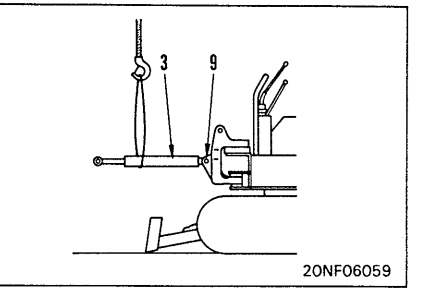
F2



F1

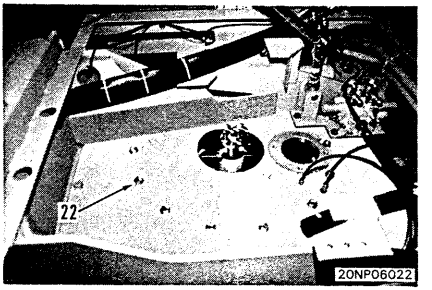


F3

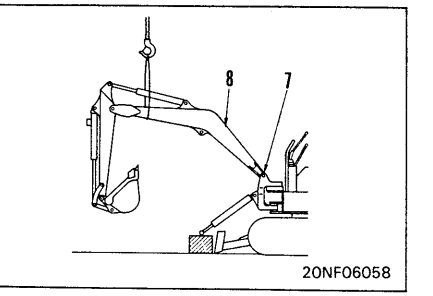


020M06

P2

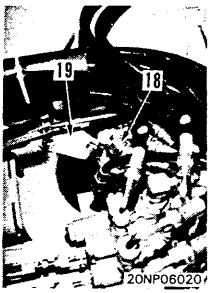


F4

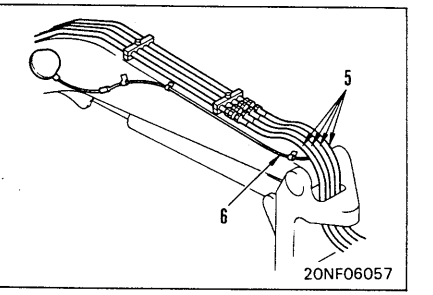


P3

P4



F5



18. Sling boom cylinder assembly (3), and extend piston rod, then install connecting pin (4). (See P1)

19. Connect boom cylinder hoses (1) and (2). (See F1)

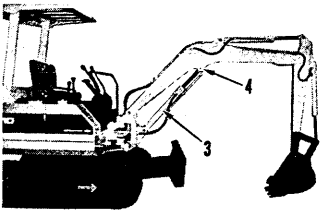
20. Install operator's seat (11). (See P2)
21. Install canopy assembly (10). (See P2)
22. Tighten drain plug (12) and add oil through oil filler. (See F2)

    Hydraulic tank: Approx. 30ℓ

    ★ Run the engine to circulate the oil through the system. Then check the oil level again.

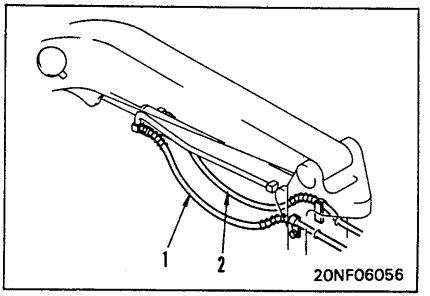
020M06

P1



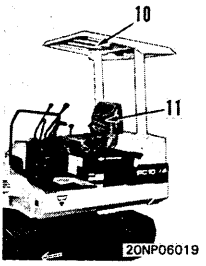
20NP06018

F1

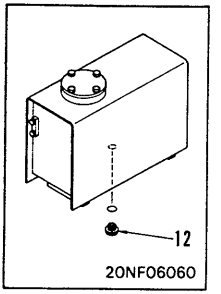


020M06

P2



F2



REMOVAL OF HYDRAULIC PUMP ASSEMBLY (PC05-6, PC07-1)

Loosen the oil filler cap slowly to release the pressure inside the hydraulic tank.

1. Remove drain plug (1) and drain oil from hydraulic tank. (See F1)
   Hydraulic tank: Approx. 18.5 ℓ
2. Open hood.
3. Disconnect hydraulic pump piping (2), (3), and (4). (See P1)
4. Remove mounting bolts (5), then remove hydraulic pump assembly (6). (See P2)

REMOVAL OF HYDRAULIC PUMP (PC10-6, PC15-2)

Loosen the oil filler cap slowly to release the pressure iniside the hydraulic tank.

1. Remove drain plug (1) and drain oil from hydraulic tank. (See F2)
   Hydraulic tank: Approx. 30ℓ
2. Open hood.
3. Disconnect 2 hydraulic pump inlet tubes (2) and 3 outlet tubes (3). (See P3)
4. Remove mounting bolts, then remove hydraulic pump assembly (4). (See P4)

INSTALLATION OF HYDRAULIC PUMP ASSEMBLY (PC05-6, PC07-1)

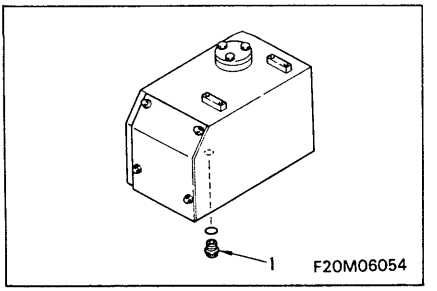
1. Install hydraulic pump assembly (6), and tighten mounting bolts (5). (See P2)
2. Connect hydraulic pump piping (4), (3), and (2). (See P1)
3. Tighten drain plug (1) and add oil through oil filler to the specified level. (See F1)
   ★ Run the engine to circulate the oil through the system. Then check the oil level again.

INSTALLATION OF HYDRAULIC PUMP ASSEMBLY (PC10-6, PC15-2)

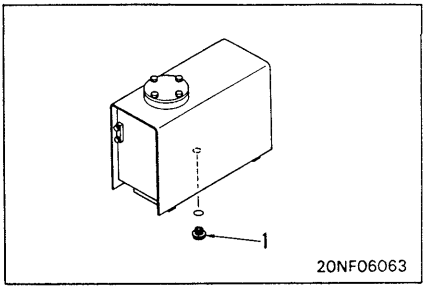
1. Install hydraulic pump assembly (4), and tighten mounting bolts. (See P4)
2. Connect 3 hydraulic pump outlet tubes (3) and 2 inlet tubes (2). (See P3)
3. Tighten drain plug (1) and add oil through
   ★ Run the engine to circulate the oil through the system. Then check the oil level again.
4. Close hood.

020M06

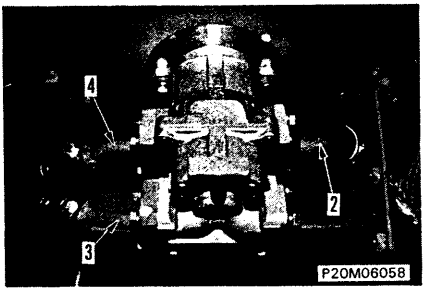
F1



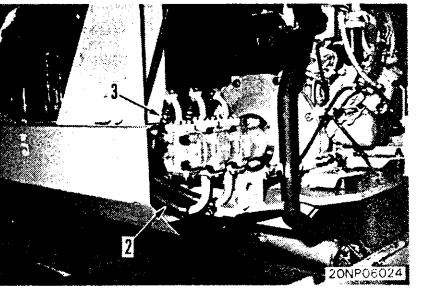
F2



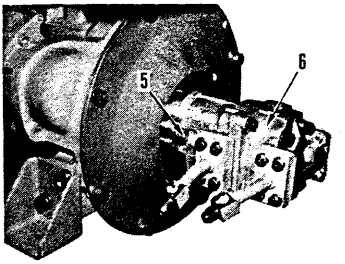
P1



P3

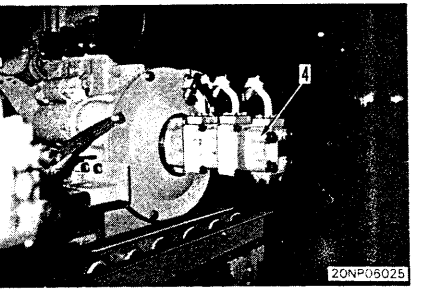


P2



P20M06025

P4



020M06

REMOVAL OF 7-SPOOL CONTROL VALVE ASSEMBLY (PC05-6, PC07-1)

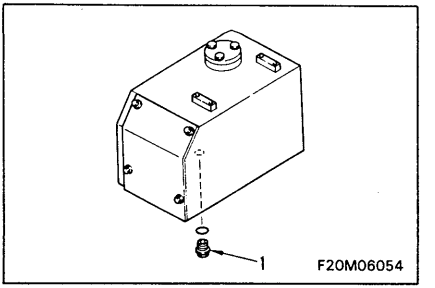
Retract the bucket and arm cylinder rods fully, lower the work equipment completely to the ground and stop the engine. Operate the control levers several times to release the remaining pressure in the hydraulic piping. Then loosen the oil filler plate slowly to release the pressure inside the hydraulic tank.

1. Remove drain plug (1) and drain oil from hydraulic tank. (See F1)
   Hydraulic tank: Approx. 18.5 ℓ
2. Remove work equipment hoses (2), (3), (4), (5), (6), and (7). (See P1)
3. Remove lever knob (8) and boot (9). (See F2)
4. Remove plate (10). (See F2)
5. Remove safety lock lever (11) and stay (12). (See F2)
6. Remove floor plate (13). (See F2)
7. Disconnect all tubes (14) and hoses (15) from valve ports. (See P2)
8. Remove mounting bolts from bottom of revolving frame, then remove lever (16). (See P3)
9. Remove bracket (17). (See P3)
10. Remove 7 yokes (18) of spool from bottom of revolving frame. (See P4)
11. Remove 7-spool control valve assembly (19). (See P5)

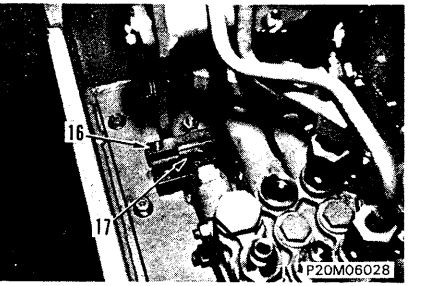
020M06

★ FOR MACHINE EQUIPPED WITH SWING-BOOM SWING SELECTOR PEDAL

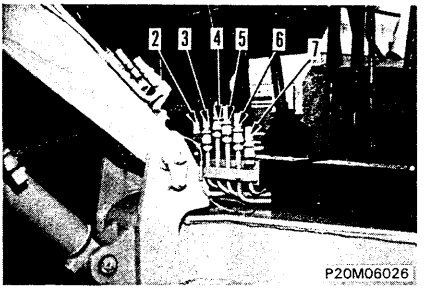
F1



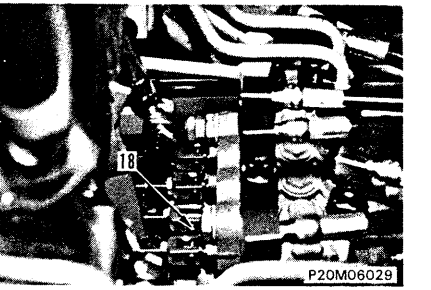
P3



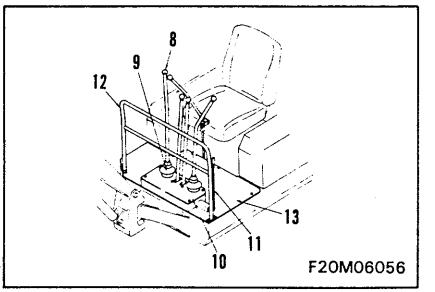
P1



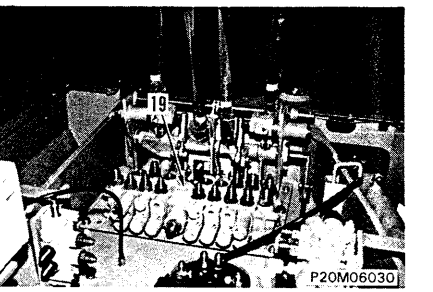
P4



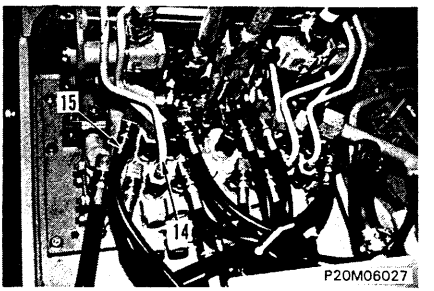
F2



P5



P2



020M06

INSTALLATION OF 7-SPOOL CONTROL VALVE ASSEMBLY (PC05-6, PC07-1)

1. Install 7-spool control valve assembly (19). (See P1)
2. Install 7 yokes (18) of spool from bottom of revolving frame. (See P2)
3. Install bracket (17) and bar (16). (See P3)
4. Connect tubes (14) and hoses (15) to valve port. (See P4)
5. Install floor plate (13). (See F1)
6. Install stay (12) and safety lock lever (11). (See F1)
7. Install plate (10). (See F1)
8. Install boot (9) and lever knob (8). (See F1)
9. Install work equipment hoses (7), (6), (5), (4), (3), and (2). (See F5)
10. Tighten drain plug (1) and add oil through oil filler to the specified level. (See F2)

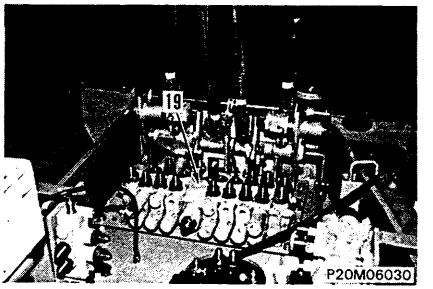
    Hydraulic tank: Approx. 18.5 ℓ

    ★ Run the engine to circulate the oil through the system. Then check the oil level again.

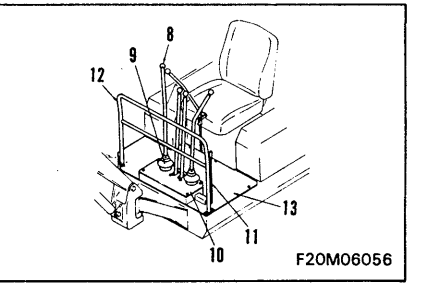
020M06

★ FOR MACHINE EQUIPPED WITH SWING-BOOM SWING SELECTOR PEDAL

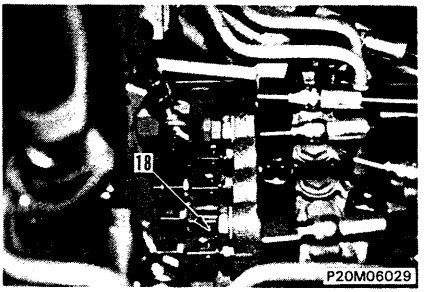
P1



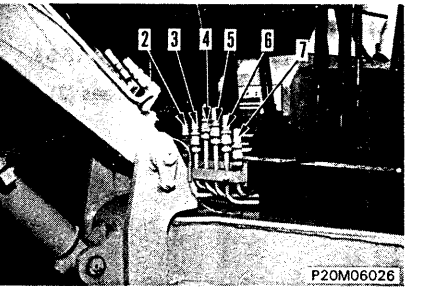
F1



P2

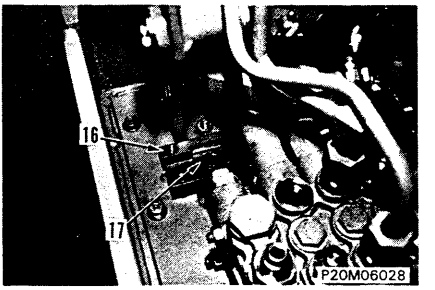


P5

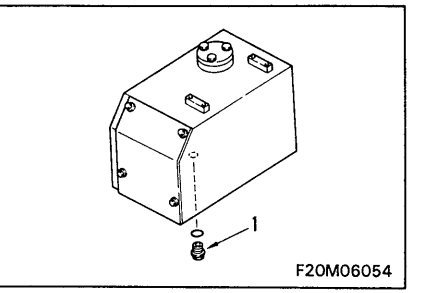


020M06

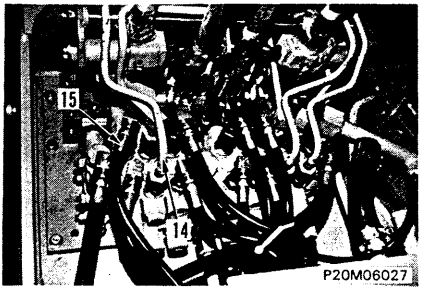
P3



F2



P4



REMOVAL OF 8-SPOOL CONTROL VALVE ASSEMBLY (PC05-6, PC07-1)

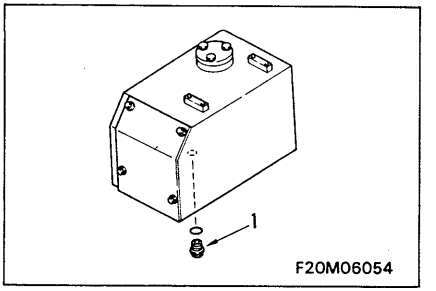
Retract the piston rods of the bucket and arm cylinders fully, then lower the work equipment to the ground and stop the engine. Operate the control levers several times to release the remaining pressure in the hydraulic piping. Then loosen the oil filler cap slowly to release the pressure inside the hydraulic tank.

1. Remove drain plug (1) and drain oil from hydraulic tank. (See F1)
   Hydraulic tank: Approx. 18.5ℓ
2. Remove work equipment hoses (2), (3), (4), (5), (6), and (7). (See P1)
3. Remove lever knob (8) and boot (9). (See F2)
4. Remove plate (10). (See F2)
5. Remove safety lock lever (11) and stay (12). (See F2)
6. Remove floor plate (13). (See F2)
7. Disconnect all tubes (14) and hoses (15) from valve ports. (See P2)
8. Remove mounting bolts from bottom of revolving frame, then remove lever (16). (See P3)
9. Remove bracket (17). (See P3)
10. Remove 8 yokes (18) of spools from bottom of revolving frame. (See P4)
11. Remove 8-spool control valve assembly (19). (See F3)

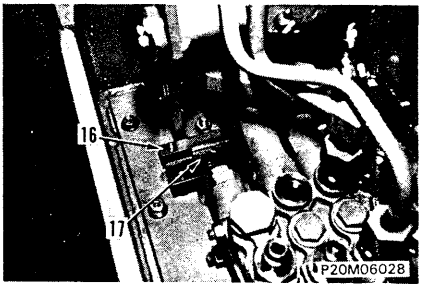
020M06

★ FOR MACHINE WITHOUT SWING-BOOM SWING SELECTOR PEDAL

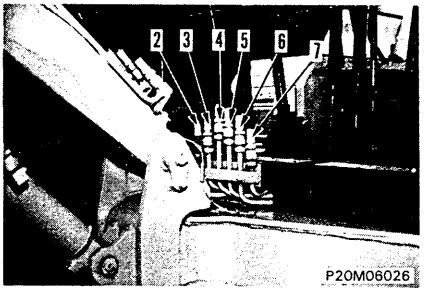
F1



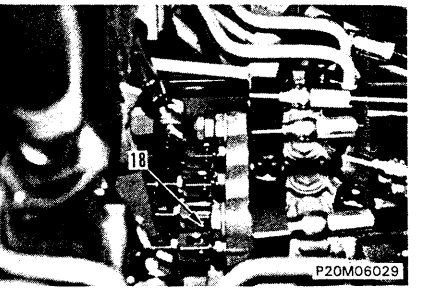
P3



P1

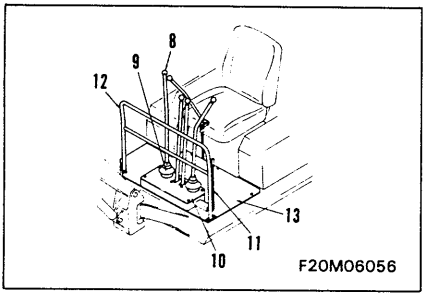


P4

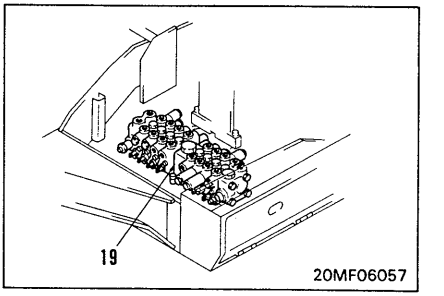


020M06

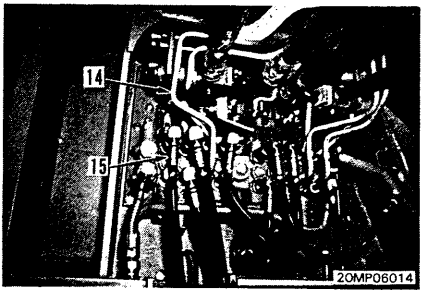
F2



F3



P2



INSTALLATION OF 8-SPOOL CONTROL VALVE ASSEMBLY (PC05-6, PC07-1)

1. Install 8-spool control valve assembly (19). (See F1)
2. Install 8 yokes (18) of spools from bottom of revolving frame. (See P1)
3. Install bracket (17) and lever (16). (See P2)
4. Connect tubes (14) and hoses (15) to valve ports. (See P3)
5. Install floor plate (13). (See F2)
6. Install stay (12) and safety lock lever (11). (See F2)
7. Install plate (10). (See F2)
8. Install boot (9) and lever knob (8). (See F2)
9. Install work equipment hoses (7), (6), (5), (4), (3), and (2). (See P4)
10. Tighten drain plug (1) and add oil through oil filler. (See F3)

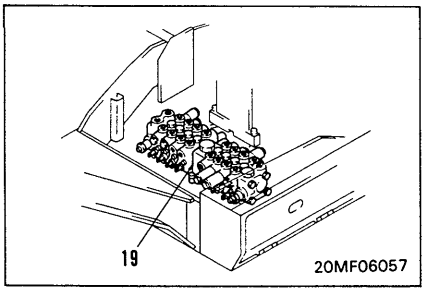
    Hydraulic tank: Approx. 18.5ℓ

    ★ Run the engine to circulate the oil through the system. Then check the oil level again.

