

SHOP MANUAL

KOMATSU

PC340, PC340LC-6k PC340NLC-6k

MACHINE MODEL

SERIAL NUMBER

PC340-6k

K30001 and up

PC340LC -6k

K30001 and up

PC340NLC-6k

K30001 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 require. Materials and specifications are subject to change without notice.
- PC340-6K mount the SA6D114E-1 engine.
For details of the engine, see the Engine Shop Manual.

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STANDARD TIGHTENING TORQUE

STANDARD TIGHTENING TORQUES OF BOLTS AND NUTS

The following charts give the standard tightening torques of bolts and nuts. Exceptions are given in section of **DISASSEMBLY AND ASSEMBLY**.

1 Kgm = 9.806 Nm

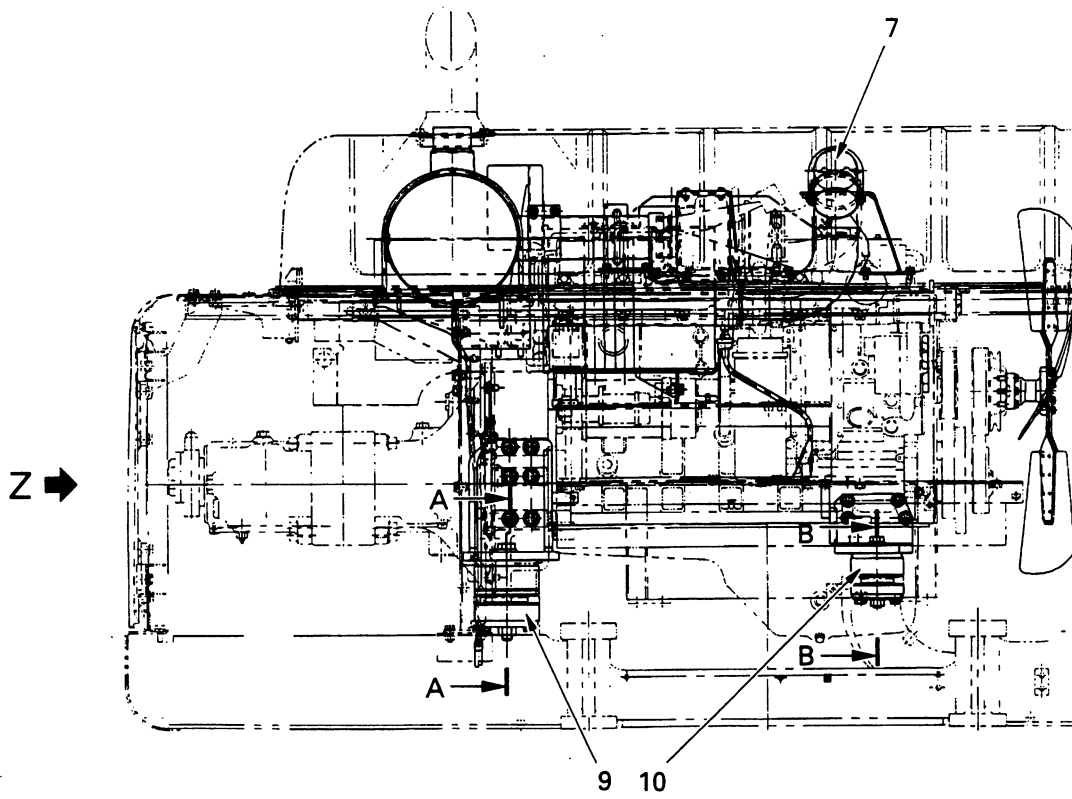
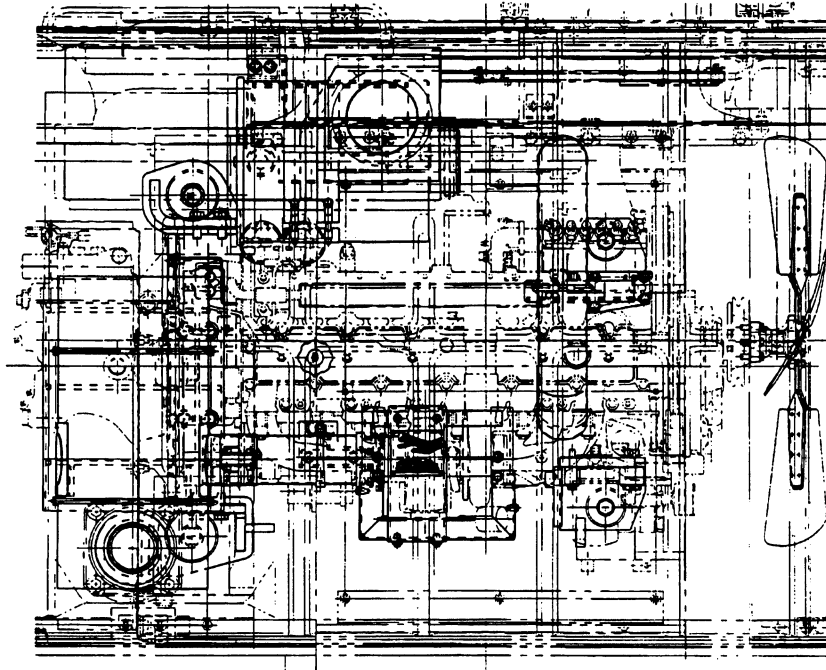
Thread diameter of bolt	Width across flats		
		kgm	Nm
6	10	1.35 ± 0.15	13.2 ± 1.4
8	13	3.2 ± 0.3	31.4 ± 2.9
10	17	6.7 ± 0.7	65.7 ± 6.8
12	19	11.5 ± 1.0	112 ± 9.8
14	22	18.0 ± 2.0	177 ± 19
16	24	28.5 ± 3	279 ± 29
18	27	39 ± 4	383 ± 39
20	30	56 ± 6	549 ± 58
22	32	76 ± 8	745 ± 78
24	36	94.5 ± 10	927 ± 98
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 nonferrous metal washers are to be used, or which require tightening to otherwise specified torque.

01 GENERAL

Specification drawings	01- 2
Specifications.....	01- 4
Weight table	01- 8
Fuel, coolant and lubricants.....	01-12

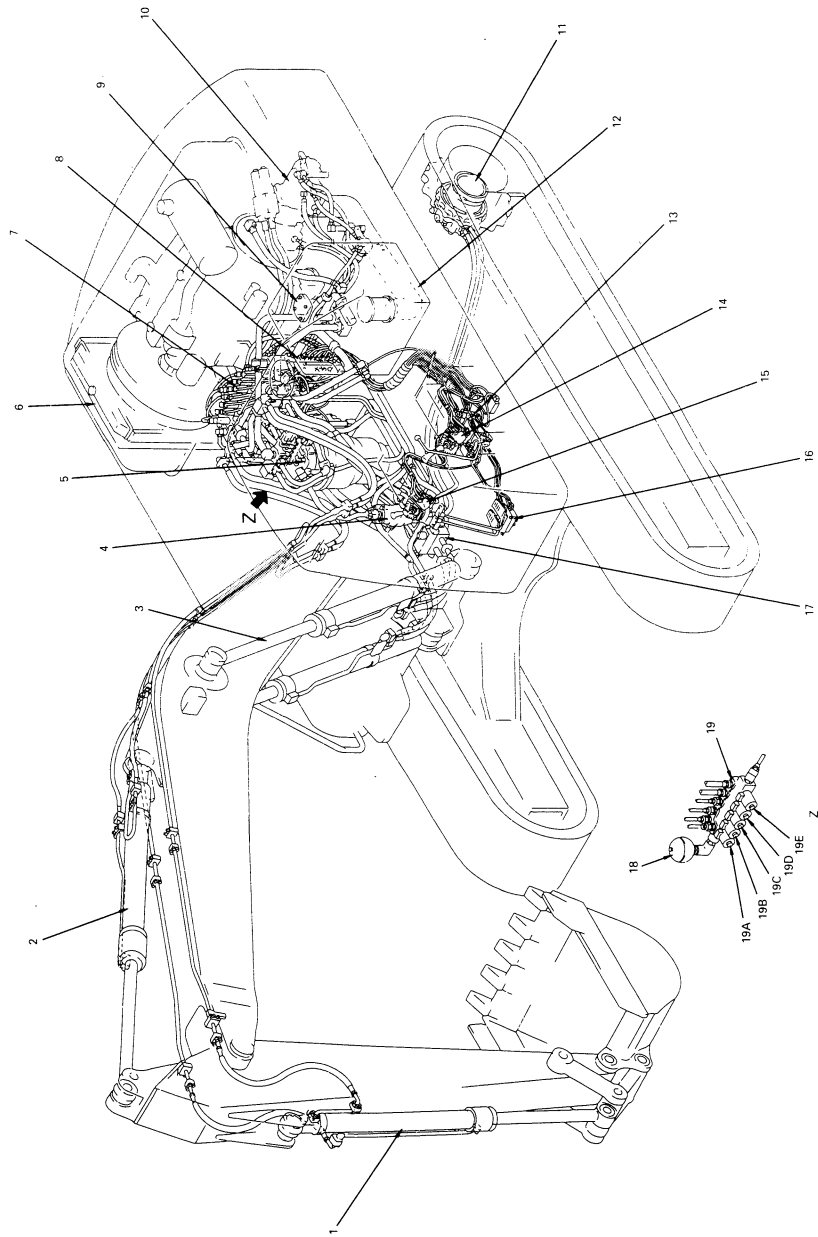
PARTS RELATED TO ENGINE



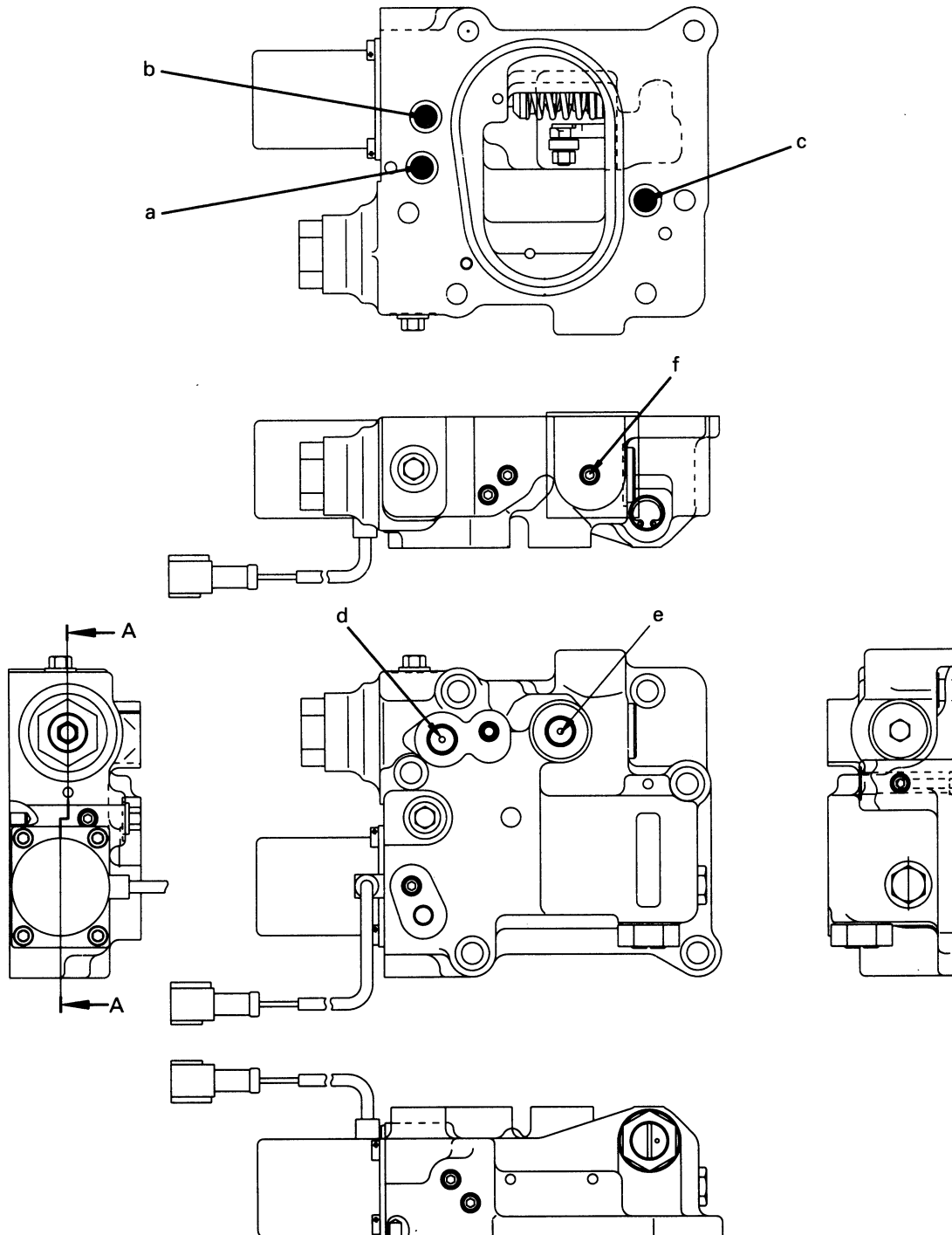
HYDRAULIC PIPING DRAWING

★ For details of this page, see Section 90.

1. Bucket cylinder
2. Arm cylinder
3. Boom cylinder
4. Center swivel joint
5. Swing motor
6. Oil cooler
7. Control valve
8. PPC shuttle valve
9. Hydraulic filter
10. Hydraulic pump
11. L.H. travel motor
12. Hydraulic tank
13. PPC safety lock valve
14. L.H. PPC valve
15. R.H. PPC valve
16. Travel PPC valve
17. Boom holding valve
18. Accumulator
19. Solenoid valve assembly
 - 19A. LS select solenoid valve
 - 19B. Boom Hi 2-stage safety solenoid valve
 - 19C. Merge/flow divider solenoid valve
 - 19D. Travel speed solenoid valve
 - 19E. Swing brake solenoid valve



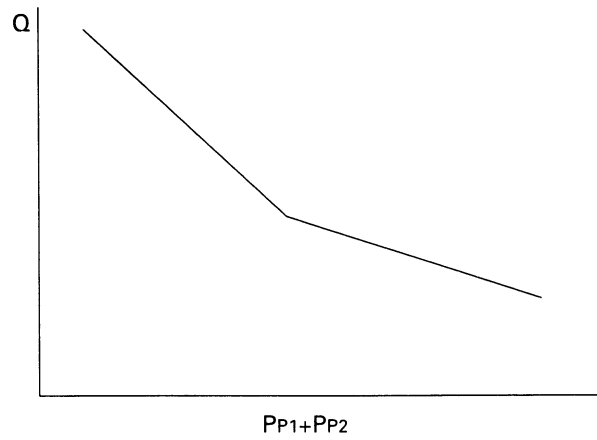
2. TVC, LS VALVE



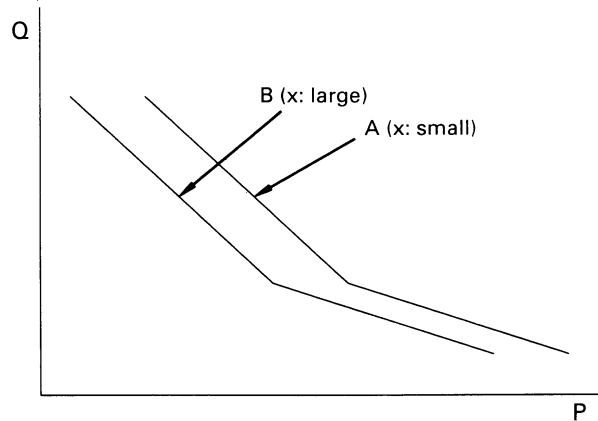
- a. Port Pen1 (signal pressure output)
- b. Port Pa2 (rear pump delivery pressure inlet port)
- c. Port Pa1 (front pump delivery pressure inlet port)

- d. Port PLS1 (control valve LS pressure inlet port)
- e. Port Psig1 (LS control EPC pressure inlet port)
- f. Port PP2 (pump pressure No. 2 port)

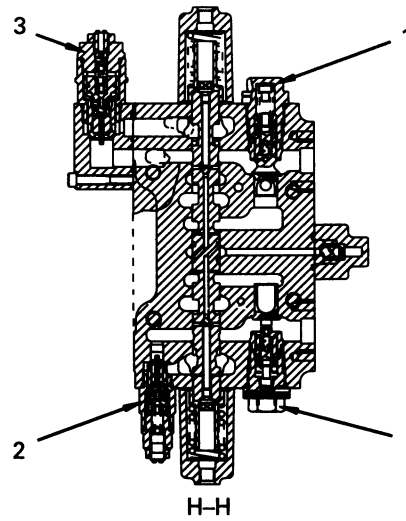
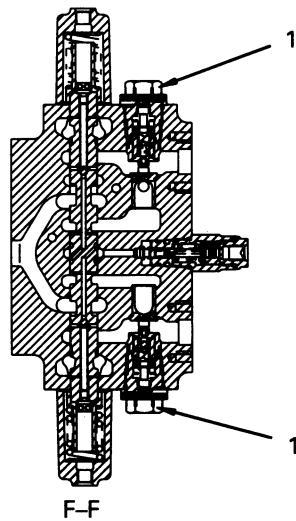
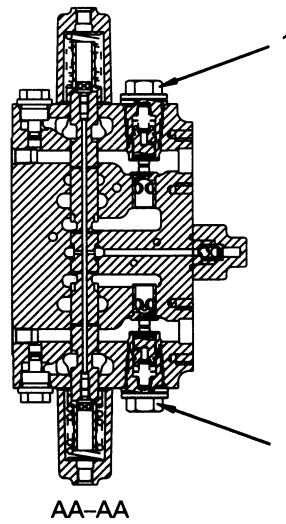
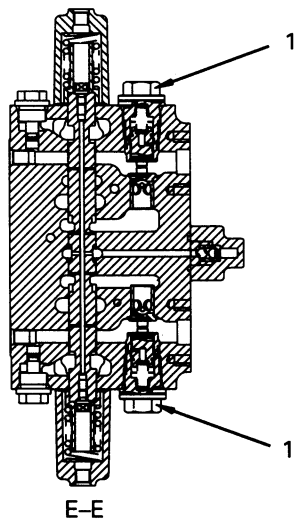
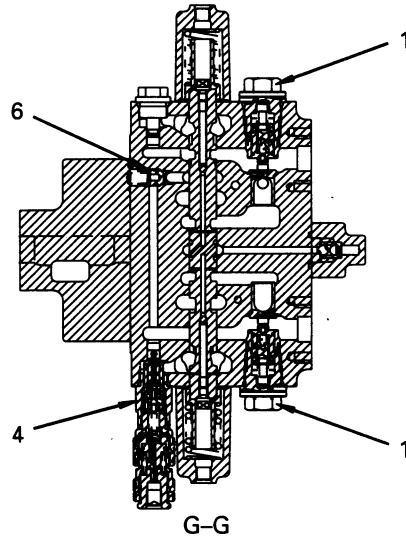
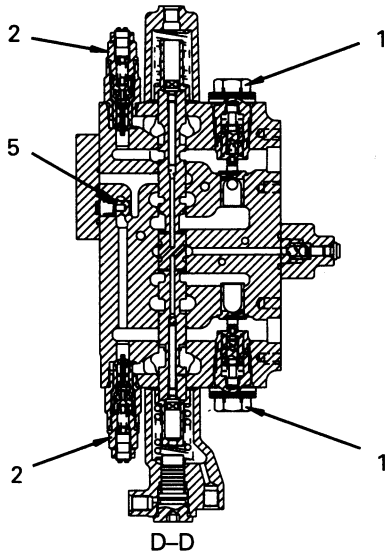
- The relation of pump pressures **PP1 + PP2** and the position of servo piston (9) forms a bent line because of the double-spring effect of springs (3) and (4). The relationship between pump pressures **PP1 + PP2** and pump discharge amount **Q** is shown in the figure on the right.



- If command current **x** sent to solenoid (1) increases further, the relationship between pump pressures **PP1** and **PP2**, and pump discharge amount **Q** is proportional to the pushing force of the solenoid and moves in parallel. In other words, if the pushing force of solenoid (1) is added to the force pushing to the left because of the pump pressure applied to the piston (2), the relationship between **P** and **Q** moves from **A** to **B** in accordance with the increase in **x**.



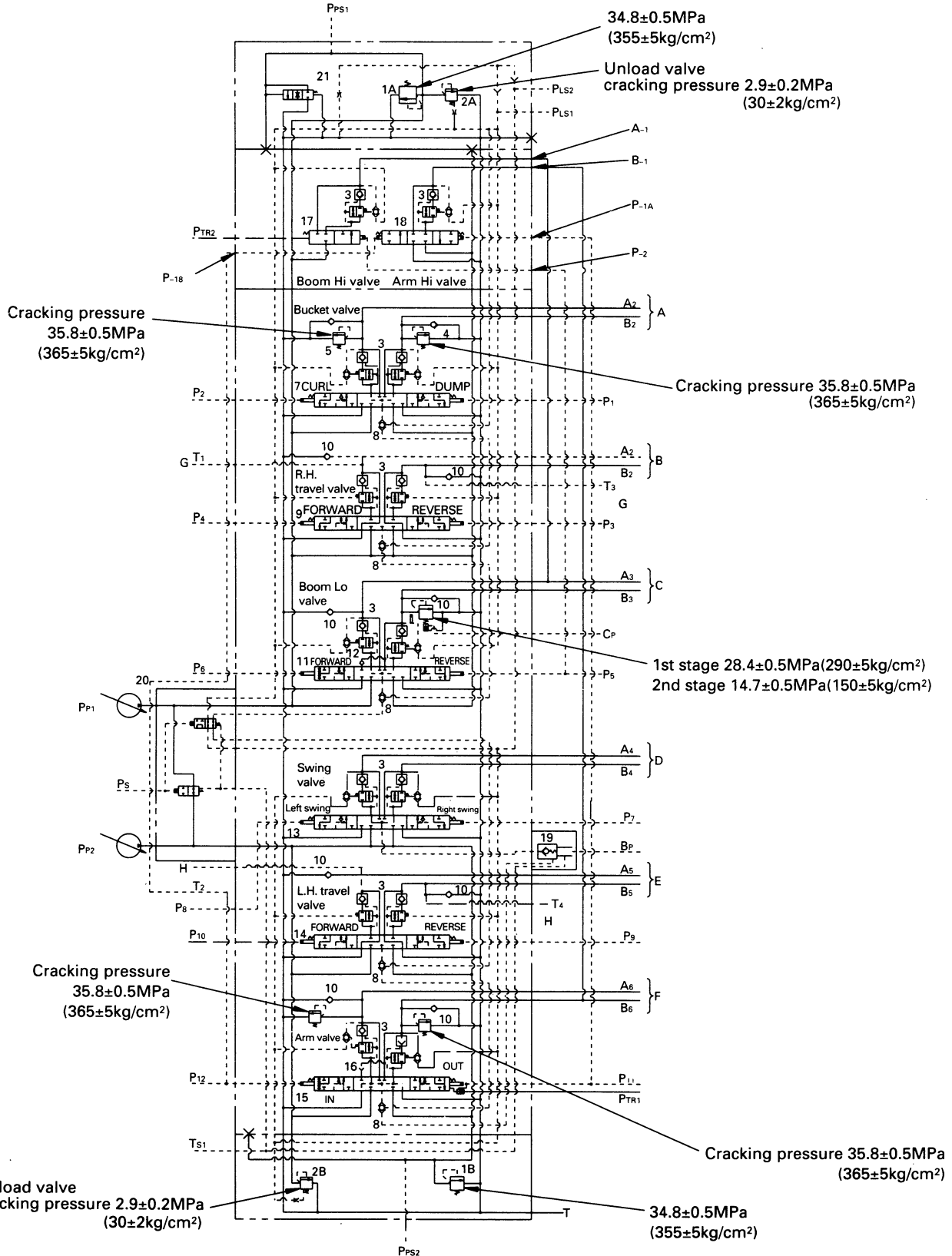
(3/3)

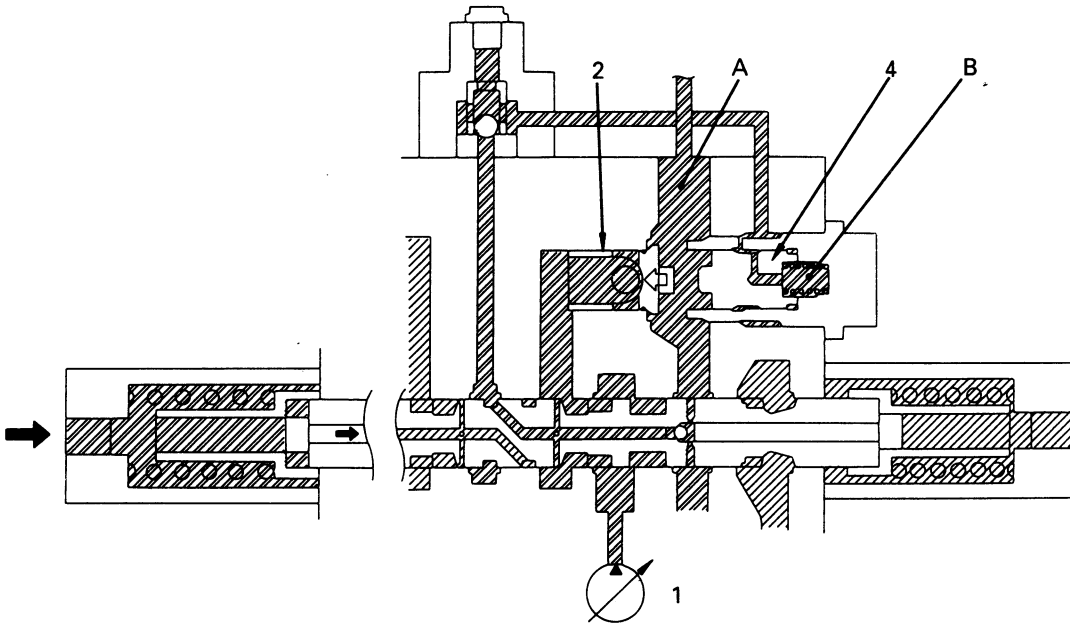


Operation for each function of CLSS

Hydraulic circuit diagram for system

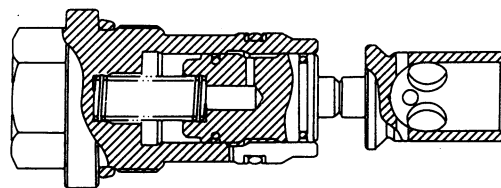
★ For details of this page, see Section 90.





