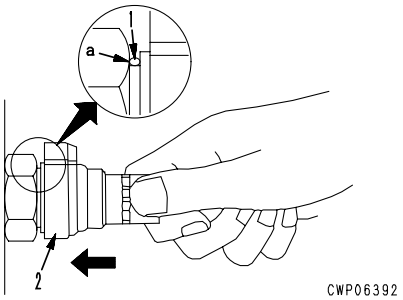
SHOP MANUAL

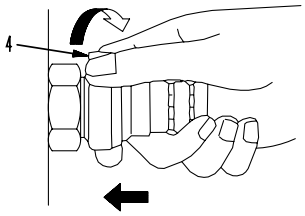
KOMATSU PC75UU-2

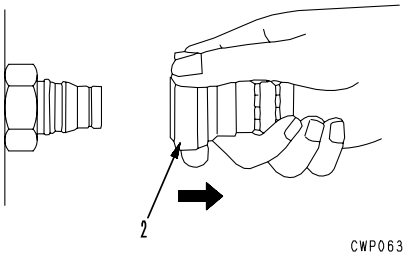
MACHINE MODEL	SERIAL No.
PC75UU-2	**5001 and up**

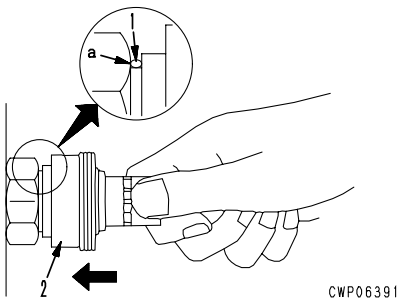
- This shop manual may contain attachments and optional equipment that are not available in your area. Please consult your local Komatsu distributor for those items you may require.
  Materials and specifications are subject to change without notice.
- PC75UU-2 mount the 4D95L-1 engine.
  For details of the engine, see the 95 Series Engine Shop Manual.

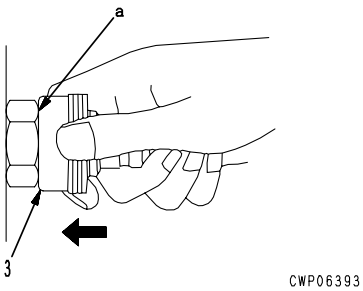
Printed in Japan 09-00(02)

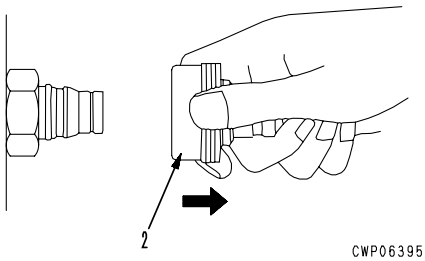
<table>
<tr><th></th><th>Type 2</th><th>Type 3</th></tr>
<tr><td>Disassembly</td><td>1) Hold the mouthpiece of the tightening portion and push body (2) in straight until sliding prevention ring (1) contacts contact surface a of the hexagonal portion at the male end.
 

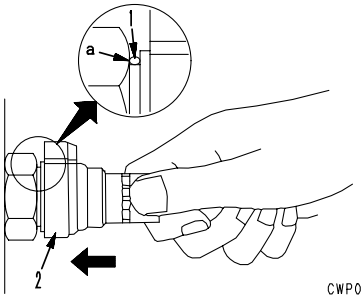
CWP06392
2) Hold in the condition in Step 1), and turn lever (4) to the right (clockwise).
 

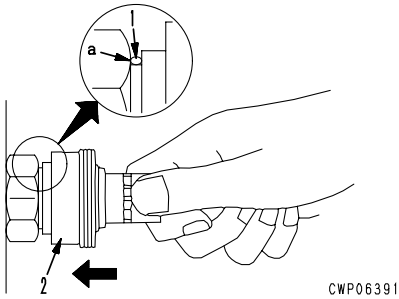
CWP06394
3) Hold in the condition in Steps 1) and 2), and pull out whole body (2) to disconnect it.
 

CWP06396</td><td>1) Hold the mouthpiece of the tightening portion and push body (2) in straight until sliding prevention ring (1) contacts contact surface a of the hexagonal portion at the male end.
 

CWP06391
2) Hold in the condition in Step 1), and push until cover (3) contacts contact surface a of the hexagonal portion at the male end.
 

CWP06393
3) Hold in the condition in Steps 1) and 2), and pull out whole body (2) to disconnect it.
 

CWP06395</td></tr>
<tr><td>Connection</td><td>• Hold the mouthpiece of the tightening portion and push body (2) in straight until sliding prevention ring (1) contacts contact surface a of the hexagonal portion at the male end to connect it.
 

CWP06392</td><td>• Hold the mouthpiece of the tightening portion and push body (2) in straight until sliding prevention ring (1) contacts contact surface a of the hexagonal portion at the male end to connect it.
 

CWP06391</td></tr>
</table>

kgm to ft. lb

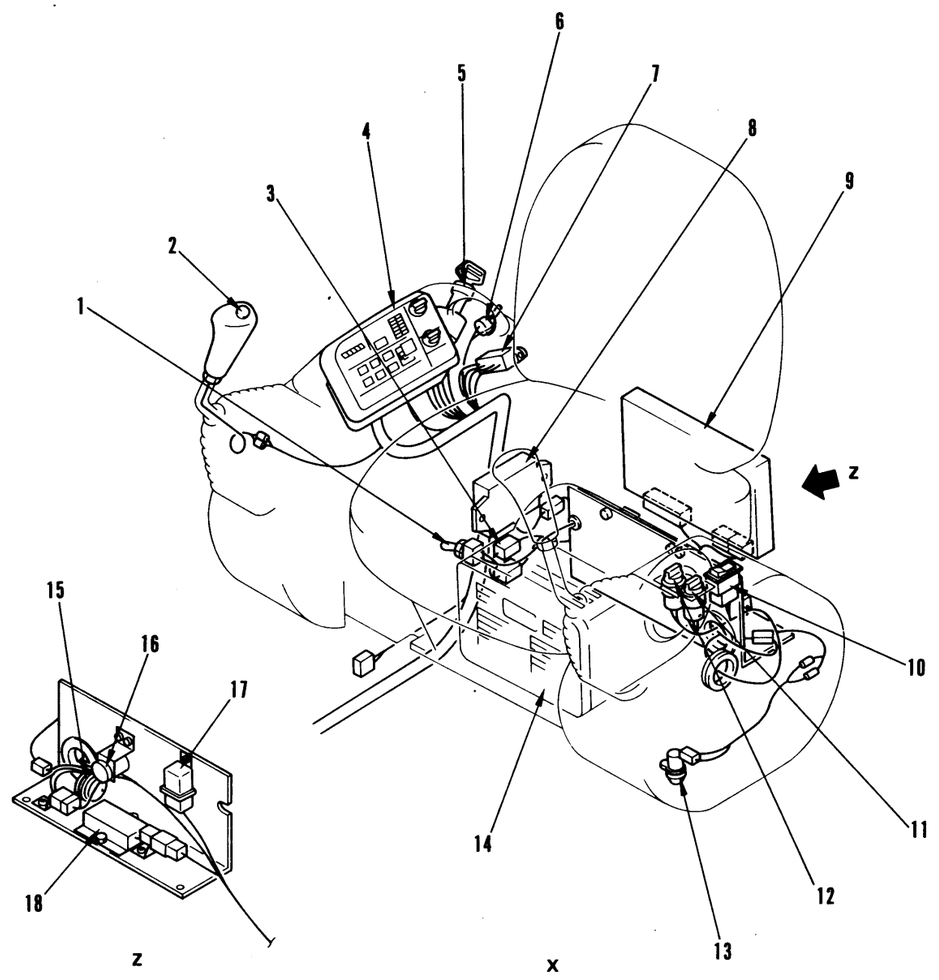
1 kgm = 7.233 ft. lb

	0	1	2	3	4	5	6	7	8	9
0	0	7.2	14.5	21.7	28.9	36.2	43.4	50.6	57.9	65.1
10	72.3	79.6	86.8	94.0	101.3	108.5	115.7	123.0	130.2	137.4
20	144.7	151.9	159.1	166.4	173.6	180.8	188.1	195.3	202.5	209.8
30	217.0	224.2	231.5	238.7	245.9	253.2	260.4	267.6	274.9	282.1
40	289.3	296.6	303.8	311.0	318.3	325.5	332.7	340.0	347.2	354.4
50	361.7	368.9	376.1	383.4	390.6	397.8	405.1	412.3	419.5	426.8
60	434.0	441.2	448.5	455.7	462.9	470.2	477.4	484.6	491.8	499.1
70	506.3	513.5	520.8	528.0	535.2	542.5	549.7	556.9	564.2	571.4
80	578.6	585.9	593.1	600.3	607.6	614.8	622.0	629.3	636.5	643.7
90	651.0	658.2	665.4	672.7	679.9	687.1	694.4	701.6	708.8	716.1
100	723.3	730.5	737.8	745.0	752.2	759.5	766.7	773.9	781.2	788.4
110	795.6	802.9	810.1	817.3	824.6	831.8	839.0	846.3	853.5	860.7
120	868.0	875.2	882.4	889.7	896.9	904.1	911.4	918.6	925.8	933.1
130	940.3	947.5	954.8	962.0	969.2	976.5	983.7	990.9	998.2	1005.4
140	1012.6	1019.9	1027.1	1034.3	1041.5	1048.8	1056.0	1063.2	1070.5	1077.7
150	1084.9	1092.2	1099.4	1106.6	1113.9	1121.1	1128.3	1135.6	1142.8	1150.0
160	1157.3	1164.5	1171.7	1179.0	1186.2	1193.4	1200.7	1207.9	1215.1	1222.4
170	1129.6	1236.8	1244.1	1251.3	1258.5	1265.8	1273.0	1280.1	1287.5	1294.7
180	1301.9	1309.2	1316.4	1323.6	1330.9	1338.1	1345.3	1352.6	1359.8	1367.0
190	1374.3	1381.5	1388.7	1396.0	1403.2	1410.4	1417.7	1424.9	1432.1	1439.4

Machine model				PC75UU-2	
Serial Number				5001 – 10370	
Specifications				Cab specification	Canopy specification
Engine	Model			4D95L-1	4D95L-1
	Type			4-cycle, water-cooled, vertical, direct injection	4-cycle, water-cooled, vertical, direct injection
	No. of cylinders – bore x stroke		mm	4 – 95 × 115	4 – 95 × 115
	Piston displacement		ℓ {cc}	3.260{3,260}	3.260{3,260}
	Firing order			1 – 2 – 4 – 3	1 – 2 – 4 – 3
	Flywheel horsepower		kW {HP}/rpm	40 {54.2}/1,900	40 {54.2}/1,900
	Max. torque		Nm {kgm} /rpm	225{23}/1,500	225{23}/1,500
	Max. speed at no load		rpm	2,100	2,100
	Min. speed at no load		rpm	900	900
	Min. fuel consumption		g/kWh {g/HPh}	218 {162}	218 {162}
	Starting motor			24V, 2.8kW	24V, 2.8kW
	Alternator			24V, 15A	24V, 15A
	Battery			12V, 65Ah × 2	12V, 65Ah × 2
	Radiator core type			CD-3	CD-3
Under-carriage	Carrier roller			1 on each side	
	Track roller			5 on each side	
	Track shoe			Road liner (39 each side)	
Hydraulic system	Hydraulic pump	Type x no.		Tandem piston type + Gear type x 1	
		Discharge	ℓ/min	78 x 2 + 44, 11	
		Set pressure for work equipment, swing, travel	MPa {kg/cm²}	24.5 {250} (Bucket dump: 22.5 {230})	
		• Offset, blade	MPa {kg/cm²}	20.5 {210}	
		• Control	MPa {kg/cm²}	2.9 {30}	
	Control valve	Type x no.		4-spool x 1, 3-spool x 2	
		Control method		Hydraulically assisted + travel and blade	
	Hydraulic motor	Travel motor		Piston type (with reduction gear, counter-balance valve, parking brake) × 2	
		Swing motor		Piston type (with brake valve, parking brake) × 1	
	Hydraulic cylinder			Double-acting piston	
	Hydraulic tank			Box-shaped, open	
	Hydraulic filter			Tank return side	
	Hydraulic cooler			Air cooled	

★ Figures in ( ) steel shoe specification

ELECTRIC WIRING DIAGRAM



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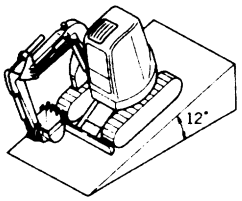
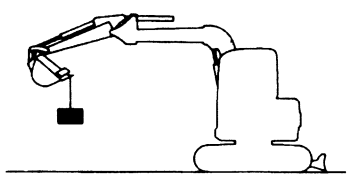
1. Cancel switch
2. Horn switch
3. Attachment selection connector
4. Monitor panel
5. Starting switch
6. Swing brake cancel switch
7. Fuse box
8. Cancel resistance
9. 4-system controller
10. Wiper switch (cab specification)
11. Heater switch (cab specification)
12. Lamp switch
13. PPC lock switch
14. Heater (cab specification)
15. Alarm buzzer
16. Glow signal (resistor)
17. Stop motor relay
18. Swing brake timer

Applicable model					PC75UU-2	
Category	Item		Measurement conditions	Unit	Standard value for new machine	Service limit value
Travel	Hydraulic drift of travel		Posture for measurement  20UF02278 • Engine stopped • Hydraulic oil temperature: 45—55°C • Stop machine on 12° slope with sprocket facing straight up the slope. • Measure the distance the machine moves in 5 minutes.	mm	0	0
	Leakage of travel motor		• Engine at full throttle • Hydraulic oil temperature: 45—55°C • Lock shoes and relieve travel circuit.	ℓ/min	Max. 0.52	Max. 0.8
Work equipment	Hydraulic drift of work equipment	Total work equipment (hydraulic drift at tip of bucket teeth)	Posture for measurement  20UF02279 • Place in above posture and measure extension or retraction of each cylinder and downward movement at tip of bucket teeth. • Horizontal, flat ground • Bucket: Rated load (450 kg) • Levers at neutral • Engine stopped • Hydraulic oil temperature: 45—55°C • Start measuring immediately after setting. • Measure hydraulic drift every 5 minutes and judge from results for 15 minutes.	mm	Max. 540	Max. 810
		Boom cylinder (amount of retraction of cylinder)			Max. 41	Max. 62
		Arm cylinder (amount of extension of cylinder)			Max. 32	Max. 48
		Bucket cylinder (amount of retraction of cylinder)			Max. 11	Max. 17
		Blade (downward movement at tip of blade)	• Engine stopped • Hydraulic oil temperature: 45—55°C • Raise blade to max. height, then measure downward movement at tip of blade for 15 minutes.		Max. 20	Max. 30
	Leakage from cylinder (each cylinder)		• Hydraulic oil temperature: 45—55°C • Apply relief pressure to cylinder to be measured	cc/min	Max. 1.5	Max. 7.5

021W02

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 parts.

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 the nozzle holder assembly from the cylinder to be measured.

