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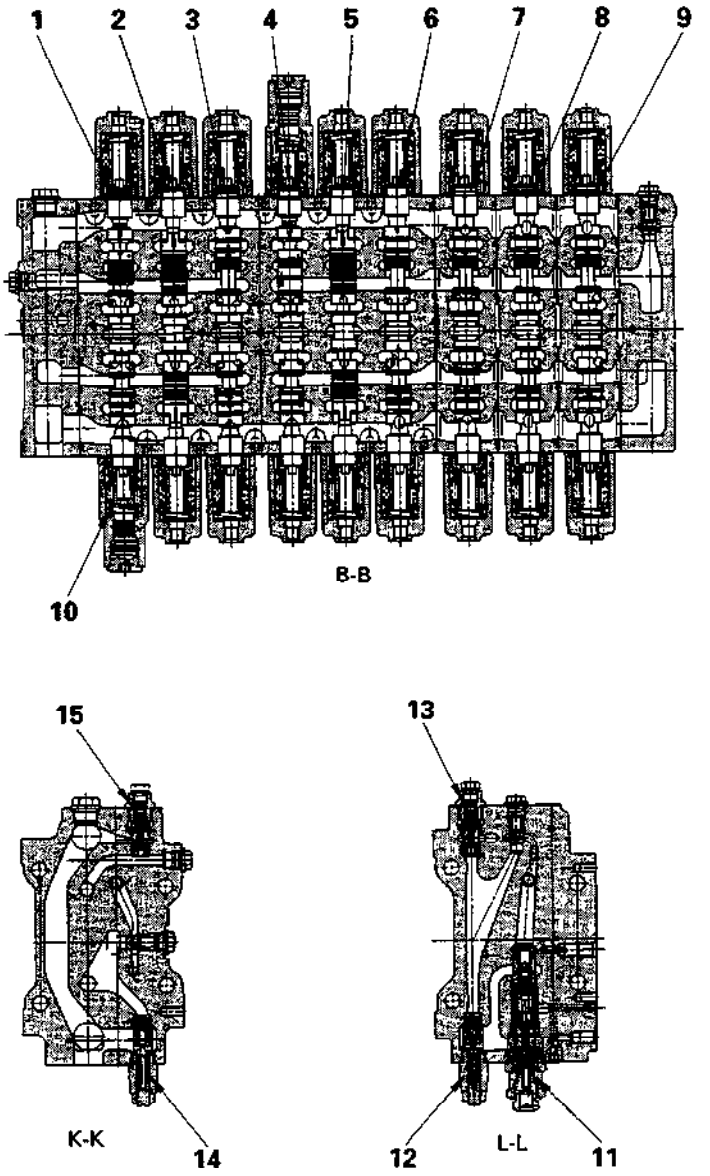
PC210LC-6

Unit: kg

Machine model	PC210LC-6
Serial number	A82001 and up
Engine assembly	685
• Engine	480
• Damper	6
• Hydraulic pump	142
Radiator • oil cooler assembly	144
Hydraulic tank • filter assembly (excl. oil)	133
Fuel tank assembly (excl. fuel)	114
Revolving frame	1,982
Operator's cab	290
Operator's seat	29
Counterweight	4,730
Swing machinery	205
Control valve	230
Swing motor	9
Travel motor	123 x 2
Center swivel joint	42
Track frame assembly	5,318
• Track frame	2,870
• Swing circle	280
• Idler	140 x 2
• Idler cushion	135 x 2
• Carrier roller	21 x 4
• Track roller	38 x 18
• Travel motor • final drive	425 x 2
Track shoe assembly	
Standard triple grouser shoe (600 mm)	1,425 x 2
Standard triple grouser shoe (700 mm)	1,565 x 2
Wide triple grouser shoe (800 mm)	–
Wide triple grouser shoe (900 mm)	–