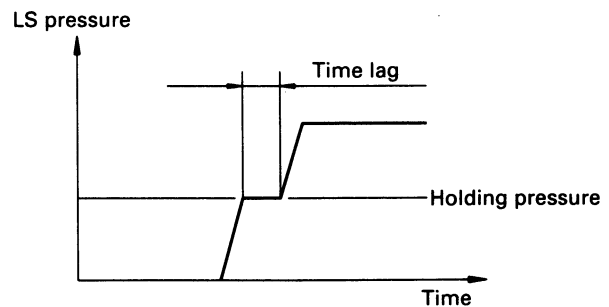
< For travel >

- No holding pressure is generated at port A in the travel circuit, so a pressure compensation valve without a shuttle valve is used.



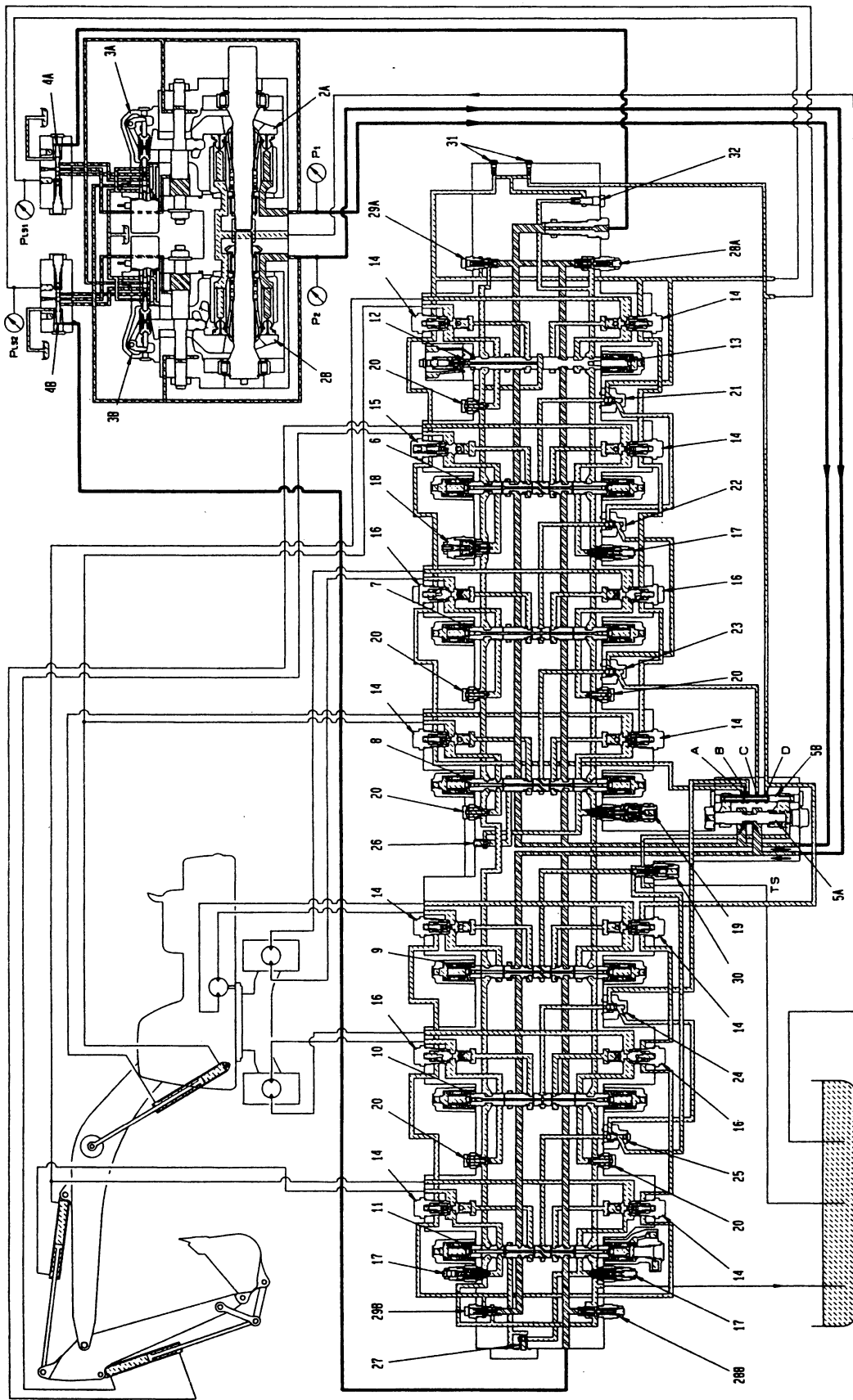
Reference: When there is no shuttle valve

- If there is no shuttle valve, piston (4) and valve (2) will separate. In this condition, if another actuator is operated, the piston acts as an accumulator, so there is a time lag.

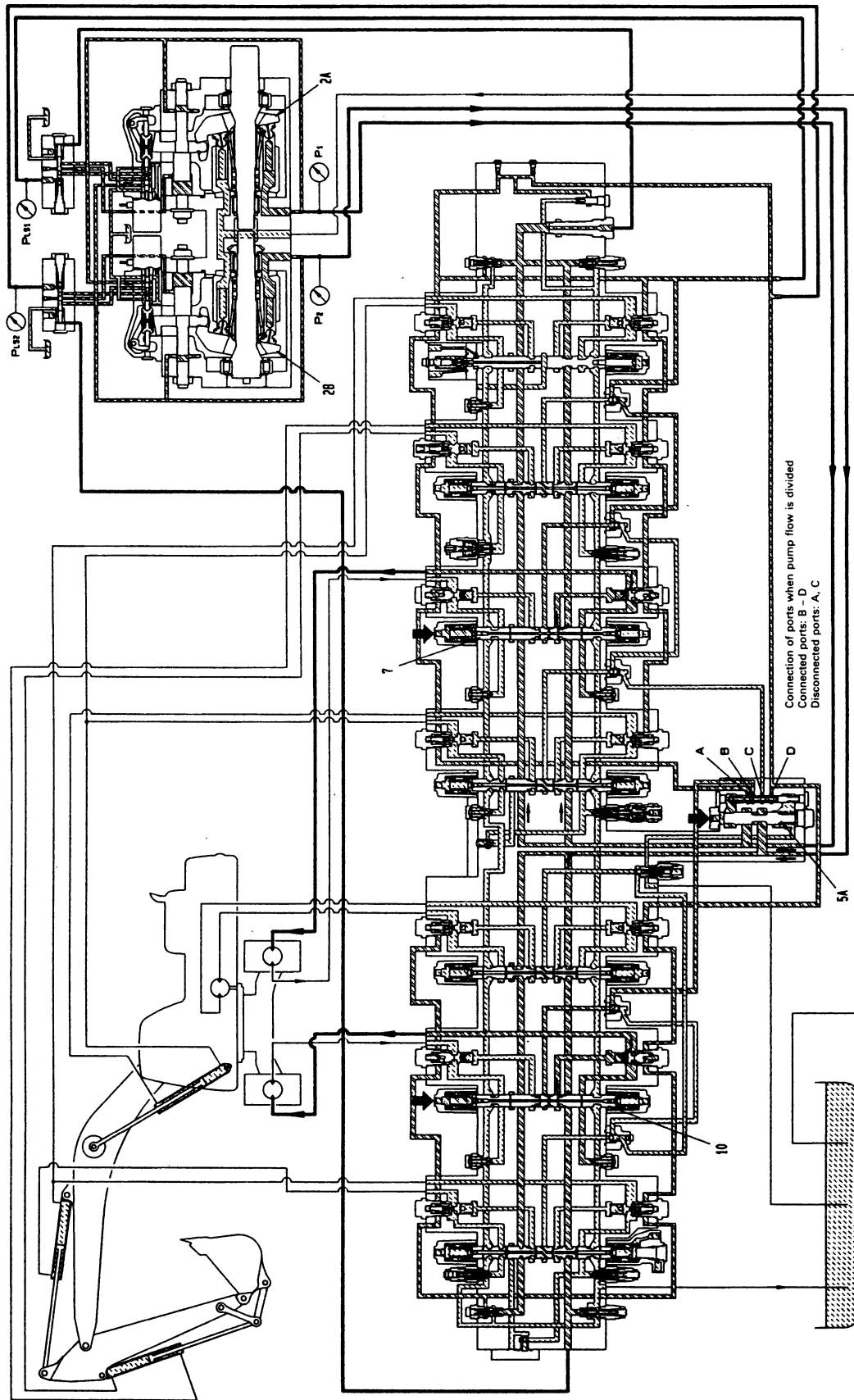


- ★ The diagram shows the situation when all work equipment is at neutral.
- ★ The valves and circuits that are not connected with the explanation of the operation of the CLSS hydraulic system have been omitted.
- ★ For details of this page, see Section 90.

OPERATION OF CLSS SYSTEM AS A WHOLE
1. When all work equipment is at neutral

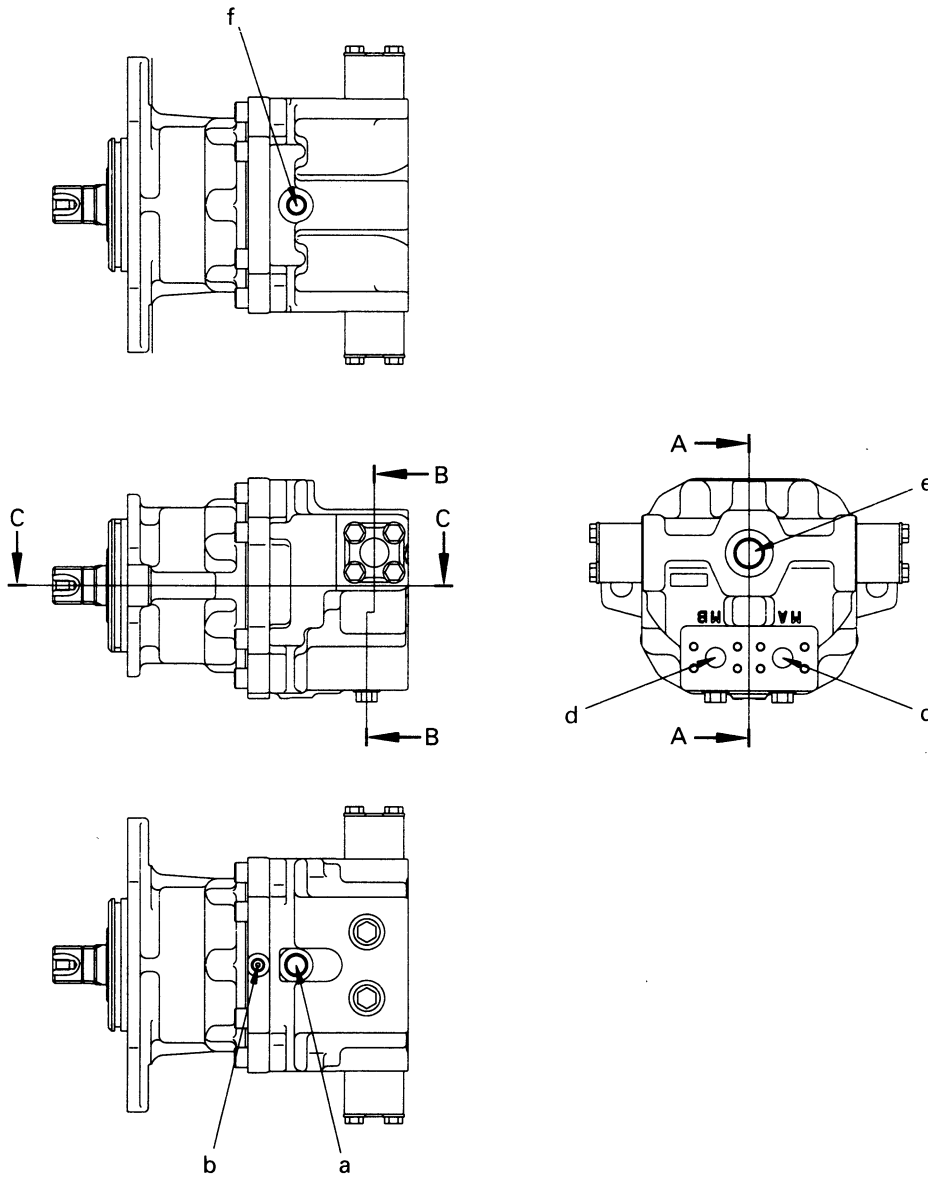


- 6. Pump flow divided, travel operated independently
- ★ For details of this page, see Section 90.



SWING MOTOR

KMF160AB-3



- a. Port T1 (to tank)
- b. Port B (from swing brake solenoid valve)
- c. Port MA (from control valve)
- d. Port MB (from control valve)
- e. Port S (from lift check valve)
- f. Port T2 (to port S)

Specifications

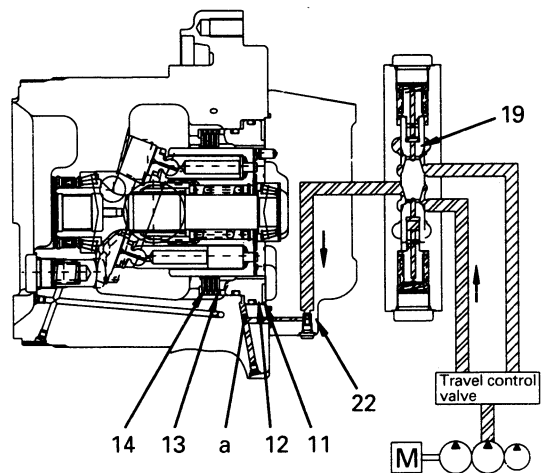
Model:	KMF160AB-3
Theoretical delivery:	160.7 cc/rev
Safety valve set pressure:	28.4 ^{+0.5} MPa at 244 /min (290 ⁺⁵ Kg/cm ² at 244 /min)
Rated speed:	1,525 rpm (1,680 rpm max.)
Brake releasing pressure:	1.8 ± 0.4 MPa (18.4 ± 4 kg/cm ²)

Operation of parking brake

1) When starting to travel

- When the travel lever is operated, the pressurized oil from the pump actuates counterbalance valve spool (19), opens the circuit to the parking brake, and flows into chamber a of brake piston (12). It overcomes the force of spring (11), and pushes piston (12) to the right.

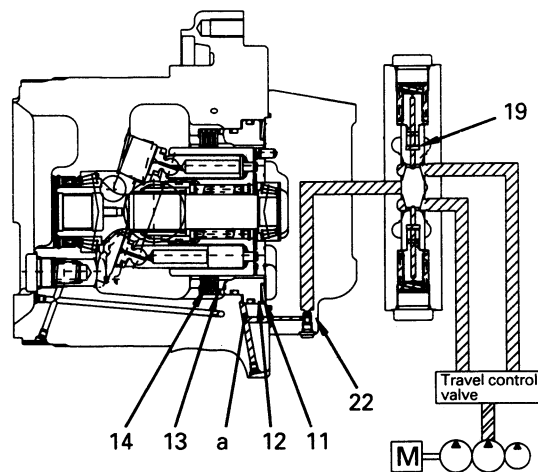
When this happens, the force pushing plate (13) and disc (14) together is lost, so plate (13) and disc (14) separate and the brake is released.



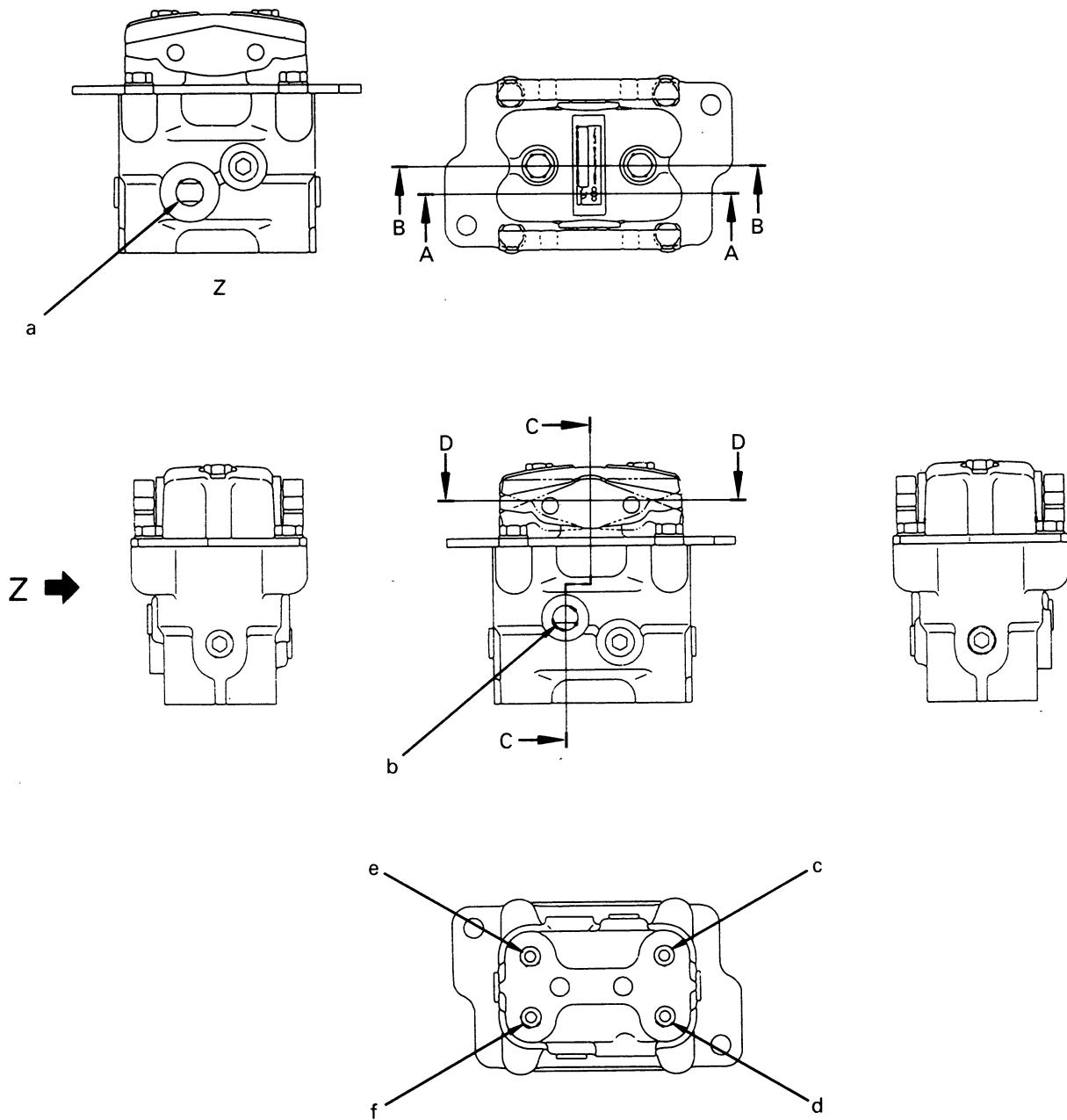
2) When stopping travel

- When the travel lever is placed in neutral, counterbalance valve spool (19) returns to the neutral position and the circuit to the parking brake is closed.

The pressurized oil in chamber a of brake piston (12) is drained to the case from the orifice in the brake piston, and brake piston (12) is pushed fully to the left by spring (11). As a result, plate (13) and disc (14) are pushed together, and the brake is applied. A time delay is provided by having the pressurized oil pass through a throttle in slow return valve (22) when the brake piston returns, and this ensures that the brake is applied after the machine stops.

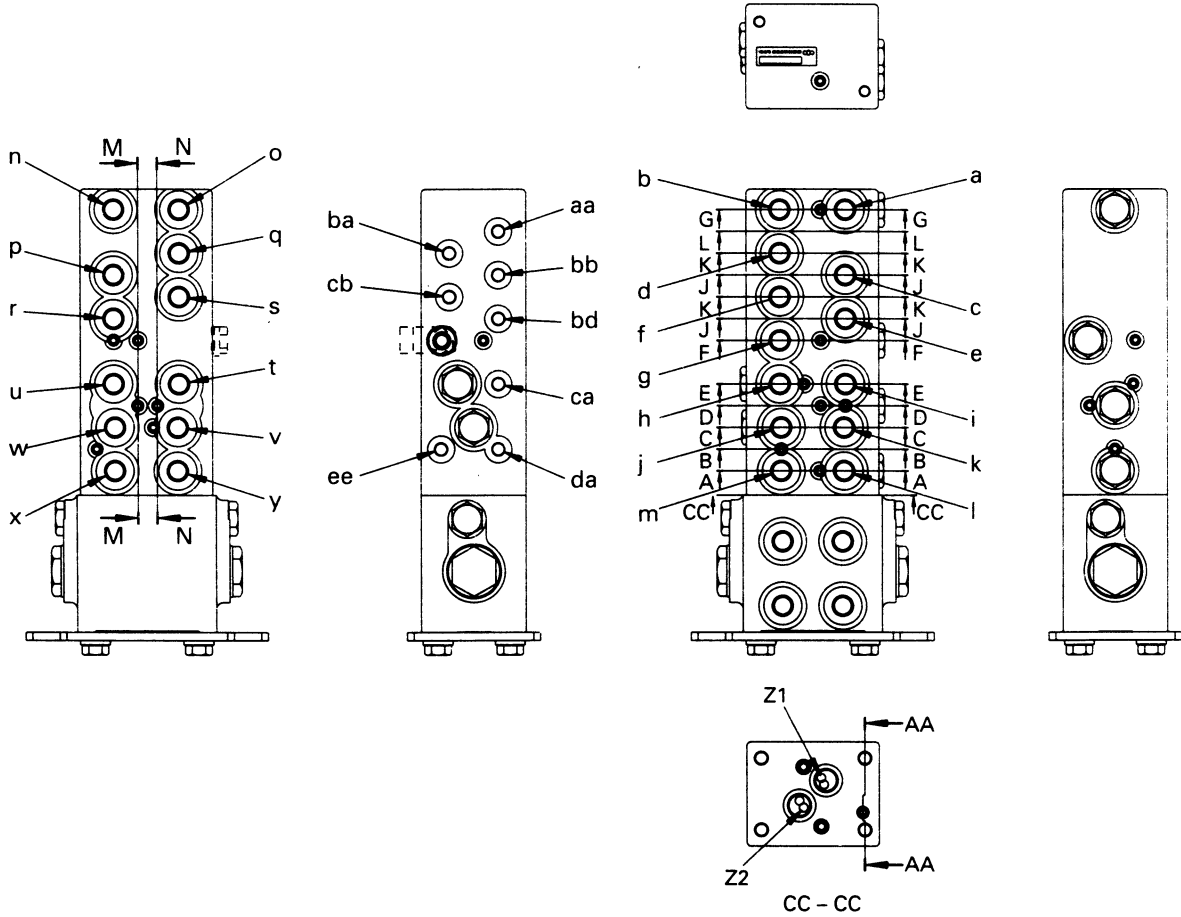


TRAVEL PPC VALVE



- a. Port P (from control pump)
- b. Port T (to tank)
- c. Port P1 (L.H. travel FORWARD)
- d. Port P3 (R.H. travel FORWARD)
- e. Port P2 (L.H. travel REVERSE)
- f. Port P4 (R.H. travel REVERSE)

PPC SHUTTLE VALVE

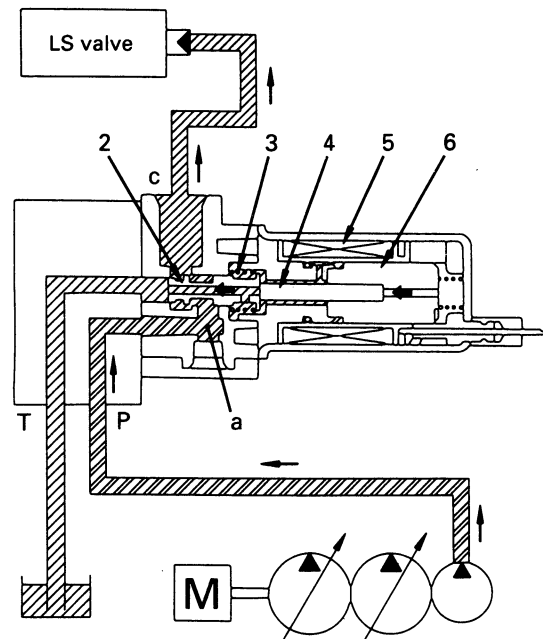


Function

- The PPC shuttle valve sends the PPC valve output pressure to the control valve and travel junction valve. It is provided with a mount port for the pressure switch for detecting the pilot pressure.

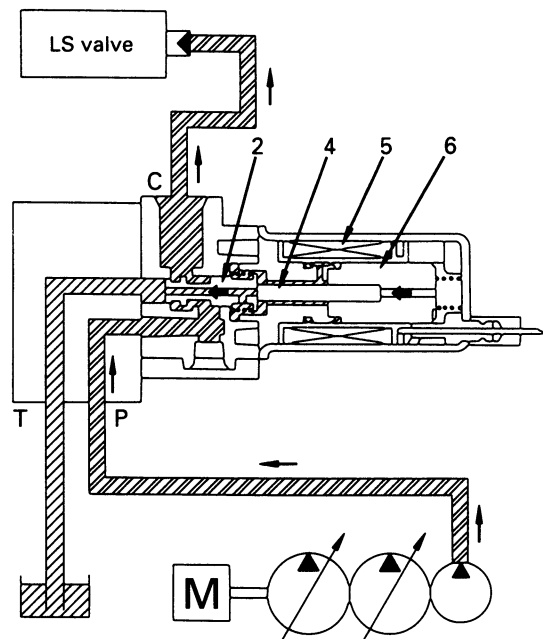
2. When signal current is very small (coil energized, fine control)

- When a very small signal current flows to coil (5), coil (5) is energized, a propulsion force is generated, and this pushes plunger (6) to the left.
- Push pin (4) pushes spool (2) to the left, and pressurized oil flows from port **P** to port **C**.
- When the pressure at port **C** rises and the load of spring (3) + the force acting on surface **a** of spool (2) becomes greater than the propulsion force of plunger (6), spool (2) is pushed to the right. The circuit between port **P** and port **C** is shut off, and at the same time, port **C** and port **T** are connected.
- As a result, spool (2) moves up and down so that the propulsion force of plunger (6) is balanced with the load of spring (3) + pressure of port **C**.
- Therefore, the circuit pressure between the EPC valve and the LS valve is controlled in proportion to the size of the signal current.