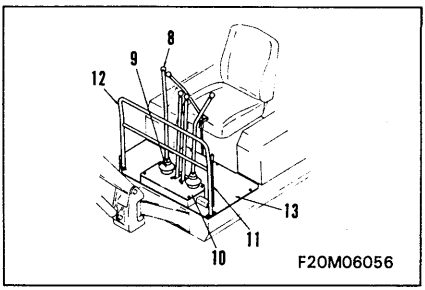
020M06

★ FOR MACHINE WITHOUT SWING-BOOM SWING SELECTOR PEDAL

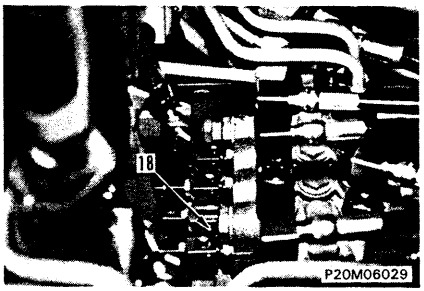
F1



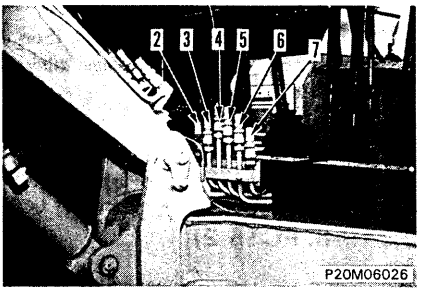
F2



P1

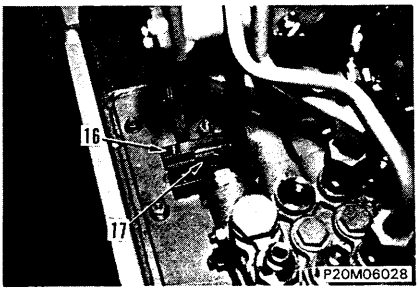


P4

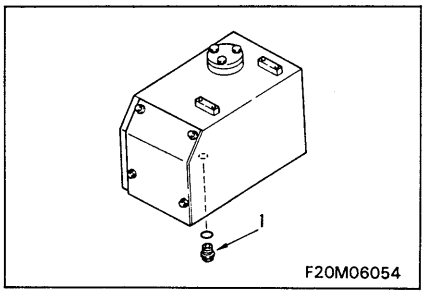


020M06

P2



F3



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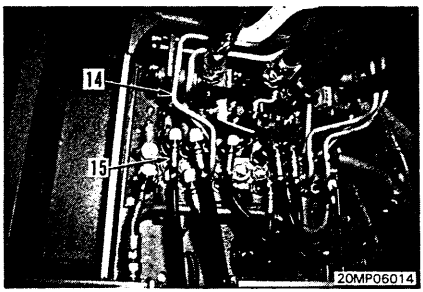

REMOVAL OF 2-SPOOL CONTROL VALVE ASSEMBLY (PC10-6, PC15-2)

1. Remove drain plug (1) and drain oil from hydraulic tank. (See F1)

   Hydraulic tank: Approx. 30ℓ

2. Remove operator's seat (2). (See P1)
3. Remove seat (3). (See F2)
4. Remove swing lever knob (4). (See F2)
5. Remove floor plates (5) and (6). (See F2)
6. Remove seat bracket (7). (See F2)
7. Disconnect all piping (8) from valve ports. (See P2)
8. Disconnect 2 yokes (9) of spools. (See P2)
9. Remove 2-spool control valve assembly (10). (See P2)

INSTALLATION OF 2-SPOOL CONTROL VALVE ASSEMBLY (PC10-6, PC15-2)

1. Install 2-spool control valve assembly (10). (See P2)
2. Connect 2 yokes (9) of spools. (See P2)
3. Connect all piping (8) to valve ports. (See P2)
   ★ Be careful not to mistake the sets when connecting the piping.
4. Install seat bracket (7). (See F2)
5. Install floor plates (5) and (6). (See F2)
6. Install swing lever knob (4). (See F2)
7. Install seat (3). (See P1)
8. Install operator's seat (2). (See P1)
9. Tighten drain plug (1) and add oil through oil filler.

   Hydraulic tank: Approx. 30ℓ

   ★ Run the engine to circulate the oil through the system. Then check the oil level again.

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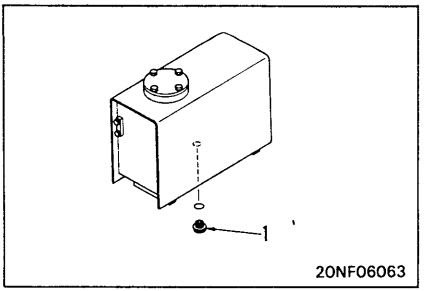
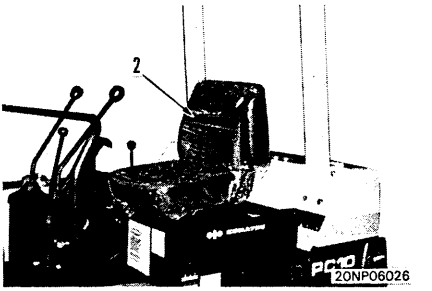
F1



P1



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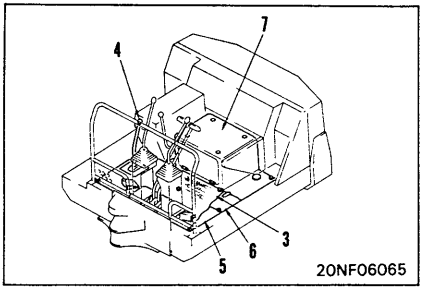
F2



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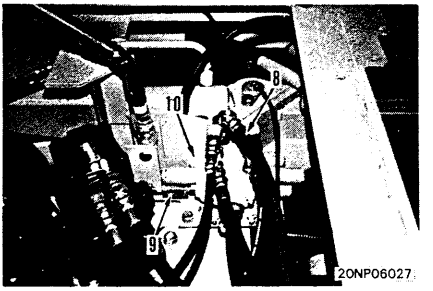


REMOVAL OF 6-SPOOL CONTROL VALVE ASSEMBLY (PC10-6, PC15-2)

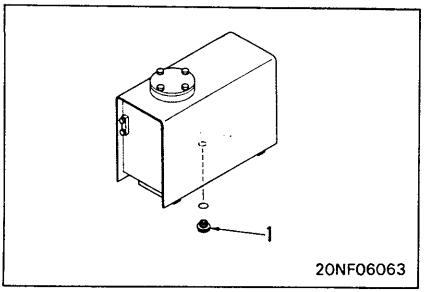
1. Remove drain plug (1) and drain oil from hydraulic tank. (See F1)
   Hydraulic tank: Approx. 30ℓ
2. Remove operator's seat (2). (See P1)
3. Remove seat (3). (See F2)
4. Remove swing lever knob (4). (See F2)
5. Remove floor plates (5) and (6). (See F2)
6. Remove seat bracket (7). (See F2)
7. Disconnect all piping (8) from valve ports. (See P2)
8. Disconnect yokes (9) (6 places) of spools. (See P3)
9. Remove 6-spool control valve assembly (10). (See P3)

INSTALLATION OF 6-SPOOL CONTROL VALVE ASSEMBLY (PC10-6, PC15-2)

1. Install 6-spool control valve assembly (10). (See P3)
2. Connect yokes (9) (6 places) of spools. (See P3)
3. Connect all piping (8) to valve ports. (See P2)
   ★ Be careful not to mistake the sets when connecting the piping.
4. Install seat bracket (7). (See F2)
5. Install floor plates (5) and (6). (See F2)
6. Install swing lever knob (4). (See F2)
7. Install seat (3). (See F2)
8. Install operator's seat (2). (See P1)
9. Tighten drain plug (1) and add oil through oil filler. (See F1)
   Hydraulic tank: Approx. 30ℓ
   ★ Run the engine to circulate the oil through the system. Then check the oil level again.

020M06

F1



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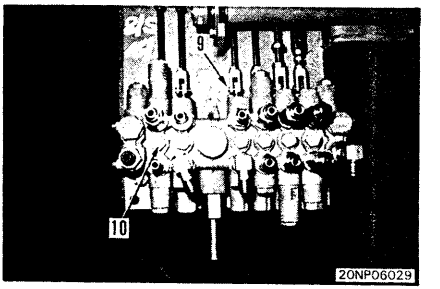

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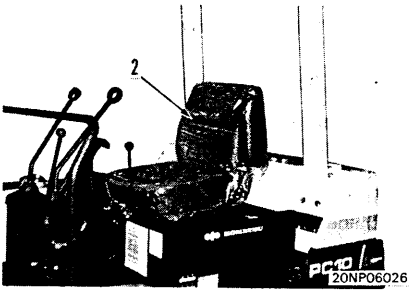

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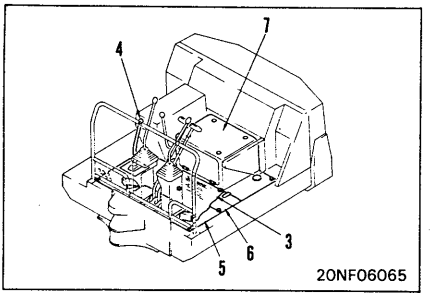

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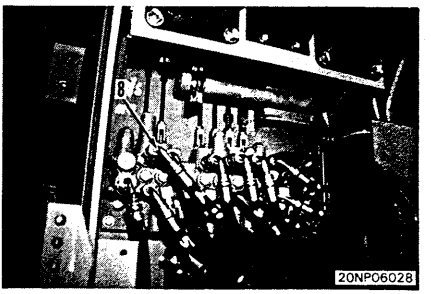

DISASSEMBLY OF CONTROL VALVE ASSEMBLY

★ The set pressure of the safety valve cannot be adjusted when it is on the machine, so do not disassemble it.

1. Remove main relief valve (1) and safety-suction valve (2). (See F1)
2. Remove case (3), then remove spool assembly (4). (See F1)
3. Remove plate (5) on opposite side, then remove oil seal (6). (See F1)
4. Disassembly of spool
   1) Assemble removed spool assembly to body, and remove bolt (7), then remove collar (8), retainer (9), and spring (10). (See F1)
   2) Remove retainer (9) and plate (5), then remove oil seal (6) from spool (11). (See F1)
5. Remove plug (12), then remove spring (13) and check valve (14). (See F1)

ASSEMBLY OF CONTROL VALVE ASSEMBLY

1. Assemble check valve (14) and spring (13), then fit O-ring and install plug (12). (See F1)

   kgm Plug: 3.5 ± 0.5 kgm

2. Assembly of spool
   1) Assemble oil seal (6), plate (5), retainer (9), and spring (10) to spool (11). (See F1)
   2) Fit collar (8) and tighten bolt (7) temporarily. (See F1)
   3) Insert spool in body, and tighten bolt (7). (See F1)

   kgm Bolt: 0.85 ± 0.15 kgm

3. Assemble oil seal (16) to opposite side, and install plate (5). (See F1)
4. Install case (3). (See F1)
5. Fit O-rings and install safety-suction valve (2) and main rleief valve (1). (See F1)

   kgm Safety-suction valve: 4.5 ± 0.5 kgm

   Main relief valve: 5.5 ± 0.5 kgm

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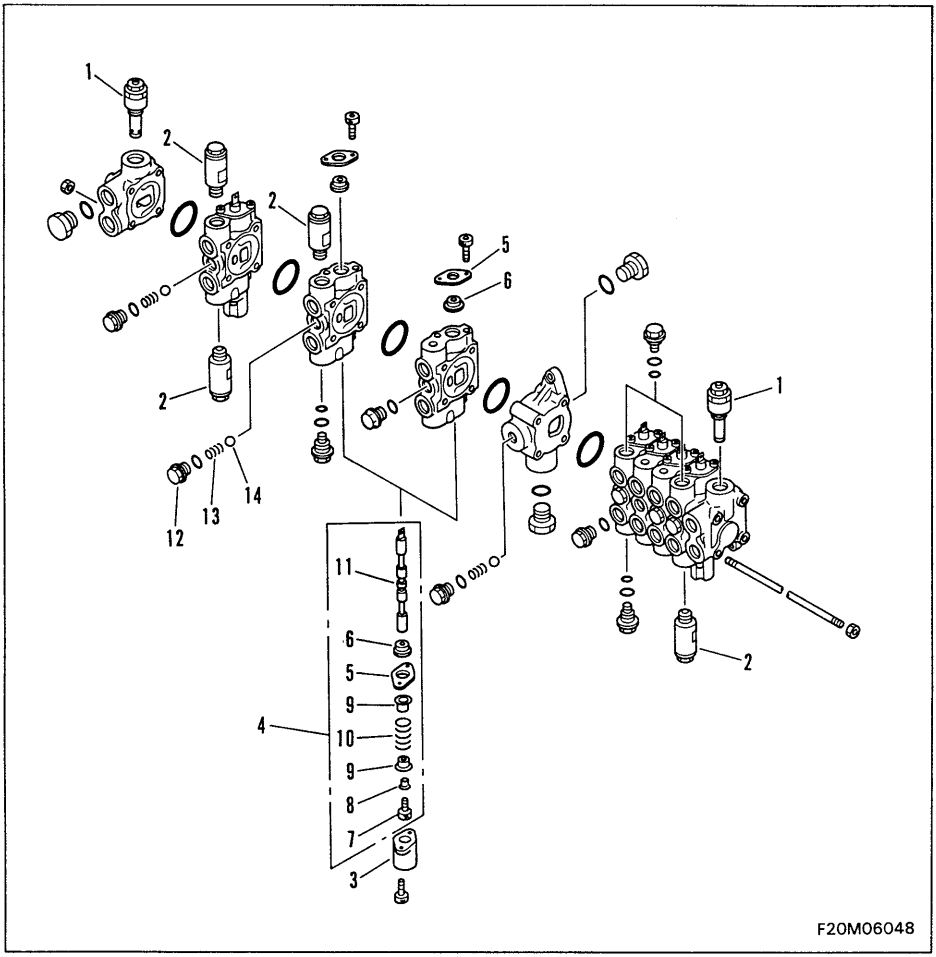
F1



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REMOVAL OF SWING MOTOR ASSEMBLY (PC05-6, PC07-1)

1. Remove operator's seat (1). (See P1)
2. Disconnect hoses (2) and (3), and remove swing motor assembly (4). (See P2)

REMOVAL OF SWING MOTOR ASSEMBLY (PC10-6, PC15-2)

1. Remove operator's seat (1). (See P3)
2. Remove seat (2). (See F1)
3. Remove swing lever knob (3). (See F1)
4. Remove floor plates (4) and (5). (See F1)
5. Remove seat bracket (6). (See F1)
6. Disconnect hoses (7), then disconnect swing motor assembly (8). (See P4)

INSTALLATION OF SWING MOTOR ASSEMBLY (PC05-6, PC07-1)

1. Install swing motor assembly (4), and connect hoses (3) and (2).
2. Install operator's seat (1). (See P1)

INSTALLATION OF SWING MOTOR ASSEMBLY (PC10-6, PC15-2)

1. Install swing motor assembly (8), and connect hoses (7). (See P4)
2. Install seat bracket (6). (See F1)
3. Install floor plates (4) and (5). (See F1)
4. Install swing lever knob (3). (See F1)
5. Install seat (2). (See F1)
6. Install operator's seat (1). (See P3)

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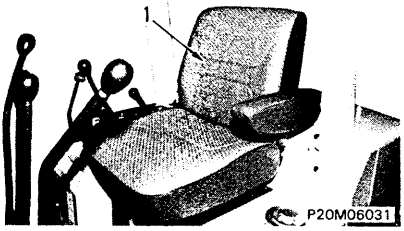
P1



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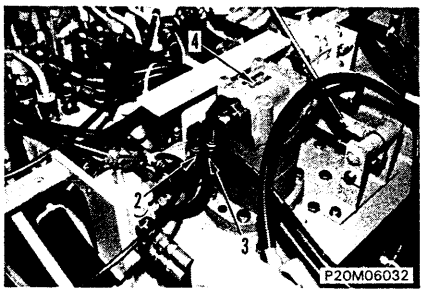

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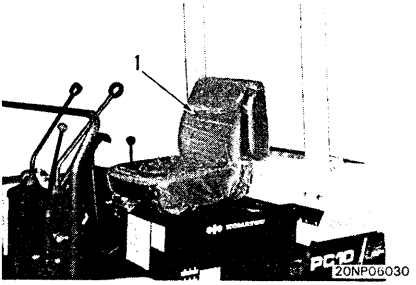

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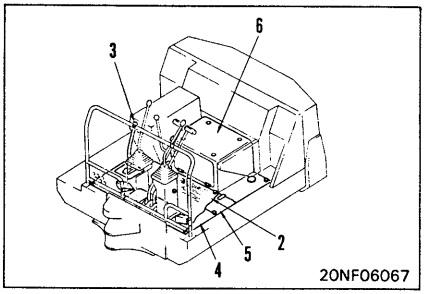

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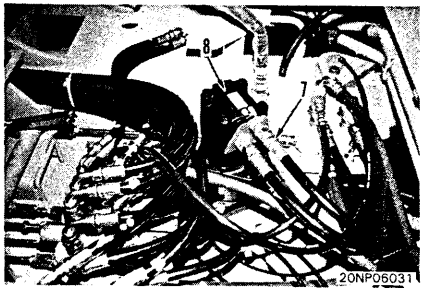

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REMOVAL OF TRAVEL MOTOR ASSEMBLY

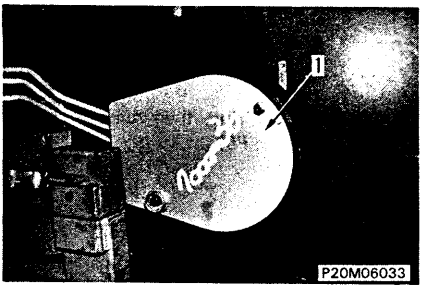
1. Remove track shoe assembly.
2. Remove cover (1). (See P1)
3. Disconnect motor tubes (2), (3), and (4). (See P2)
4. Remove motor mounting bolts (5), and raise travel motor assembly (6), then tap it with a plastic hammer, and remove it together with sprocket. (See P3)

INSTALLATION OF TRAVEL MOTOR ASSEMBLY

1. Install travel motor assembly (6) to track frame, and tighten bolts (5). (See P3)
2. Connect motor tubes (4), (3), and (2). (See P2)
3. Install cover (1). (See P1)
4. Install track shoe assembly.