MAIN STRUCTURE



X10BH145

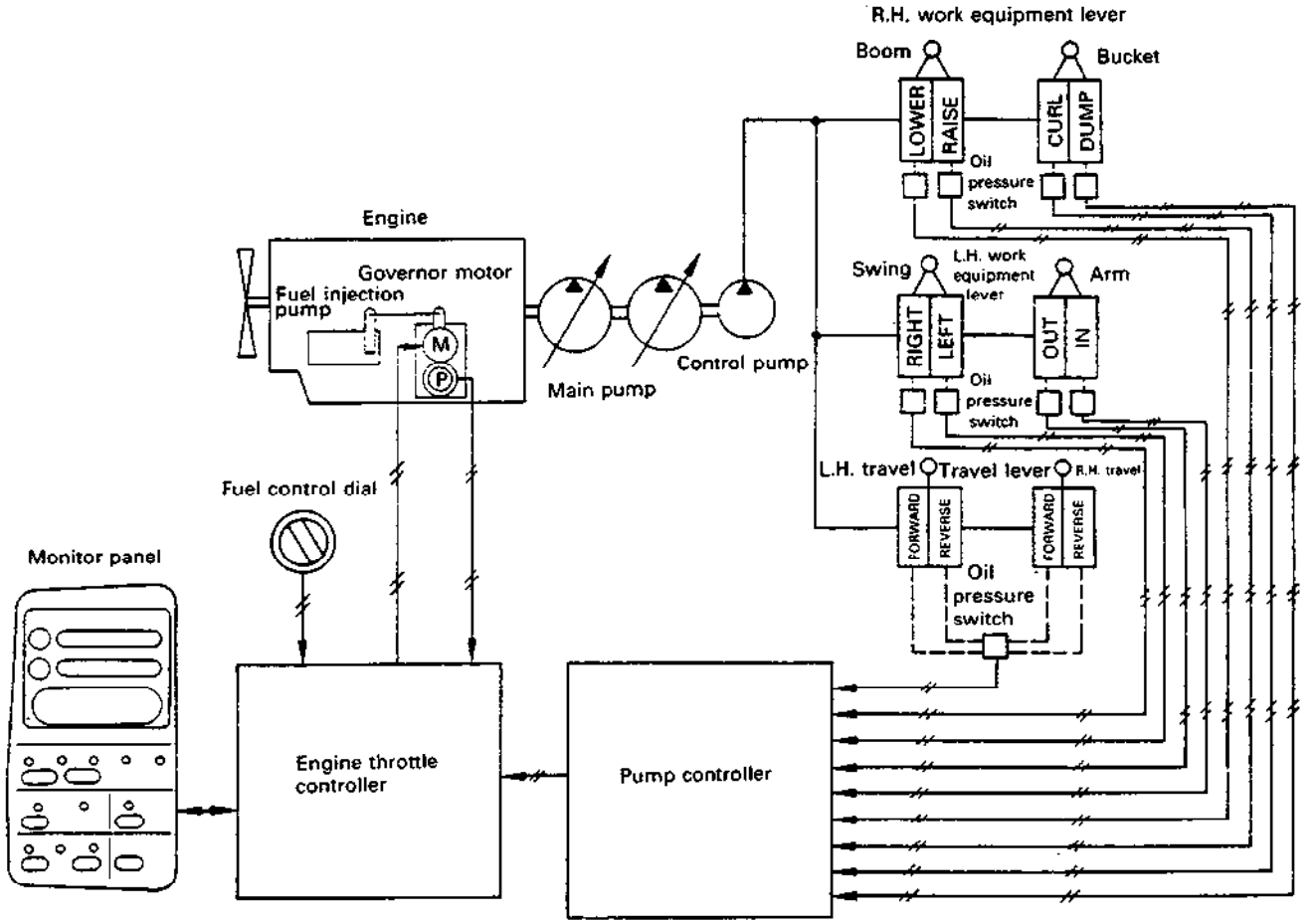
1. Spool (arm)
2. Spool (L.H. travel)
3. Spool (swing)
4. Spool (boom)
5. Spool (R.H. travel)
6. Spool (bucket)
7. Spool (service 1)
8. Spool (service 2)
9. Spool (service 3)
10. Spool return spring
11. Main unload • LS relief valve
12. Main relief valve (bucket end group)
13. Sub-unload valve (bucket end group)
14. Main relief valve (arm end group)
15. Sub-unload valve (arm end group)

Operation

1) When the arm and boom are operated simultaneously, the swash plate angle for both pumps becomes the maximum. When this happens, the load pressure at the boom RAISE side is higher than at the arm side, so the LS pressure passes through ports **E** and **F** of boom spool (8), enters LS shuttle valve (22) and is sent to the LS circuit. This LS pressure is transmitted to port **G** of arm pressure compensation valve (17), and acts to increase the set pressure of the pressure compensation valve. Because of this, the pressure between port **H** or arm spool (11) and port **I** or pressure compensation valve (17) rises, and spool meter-in LS differential pressure (pump pressure - LS pressure = **Δ PLS**) becomes the same as that at the boom end.

2) Because of the above operation, the oil flow is divided in proportion to the size of the opening area of boom spool (8) and the opening area of arm spool (11). Meter-in differential pressure **Δ PLS** during boom RAISE + arm **IN** is **Δ PLS** < boom LS control pressure, so the main pump swash plate angle is set to maximum.

