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SAFETY

SAFETY NOTICE

IMPORTANT SAFETY NOTICE

Proper service and repair is extremely important for safe machine operation. The service and repair techniques recommended by Komatsu and described in this manual are both effective and safe. Some of these techniques require the use of tools specially designed by Komatsu for the specific purpose.

To prevent injury to workers, the symbol  is used to mark safety precautions in this manual. The cautions accompanying these symbols should always be followed carefully. If any dangerous situation arises or may possibly arise, first consider safety, and take the necessary actions to deal with the situation.

GENERAL PRECAUTIONS

Mistakes in operation are extremely dangerous. Read the Operation and Maintenance Manual carefully BEFORE operating the machine.

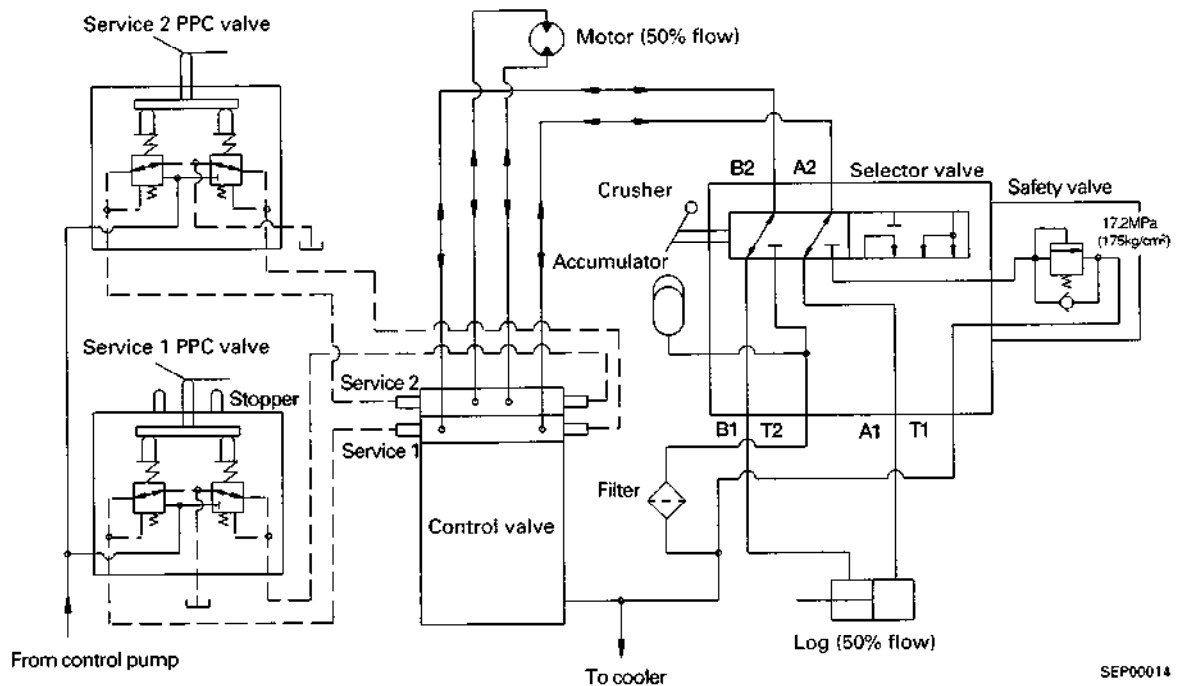
1. Before carrying out any greasing or repairs, read all the precautions given on the decals which are fixed to the machine.
2. When carrying out any operation, always wear safety shoes and helmet. Do not wear loose work clothes, or clothes with buttons missing.
 - Always wear safety glasses when hitting parts with a hammer.
 - Always wear safety glasses when grinding parts with a grinder, etc.
3. If welding repairs are needed, always have a trained, experienced welder carry out the work. When carrying out welding work, always wear welding gloves, apron, hand shield, cap and other clothes suited for welding work.
4. When carrying out any operation with two or more workers, always agree on the operating procedure before starting. Always inform your fellow workers before starting any step of the operation. Before starting work, hang UNDER REPAIR signs on the controls in the operator's compartment.
5. Keep all tools in good condition and learn the correct way to use them.

6. Decide a place in the repair workshop to keep tools and removed parts. Always keep the tools and parts in their correct places. Always keep the work area clean and make sure that there is no dirt or oil on the floor. Smoke only in the areas provided for smoking. Never smoke while working.

PREPARATIONS FOR WORK

7. Before adding oil or making any repairs, park the machine on hard, level ground, and block the wheels or tracks to prevent the machine from moving.
8. Before starting work, lower blade, ripper, bucket or any other work equipment to the ground. If this is not possible, insert the safety pin or use blocks to prevent the work equipment from falling. In addition, be sure to lock all the control levers and hang warning signs on them.
9. When disassembling or assembling, support the machine with blocks, jacks or stands before starting work.
10. Remove all mud and oil from the steps or other places used to get on and off the machine. Always use the handrails, ladders or steps when getting on or off the machine. Never jump on or off the machine. If it is impossible to use the handrails, ladders or steps, use a stand to provide safe footing.

Log hunter (2 service valve)



★ Remarks

- When switching the attachment with the first service valve, operate the selector valve.
- The flow of the pump for the first service valve is set at 100%.
- When using a 50%-flow attachment, fit a stopper to the control pedal. However, when using the breaker, select B/O(Breaker operation) mode on the working mode on the monitor panel and use the control pedal over the full stroke.
- The oil flow from the pump for the second service valve is set at 50%.
- It is possible to add up to a third service valve.