020M06

P1



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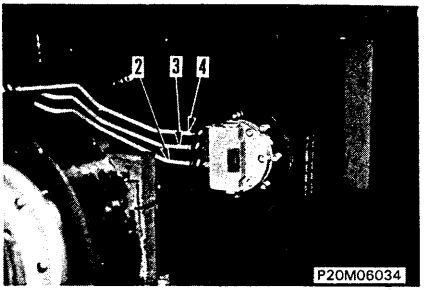

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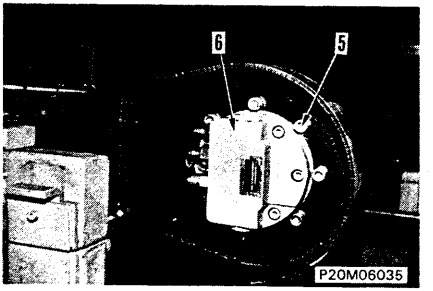

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DISASSEMBLY OF TRAVEL MOTOR ASSEMBLY (PC05-6, PC07-1)

DISASSEMBLY OF FINAL DRIVE ASSEMBLY

1. Remove mounting bolts and snap ring, then remove cover (1). (See P1)
2. Remove snap ring, then remove No. 2 sun gear (2). (See P2)
3. Remove O-ring and snap ring.
4. Remove No. 2 planetary carrier assembly (3) together with gear. (See P3)
5. Remove snap ring.
6. Remove thrust washer (4), No. 2 planetary gear (5), and needle bearing (6). (See P4)
7. Remove snap ring, then remove No. 1 sun gear (7). (See P5)
8. Remove snap ring, then remove thrust washer (8), No. 1 planetary gear (9), and needle bearing. (See P6)
9. Tighten final drive flange and hydraulic motor flange in a vice, and remove snap ring (10). (See F1, P7)

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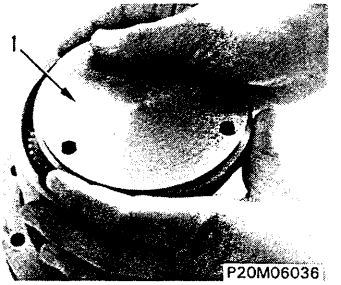
P1



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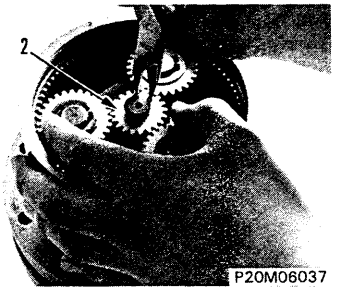

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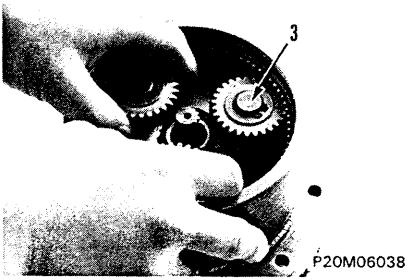

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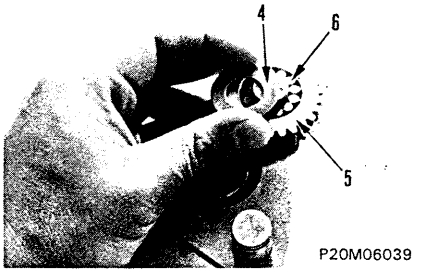

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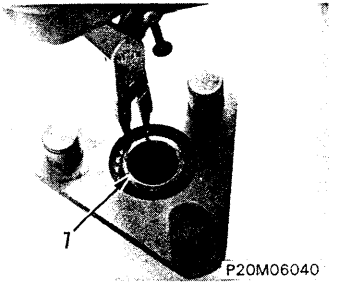

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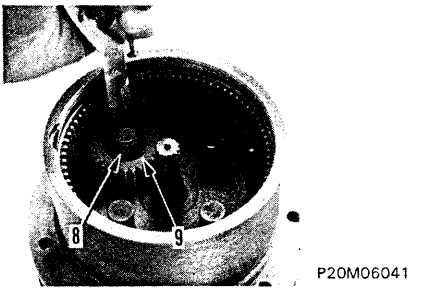
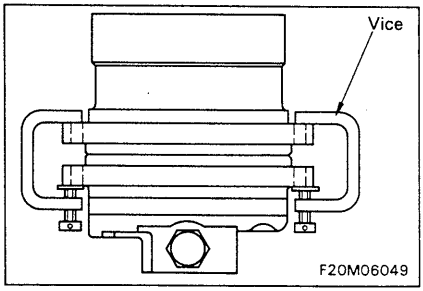


F1



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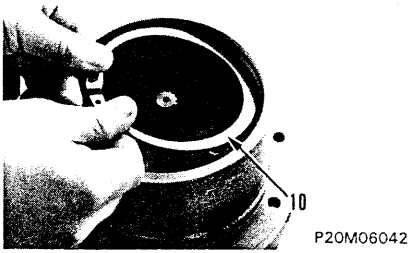

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10. Remove ring gear (11). (See P1)

11. Remove floating seal (12) and O-ring. (See P2)

12. Remove hydraulic motor assembly (13). (See P3)

13. Remove seal ring (14). (See P4)

14. Remove bearing (15) and snap ring (16). (See F1)

DISASSEMBLY OF HYDRAULIC MOTOR AND VALVE ASSEMBLY

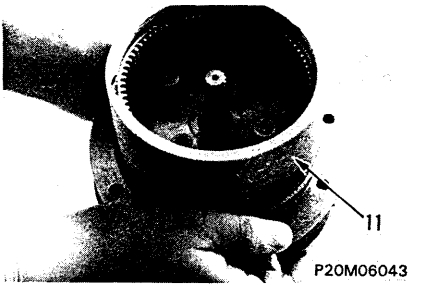
15. Pull out spool assembly (17) from body. (See P5)

16. Remove mounting bolts, then remove valve body (18) together with valve plate. (See P6)

17. Remove valve plate (19) from valve body. (See P7)

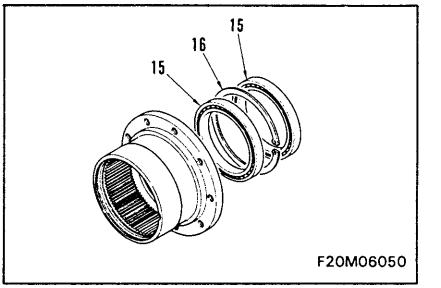
020M06

P1



P20M06043

F1



F20M06050

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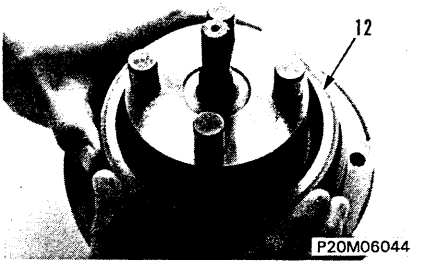

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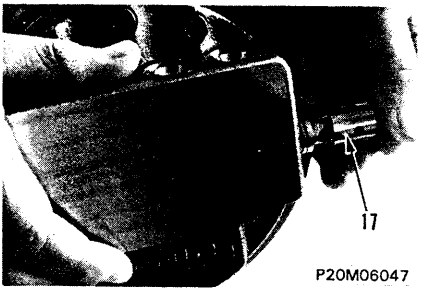

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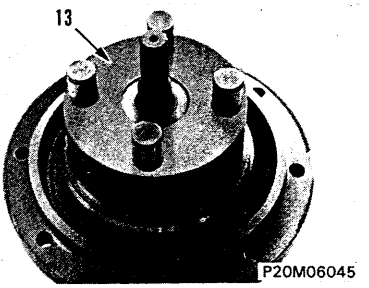
020M06

P3



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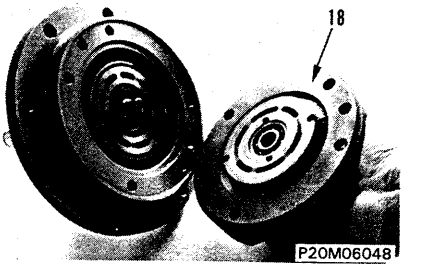

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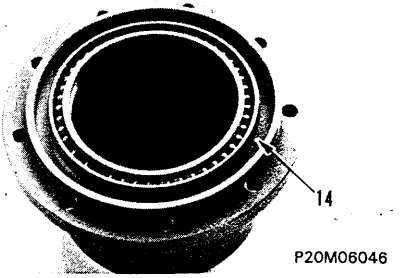

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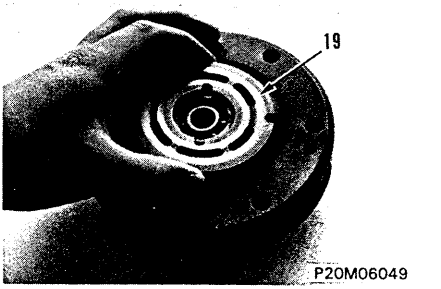


P20M06049

18. Remove bearing (20) and spring pin. (See P1)

19. Remove O-ring, then remove cylinder assembly (21). (See P2)

20. Remove piston assembly (22). (See P3)

21. Remove piston (23) from shoe holder. (See P4)

22. Remove snap ring (24) from cylinder, then remove retainer (25) and spring (26). (See F1)

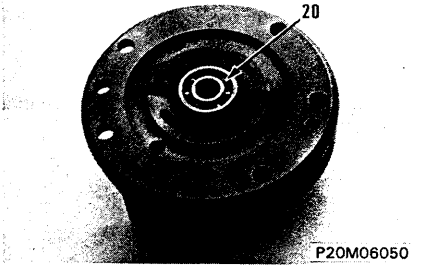
23. Remove holder (27) and pin (28). (See F1)

24. Remove swash plate (29). (See P5)

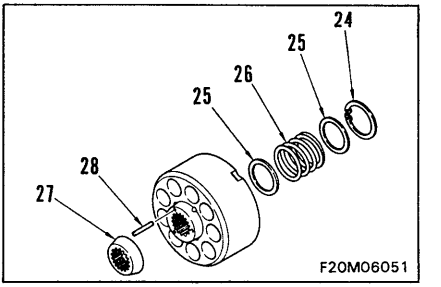
25. Remove shaft (30). (See P6)

020M06

P1



F1



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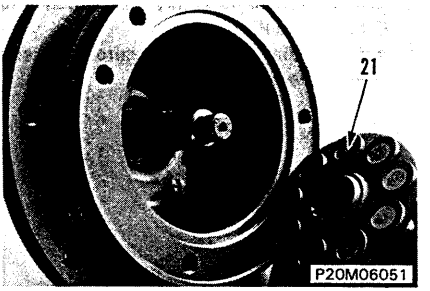
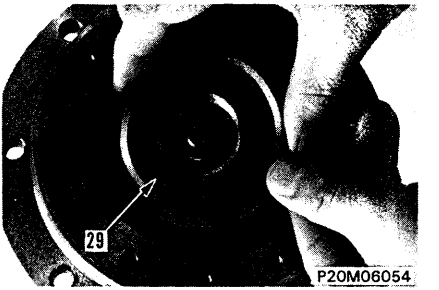
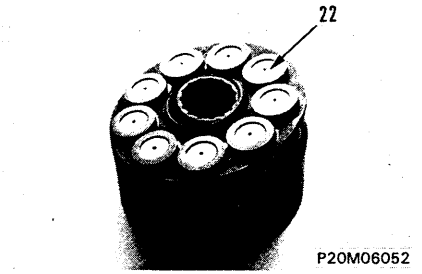


P5



020M06

P3



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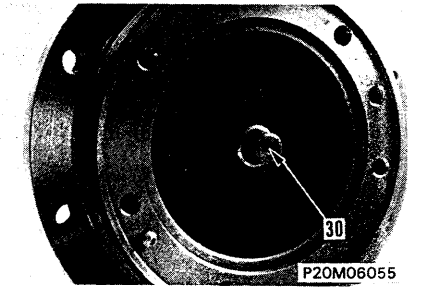

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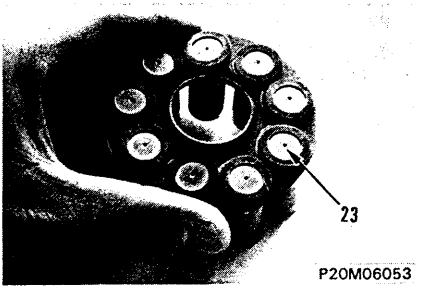


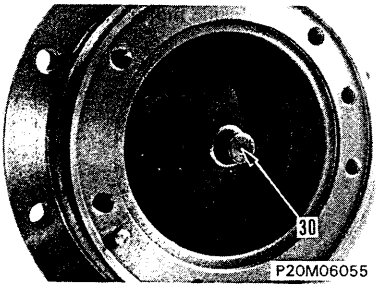
ASSEMBLY OF TRAVEL MOTOR ASSEMBLY (PC05-6, PC07-1)

ASSEMBLY OF HYDRAULIC MOTOR AND VALVE ASSEMBLY

1. Install shaft (30). (See P1)
   ★ Coat the surface of the oil seal lip with grease.
2. Install swash plate (29). (See P2)
3. Install pin (28) and holder (27) to cylinder. (See F1)
4. Assemble retainer (25) and spring (26), and secure with snap ring (24). (See F1)
5. Install piston (23) to shoe holder. (See P3)
6. Assemble piston assembly (22) to cylinder. (See P4)
7. Install cylinder assembly (21), then install O-ring. (See P5)
   ★ Check that the shoe is securely in contact with the swash plate.
8. Install spring pin and bearing (20). (See P6)
9. Install valve plate (19) to valve body. (See P7)
   ★ Fill the inside of the valve body with approx. 150 cc of engine oil (SAE30-CD).

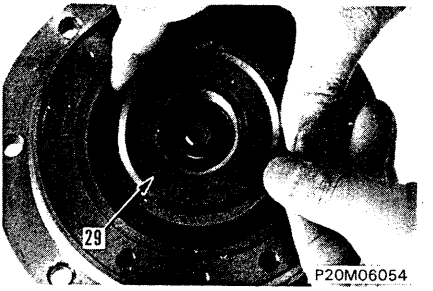
020M06

P1



P20M06055

P2



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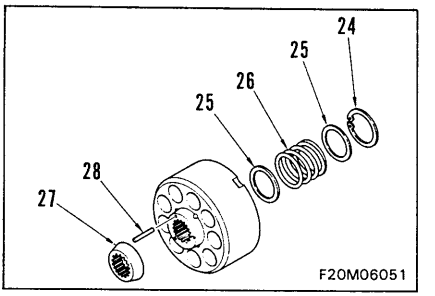

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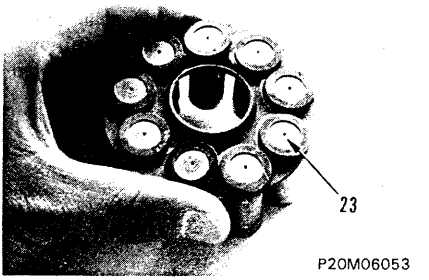

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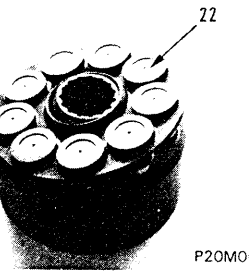

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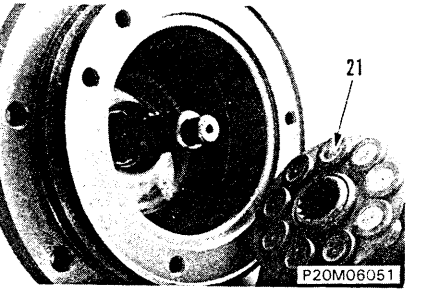

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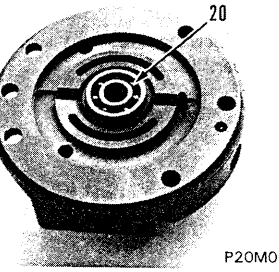

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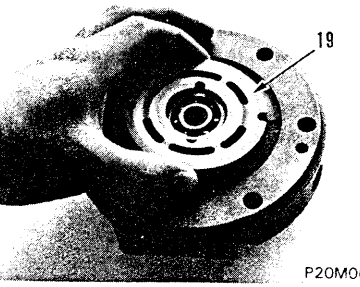


P20M06049

020M06

10. Install valve body (18). (See P1)
    Mounting bolt: 2.6 – 3.3 kgm

11. Install spool assembly to valve body. (See P2)
    Plug: 17 – 20 kgm

ASSEMBLY OF FINAL DRIVE ASSEMBLY

12. Install bearing (15) and snap ring (16) to ring gear. (See F1)

13. Install seal ring (14). (See P3)
    ★ Coat the O-ring portion with grease.
    ★ Install with the seal surface at the top.

14. Install hydraulic motor assembly (13). (See P4)

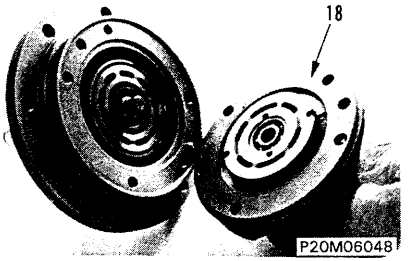
15. Install O-ring and floating seal (12). (See P5)
    ★ The O-ring is easier to install if it is coated with grease.

16. Install ring gear (11). (See P6)

17. Tighten final drive flange and hydraulic motor flange in a vice, and install snap ring (10). (See F2 and P1 on next page)
    ★ The preload of the bearing is adjusted by the thickness of the snap ring.