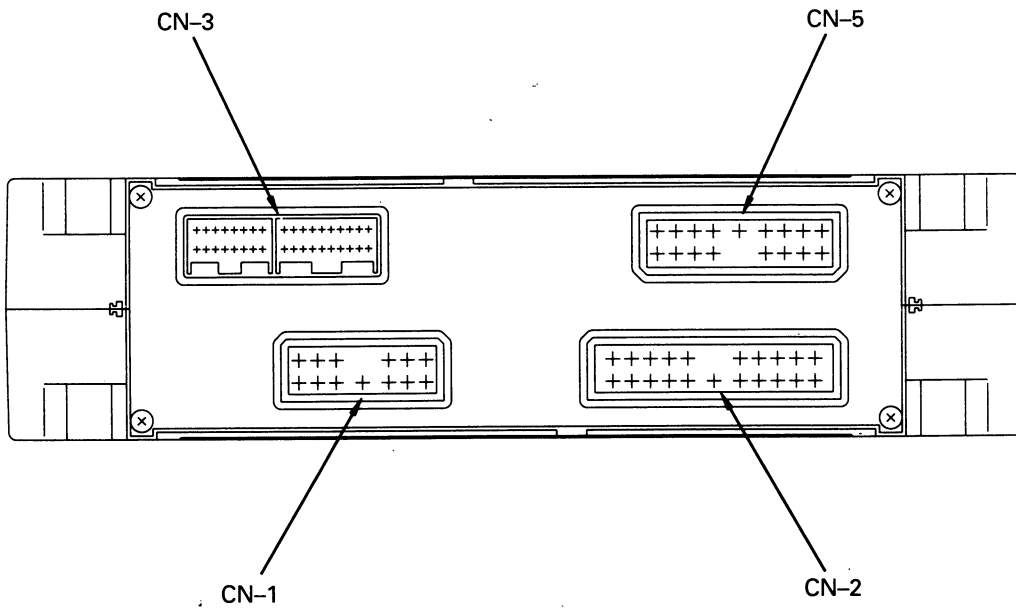
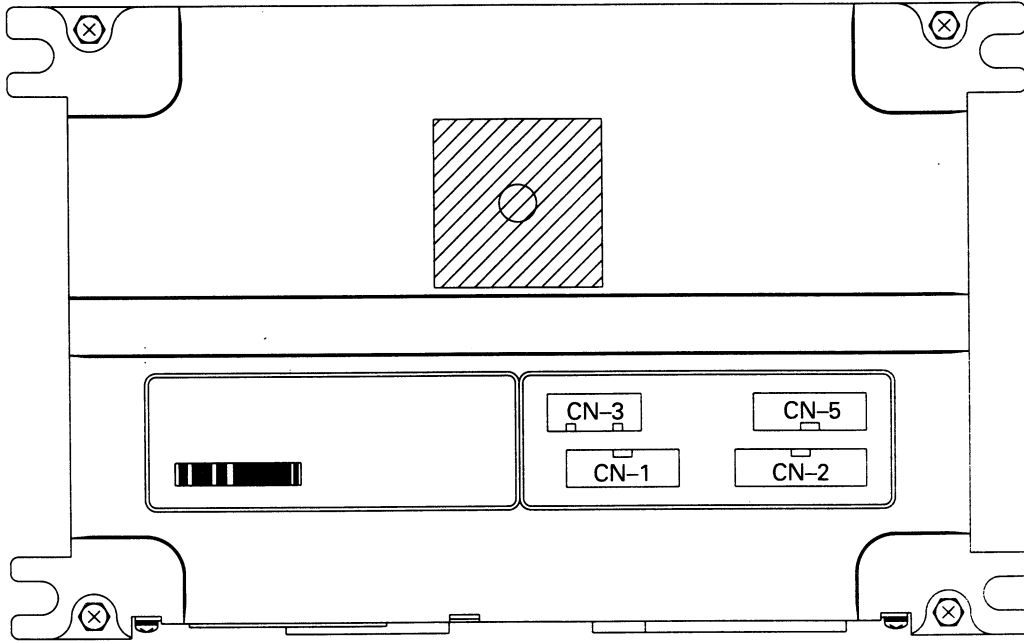


3. When signal current is maximum (coil energized, operated fully)

- When the signal current flows to coil (5), coil (5) is energized.
- When this happens, the signal current is at its maximum, so the propulsion force of plunger (6) is also at its maximum. For this reason, spool (1) is pushed fully to the left by push pin (4).
- As a result, the flow of pressurized oil from port **P** flows at its maximum to port **C**, and the circuit pressure between the EPC valve and LS valve becomes the maximum. At the same time, port **T** closes and stops the oil from flowing to the tank.



Governor, pump controller



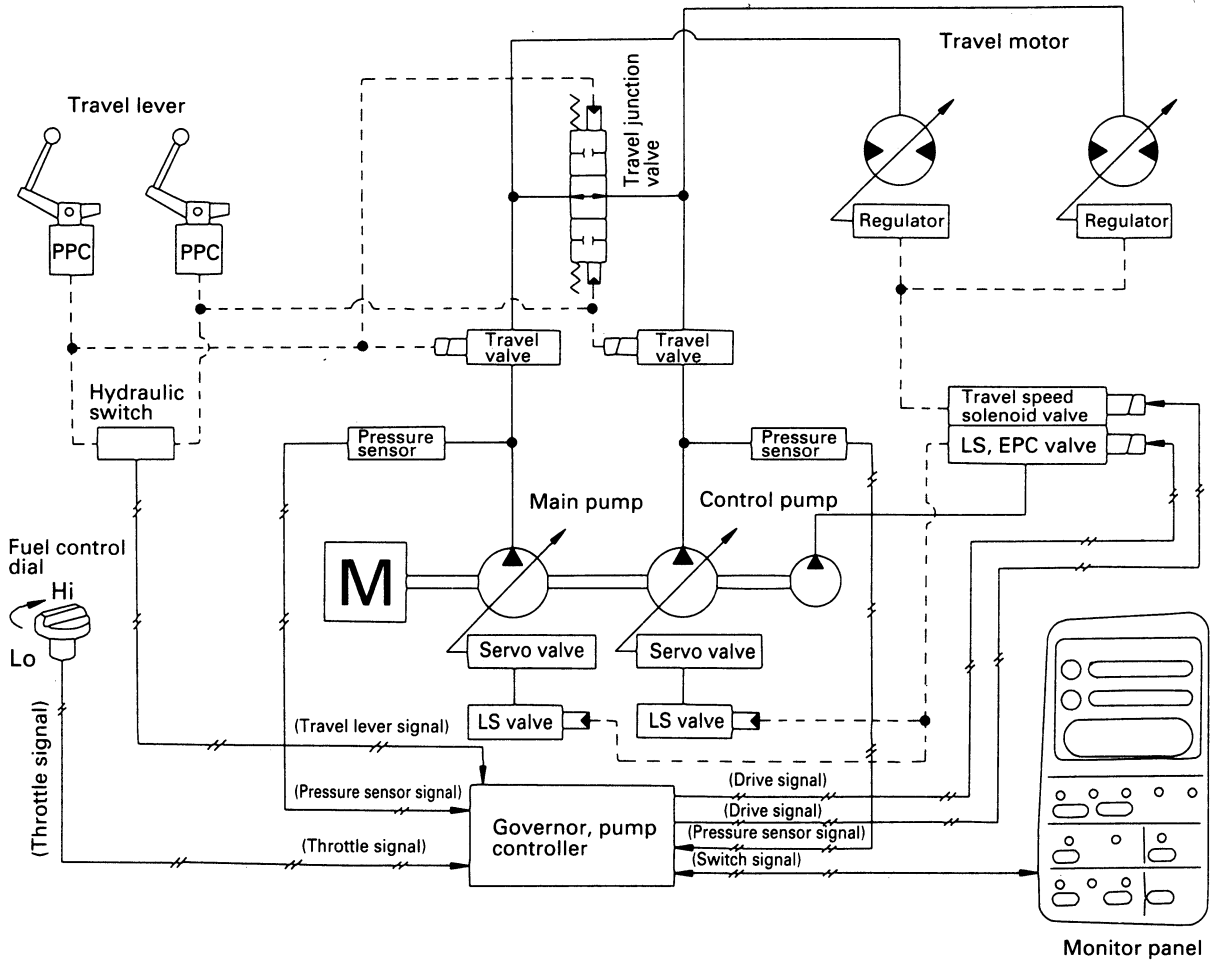
4) Fine control mode function

- When the finishing mode is selected as the working mode, the pump LS valve is controlled, and the pump discharge amount is reduced to improve the ease of fine control and the precision when finishing.
- Relationship between working mode and pump discharge amount (for independent operation)

Actuator	Boom,		Arm	Bucket		Swing	Breaker
	RAISE	LOWER		CURL	DUMP		
Working mode							
Heavy-duty operation (H/O)	100	30	100	75	60	55	—
General operation (G/O)							
Finishing operation (F/O)	83	30	83	60	50	45	—
Lifting mode (L/O)	75		75	55	45	40	—
Breaker (B/O)	100	30	100	75	60	55	45

- ★ In each working mode, the full flow of the pump at the set engine speed is taken as 100%.

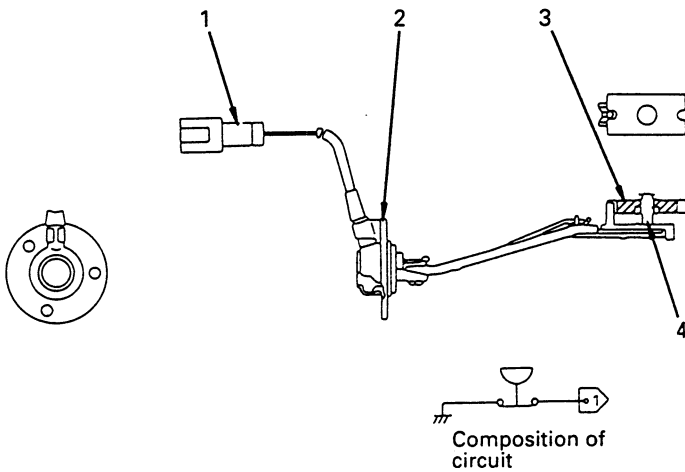
8. Travel control system



Function

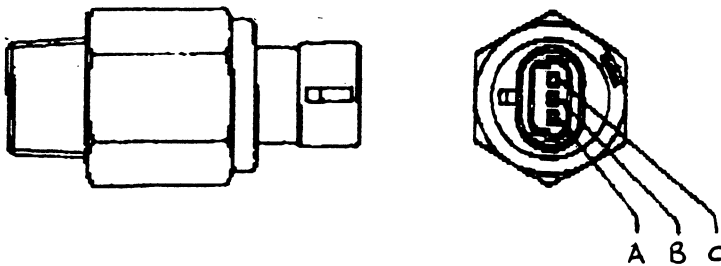
- When traveling, the pump control is carried out, and the travel speed can be selected manually or automatically to give a travel performance that suits the nature of the work or the jobsite.

Hydraulic oil level sensor



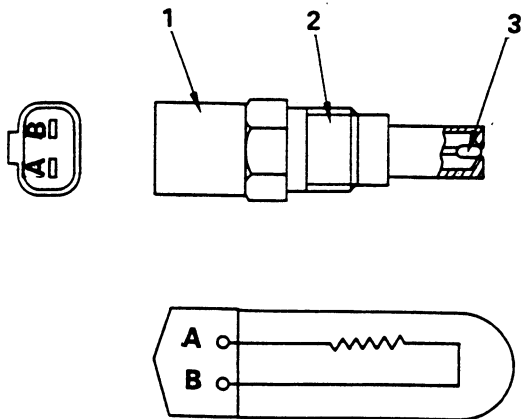
- 1. Connector
- 2. Bracket
- 3. Float
- 4. Switch

Engine oil pressure sensor



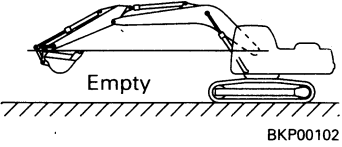
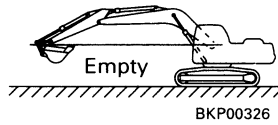
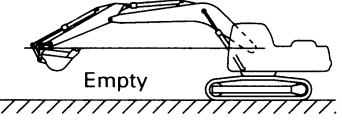
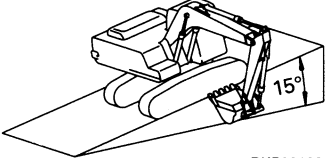
Composition of circuit

Coolant temperature sensor



- 1. Connector
- 2. Plug
- 3. Thermistor

Composition of circuit

Applicable model				PC340-6k	
Category	Item	Measurement conditions	Unit	Standard value for new machine	Service limit value
Swing	Overrun when stopping swing	Work equipment posture Max. reach  Empty BKP00102 <ul style="list-style-type: none"> Engine at full throttle Hydraulic oil temperature: 45 - 55°C In H/O mode Stop after swinging one turn and measure distance that swing circle moves 	Deg.	Max. 110	Max. 140
	Time taken to start swing	Work equipment posture Max. reach  Empty BKP00326 <ul style="list-style-type: none"> Engine at full throttle Hydraulic oil temperature: 45 - 55°C In H/O mode Time taken to swing 90° and 180° from starting position 	90°	3.8 ± 0.4	Max. 4.5
		180°	5.2 ± 0.5	Max. 6.1	
	Time taken to swing	Work equipment posture Max. reach  Empty BKP00102 <ul style="list-style-type: none"> Engine at full throttle Hydraulic oil temperature: 45 - 55°C In H/O mode Swing one turn, then measure time taken to swing next 5 turns 	Sec	30 ± 1.5	Max. 35
	Hydraulic drift of swing	 BKP00103 <ul style="list-style-type: none"> Engine stopped Hydraulic oil temperature: 45 - 55°C Set machine on 15° slope, and set upper structure at 90° to the side. Make match marks on swing circle outer race and track frame. Measure distance that match marks move apart after 5 minutes. 	mm	0	0
Leakage from swing motor	<ul style="list-style-type: none"> Engine at full throttle Hydraulic oil temperature: 45 - 55°C Swing lock switch ON Relieve swing circuit. 	ℓ/min	Max. 5.5	Max. 11	

System	Name of component	Connector No.	Inspection method	Judgment table	Measurement conditions														
Control system Governor, pump controller	TVC solenoid valve (default value)	C02	Measure current	If the condition is as shown in the table below, it is normal · H/O mode <table border="1" style="width: 100%;"> <tr> <td>Between front (8) - (18)</td> <td rowspan="2" style="text-align: center; vertical-align: middle;">520 ± 80 mA</td> </tr> <tr> <td>Between rear (9) - (19)</td> </tr> </table>	Between front (8) - (18)	520 ± 80 mA	Between rear (9) - (19)	1) Turn starting switch ON. 2) Turn fuel control dial to MAX position 3) Turn prolux switch OFF.											
	Between front (8) - (18)	520 ± 80 mA																	
	Between rear (9) - (19)																		
	LS-EPC solenoid valve (default value)	C02	Measure current	If the condition is as shown in the table below, it is normal · H/O mode <table border="1" style="width: 100%;"> <tr> <td>Between (7) - (17)</td> <td style="text-align: center; vertical-align: middle;">900 ± 80 mA</td> </tr> </table>	Between (7) - (17)	900 ± 80 mA	1) Turn starting switch ON. 2) Turn fuel control dial to MAX position 3) All levers at neutral.												
	Between (7) - (17)	900 ± 80 mA																	
	L.H. knob switch	C03	Measure voltage	If the condition is as shown in the table below, it is normal <table border="1" style="width: 100%;"> <tr> <td>When switch is ON</td> <td rowspan="2" style="text-align: center; vertical-align: middle;">Between (9) - GND</td> <td style="text-align: center;">20 - 28 V</td> </tr> <tr> <td>When switch is OFF</td> <td style="text-align: center;">0 - 1 V</td> </tr> </table>	When switch is ON	Between (9) - GND	20 - 28 V	When switch is OFF	0 - 1 V	1) Turn starting switch ON. 2) Insert T - adapter.									
	When switch is ON	Between (9) - GND	20 - 28 V																
When switch is OFF	0 - 1 V																		
S-NET	C17	Measure voltage	If the condition is as shown in the table below, it is normal <table border="1" style="width: 100%;"> <tr> <td>Between (4),(12) - GND</td> <td style="text-align: center; vertical-align: middle;">4 - 8 V</td> </tr> </table>	Between (4),(12) - GND	4 - 8 V	1) Turn starting switch ON. 2) Insert T - adapter.													
Between (4),(12) - GND	4 - 8 V																		
No. 2 throttle signal	Monitoring code 16	Engine speed	If the condition is as shown in the table below, it is normal High idling (rpm) <table border="1" style="width: 100%;"> <tr> <td>H/O</td> <td style="text-align: center;">Approx. 2250</td> </tr> <tr> <td>G/O</td> <td style="text-align: center;">Approx. 2050 (during operation) Approx. 1900 (idling)</td> </tr> <tr> <td>F/O</td> <td style="text-align: center;">Approx. 1900</td> </tr> <tr> <td>L/O</td> <td style="text-align: center;">Approx. 1700</td> </tr> <tr> <td>Power max. (H/O) (G/O)</td> <td style="text-align: center;">Approx. 2250</td> </tr> <tr> <td>Swift slow-down (H/O) (G/O)</td> <td style="text-align: center;">Approx. 1700</td> </tr> </table>	H/O	Approx. 2250	G/O	Approx. 2050 (during operation) Approx. 1900 (idling)	F/O	Approx. 1900	L/O	Approx. 1700	Power max. (H/O) (G/O)	Approx. 2250	Swift slow-down (H/O) (G/O)	Approx. 1700	1) Start engine. 2) Set monitoring code to 10 or 16 (command value). 3) Operate working mode switch and L.H. knob switch.			
H/O	Approx. 2250																		
G/O	Approx. 2050 (during operation) Approx. 1900 (idling)																		
F/O	Approx. 1900																		
L/O	Approx. 1700																		
Power max. (H/O) (G/O)	Approx. 2250																		
Swift slow-down (H/O) (G/O)	Approx. 1700																		
Model selection	C17 - C02	Continuity	If the condition is as shown in the table below, it is normal <table border="1" style="width: 100%;"> <tr> <td>Between selection 1</td> <td>C17(5) - C02(11)</td> <td>No continuity</td> </tr> <tr> <td>Between selection 2</td> <td>C17(13) - C02(11)</td> <td>Continuity</td> </tr> <tr> <td>Between selection 3</td> <td>C17(6) - C02(11)</td> <td>Continuity</td> </tr> <tr> <td>Between selection 4</td> <td>C17(14) - C02(11)</td> <td>No continuity</td> </tr> <tr> <td>Between selection 5</td> <td>C17(7) - C02(11)</td> <td>No continuity</td> </tr> </table>	Between selection 1	C17(5) - C02(11)	No continuity	Between selection 2	C17(13) - C02(11)	Continuity	Between selection 3	C17(6) - C02(11)	Continuity	Between selection 4	C17(14) - C02(11)	No continuity	Between selection 5	C17(7) - C02(11)	No continuity	1) Turn starting switch OFF. 2) Disconnect connector. 3) Connect T - adapter to wiring harness end.
Between selection 1	C17(5) - C02(11)	No continuity																	
Between selection 2	C17(13) - C02(11)	Continuity																	
Between selection 3	C17(6) - C02(11)	Continuity																	
Between selection 4	C17(14) - C02(11)	No continuity																	
Between selection 5	C17(7) - C02(11)	No continuity																	

MEASURING COMPRESSION PRESSURE

- ⚠ When measuring the compression pressure, be careful not to touch the exhaust manifold or muffler, or to get your clothes caught in the fan, fan belt or other rotating part.
- 1. Adjust the valve clearance.
For details, see ADJUSTING VALVE CLEARANCE.
- 2. Warm up the engine to make the oil temperature 40 - 60°C
- 3. Remove nozzle holder assembly from the cylinder to be measured.
- 4. Connect pressure gauge.
- 5. Disconnect the fuel control rod, place the governor lever of the injection pump in the NO INJECTION position, then crank the engine with the starting motor and measure the compression pressure.
- ★ Measure the compression pressure at the point where the pressure gauge indicator remains steady.
- ★ When measuring the compression pressure, measure the engine speed to confirm that it is within the specified range.
- ★ After measuring the compression pressure, install nozzle holder assembly (1).

NOTE: Due to variables such as; starter and battery conditions that affect engine cranking speed, it is difficult to establish an absolute value for compression pressure; however, the following values can be used as guidelines:

- New engine (cranking speed @ 250 RPM)
2413 kPa [350 psi]
- Used engine (cranking speed @ 250 RPM)
2068 kPa [300 psi]

It is recommended that the compression pressure be checked on all cylinders and then compared. All cylinders should be within 690 kPa [100 psi] of each other

MEASURING BLOW-BY PRESSURE

Blowby is generally recorded in liters/minute.

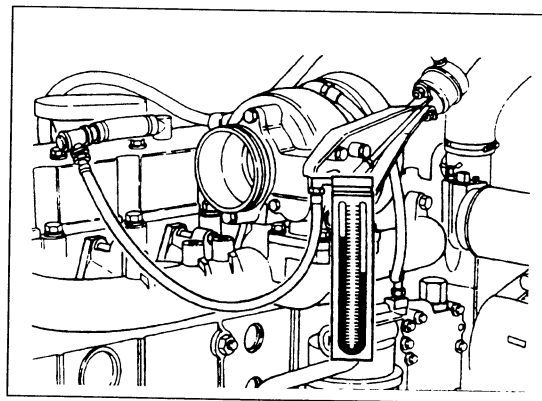
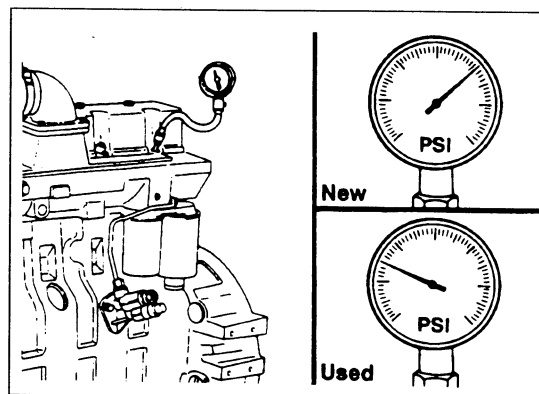
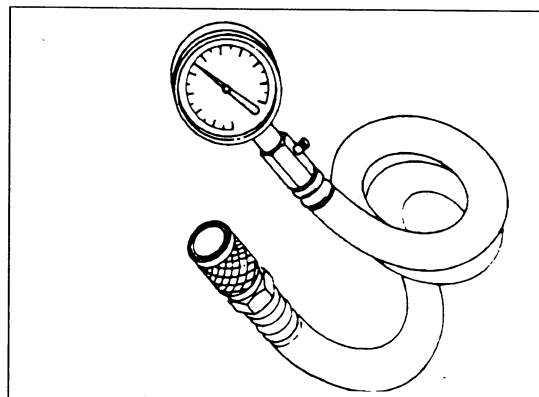
Install the Engine Blowby Tool **E1** to the crankcase breather tube in the valve cover.

Install the water manometer **E2** to the engine blowby tool.

Use the Blowby Conversion Chart to convert the manometer reading to liters/minute.

NOTE: A pressure gauge can be used to record the engine blowby.

Minimum Gauge Capacity: 1270 mm H₂O [50 inches H₂O].



Blowby Conversion Chart (7.67 mm [0.302 in]) Orifice

Inches of Water	Liters/Minute
1	50
2	84
3	103
4	119
5	133
6	145
7	155
8	164
9	172
10	180
11	187
12	193
13	200
14	206
15	211
16	217
17	222
18	226
19	229
20	235
21	239
22	242
23	246
24	248

Turbocharger Wastegate Actuator-Calibration

Note: The wastegate is set accurately from the factory. Adjustment is not necessary unless the capsule is removed.

Attach a dial indicator as show, so that its shaft is in line with the wastegate actuator rod. Set the indicator to zero with no air pressure applied to the wastegate capsule.

Connect clean, regulated air pressure supply and an accurate pressure gauge to the capsule.

Apply 1,8 kg/cm² (26.4 psi) and measure the rod travel and compare to the table below.

Wastegate Actuator Rod Movement		
mm		in
0.33	MIN	0.013
1.3	MAX	0.050

Replace the actuator if no movement of the actuator rod and lever is detected. Refer to Procedure 3-04.

Caution: Do not pull, push or force alignment of the clevis pin.

While pressure is being applied, adjust linkage as follow:

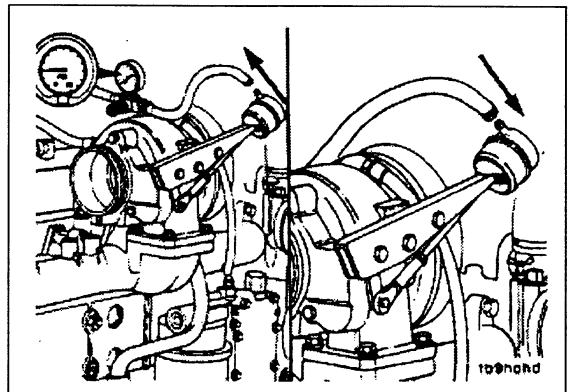
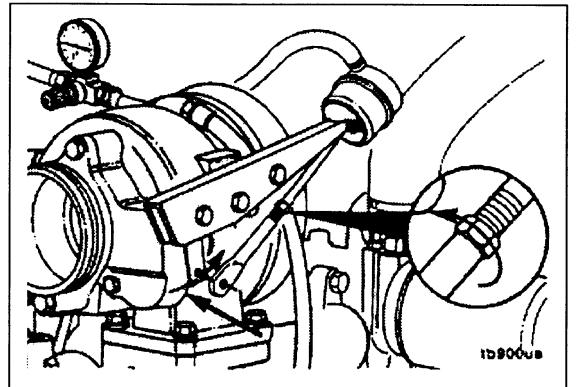
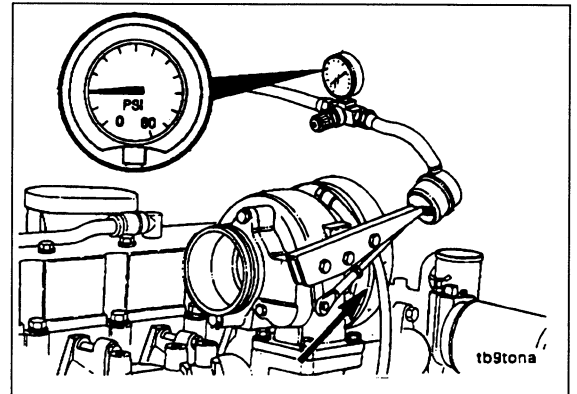
- Pull the wastegate lever to the foremost closed position (lever toward actuator).
- Adjust the length of the clevis end of the control rod to where the clevis pin hole aligns to the wastegate lever.
- Install the adjusting link an retaining clip.
- After adjustment is completed, tighten actuator rod locknut.

Disconnect regulated air pressure line from the actuator.

Connect the turbo boost line to the actuator and secure hose clamp.