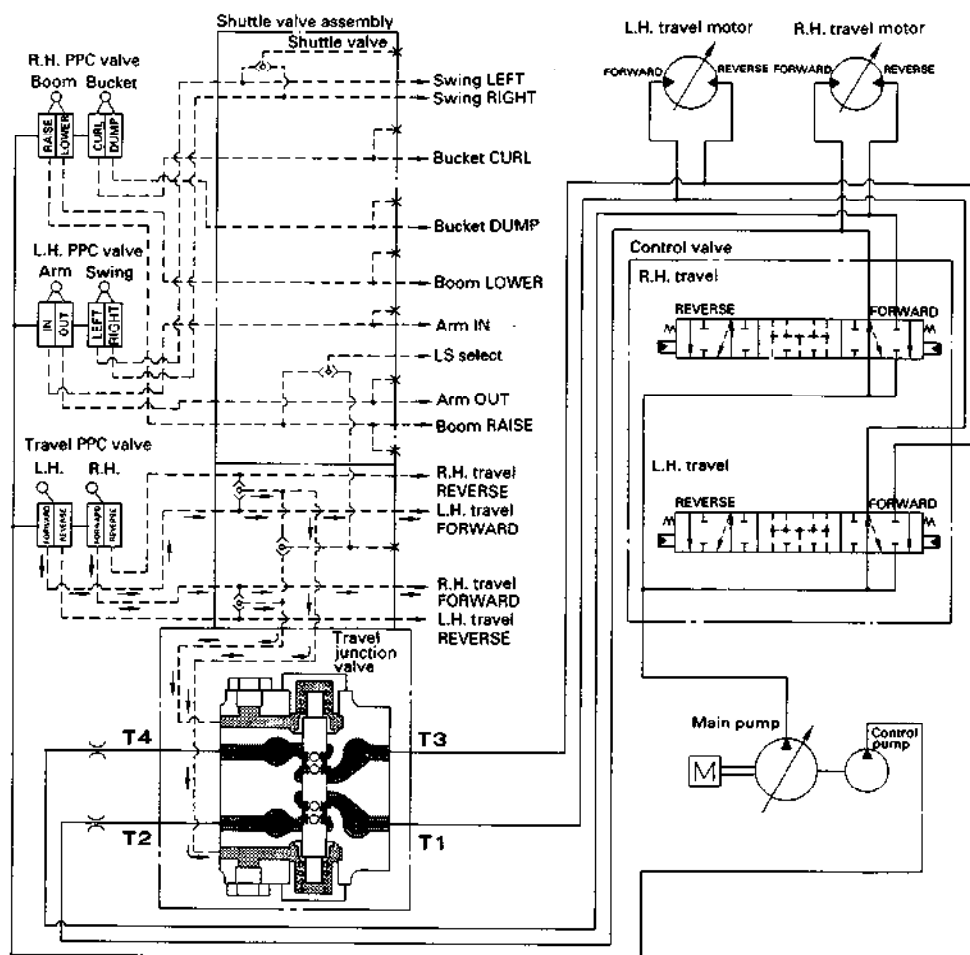
STRAIGHT-TRAVEL SYSTEM FUNCTION

- Travel junction valves are installed between the travel valve and travel motor to compensate for the error in the oil flow in the left and right travel circuits when the machine is traveling in a straight line.
- As a result, when the machine is traveling in a straight line, the flow of oil to the left and right travel motors is almost the same, so there is no travel deviation.
- The travel junction valve connects the travel circuits when the straight travel is operated independently, or when the straight travel is operated together with another actuator.
- When steering, if the difference in the amount the left and right travel levers are operated exceeds more than approx. 10 mm, the travel junction valve is switched and the left and right travel circuits are shut off.

OPERATION

During straight travel

- When the L.H. and R.H. travel levers are operated to travel forward, the pilot pressure from the PPC valve flows to the L.H. and R.H. travel valves. The flow of oil from the main pump flows to the L.H. and R.H. travel motors.
- At the same time, the pilot pressure passing through the PPC shuttle valve goes to the pilot chamber at both ends of the travel junction valve, and keeps the travel junction valve at the neutral position.
- In this way, the L.H. travel FORWARD circuit and R.H. travel FORWARD circuit, and the L.H. travel REVERSE circuit and R.H. travel REVERSE circuit are interconnected inside the travel junction valve.



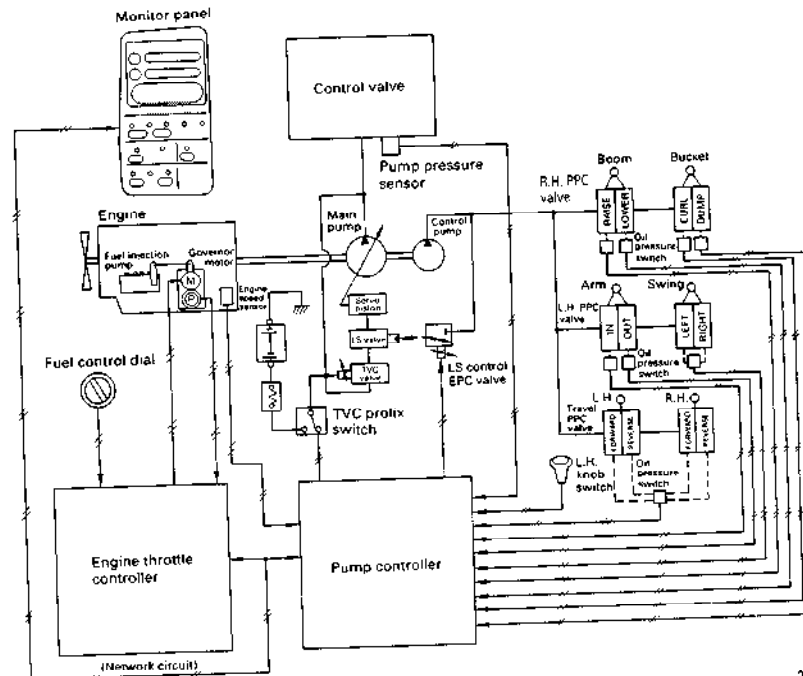
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1. PUMP & ENGINE MUTUAL CONTROL FUNCTION

