SERVICE MANUAL

Robex 15-7

SER. NO. HY1570001~

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HYUNDAI
HEAVY INDUSTRIES CO.,LTD.

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CONTENTS

1. Precautions on Maintenance
2. Outline
3. Attachment
4. Engine
5. Main Pump
6. Hydraulic Oil Filter
7. Control Valve
8. Joystick
9. Slew Motor
10. Travelling Motor
11. Hydraulic Cylinder
12. Swivel Joint
13. Crawler
14. Spring Case and Grease Cylinder
15. Idler
16. Sprocket
17. Track Roller
18. Electrical Equipment
19. Troubleshooting

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Description			Unit	Robex15-7
Machine weight	Canopy	Rubber shoe	Kg	1460
		Steel shoe		1510
	Cabin	Rubber shoe		1570
		Steel shoe		1620
Standard bucket	Capacity		m^3	0.04
	Width		mm	400
Engine	Maker, model			MITSUBISHI L3E
	Rated power		kW(ps)/min^{-1}	12.5(17)/2400
	Displacement		cc	952
Working range	Max.digging depth		mm	2175
	Max.vertical digging depth			1535
	Max.digging height			3250
	Max.dumping height			2180
	Max.digging reach			3730
	Min.swing radius	Front		1630
		Swing		1235
	Rear end radius			1140
	Boom swing angle		deg	Left80/Right50
Dimension	Overall length		mm	3720
	Overall width			1000
	Overall height			2260
	Dozer(width × height)			1000×240
Performance	Travel speed		km/hr	2.1/3.9
	Swing speed		min^{-1}	11.5
	Gradeability		deg(%)	25(47)
	Max.digging force	Bucket	kN(kgf)	14.4(1470)
		Arm		9.0(920)
	Max. drawbar pull			12.6(1290)
Under-carriage	Ground pressure	Canopy&rubber shoe	kpa(kgf/cm^2)	26(0.27)
		Cabin&rubber shoe		28(0.29)
	Tumbler distance × track gauge		mm	1130×770
	Track shoe width			230
	Type of travelling motor			Piston shoe-in type
	Crawler tension system			Grease cylinder
Hydraulic	Type of hydraulic pump			Gear×3
	Pump oil flow		ℓ/min	3×15.7
	Auxiliary circuit oil flow			31.4
	Relief valve setting pressure		MPa(kgf/cm^2)	18.6(190)
Capacity	Hydraulic oil tank		ℓ	24
	Engine oil			3.5
	Fuel tank			20
	Cooling water			5.6
Noise	Noise level(LwA/LpA)		dB	95/84