⚠ Caution: The turbocharger is a performance part and must not be tampered with. The wastegate bracket is an intergral part of the turbocharger. Tampering with the Wastegate Components can reduce durability by increasing cylinder pressure and thermal loading due to incorrect inlet and exhaust manifold pressure.

Poor fuel economy and failure to meet regulatory emissions laws may result. Increasing the turbocharger boost will not increase engine power.



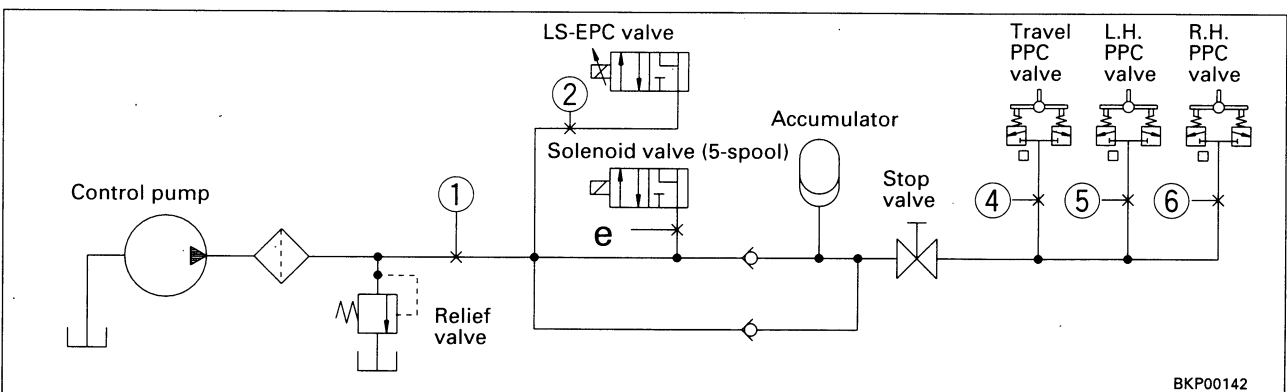
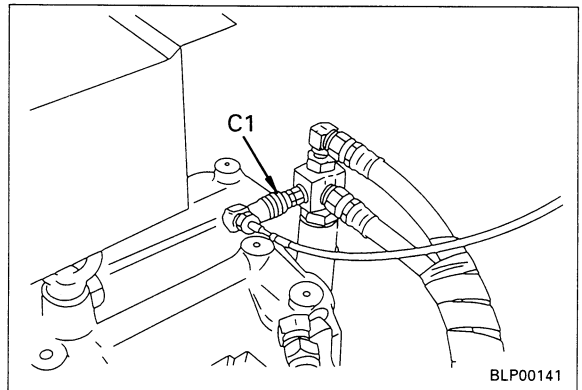
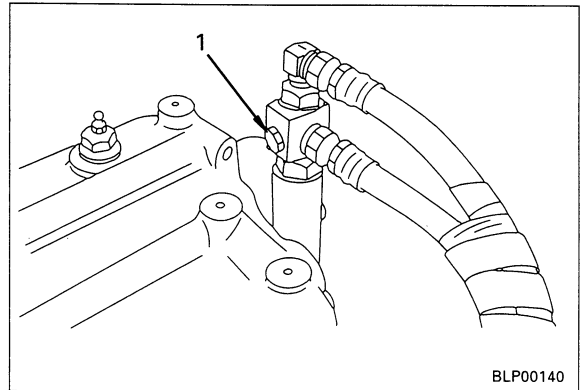
TESTING AND ADJUSTING CONTROL PUMP CIRCUIT OIL PRESSURE

Measuring

- ★ Oil temperature when measuring: 45 – 55°C
- 1. Remove pressure pick-up plug (1) (Thread dia.=10mm, Pitch=1.25mm), and install oil pressure gauge **C1** (5.9 MPa (60 kg/cm²)).
- 2. Start the engine and measure with the engine at full throttle.
- ★ When testing for internal leakage of the equipment in the control circuit, use the parts given below to shut off the circuit for the following sections when measuring the relief pressure.

N0.	Section of hydraulic circuit shut off	Component that can be checked
1.	Control pump outlet port	Control pump
2.	LS-EPC valve inlet port	LS-EPC valve
3.	Solenoid valve inlet port	Solenoid valve
4.	Travel PPC valve inlet port	Travel PPC valve
5.	L.H. PPC valve inlet port	L.H. PPC valve
6.	R.H. PPC valve inlet port	R.H. PPC valve

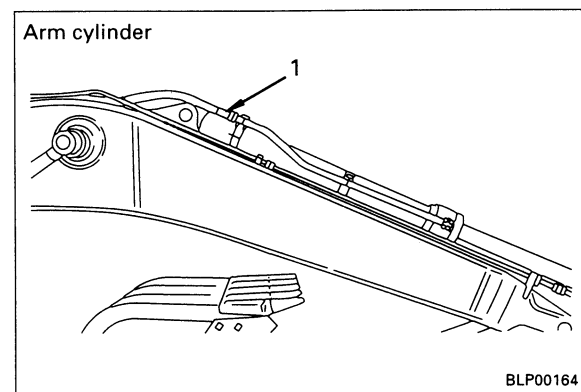
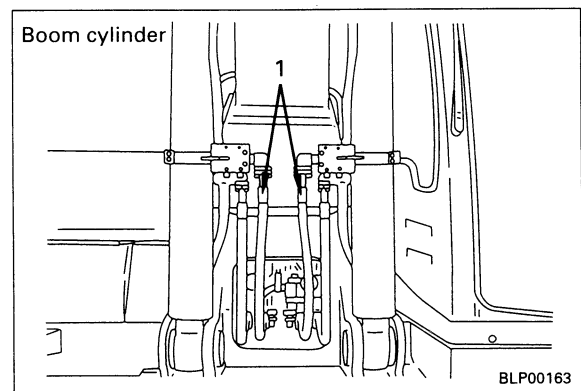
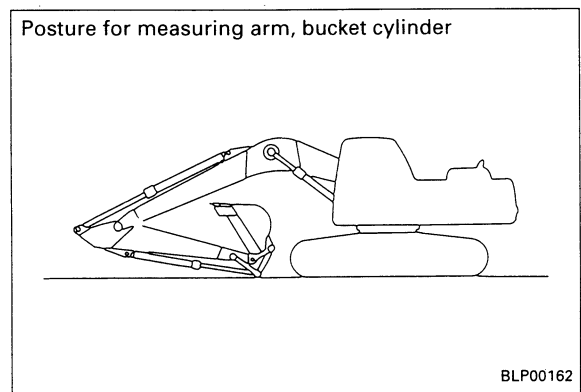
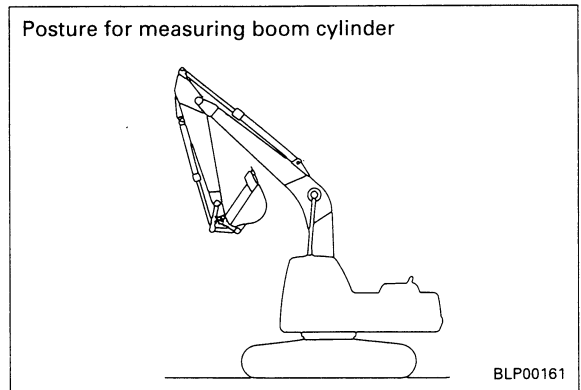
- ★ Items No. 2 and below can be checked if the equipment in the previous number is normal.
- ★ Use the following parts to shut off the circuit.
 - For elbow
 - Sleeve nut: 07221-20210, 07221-20315
 - 07221-20422
 - Plug: 07222-00210, 07222-00315
 - 07222-00414
- For hose
 - Plug: 07376-50210, 07376-50315
 - 07376-50422



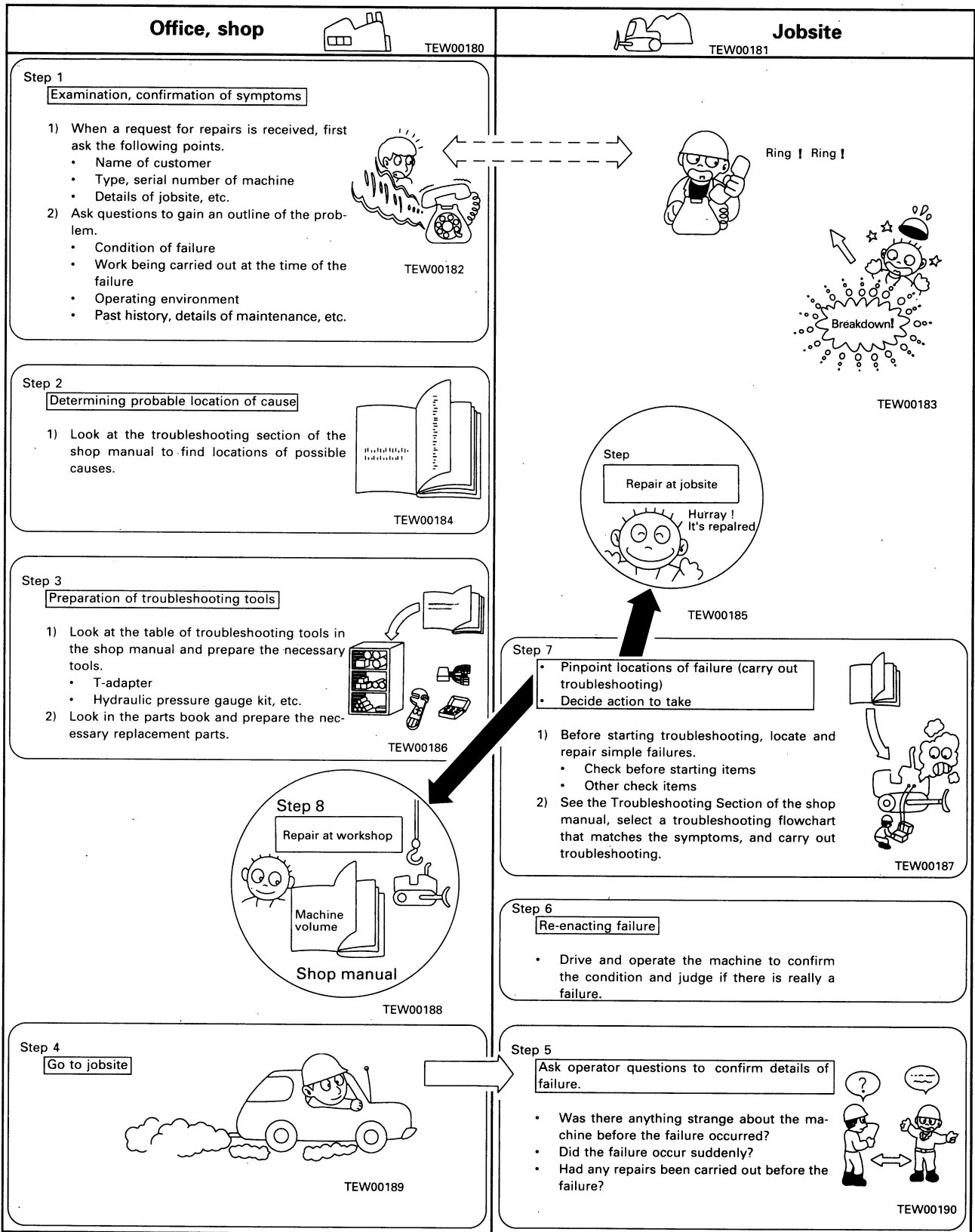
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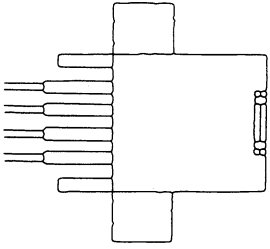
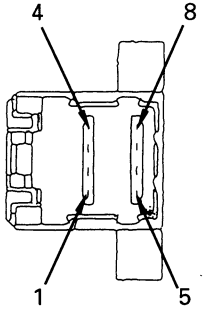
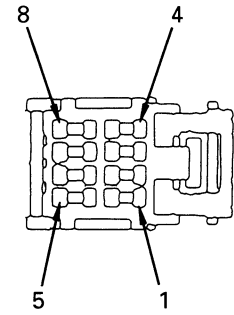
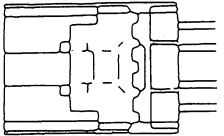
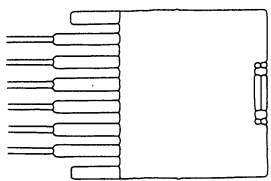
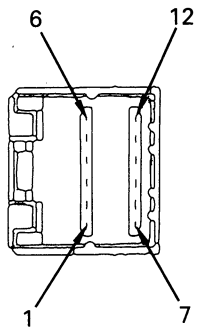
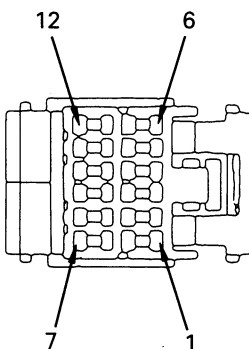
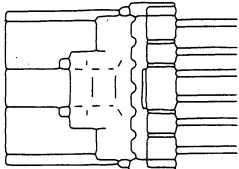
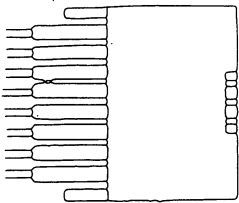
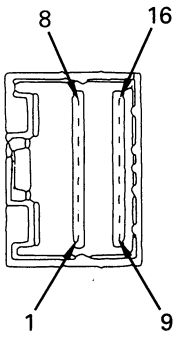
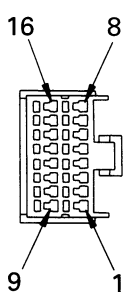
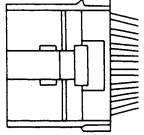
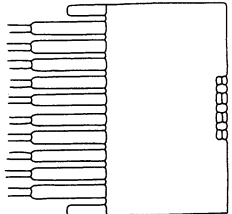
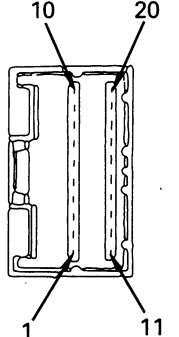
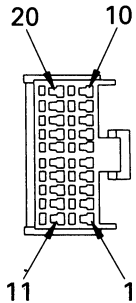
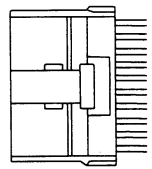
MEASURING OIL LEAKAGE

- ★ Oil temperature when measuring: 45 – 55°C
- 1. **Work equipment cylinder**
 - ★ If the hydraulic drift of the work equipment is outside the standard value, measure the leakage inside the cylinder as follows, and judge if the cause of the hydraulic drift is in the cylinder or in the control valve.
 - If the leakage is within the standard value, the problem is in the control valve.
 - If the leakage is greater than the standard value, the problem is in the cylinder.
 - 1) Fully extend the rod of the cylinder to be measured, then stop the engine.
 - 2) Disconnect piping (1) at the head end, then block the piping at the chassis end with a blind plug.
 - ⚠ Be careful not to disconnect the piping at the bottom end.
 - 3) Start the engine and apply the relief pressure to the bottom end of the cylinder with the engine at full throttle.
 - ★ Boom cylinder : RAISE
 - Arm cylinder : IN
 - Bucket cylinder : CURL
 - 4) Continue this condition for 30 seconds, then measure the oil leakage for the next one minute.



SEQUENCE OF EVENTS IN TROUBLESHOOTING



No. of pins	AMP040 type connector			
	Male (female housing)		Female (male housing)	
8		 BLP00053	 BLP00054	
12		 BLP00055	 BLP00056	
16		 BLP00057	 TEW00232	
20		 BLP00058	 TEW00234	

★ For details of the B in the Unit column, see the bit pattern chart in the next section.

No.	Item	Unit	Name of component
33	Governor motor A phase current	10mV	Governor, pump controller
34	Governor motor B phase current	10mV	Governor, pump controller
35	Battery relay output voltage	100mV	Governor, pump controller
36	Governor governor input condition	B	Governor, pump controller
37	Governor governor output condition	B	Governor, pump controller
40	Engine speed	10rpm	Governor, pump controller
41	Coolant temperature sensor voltage	10mV	Governor, pump controller
42	Fuel sensor input voltage	10mV	Governor, pump controller
43	Battery charge input voltage	100mV	Governor, pump controller
47	Monitor panel output condition 1	B	Governor, pump controller
48	Monitor panel input condition 1	B	Governor, pump controller
49	Monitor panel input condition 2	B	Governor, pump controller
4A	Monitor panel input condition 3	B	Governor, pump controller

3. Checking travel speed selection signal
 - 1) Set to the monitoring mode and display monitoring code 23.
 - 2) Change the speed selector switch to Hi or Mi and run the engine at 1500 rpm or above. Check that bit (6) lights up when traveling at Hi or Mi (front or rear pump oil pressure: 21.6 – 32.3 MPa (220 – 330 kg/cm²))
4. Checking swing priority mode signal
 - ★ If the travel oil pressure switch signal is not input to the controller, the flow from the front and rear pumps will remain divided.
 - 1) Set to the monitoring mode and display monitoring code 23.
 - 2) Check that bit (4) lights up when the travel is operated (even when operated slightly).
 - ★ Check the operating condition of the pump merge/divider solenoid valve

2. Checking input signal of governor, pump controller

- ★ Check the input signals for each controller as follows.
 - Pump control system
- 1. Checking input signal
 - 1) Check hydraulic switch
 - i) Set to the monitoring mode, and display monitoring codes 20 and 21.
 - ii) Operate each work equipment lever, and check how the bit pattern lights up.
 - ★ For details of the bit pattern chart, see MONITOR PANEL DISPLAY AND SPECIAL FUNCTIONS.
 - 2) Check speed sensor (check engine speed)
 - i) Set to the monitoring mode, and display monitoring code 10.
 - ii) Use the fuel control dial to change the speed, and measure the speed when this is done.
 - 3) Check pump discharge pressure sensor
 - i) Set to the monitoring mode, and display monitoring codes 11 and 12.
 - ★ Code 11 is for the front pump and code 12 is for the rear pump.
 - ii) Refer to Table 2 and measure the hydraulic pressure at the front or rear pump.

Table 2 Pump merge/flow logic and pumps actuated by control levers

	Independent operation (basic flow merged)		Travel operated independently or compound operation together with travel※	
	Front pump	Rear pump	Front pump	Rear pump
L.H. travel				
Swing				
Arm				
Boom				
Bucket				
R.H. travel				

- ※ Conditions for compound operation with travel.
 - (1) When measuring the oil pressure for any circuit other than travel, operate the travel lever slightly or connect a short connector (X-2P) to the travel oil pressure switch connector (CN-S01).
 - (2) The circuits merge when the pressure of the front pump or rear pump is more than 19.6 MPa (200 kg/cm²).

E-2 [E308] Abnormality in fuel control dial input value is displayed

- ★ This troubleshooting is carried out when there is still an abnormality, so when disconnecting the connector and inserting the T-adaptor, or when removing the T-adaptor and returning the connector to its original position, if the service code E 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 the next step.

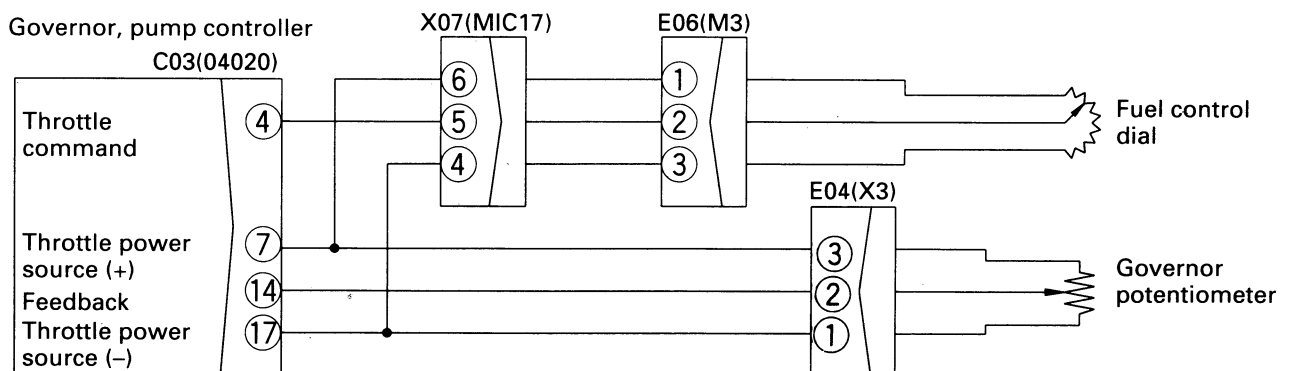
	Cause	Remedy
<p style="text-align: center;">2 YES</p> <p>Is resistance between each pin of C03 (female) (4) (7) (17), or between each pin and chassis as shown in Table 1?</p> <p style="text-align: center;">NO</p> <p>• Turn starting switch OFF. • Disconnect C03.</p>	<p>Defective governor, pump controller</p>	<p>Replace</p>
<p style="text-align: center;">1 YES</p> <p>Is resistance between E06 (male) (1)-(2), (2)-(3) as show in Table 1?</p> <p>• Turn starting switch OFF. • Disconnect E06.</p>	<p>Defective wiring harness in system with defective resistance</p>	<p>Replace</p>
<p style="text-align: center;">NO</p>	<p>Defective fuel control dial</p>	<p>Replace</p>

- ★ If E306 also occurs at the same time, check the wiring harness below.
 - Wiring harness between C03 (female) (7) – E04 (female) (1) short circuiting with ground, or contact with other wiring harness

Table 1

C03 (female)	E04 (male)	Resistance value
(7) – (4)	(1) – (2)	0.25 – 7kΩ
(4) – (17)	(2) – (3)	0.25 – 7kΩ
(7) – (17)	—	2 – 3kΩ
—	(1) – (3)	4 – 6kΩ
Between each pin and chassis	—	Min. 1 MΩ

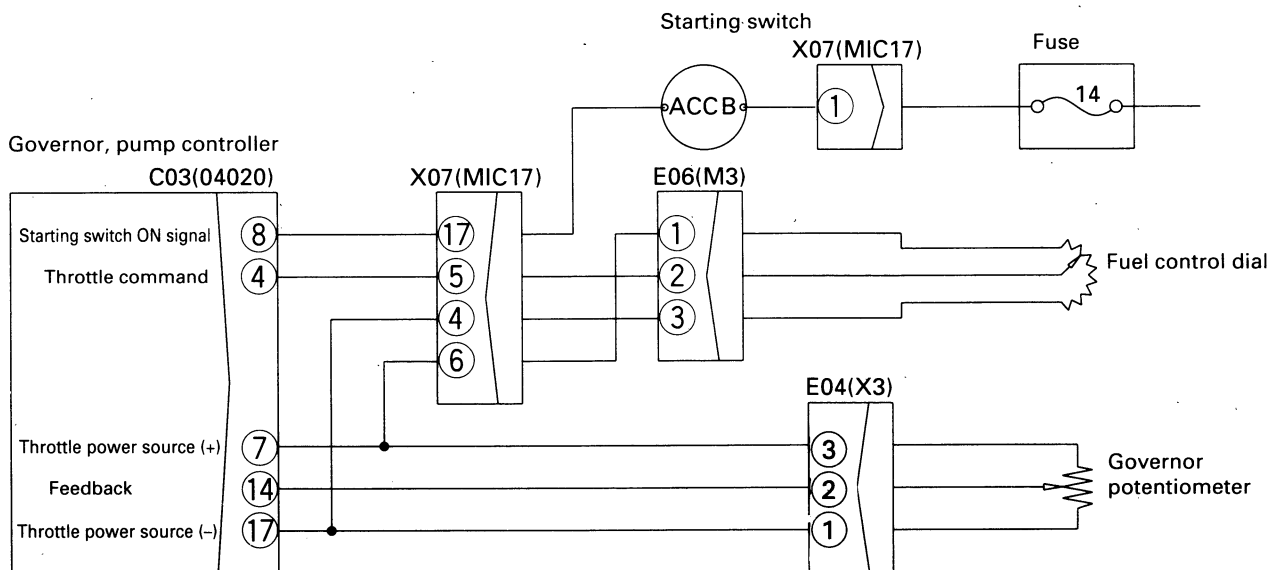
E-2 Related electric circuit diagram



BKP00097

	Cause	Remedy
	See N mode	
	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)-C03 (femal) (8), or defective starting switch	Repair or replace
	See E-5	—
	See E-2	—
	See C-14	—

E-9 Related electric circuit diagram



BKP00203

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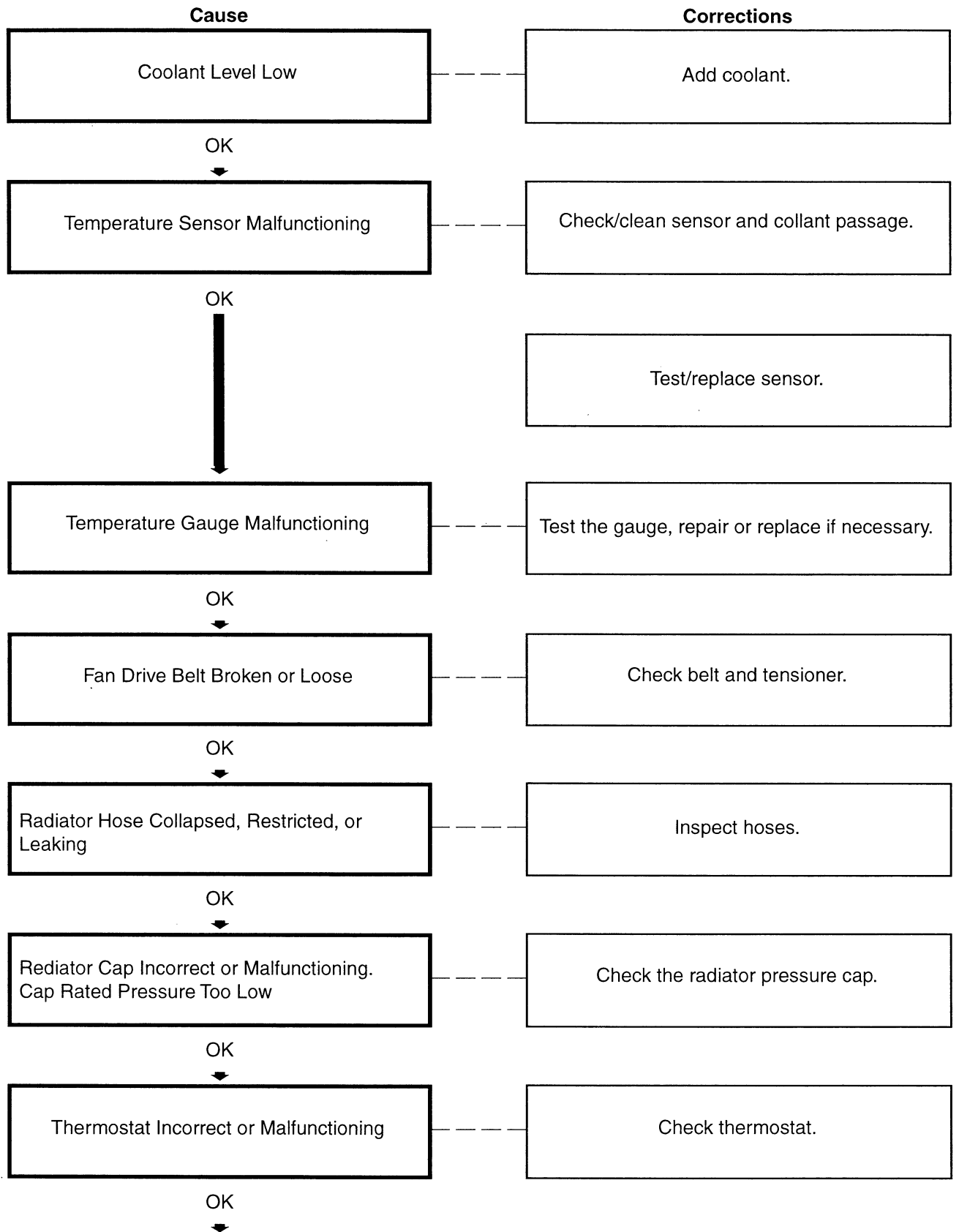
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Troubleshooting Logic