PC120-6 Serial No : 40001 – 41229

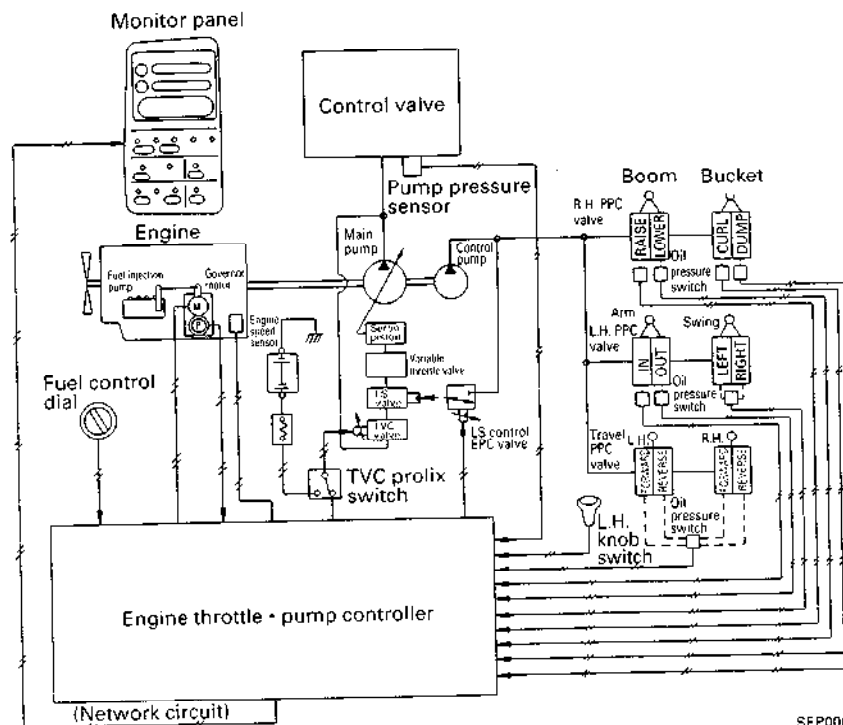
PC120-6 Serial No : 45001 – 49820



202F6153

PC100-6 Serial No : 41230 and up

PC120-6 Serial No : 49821 and up




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
ADJUSTING

1. Main relief valve

- Adjusting high set pressure end
 - 1) Loosen locknut (5).
 - ★ Check that elbow (6) can move.
 - 2) Loosen locknut (3), then turn holder (4) to adjust.
 - ★ Turn the holder to adjust as follows.
 - To INCREASE pressure, turn CLOCKWISE.
 - To DECREASE pressure, turn COUNTERCLOCKWISE.
- ★ Amount of adjustment for one turn of adjustment screw: 12.6 MPa (128 kg/cm²)

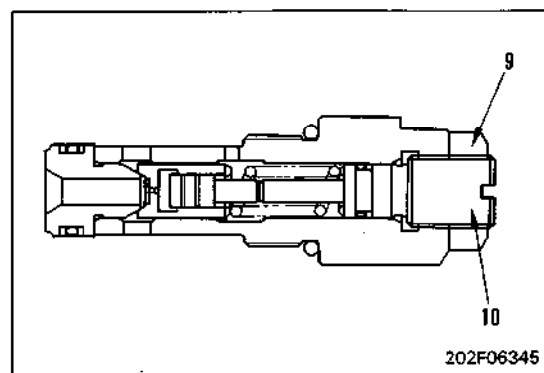
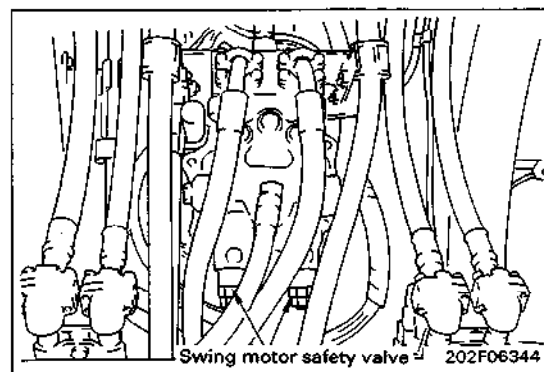
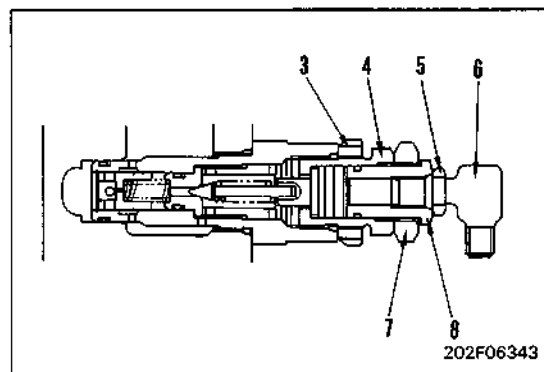
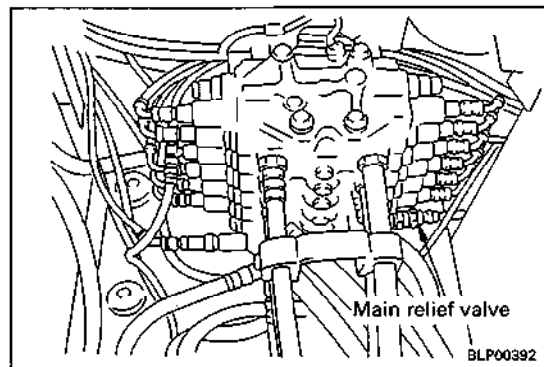
 Locknut :
58.8 ± 4.9 Nm (6 ± 0.5 kgm)

- ★ When the high pressure end is adjusted, the low pressure end also changes, so adjust the low pressure end also.
- Adjusting low set pressure end
 - 1) Loosen locknut (5).
 - ★ Check that elbow (6) can move.
 - 2) Loosen locknut (7), then turn holder (8) to adjust.
 - ★ Turn the holder to adjust as follows.
 - To INCREASE pressure, turn CLOCKWISE.
 - To DECREASE pressure, turn COUNTERCLOCKWISE.
- ★ Amount of adjustment for one turn of adjustment screw: 12.6 MPa (128 kg/cm²)

 Locknut :
44.1 ± 4.9 Nm (4.5 ± 0.5 kgm)

2. Swing motor safety valve

- 1) Loosen locknut (9), then turn adjustment screw (10) to adjust.
 - ★ Turn the adjustment screw to adjust as follows.
 - To INCREASE pressure, turn CLOCKWISE.
 - To DECREASE pressure, turn COUNTERCLOCKWISE.
 - ★ After completion of adjustment, repeat the procedure in MEASURING to check again.
- ★ The safety valve set pressure can be adjusted only for the swing motor. Do not try to adjust the setting for anything except the swing motor.