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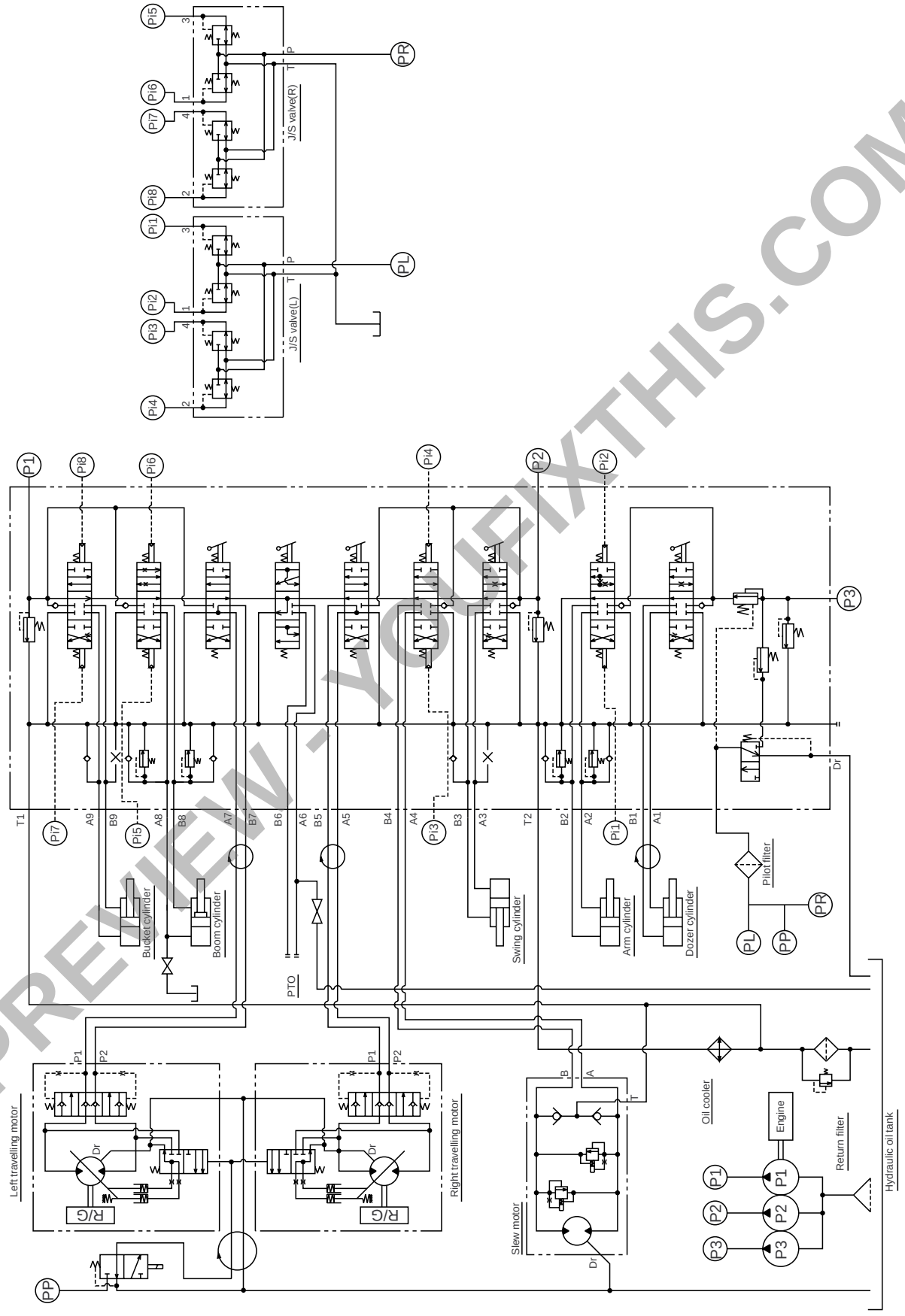
2-7-2 Maintenance procedure

	Inspection and maintenance item	Inspection and maintenance interval (hours)					
		7	50	100	250	500	1,000
1	Engine oil pan	Check oil level	Replace the engine oil (New machine only)		Replace the engine oil		Clean
	Engine oil filter		Replace the cartridge (New machine only)		Replace the cartridge		
2	Fuel filter			Check and clean		Replace the element	
3	Engine valve clearance		Inspect and adjust (New machine only)			Inspect and adjust	
4	Fan belt	Check and adjust					
5	Fuel tank	Check oil level	Drain water and sediment, clean strainer				
6	Radiator (sub-tank)	Check water level				Replace and clean	
	Radiator fin		Check and clean				
7	Air cleaner			Check and clean		Replace the element	
8	Hydraulic oil tank	Check oil level			Drain water and sediment		Replace oil
9	Hydraulic line filter			Replace the cartridge (New machine only)		Replace the cartridge	
10	Hydraulic suction filter			Clean the element (New machine only)		Replace the element	
11	Bucket teeth and others	Inspect					
12	Slew bearing		Inspect and grease				
13	Inspect crawler tension(grease cylinder) and grease the crawler	Check and adjust					
14	Battery liquid amount and specific gravity		Inspect, clean and supply distilled water				
15	Inspect each body part for loosening and damage	Check and tighten					
16	Each lever and instrument	Inspect					
17	Lubricating oil of slew/travelling reduction gear					Replace oil (after the first 500 service hours only for a new machine)	Replace oil
18	Electrical wiring	Inspect					
19	Water and oil leakage in each body part	Inspect					
20	Inspect and grease attachment	Inspect attachment					

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2-8 Hydraulic circuit diagram



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5-3 Removing and installing the pump

5-3-1 Removing the pump

1. Remove the nipple, TEE, elbow and hoses around the pump. Attach a cap to the removed hoses to keep dust off. Store the nipples and elbows in treated oil.