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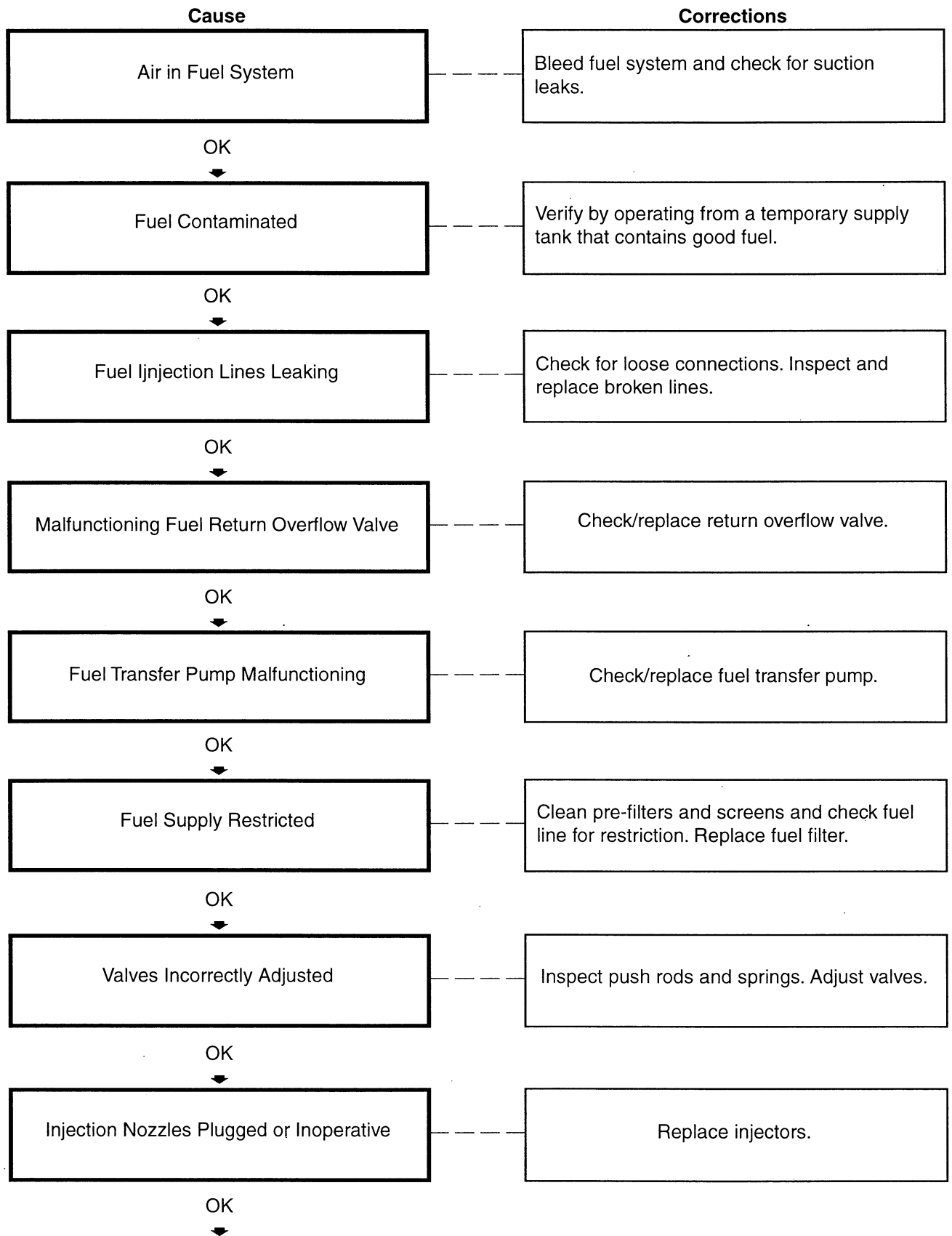
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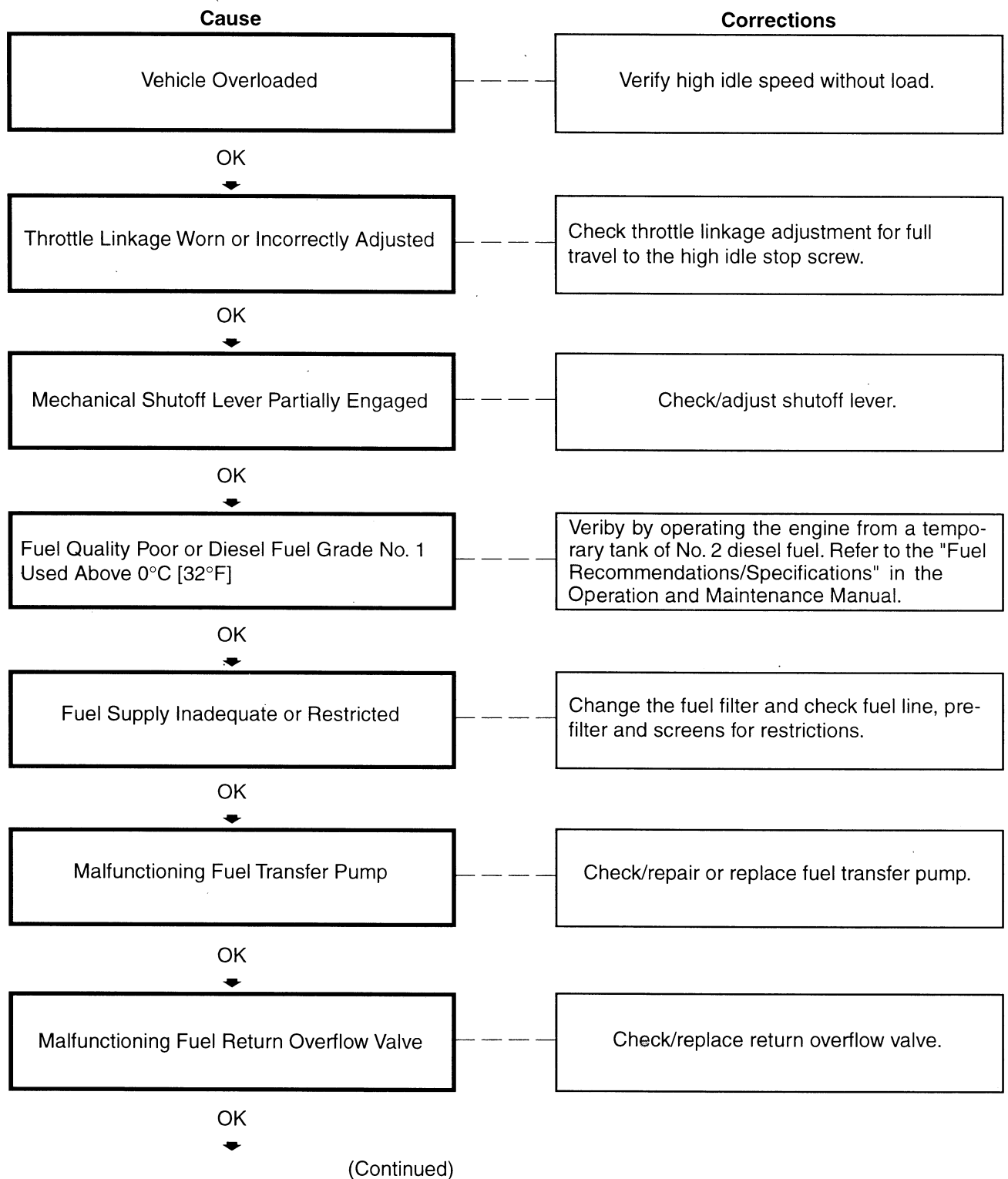
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Engine Misfiring

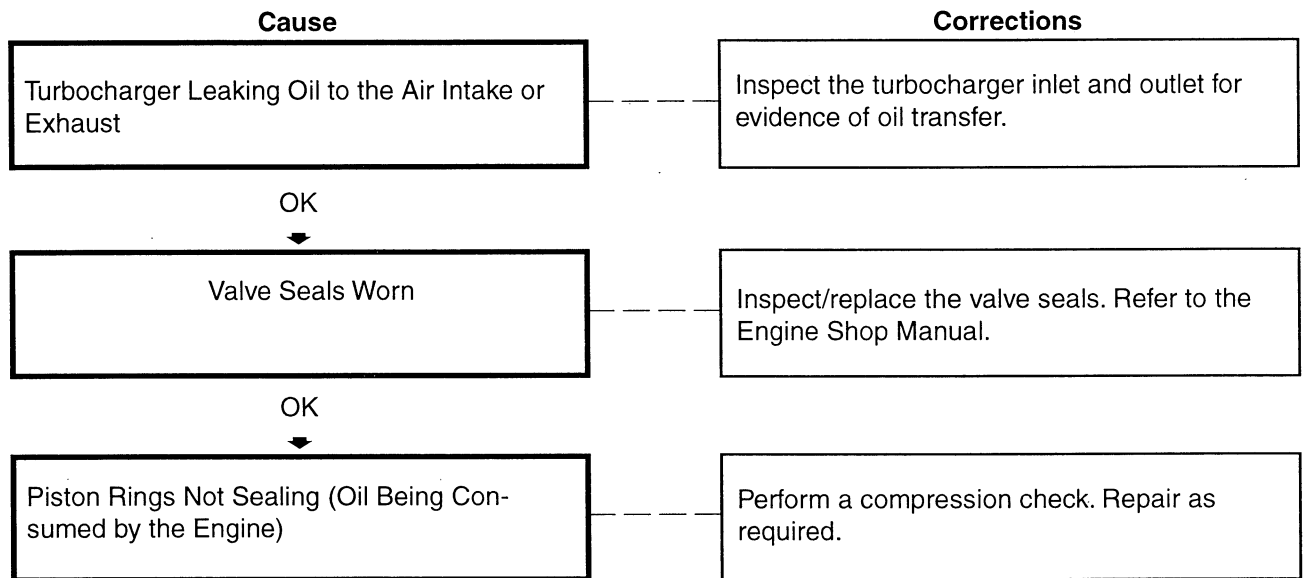


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Engine Will Not Reach Rated Speed When Loaded



Lubricating Oil Consumption Excessive (Cotinued)



Condition when normal (voltage, current, resistance)	Action by controller when abnormality is detected	Problem that appears on machine when there is abnormality
<ul style="list-style-type: none"> Resistance of solenoid: 10 – 22 Ω 	<ol style="list-style-type: none"> 1. Makes output to TVC solenoid 0. 2. Displays user code E02 on monitor panel. <p>★ If the abnormality is restored by the vibration of the machine, it resets the power source to restore to the proper condition. (However, the service code display does not go out.)</p>	<ol style="list-style-type: none"> 1. No current flows to the front pump TVC solenoid. Therefore, when the load is large, there is a big drop in the engine speed which may result in the engine stalling. 2. The swing acceleration is poor
<ul style="list-style-type: none"> Resistance of solenoid: 10 – 22 Ω Current: 1000 mA (H/O mode, auto-deceleration ON, levers at neutral, fuel control dial at MAX.) 	<ol style="list-style-type: none"> 1. The current stops flowing to the TVC solenoid, so no particular action is taken. 2. If there is a short circuit with the ground at the (-) end, the current (min. 1A) continues to flow to the TVC solenoid. 3. It displays user code E02 on the monitor panel. <p>★ If the abnormality is restored by the vibration of the machine, it resets the power source to restore to the proper condition. (However, the service code display does not go out.)</p>	<ol style="list-style-type: none"> 1. In the case of 1, it is the same as E232. 2. In the case of 2, the current (min. 1A) continues to flow to the front pump TVC solenoid, so the output of the front pump TVC valve increases and the overall speed becomes slower.
<ul style="list-style-type: none"> Resistance of solenoid: 10 – 22 Ω 	<ol style="list-style-type: none"> 1. Makes output to TVC solenoid 0. 2. Displays user code E02 on monitor panel. <p>★ If the abnormality is restored by the vibration of the machine, it resets the power source to restore to the proper condition. (However, the service code display does not go out.)</p>	<p>Same as E232 (but for the rear pump)</p>
<ul style="list-style-type: none"> Resistance of solenoid: 10 – 22 Ω Current: 1000 mA (H/O mode, auto-deceleration ON, levers at neutral, fuel control dial at MAX.) 	<ol style="list-style-type: none"> 1. The current stops flowing to the TVC solenoid, so no particular action is taken. 2. If there is a short circuit with the ground at the (-) end, the current (min. 1A) continues to flow to the TVC solenoid. 3. It displays user code E02 on the monitor panel. <p>★ If the abnormality is restored by the vibration of the machine, it resets the power source to restore to the proper condition. (However, the service code display does not go out.)</p>	<p>Same as E233 (but for the rear pump)</p>
<ul style="list-style-type: none"> Resistance of solenoid: 20 – 60 Ω 	<ol style="list-style-type: none"> 1. Makes output to TVC solenoid 0. 2. Displays user code E03 on monitor panel. <p>★ If the abnormality is restored by the vibration of the machine, it resets the power source to restore to the proper condition. (However, the service code display does not go out.)</p>	<p>When the swing is operated, the motor brake is not released, so the upper structure does not swing.</p>
<ul style="list-style-type: none"> Resistance of solenoid: 20 – 60 Ω 	<ol style="list-style-type: none"> 1. The current stops flowing to the solenoid, so no particular action is taken. 2. Displays user code E03 on monitor panel. <p>★ If the abnormality is restored by the vibration of the machine, it resets the power source to restore to the proper condition. (However, the service code display does not go out.)</p>	<p>Same as display for E203</p>

C-2 [E232] Short circuit in front pump TVC 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 an E 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 an E service code is displayed. (If it is not displayed, the problem has been removed.)
- ★ Always turn the TVC prolix switch OFF.
- ★ Before carrying out troubleshooting, check that all the related connectors are properly inserted.
- ★ Always connect any disconnected connectors before going on the next step.

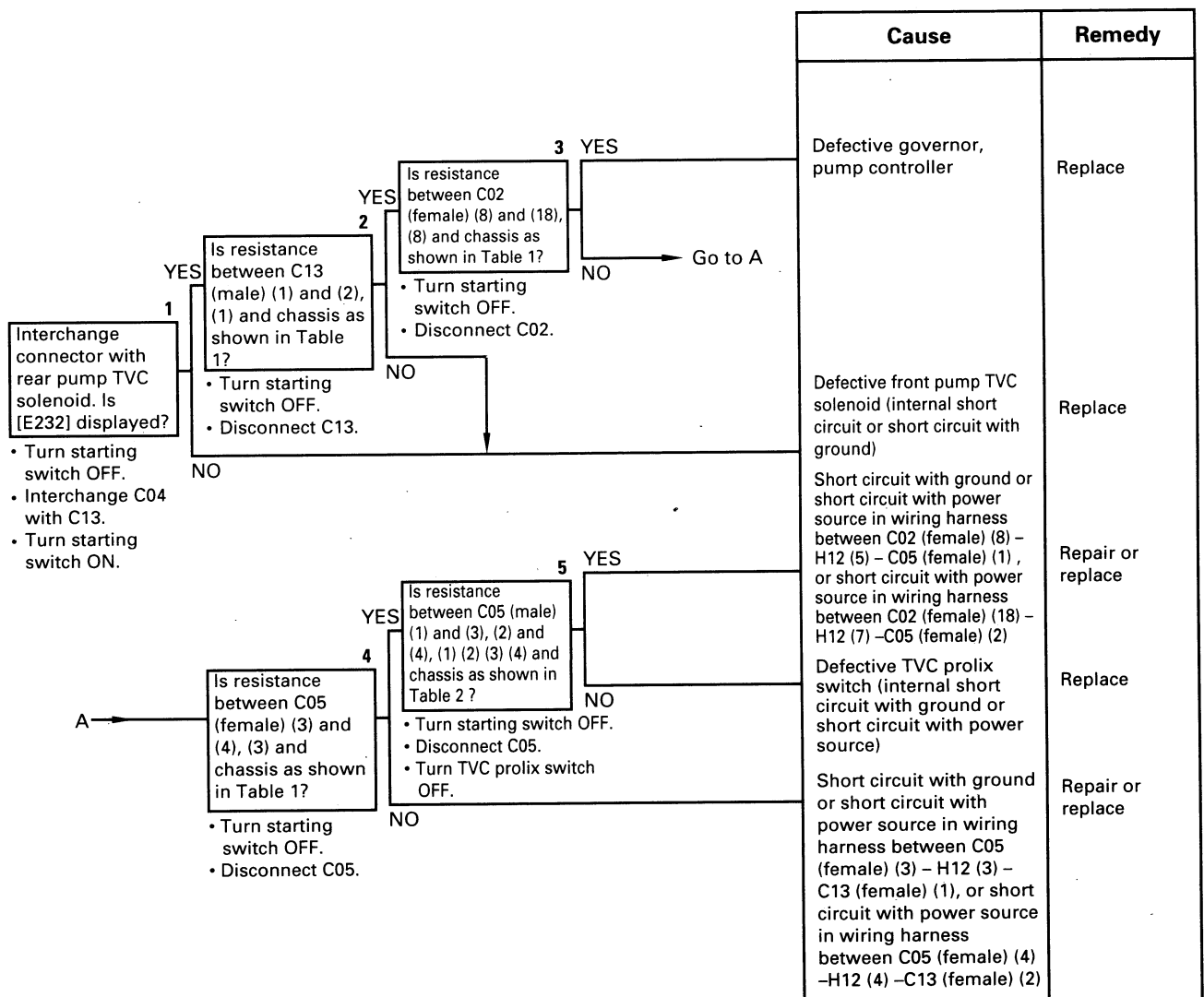


Table 1

Troubleshooting No. 2	Troubleshooting No. 3	Troubleshooting No. 4	Resistance value
Between C13 (male) (1) - (2)	Between C02 (female) (8) - (18)	Between C05 (female) (3) - (4)	10 - 22 Ω
Between C13 (male) (1) - chassis	Between C02 (female) (8) - chassis	Between C05 (female) (3) - chassis	Min. 1 MΩ

Table 2

Troubleshooting No. 5	Resistance value
Between C05 (male) (1) - (3), (2) - (4)	Max. 1 Ω
Between C05 (male) (1)(2)(3)(4) - chassis	Min. 1 MΩ

C-8 [E203] Short circuit in swing brake 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 an E 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 an E 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 the next step.
- ★ Always turn the swing lock prolix switch OFF, then turn the swing lock switch OFF before checking.

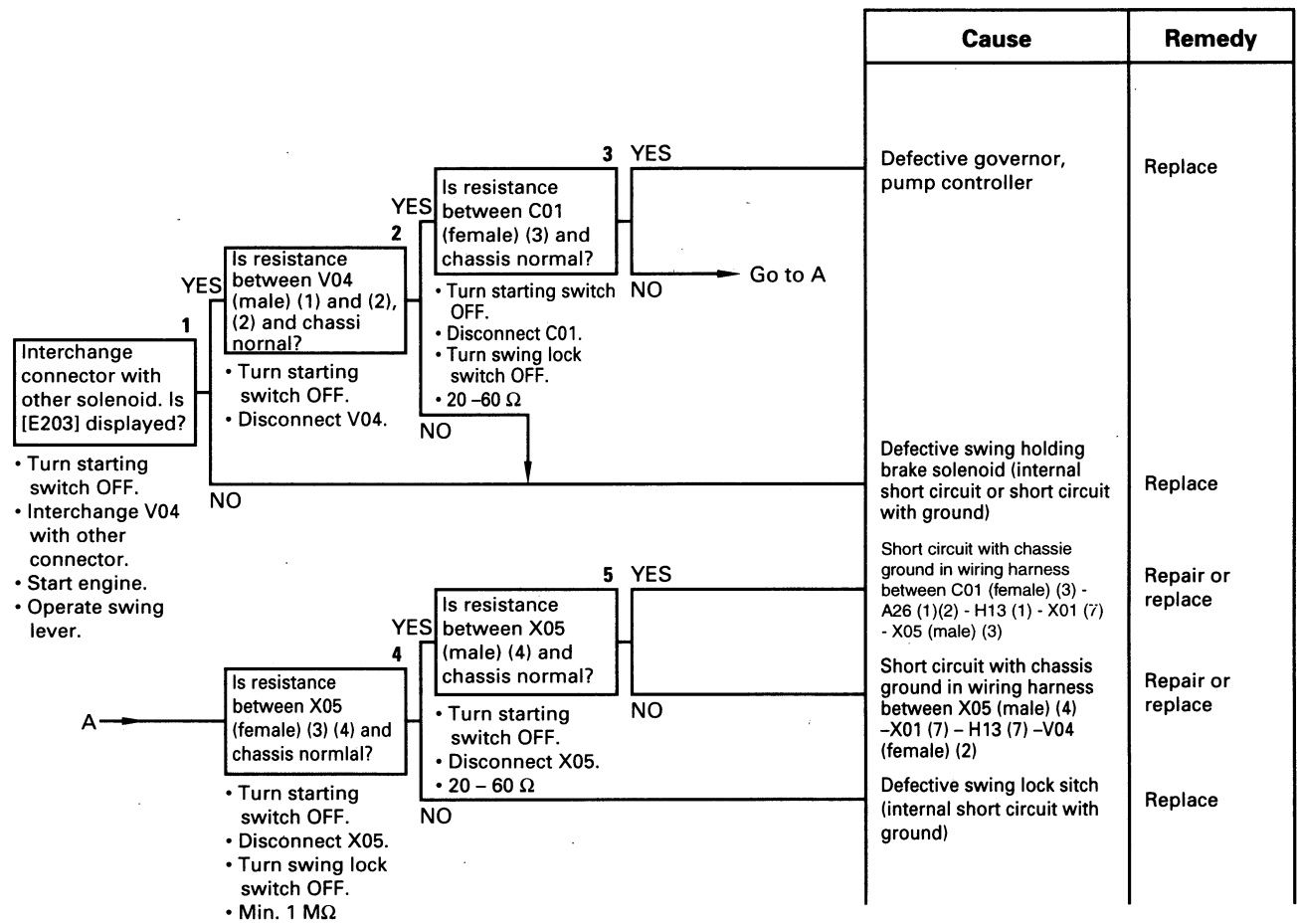


Table 1

Between V04 (male) (1) - (2)	20 - 60 Ω
Between V04 (male) (2) - chassis	Min. 1 MΩ

C-15 [E222] Short circuit in LS-EPC solenoid system is displayed

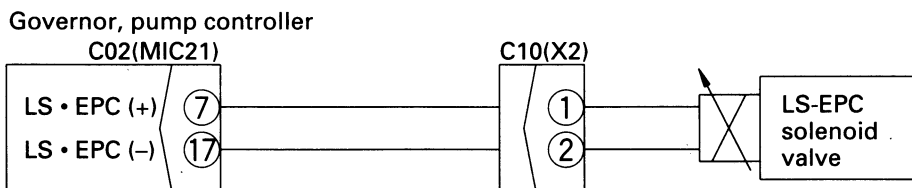
- ★ This troubleshooting is carried out when there is still an abnormality, so when disconnecting the connector and inserting the T-adaptor, or when removing the T-adaptor and returning the connector to its original position, if an E service code is not displayed, the problem has been removed.
- ★ If the starting switch is turned OFF after an abnormality occurs, turn the starting switch ON and check if an E 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 the next step.