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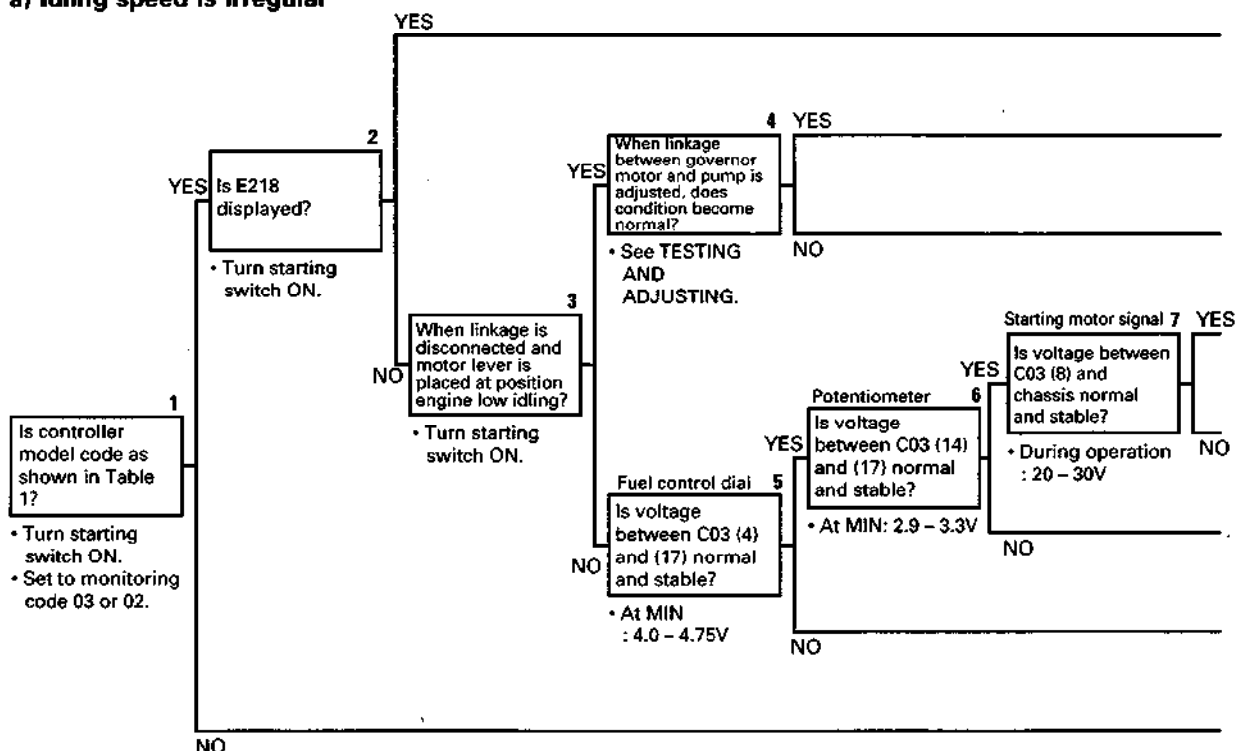
Code	Content	Bit	Details (condition when lighted up)
48	Input condition 1 of monitor panel	(1) (2) (3) (4) (5) (6)	Wiper (ON) OFF Wiper (INT) OFF Wiper (WASHER) OFF Window limit switch open Limit switch (P) open Limit switch (W) open
49	Input condition 2 of monitor panel	(1) (2) (3) (4) (5) (6)	KEY ON SW OFF BR terminal Voltage Hi LIGHT SW OFF Preheating switch OFF START C May be ON Monitor panel LED lighting output OFF
4A	Input condition 3 of monitor panel	(1) (2) (3) (4) (5) (6)	Time switch OFF PPC oil pressure selector switch OFF Overload selector switch OFF STD/DLX selector When STD Swing lock switch OFF Buzzer cancel switch OFF
4C	Input condition 4 of monitor panel	(1) (2) (3) (4) (5) (6)	Wiper motor normal rotation relay output When specified voltage is abnormal Wiper motor reverse rotation relay output When specified voltage is abnormal Window washer motor drive output When specified voltage is abnormal

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E-9 Engine speed is irregular

- ★ 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) Idling speed is irregular



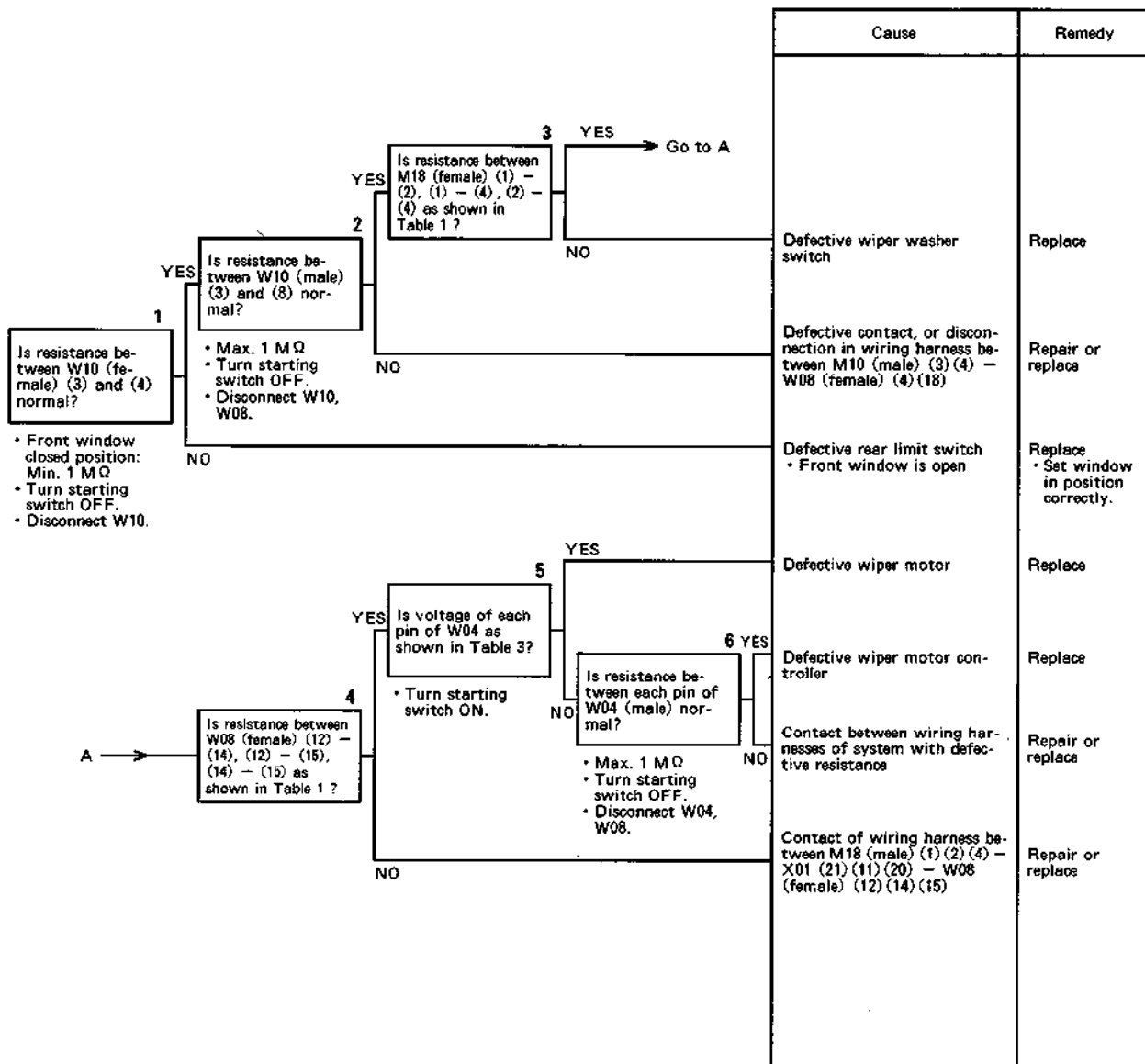
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Table 1