4. Install adapter **D2** in the mount of the nozzle holder, then connect compression gauge **D1**.

5. Set multi-tachometer **A** in position.

6. Disconnect connector **M15** (1) of the engine stop motor, place the stop lever of the injection pump in the STOP 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 the nozzle holder assembly.
   Nozzle holder mounting nut:
   {44.1 ± 4.9 Nm (4.5 ± 0.5 kgm)}

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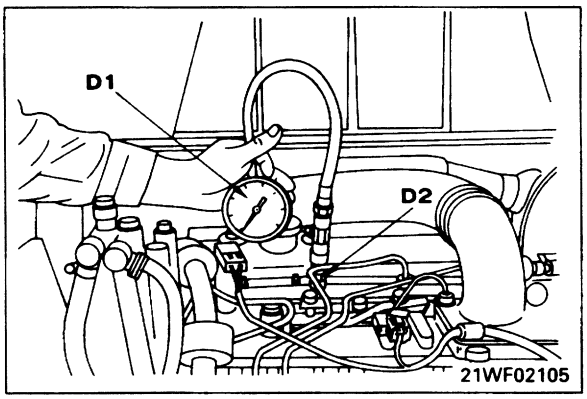
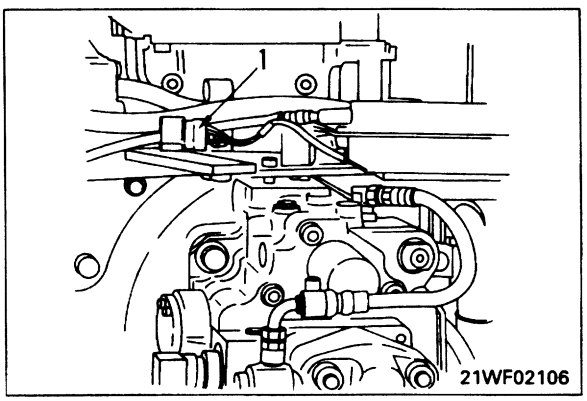
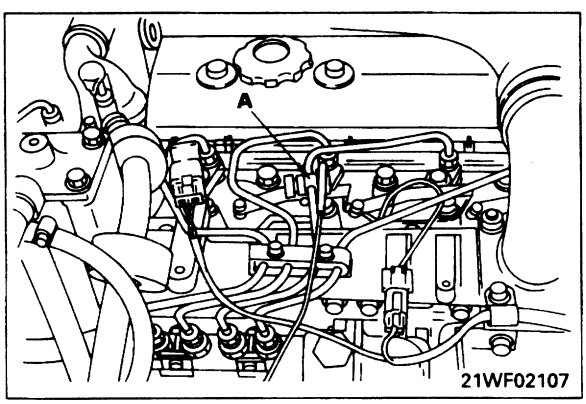


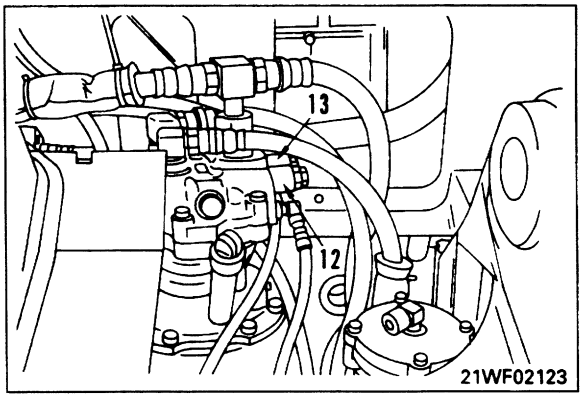


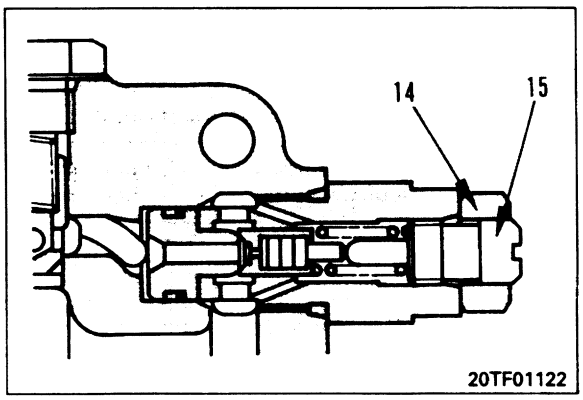


2. **Swing motor safety valve**
   - (12) : Left swing
   - (13) : Right swing
   - Loosen locknut (14) and turn adjustment screw (15) to adjust.
     - ★ Turn the adjustment screw as follows.
       - To INCREASE pressure, turn CLOCKWISE
       - To DECREASE pressure, turn COUNTERCLOCKWISE
     - ★ Amount of adjustment for one turn of holder: {17.5 MPa (179 kg/cm²)}

     Locknut : {34.3 ± 4.9 MPa (3.5 ± 0.5 kgm)}

     - ★ After adjusting, repeat the procedure in Step 1 to check again.
     - ★ Adjust the safety valve set pressure only for the swing motor. Do not try to adjust the safety valve set pressure for any other part.





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RELEASING REMAINING FROM HYDRAULIC CIRCUIT

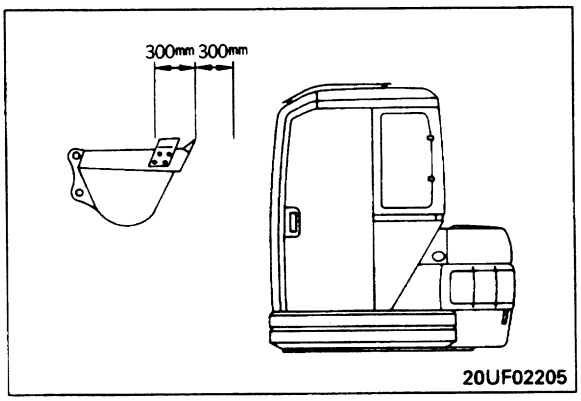
⚠ There is no accumulator installed, so the remaining pressure in the piping between the control valve and hydraulic cylinder or swing motor cannot be released by operating the control levers.
When the above piping is removed, be careful of the following points.

1. Run the engine at low idling, operate the hydraulic cylinders as far as possible so that the pressure is not relieved at the end of the stroke, then lower the work equipment to the ground, and stop the engine.
   ★ If the engine is stopped with the hydraulic circuit relieved and the hydraulic cylinder at the end of its stroke, do not carry out any work for 5 to 10 minutes.

2. When removing the piping, loosen the piping sleeve nut gradually to release the pressure remaining in the piping slowly, then remove the piping after the oil stops spurting out.

021W02

7. **If an abnormality display (error code) is given for items 5 or 6 (reset automatic stop output signal)**
   - ★ For details of the abnormality display, see Item 2, Table 1.
   - The adjustment range for the automatic stop position is 300 mm to the front and rear of the automatic stop position, so with the normal reset, there is no reset error, but if an abnormality display is given, carry out the resetting operation within a range that does not give any abnormality display.
     - ★ Adjustment range:
       Automatic stop position ± 300 mm
   - ★ If the above resetting operation causes any problem with normal operation, carry out the resetting operation again from 1. Reset potentiometer input signal.
   - ★ If an abnormality display appears during the resetting operation, turn the starting switch OFF with the abnormality display still displayed, then turn the starting switch ON again. This will delete the input signals that are in the memory.
     Therefore, if an abnormality display is given, the causes are all deleted and the system is completely reset.



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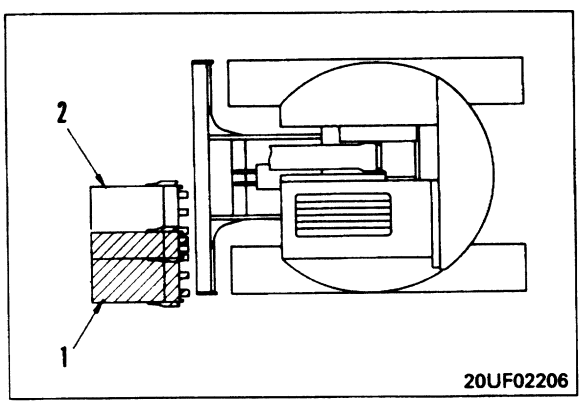
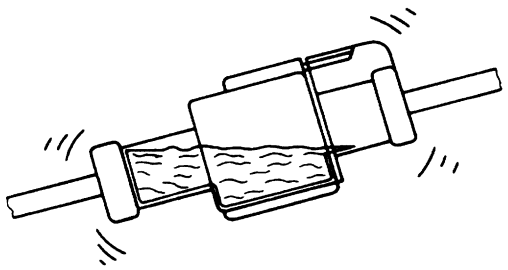
8. **Move position of bucket to left and right and check automatic stop position**
   - If the automatic stopping distance has been reset in Item 5 or Item 6, move the bucket to the maximum left offset and the center of the cab (canopy), carry out the automatic stop, and check that there is no extreme difference between the distance set previously and the actual distance from the tip of the bucket teeth to the cab (canopy).
   1) Set the bucket to maximum left offset position (1), and carry out the automatic stop.
   2) Set the bucket in line with cab (canopy) center (2), and carry out the automatic stop.
   - ★ When measuring the stopping distance, set the bucket in a horizontal position.



(4) High pressure water entering connector
The connector is designed to make it difficult for water to enter (drip-proof structure), but if high-pressure water is sprayed directly on the connector, water may enter the connector depending on the direction of the water jet.
The connector is designed to prevent water from entering, but at the same time, if the water does enter, it is difficult for it to be drained. Therefore, if water should get into the connector, the pins will be short-circuited by the water, so if any water gets in, immediately dry the connector or take other appropriate action before passing electricity through it.



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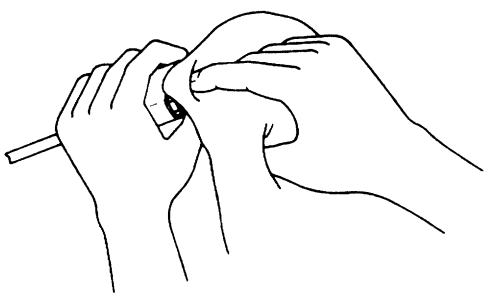
(5) Oil or dirt stuck to connector
If oil or grease are stuck to the connector and an oil film is formed on the mating surface between the male and female pins, the oil will not let the electricity pass, so there will be defective contact.
If there is oil or grease or dirt stuck to the connector, wipe it off with a dry cloth or blow dry with air, and spray it with a contact restorer.
★ When wiping the mating portion of the connector, be careful not to use excessive force or deform the pins.
★ If there is water or oil in the air, it will increase the contamination of the points, so clean with air from which all the water and oil has been removed.



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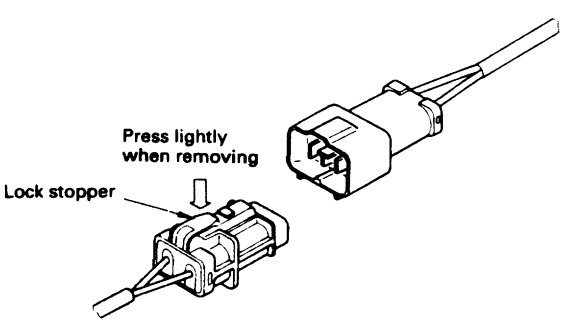
2) Removing, installing, and drying connectors and wiring harnesses

Disconnecting connectors

(1) Hold the connectors when disconnecting.
When disconnecting the connectors, hold the connectors and not the wires.
For connectors held by a screw, loosen the screw fully, then hold the male and female connectors in each hand and pull apart.
For connectors which have a lock stopper, press down the stopper with your thumb and pull the connectors apart.



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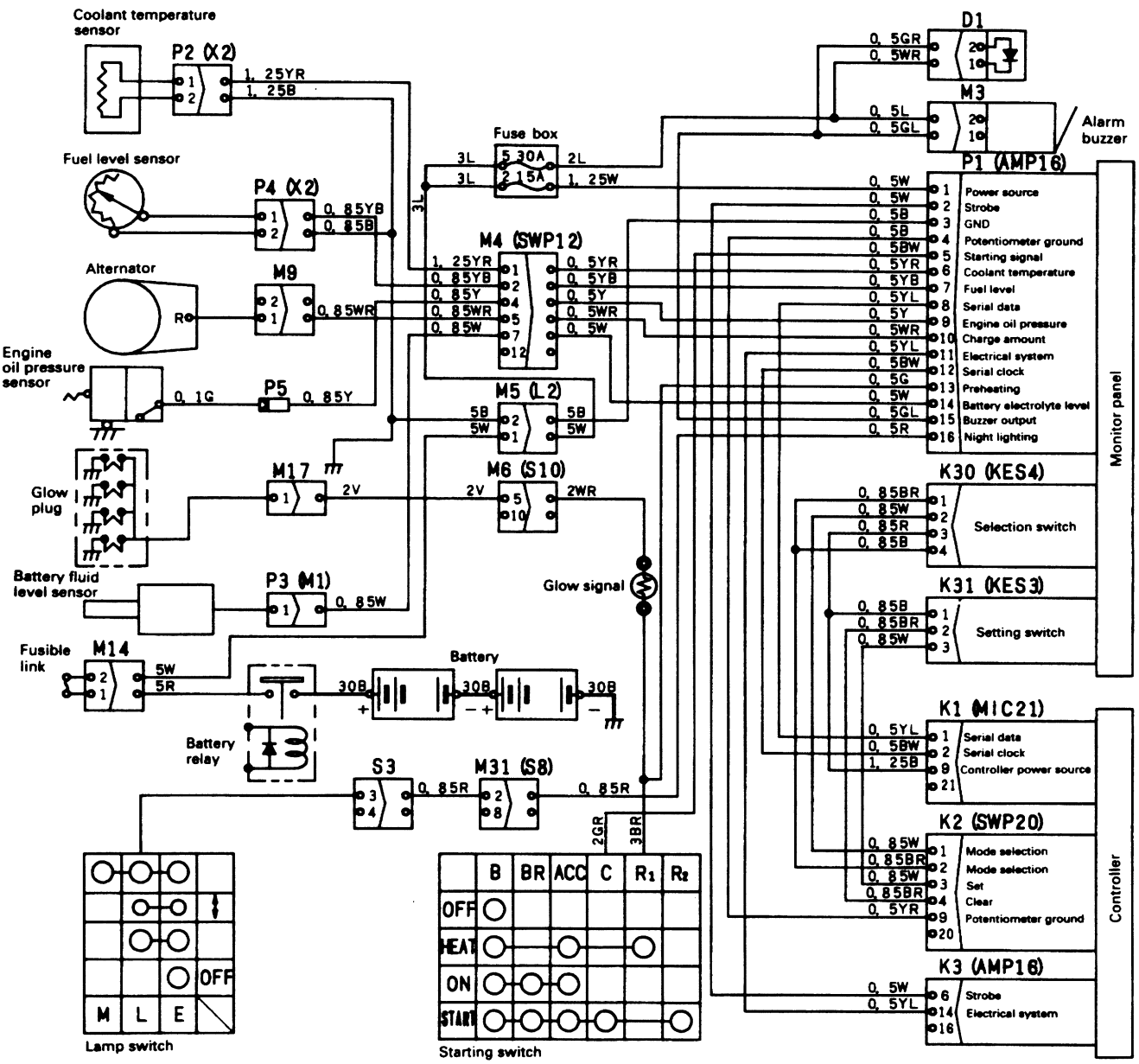
MACHINE MONITOR SYSTEM