020M06

P1



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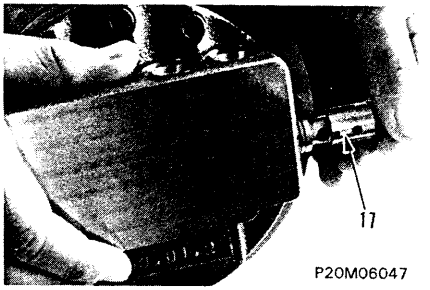
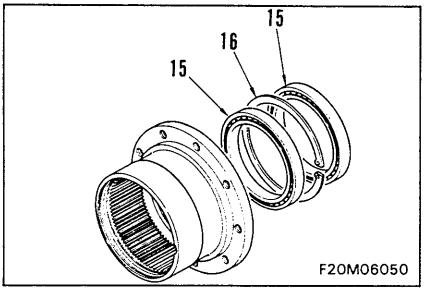


F1



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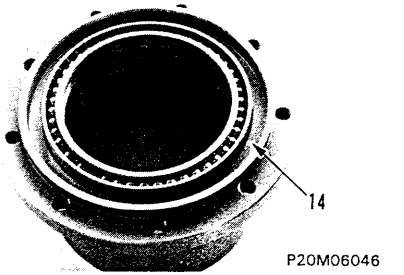
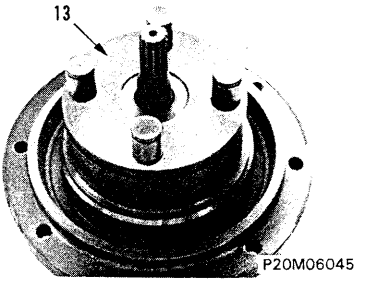


P4



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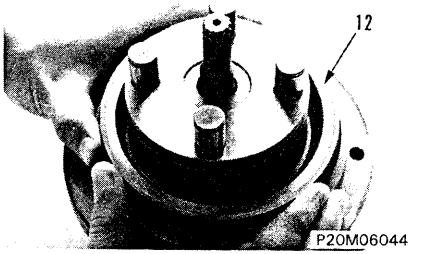

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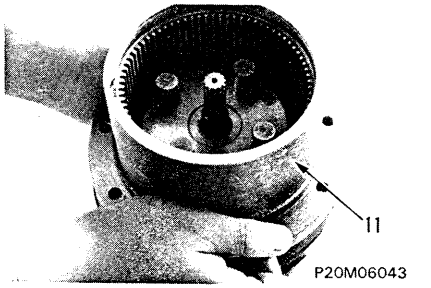

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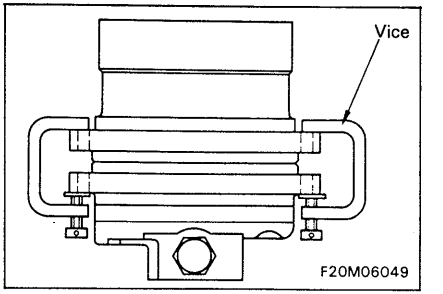


020M06

21. Install No. 2 planetary carrier assembly (3). (See P5)

18. Install needle bearing, No. 1 planetary gear (9), and thrust washer (8), and secure with snap ring. (See P2)

22. Install No. 2 sun gear (2), and secure with snap ring. (See P6)
23. Install O-ring.

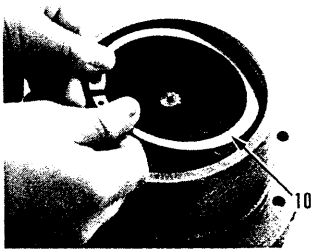
19. Install No. 1 sun gear (7) to No. 2 planetary carrier, and secure with snap ring. (See P3)

24. Install cover (1), then install snap ring. (See P7)
    ★ Be careful not to damage the O-ring.
    kgm Mounting bolt: 1.2 – 1.5 kgm
    ★ Wind seal tape round the bolt.
25. Add lubrication oil.
    Final drive: Approx. 300 cc

020M06

20. Install needle bearing (6), No. 2 planetary gear (5), and thrust washer (4), and secure with snap ring. (See P4)

P1



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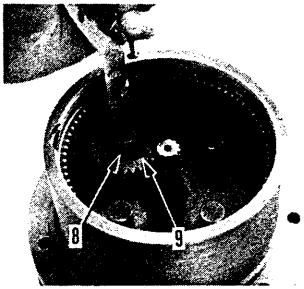

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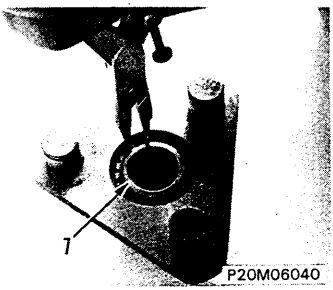

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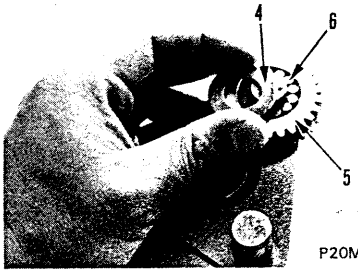

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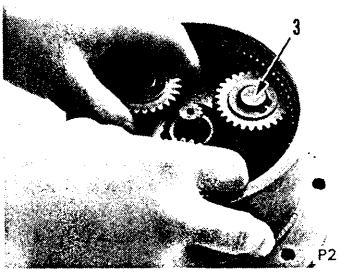

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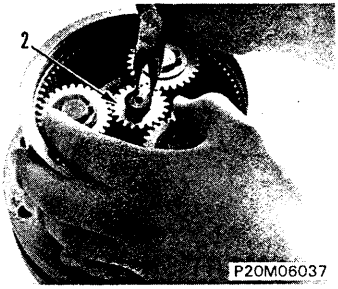

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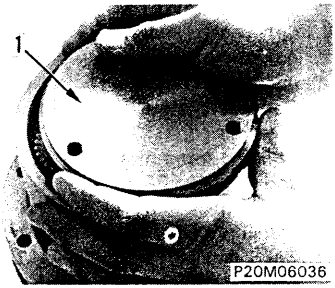


P20M06036

020M06

REMOVAL OF CENTER SWIVEL JOINT ASSEMBLY (PC05-6, PC07-1)

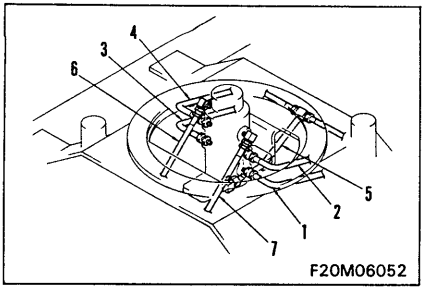
1. Remove revolving frame assembly.
   For details, see REMOVAL OF SWING CIRCLE ASSEMBLY.
2. Raise track frame, and put block (height: approx. 300 mm) under track shoe, then jack up track frame.
3. Disconnect travel motor hoses (1), (2), (3), (4), and (5). (See F1)
4. Disconnect blade cylinder hoses (6) and (7). (See F1)
5. Remove mounting bolts, then remove center swivel joint assembly (8) together with bracket. (See P1)

INSTALLATION OF CENTER SWIVEL JOINT ASSEMBLY (PC05-6, PC07-1)

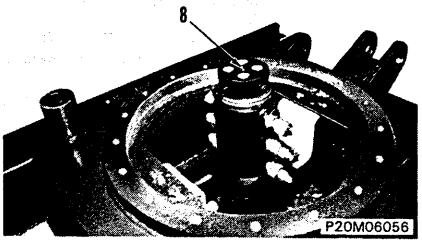
1. Set center swivel joint assembly (8) in mounting position together with bracket, and tighten mounting bolts. (See P1)
2. Connect blade cylinder hoses (7) and (6). (See F1)
3. Connect travel motor hoses (5), (4), (3), (2), and (1). (See F1)
4. Lower track frame.
5. Install revolving frame assembly.
   For details, see INSTALLATION OF SWING CIRCLE ASSEMBLY.

020M06

F1



P1



020M06

REMOVAL OF CENTER SWIVEL JOINT ASSEMBLY (PC10-6, PC15-2)

1. Put block (height: approx. 300 mm) under track shoe, and jack up chassis.

   Lower the work equipment to the ground and stop the engine. Operate the control levers several times to release the remaining pressure in the hydraulic piping. Then loosen the oil filler cap slowly to release the pressure inside the hydraulic tank.

2. Remove drain plug (1) and drain oil from hydraulic tank. (See F1)

   Hydraulic tank: Approx. 30ℓ

3. Remove seat (2). (See F2)
4. Remove swing lever knob (3). (See F2)
5. Remove floor plates (4) and (5). (See F2)
6. Disconnect all piping (6) at top of swivel. (See P1)
7. Remove stopper (7). (See P1)
8. Disconnect all piping (8) at bottom of swivel. (See F3)
9. Remove center swivel joint assembly (9). (See F3)

INSTALLATION OF CENTER SWIVEL JOINT ASSEMBLY (PC10-6, PC15-2)

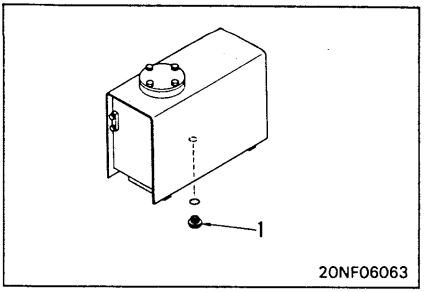
1. Install center swivel joint assembly (9). (See F3)
2. Connect all piping (8) at bottom of swivel. (See F3)
3. Install stopper (7). (See P1)
4. Connect piping (6) at top of swivel. (See P1)
5. Install floor plates (4) and (5). (See F2)
6. Install swing lever knob (3). (See F2)
7. Install seat (2). (See F2)
8. Tighten drain plug (1) and add oil through oil filler. (See F1)

   Hydraulic tank: Approx. 30ℓ

   ★ Run the engine to circulate the oil through the system. Then check the oil level again.
9. Lower chassis to ground.

020M06

F1



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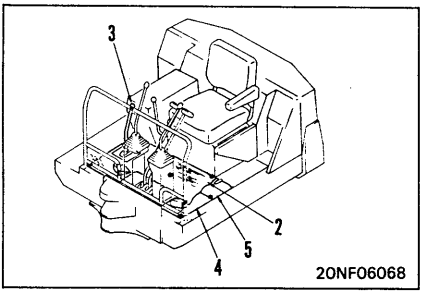

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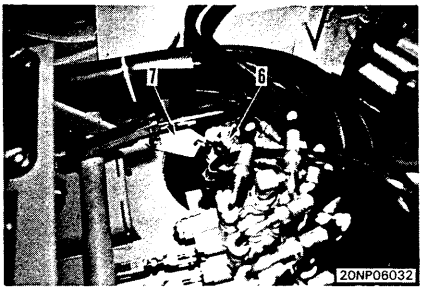
P1



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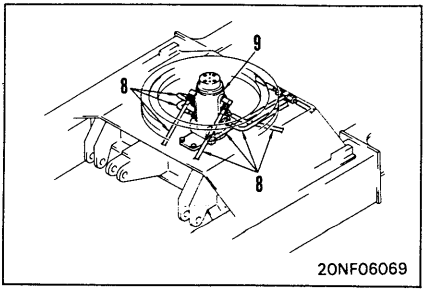


DISASSEMBLY OF CENTER SWIVEL JOINT ASSEMBLY (PC05-6, PC07-1)

1. Remove flange (1) and O-ring (2). (See F1)
2. Remove snap ring (3), then remove washer (4), and pull out swivel shaft (5) from rotor (6). (See F1)
3. Remove backup ring (7) and O-rings (8) and (9) from rotor (6). (See F1)

DISASSEMBLY OF CENTER SWIVEL JOINT ASSEMBLY (PC10-6, PC15-2)

1. Remove flange (1) and O-ring (2). (See F2)
2. Remove snap ring (3), then remove washer (4), and pull out swivel shaft (5) from rotor (6). (See F2)
3. Remove O-ring (7) from rotor (6). (See F2)

ASSEMBLY OF CENTER SWIVEL JOINT ASSEMBLY (PC05-6, PC07-1)

★ Coat the O-rings with engine oil before assembling.

1. Assemble O-rings (9) and (8), and backup ring (7) to rotor (1). (See F1)
2. Install swivel shaft (5) to rotor (6), then assemble washer (4), and secure with snap ring (3). (See F1)
3. Assemble O-ring (2), and install flange (1). (See F1)

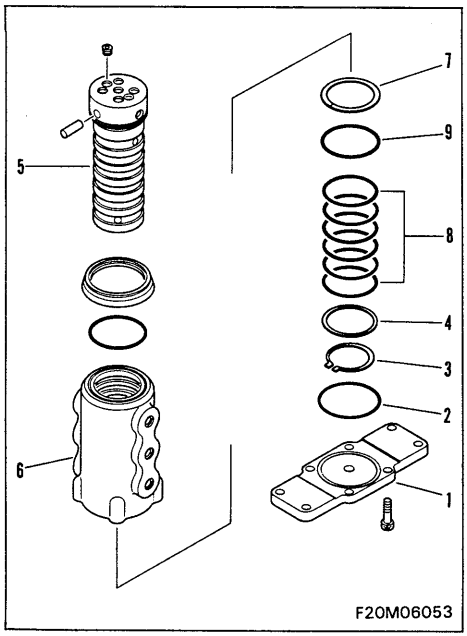
ASSEMBLY OF CENTER SWIVEL JOINT ASSEMBLY (PC10-6, PC15-2)

★ Coat the O-rings with engine oil before assembling.

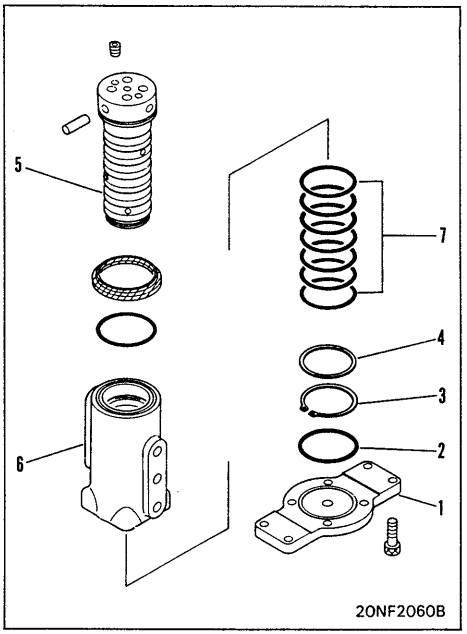
1. Assemble O-ring (7) to rotor (6). (See F2)
2. Install swivel shaft (5) to rotor (6), and assemble washer (4), then lock with snap ring (3). (See F2)
3. Assemble O-ring (2), and install flange (1). (See F2)

020M06

F1



F2



020M06

REMOVAL OF WORK EQUIPMENT ASSEMBLY

Extend the arm and bucket fully, lower the work equipment assembly completely to the ground and stop the engine. Operate the control levers several times to release the remaining pressure in the hydraulic piping. Then loosen the oil filler plate slowly to release the pressure inside the hydraulic tank.

1. Disconnect boom cylinder hoses (1) and (2). (See P1)
2. Raise boom cylinder assembly (3), then remove connecting pin (4), and lower on to block (height: approx. 500 mm). (See P2)
3. Disconnect 4 arm and bucket cylinder hoses (5). (See P3)
4. Disconnet head lamp wiring (6). (See P3)
5. Sling work equipment assembly, and remove connecting pin (7). (See F1)
6. Lift off work equipment assembly (8). (See F1)

INSTALLATION OF WORK EQUIPMENT ASSEMBLY

1. Raise work equipment assembly (8) and align with mounting position. (See F1)
2. Install connecting pin (7), and secure with bolt. (See F1)
3. Connect 4 arm and bucket cylinder hoses (5). (See P3)
4. Connect head lamp wiring (6). (See P3)
5. Sling boom cylinder assembly (3), then extend piston rod, and install connecting pin (4). (See P2)
6. Connect boom cylinder hoses (2) and (1). (See P1)

REMOVAL OF BLADE ASSEMBLY

1. Sling blade cylinder assembly (1), and remove bottom pin (2), then lower blade cylinder assembly (1). (See P4)
2. Sling blade assembly (3), and remove pin (4). (See P4)
3. Lift off blade assembly (3). (See P4)

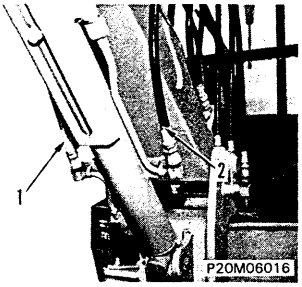
kg Blade assembly: 30 kg

INSTALLATION OF BLADE ASSEMBLY

1. Raise blade assembly (3) and set in position, then install pin (4). (See P4)
2. Raise blade cylinder assembly (1) and set in position, then install bottom pin (2). (See 4)

020M06

P1



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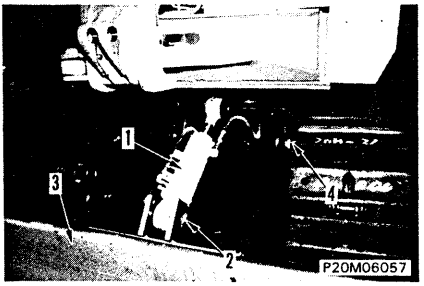
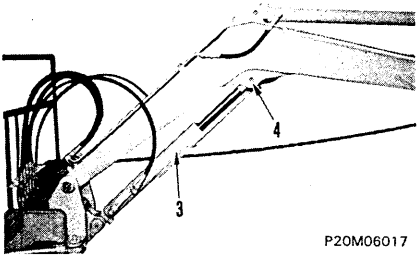
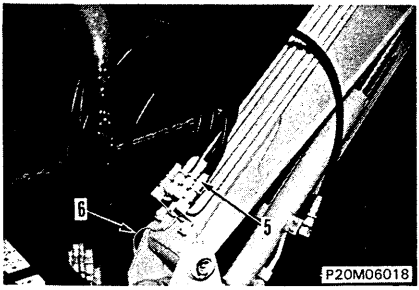


P2

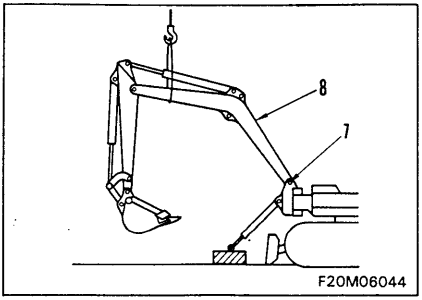


020M06

P3



F1

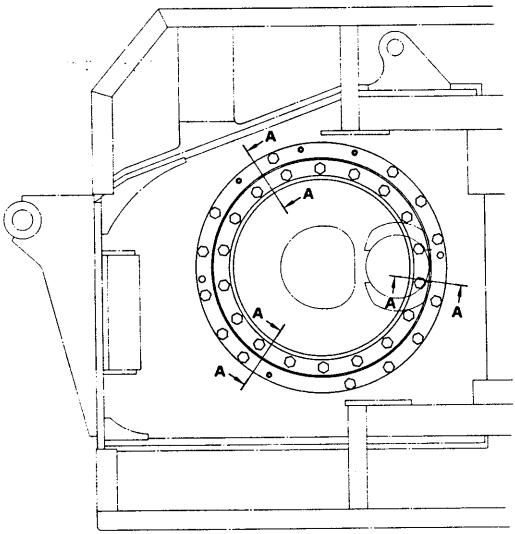


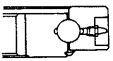
40 MAINTENANCE STANDARD

020M06

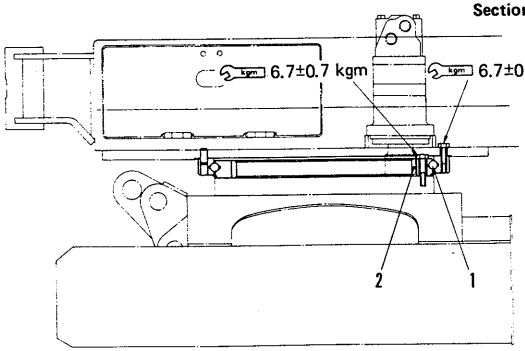
SWING CIRCLE

PC05-6, PC07-1





Section A – A



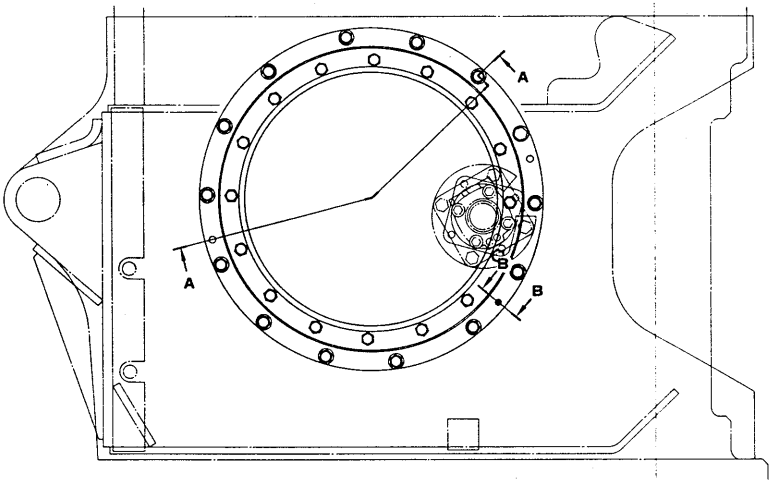
20MF06014

020M06

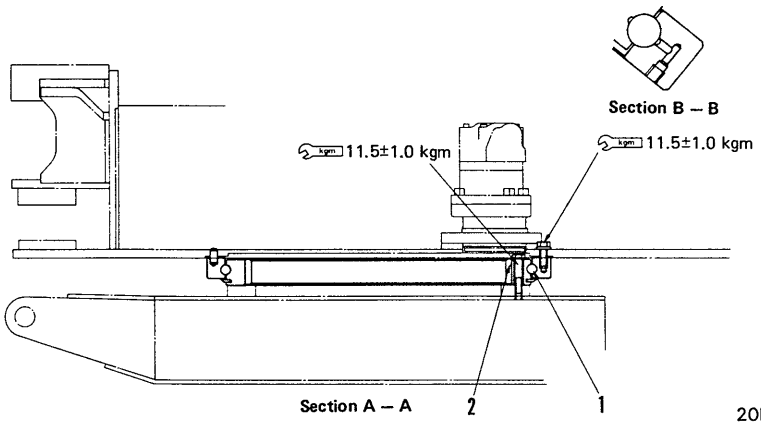
Unit: mm

No.	Check item	Criteria		Remedy
1	Axial clearance of bearing	Standard clearance	Clearance limit	Replace
		0.2 – 0.3	0.6	
2	Backlash between swing pinion and swing circle	0.138 – 0.561	1.0	