Controller model code			
PC100		PC120	
03	100	03	120
BKP00357		BKP00358	

- ★ The diagram shows monitoring code 03.

b) Wiper switch is not being used but wiper is actuated



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Table 1

Actuation mode	M18 (female)	W08 (female)	Resistance (Ω)
INT mode	Between (1)-(4)	Between (12)-(15)	Max. 1 Ω
	Between (1)-(2) Between (2)-(4)	Between (12)-(14) Between (14)-(15)	Min. 1 MΩ
OFF mode	Between (1)-(2) Between (1)-(4) Between (2)-(4)	Between (12)-(14) Between (12)-(15) Between (14)-(15)	Min. 1 MΩ
	Between (1)-(2)	Between (12)-(14)	Max. 1 Ω
ON mode	Between (1)-(4)	Between (12)-(15)	Min. 1 MΩ
	Between (2)-(4)	Between (14)-(15)	Min. 1 MΩ

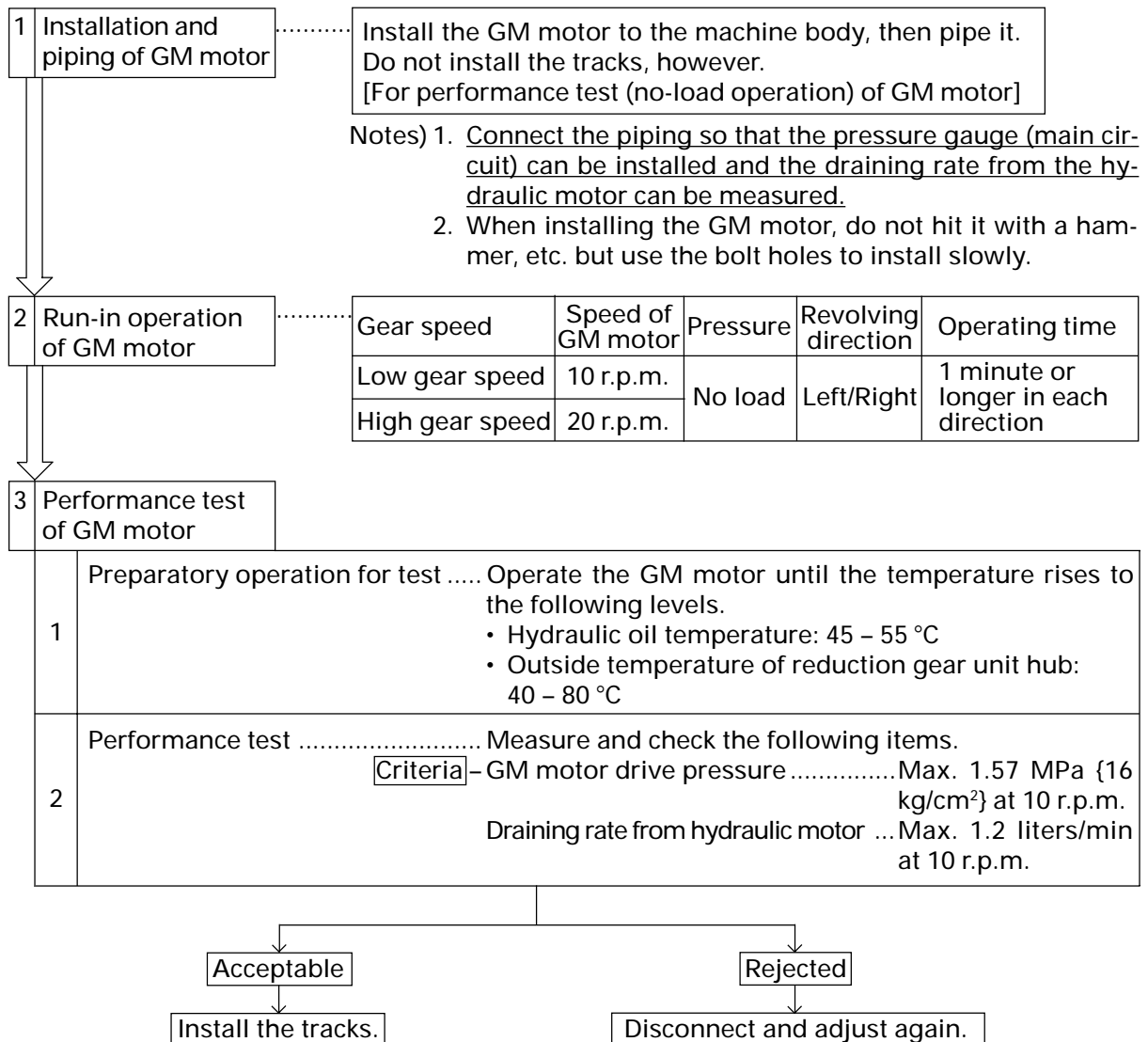
5. PERFORMANCE TEST

- After maintaining the GM motor, perform the performance test according to the following procedure.