4. AUTO-DECELERATION FUNCTION



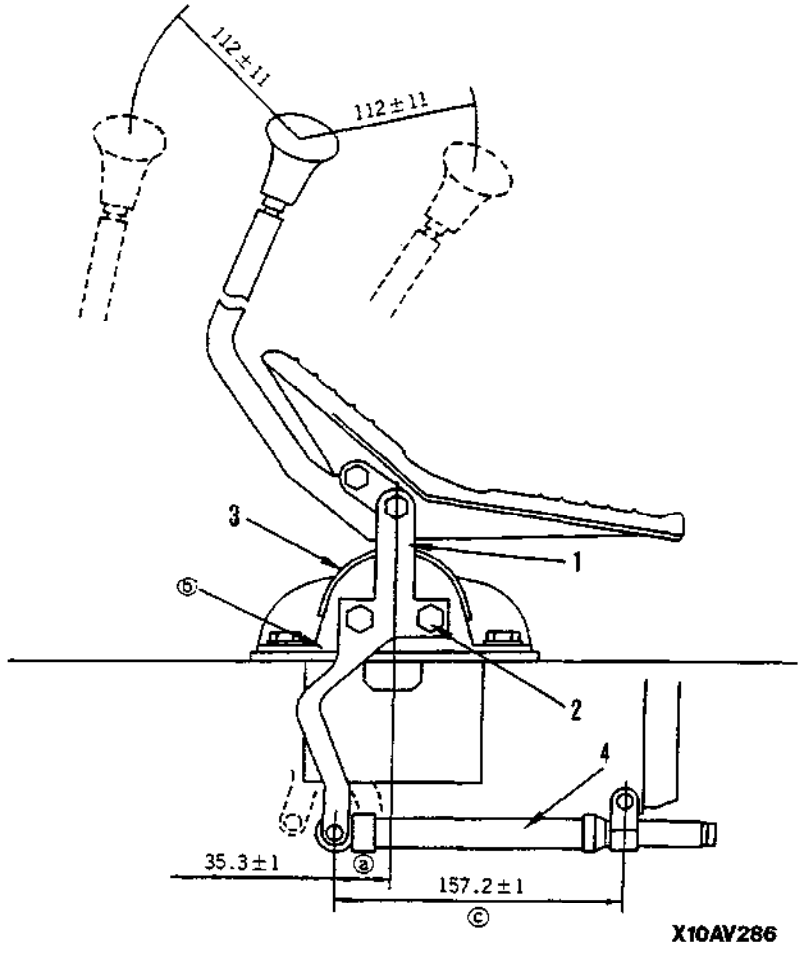
X12BV100

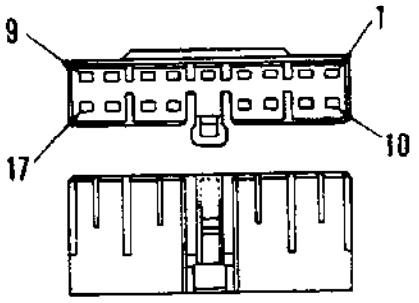
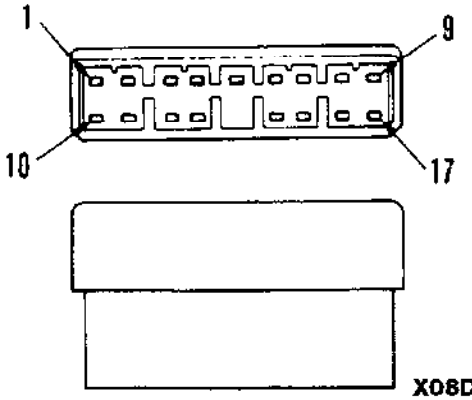
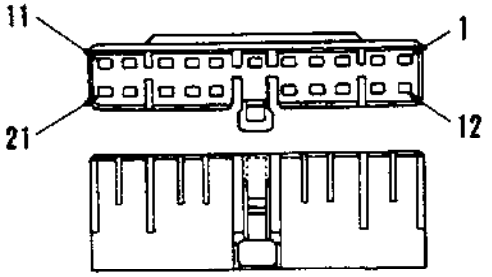
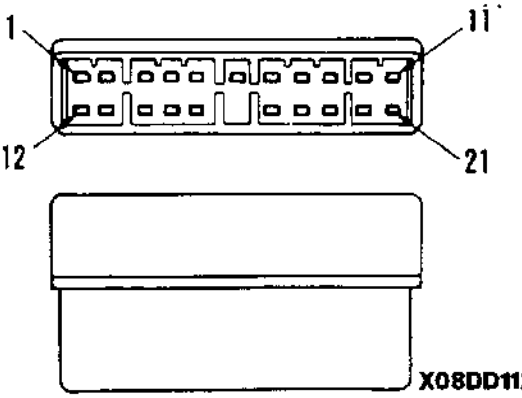
FUNCTION

- If all the control levers are at neutral when waiting for work or waiting for a dump truck, the engine speed is automatically reduced to a midrange speed to reduce fuel consumption and noise.
- If any lever is operated, the engine speed returns immediately to the set speed.

ADJUSTING TRAVEL LEVER

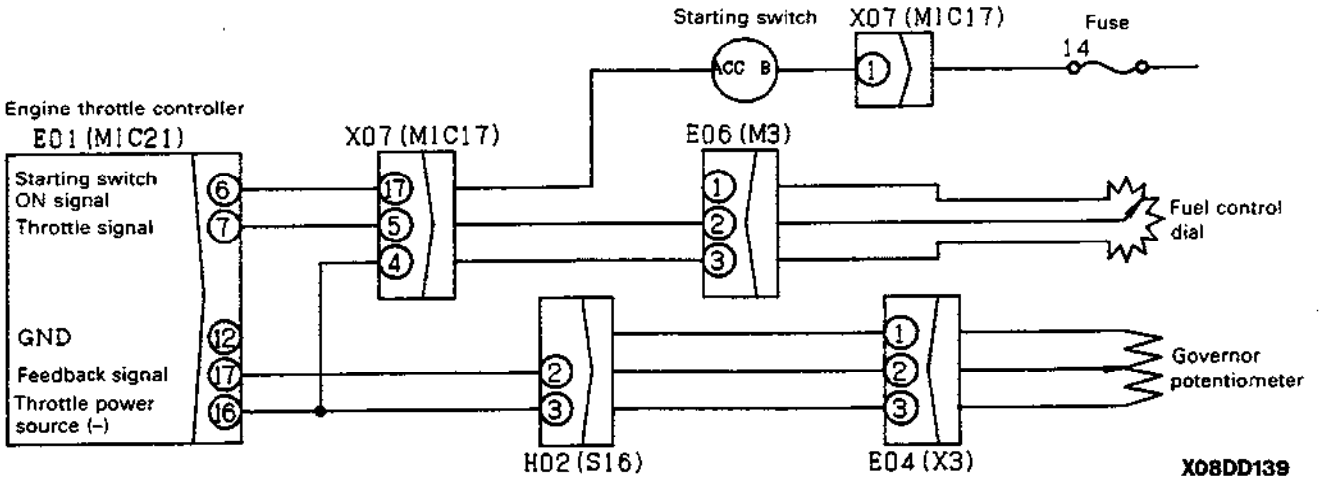
1. Use bolt (2) to install lever (1) to the PPC valve.
   ★ When doing this, install so that clearance ⓐ is 35.3 ± 1mm.
2. In this condition, move left and right travel levers (3) forward and backwards, and check that the levers are fitted securely in the stopper (bolt head) of the PPC valve.
3. Check also that cover (3) is not contacting portion ⓑ.
   ★ If it is contacting, adjust with the PPC mounting bolt or cover mounting bolt.
4. Install damper (4) and adjust so that dimension ⓒ is 157.2 ± 1mm when the lever is at neutral.