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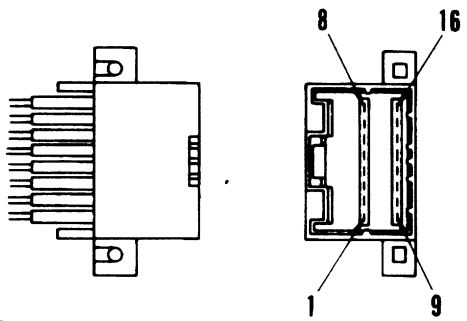
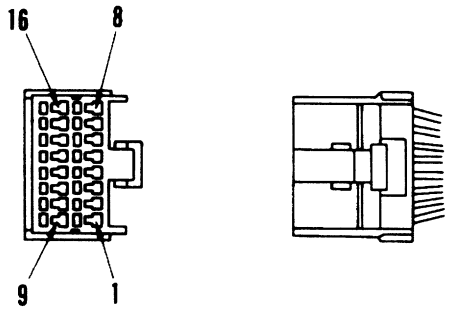
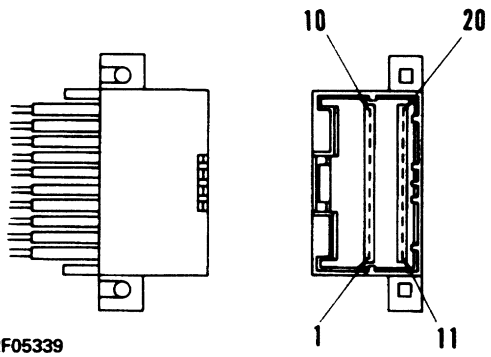
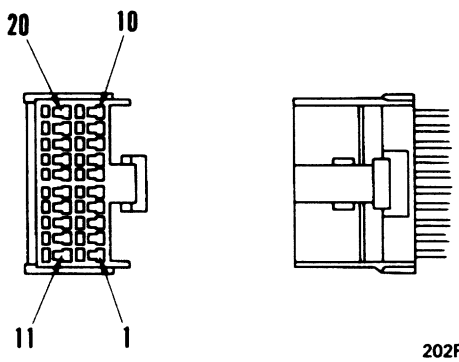
No. of pins	AMP040 type connector	
	Male (female housing)	Female (male housing)
16	 202F05337	 202F05338
20	 202F05339	 202F05340

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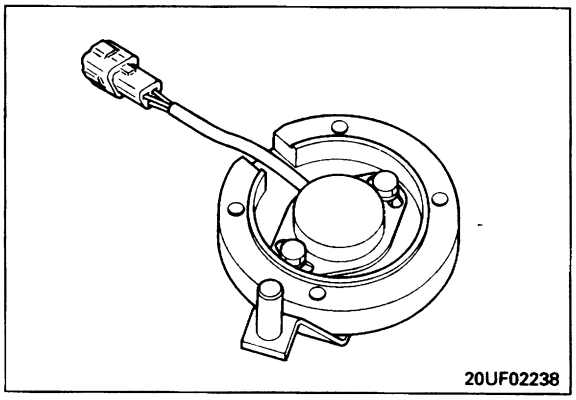
Name of group	Error code	Abnormal system	Single/ multiple	Re-enact
Reset	11	Defective resetting of boom angle	Single	□
	12	Defective resetting of arm angle	Single	□
	13	Defective resetting of boom angle + arm angle	11+13	□
	14	Defective resetting of offset angle	Single	□
	15	Defective resetting of boom angle + offset angle	11+14	□
	16	Defective resetting of arm angle + offset angle	12+14	□
	17	Defective resetting of boom angle + arm angle + offset angle	11+12 +14	□
	18	Defective resetting of front stop position	Single	□
	19	Defective resetting of boom angle + front stop position	11+18	□
	1A	Defective resetting of arm angle + front stop position	12+18	□
	1B	Defective resetting of boom angle + arm angle + front stop position	11+12 +18	□
	1C	Defective resetting of offset angle + front stop position	14+18	□
	1D	Defective resetting of boom angle + offset angle + front stop position	11+14 +18	□
	1E	Defective resetting of arm angle + offset angle + front stop position	12+14 +18	□
	1F	Defective resetting of boom angle + arm angle + offset angle + front stop position	11+12 +14+ 18	□
Model, work equip-ment selection	21	Defective model selection	Single	■
	22	Defective work equipment selection	Single	■
	23	Defective model selection + work equipment selection	21+22	■
Potenti-ometer	31	Defective boom potentiome-ter system	Single	■
	32	Defective arm potentiometer system	Single	■
	33	Defective boom + arm potentiometer system	31+32	■
	34	Defective offset potentiome-ter system	Single	■
	35	Defective boom + offset potentiometer system	31+34	■
	36	Defective arm + offset potentiometer system	32+34	■
	37	Defective boom + arm + offset potentiometer system	31+32 +34	■

Name of group	Error code	Abnormal system	Single/ multiple	Re-enact
ON/ OFF solenoid	41	Defective PPC lock solenoid system	Single	■
	42	Defective left offset solenoid system	Single	■
	43	Defective PPC lock + left offset solenoid system	41+42	■
	44	Defective boom LOWER solenoid system	Single	■
	45	Defective PPC lock + boom LOWER solenoid system	41+45	■
	46	Defective left offset + boom LOWER solenoid system	42+44	■
	47	Defective PPC lock + left offset + boom LOWER solenoid system	41+42 +44	■
EPC solenoid	51	Defective boom RAISE solenoid system	Single	■
	52	Defective arm IN solenoid system	Single	■
	53	Defective boom RAISE + arm IN solenoid system	51+52	■
Valve open	61	Valve open (when emergency stop is actuated)	Single	△
Power source	OFF	Defective power source system	—	■

021W02

★ The thick lines indicate occurrence of a single abnormality.
★ "Slide arm" indicates the telescopic arm (option).

8. When the potentiometers are removed and installed again, the automatic stop position is out of place.
   ★ Reset the input/output signal and the condition will return to normal.
   For details, see TESTING AND ADJUSTING.

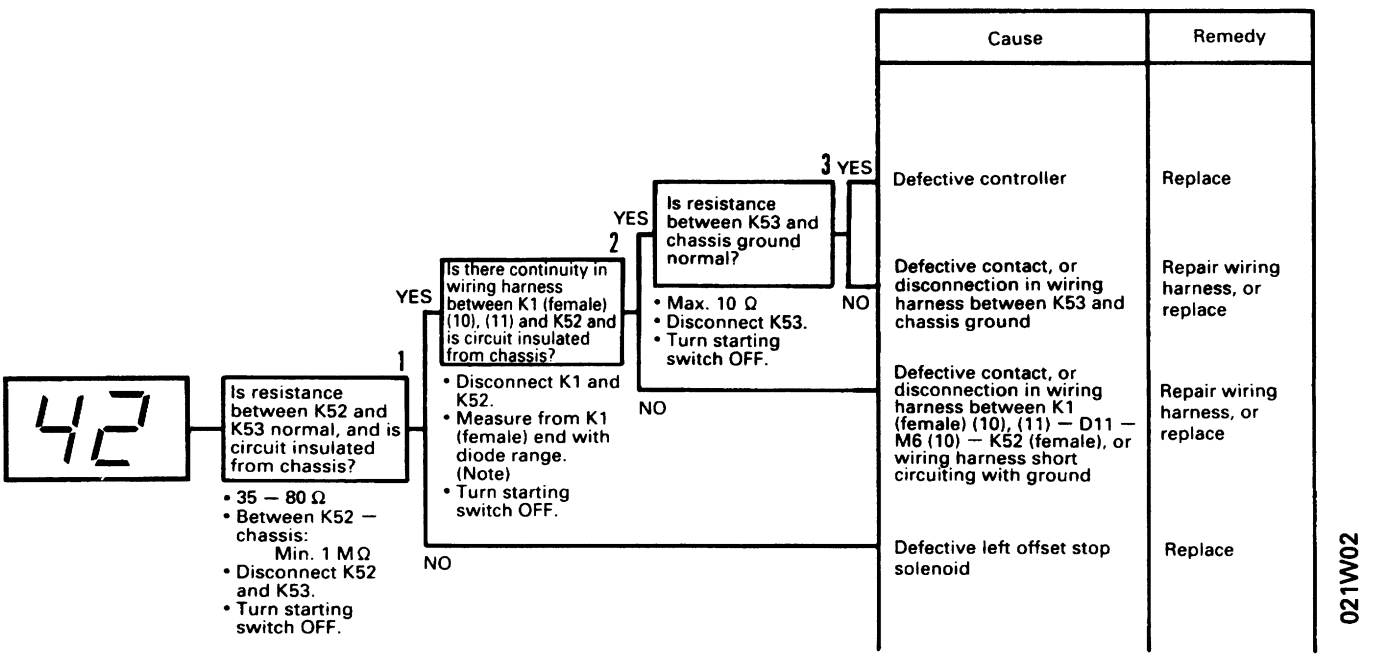


9. When the interference prevention function and automatic control function are actuated in cold areas, the automatic stop position is out of place.
   ★ Error code 61 may also be displayed, but when the oil temperature rises, the condition will return to normal.

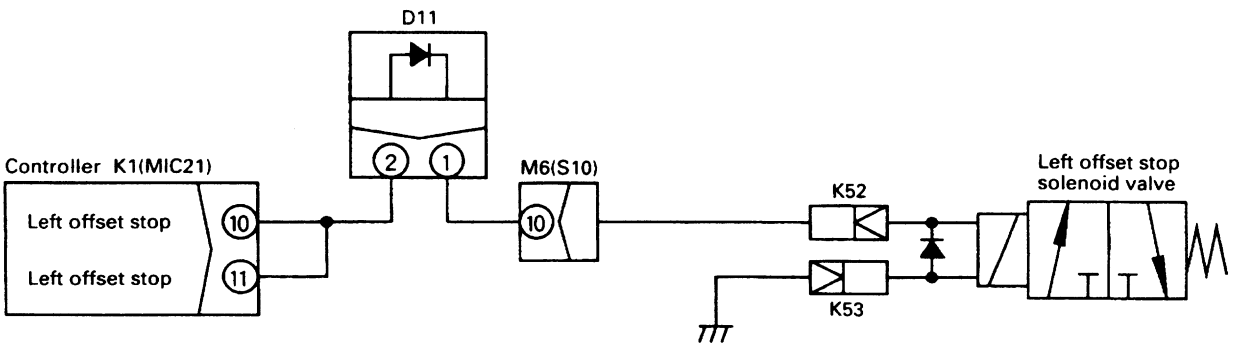
021W02

E-8 Error code [42] (Abnormality in left offset stop solenoid system)

★ Before carrying out troubleshooting, check that all the related connectors are properly inserted.
★ Always connect any disconnected connectors before going on the next step.
★ If the wiring harness between the controller and the solenoid is short circuiting with the ground, a display is given during operations. In the case of a disconnection, no display is given, but the work equipment stops.
If this happens, turn the starting switch OFF, then ON again, and the display is given.



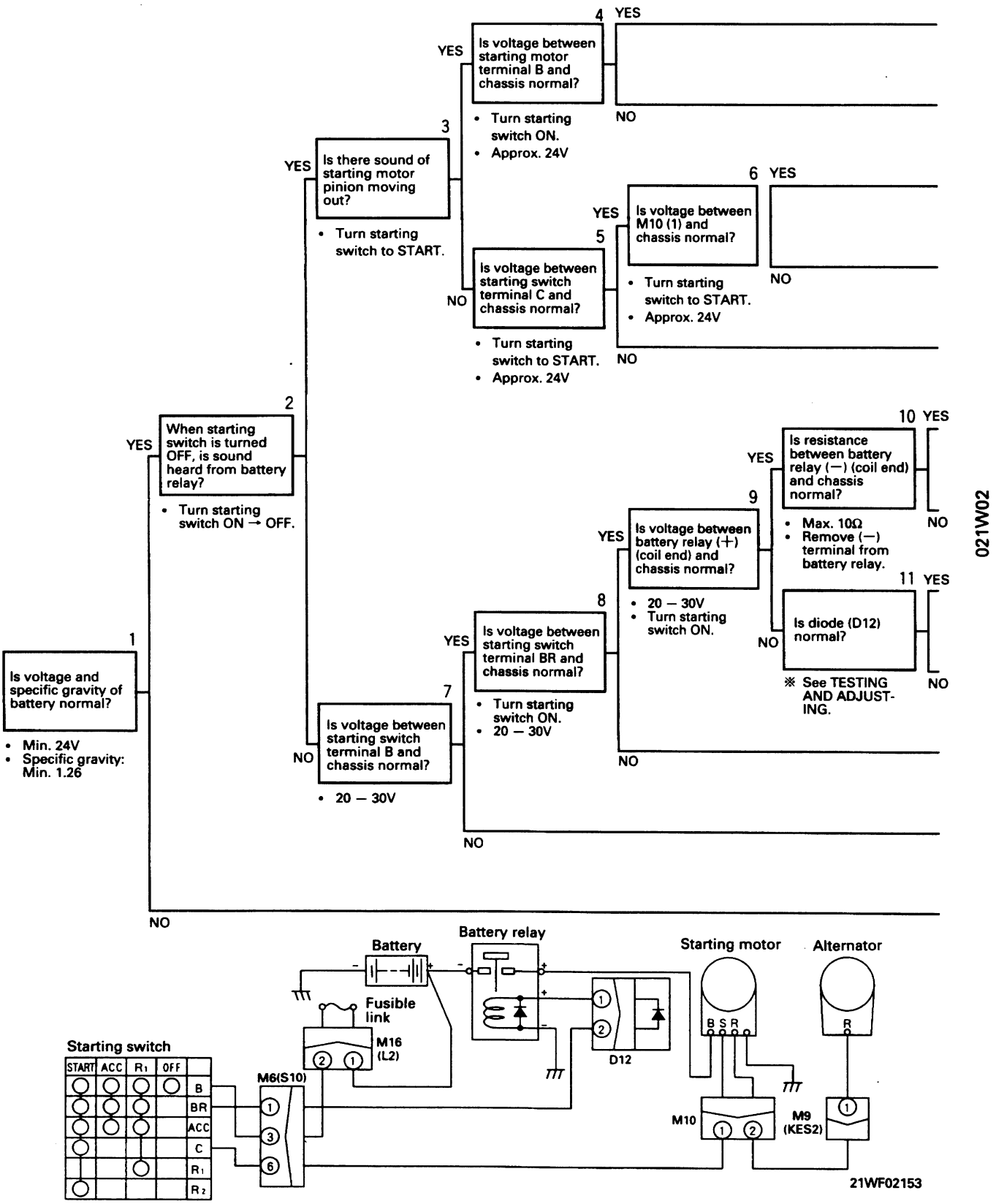
Note: If a normal tester is switched to the diode range, the voltage of the internal battery is displayed.
When checking a wiring harness containing a diode, the change in this voltage is judged as follows:
Change = Continuity
No change = No continuity