1) Necessary measuring instruments

1	Pressure gauge (For 3.43 MPa {35 kgf/cm ² })	2 pcs.
2	Measuring cylinder (For 5 liters)	1 pc.
3	Stopwatch	1 pc.

2) Test procedure



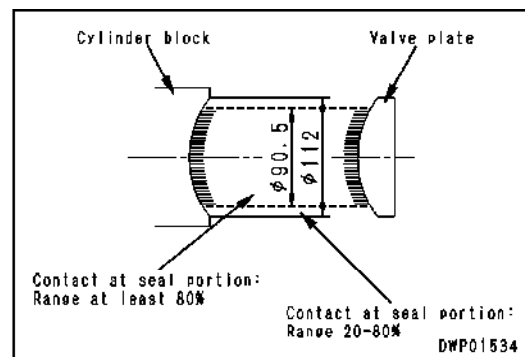
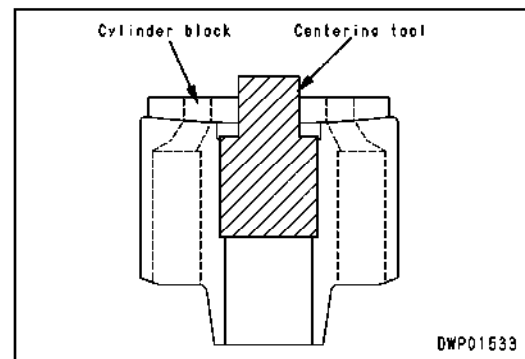
CHECKING CONTACT BETWEEN CYLINDER BLOCK AND VALVE PLATE, ROCKER CAM AND CRADLE VALVE PLATE AND END CAP

1. Checking contact between cylinder block and valve plate

- ★ There is no need for this check if both the cylinder block and valve plate have been replaced with a repair part (new part).
- ★ If either part has been repaired or replaced with a new part, check the contact.

- 1) Make centering tool for cylinder block and valve plate.
 - ★ The tool can be made from plastic, bakelite or any other soft material.
- 2) Remove all oil and grease from parts to be checked.
 - ★ Do not wipe with a cloth.
- 3) Set tool in position, then paint cylinder block with inspection paint.
 - ★ Coat thinly with paint.
- 4) Push valve plate with a force of 39 – 49 N (4 – 5 kg) against cylinder block, turn valve plate 90°, then turn it back to original position. Repeat this process 2 or 3 times.
- 5) Remove valve plate, transfer contact surface to a tape, and check contact surface.
 - ★ The contact for the spherical surface of the cylinder block and valve plate must fulfill the following conditions and there must be no break around the whole circumference.
 - i) Seal portion (range of $\phi 90.5$ mm from bottom): Contact of more than 80%
 - ii) Land portion (range of $\phi 90.5$ mm $\phi 112$ mm) : Contact of more than 60%

	Seal portion	Land portion
Valve plate	Min. 80%	Min. 60%
Cylinder block	Min. 80%	Min. 60%



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7. LS shuttle valve

- 1) Fit O-ring to seat (89), then install.
- 2) Install ball (88).
- 3) Fit O-ring to plug (30), then install.

 Plug: $166.7 \pm 19.6 \text{ Nm}$ ($17 \pm 2 \text{ kgm}$)

8. LS select valve

- 1) Install sleeve (87) and valve (86).
- 2) Fit O-ring to sleeve (29), then install.


 Sleeve: $127.5 \pm 19.6 \text{ Nm}$
($13 \pm 2 \text{ kgm}$)

9. Safety-suction valves, suction valves

- 1) Fit O-rings, then install suction valves (22), (23), (24), (25), and (26).

 Suction valve: $147.1 \pm 9.8 \text{ Nm}$
($15 \pm 1 \text{ kgm}$)

- 2) Fit O-rings, then install safety-suction valves (17), (18), (19), (20), and (21).

 Safety-suction valve:
 $147.1 \pm 9.8 \text{ Nm}$ ($15 \pm 1 \text{ kgm}$)

10. Pressure compensation valves

- Check marks made on each pressure compensation valve when disassembling, and install in correct position.

- 1) Before installing pressure compensation valves below, install check valve (28).
- 2) Fit O-rings, then install right swing pressure compensation valve (15), L.H. travel REVERSE pressure compensation valve (14), R.H. travel REVERSE pressure compensation valve (13), boom LOWER pressure compensation valve (12), arm IN pressure compensation valve (11), and bucket CURL pressure compensation valve (10).

- 3) Fit O-rings, then install left swing pressure compensation valve (3), L.H. travel FORWARD pressure compensation valve (4), R.H. travel FORWARD pressure compensation valve (5), boom RAISE pressure compensation valve (6), arm OUT pressure compensation valve (7), and bucket DUMP pressure compensation valve (8).


 Pressure compensation valve:
 $264.8 \pm 19.6 \text{ Nm}$ ($27 \pm 2 \text{ kgm}$)

11. Main relief valve, LS bypass valve

- 1) Fit O-ring and install LS bypass valve (27).


 LS bypass valve: $166.7 \pm 19.6 \text{ Nm}$
($17 \pm 2 \text{ kgm}$)

- 2) Fit O-ring and install main relief valve (2).

 Main relief valve assembly:
 $98.1 \pm 9.8 \text{ Nm}$ ($10 \pm 1 \text{ kgm}$)

12. Unload valve

- Fit O-ring and install unload valve (1).

 Unload valve: $166.7 \pm 19.6 \text{ Nm}$
($17 \pm 2 \text{ kgm}$)

13. Back-pressure check valve, cooler bypass valve

- 1) Assemble sleeve (84), piston (84), and spring (83).
- 2) Fit O-ring to cooler bypass valve (82), then install.
- 3) Assemble sleeve (81), piston (80), and spring (79).
- 4) Fit O-ring to back-pressure check valve (78), then install.

 Mounting bolt: $30.9 \pm 3.4 \text{ Nm}$
($3.15 \pm 0.35 \text{ kgm}$)

14. Arm regeneration valve


- 1) Assemble arm regeneration valve (50) and spring (49).
- 2) Fit O-ring to plug (48), then install.

