

TROUBLESHOOTING / Troubleshooting B

RELATIONSHIP BETWEEN MACHINE TROUBLE SYMPTOMS AND RELATED PARTS

This table indicates the relationship between machine trouble symptoms and the potential problem parts, which may cause trouble if failed, and the evaluation methods of these components.

Parts	Function	Symptoms in control system when trouble occurs.	Symptoms in machine operation when trouble occurs.
Forward/Reverse Lever	<ul style="list-style-type: none"> Sends the command signal on Forward/Reverse to MC. Sends the signal on forward/reverse to the neutral relay. 	<ul style="list-style-type: none"> Keeps MC in neutral when traveling. 	<ul style="list-style-type: none"> Although the forward/reverse lever is operated, the machine does not travel. Although the forward/reverse lever is in Reverse, the backlight and back buzzer are not operated.
Shift Switch	<ul style="list-style-type: none"> Sends the command signal on speed gear to MC. 	<ul style="list-style-type: none"> Particular speed gear only can be operated according to condition of the shorted or open circuit. 	<ul style="list-style-type: none"> When the travel mode switch is manually operated, the machine can travel at particular speed gear only. When the travel mode switch is automatically operated, speed can be shifted to particular speed gear only.
Parking Brake Switch	<ul style="list-style-type: none"> Releases/applies the parking brake. 	<ul style="list-style-type: none"> The parking brake cannot be released or applied. 	<ul style="list-style-type: none"> Although the parking brake switch is OFF, the machine cannot operate in the forward or reverse direction. Although the parking brake switch is ON on the slope, the machine moves.
Travel Mode Selector Switch	<ul style="list-style-type: none"> Sends the command signal on travel mode to MC. 	<ul style="list-style-type: none"> MC makes only the travel mode in manual gear shifting operable. 	<ul style="list-style-type: none"> When the automatic gear shifting is selected, the machine can travel in the travel mode in manual gear shifting only.
Work Mode Selector Switch	<ul style="list-style-type: none"> Sends the command signal on work mode to MC. 	<ul style="list-style-type: none"> MC keeps the work mode selector switch in Normal mode. 	<ul style="list-style-type: none"> Although mode L has been used, fuel consumption suddenly increases after certain week or month. Machine operation may be normal according to the switch to reduce engine output is controlled to low at low speed gear.
Clutch Cut-Off Position Switch	<ul style="list-style-type: none"> Sends the command signal on clutch cut-off to MC. 	<ul style="list-style-type: none"> MC makes the clutch cut-off mode disabled. 	<ul style="list-style-type: none"> Although mode S,N or D in the clutch cut-off mode switch is selected and the brake pedal is depressed, the clutch cut-off is not operated.
Down-Shift Switch Down-Shift/Up-Shift Switch	<ul style="list-style-type: none"> Sends the command signal on down-shift/up-shift switch to MC. (The circuit in down-shift switch is connected to that at down-shift side in down-shift/up-shift switch.) 	<ul style="list-style-type: none"> MC makes down-shift/up-shift switch control disabled. 	<ul style="list-style-type: none"> Although the down-shift/up-shift switch is pushed, down-shift/up-shift is not operated. Although the down-shift switch is pushed, down-shift is not operated.
Hold Switch	<ul style="list-style-type: none"> Sends the command signal on hold switch to MC. 	<ul style="list-style-type: none"> MC makes hold switch control disabled. 	<ul style="list-style-type: none"> Although the auto speed gear shifting is selected and the hold switch is pushed, travel speed gear is not fixed.

