SEBM032406

Shop Manual

KOMATSU®

PC27MR-2
PC30MR-2
PC35MR-2
PC40MR-2
PC50MR-2

HYDRAULIC EXCAVATOR

SERIAL NUMBERS	PC27MR-2	15001 and up
	PC30MR-2	20001 and up
	PC35MR-2	5001 and up
	PC40MR-2	8001 and up
	PC50MR-2	5001 and up

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CLASSIFICATION AND PROCEDURES OF TROUBLESHOOTING

Classification of troubleshooting

Mode	Contents
E-mode	Troubleshooting for electric system
H-mode	Troubleshooting for hydraulic and mechanical system
M-mode	Troubleshooting for monitor panel
S-mode	Troubleshooting for engine unit

Procedure for troubleshooting

If a possible fault is detected in the machine, find a corresponding fault in the table of "Possible faults and troubleshooting Nos.", then go to the indicated troubleshooting section.

Possible faults and troubleshooting Nos.

No.	Possible fault		Troubleshooting			
			E-mode	H-mode	M-mode	S-mode
Possible faults related to engine						
1	Engine does not start easily (It always takes time to start)					S-1
2	Engine does not start	Engine does not crank	E-1			S-2
3		Engine cranks but exhaust smoke does not come out				S-2
4		Exhaust smoke comes out but engine does not start				S-2
5	Engine speed does not rise sharply (Follow-up performance is low)					S-3
6	Engine stops during operation					S-4
7	Engine rotation is abnormal (Engine hunts)					S-5
8	Output is insufficient or power is low					S-6
9	Exhaust gas color is bad (Incomplete combustion)					S-7
10	Oil is consumed much or exhaust gas color is bad					S-8
11	Oil becomes dirty quickly					S-9
12	Fuel is consumed much					S-10
13	Coolant contains oil , blows back, or reduces					S-11
14	Engine oil pressure caution lamp lights up (Oil pressure lowers)					S-12
15	Oil level rises (Water or fuel is mixed in oil)					S-13
16	Water temperature rises too high (Overheating)					S-14
17	Abnormal sound comes out					S-15
18	Vibration is excessive					S-16
19	Engine does not stop		E-2			
20	Engine is not preheated normally				M-6	
Possible faults related to work equipment, travel, swing, and blade						
21	Speed or power of whole work equipment, travel, swing, and blade is low			H-1		
22	Engine speed lowers extremely or engine stalls			H-2		
23	Work equipment, travel, swing, and blade systems do not work			H-3		