 Plug: $74.5 \pm 8.8 \text{ Nm}$ ($7.6 \pm 0.9 \text{ kgm}$)

15. Boom regeneration valve

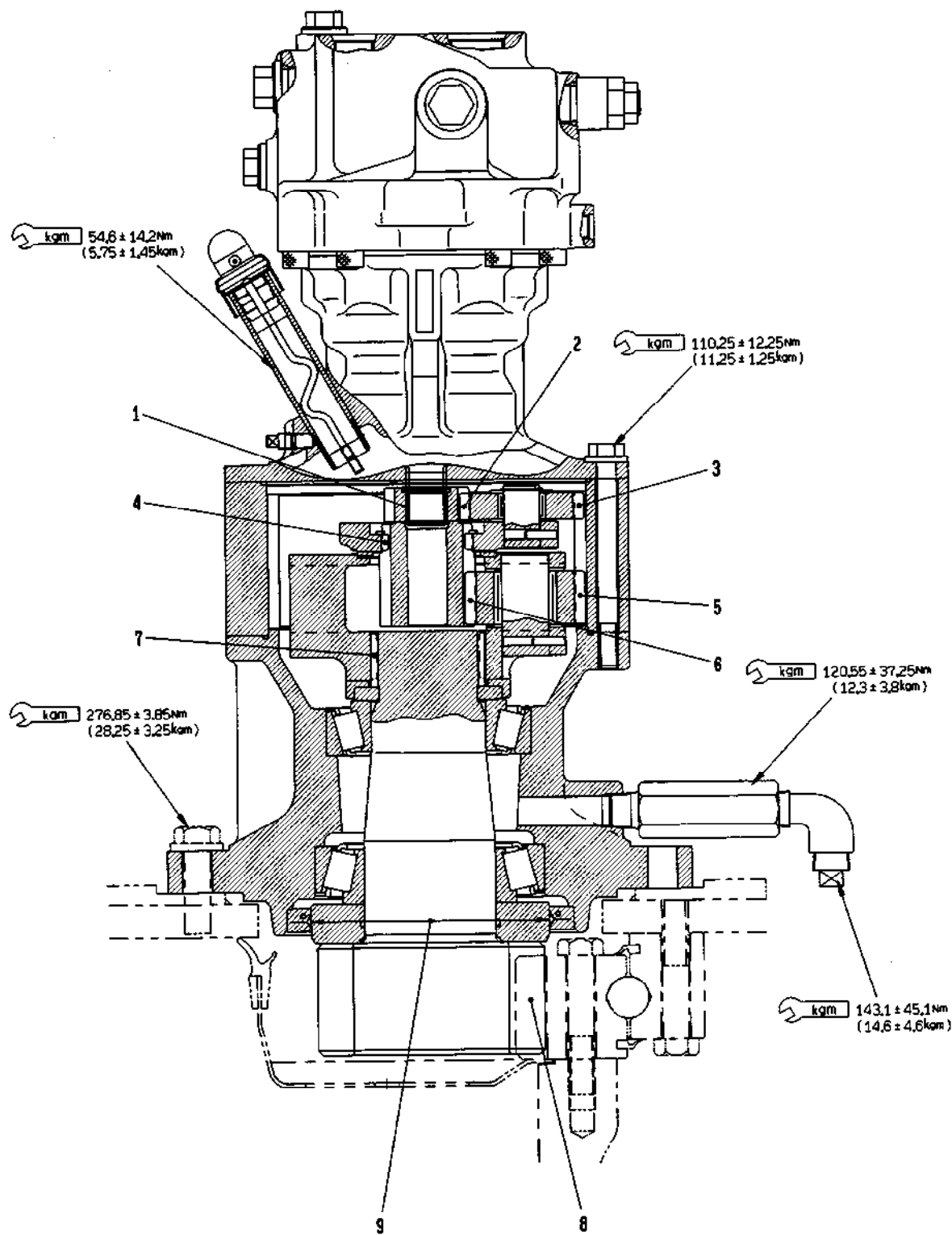
- 1) Assemble boom regeneration valve (63) and spring (62).
- 2) Fit O-ring to plate (61), then install.

 Mating surface of plate:
Seal End 242 or equivalent

 Plug: $30.9 \pm 3.4 \text{ Nm}$
($3.15 \pm 0.35 \text{ kgm}$)