PC10-6, PC15-2



020M06



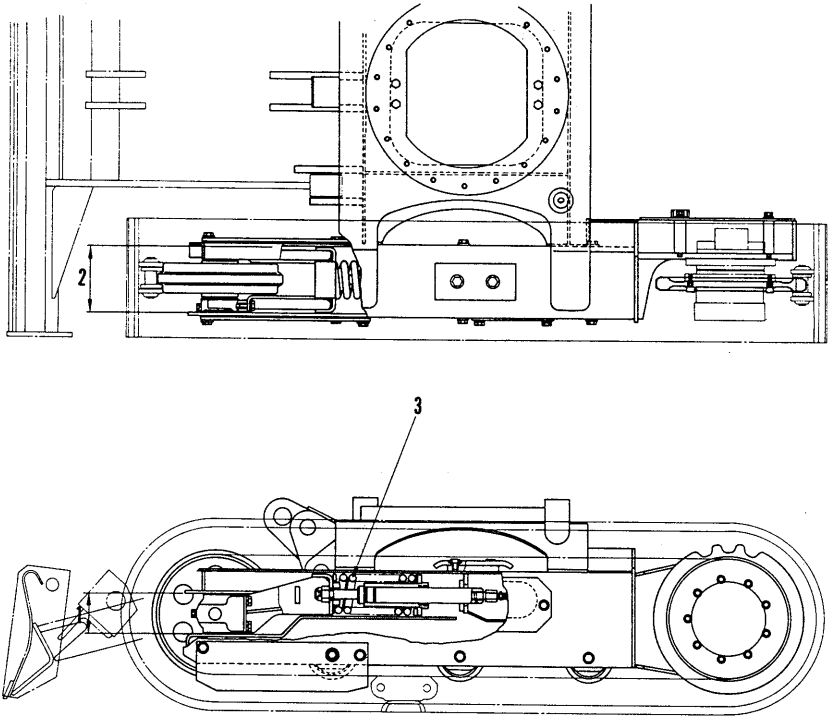
20NF06024

Unit: mm

No.	Check item	Criteria		Remedy
		Standard clearance	Clearance limit	
1	Axial clearance of bearing	0.05 – 0.25	0.4	Replace
2	Backlash between swing pinion and swing circle	0.12 – 0.73	1.4	

TRACK FRAME AND RECOIL SPRING

PC05-6, PC07-1



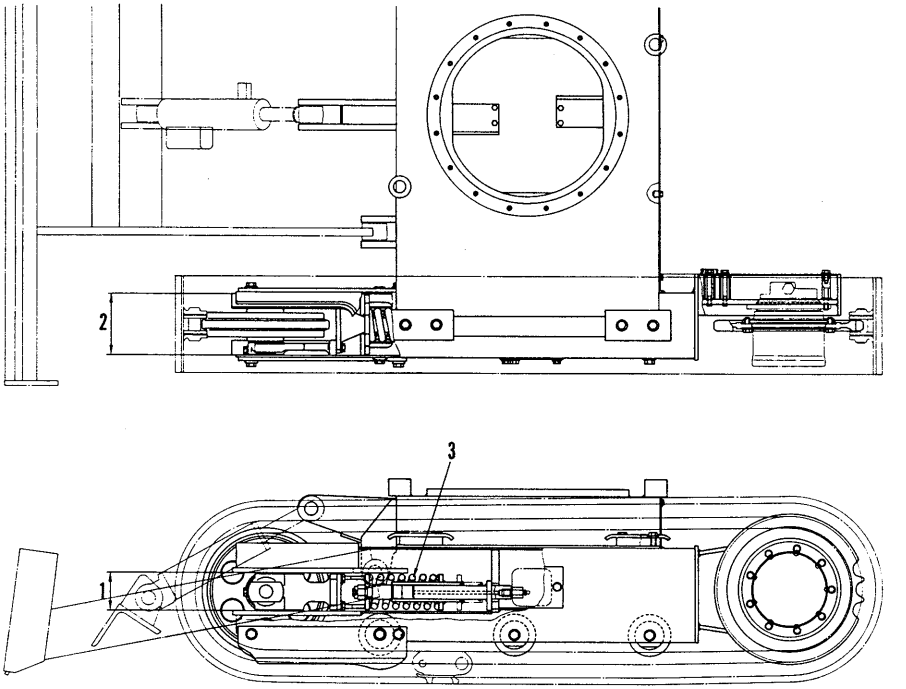
F20M06026

020M06

Unit: mm

No.	Check item	Criteria					Remedy
			Standard size		Repair limit		
1	Vertical width of idler guide	Track frame	77 ± 1.0				Rebuild or replace
		Idler support	75 ± 0.5				
2	Horizontal width of idler guide	Track frame	131				
		Idler	129				
3	Recoil spring	Standard size			Repair limit		Replace
		Free length	Installed length	Installed load	Free lenght	Installed load	
		200	168	709 kg			

PC10-6, PC15-2



020M06

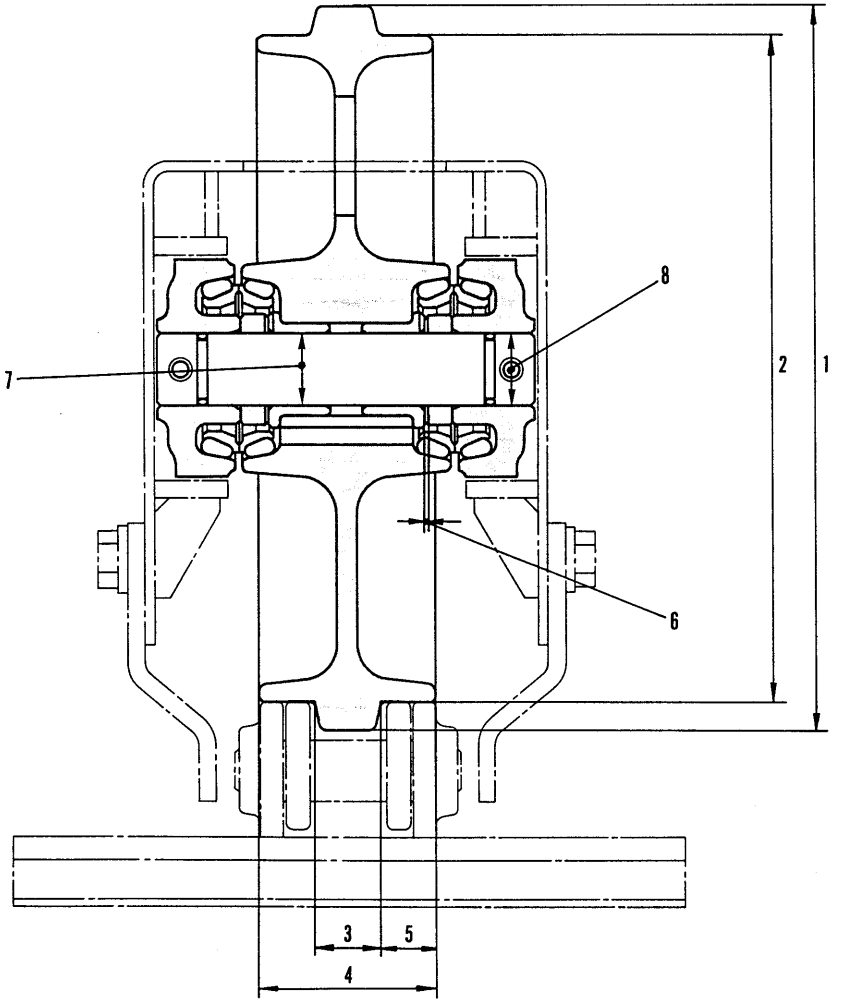
20NF06025

Unit: mm

No.	Check item	Criteria					Remedy
1	Vertical width of idler guide		Standard size		Repair limit		Rebuild or replace
		Track frame	96				
		Idler support	94				
2	Horizontal width of idler guide	Track frame	161				
		Idler	159				
3	Recoil spring	Standard size			Repair limit		Replace
		Free length	Installed length	Installed load	Free length	Installed load	
		209.3	177	1,400 kg	204.5	1,190 kg	

IDLER

PC05-6 Serial No. 11301 – 11700



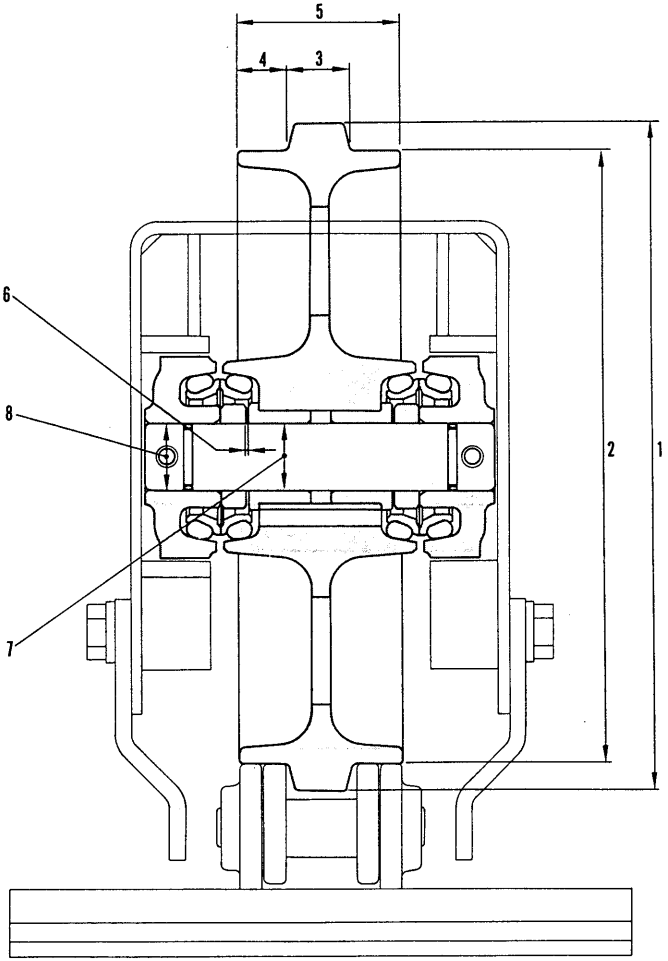
020M06

20MF023A

020M06

Unit: mm

No.	Check item	Criteria					Remedy
1	Outside diameter of protrusion	Standard size		Repair limit			Rebuild of replace
		247		241			
2	Outside diameter of tread	227		221			
3	Width of protrusion	23		17			
4	Overall width	60		55			
5	Width of tread	18.5		21.5			
6	Axial play of shaft	Repair limit: 1.3					Replace bushing
7	Clearance between idler shaft and bushing	Standard size	Tolerance		Standard clearance	Clearance limit	Replace
			Shaft	Hole			
		25	0 -0.021	+0.033 0	0 – 0.054	1.5	
8	Clearance between idler shaft and support	25	0 -0.021	+0.75 0.67	0.67 – 0.771	1.5	



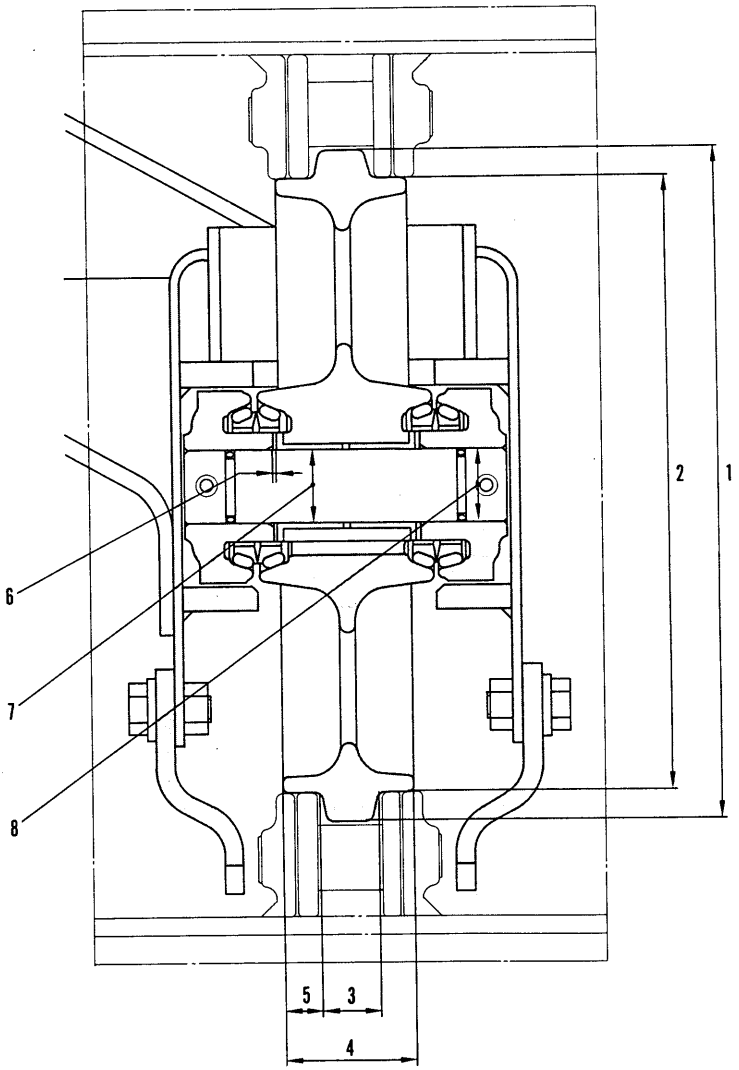
020M06

20MF06015

020M06

Unit: mm

No.	Check item	Criteria					Remedy
1	Outside diameter of protrusion	Standard size		Repair limit			Rebuild of replace
		247		241			
2	Outside diameter of tread	227		221			
3	Width of protrusion	23		17			
4	Overall width	60		55			
5	Width of tread	18.5		21.5			
6	Axial play of shaft	Repair limit: 1.3					Replace bushing
7	Clearance between idler shaft and bushing	Standard size	Tolerance		Standard clearance	Clearance limit	Replace
			Shaft	Hole			
		25	0 −0.021	+0.750 +0.670	0.670 − 0.771	1.5	
8	Clearance between idler shaft and support	25	0 −0.021	+0.033 0	0 − 0.054	1.5	



020M06

20NF06026

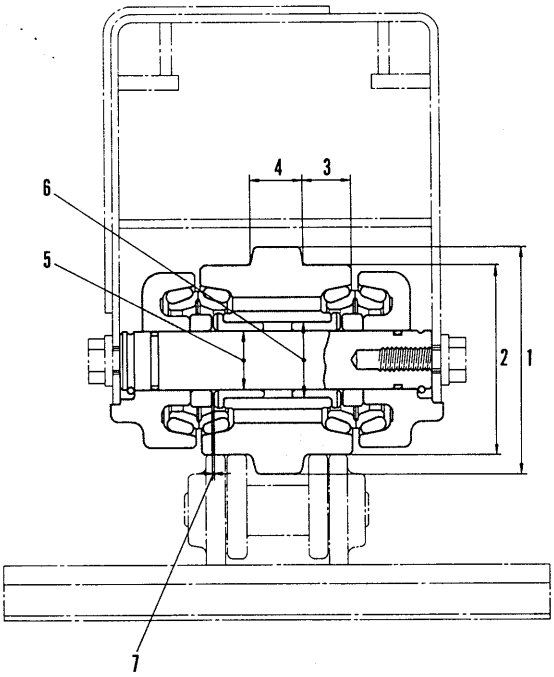
020M06

Unit: mm

No.	Check item	Criteria					Remedy
1	Outside diameter of protrusion	Standard size		Repair limit			
		338		330			
2	Outside diameter of tread	300		292			
3	Width of protrusion	28		20			Rebuild of replace
4	Overall width	64		59			
5	Width of tread	18		22			
	Clearance between idler shaft and bushing	Standard size	Tolerance		Standard clearance	Clearance limit	
			Shaft	Hole			
		35	−0.025 −0.064	+0.142 +0.080	0.105 – 0.206	1.5	Replace
	Clearance between idler shaft and support	35	−0.025 −0.064	+0.060 0	0.025 – 0.124	1.5	
	Axial play of shaft	Repair limit: 2.0					Replace bushing

TRACK ROLLER

PC05-6 Serial No. 11301 – 11700



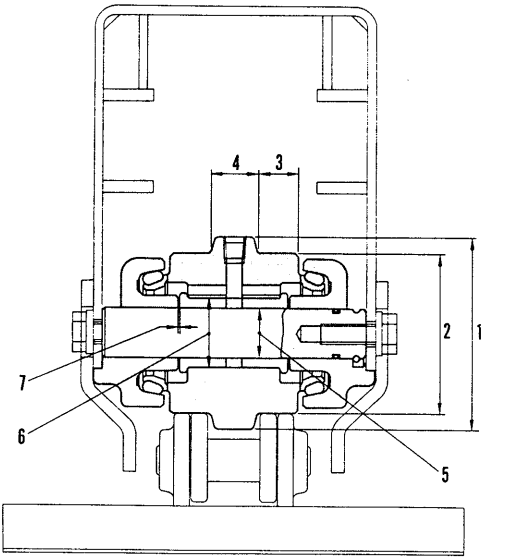
20MF022

020M06

Unit: mm

No.	Check item	Criteria					Remedy
1	Outside diameter of flange	Standard size: 96		Repair limit: 90			Rebuild or replace
2	Outside diameter of tread	80		74			
3	Width of tread	20.5		23.5			
4	Width of flange	23		20			
5	Clearance between track roller shaft and bushing	Standard size	Tolerance: Shaft	Tolerance: Hole	Standard clearance	Clearance limit	Replace bushing
		25	0 –0.052	+0.750 +0.670	0.670 – 0.802	1.5	
6	Interference between track roller and bushing	Standard size	Tolerance: Shaft	Tolerance: Hole	Standard interference	Interference limit	
		35	+0.100 0	–0.040 –0.140	0.040 – 0.240	–	
7	Side clearance of roller	Standard size: 0.25		Repair limit: 1.3			Replace

PC05-6 Serial No. 11701 and up

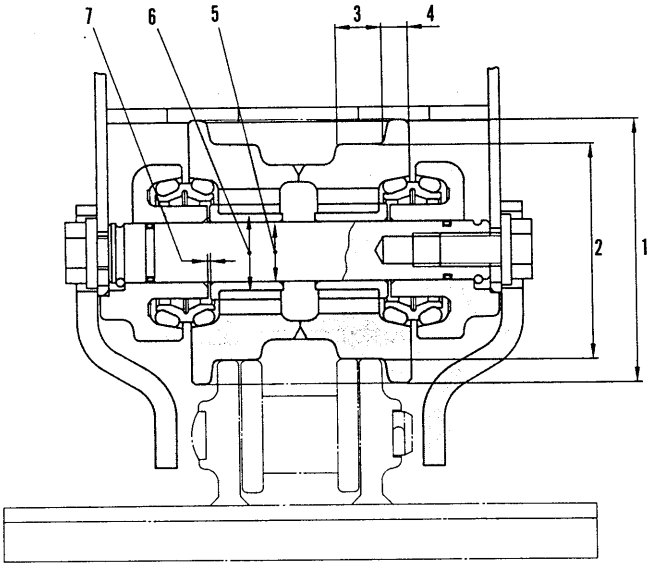


020M06

20MF06016

Unit: mm

No.	Check item	Criteria					Remedy
1	Outside diameter of flange	Standard size			Repair limit		Rebuild or replace
		96			90		
2	Outside diameter of tread	80			74		
3	Width of tread	20.5			23.5		
4	Width of flange	23			20		
5	Clearance between track roller shaft and bushing	Standard size	Tolerance		Standard clearance	Clearance limit	Replace bushing
			Shaft	Hole			
		25	0 −0.053	+0.750 +0.670	0.670 – 0.803	1.5	
6	Interference between track roller and bushing	Standard size	Tolerance		Standard interference	Interference limit	
			Shaft	Hole			
		35	+0.100 0	−0.040 −0.140	0.040 – 0.240	–	
7	Side clearance of roller	Standard size			Repair limit		Replace
		0.25			1.3		