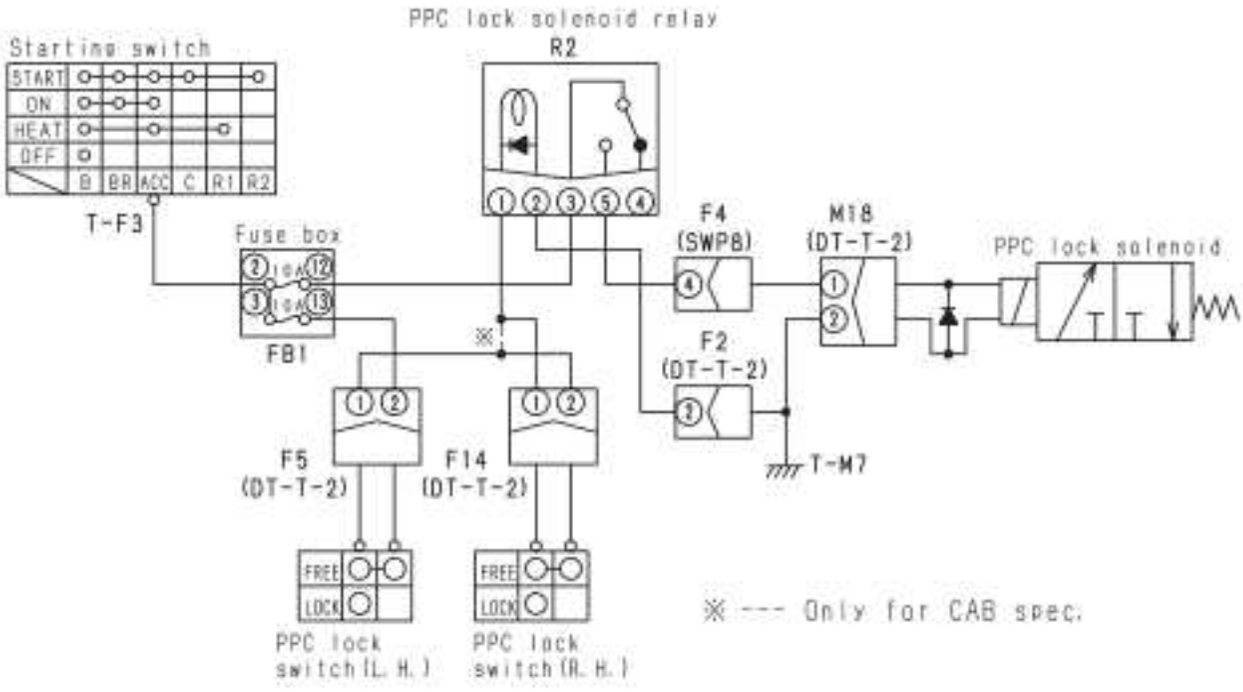
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Connector No.	Type	Number of pins	Location	Address of connector arrangement drawing	
				Canopy specification	Cab specification
FB1	–	–	Fuse box	AJ-3	AV-3
M1	YAZAKI	2	Horn	AB-2	—
M2	KES0	2	Windshield washer motor (Cab specifition)	Z-7	AL-7
M3	SWP	6	Intermediate connector (Optional connector)	AD-5	AP-5
M4	X	4	Intermediate connector (Air conditioner specification)	Y-5	AK-5, AK-9
M5	—	2	Fusible link	Y-7	AK-7
M6	X	2	Fuel lever sensor	Z-7	AL-7
M8	DT-T	2	Travel alarm	Y-5, Y-9	AK-5, AK-8
M9	DT-T	2	Engine coolant temperature sensor	AC-9	AO-9
M10	SUMITOMO	3	Alternator	AA-8	AM-8
M11	DT-T	2	TVC solenoid	AD-6	AP-6
M12	SWP	1	Air conditioner compressor (Cab specification)	AD-9	AP-9
M13	X	3	Engine stop solenoid	AD-7	AP-7
M14	X	2	Fuel pump	AD-6	AP-6
M15	SUMITOMO	6	Safety relay	AC-1	AO-1
M16	SUMITOMO	2	Safety relay	AC-1	AO-1
M17	DT-T	2	2nd travel speed selection solenoid relay	AD-3	AP-3
M18	DT-T	2	PPC lock solenoid	AD-4	AP-4
M19	YAZAKI	2	Engine stop solenoid relay	AD-1	AP-1
M20	YAZAKI	1	Engine stop solenoid relay	AD-1	AP-1
M21	YAZAKI	1	Engine stop solenoid relay	AD-1	AP-1
M22	KES1	4	Timer (For stop solenoid)	AC-1	AO-1
R1	Relay	5	Starting motor circuit relay	AJ-1	AV-1
R2	Relay	5	PPC lock solenoid relay	AJ-2	AV-2
R3	Relay	5	Working lamp relay	AJ-1	AV1
R4	Relay	5	2nd travel speed selection solenoid relay	AI-1	AV-1
R5	Relay	5	Additional working lamp relay (Cab specification)	—	W-1
R6	R	5	—	—	—
R7	Relay	5	Air conditioner relay (Air conditionor specification)	—	—
S1	DT-T	2	Register 100Ω (Air conditioner specification)	—	—
S2	DT-T	2	Register 270Ω (Air conditioner specification)	—	—
T-F1	Terminal	1	Starting switch terminal B	AE-9	AQ-9
T-F2	Terminal	1	Starting switch terminal BR	AE-8	AQ-8
T-F3	Terminal	1	Starting switch terminal ACC	AE-8	AQ-8

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	Cause		Standard value in normalcy and references for troubleshooting		
Presumed cause and standard value in normalcy	7	Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	1) Turn starting switch OFF. 2) Disconnect related connector. 3) Set PPC lock switch in LOCK.		
			Wiring harness between T-F3, fuse (12) and R2 (female) (3)	Resistance	Max. 1 Ω
			Wiring harness between R2 (female) (5), F4 (4) and M18 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between T-F3, fuse (13) and F5 (2) or between (1) and F14 (2) or between (1) and R2 (female) (1) * Check F14 for only canopy specification.	Resistance	Max. 1 Ω
			Wiring harness between R2 (female) (2), F2 (2) and ground	Resistance	Max. 1 Ω
	8	Short circuit with chassis ground in wiring harness (Contact with ground circuit)	1) Turn starting switch OFF. 2) Disconnect related connector. 3) Set PPC lock switch in LOCK.		
			Between wiring harness between fuse (12) and R2 (female) (3) and ground	Resistance	Min. 1 MΩ
			Between wiring harness between R2 (female) (5), F4 (4) and M18 (female) (1) and ground	Resistance	Min. 1 MΩ
			Between wiring harness between fuse (13) and F5 (2) or between (1) and F14 (2) or between (1) and R2 (female) (1) and ground * Check F14 for only canopy specification.	Resistance	Min. 1 MΩ