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SWING MACHINERY

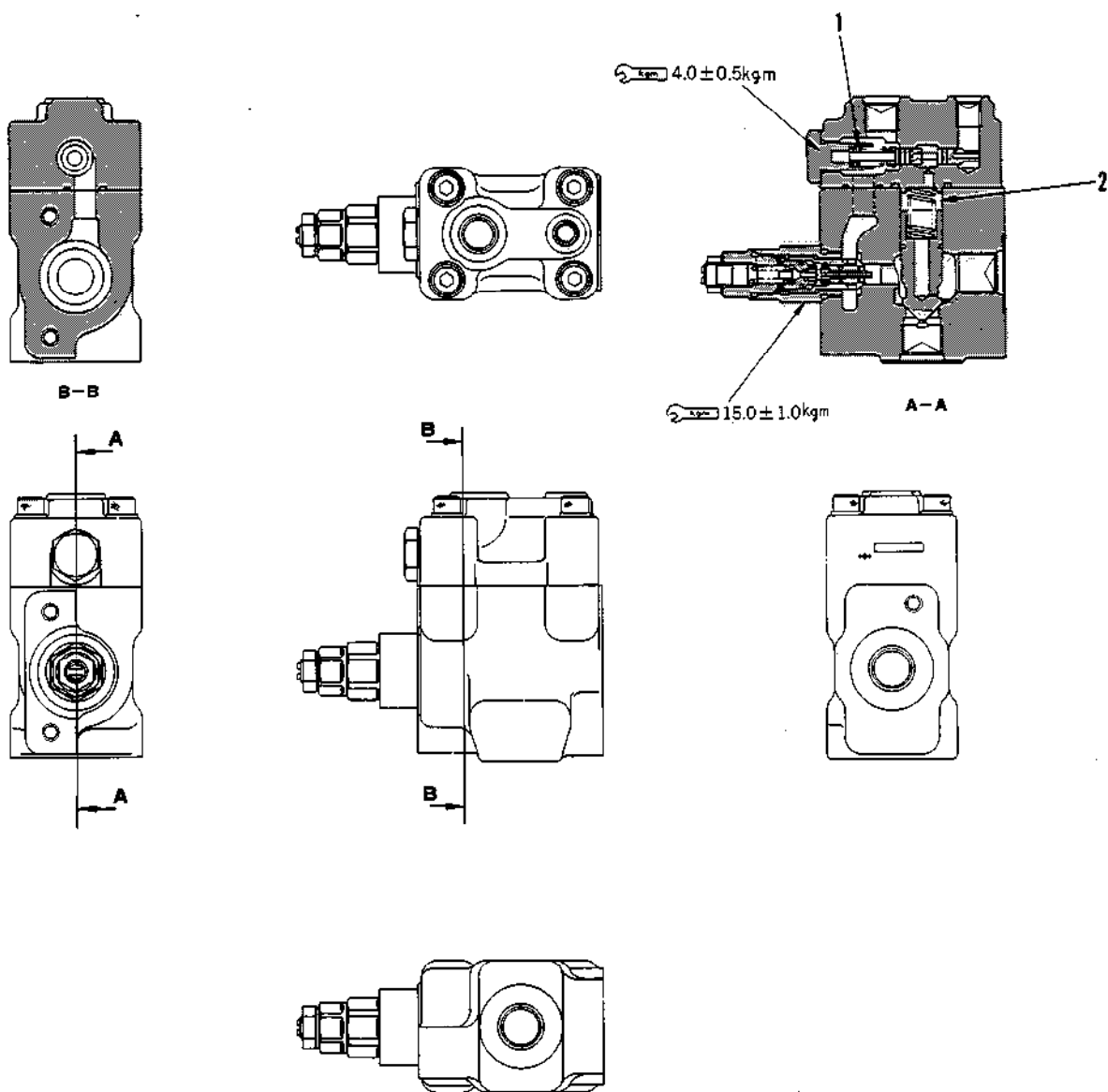


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BOOM HOLDING VALVE

- ★ For machine equipped with arm holding valve, the Maintenance Standard of arm holding valve is the same as this valve.

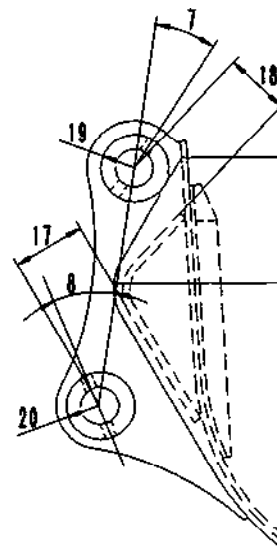
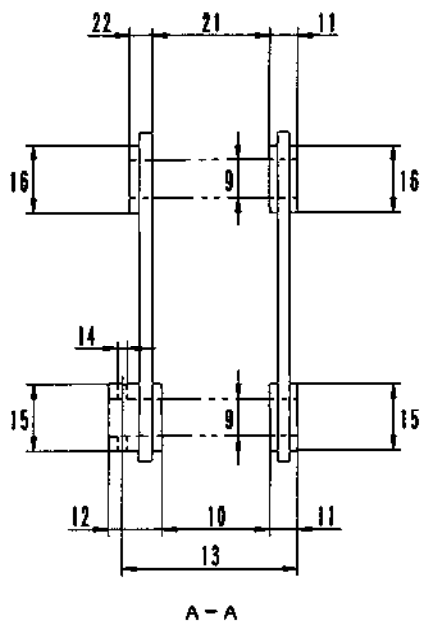
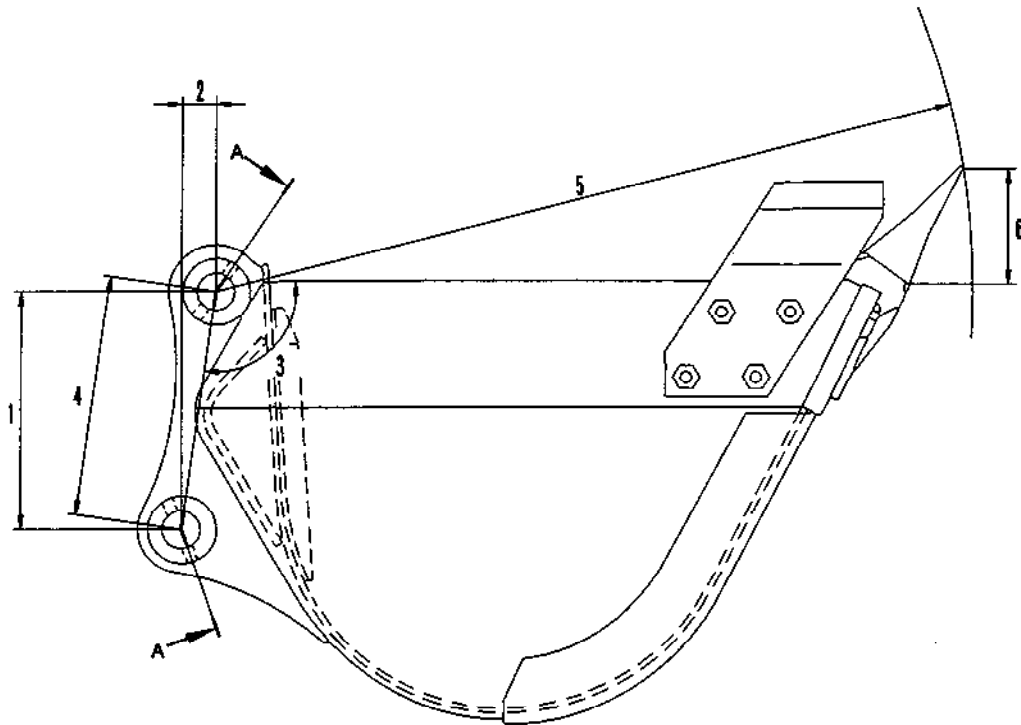


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Unit: mm

No.	Check item	Criteria					Remedy
1	Pilot valve spring.	Standard size			Repair limit		Replace spring if any damages or deformations are found.
		Free length × O.D.	Installed length	Installed load	Free length	Installed load	
		26.5×11.2	25.0	4.7 N (0.48 kg)	—	3.7 N (0.38 kg)	
2	Check valve spring.	37.2×16.2	30.0	35.3 N (3.6 kg)	—	28.4 N (2.9 kg)	

2. BUCKET PORTION



SEP01487

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