20NF06027

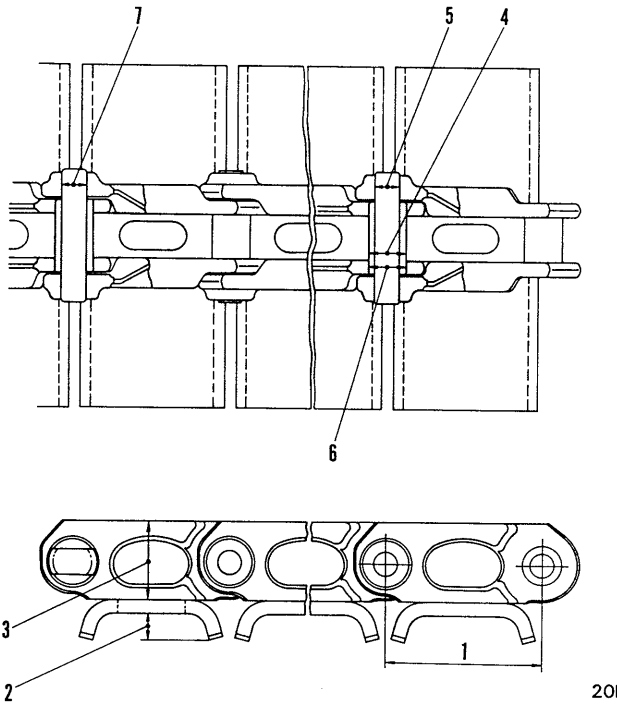
020M06

Unit: mm

No.	Check item	Criteria					Remedy
1	Outside diameter of flange	Standard size: 115		Repair limit: 107			Rebuild or replace
2	Outside diameter of tread	85		77			
3	Width of tread	20		23			
4	Width of flange	10.5		7.5			
5	Clearance between track roller shaft and bushing	Standard size	Tolerance: Shaft	Tolerance: Hole	Standard clearance	Clearance limit	Replace bushing
		25	0 −0.013	+0.183 +0.144	0.144 – 0.196	0.009	
6	Interference between track roller and bushing	Standard size	Tolerance: Shaft	Tolerance: Hole	Standard interference	Interference limit	
		32	+0.073 +0.043	−0.039 0	0.009 – 0.073	–	
7	Side clearance of roller	Standard size: 0.2		Repair limit: 2.0			Replace

TRACK SHOE

PC05-6 (FOR MACHINE EQUIPPED WITH SWING–BOOM SWING SELECTOR PEDAL)



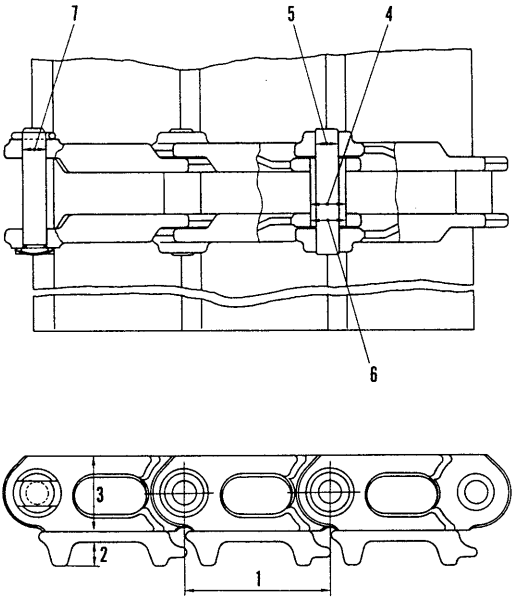
20MF024

020M06

Unit: mm

No.	Check item	Criteria					Remedy
1	Link pitch	Standard size			Repair limit		Repair or replace
		90			92		
2	Height of grouser	16			5		
3	Height of link	46			41		
4	Outside diameter of bushing	22			18		
5	Interference between link and regular pin	Standard size	Tolerance		Standard interference	Interference limit	Replace
			Shaft	Hole			
		14	+0.154 +0.150	+0.050 0	0.100 – 0.104		
6	Interference between link and bushing	22	+0.154 +0.150	+0.050 0	0.100 – 0.104		
7	Clearance between master pin and bushing	Standard size	Tolerance		Standard clearance	Clearance limit	
			Shaft	Hole			
		14	–0.020 –0.050	+0.300 +0.200	0.202 – 0.305		

PC05-6 (FOR MACHINE WITHOUT SWING – BOOM SWING SELECTOR PEDAL)
PC07-1



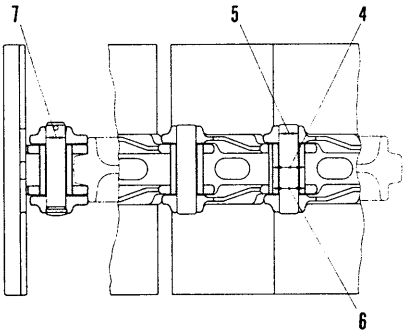
20MF06017

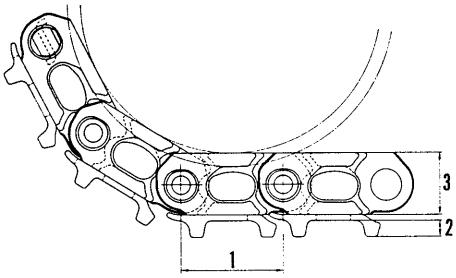
020M06

Unit: mm

No.	Check item	Criteria					Remedy
1	Link pitch	Standard size			Repair limit		Repair or replace
		90			92		
2	Height of grouser	15			5		
3	Height of link	46			41		
4	Outside diameter of bushing	22			18		
5	Interference between link and regular pin	Standard size	Tolerance		Standard interference	Interference limit	Replace
			Shaft	Hole			
		14	+0.155 +0.150	+0.050 0	0.100 – 0.105	–	
6	Interference between link and bushing	22	+0.154 +0.150	+0.050 0	0.100 – 0.154	–	
7	Clearance between master pin and bushing	Standard size	Tolerance		Standard interference	Interference limit	
			Shaft	Hole			
		14	–0.020 –0.050	+0.050 0	0.020 – 0.100	0.8	

PC10-6, PC15-2





20NF06028

020M06

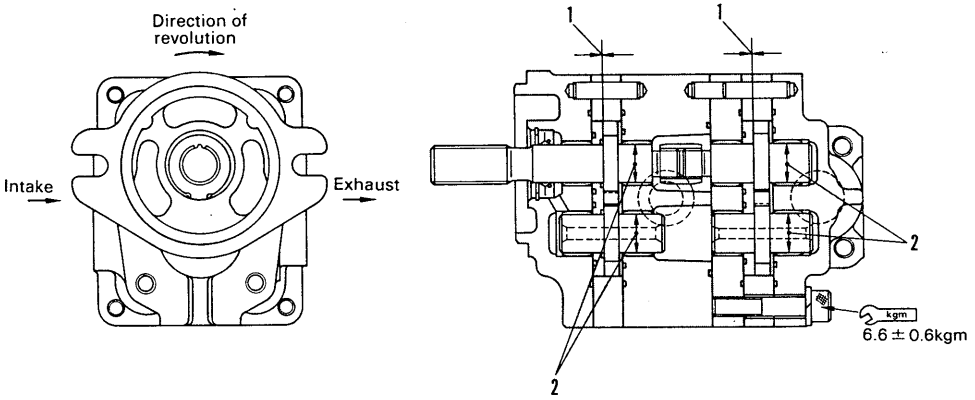
Unit: mm

No.	Check item	Criteria					Remedy
1	Link pitch	Standard size			Repair limit		Repair or replace
		90					
2	Height of grouser	21			6.5		
3	Height of link	46			55		
4	Outside diameter of bushing	22			26.5		
5	Interference between link and regular pin	Standard size	Tolerance		Standard interference	Interference limit	Replace
			Shaft	Hole			
		19	+0.150 +0.120	+0.050 0	0.070 – 0.150	–	
6	Interference between link and bushing	32	+0.150 +0.120	+0.050 0	0.070 – 0.150	–	
7	Clearance between master pin and bushing	Standard size	Tolerance		Standard interference	Interference limit	
			Shaft	Hole			
		19	–0.020 –0.070	+0.050 0	0.020 – 0.120		

HYDRAULIC PUMP

PC05-6 (Serial No. 11301 – 11700)

1. MAIN PUMP



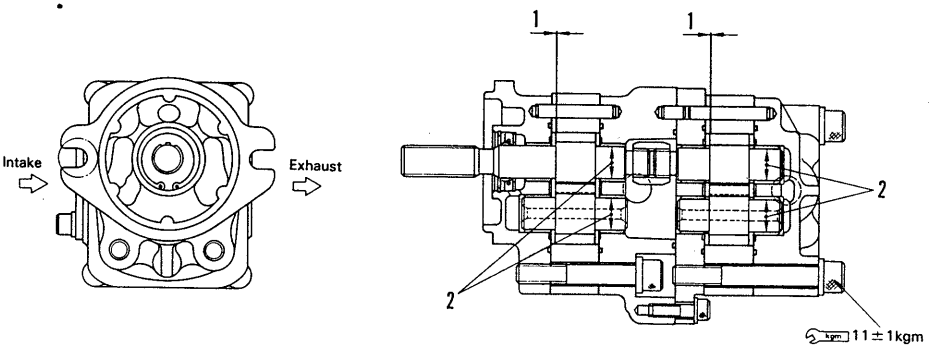
020M06

20MF226A

Unit: mm

No.	Check item	Criteria				Remedy
1	Clearance between side plate and gear	Standard clearance		Clerance limit		Replace if damaged, or deformed
		0.05 – 0.10		0.15		
2	Clearance between I.D. and gear shaft dia.	Standard clearance		Clearance limit		
		0.060 – 0.119		0.20		
3	Delivery (SAE10W 45 – 55°C)	Pump speed (rpm)	Discharge pressure (kg/cm²)	Standard value (ℓ/min)	Repair limit (ℓ/min)	
		3,500	175	20	17	

PC05-6 (Serial No. 11701 and up)
PC07-1

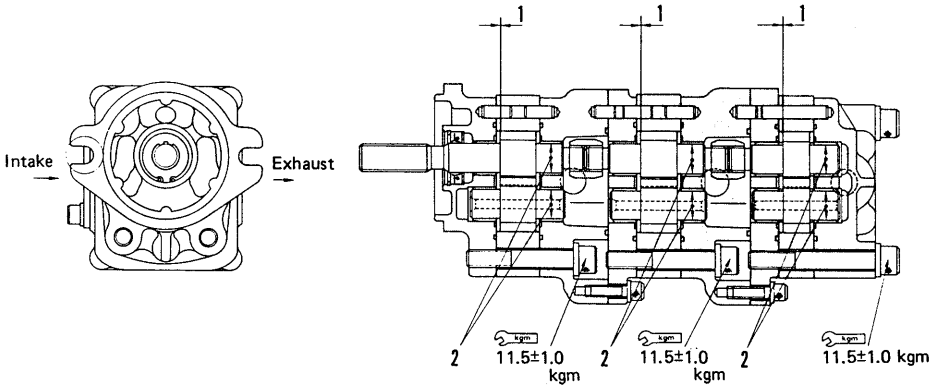


F20M06027-1

020M06

Unit: mm

No.	Check item	Criteria				Remedy
1	Clearance between side plate and gear	Standard clearance		Clearance limit		Replace it damaged, or deformed
		0.05 – 0.10		0.15		
2	Clearance between inside diameter and gear shaft diameter	Standard clearance		Clearance limit		
		0.060 – 0.119		0.20		
3	Delivery (SAE10W, 45–55°C)	Pump speed (rpm)	Discharge pressure (kg/cm²)	Standard value (ℓ/min)	Repair limit (ℓ/min)	
		3,500	175	20	17	



20NF06029

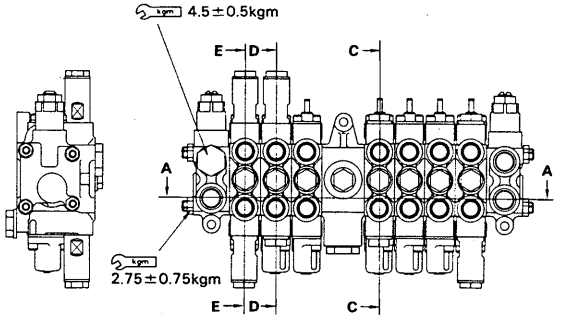
020M06

Unit: mm

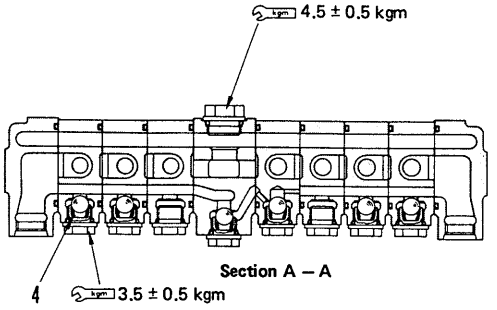
No.	Check item		Criteria				Remedy
1	Clearance between side plate and gear		Standard clearance		Clearance limit		
			0.05 – 0.10		0.15		
2	Clearance between bearing inside diameter and shaft outside diameter		0.060 – 0.119		0.20		
3	Delivery (SAE10W, 45–55°C)		Pump speed (rpm)	Discharge pressure (kg/cm²)	Standard value (ℓ/min)	Repair limit (ℓ/min)	
		SBR8	3,500	210	26.8	25.2	
		SBR6	3,500	210	20.2	19.0	

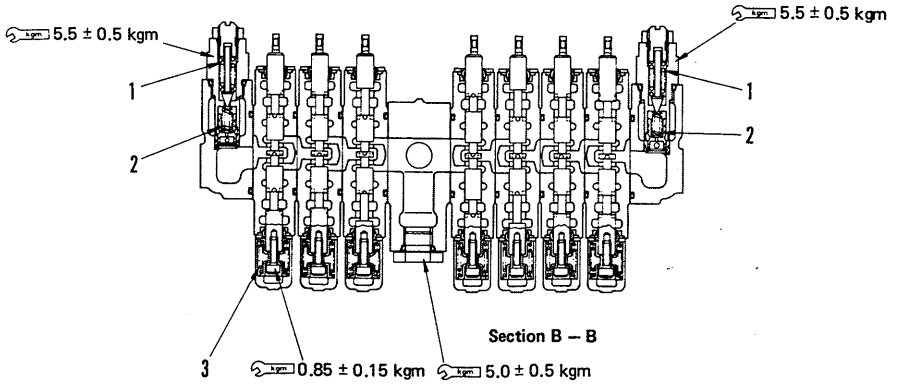
7-SPOOL CONTROL VALVE

PC05-6, PC07-1

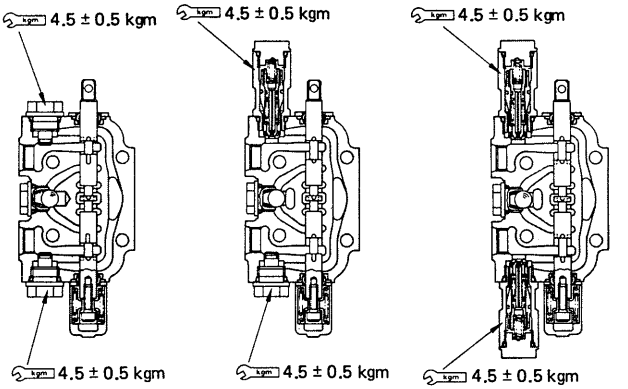


F20M06028





020M06



F20M06029

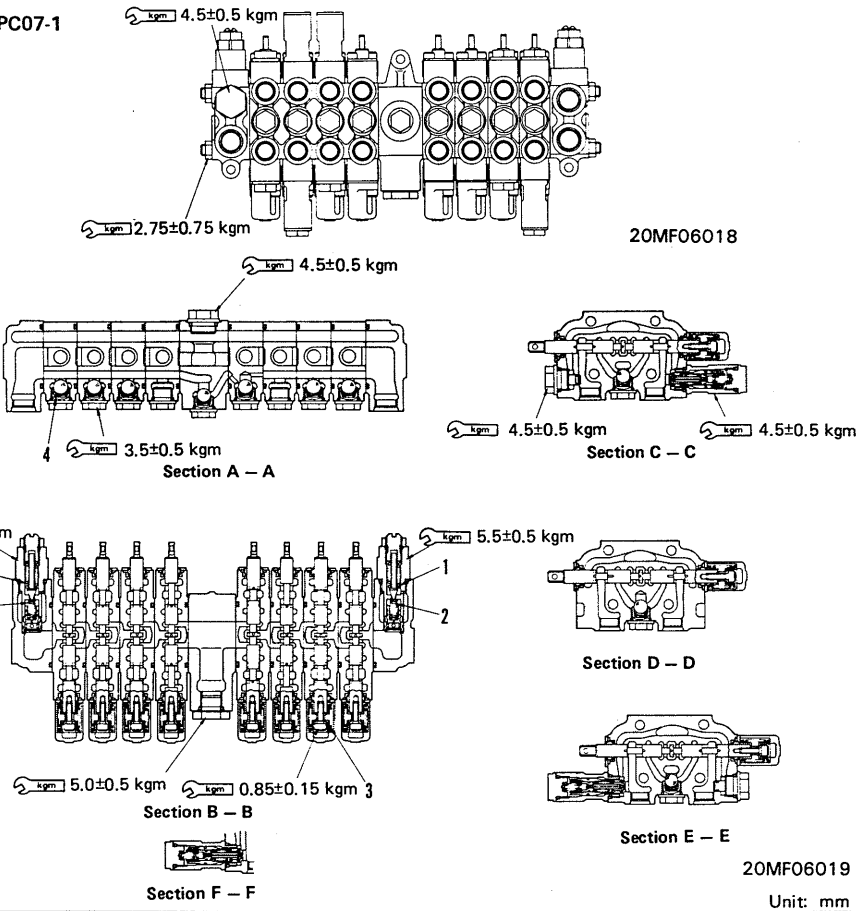
020M06

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
1	Main relief valve pilot poppet spring	Free length	Installed length	Installed load	Free length	Installed load	Replace, if damaged, or deformed.
		–	24.9	22.1 kg	–	17.7 kg	
2	Main relief valve main valve spring	–	19.0	2.0 kg	–	1.6 kg	
3	Spool return spring	46.2	25.4	10.0 kg	–	8.0 kg	
4	Check valve spring	13.1	6.0	0.2 kg	–	0.16 kg	

8-SPOOL CONTROL VALVE

PC05-6, PC07-1



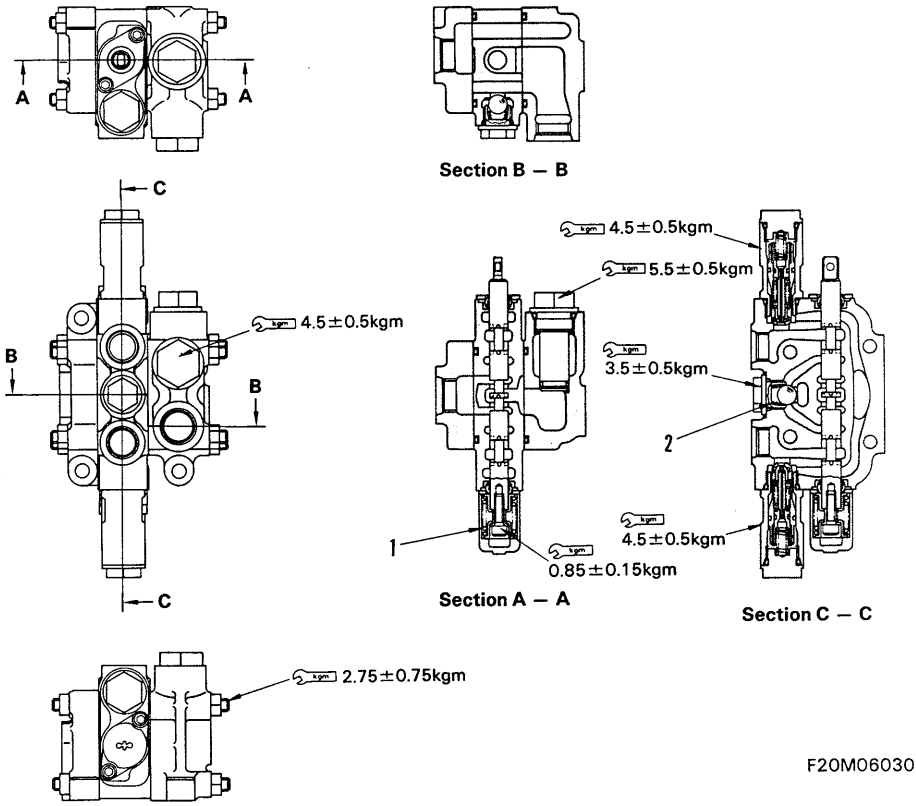
020M06

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
		Free length	Installed length	Installed load	Free length	Installed load	
1	Main relief valve pilot poppet spring	29.6 x 9.5	24.9	22.1 kg	–	17.7 kg	Replace, if damaged, or deformed.
2	Main relief valve main valve spring	23.3 x 7.2	19.0	2.0 kg	–	1.6 kg	
3	Spool return spring	46.2 x 20.0	25.4	10.0 kg	–	8.0 kg	
4	Check valve spring	18.0 x 12.5	6.0	0.2 kg	–	0.16 kg	