2. Remove the pump mounting bolts(1).

3. Remove the pump from the flange 2. If removal is difficult, insert a screwdriver and remove the pump little by little with equal force applied on the right and left sides.

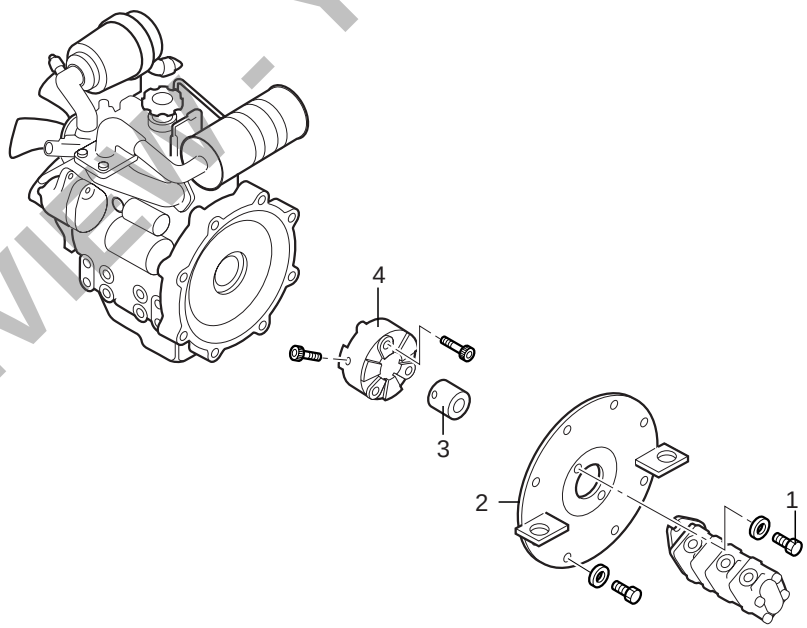
5-3-2 Installing the pump

1. Replace with a new pump and install it on the pump flange 2. Check that the spline of the shaft fits smoothly with the boss of the coupling.
   When tightening the bolts 1, tighten the left and right side bolts slowly and evenly.

Bolt	Tightening torque
M10 × 30ℓ	60.8 N-m(6.2kgf-m)