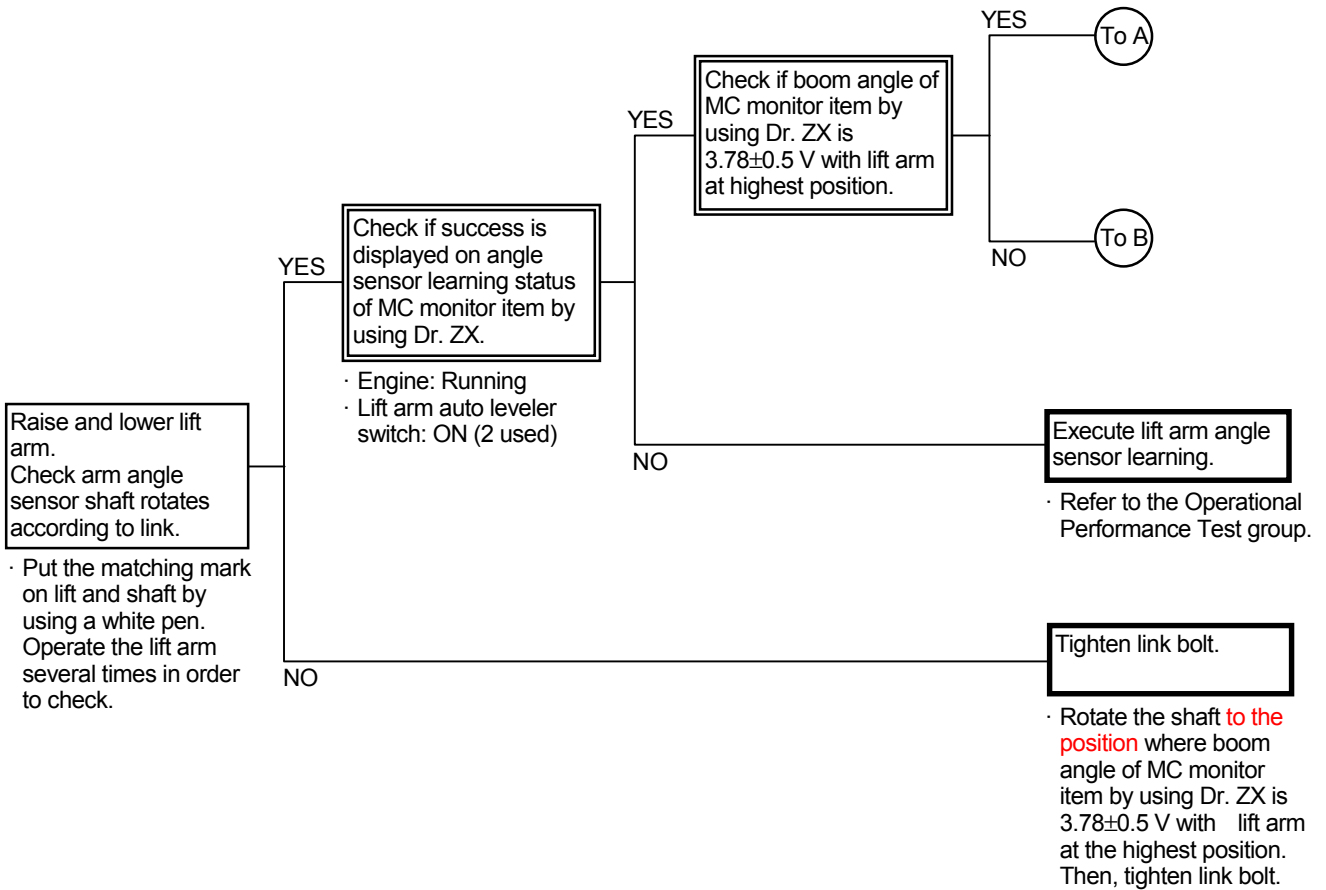
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Parts	Function	Symptoms in control system when trouble occurs.	Symptoms in machine operation when trouble occurs.
Steering Pilot Valve	<ul style="list-style-type: none"> Controls pilot pressure oil flow rate and direction to the steering valve spool end according to steering handle operating speed and direction. 	<ul style="list-style-type: none"> Pilot pressure oil flow rate cannot be controlled properly. 	<ul style="list-style-type: none"> According to malfunction, the troubles may occur including; although the steering handle is operated fast, the steering is operated slowly, although the steering handle is operated slowly, the steering is operated fast, and so on.
Ride Control Valve	<ul style="list-style-type: none"> Supplies lift arm cylinder bottom pressure to the accumulator through the charge cut-off spool with the ride control switch OFF. Closes the charge cut-off spool and blocks the circuit to lift arm cylinder bottom side when accumulated pressure in the accumulator exceeds the specification. Operates the solenoid valve by the command signal from MC, moves the main spool and connects the circuits between lift arm cylinder bottom side and accumulator, between lift arm rod side and hydraulic oil tank when travel speed reaches 7km/h or faster with the ride control switch ON. 	<ul style="list-style-type: none"> Pressure cannot be accumulated in the accumulator. The solenoid valve and main spool cannot be controlled. 	<ul style="list-style-type: none"> Ride control is not operated. (Shock when traveling is continued.) Ride control can not turned off. (Shock when traveling is always reduced.)
Emergency Steering Pressure Switch	<ul style="list-style-type: none"> Is installed to emergency steering block in circuit upper between main pump and steering valve. Sends the signal on steering circuit pressure to the monitor unit. 	<ul style="list-style-type: none"> Steering circuit pressure cannot be detected. 	<ul style="list-style-type: none"> Although there is no trouble in the steering circuit, the emergency steering pump is operated.
Emergency Steering Pump Delivery Pressure Switch	<ul style="list-style-type: none"> Is installed to between emergency steering pump and emergency steering block. When pressure oil beyond specification from the emergency steering pump is supplied, the connection is broken and the monitor unit judges that the emergency steering switch is operated correctly. 	<ul style="list-style-type: none"> The normal signal on pressure occurrence is not sent to the monitor unit. 	<ul style="list-style-type: none"> Although the emergency steering pump auto check circuit is operated when the engine starts, the emergency steering pump indicator blinks.
Hydraulic Fan Motor	<ul style="list-style-type: none"> Operates the flow rate adjustment solenoid valve by the command signal from MC. Controls pressure oil flow rate to the fan motor by operating the flow rate control valve. Increases or decreases cooling fan speed. Operates the reverse control solenoid valve by the command signal from MC. Shifts the outlet port for pressure oil to the fan motor by operating the reverse control valve. Switches the cooling fan in reverse rotation. 	<ul style="list-style-type: none"> The flow rate control valve cannot be controlled. The reverse control valve cannot be controlled. 	<ul style="list-style-type: none"> Cooling fan speed cannot be controlled. Cooling fan reverse control cannot be operated.