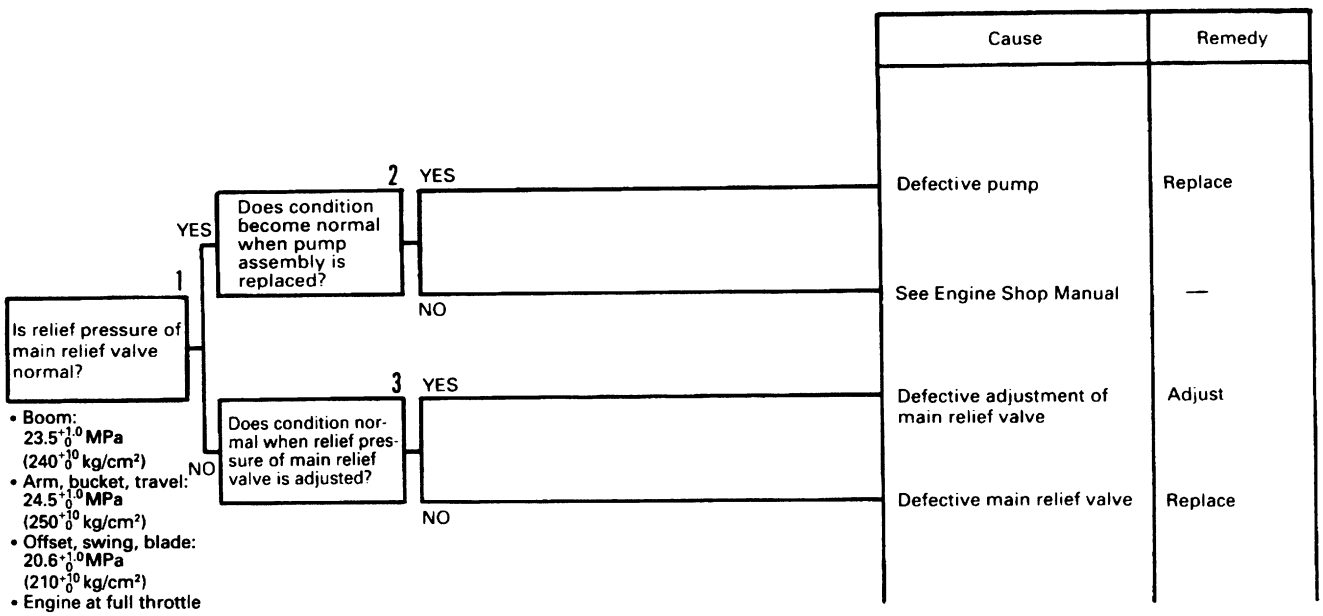
20UF02249

E-18 Engine does not start when starting switch is turned to START

★ When starting motor does not rotate.
★ Check that fuse 2 is not blown before starting 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.



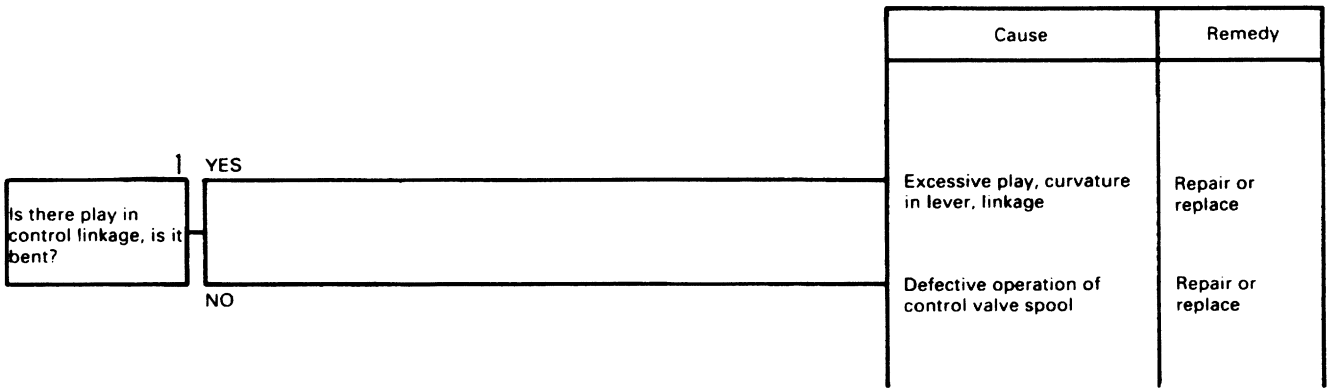
b) Speeds of all work equipment, swing, travel are all slow



021W02

H-12 Excessive deviation when starting

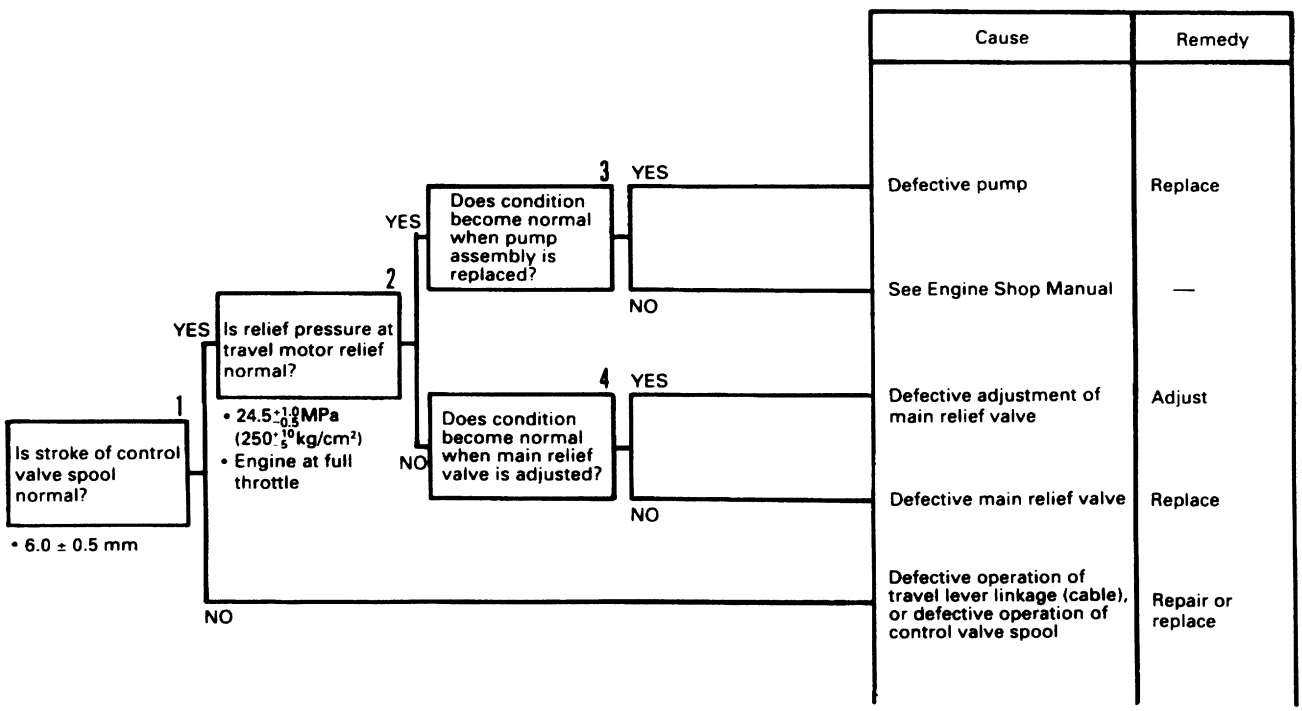
★ When the travel speed is normal
(If there is also deviation during normal travel, go first to "H-11 When machine is traveling, it deviates naturally to one side".)



H-13 Travel lacks power (or speed is slow)

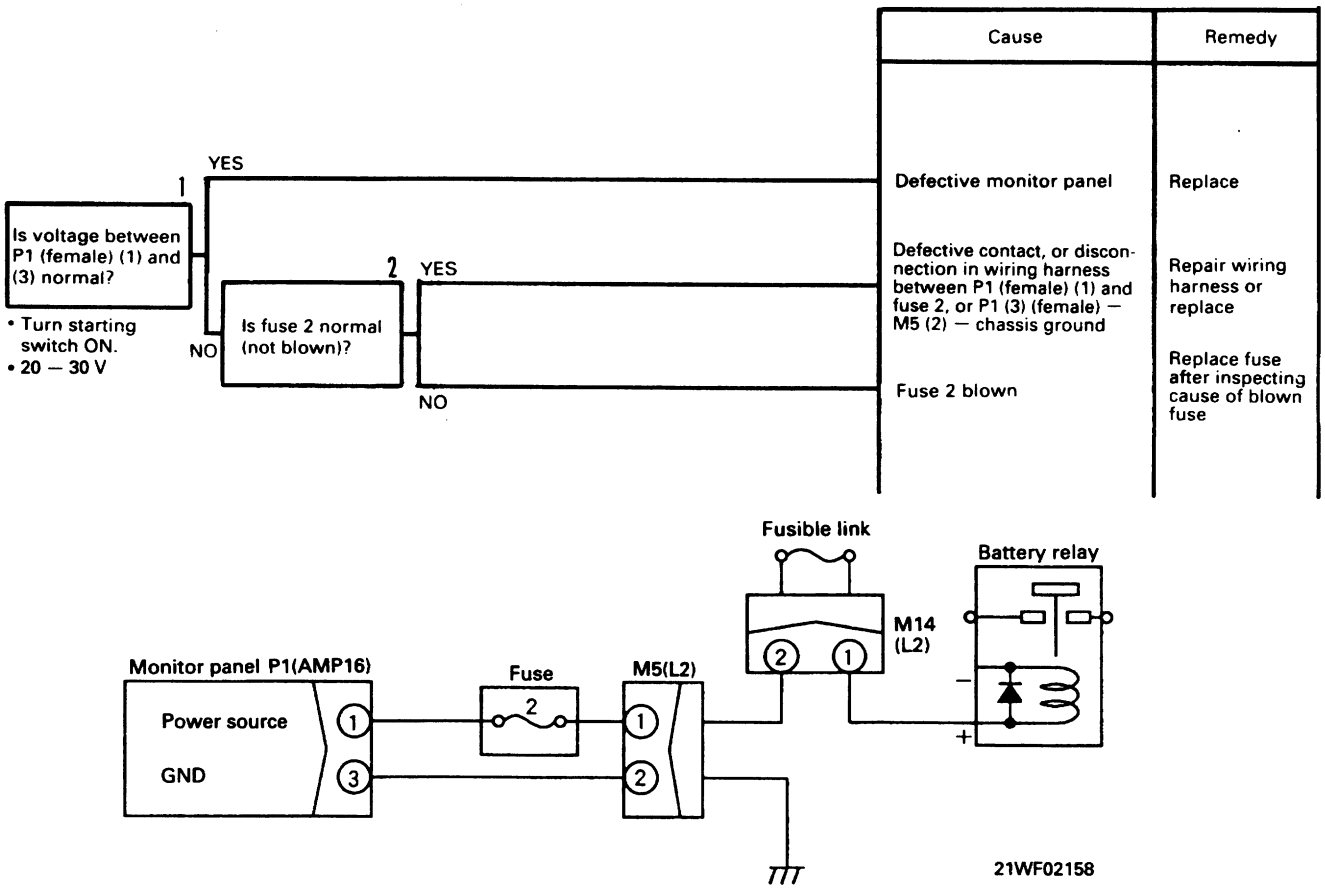
021W02

★ When there is no travel deviation.
(If there is deviation during normal travel, go first to "H-11 When machine is traveling, it deviates naturally to one side".)



M-1 When the starting switch is turned ON, no display is given (lamps do not light up for 3 seconds)

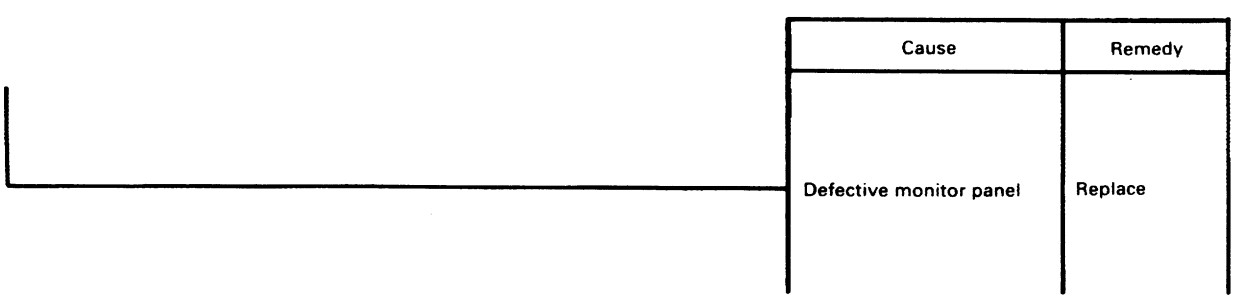
★ Before carrying out troubleshooting, check that all the related connectors are properly inserted.
★ Always connect any disconnected connectors before going on the next step.



021W02

M-2 When starting switch is turned ON, lamps light up for 3 seconds, but then do not go out

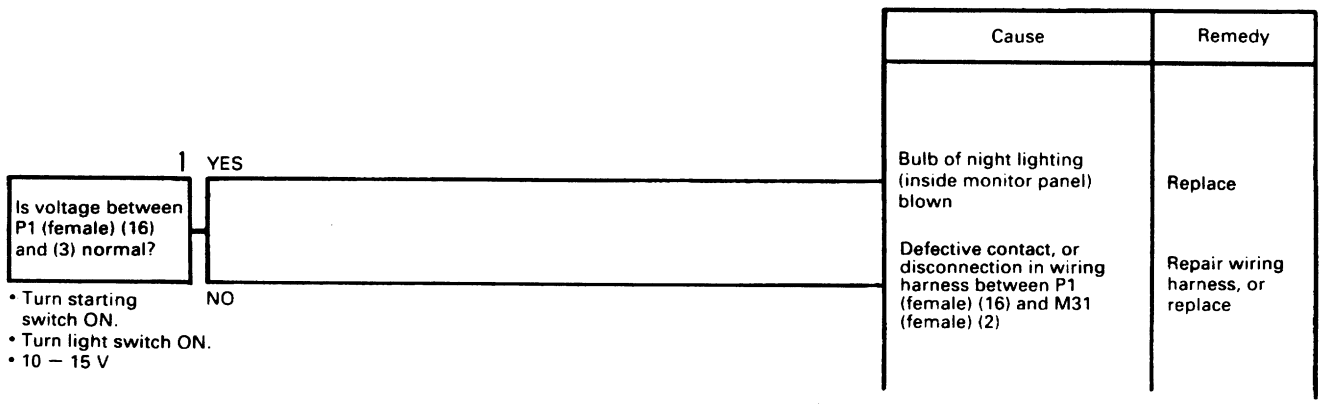
★ Before carrying out troubleshooting, check that all the related connectors are properly inserted.
★ Always connect any disconnected connectors before going on the next step.
★ Check fuse 2 before troubleshooting.