Relative circuit diagram (PC40, 50MR-2)



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H-3 WHOLE WORK EQUIPMENT, TRAVEL SYSTEM, SWING SYSTEM, AND BLADE DO NOT WORK

★ Check the systems which do not work according to the following table, then got the specified troubleshooting item.

○: Normal
×: Does not work

Whole work equipment	Travel	Swing	Blade	Trouble-shooting item
×	×	×	×	Go to 1)
×	×	○	○	Go to 2)
○	○	×	×	Go to 3)
×	○	○	×	Go to 4)
○	×	○	×	Go to 5)
×	○	○	○	Go to 6)

1) Whole work equipment, travel system, swing system, and blade do not work

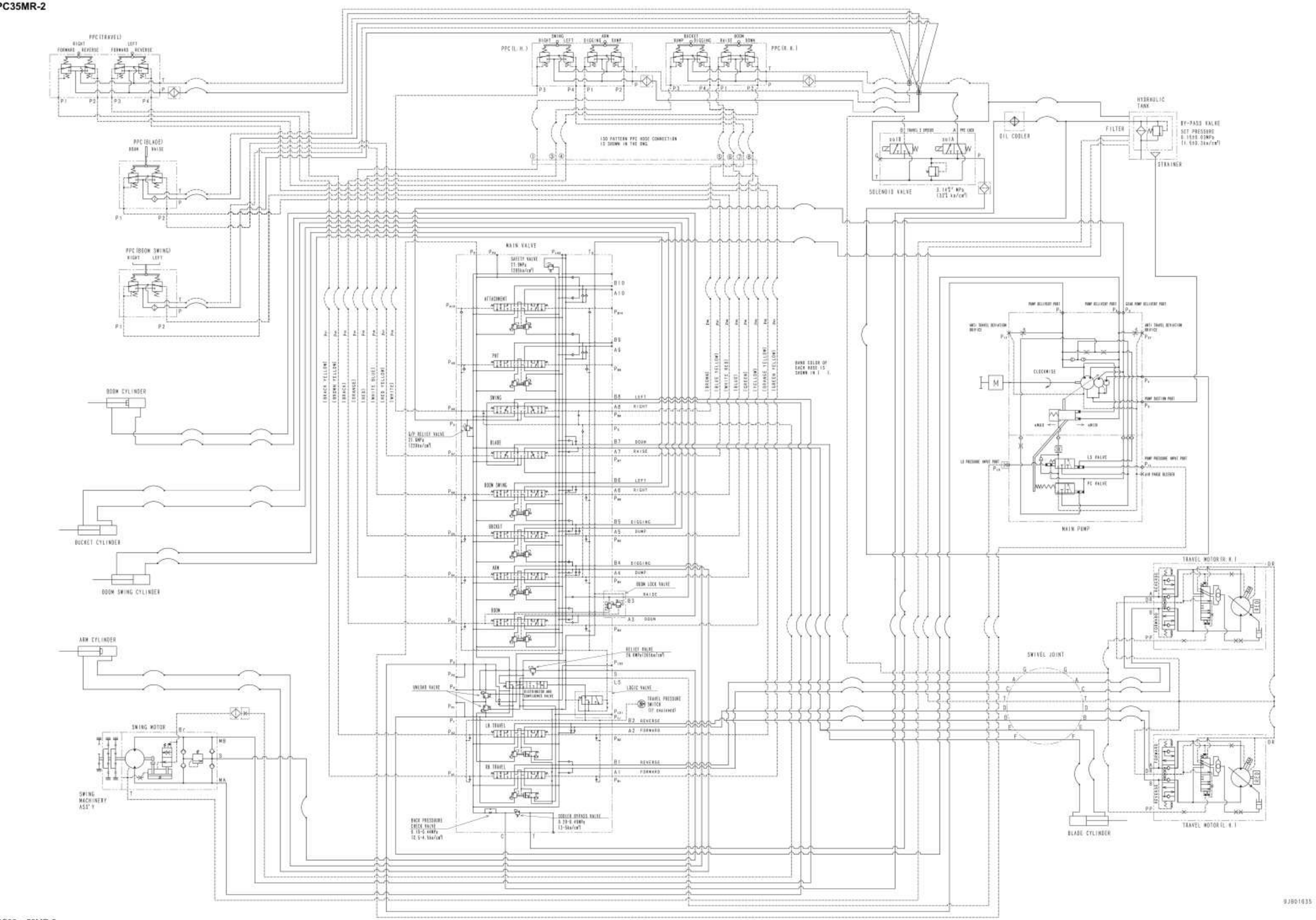
Failure information	• Whole work equipment, travel system, swing system, and blade do not work
Relative information	• Before starting troubleshooting, check that the oil level in the hydraulic tank is proper. • When starting troubleshooting, warm up the hydraulic oil to 45 – 55°C. • Before starting troubleshooting, check that the electric system (solenoid circuit) is normal.