1-SPOOL CONTROL VALVE

PC05-6



F20M06030

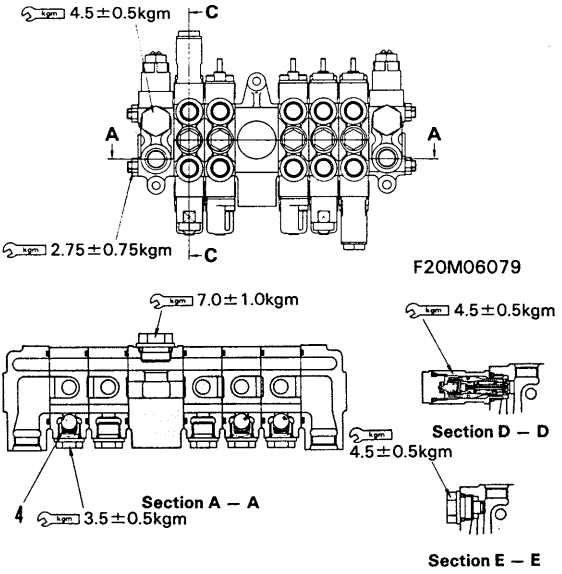
020M06

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
		Free length x O.D.	Installed length	Installed load	Free length	Installed load	
1.	Spool return spring	46.2 x	25.4	13.0 kg	–	–	Replace if damaged or deformed
2.	Check valve spring	13.1 x	6.0	0.2 kg	–	–	

5-SPOOL CONTROL VALVE

PC10-6, PC15-2



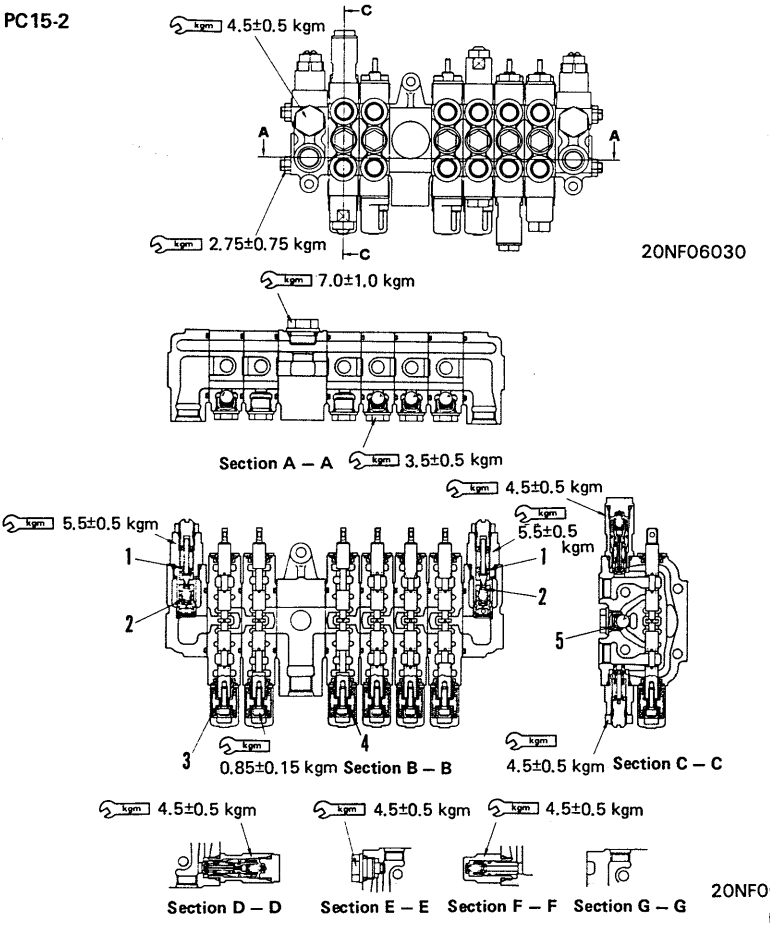
020M06

Unit: mm

No.	Check item		Criteria					Remedy
			Standard size			Repair limit		
1	Main relief valve pilot poppet spring		Free length XO.D.	Installed length	Installed load	Free length	Installed load	
		PC10-5	29.6 x 9.5	24.9	22.1 kg	28.7	17.7 kg	Replace if damaged or deformed
		PC15-2	29.6 x 9.5	24.0	22.1 kg	28.7	20.2 kg	
2	Main relief valve main valve spring		23.3 x 7.2	19.0	2.0 kg	–	–	
3	Spool return spring		46.2 x 20.0	25.4	10.0 kg	–	–	
4	Check valve spring		18.0 x 12.5	7.5	0.2 kg	–	–	

6-SPOOL CONTROL VALVE

PC10-6, PC15-2



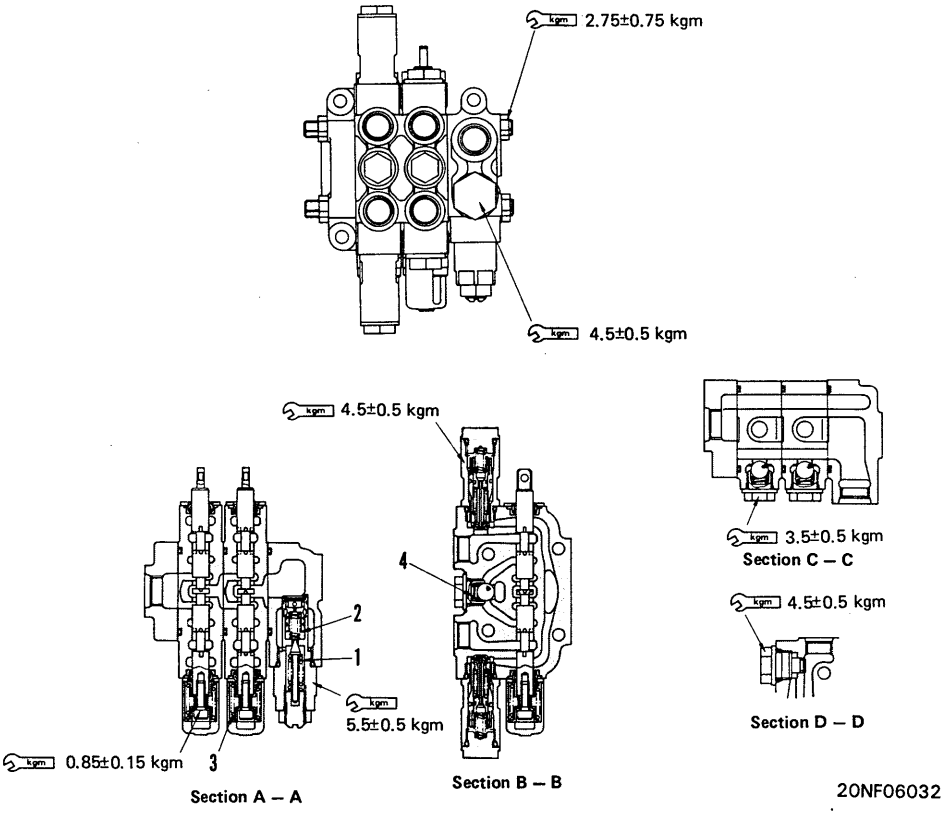
Unit: mm

No.	Check item		Criteria					Remedy
			Standard size			Repair limit		
1	Main relief valve pilot poppet spring		Free length x O.D.	Installed length	Installed load	Free length	Installed load	
		PC10-5	29.6 x 9.5	24.9	22.1 kg	28.7	17.7 kg	Replace if damaged or deformed
		PC15-2	29.6 x 9.5	24.0	25.3 kg	28.7	20.2 kg	
2	Main relief valve main valve spring		23.3 x 7.2	19.0	2.0 kg	–	–	
3	Spool return spring (Boom, arm, bucket)		46.2 x 20.0	25.4	10.0 kg	–	–	
4	Spool return spring (Travel)		40.7 x 20.6	25.4	13.0 kg	–	–	
5	Check valve spring		18.0 x 12.5	7.5	0.2 kg	–	–	

020M06

2-SPOOL CONTROL VALVE

PC10-6, PC15-2

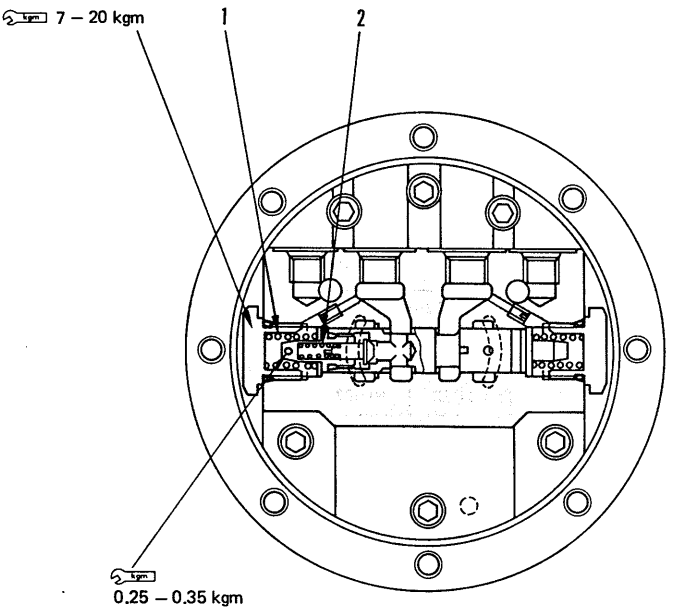


020M06

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
1	Main relief valve pilot poppet spring	Free length x O.D.	Installed length	Installed load	Free length	Installed load	Replace, if damaged, or deformed.
		29.6 x 9.5	24.9	22.1 kg	28.7	17.7 kg	
2	Main relief valve main valve spring	23.3 x 7.2	19.0	2.0 kg	–	–	
3	Spool return spring	40.7 x 20.6	25.4	13.0 kg	–	–	
4	Check valve spring	18.0 x 12.5	6.0	0.2 kg	–	–	

TRAVEL MOTOR BRAKE VALVE



020M06

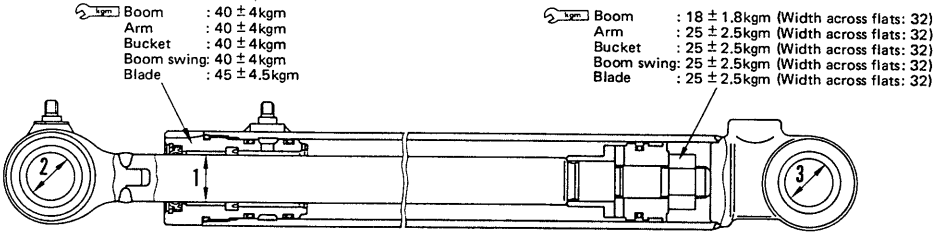
F20M06032

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
1	Spool return spring	Free length	Installed length	Installed load	Free length	Installed load	Replace if damaged, or deformed
		21.9	13.9	13.3 kg	–	–	
2	Check valve spring	13.7	8.0	0.52 kg	–	–	

HYDRAULIC CYLINDER

PC05-6 Serial No. 11301 – 11700



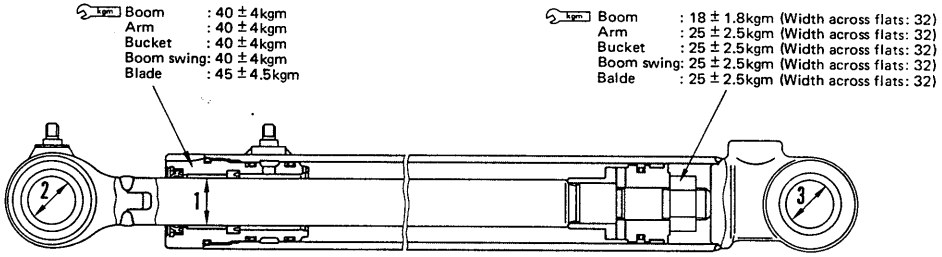
F20M06033

Unit: mm

No.	Check item		Criteria					Remedy
		Cylinder	Standard size	Tolerance		Standard clearance	Clearance limit	
				Shaft	Hole			
1	Clearance between piston rod and bushing	Boom	30	-0.020 -0.072	+0.133 +0.007	0.027 – 0.205	0.505	Replace bushing
		Arm	30	-0.020 -0.072	+0.133 +0.007	0.027 – 0.205	0.505	
		Bucket	30	-0.020 -0.072	+0.133 +0.007	0.027 – 0.205	0.505	
		Boom swing	30	-0.020 -0.072	+0.133 +0.007	0.027 – 0.205	0.505	
		Blade	30	-0.020 -0.072	+0.133 +0.007	0.027 – 0.205	0.505	
2	Clearance between piston rod mounting pin and bushing	Boom	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Arm	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Bucket	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Boom swing	30	-0.020 -0.050	+0.117 +0.080	0.100 – 0.167	1.0	
		Blade	35	-0.170 -0.209	+0.142 +0.080	0.250 – 0.351	1.0	
3	Clearance between cylinder bottom mounting pin and bushing	Boom	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Arm	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Bucket	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Boom swing	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Blade	35	-0.170 -0.209	+0.142 +0.080	0.250 – 0.351	1.0	

020M06

PC05-6 Serial No. 11701 and up

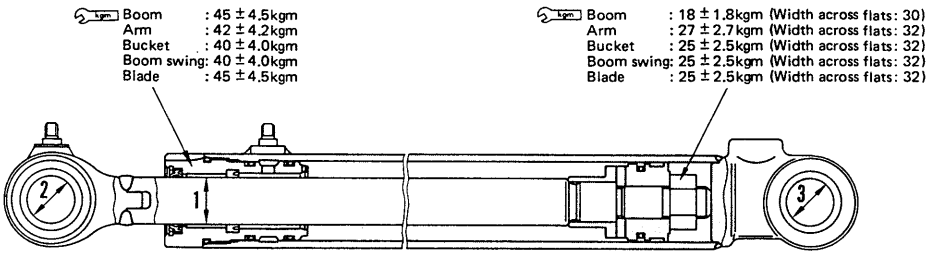


F20M06033

Unit: mm

No.	Check item	Cylinder	Criteria: Standard size	Criteria: Tolerance Shaft	Criteria: Tolerance Hole	Criteria: Standard clearance	Criteria: Clearance limit	Remedy
1	Clearance between piston rod and bushing	Boom	30	−0.020 −0.072	+0.133 +0.007	0.027 – 0.205	0.505	
		Arm	30	−0.020 −0.072	+0.133 +0.007	0.027 – 0.205	0.505	
		Bucket	30	−0.020 −0.072	+0.133 +0.007	0.027 – 0.205	0.505	
		Boom swing	30	−0.020 −0.072	+0.133 +0.007	0.027 – 0.205	0.505	
		Blade	30	−0.020 −0.072	+0.133 +0.007	0.027 – 0.205	0.505	
2	Clearance between piston rod mounting pin and bushing	Boom	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	Replace bushing
		Arm	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Bucket	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Boom swing	30	−0.020 −0.053	+0.117 +0.080	0.100 – 0.170	1.0	
		Blade	35	−0.170 −0.209	+0.142 +0.080	0.250 – 0.351	1.0	
3	Clearance between cylinder bottom mounting pin and bushing	Boom	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Arm	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Bucket	30	−0.163 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Boom swing	30	−0.163 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Blade	35	−0.170 −0.209	+0.142 +0.080	0.250 – 0.351	1.0	

PC07-1



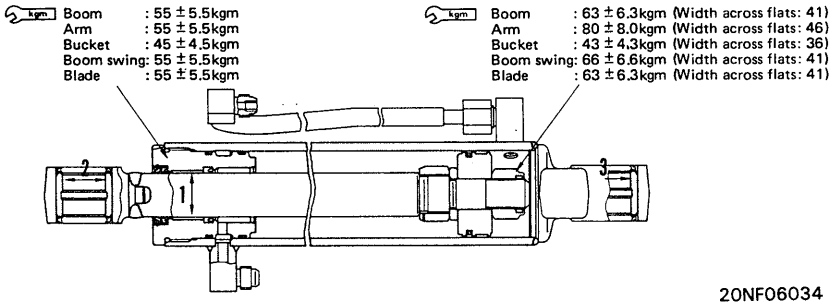
20MF06020

Unit: mm

No.	Check item		Criteria					Remedy
		Cylinder	Standard size	Tolerance		Standard clearance	Clearance limit	
				Shaft	Hole			
1	Clearance between piston rod and bushing	Boom	30	−0.020 −0.072	+0.133 +0.007	0.027 – 0.205	0.505	Replace bushing
		Arm	30	−0.020 −0.072	+0.133 +0.007	0.027 – 0.205	0.505	
		Bucket	30	−0.020 −0.072	+0.133 +0.007	0.027 – 0.205	0.505	
		Boom swing	30	−0.020 −0.072	+0.133 +0.007	0.027 – 0.205	0.505	
		Blade	30	−0.020 −0.072	+0.133 +0.007	0.027 – 0.205	0.505	
2	Clearance between piston rod mounting pin and bushing	Boom	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Arm	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Bucket	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Boom swing	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Blade	35	−0.170 −0.209	+0.142 +0.080	0.250 – 0.351	1.0	
3	Clearance between cylinder bottom mounting pin and bushing	Boom	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Arm	30	−0.163 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Bucket	30	−0.163 −0.193	+0.117 +0.080	0.240 – 0 0.310	1.0	
		Boom swing	30	−0.163 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
		Blade	35	−0.170 −0.209	+0.142 +0.080	0.250 – 0.351	1.0	

020M06

PC10-6

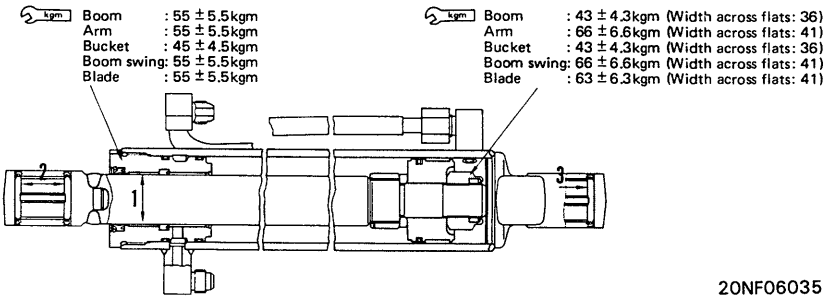


20NF06034

Unit: mm

No.	Check item	Cylinder	Criteria					Remedy
			Standard size	Tolerance		Standard clearance	Clearance limit	
				Shaft	Hole			
1	Clearance between piston rod and bushing	Boom	35	−0.025 −0.087	+0.132 +0.0006	0.031 – 0.219	0.519	
		Arm	40	−0.025 −0.087	+0.132 +0.006	0.031 – 0.219	0.519	
		Bucket	35	−0.025 −0.087	+0.132 +0.006	0.031 – 0.219	0.519	
		Boom swing	35	−0.025 −0.087	+0.132 +0.005	0.031 – 0.219	0.519	
		Blade	35	−0.025 −0.087	+0.132 +0.005	0.031 – 0.219	0.519	
2	Clearance between piston rod mounting pin and bushing	Boom	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	Replace bushing
		Arm	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
		Bucket	30	0 −0.050	+0.117 +0.080	0.080 – 0.167	1.0	
		Boom swing	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
		Blade	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
3	Clearance between cylinder bottom mounting pin and bushing	Boom	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
		Arm	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
		Bucket	30	0 −0.050	+0.117 +0.080	0.080 – 0.167	1.0	
		Boom swing	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
		Blade	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	