No. of pins	MIC type connector	
	Male (female housing)	Female (male housing)
17	 X08DD109	 X08DD110
21	 X08DD111	 X08DD112

Cause	Remedy
See E-5	—
Defective adjustment of linkage	Adjust
Defective injection pump	See S mode
Defective governor motor	Replace
Defective contact of wiring harness between starting switch ACC – X07 (17) – E01 (female) (6), or defective starting switch	Repair or replace
See E-7	—
See E-2	—
See E-6	—

E-12 Related electric circuit diagram



C-6 [E2:02] Short circuit in LS select solenoid system is displayed [E2:04] Short circuit in pump merge-divider solenoid system is displayed [E2:05] Short circuit in 2-stage relief solenoid system is displayed [E2:06] Short circuit in travel speed solenoid system is displayed

★ **This troubleshooting is carried out when there is still an abnormality, so when disconnecting the connector and inserting the T-adapter, or when removing the T-adapter and returning the connector to its original position, if the service code is not displayed, the problem has been removed.**

★ If the starting switch is turned OFF after an abnormality occurs, turn the starting switch ON and check if any service code is displayed. (If it is not displayed, the problem has been removed.)

★ Before carrying out troubleshooting, check that all the related connectors are properly inserted.

★ Always connect any disconnected connectors before going on to the next step.

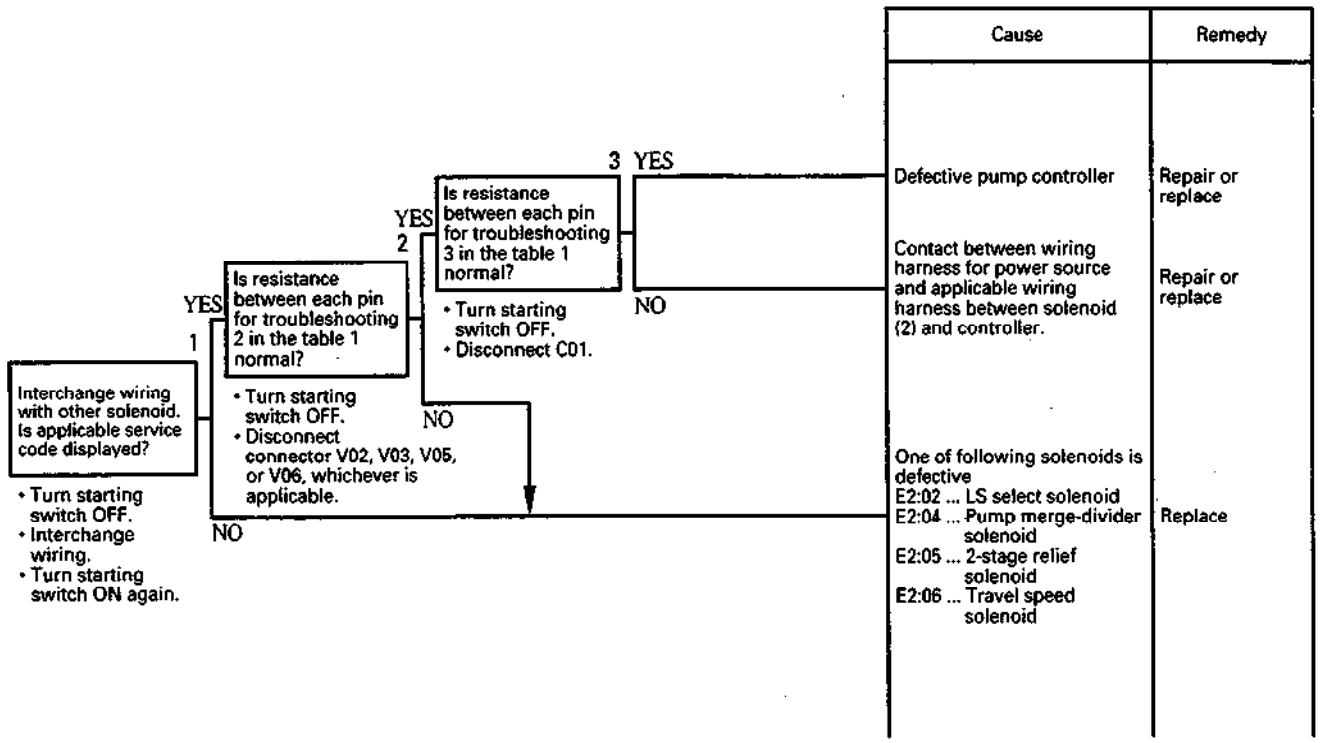
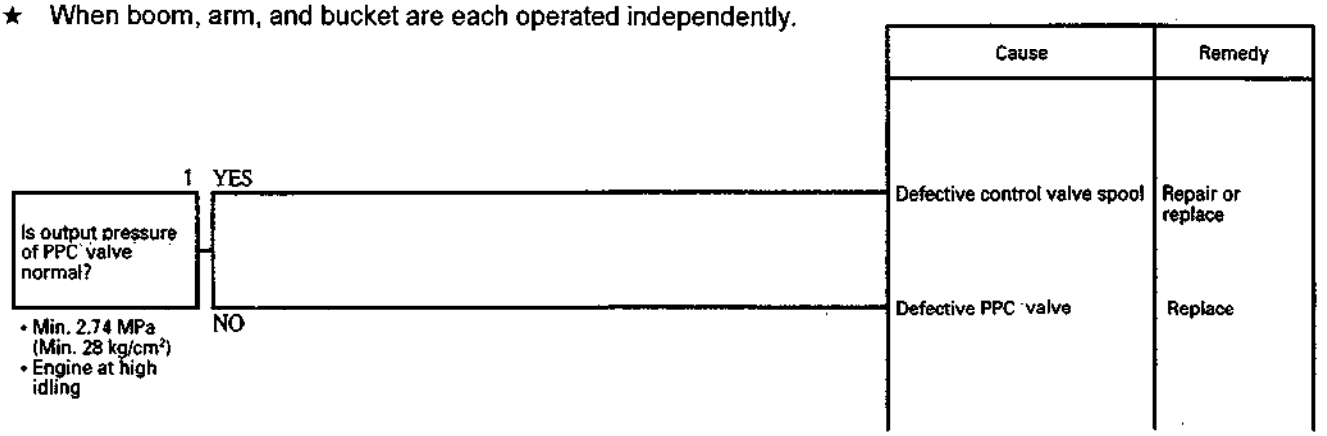