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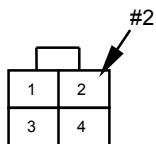
F-11 Lift arm auto leveler is not operated. (Optional)

- Check the wiring connections first.

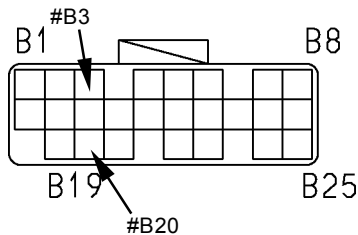


Connector (Harness end of connector viewed from the open end side)

Lift Arm Auto Leveler Switch Connector

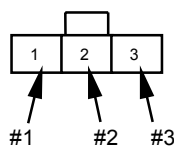


MC Connector B

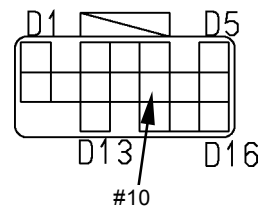


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Lift Arm Angle Sensor Connector

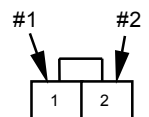


MC Connector D



T183-05-04-009

Lift Arm Solenoid Valve Connector



THE ATTACHED DIAGRAM LIST

(The following diagrams are attached to this manual.)

ZW310 ELECTRIC CIRCUIT DIAGRAM 1

ZW310 ELECTRIC CIRCUIT DIAGRAM 2

ZW220/250 LIFT ARM PROXIMITY SWITCH HARNESS (EU STANDARD, GENERAL STANDARD)
ZW310 LIFT ARM PROXIMITY SWITCH HARNESS

ZW220/250 LIFT ARM ANGLE SENSOR HARNESS (EU STANDARD, GENERAL STANDARD) (OPTIONAL)
ZW310 LIFT ARM ANGLE SENSOR HARNESS (OPTIONAL)

ZW220/250 FRONT LIGHT HARNESS (EU STANDARD, GENERAL STANDARD)
ZW310 FRONT LIGHT HARNESS

ZW220/250 FRONT HARNESS (EU STANDARD, GENERAL STANDARD)
ZW310 FRONT HARNESS

ZW220/250 CENTER HARNESS (EU STANDARD, GENERAL STANDARD)
ZW310 CENTER HARNESS

ZW220/250 FRONT CONSOLE HARNESS 1 (EU STANDARD, GENERAL STANDARD)
ZW310 FRONT CONSOLE HARNESS 1

ZW220/250 FRONT CONSOLE HARNESS 2 (EU STANDARD, GENERAL STANDARD)
ZW310 FRONT CONSOLE HARNESS 2

ZW220/250 SIDE CONSOLE HARNESS 1 (EU STANDARD, GENERAL STANDARD)
ZW310 SIDE CONSOLE HARNESS 1

ZW220/250 SIDE CONSOLE HARNESS 2 (EU STANDARD, GENERAL STANDARD) (FOR STANDARD TWO
LEVER PILOT VALVE)
ZW310 SIDE CONSOLE HARNESS 2 (FOR STANDARD TWO LEVER PILOT VALVE)

ZW220/250 SIDE CONSOLE HARNESS 3 (EU STANDARD, GENERAL STANDARD) (FOR OPTIONAL JOY
STICK LEVER PILOT VALVE)
ZW310 SIDE CONSOLE HARNESS 3 (FOR OPTIONAL JOY STICK LEVER PILOT VALVE)

ZW310 REAR CONSOLE HARNESS

ZW220/250 TRANSMISSION HARNESS (GENERAL STANDARD)
ZW310 TRANSMISSION HARNESS

ZW310 REAR FRAME HARNESS

ZW310 HYDRAULIC CIRCUIT DIAGRAM (EU STANDARD)

ZW310 HYDRAULIC CIRCUIT DIAGRAM (GENERAL STANDARD)