	Cause	Remedy
<p style="text-align: center;">2 YES</p> <p>Is resistance between C02 (female) (7) and (17), (7) and chassis as shown in Table 1?</p> <p>• Turn starting switch OFF. • Disconnect C02.</p>	<p>Defective governor, pump controller</p>	<p>Replace</p>
<p style="text-align: center;">1 YES</p> <p>Is resistance between C10 (male) (1) and (2), (1) and chassis as shown in Table 1?</p> <p>• Turn starting switch OFF. • Disconnect C10.</p>	<p>Short circuit with ground or short circuit with power source in wiring harness between C02 (female) (7) - C10 (female) (1), or short circuit with power source in wiring harness between C02 (female) (17) - C10 (female) (2)</p>	<p>Repair or replace</p>
<p style="text-align: center;">NO</p>	<p>Defective LS-EPC solenoid (internal short circuit with ground or short circuit with power source)</p>	<p>Replace</p>

Table 1

Troubleshooting No. 1	Troubleshooting No. 2	Resistance value
Between C10 (male) (1) - (2)	Between C02 (female) (7) - (17)	7 - 14 Ω
Between C10 (male) (1) - chassis	Between C02 (female) (7) - chassis	Min. 1 MΩ

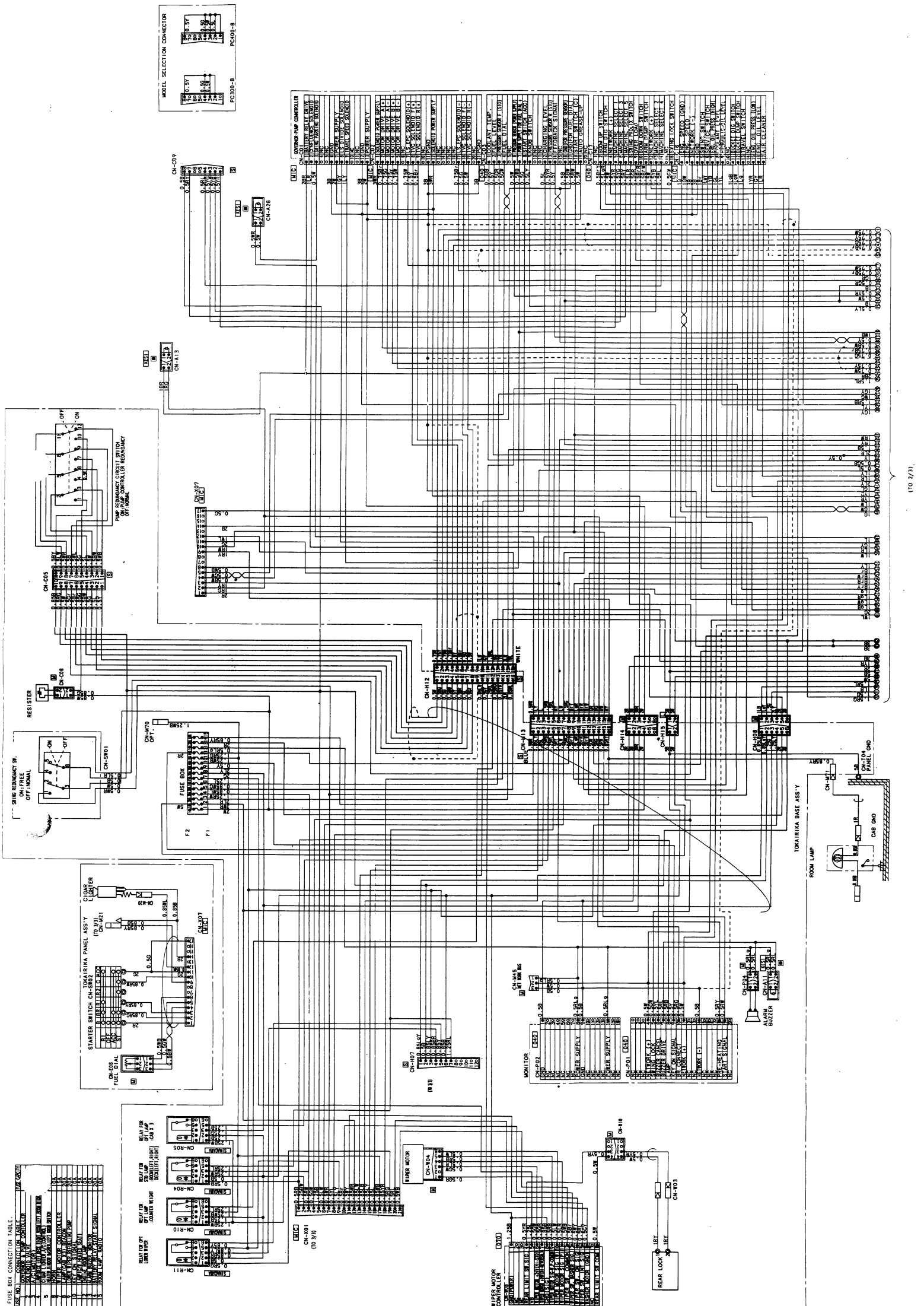
C-15 Related electric circuit diagram



BKP00251

FUSE BOX CONNECTION TABLE

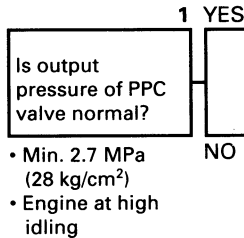
FUSE NO.	CONNECTION TABLE	WIRE GAUGE
1	STARTER MOTOR	16
2	RELAY FOR STARTER MOTOR	16
3	RELAY FOR STOP LAMP	16
4	RELAY FOR STOP LAMP	16
5	RELAY FOR STOP LAMP	16
6	RELAY FOR STOP LAMP	16
7	RELAY FOR STOP LAMP	16
8	RELAY FOR STOP LAMP	16
9	RELAY FOR STOP LAMP	16
10	RELAY FOR STOP LAMP	16
11	RELAY FOR STOP LAMP	16
12	RELAY FOR STOP LAMP	16
13	RELAY FOR STOP LAMP	16
14	RELAY FOR STOP LAMP	16
15	RELAY FOR STOP LAMP	16
16	RELAY FOR STOP LAMP	16
17	RELAY FOR STOP LAMP	16
18	RELAY FOR STOP LAMP	16
19	RELAY FOR STOP LAMP	16
20	RELAY FOR STOP LAMP	16
21	RELAY FOR STOP LAMP	16
22	RELAY FOR STOP LAMP	16
23	RELAY FOR STOP LAMP	16
24	RELAY FOR STOP LAMP	16
25	RELAY FOR STOP LAMP	16
26	RELAY FOR STOP LAMP	16
27	RELAY FOR STOP LAMP	16
28	RELAY FOR STOP LAMP	16
29	RELAY FOR STOP LAMP	16
30	RELAY FOR STOP LAMP	16
31	RELAY FOR STOP LAMP	16
32	RELAY FOR STOP LAMP	16
33	RELAY FOR STOP LAMP	16
34	RELAY FOR STOP LAMP	16
35	RELAY FOR STOP LAMP	16
36	RELAY FOR STOP LAMP	16
37	RELAY FOR STOP LAMP	16
38	RELAY FOR STOP LAMP	16
39	RELAY FOR STOP LAMP	16
40	RELAY FOR STOP LAMP	16
41	RELAY FOR STOP LAMP	16
42	RELAY FOR STOP LAMP	16
43	RELAY FOR STOP LAMP	16
44	RELAY FOR STOP LAMP	16
45	RELAY FOR STOP LAMP	16
46	RELAY FOR STOP LAMP	16
47	RELAY FOR STOP LAMP	16
48	RELAY FOR STOP LAMP	16
49	RELAY FOR STOP LAMP	16
50	RELAY FOR STOP LAMP	16
51	RELAY FOR STOP LAMP	16
52	RELAY FOR STOP LAMP	16
53	RELAY FOR STOP LAMP	16
54	RELAY FOR STOP LAMP	16
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57	RELAY FOR STOP LAMP	16
58	RELAY FOR STOP LAMP	16
59	RELAY FOR STOP LAMP	16
60	RELAY FOR STOP LAMP	16
61	RELAY FOR STOP LAMP	16
62	RELAY FOR STOP LAMP	16
63	RELAY FOR STOP LAMP	16
64	RELAY FOR STOP LAMP	16
65	RELAY FOR STOP LAMP	16
66	RELAY FOR STOP LAMP	16
67	RELAY FOR STOP LAMP	16
68	RELAY FOR STOP LAMP	16
69	RELAY FOR STOP LAMP	16
70	RELAY FOR STOP LAMP	16
71	RELAY FOR STOP LAMP	16
72	RELAY FOR STOP LAMP	16
73	RELAY FOR STOP LAMP	16
74	RELAY FOR STOP LAMP	16
75	RELAY FOR STOP LAMP	16
76	RELAY FOR STOP LAMP	16
77	RELAY FOR STOP LAMP	16
78	RELAY FOR STOP LAMP	16
79	RELAY FOR STOP LAMP	16
80	RELAY FOR STOP LAMP	16
81	RELAY FOR STOP LAMP	16
82	RELAY FOR STOP LAMP	16
83	RELAY FOR STOP LAMP	16
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87	RELAY FOR STOP LAMP	16
88	RELAY FOR STOP LAMP	16
89	RELAY FOR STOP LAMP	16
90	RELAY FOR STOP LAMP	16
91	RELAY FOR STOP LAMP	16
92	RELAY FOR STOP LAMP	16
93	RELAY FOR STOP LAMP	16
94	RELAY FOR STOP LAMP	16
95	RELAY FOR STOP LAMP	16
96	RELAY FOR STOP LAMP	16
97	RELAY FOR STOP LAMP	16
98	RELAY FOR STOP LAMP	16
99	RELAY FOR STOP LAMP	16
100	RELAY FOR STOP LAMP	16



	Cause	Remedy
_____	Defective adjustment of TVC valve	Adjust
_____	Defective servo assembly (defective TVC valve)	Repair or replace
_____	Defective piston pump	Repair or replace
_____	Defective servo assembly (defective LS valve)	Repair or replace
_____	Defective piston pump (servo piston)	Repair or replace
_____	Defective operation of LS-EPC solenoid valve	Replace
_____	Defective operation of main relief assembly (valve which becomes normal when adjusted)	Adjust
_____	Defective operation of unload valve (valve which becomes normal when replaced)	Replace
_____	Defective operation of main relief valve	Replace
_____	Defective hydraulic equipment in control pump circuit (See TESTING AND ADJUSTING)	Repair or replace

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

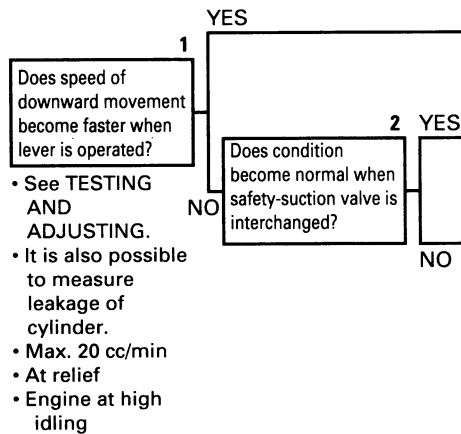
★ When boom, arm, and bucket are each operated independently.



Cause	Remedy
Defective control valve spool	Correct or replace
Defective PPC valve	Replace

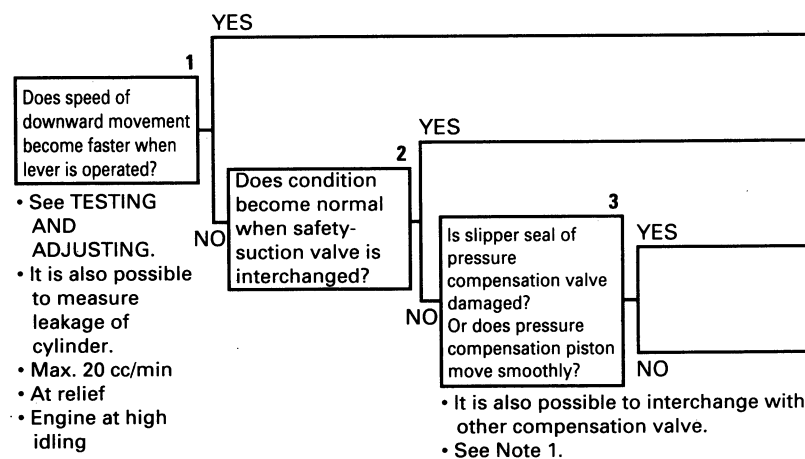
H-11 Excessive hydraulic drift (boom, arm, bucket)

1) Excessive hydraulic drift of boom



Cause	Remedy
Defective hydraulic cylinder piston packing	Replace
Defective operation of safety-suction valve	Replace
Defective operation of boom lock valve	Correct or replace

2) Excessive hydraulic drift of arm or bucket

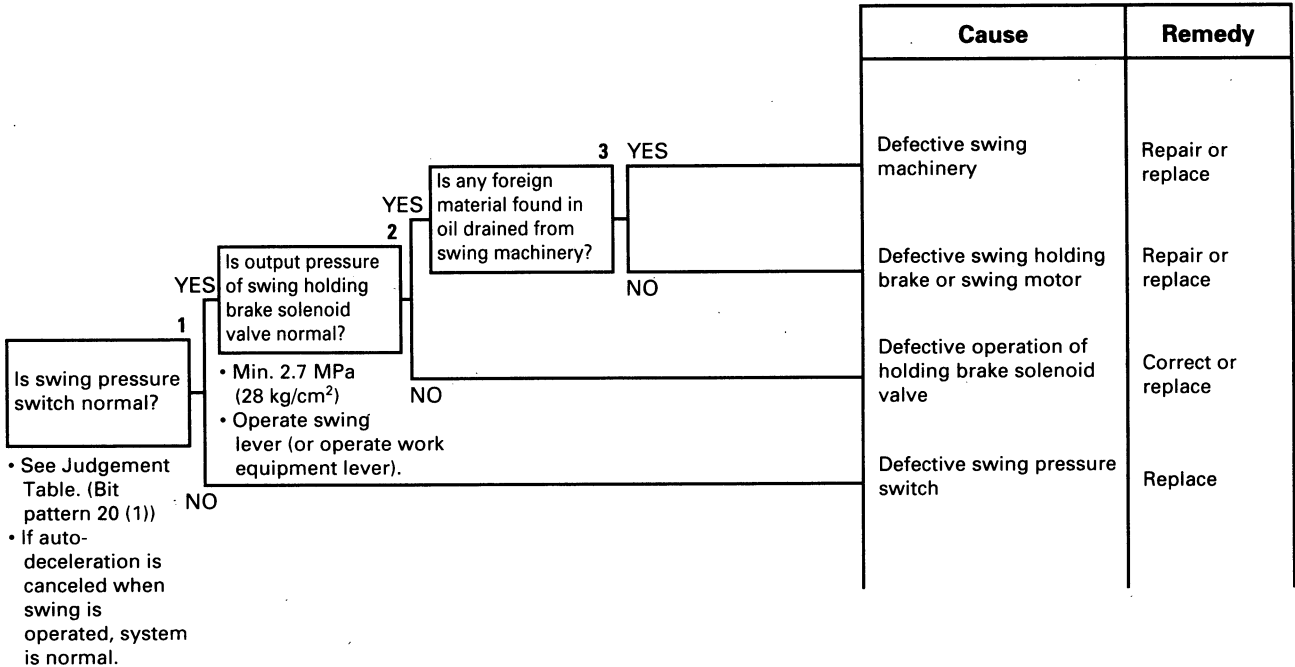


Cause	Remedy
Defective hydraulic cylinder piston packing	Replace
Defective operation of safety-suction valve	Replace
Defective control valve spool	Replace
Damaged slipper seal of pressure compensation valve, or defective operation of pressure compensation piston	Correct or replace

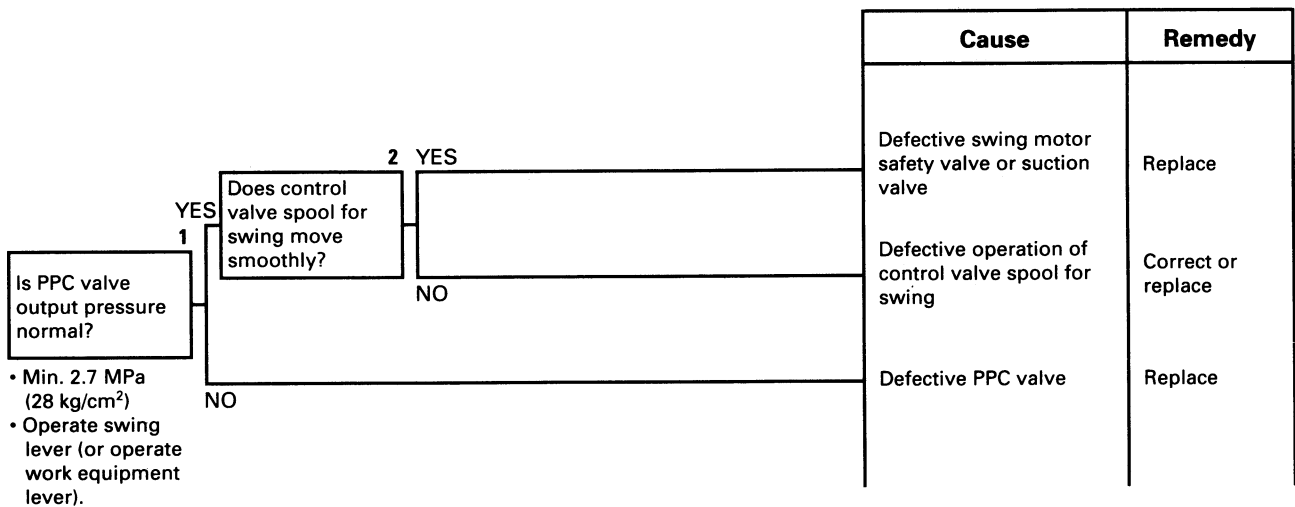
Note 1: After inspection, do not forget to return the interchanged valves to the original position.

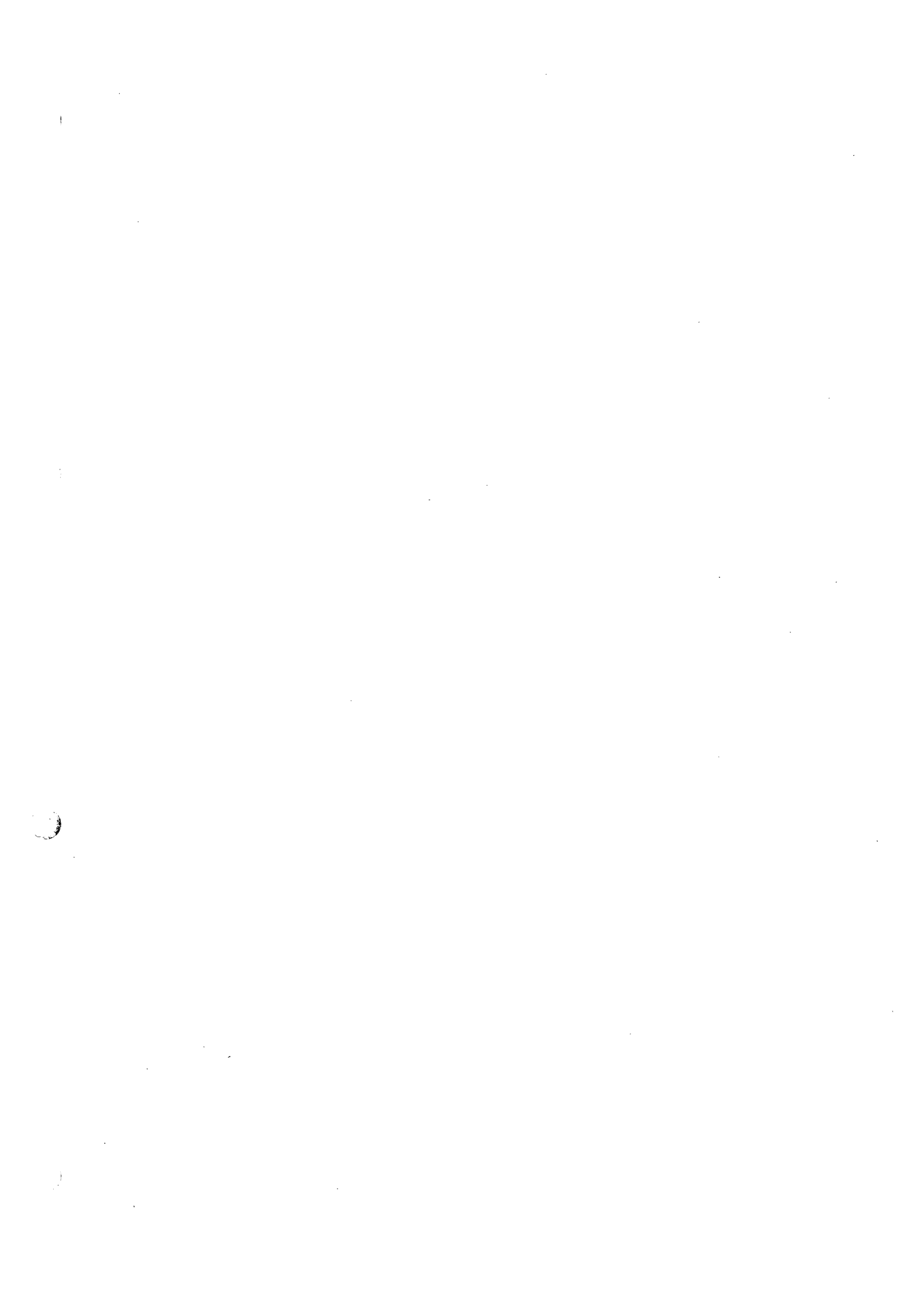
H-25 Does not swing

a) Does not swing to either left or right

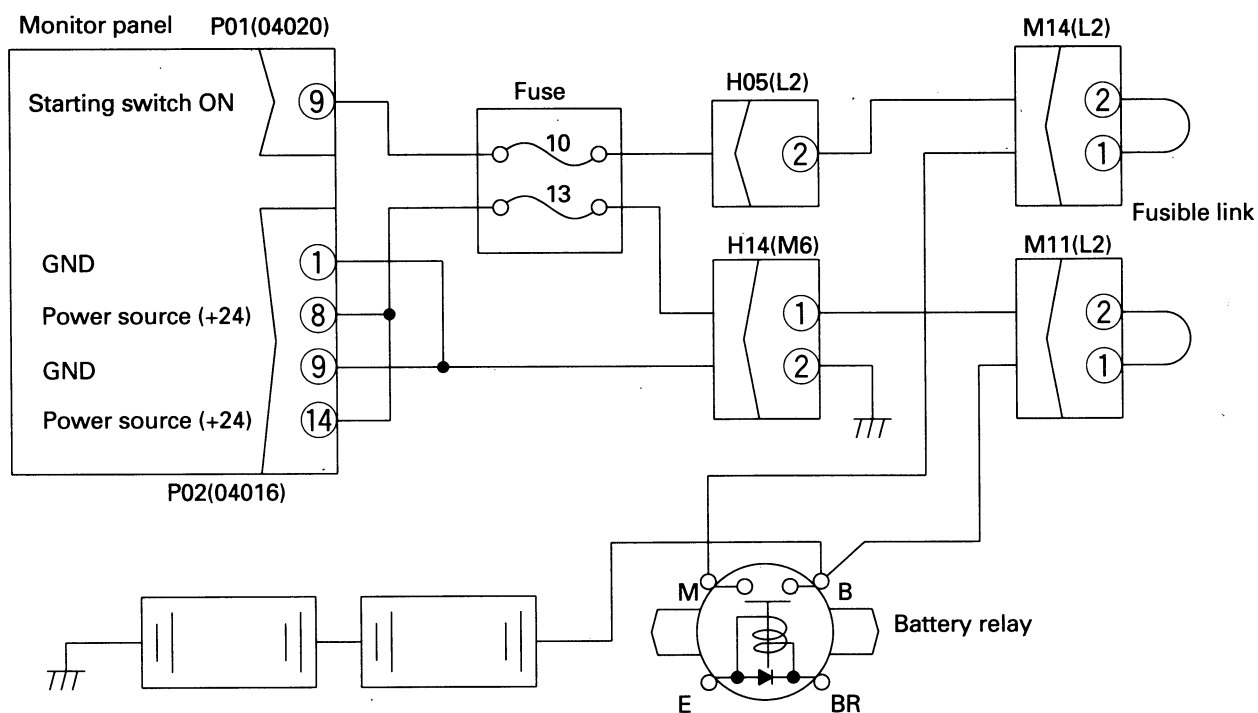


b) Does not swing in one direction





M-6 a) Related electric circuit diagram



BKP00274

M-13 When starting switch is turned ON and engine is started, caution items, emergency items flash (when there is no abnormality in engine or items to check before troubleshooting)

- ★ Before carrying out troubleshooting, check that all the related connectors are properly inserted.
- ★ Always connect any disconnected connectors before going on the next step.

a)  (engine oil pressure) flashes

SAP00520

- ★ Check that the engine oil pressure is normal before carrying out troubleshooting.

Cause	Remedy
See M-11 b)	—

b)  (coolant level) flashes

SAP00519

- ★ Check that the coolant level is normal before carrying out troubleshooting.

Cause	Remedy
See M-9 a)	—

c)  (battery charge) flashes

SAP00522

Cause	Remedy
See M-11 a)	—

M-26 Defective coolant temperature sensor system

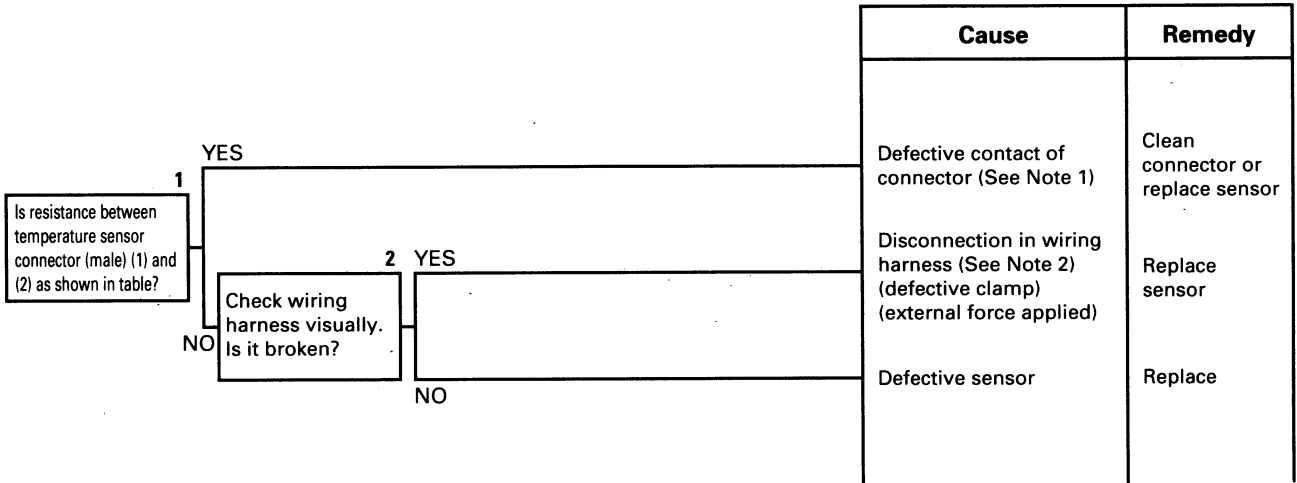
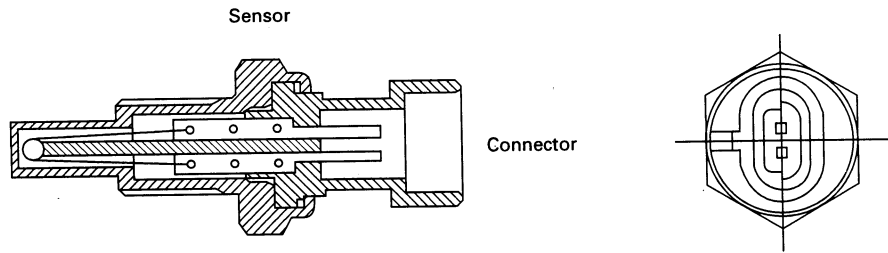


Table 1

Normal temperature (20°C)	Approx. 70 ~ 78 kΩ
100°C	Approx. 3 Ω





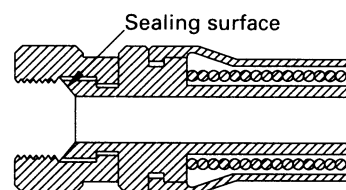
Note 1: If the problem occurs again, the connector (female) at the chassis end is probably defective, so check the connector and wiring harness at the chassis end.

Note 2: Check for vibration at the connector mount. If there is excessive vibration, take the appropriate action.