Table 1

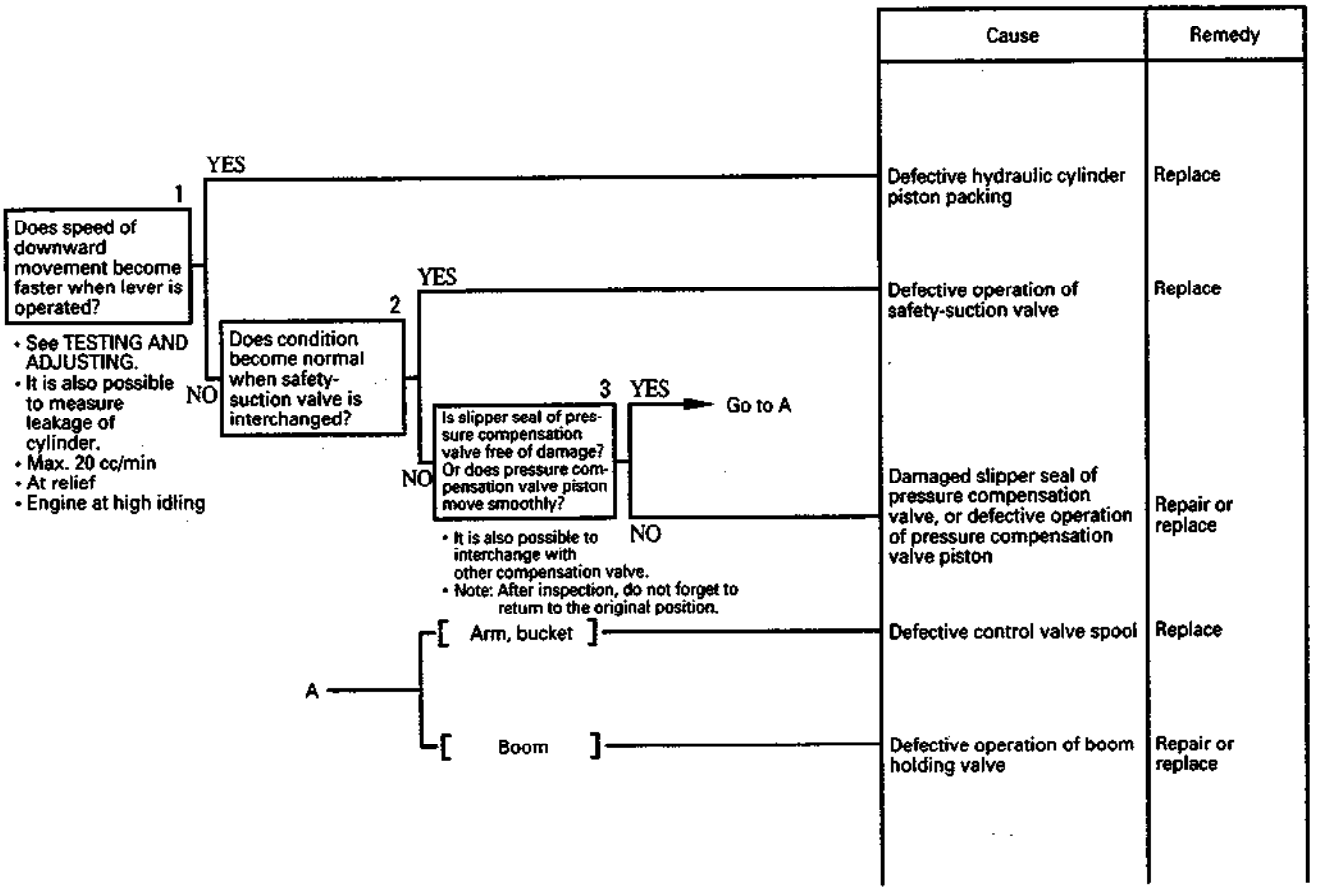
Service code	Measurement location			
	Troubleshooting 2		Troubleshooting 3	
E2 : 02	Between V02 (male) (1) and (2)	20 - 60 Ω	Between C01 (female) (10), (11) and (3)	20 - 60 Ω
			Between C01 (female) (3) and chassis	Min. 1 MΩ
E2 : 04	Between V03 (male) (1) and (2)	20 - 60 Ω	Between C01 (female) (10), (11), and (4)	20 - 60 Ω
			Between C01 (female) (4) and chassis	Min. 1 MΩ
E2 : 05	Between V05 (male) (1) and (2)	20 - 60 Ω	Between C01 (female) (10), (11) and (14)	20 - 60 Ω
			Between C01 (female) (14) and chassis	Min. 1 MΩ
E2 : 06	Between V06 (male) (1) and (2)	20 - 60 Ω	Between C01 (female) (10), (11) and (6)	20 - 60 Ω
			Between C01 (female) (6) and chassis	Min. 1 MΩ