020M06



20NF06035

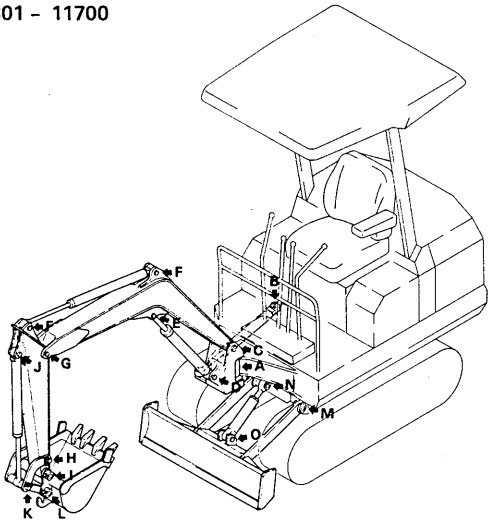
Unit: mm

No.	Check item	Cylinder	Standard size	Tolerance		Standard clearance	Clearance limit	Remedy
				Shaft	Hole			
1	Clearance between piston rod and bushing	Boom	40	−0.025 −0.087	+0.132 +0.006	0.031 – 0.219	0.519	
		Arm	40	−0.025 −0.087	+0.132 +0.006	0.031 – 0.219	0.519	
		Bucket	35	−0.025 −0.087	+0.132 +0.006	0.031 – 0.219	0.519	
		Boom swing	35	−0.025 −0.087	+0.132 +0.006	0.031 – 0.219	0.519	
		Blade	35	−0.025 −0.087	+0.132 +0.006	0.031 – 0.219	0.519	
2	Clearance between piston rod mounting pin and bushing	Boom	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	Replace bushing
		Arm	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
		Bucket	30	0 −0.050	+0.117 +0.080	0.080 – 0.167	1.0	
		Boom swing	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
		Blade	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
3	Clearance between cylinder bottom mounting pin and bushing	Boom	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
		Arm	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
		Bucket	30	0 −0.050	+0.117 +0.080	0.080 – 0.167	1.0	
		Boom swing	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
		Blade	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	

020M06

WORK EQUIPMENT

PC05-6 Serial No. 11301 - 11700



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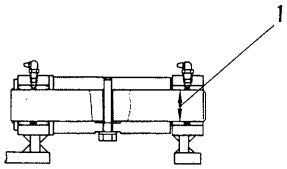
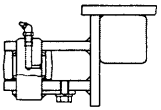
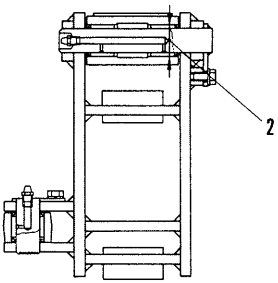
020M06



Section A – A

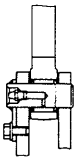


Section B – B

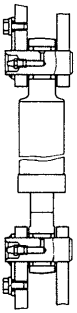


Section C – C

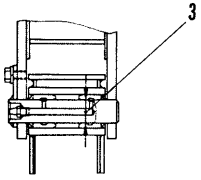
Section D – D



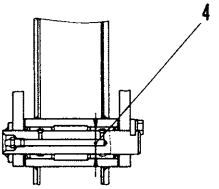
Section E – E



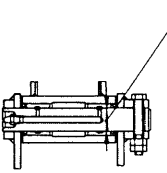
Section F – F



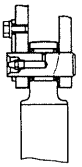
Section G – G



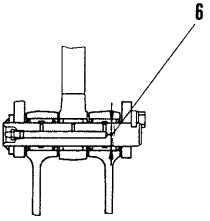
Section H – H



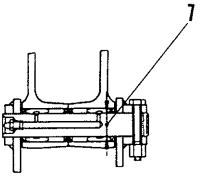
Section I – I



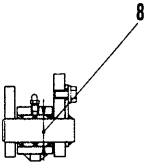
Section J – J



Section K – K



Section L – L



Section M – M

Section N – N

Section O – O

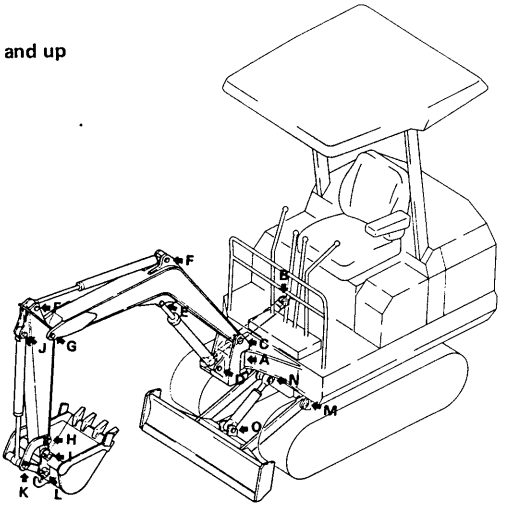
F20M06035

020M06

Unit: mm

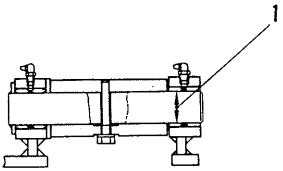
No.	Check item	Criteria					Remedy
		Standard size	Tolerance		Standard clearance	Clearance limit	
			Shaft	Hole			
1	Clearance between bushing and connecting pin of revolving frame and swing bracket	40	-0.025 -0.064	+0.142 +0.080	0.105 – 0.206	1.0	Replace bushing
2	Clearance between bushing and boom foot pin	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
3	Clearance between bushing and connecting pin of boom and arm	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
4	Clearance between bushing and connecting pin of arm and link	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
5	Clearance between bushing and connecting pin of arm and bucket	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
6	Clearance between bushing and connecting pin of link and link	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
7	Clearance between bushing and connecting pin of link and bucket	30	-0.160 -0.193	+0.117 +0.080	0.240 – 0.310	1.0	
8	Clearance between bushing and connecting pin of blade and track frame	30	-0.160 -0.193	+0.135 +0.096	0.256 – 0.328	1.0	

PC05-6 Serial No. 11701 and up

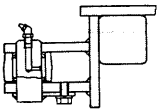


F20M06034

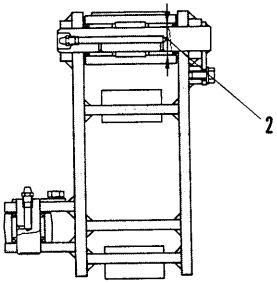
020M06



Section A – A

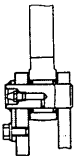


Section B – B

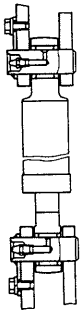


Section C – C

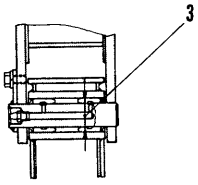
Section D – D



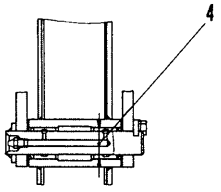
Section E – E



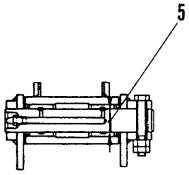
Section F – F



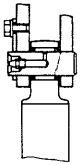
Section G – G



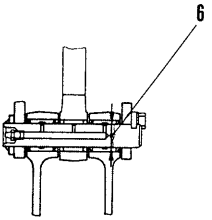
Section H – H



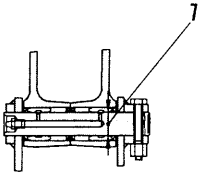
Section I – I



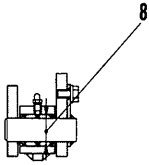
Section J – J



Section K – K



Section L – L



Section M – M

Section N – N

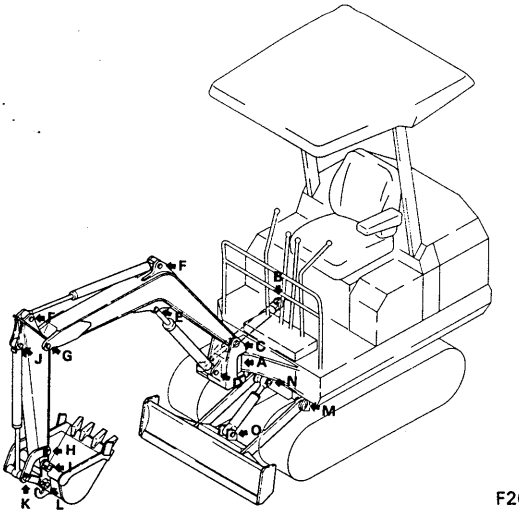
Section O – O

F20M06035

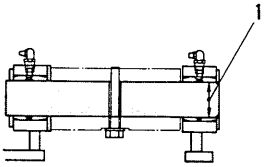
020M06

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size	Tolerance		Standard clearance	Clearance limit	
			Shaft	Hole			
1	Clearance between bushing and connecting pin of revolving frame and swing bracket	40	−0.025 −0.064	+0.125 +0.071	0.096 – 0.189	1.0	Replace bushing
2	Clearance between bushing and boom foot pin	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
3	Clearance between bushing and connecting pin of boom and arm	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
4	Clearance between bushing and connecting pin of arm and link	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
5	Clearance between bushing and connecting pin of arm and bucket	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
6	Clearance between bushing and connecting pin of link and link	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
7	Clearance between bushing and connecting pin of link and bucket	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
8	Clearance between bushing and connecting pin of blade and track frame	30	−0.160 −0.193	+0.135 +0.096	0.256 – 0.328	1.0	

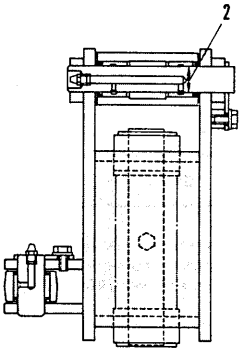


F20M06034

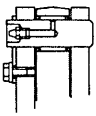


Section A – A

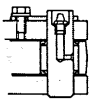
Section B – B



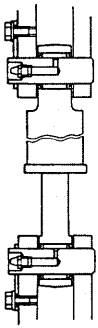
Section C – C



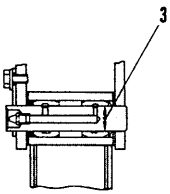
Section D – D



Section E – E

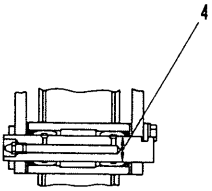


Section F - F

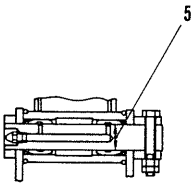


Section G – G

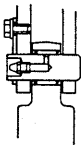
020M06



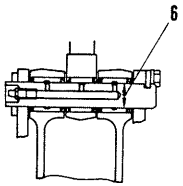
Section H – H



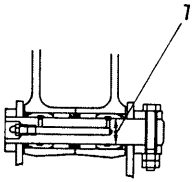
Section I – I



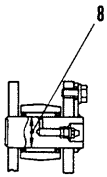
Section J – J



Section K – K

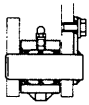


Section L – L



Section M – M

Section N – N



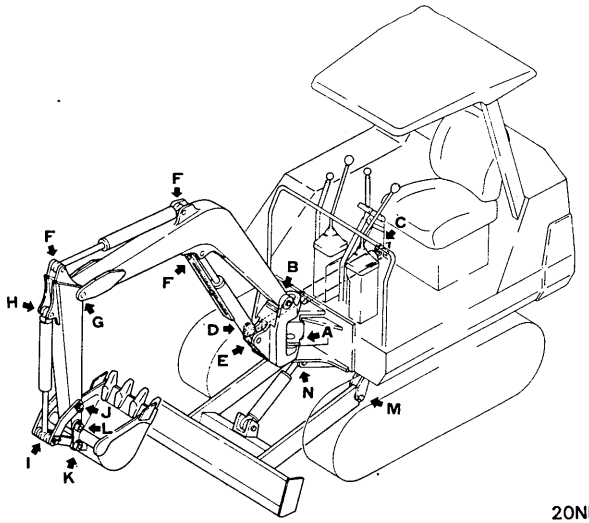
Section O – O

020M06

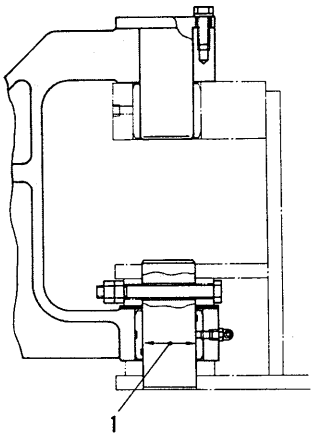
20MF06021

Unit: mm

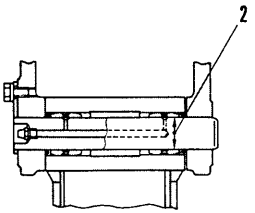
No.	Check item	Criteria					Remedy
		Standard size	Tolerance		Standard clearance	Clearance limit	
			Shaft	Hole			
1	Clearance between bushing and connecting pin of revolving frame and swing bracket	40	−0.025 −0.064	+0.125 +0.071	0.096 – 0.189	1.0	Replace bushing
2	Clearance between bushing and boom foot pin	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
3	Clearance between bushing and connecting pin of boom and arm	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
4	Clearance between bushing and connecting pin of arm and link	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
5	Clearance between bushing and connecting pin of arm and bucket	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
6	Clearance between bushing and connecting pin of link and link	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
7	Clearance between bushing and connecting pin of link and bucket	30	−0.160 −0.193	+0.117 +0.080	0.240 – 0.310	1.0	
8	Clearance between bushing and connecting pin of blade and track frame	30	−0.160 −0.193	+0.135 +0.096	0.256 – 0.328	1.0	



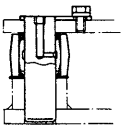
20NF06036



Section A – A

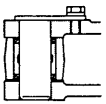


Section B – B

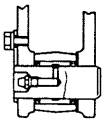


Section C – C

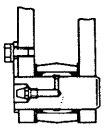
020M06



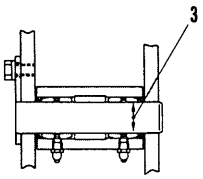
Section D – D



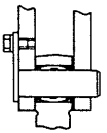
Section E – E



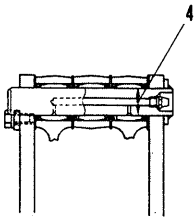
Section F – F



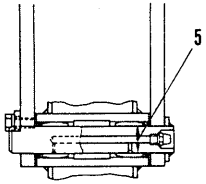
Section G – G



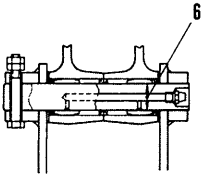
Section H – H



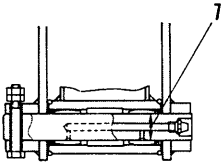
Section I – I



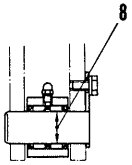
Section J – J



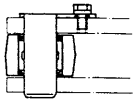
Section K – K



Section L – L



Section M – M



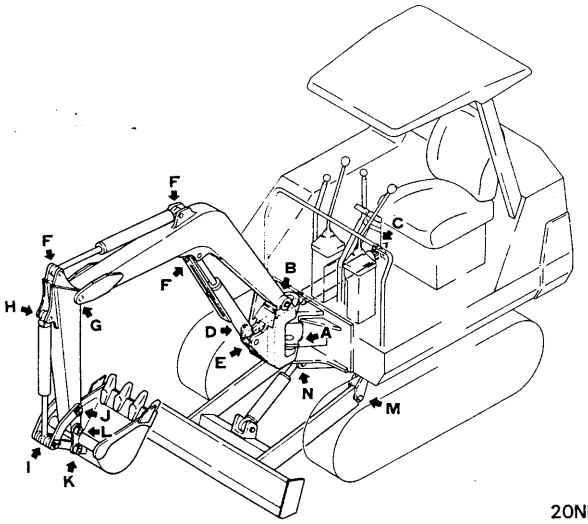
Section N – N

20NF06037

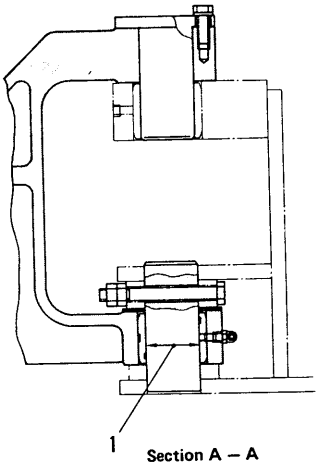
Unit: mm

020M06

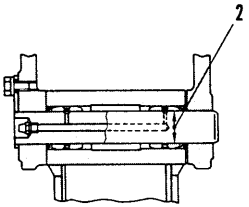
No.	Check item	Criteria					Remedy
		Standard size	Tolerance		Standard clearance	Clearance limit	
			Shaft	Hole			
1	Clearance between bushing and connecting pin of revolving frame and swing bracket	60	0 −0.050	+0.178 +0.109	0.109 – 0.228	1.0	Replace bushing
2	Clearance between bushing and connecting pin of boom and swing bracket	35	0 −0.050	+0.142 +0.080	0.080 – 0.192	1.0	
3	Clearance between bushing and connecting pin of boom and arm	35	0 −0.050	+0.095 +0.044	0.044 – 0.145	1.0	
4	Clearance between bushing and connecting pin of arm and link	30	0 −0.050	+0.079 +0.033	0.033 – 0.129	1.0	
5	Clearance between bushing and connecting pin of arm and bucket	30	0 −0.050	+0.079 +0.033	0.033 – 0.129	1.0	
6	Clearance between bushing and connecting pin of link and link	30	0 −0.050	+0.079 +0.033	0.033 – 0.129	1.0	
7	Clearance between bushing and connecting pin of link and bucket	30	0 −0.050	+0.079 +0.033	0.033 – 0.129	1.0	
8	Clearance between bushing and connecting pin of blade and track frame	35	0 −0.050	+0.095 +0.044	0.044 – 0.145	1.0	



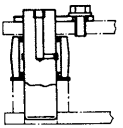
20NF06036



Section A – A

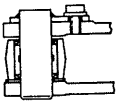


Section B – B

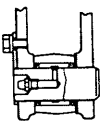


Section C – C

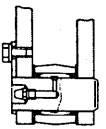
020M06



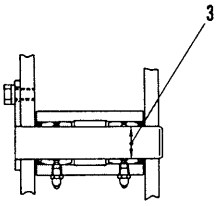
Section D – D



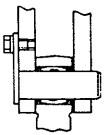
Section E – E



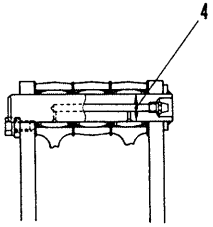
Section F – F



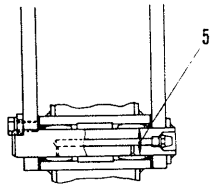
Section G – G



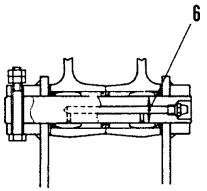
Section H – H



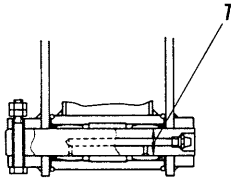
Section I – I



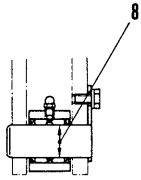
Section J – J



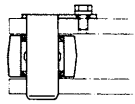
Section K – K



Section L – L



Section M – M



Section N – N

20NF06038

Unit: mm

020M06

No.	Check item	Criteria					Remedy
		Standard size	Tolerance		Standard clearance	Clearance limit	
			Shaft	Hole			
1	Clearance between bushing and connecting pin of revolving frame and swing bracket	60	0 −0.050	+0.178 +0.109	0.109 – 0.228	1.0	Replace bushing
2	Clearance between bushing and connecting pin of boom and swing bracket	40	0 −0.050	+0.096 +0.045	0.045 – 0.146	1.0	
3	Clearance between bushing and connecting pin of boom and arm	35	0 −0.050	+0.095 +0.044	0.044 – 0.145	1.0	
4	Clearance between bushing and connecting pin of arm and link	30	0 −0.050	+0.079 +0.033	0.033 – 0.129	1.0	
5	Clearance between bushing and connecting pin of arm and bucket	30	0 −0.050	+0.079 +0.033	0.033 – 0.129	1.0	
6	Clearance between bushing and connecting pin of link and link	30	0 −0.050	+0.079 +0.033	0.033 – 0.129	1.0	
7	Clearance between bushing and connecting pin of link and bucket	30	0 −0.050	+0.079 +0.033	0.033 – 0.129	1.0	
8	Clearance between bushing and connecting pin of blade and track frame	35	−0.170 −0.209	+0.142 +0.080	0.250 – 0.351	1.0	