4. General tightening torque table (when using torque wrench)

- ★ In the case of metric nuts and bolts for which there is no special instruction, tighten to the torque given in the table below.

Thread diameter	Width across flats		
		kgm	Nm
mm	mm	SAD00481	SAD00482
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



SAD00483

5. Table of tightening torques for flared nuts

- ★ In the case of flared nuts for which there is no special instruction, tighten to the torque given in the table below.

Thread diameter	Width across flats	Tightening torque	
		kgm	Nm
mm	mm		
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

6. Table of tightening torques for split flange bolts

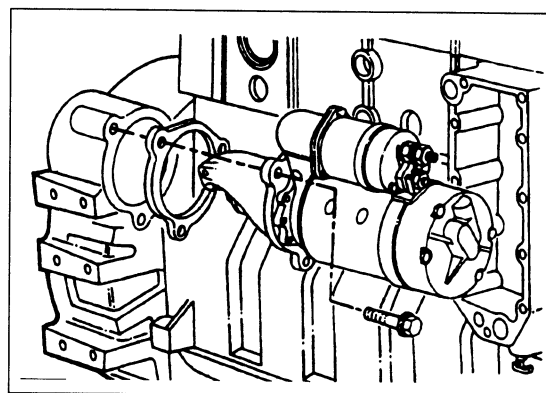
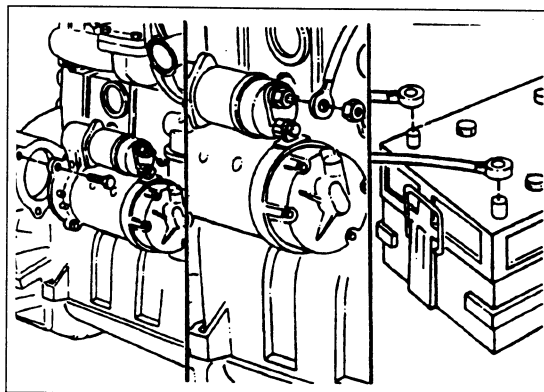
- ★ In the case of split flange bolts for which there is no special instruction, tighten to the torque given in the table below.

Thread diameter	Width across flats	Tightening torque	
		kgm	Nm
mm	mm		
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

REMOVAL OF STARTING MOTOR ASSEMBLY

⚠ Disconnect the cable from the negative (-) terminal of the battery.

1. Open engine hood.
2. Remove engine undercover.
3. Remove starting motor wiring harness cover.
4. Disconnect starting motor harnesses
5. Remove 3 mounting bolts, then remove starting motor assembly (4).



INSTALLATION OF STARTING MOTOR ASSEMBLY

1. Apply a coat of Three Bond Sealant to the starter mounting surface and both sides of the spacer and starting motor gasket, if equipped.
2. Coat the starting motor capscrews with Loctite™ pipe sealant PST.

Install the starting motor. Tighten the starting motor capscrews.

Torque Value: 77 N•m [57 ft-lb]

NOTE: Starting motor capscrews that are precoated with Vibra-Seal require a lower torque.

Torque Value: 68 N•m [50 ft-lb]

- 5.2. Follow the numbered sequence and tighten only the 12 long capscrews:

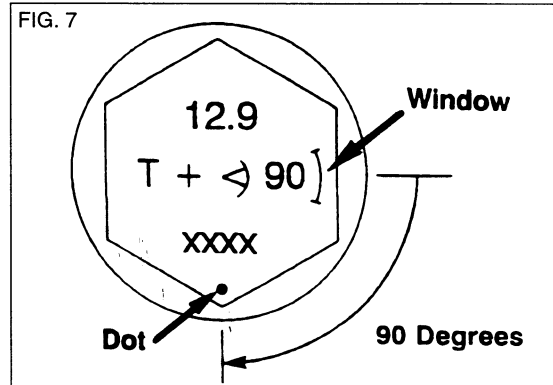
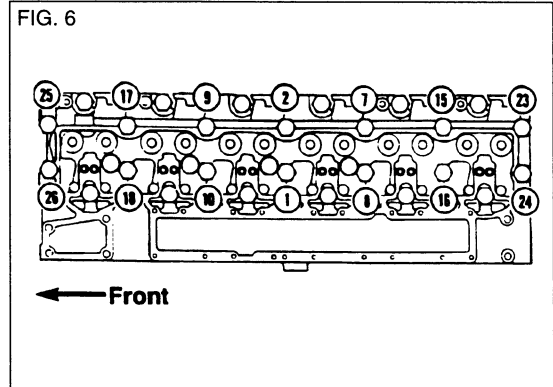
Torque Value: (Step Two) 145 N•m [105 ft-lb]

Follow the numbered sequence and check the torque on all long capscrews again.

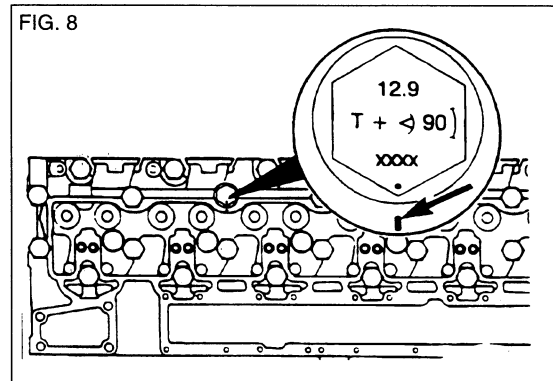
- 5.3. Torque Value: (Step Three)

Follow the numbered sequence and turn all the capscrews 90 degrees as indicated on the capscrew head.

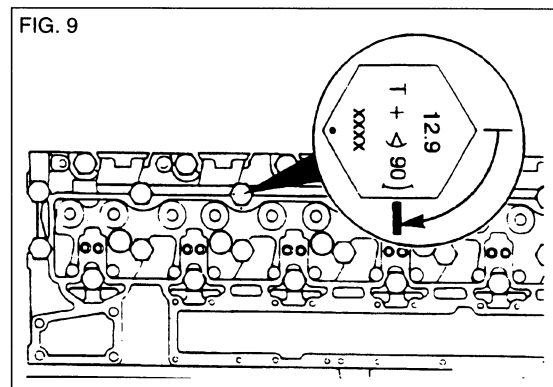
To accurately turn the capscrew to the desired angle, a small "dot" and a "window" are marked on the capscrew head.



6. Mark the cylinder head adjacent to the dot on the capscrew head. This mark will serve as an indexing aid.

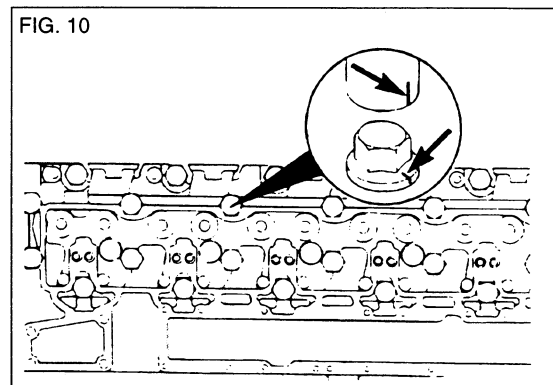


7. Rotate the capscrew until the mark, that has been made on the cylinder head, falls into the "window" on the capscrew head.



Service Tip:

Use a permanent marker to mark the socket corresponding to one of the flats of the socket hex.



REMOVAL OF FUEL TANK ASSEMBLY

⚠ Disconnect the cable from the negative (-) terminal of the battery.

1. Open drain valve of fuel tank and drain fuel.



Fuel tank: Approx. 540 ℓ
(when tank is full)

2. Remove air conditioner condenser top cover.

3. Remove handrail (1), front cover (2), and battery case cover (3).

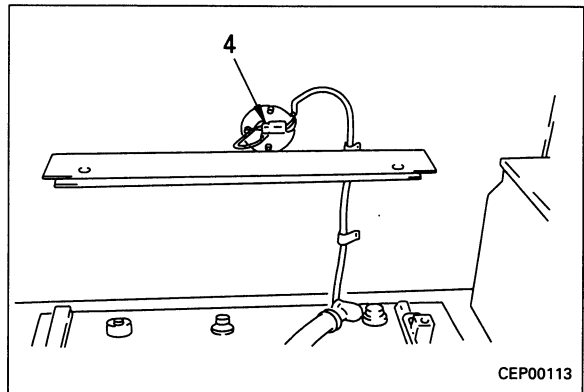
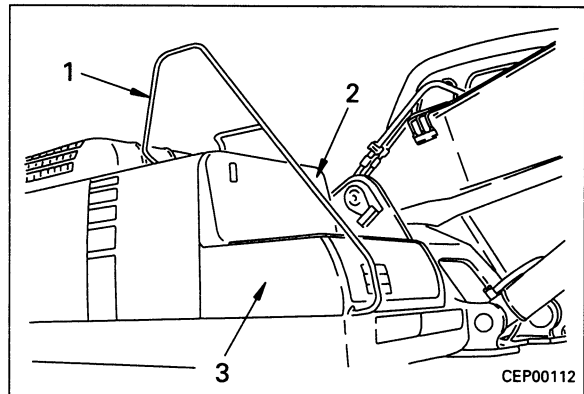
4. Disconnect fuel level sensor connector (4) (CN-P06).

5. Disconnect fuel supply hose (5), return hose (6), spill hose (7), and clamp (8).

6. Remove mounting bolts, and lift off fuel tank assembly (9). ※ 1



Fuel tank assembly: **210 kg**



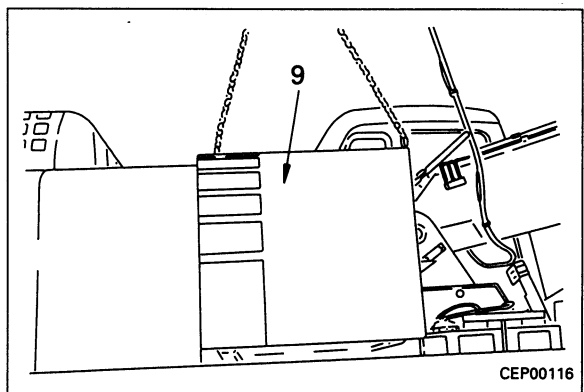
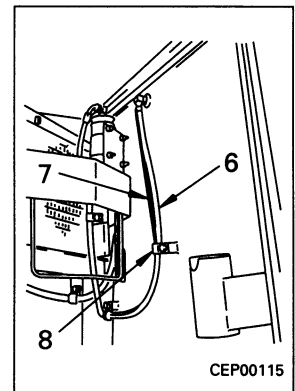
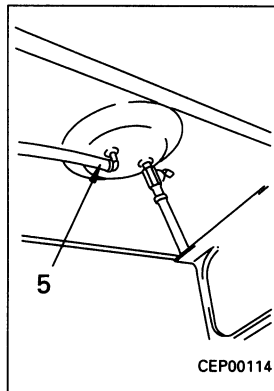
INSTALLATION OF FUEL TANK ASSEMBLY

• Carry out installation in the reverse order to removal.

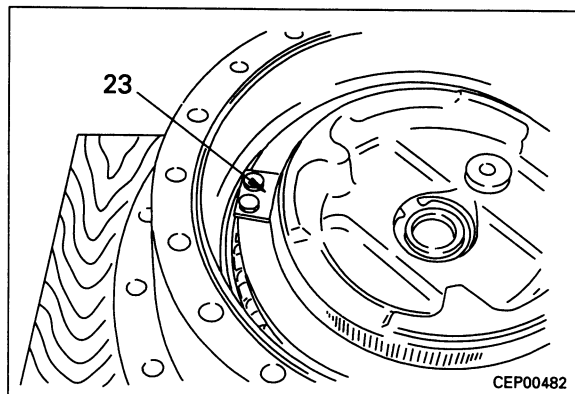
※ 1



Fuel tank mounting bolt:
277.04 ± 31.87 Nm (28.25 ± 3.25 kgm)



7) Install lock plate (23).

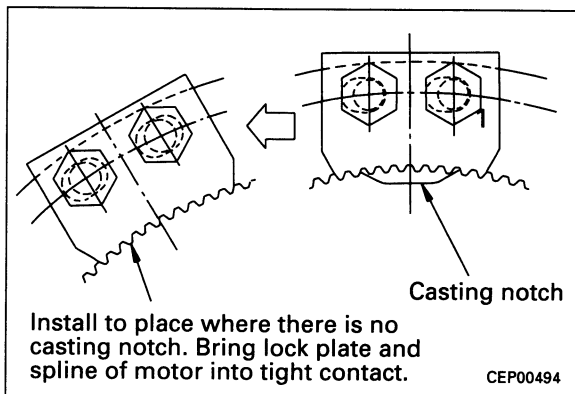


★ Install the lock plate as shown in the diagram on the right.

 Thread of mounting bolt:
Thread tightener (LT-2)

★ Do not coat the threaded portion of the nut with thread tightener (LT-2).

 Mounting bolt: **66.19 ± 7.35 Nm**
(6.75 ± 0.75 kgm)

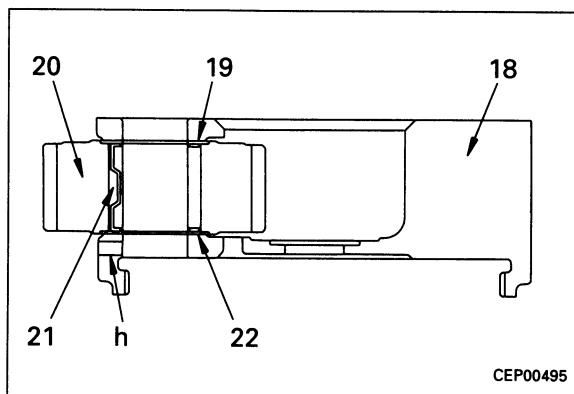


3. No. 2 carrier assembly

1) Assemble No. 2 carrier assembly as follows.

★ There are the remains of the caulking when the pin is inserted at the end face of hole **h** at the side of the carrier, so remove the caulked metal from the inside diameter of the hole before starting to assemble.

i) Assemble bearing (21) to gear (20), fit top and bottom thrust washers (19) and (22), and set gear assembly in carrier (18).



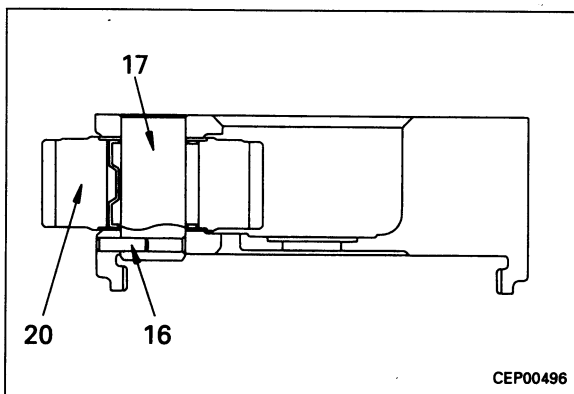
ii) Align with position of pin holes of shaft and carrier, then tap with a plastic hammer to install shaft (17).

★ When installing the shaft, rotate the planetary gear, and be careful not to damage the thrust washer.

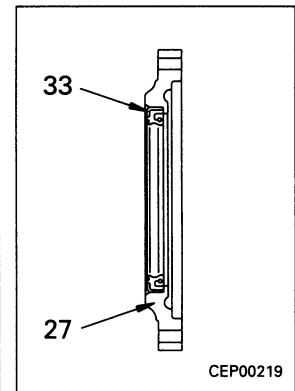
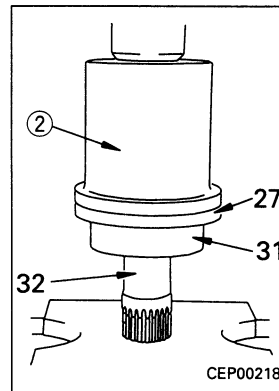
iii) Insert pin (16).

★ After inserting the pin, caulk the pin portion of the carrier.

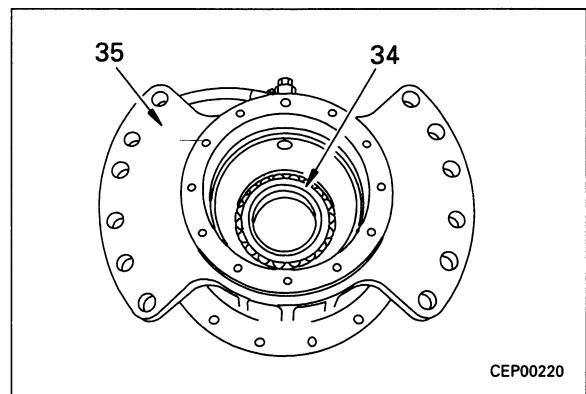
★ After assembling the carrier assembly, check that gear (20) rotates smoothly.



10. Disassemble pinion shaft assembly as follows.
- 1) Using push tool ②, remove cover assembly (27) and bearing (31) from shaft (32).
 - 2) Remove oil seal (33) from cover (27).

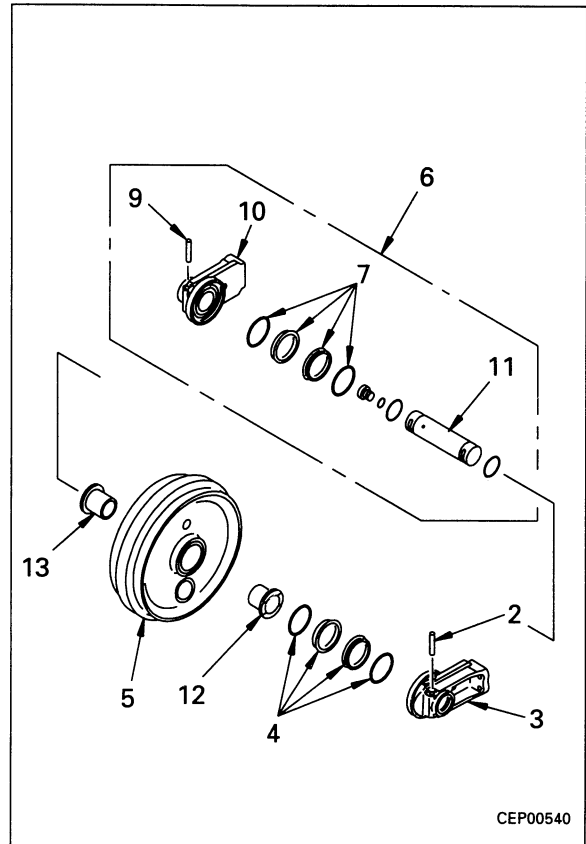


11. **Bearing**
Using push tool, remove bearing (34) from case (35).

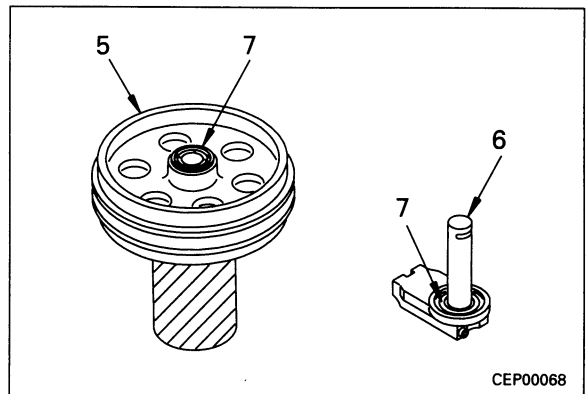


DISASSEMBLY OF IDLER ASSEMBLY

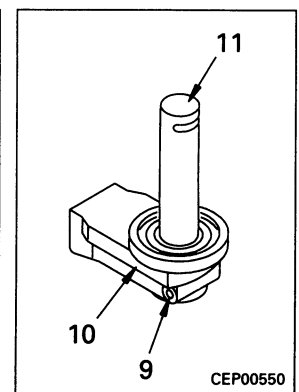
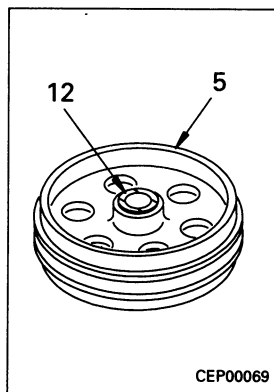
1. Remove pin (2), then remove support (3).
2. Remove floating seal (4) from support (3) and idler (5).
3. Pull out shaft and support assembly (6) from idler (5).
 - ★ It is filled with approx. 230 cc. of oil, so drain the oil at this point or lay a cloth to prevent the area from becoming dirty.



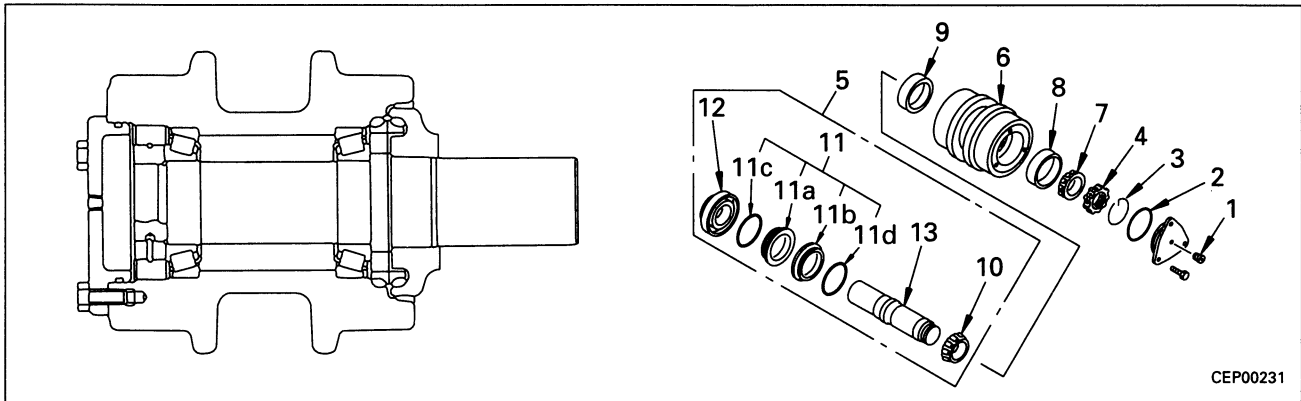
4. Remove floating seal (7) on opposite side from idler (5) and shaft and support assembly (6).



5. Remove pin (9), then remove support (10) from shaft (11).
6. Remove bushing (12) from idler (5).



DISASSEMBLY OF CARRIER ROLLER ASSEMBLY

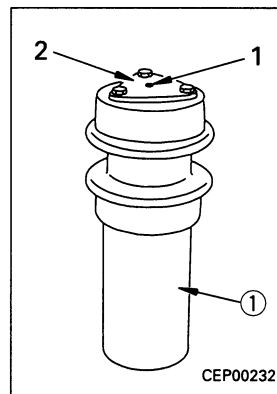


1. Remove plug (1) and drain oil.

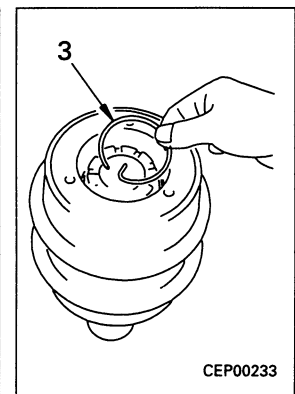


Carrier roller assembly: 450 – 500 cc

2. Set carrier roller assembly on stand ①.
3. Remove cover (2).
4. Remove ring (3).

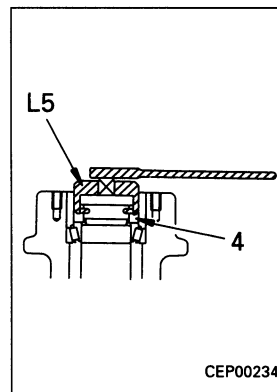


CEP00232

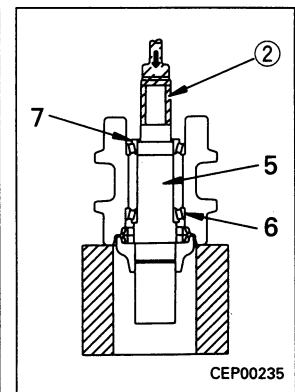


CEP00233

5. Using tool L5, remove nut (4).
6. Using push tool ②, pull out shaft assembly (5) from roller (6) with press, then remove inner race (7).

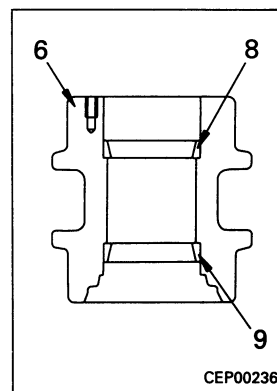


CEP00234

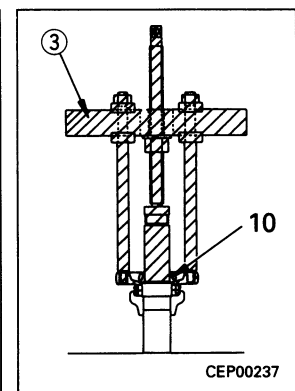


CEP00235

7. Remove outer races (8) and (9) from roller (6).
8. **Disassembly of shaft assembly.**
 - 1) Using puller ③, remove inner race (10).



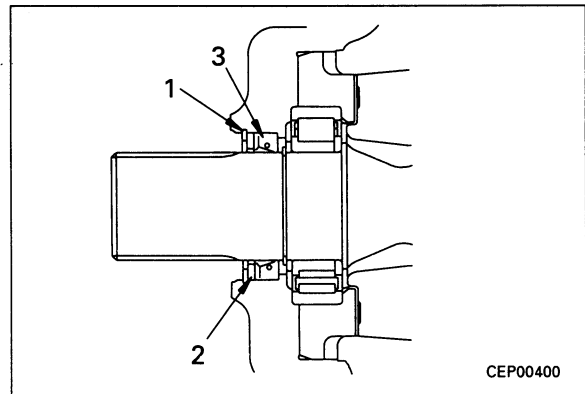
CEP00236



CEP00237

REMOVAL OF MAIN PUMP INPUT SHAFT OIL SEAL


1. Remove main pump assembly.
For details, see REMOVAL OF MAIN PUMP ASSEMBLY.
2. Remove snap ring (1), then remove spacer (2).
3. Lever up oil seal (3) with a screwdriver to remove. ※ 1
 - ★ When removing the oil seal, be extremely careful not to damage the shaft.




INSTALLATION OF MAIN PUMP INPUT SHAFT OIL SEAL

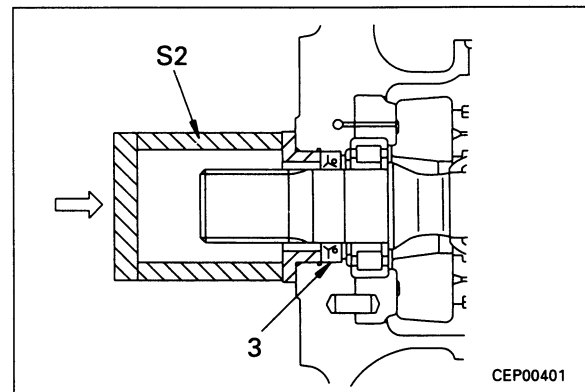
- Carry out installation in the reverse order to removal.