H-10 Work equipment (boom, arm, bucket) does not move (but travel and swing are normal)

★ When boom, arm, and bucket are each operated independently.

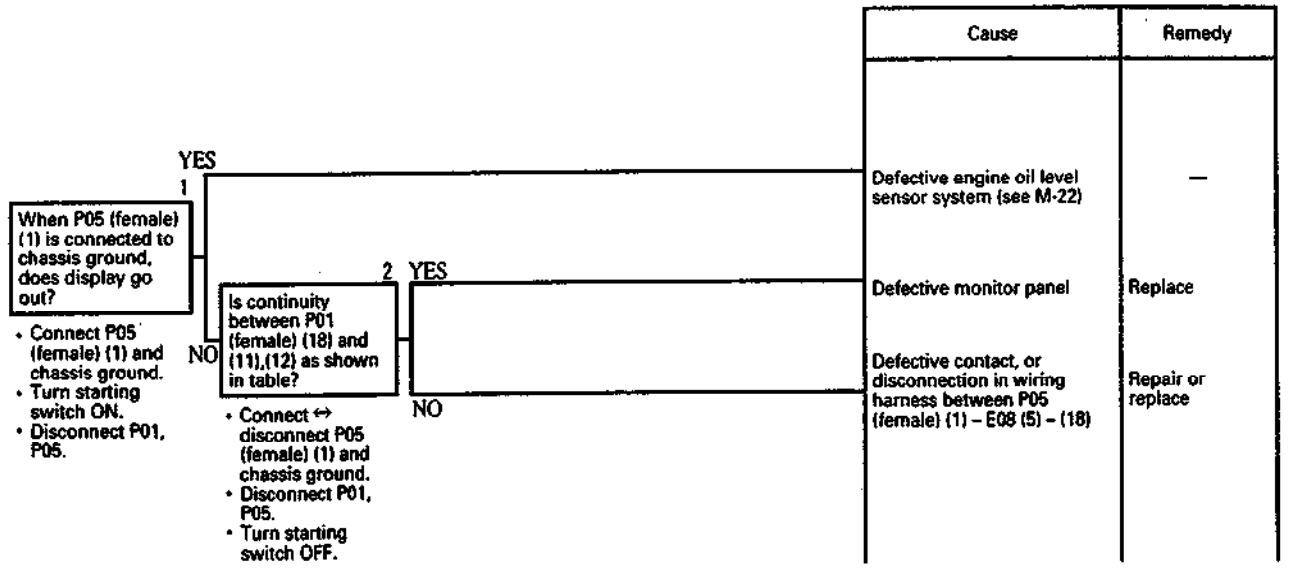


H-11 Excessive hydraulic drift (boom, arm, bucket)



b) (engine oil level) flashes

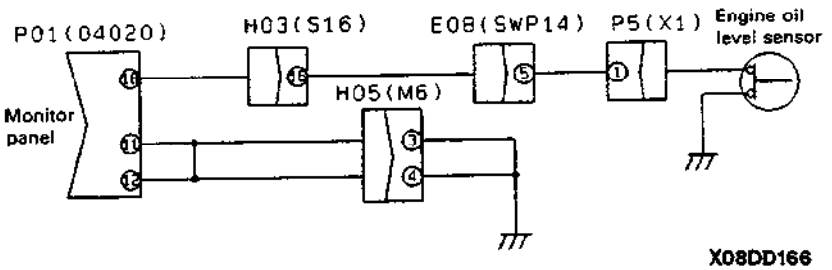
★ Use the level gauge to check that the engine oil level is correct before carrying out troubleshooting.