<table>
<tr><td rowspan="14">Presumed cause and standard value in normalcy</td><td colspan="2">Cause</td><td colspan="3">Standard value in normalcy and references for troubleshooting</td></tr>
<tr><td rowspan="4">1</td><td rowspan="4">Malfunction of PPC basic pressure lock solenoid valve</td><td colspan="3">★ Prepare with engine stopped, then run engine at full throttle and carry out troubleshooting.</td></tr>
<tr><td>Position of work equipment lock lever</td><td colspan="2">Solenoid valve output pressure</td></tr>
<tr><td>LOCK</td><td colspan="2">0MPa {0kg/cm²}</td></tr>
<tr><td>FREE</td><td>PC27, 30, 35MR-2</td><td>$2.94^{+0.49}_{-0.1}$ MPa {30^{+5}_{-1} kg/cm²}</td></tr>
<tr><td rowspan="5">2</td><td rowspan="5">Defective adjustment or malfunction of control circuit relief valve (PC35, 40, 50MR-2)</td><td>PC40, 50MR-2</td><td>$3.72^{+0.39}_{-0.1}$ MPa {38^{+4}_{-1} kg/cm²}</td></tr>
<tr><td colspan="3">★ Prepare with engine stopped, then run engine at full throttle and carry out troubleshooting.</td></tr>
<tr><td>Control levers</td><td colspan="2">Control circuit relief pressure</td></tr>
<tr><td rowspan="2">Set all levers in neutral</td><td>PC35MR-2</td><td>$2.94^{+0.49}_{-0.1}$ MPa {30^{+5}_{-1} kg/cm²}</td></tr>
<tr><td>PC40, 50MR-2</td><td>$3.72^{+0.39}_{-0.1}$ MPa {38^{+4}_{-1} kg/cm²}</td></tr>
<tr><td colspan="3">If the oil pressure does not become normal after adjustment, the control relief valve may have a malfunction or a defect in it. Check it directly.</td></tr>
<tr><td rowspan="3">3</td><td rowspan="3">Malfunction of self-reducing pressure valve (PC27, 30MR-2)</td><td colspan="3">★ Prepare with engine stopped, then run engine at full throttle and carry out troubleshooting.</td></tr>
<tr><td colspan="2">Control levers</td><td>Control circuit oil pressure</td></tr>
<tr><td colspan="2">Set all levers in neutral</td><td>$2.94^{+0.49}_{-0.1}$ MPa {30^{+5}_{-1} kg/cm²}</td></tr>
<tr><td>4</td><td>Clogging of suction strainer</td><td colspan="3">If the results of 1 – 3 are normal, the strainer may be clogged. Check it directly.</td></tr>
<tr><td>5</td><td>Defective control pump (PC35, 40, 50MR-2)</td><td colspan="3">If the results of 1, 2, and 4 are normal, the control pump may be defective.</td></tr>
<tr><td>6</td><td>Defective piston pump drive shaft or damper</td><td colspan="3">Disconnect the discharge hose from the main pump, crank the engine with the starting motor, and check that oil flows out of the discharge port.</td></tr>
</table>

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HYDRAULIC CIRCUIT DIAGRAM

PC35MR-2



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