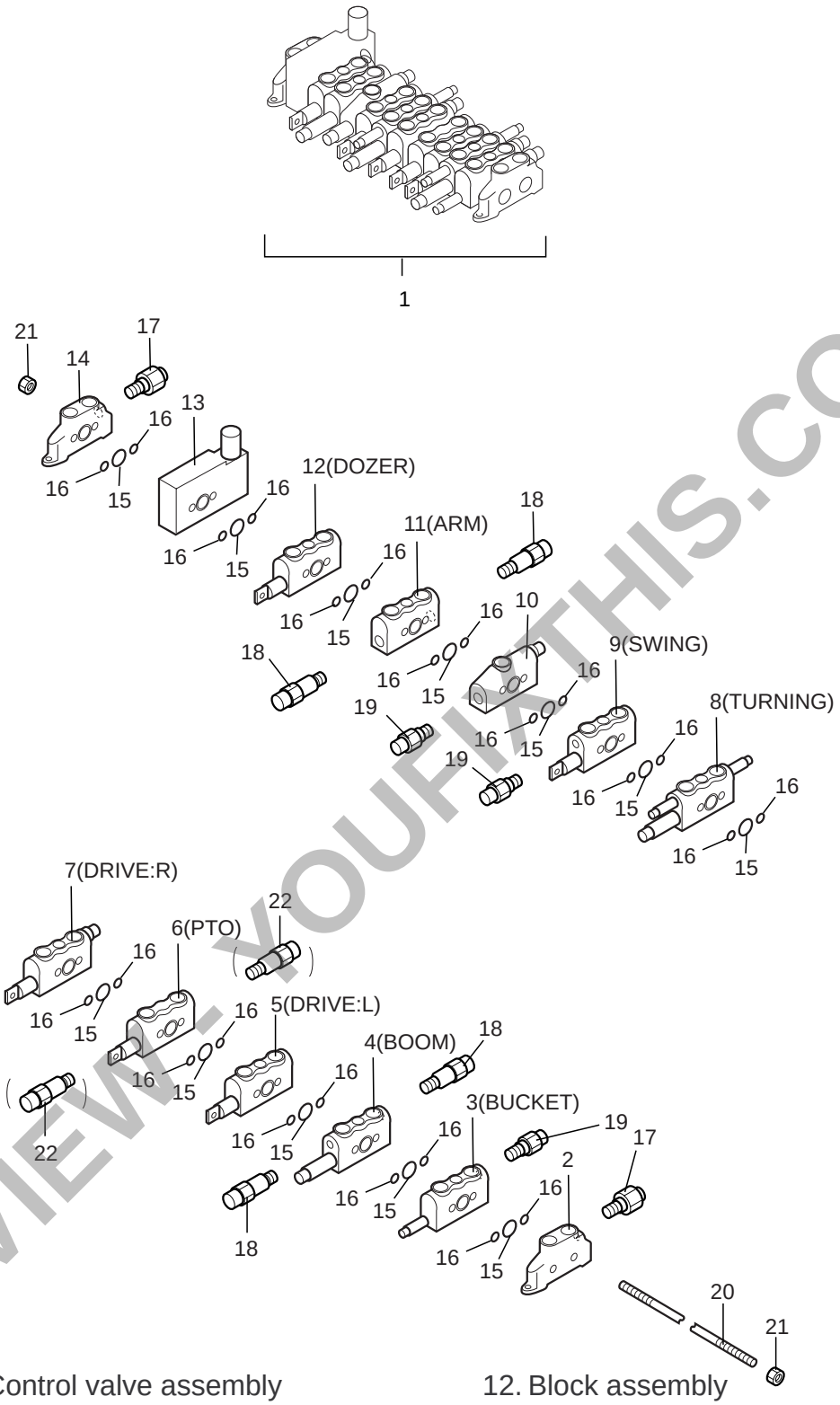
* Precautions on installing the pump

1.When tightening the coupling boss 3,be careful so that coupling 4 does not tilt.
Note) Make sure there is no misalignment.



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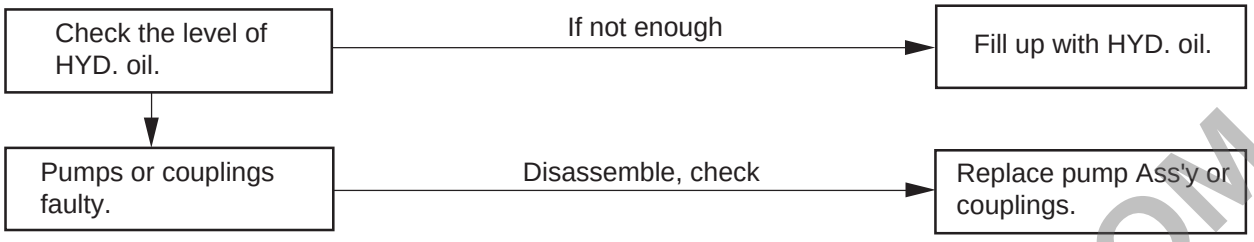
1. Control valve assembly
2. Block assembly
3. Block assembly
4. Block assembly
5. Block assembly
6. Block assembly
7. Block assembly
8. Block assembly
9. Block assembly
10. Block assembly
11. Block assembly
12. Block assembly
13. Block assembly
14. Block assembly
15. O-ring
16. O-ring
17. Relief valve assembly
18. Relief valve assembly
19. Relief valve assembly
20. Rod
21. Nut
22. Relief valve assembly