Table

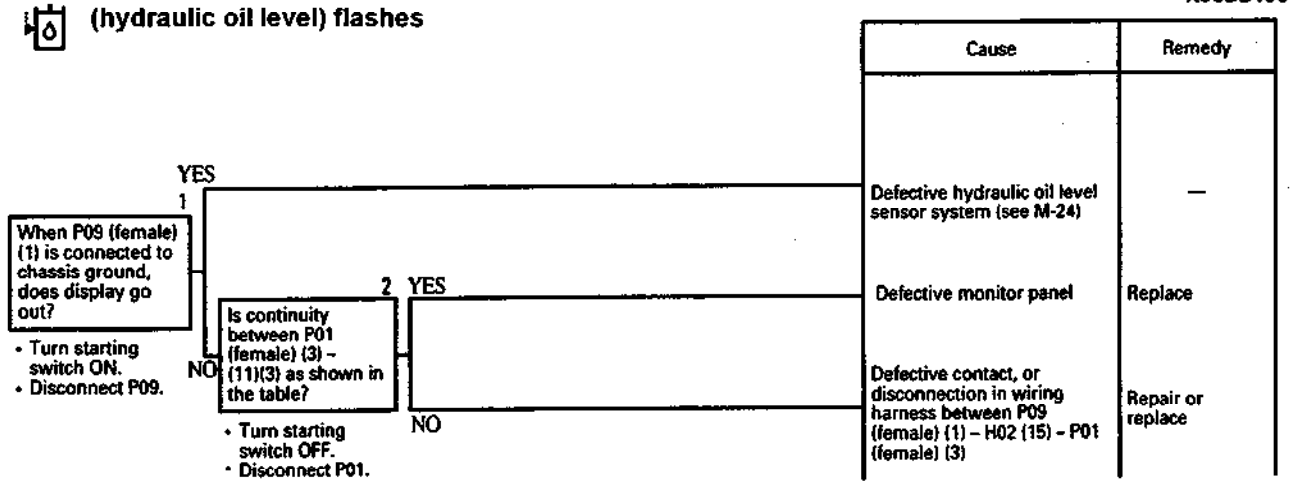
Connection with ground	Continuity
Connected	Yes
Disconnected	No