※ 1

 Lip of oil seal: **Grease (G2-LI)**


 Coat the outside circumference of the oil seal with grease (G2-LI) thinly, then press fit.

- ★ Using tool **S2**, press fit oil seal (3).



4. Swing, boom, bucket control valve spools

- ★ Check the mounting position of the springs and spool assembly before installing.
- 1) Assemble spool assembly (49) to valve body (70).
- 2) Assemble retainer (52) and spring (51), then fit O-ring to case (50) and install.
- 3) Assemble retainer (48) and spring (47) to spool, then fit O-ring to case (46) and install.
- 4) Tighten mounting bolts of cases (50) and (46) to specified torque.


 Case mounting bolt:
30.89 ± 3.43 Nm (3.15 ± 0.35 kgm)

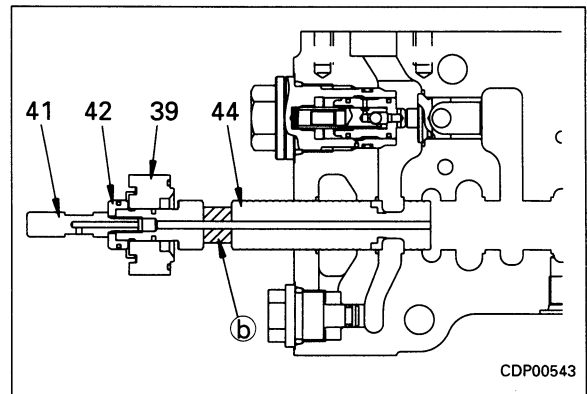
5. Boom Hi, arm Hi control valve spools

- **Boom Hi control valve spool**
- ★ Check the mounting position of the spring and spool assembly before installing.
- 1) Fit seal (45) to spool (44), and install seal (43) to valve (42).
- 2) Assemble spool (44) to position shown in diagram on right, install plate (39) and valve (42) to spool (44), then hold position **b** shown in diagram on right with a wrench (width across flats: 24mm), and tighten plug (41).


 Plug:
13.24 ± 1.47 Nm (1.35 ± 0.15 kgm)

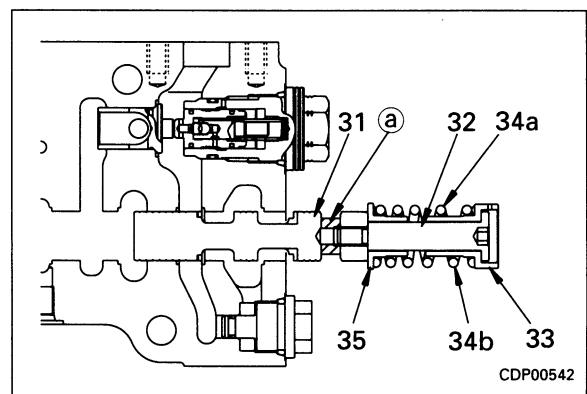
- 3) Push spool assembly (40) into body, fit spring (38), then fit O-ring to case (37) and install.

 Case mounting bolt:
30.89 ± 3.43 Nm (3.15 ± 0.35 kgm)



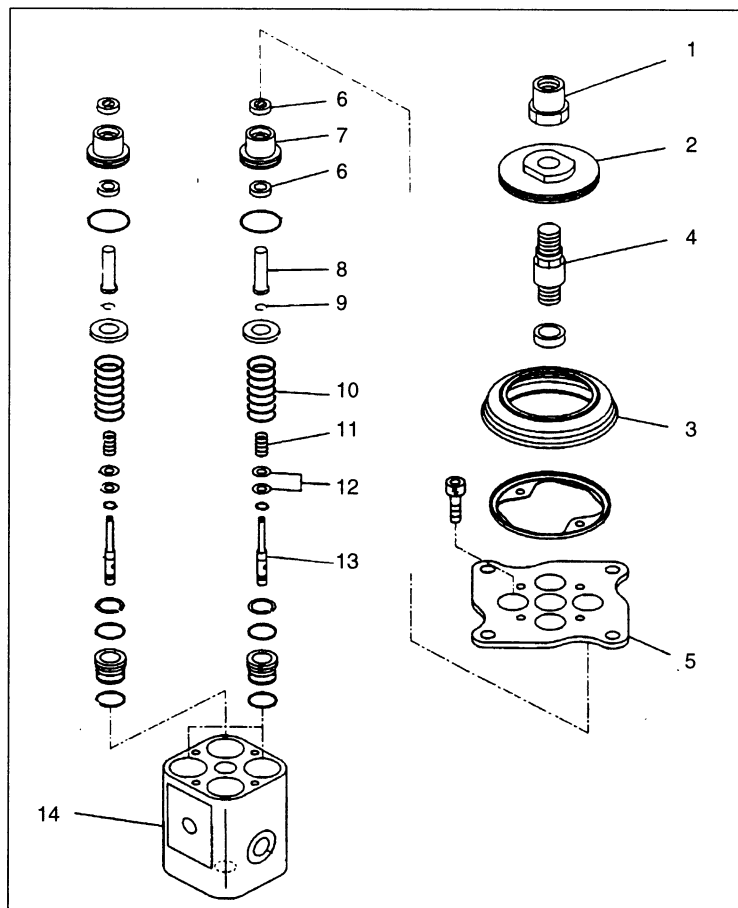
- **Arm Hi control valve spool**
- ★ Check the mounting position of the spring and spool assembly before installing.
- 1) Assemble spool (31) to position shown in diagram on right, install retainer (35), springs (34a) and (34b), and retainer (33), then install plug (32).
- 2) Hold spool (31) at position **a** shown in diagram on right with a wrench (width across flats: 24mm), and tighten plug (32).

 Plug:
17.16 ± 2.45 Nm (1.75 ± 0.25 kgm)



DISASSEMBLY OF WORK EQUIPMENT PPC VALVE ASSEMBLY

1. Remove nut (1), then remove disc (2) and boot (3).
2. Remove bolts, 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 pusher (8), and remove retainers (9), springs (10) and (11), and shim (12).
 - ★ Spring (10) consists of two springs each of two types with different installed loads, so check the mounting position (hydraulic port) and mark with tags to prevent mistakes when installing.
5. Pull out valve (13) from body (14).



INSTALLATION OF BOOM CYLINDER ASSEMBLY

- Carry out installation in the reverse order to removal.

※ 1

- ★ When tightening the locknut, tighten so that the clearance between the plate and nut is 0.5 – 1.5 mm.

※ 2

- Inside surface of bushing when assembling pin: **Anti-friction compound (LM-P)**
- Greasing after assembling pin: **Grease (LM-G)**

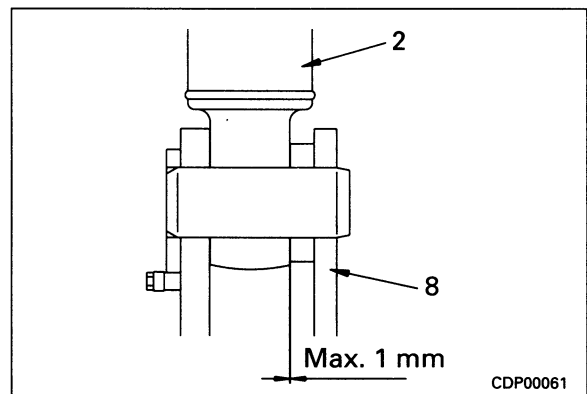
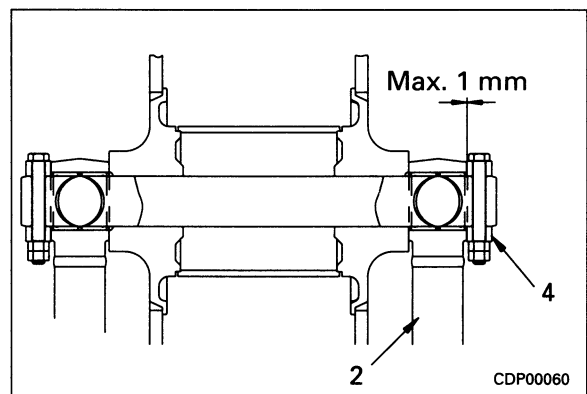
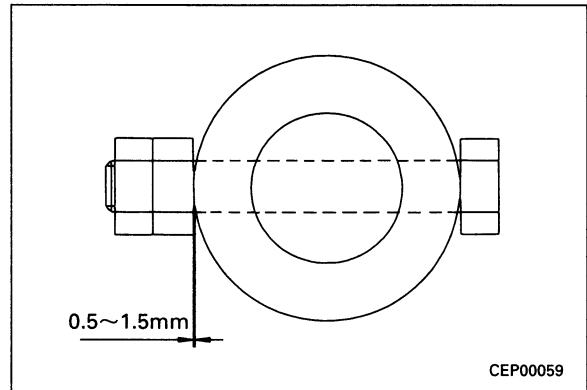
- ⚠ When aligning the position of the pin hole, never insert your fingers in the pin hole.
- ★ Adjust the shim thickness so that the clearance between the end face of the rod of cylinder (2) and plate (4) is less than 1.0 mm.
 - Standard shim thickness: 1.0 mm, 1.5 mm

※ 3

- Inside surface of bushing when assembling pin: **Anti-friction compound (LM-P)**
- Greasing after assembling pin: **Grease (LM-G)**

- ⚠ When aligning the position of the pin hole, never insert your fingers in the pin hole.
- ★ Adjust the shim thickness so that the clearance between the end face of the bottom of cylinder (2) and bracket (8) is less than 1.0 mm.
 - Standard shim thickness: 1.0 mm, 1.5 mm

- **Bleeding air**
 - ★ Bleed the air. For details, see TESTING AND ADJUSTING, Bleeding air.
- **Refilling with oil (hydraulic tank)**
 - ★ Add oil through the oil filler to the specified level. Run the engine to circulate the oil through the system. Then check the oil level again.



INSTALLATION OF WORK EQUIPMENT ASSEMBLY

- Carry out installation in the reverse order to removal.

※ 1

- ★ When tightening the locknut, tighten so that the clearance between the plate and nut is 0.5 – 1.5 mm.

※ 2

- Inside surface of bushing when assembling pin: **Anti-friction compound (LM-P)**
- Grease after assembling pin:

Grease (LM-G)

- ⚠ When aligning the position of the pin hole, never insert your fingers in the pin hole.
- ★ Adjust the shim thickness so that the clearance between the end face of the rod of cylinder (2) and plate (4) is less than 1.0 mm.
 - Standard shim thickness: 1.0 mm, 1.5 mm

※ 3

- Inside surface of bushing when assembling pin: **Anti-friction compound (LM-P)**
- Grease after assembling pin:

Grease (LM-G)

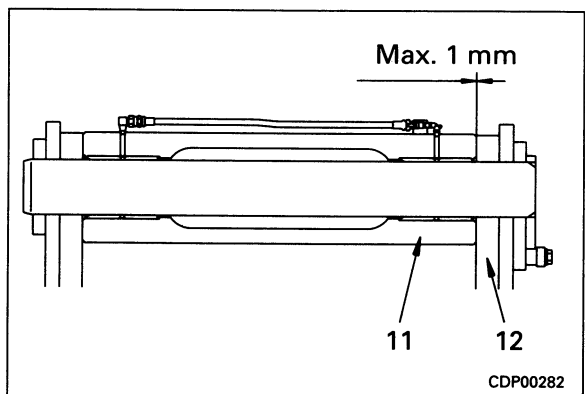
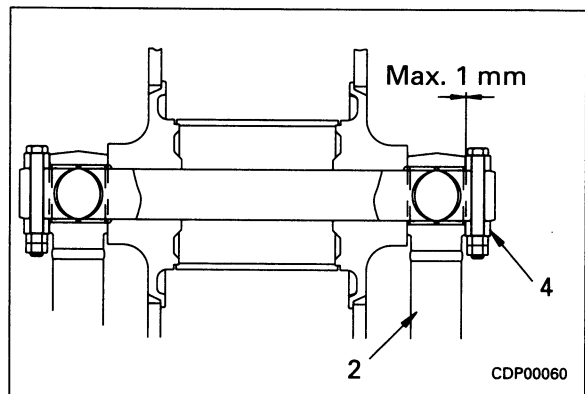
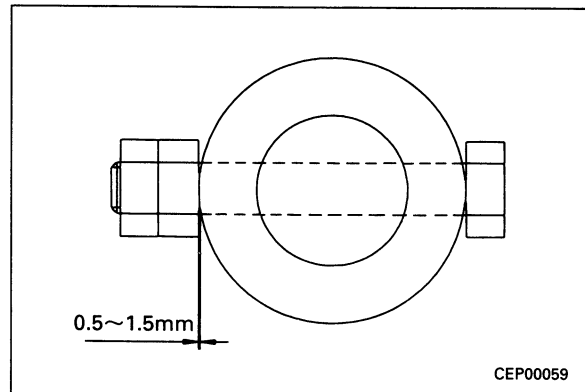
- ⚠ When aligning the position of the pin hole, never insert your fingers in the pin hole.
- ★ Adjust the shim thickness so that the clearance between the end face of the foot of boom (11) and bracket (12) is less than 1.0 mm.
 - Standard shim thickness: 0.8 mm, 1.5 mm

• Bleeding air

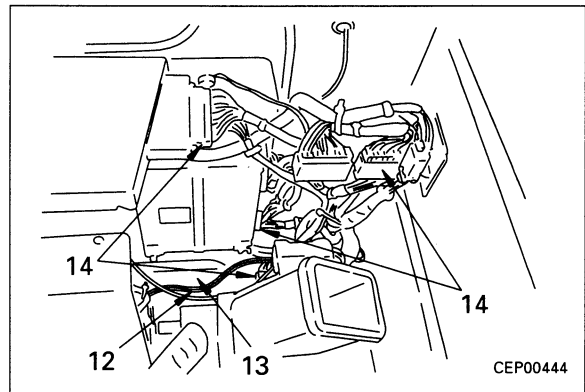
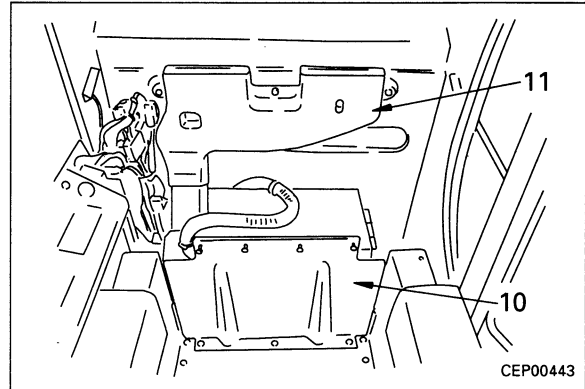
- ★ Bleed the air.
For details, see TESTING AND ADJUSTING, Bleeding air.

• Refilling with oil (hydraulic tank)


- ★ Add oil through the oil filler to the specified level.
Run the engine to circulate the oil through the system. Then check the oil level again.



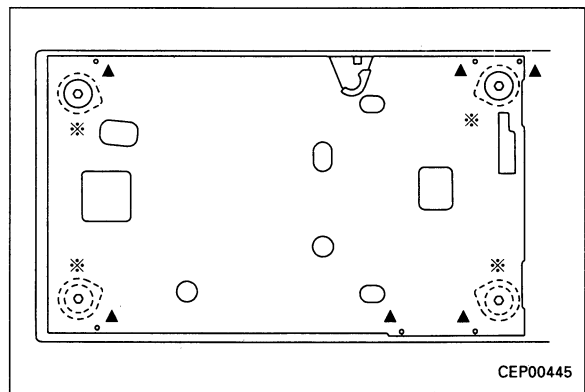
- 8. Remove cover (10) and duct (11).
- 9. Disconnect air conditioner cable (12).
- 10. Disconnect duct (13) at front.
- 11. Disconnect 11 connectors (14).
 - ★ Panel: CN-X07 (MIC21)
 - ★ Controller: CN-C01 (MIC13)
 - : CN-C02 (MIC21)
 - : CN-C03 (MIC20)
 - : CN-C16 (MIC17)
 - ★ Wiring harness intermediate
 - : CN-H12 (S16) White
 - : CN-H13 (S16) Blue
 - : CN-H14 (M6)
 - : CN-H15 (L2)
 - ★ Speaker: CM-M13 (KES-2)
 - ★ Air conditioner: No connector No.



- 12. Remove 4 mounting nuts and 6 mounting bolts, then lift off operator's cab assembly (15). ※ 1


 Operator's cab assembly: **300 kg**

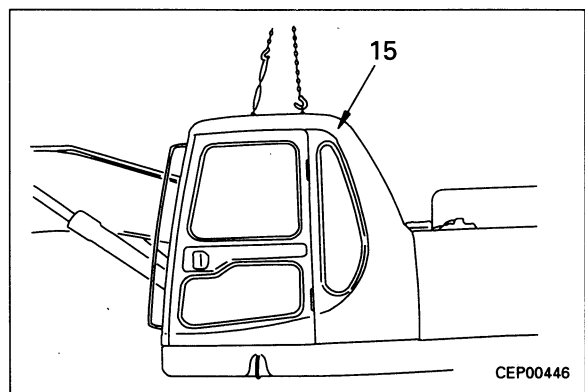
- ※: Nut ▲: Bolt
- ★ Check the length of the bolts.



INSTALLATION OF OPERATOR'S CAB ASSEMBLY

- Carry out installation in the reverse order to removal.

※ 1  Mounting nut:
277.04 ± 31.87 Nm (28.25 ± 3.25 kgm)



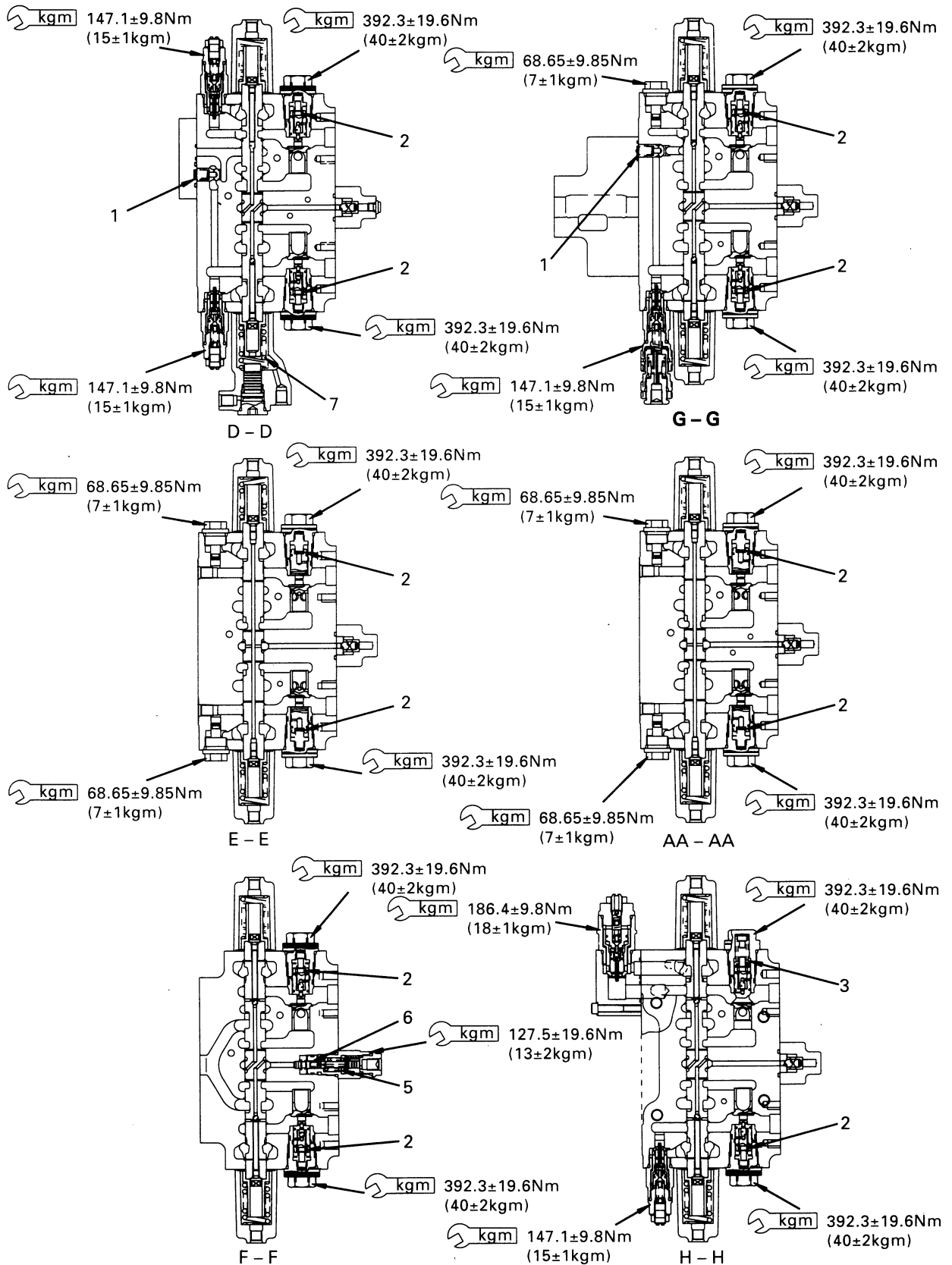
Unit: mm

No.	Check item	Criteria		Remedy
		Standard clearance	Clearance limit	
1	Backlash between swing motor shaft and No. 1 sun gear	0.19 – 0.29	—	Replace
2	Backlash between No. 1 sun gear and No. 1 planet gear	0.17 – 0.52	0.90	
3	Backlash between No. 1 planet gear and ring gear	0.20 – 0.61	0.90	
4	Backlash between No. 2 planet carrier and coupling	0.047 – 0.122	—	
5	Backlash between No. 1 planet carrier and No. 2 sun gear	0.37 – 0.65	1.10	
6	Backlash between No. 2 sun gear and No. 2 planet gear	0.17 – 0.52	1.00	
7	Backlash between No. 2 planet gear and ring gear	0.20 – 0.61	1.10	
8	Backlash between coupling and swing pinion	0.07 – 0.24	—	
9	Backlash between swing pinion and swing circle	0 – 1.21	2.00	
10	Clearance between plate and coupling	0.06 – 0.82	—	
11	Wear of swing pinion oil seal contact surface	Standard size	Repair limit	Repair hard chrome plating or replace
		140 ⁰ _{-0.100}	—	

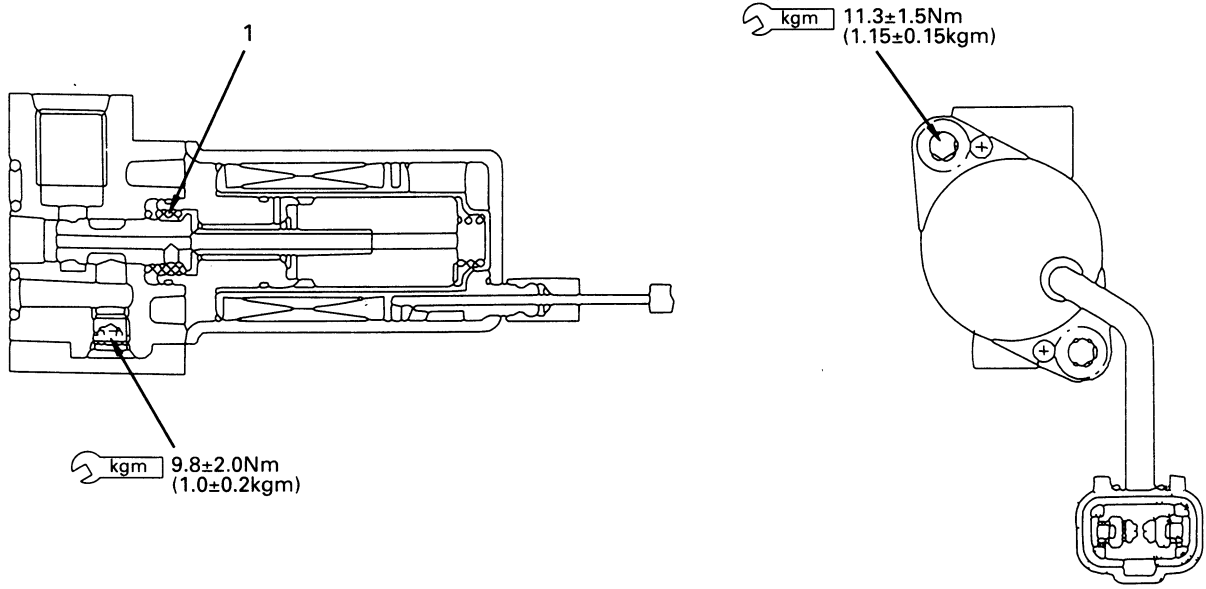
Unit: mm

No.	Check item	Criteria				Remedy	
		Standard size		Repair limit			
1	Outside diameter of protruding portion	630		—		Rebuild or replace	
2	Outside diameter of tread	590		578			
3	Width of protrusion	101		—			
4	Overall width	190		—			
5	Width of tread	44.5		50.5		Replace bushing	
6	Clearance between shaft and bushing	Standard size	Tolerance		Standard clearance		Clearance limit
			Shaft	Hole			
		80	-0.225 -0.325	+0.130 -0.010	0.215 – 0.455	1.5	
7	Clearance between shaft and support	80	-0.225 -0.290	-0.085 -0.195	0.03 – 0.205	—	Replace
8	Interference between idler and bushing	Standard size	Tolerance		Standard interference	Interference limit	
			Shaft	Hole			
		87.6	+0.087 +0.037	-0.042 -0.079	0.064 – 0.166	—	Replace bushing
9	Side clearance of idler (both sides)	Standard clearance		Clearance limit			
		0.68 – 1.22		2			

(4/6)



EPC SOLENOID VALVE FOR LS VALVE



SBP00438

Unit: mm

No.	Check item	Criteria				Remedy	
		Standard size		Repair limit			
		Free length x OD	Installed length	Installed load	Free length	Installed load	
1	Return spring	9.0 x 11.4	7.9	3.14 N (0.32 kg)	—	—	Replace EPC valve assembly if there is damage or deformation

SHOP

MANUAL

KOMATSU

PC340, PC340LC-6k PC340NLC-6k

MACHINE MODEL

SERIAL NUMBER

PC340-6k

K30001 and up

PC340LC -6k

K30001 and up

PC340NLC-6k

K30001 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 require. Materials and specifications are subject to change without notice.
- PC340-6K mount the SA6D114E-1 engine.
For details of the engine, see the Engine Shop Manual.

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