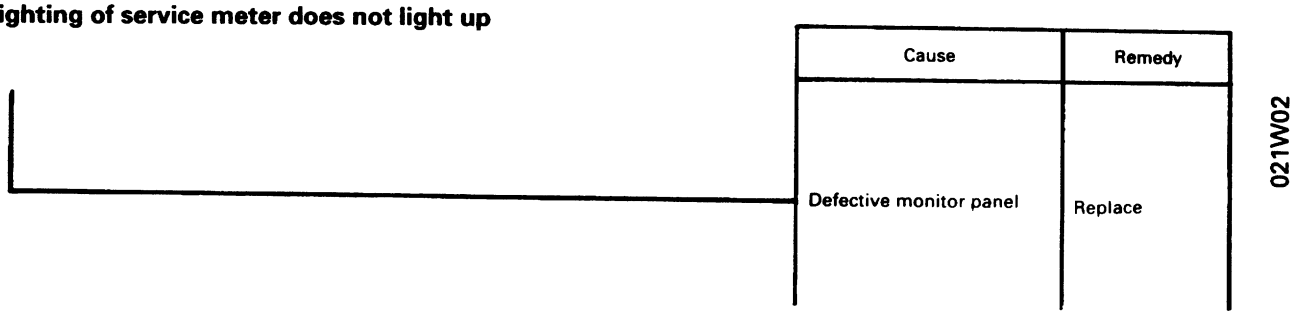
M-14 Night lighting does not light up

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

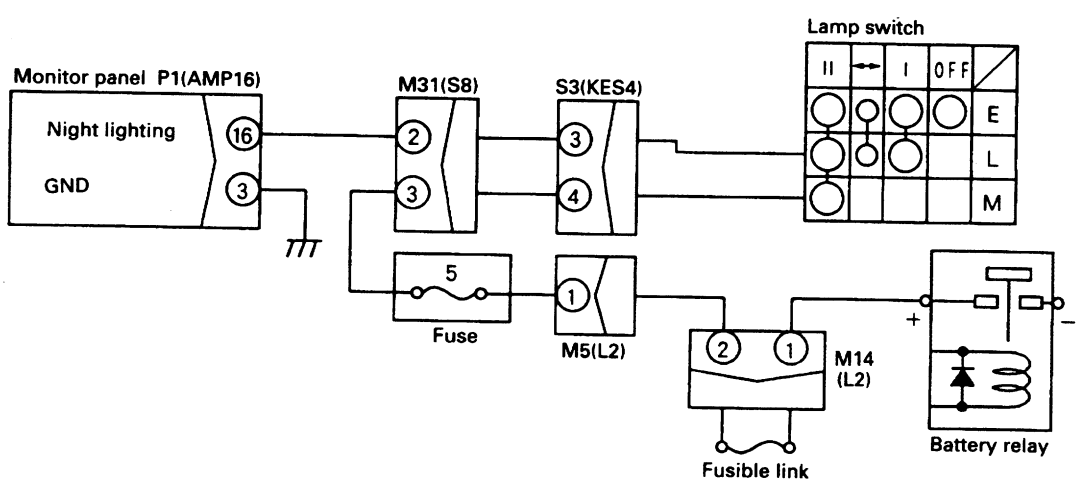
a) Lighting of coolant temperature gauge, fuel gauge, depth display does not light up



b) Lighting of service meter does not light up



021W02



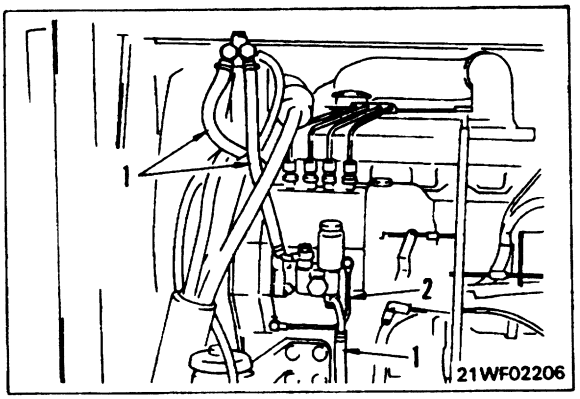
21WF02163

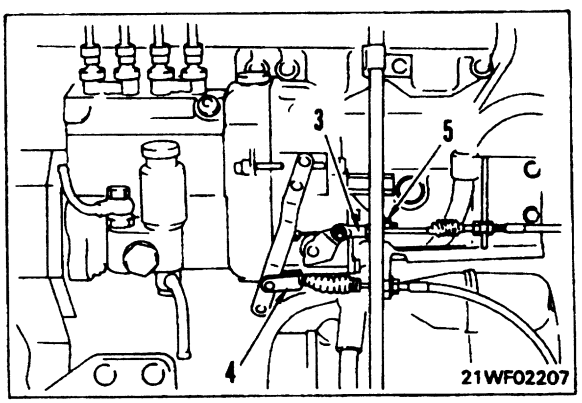
Contents of work	Symbol			Part No.	Part name	Q'ty	Sketch	Nature of work, remarks
Disassembly, assembly of swing motor	P	8	1	01435-00816	Bolt	1		Measurement of turning torque of drive shaft
			2	Commercially available	Torque wrench	1		
Disassembly, assembly of main pump	Q	1		—	Barrel puller	1	○	
		2		—	For assembly of hanger	1	○	

REMOVAL OF FUEL INJECTION PUMP

Serial No.: 5001 – 7927

1. Disconnect 3 fuel feed hoses (1).
2. Remove lubrication tube (2).
3. Disconnect engine stop motor cable (3). [※ 1]
   ★ Before disconnecting this cable, check dimension "**a**" shown in the figure at right.
4. Disconnect fuel control cable (4). [※ 2]
   ★ Before disconnecting this cable, check dimension "**b**" shown in the figure at right.
5. Disconnect bracket (5).
6. Disconnect 4 fuel injection tubes (6). [※ 3]
7. Remove fuel injection pump assembly (7). [※ 4]





INSTALLATION OF FUEL INJECTION PUMP ASSEMBLY

Serial No.: 5001 – 7927

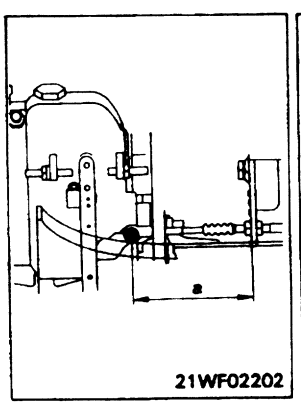
- Carry out installation in the reverse order to removal.

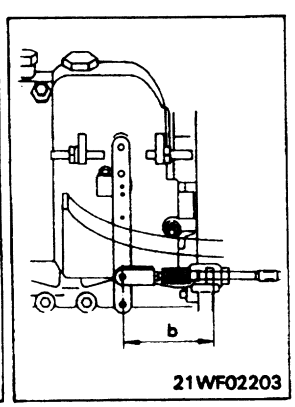
[※ 1]
★ Install to dimension "**a**" measured when removed.

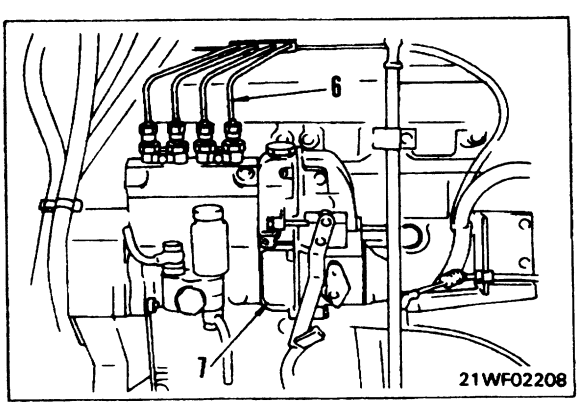
[※ 2]
★ Install to dimension "**b**" measured when removed.

[※ 3]
kgm Sleeve nut:
22.1 ± 2.5 Nm {2.25 ± 0.25 kgm}

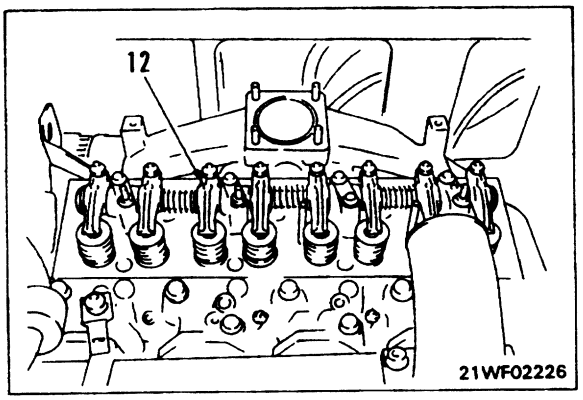
[※ 4]
★ Adjust fuel injection timing. For details, see TESTING AND ADJUSTING.



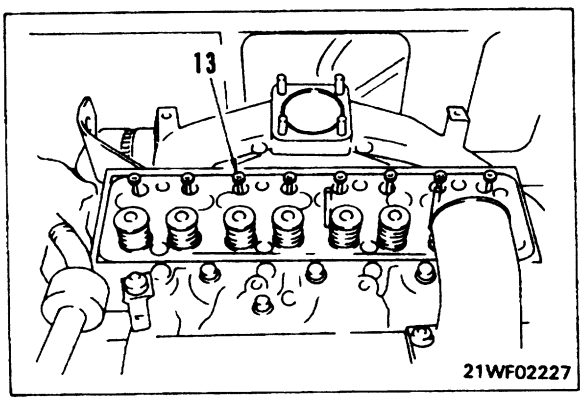




14. Remove rocker arm assembly (12). [※ 5]
    ★ Loosen the locknut, then loosen the adjustment screw 2 – 3 turns.

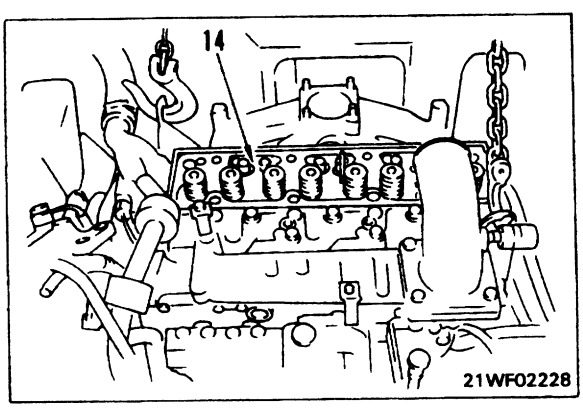


15. Remove 8 push rods (13).



16. Lift off cylinder head and air intake and exhaust manifolds assembly (14). [※ 6]

    kg Cylinder head and air intake and exhaust manifolds assembly: **30 kg**



INSTALLATION OF ENGINE AND MAIN PUMP ASSEMBLY

Serial No.: 5001 - 7927

- Carry out installation in the reverse order to removal.

※ 1
kgm Hose clamp:
5.9 ± 0.49 Nm {0.60 ± 0.05 kgm}

※ 2
★ Install to dimension "**a**" measured when removed.

※ 3
★ Install to dimension "**b**" measured when removed.

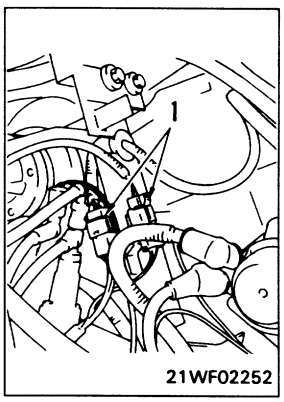
※ 4
kgm Engine mount cap mounting bolt:
277.0 ± 31.9 Nm {28.25 ± 3.25 kgm}

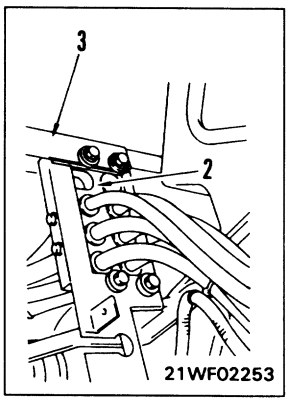
- **Refilling with water**
  Add water through the water filler to the specified level. Run the engine to circulate the water through the system. Then, check the water level again.

- **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.

- **Bleeding air**
  Bleed air from the main pump. For details, see TESTING AND ADJUSTING.

REMOVAL OF SWING MOTOR AND SWING MACHINERY ASSEMBLY

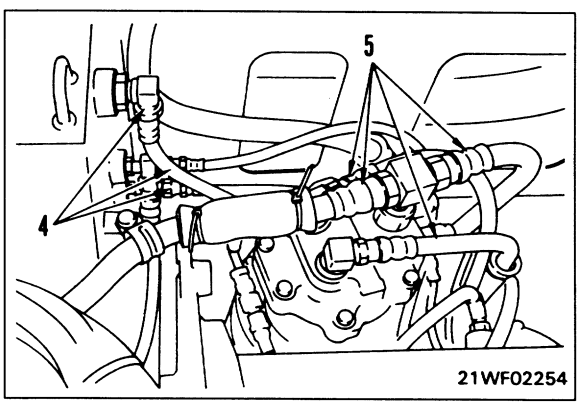




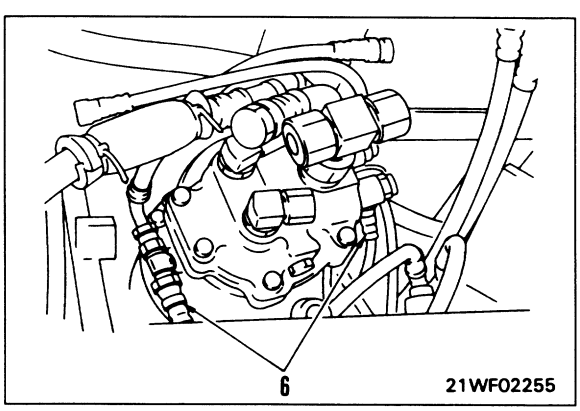
⚠ Lower the work equipment to the ground and stop the engine. Then, loosen the oil filler cap slowly to release the internal pressure of the hydraulic tank.

1. Remove swing machinery top cover.
2. Remove 2 control valve top covers.
3. Remove right side cover.
4. Disconnect connector (1) and harness from cover.
5. Remove hose clamp (2) and cover (3). ※ 1
6. Disconnect 3 hoses (4) from hydraulic tank.
7. Disconnect 4 upper hoses (5).
8. Disconnect 3 lower hoses (6).
   ★ Put tags to the disconnected hoses to prevent a mistake in re-connecting them.
9. Lift off swing motor and swing machinery assembly (7). ※ 2
   ★ Using forcing bolts, separate up the swing motor and swing machinery assembly from the revolving frame, then lift it off.

   kg Swing motor and swing machinery assembly: **75 kg**



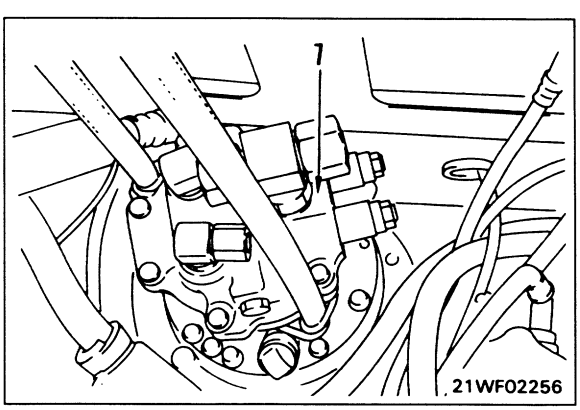
INSTALLATION OF SWING MOTOR AND SWING MACHINERY ASSEMBLY



- Carry out installation in the reverse order to removal.