M-7 b) Related electric circuit diagram



X08DD166

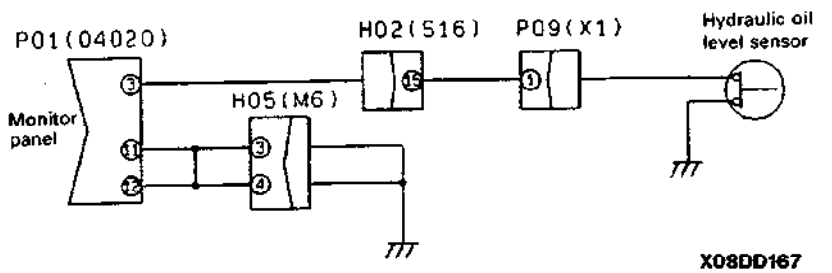
c) (hydraulic oil level) flashes



Table

Between P09 (female) and chassis	Continuity
Connected	Yes
Disconnected	No

M-7 c) Related electric circuit diagram

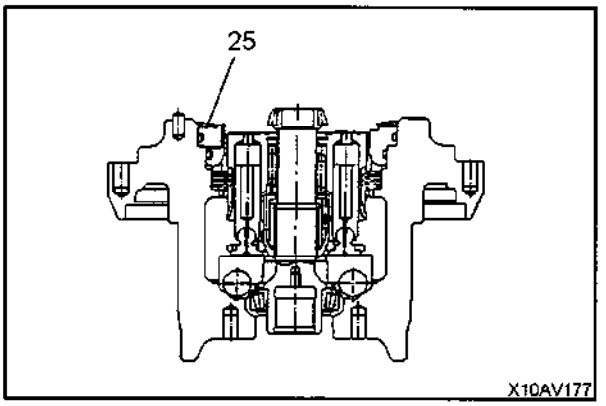


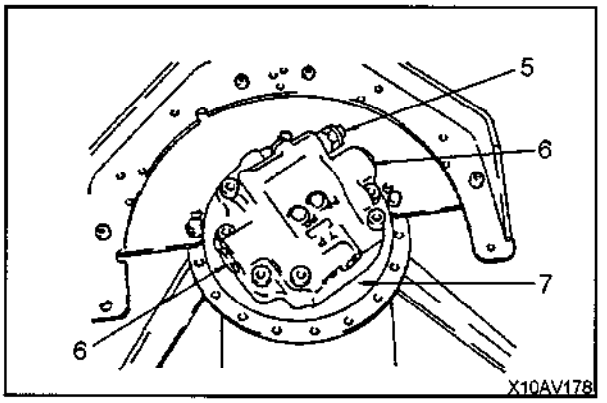
X08DD167

SPECIAL TOOL LIST

Nature of work	Symbol		Part No.	Part Name	Q'ty	Remarks	
• Engine • hydraulic pump • Radiator • hydraulic oil cooler • Control pump • Hydraulic pump • Removal, installation of TVC • LS valve assembly	B		796-460-1210	Oil stopper	1		
Disassembly of center swivel joint assembly	D		790-101-2501	Push-puller	1		
Removal, installation of swing circle	E		790-331-1110	Wrench	1	Tightening of circle bolt	
Disassembly, assembly of swing machinery assembly	F		796-426-1120	Push tool	1	Press fitting of bearing	
Disassembly, assembly of final drive assembly	G	1	796-427-1120	Wrench	1	PC200 PC200LC PC210LC PC220LC	Press fitting of bearing inner race
		2	796-427-1130	Push tool	1		
			790-101-2510	Block	1		
			792-104-3940	Bolt	2		
			01580-11631	Nut	2		
			01643-31645	Washer	2		
			790-105-2100	Jack	1		
			790-101-1102	Pump	1		
			796-570-1110	Plate	1	PC250LC	
		3	790-331-1110	Wrench	1	PC200 PC200LC PC210LC PC220LC	
		4	791-545-1510	Installer	1		
			791-580-1510	Installer	1	PC250LC	
Removal, installation of recoil spring assembly	H	1	791-600-2001 or 794-685-8005	Compressor (A) Compressor (B)	1 1	PC200 PC200LC PC210LC PC220LC	Removal, press fitting of master pin
			791-935-3160	Extension	1		
			790-101-1600	Cylinder (70 ton)	1		
			790-101-1102	Pump	1		
			791-600-2001 or 791-685-8003	Compressor (A) Compressor (B)	1 1	PC250LC	
			791-935-3160	Extension	1		
			790-101-1600	Cylinder (70 ton)	1		
			790-101-1102	Pump	1		
		2	790-201-1500 • 790-201-1620 • 790-101-5021 • 01010-50816	Push tool kit • Plate • Grip • Bolt	1 1 1	Installation of recoil spring piston dust seal	

3) Install parking brake spring (25).
4) Fit O-ring, align dowel pin with groove portion of brake piston, and install end cover (7).
   ★ Be extremely careful that the O-ring does not come out or get caught.
   Mating surface of motor case: Gasket sealant (LG-7 or LG-5) (Loctite 572/575)
   Mounting bolt: 460.9 ± 29.4 Nm (47 ± 3 kgm)
5) Tighten plug (6).
   Plug: 419.2 ± 46.6 Nm (42.75 ± 4.75 kgm)
6) Fit backup ring and O-ring, and install safety valve assembly (5).
   Safety valve assembly: 318.7 ± 24.5 Nm (32.5 ± 2.5 kgm)

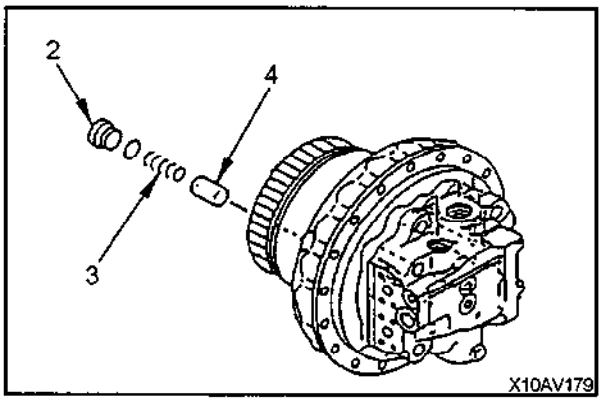




7. Piston plug

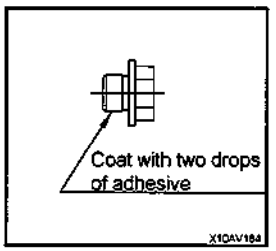
Assemble piston (4) and spring (3), then fit O-ring and install plug (2).

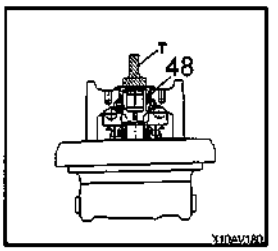
★ Precautions when installing plug.
1) Remove all oil and grease from the plug and male thread (motor case), and dry completely.
2) When coating with adhesive, coat with two drops (approx. 0.04 g) at a point 2-3 mm from the tip of the thread of the plug.
   Plug: Thread tightener (Loctite 638/648)
3) Do not apply any pressure to plug for 30 minutes after tightening.
   Plug: 362.8 ± 39.2 Nm (37 ± 4 kgm)



8. Installation of oil seal

1) Check that there are no burrs or flashes at the corners of the shaft.
2) Using tool T, press fit oil seal (48).
   ★ Tool T: Push tool (796-465-1130)
   Grip (790-101-5221)
   Bolt (01010-51225)
   ★ Clean the oil seal lip.
   Tip of oil seal (whole circumference) Grease (G2-L1-S)





DISASSEMBLY OF WORK EQUIPMENT • SWING PPC VALVE ASSEMBLY

1. Remove nut (1), then remove disc (2) and boot (3).

2. Remove bolt, then remove plate (5).
   ★ Do not remove joint (4) unless it is to be replaced.

3. Remove seal (6) and collar (7).

4. Pull out piston (8), and remove retainer (9), springs (10) and (11), and shim (12).
   ★ Spring (1) consists of a set of two types of springs with different installed loads, so check the mounting position (oil port) and mark with tags to prevent mistakes when installing.

5. Pull out valve (13) from body (14).