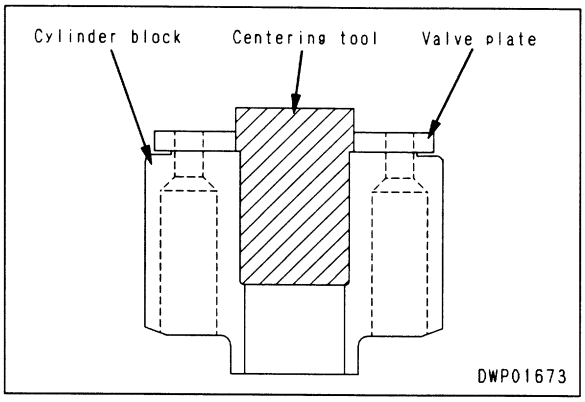
※ 1
   ★ When installing the clamp, fit the collar and O-ring securely.

※ 2
   kgm Swing motor and swing machinery mounting bolt:
   277.0 ± 31.9 Nm {28.25 ± 3.25 kgm}



- **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.

CONTACT CHECK OF CYLINDER BLOCK, VALVE PLATE, AND END COVER



1. Contact check of cylinder block and valve plate

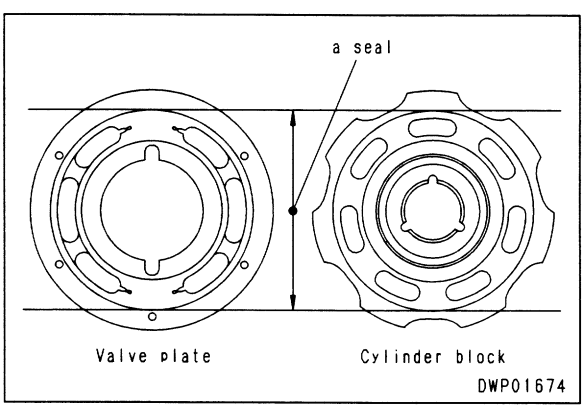
★ This check is not necessary when both of the cylinder block and valve plate are spares (new).

★ Perform this check when either of the cylinder block or valve plate is a spare or is repaired.

★ If the contact is improper, correct it by lapping the parts on a surface plate.

1) Make a centering tool for the cylinder block and valve plate.
   ★ This tool may be made of a soft material such as plastic, Bakelite, etc.
2) Degrease the parts to be checked.
   ★ Do not wipe the parts with a cloth.
3) Set the tool and apply check paint to the cylinder block.
   ★ Apply the paint thinly.
4) Press the valve plate with force of 39.2 – 49.0 N {4 – 5 kg} against the cylinder block and turn it by 90 degrees and then return it to its original position. Repeat this motion 2 – 3 times.
5) Remove the valve plate and transfer the contact surface onto a tape and check it.
   ★ The standard contact area is as follows.

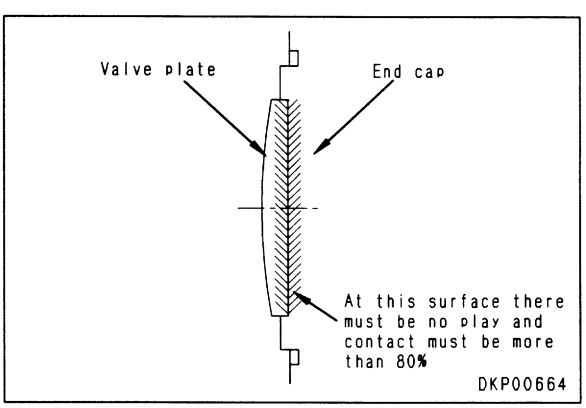
	Sealing part **a**
Valve plate	Min. 80%
Cylinder block	Min. 80%



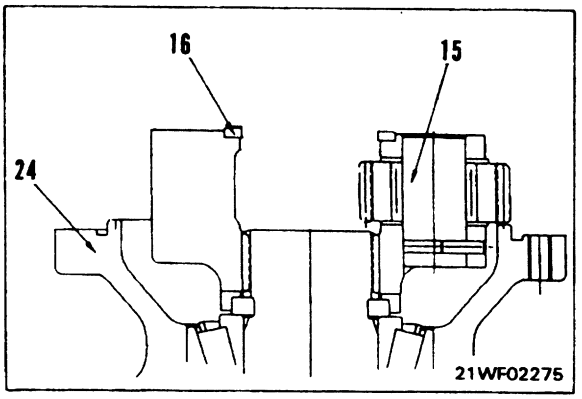
★ For the details of the work procedure, see the guide to parts judgment.

2. Valve plate and end cap

1) Remove all oil and grease from the parts to be checked.
   ★ Do not wipe with a cloth.
2) Paint the end cap with inspection paint, then put the valve plate on top.
   ★ Coat thinly with paint.
3) Push the valve plate with a force of 39.2 – 49.0 N {4 – 5 kg} against the end cap, turn the valve plate 90°, then turn it back to the original position. Repeat this process 2 or 3 times.
4) Remove the valve plate, transfer the contact surface to a tape, and check the contact surface.
   ★ The contact of the mating surface of the valve plate and end cap must cover at least 80% without any variation.
   ★ If the contact is defective, use a surface plate and correct by lapping.

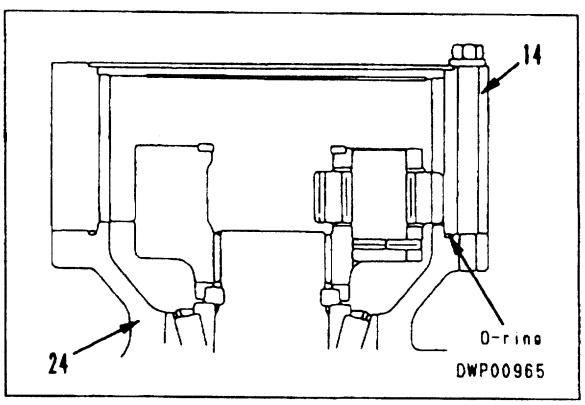


2) Install carrier No. 2 assembly (15) to shaft and case assembly (24), then install spacer (16).



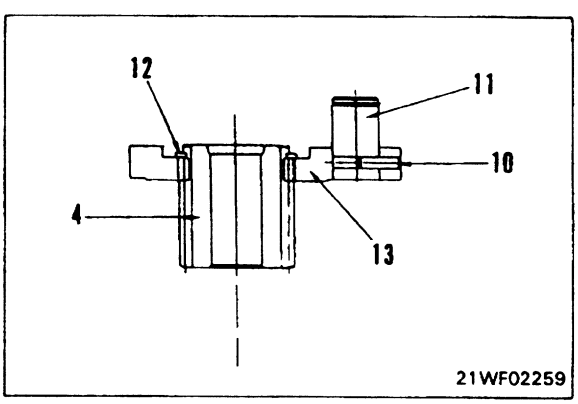
4. Ring gear

Install O-ring to shaft and case assembly (24), then install ring gear (14).

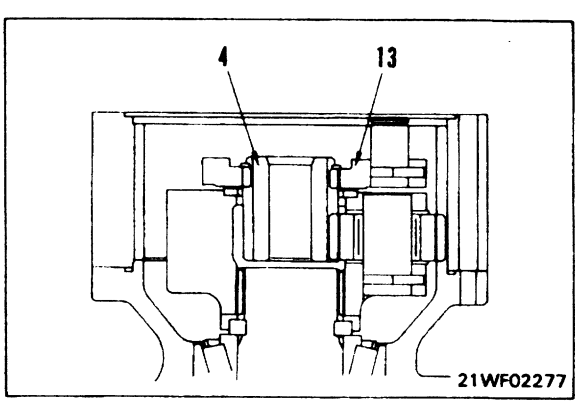


5. Carrier No. 1 and sun gear No. 2 assembly

1) Assemble carrier No. 1 and sun gear No. 2 assembly according to the following procedure.
   i) Install carrier No. 1 housing (13) to sun gear No. 2 (4), then install snap ring (12).
   ii) Insert mounting pin (10) in shaft (11).
   ★ Caulk around the pin.

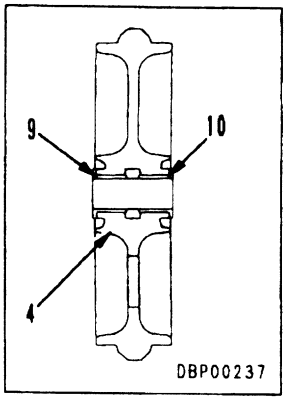


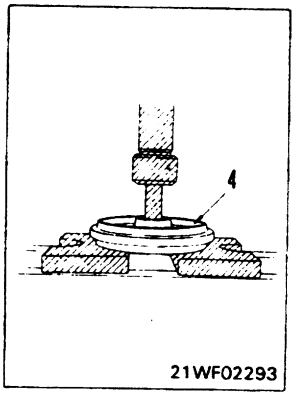
iii) Install assembly of sun gear No. 2 (4) and carrier housing (13) to carrier No. 2.



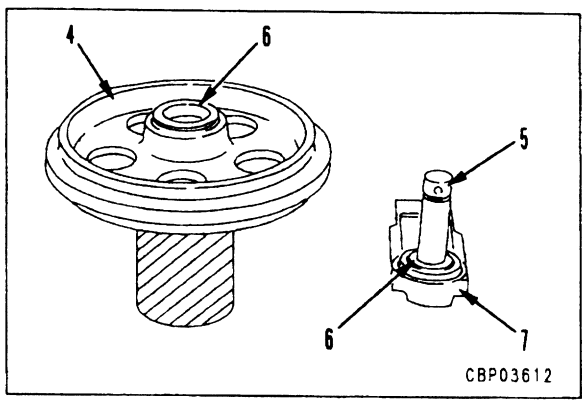
ASSEMBLY OF IDLER ASSEMBLY

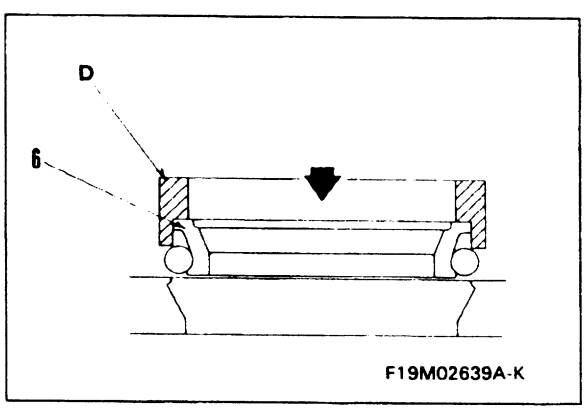
1. Press fit bushing (9) to idler (4).



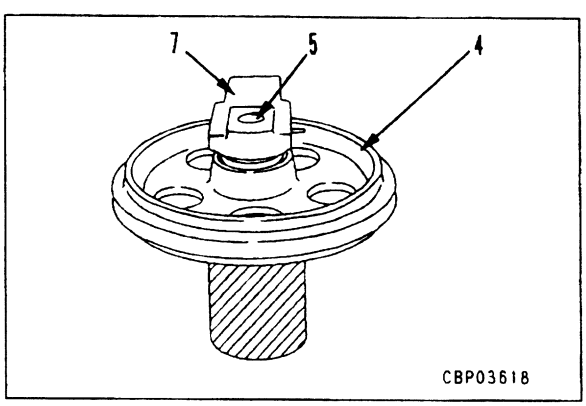


2. Install O-ring, then install support (7) to shaft (5) with dowel pin (8).
3. Using tool **D**, install floating seal (6) to idler (4) and assembly of shaft (5) and support (7).
   ★ Apply oil to the sliding surfaces of the floating seal and take care not to stick dust to them.





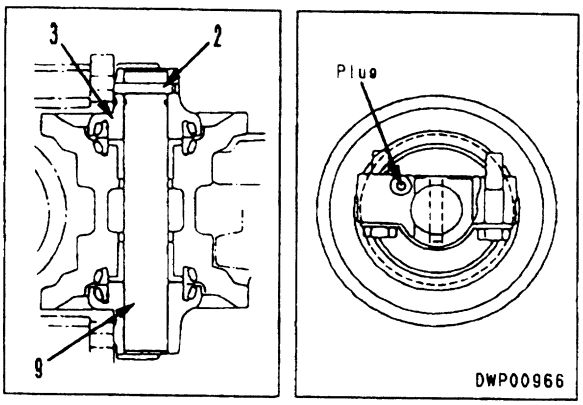
4. Install assembly of shaft (5) and support (7) to idler (4).



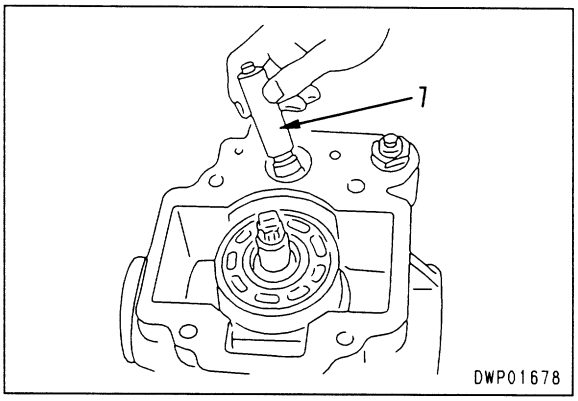
8. Install collar (3) to shaft (9), then install pin.

9. Fill roller with oil and tighten plug.

   Track roller: **Approx. 70 cc (EO-30CD)**

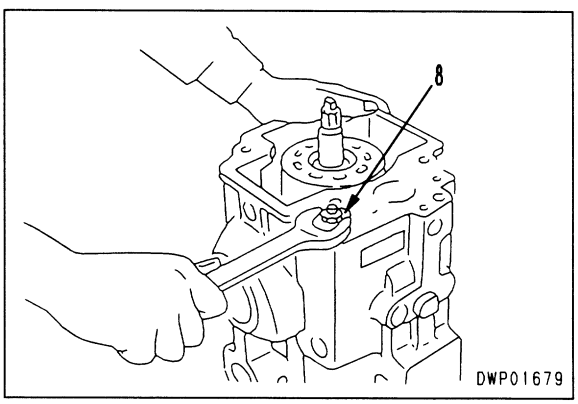


2) Remove control piston (7).

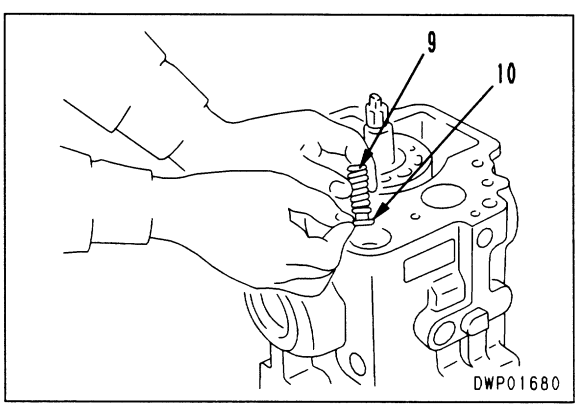


4. Selector valve

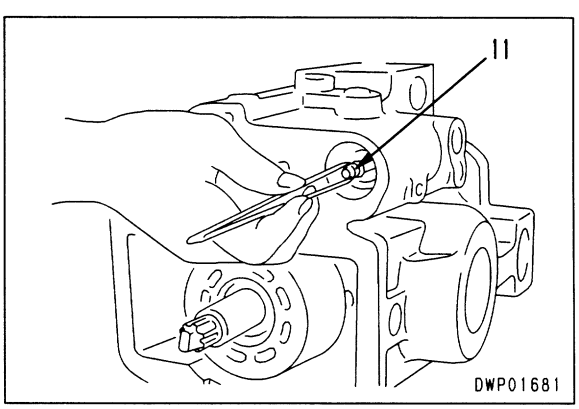
1) Remove guide (8).
   ★ Do not loosen the hexagon nut.



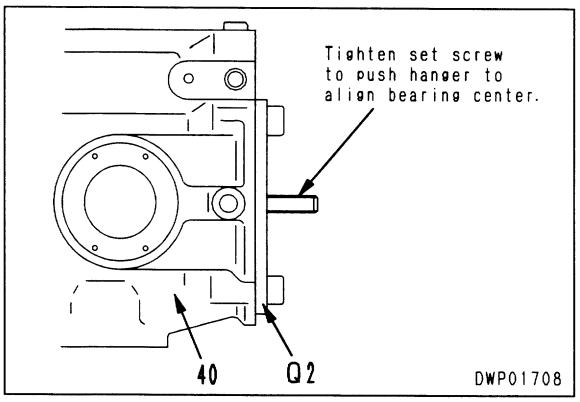
2) Remove spring (9) and spring seat (10).



3) Remove spool (11) with tweezers, etc.



4) Install hanger shaft (40) on the opposite side (cover side) with tool **Q2**.

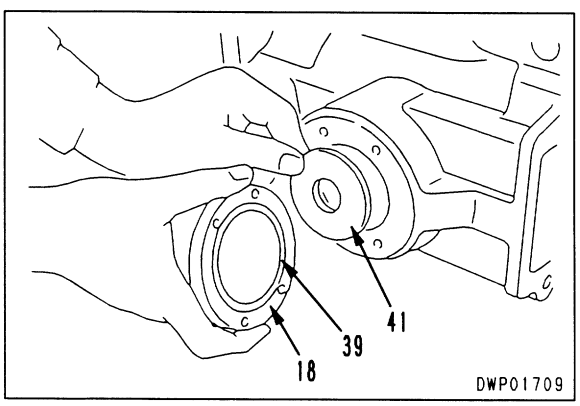


5) Apply grease to O-ring (39) to prevent it from coming off and install it to cover (18).

O-ring: **Grease (G2-LI)**

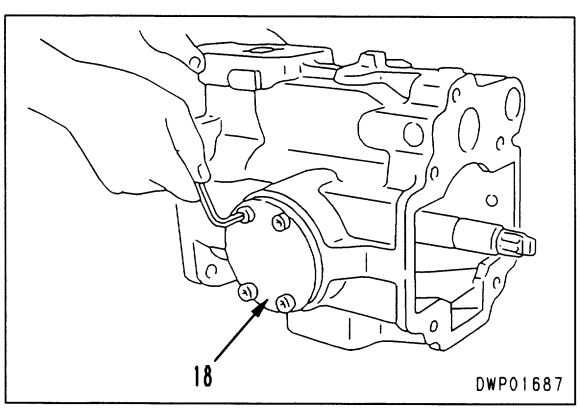
6) Apply grease to shim (41) to prevent it from coming off and install it to the shaft.

Shim: **Grease (G2-LI)**



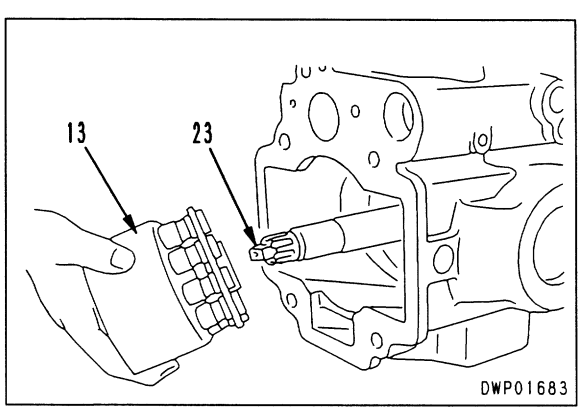
7) Install cover (18) to the body.

Bolt: **14.7 ± 1.47 Nm {1.5 ± 0.15 kgm}**



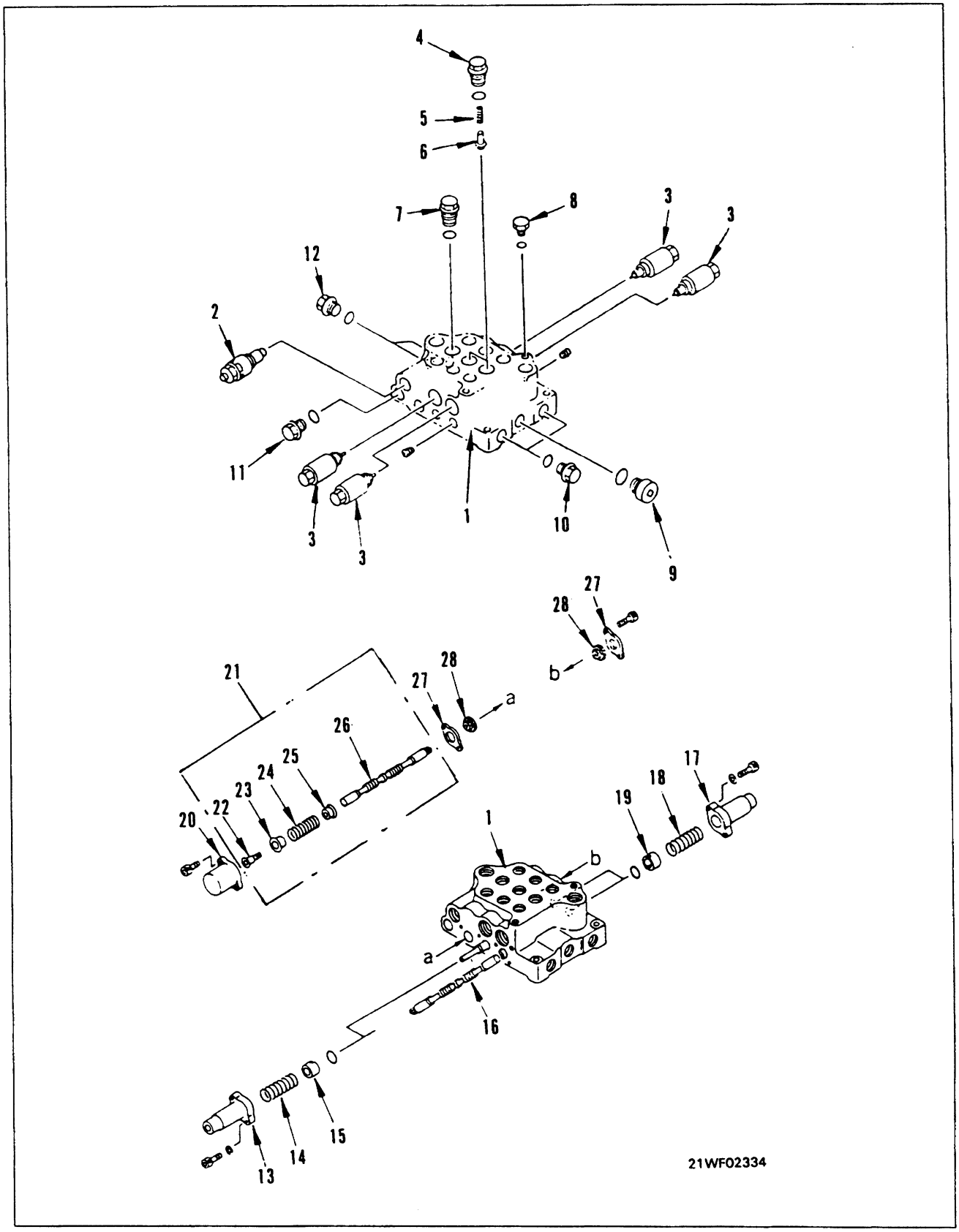
9. Cylinder block assembly (Rear side)

Install cylinder block assembly (13) to shaft (23).



ASSEMBLY OF 3-SPOOL CONTROL VALVE ASSEMBLY

(RIGHT TRAVEL, BUCKET, BOOM)



ASSEMBLY OF WORK EQUIPMENT PPC VALVE ASSEMBLY

(PPC VALVE FOR BOOM, ARM, BUCKET, AND SWING OPERATION)

Serial No.: 5001 – 7927

1. Install valve (13) to body (14).
2. Install shim (12) and spring (11) to valve (13).
   ★ Install spring (11) with its smaller end turn on shim (12) side.
3. Install spring (10), retainer (9), and piston (8).
   ★ Check the respective numbers of turns of component springs of spring (10), and install them according to the following table.

Port	Total number of turns of spring
P1, P2	9
P3, P4	10.5

   ★ The position of each port is stamped at bottom of the valve body.

   Piston: **Grease (G2-LI)**

   ★ When installing piston (8), apply grease to its outside and inside of the hole of the body.
4. Install O-ring to collar (7), then install them to body (14) and install seal (6).
5. Install plate (5).

   Mounting bolt:
   13.7 ± 1.96 Nm {1.4 ± 0.2 kgm}
6. Install joint (4).

   Rocking parts of joint:
   Grease (G2-LI) (2 – 4 cc)

   Joint: **Adhesive (LT-2)**

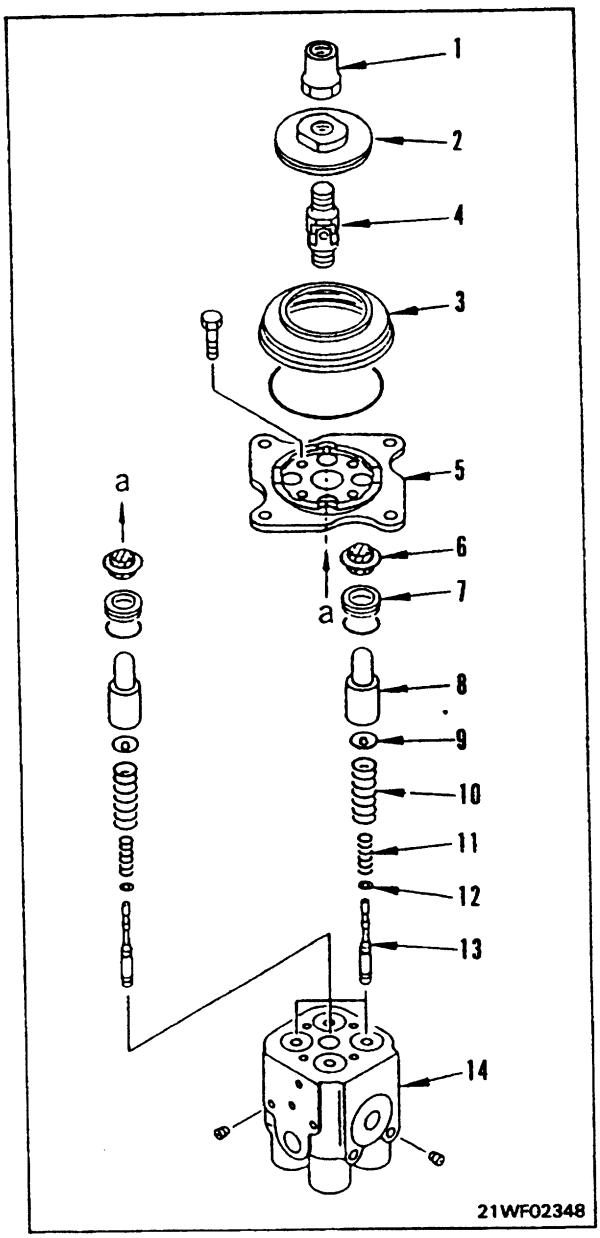
   Joint: **44.1 ± 4.9 Nm {4.5 ± 0.5 kgm}**

   ★ Observe the tightening torque for the joint.

   Contact surfaces of piston and disc: Grease **(G2-LI), 0.3 - 0.8 cc for each place (4 places)**
7. Install boot (3) and disc (2), then secure them with nut (1).

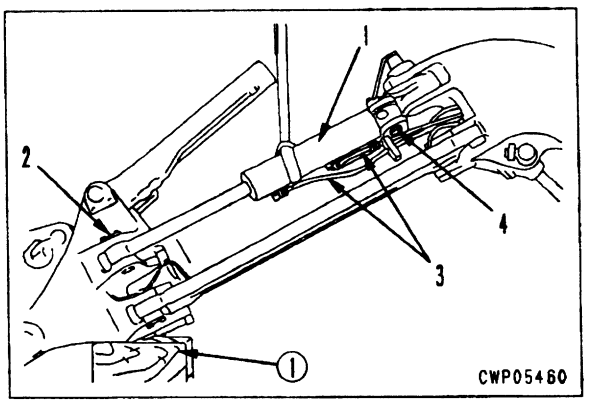
   Tightening torque for nut:
   112.8 ± 14.7 Nm {11.5 ± 1.5 kgm}

   ★ After installing the disc, adjust its height. For details, see TESTING AND ADJUSTING, Adjusting PPC valve.



REMOVAL OF OFFSET CYLINDER

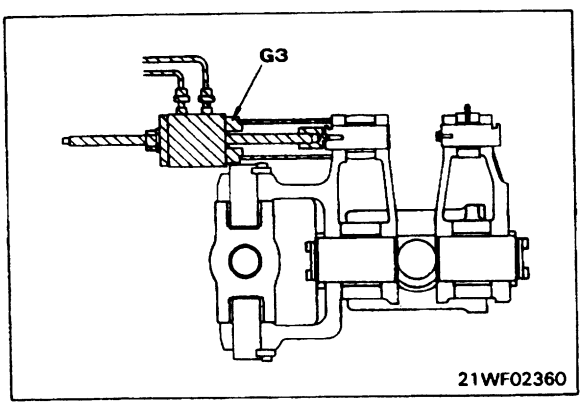
⚠ Referring to TESTING AND ADJUSTING, Releasing pressure from hydraulic circuit, release the pressure from the hydraulic tank. Run the engine at low idling and retract the arm cylinder and bucket cylinder to lower the work equipment to the ground and support the offset bracket with stand ①, taking care not to relieve the cylinders at the stroke end.



1. Sling offset cylinder (1) temporarily, and remove head pin (2) with tool **G3**. ※ 1
   ★ Check the quantity and positions of the inserted shims.

2. Start engine and retract piston rod and bind it with wires, etc. to prevent it from coming out.

⚠ Release the residual pressure from the hydraulic circuit. For details, see TESTING AND ADJUSTING, Releasing residual pressure from hydraulic circuit.



3. Disconnect hose (3).

4. Using tool **G3**, pull out bottom pin (4) and lift off offset cylinder assembly (1). ※ 2
   ★ Check the quantity and positions of the inserted shims.

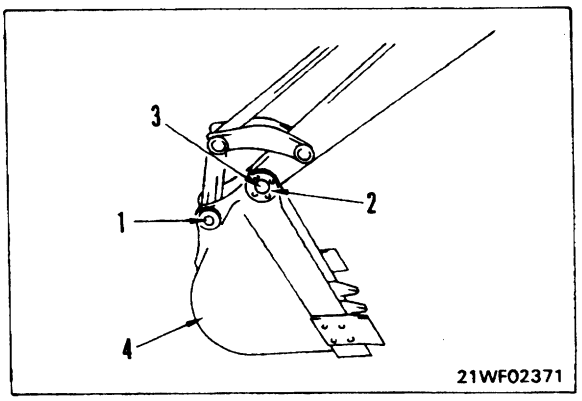
   kg Offset cylinder assembly: **50 kg**

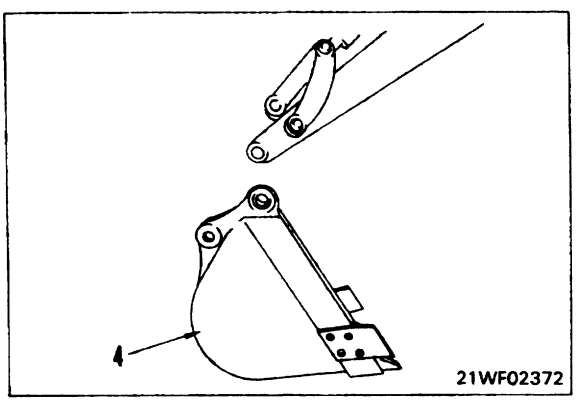
REMOVAL OF BUCKET ASSEMBLY

⚠ Lower the work equipment to the ground, with the back of the bucket down.

1. Remove lock bolt to remove connecting pin (1) of link and bucket. [※ 1]
   ★ Check the quantity and positions of the inserted shims.
2. Remove lock bolt, then remove plate (2) outward to remove connecting pin (3) of arm and bucket. [※ 2]
   ★ Check the quantity and positions of the inserted shims.
3. Raise work equipment to disconnect bucket assembly (4).

   kg Bucket assembly: **210 kg**





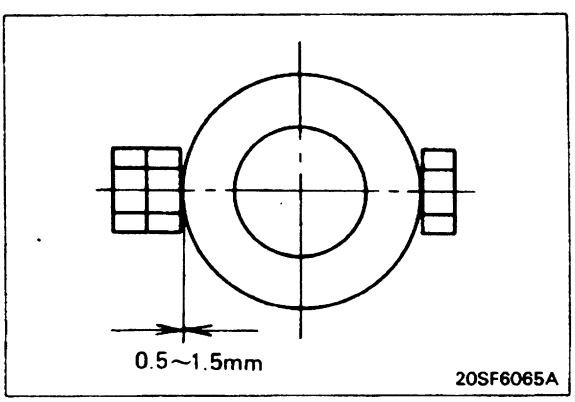
INSTALLATION OF BUCKET ASSEMBLY

- Carry out installation in the reverse order to removal.

[※ 1]
★ Insert the shims securely.

⚠ When aligning the pin holes, run the engine at slow speed and never insert your fingers in them.
★ Tighten the locknut so that the clearance between the plate and nut will be 0.5 – 1.5mm.

[※ 2]
★ Install the O-ring to the bucket boss end securely.
★ Insert the shims securely.
Standard shim thickness: 5.0 mm
★ When aligning the pin holes, never insert your fingers in them.
★ Tighten the locknut so that the clearance between the plate and nut will be 0.5 – 1.5mm.

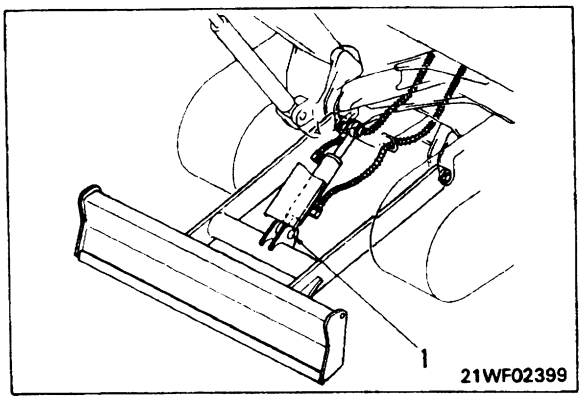


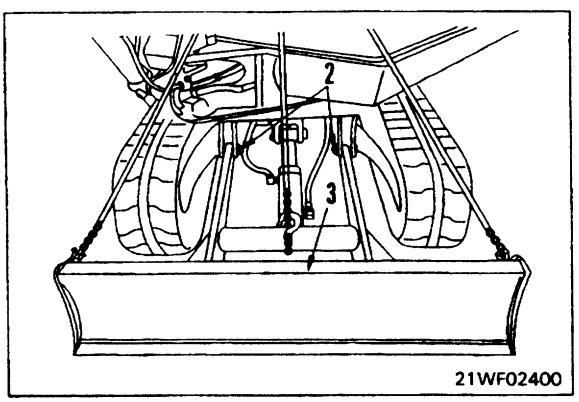
REMOVAL OF BLADE ASSEMBLY

⚠ Lower the blade to the ground and stop the engine. Operate the blade control lever 2 - 3 times, then loosen the oil filler cap of the hydraulic tank slowly to release the internal pressure of the hydraulic tank. Lower the work equipment to the ground, then set the safety lock lever to the LOCK position.

1. Remove the blade cylinder protection cover.
2. Sling blade cylinder assembly temporarily and remove bottom pin (1). ※ 1
   - ★ Start the engine and retract the blade cylinder rod, then lower the blade cylinder on a block.
   - ★ Check the quantity and positions of the inserted shims.
3. Sling blade assembly temporarily and remove pin (2). ※ 2
   - ★ Check the quantity and positions of the inserted shims.
4. Remove blade assembly (3).

   kg Blade assembly: **340 kg**





INSTALLATION OF BLADE ASSEMBLY

- Carry out installation in the reverse order to removal.

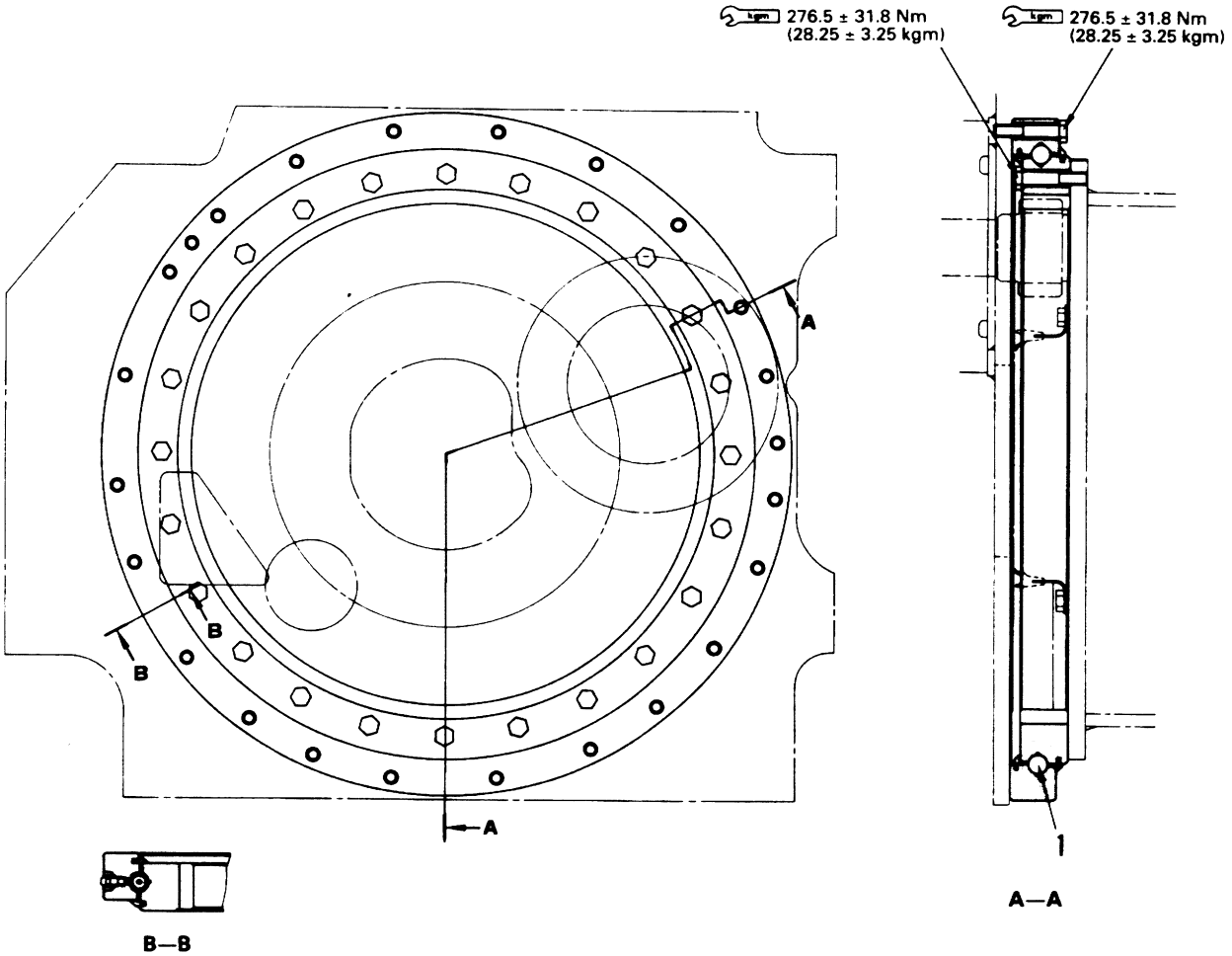
※ 1

⚠ When aligning the pin holes, never insert your fingers in them.
- ★ Insert the shims securely.

※ 2

⚠ When aligning the pin holes, never insert your fingers in them.
- ★ Insert the shims securely.

SWING CIRCLE

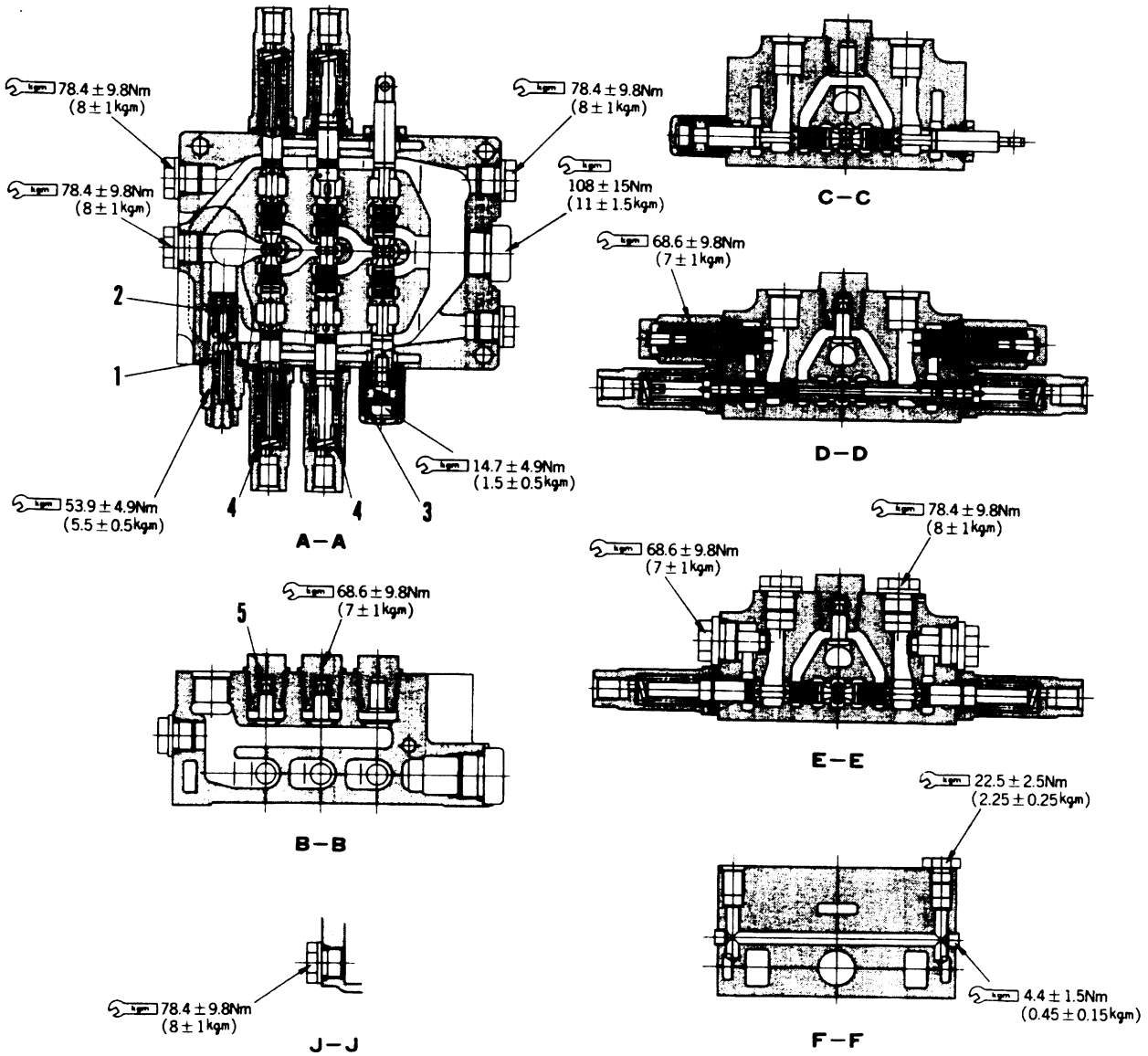


021W02

201F06095

Unit : mm

No.	Check item	Criteria		Remedy
		Standard clearance	Clearance limit	
1	Clearance of bearing in axial direction	0.04 — 0.20	0.5	Replace



021W02

21WF02052

Unit : mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
		Free lengthx OD	Installed length	Installed load	Free length	Installed load	
1	Pilot poppet spring of main relief valve	30.65×9.6	27	304 N (31 kg)	—	243.2 N (24.8 kg)	Replace spring if damaged or deformed
2	Main valve spring of main relief valve	23.17×7.2	19	41.1 N (4.2 kg)	—	33.3 N (3.4 kg)	
3	Spool return spring	50.0×22.7	26.5	138.2 N (14.1 kg)	—	110.8 N (11.3 kg)	
4	Spool return spring	41.1×19.3	40.5	34.3 N (3.5 kg)	—	27.4 N (2.8 kg)	
5	Check valve spring	16.4×8.9	11.5	13.7 N (1.4 kg)	—	10.7 N (1.1 kg)	