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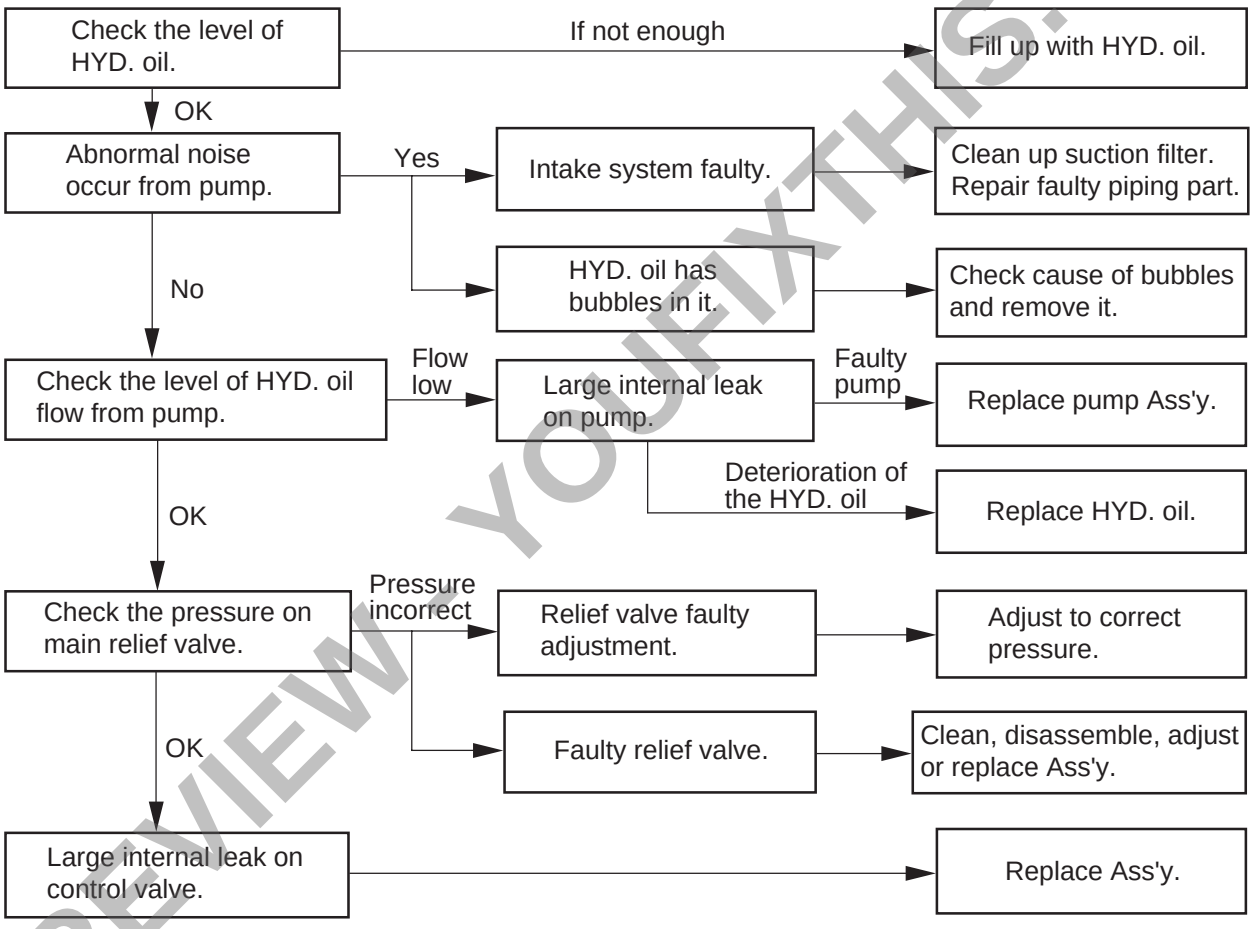
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19-1 Troubleshooting

19-1-1 All functions not operational



19-1-2 Operation power is weak

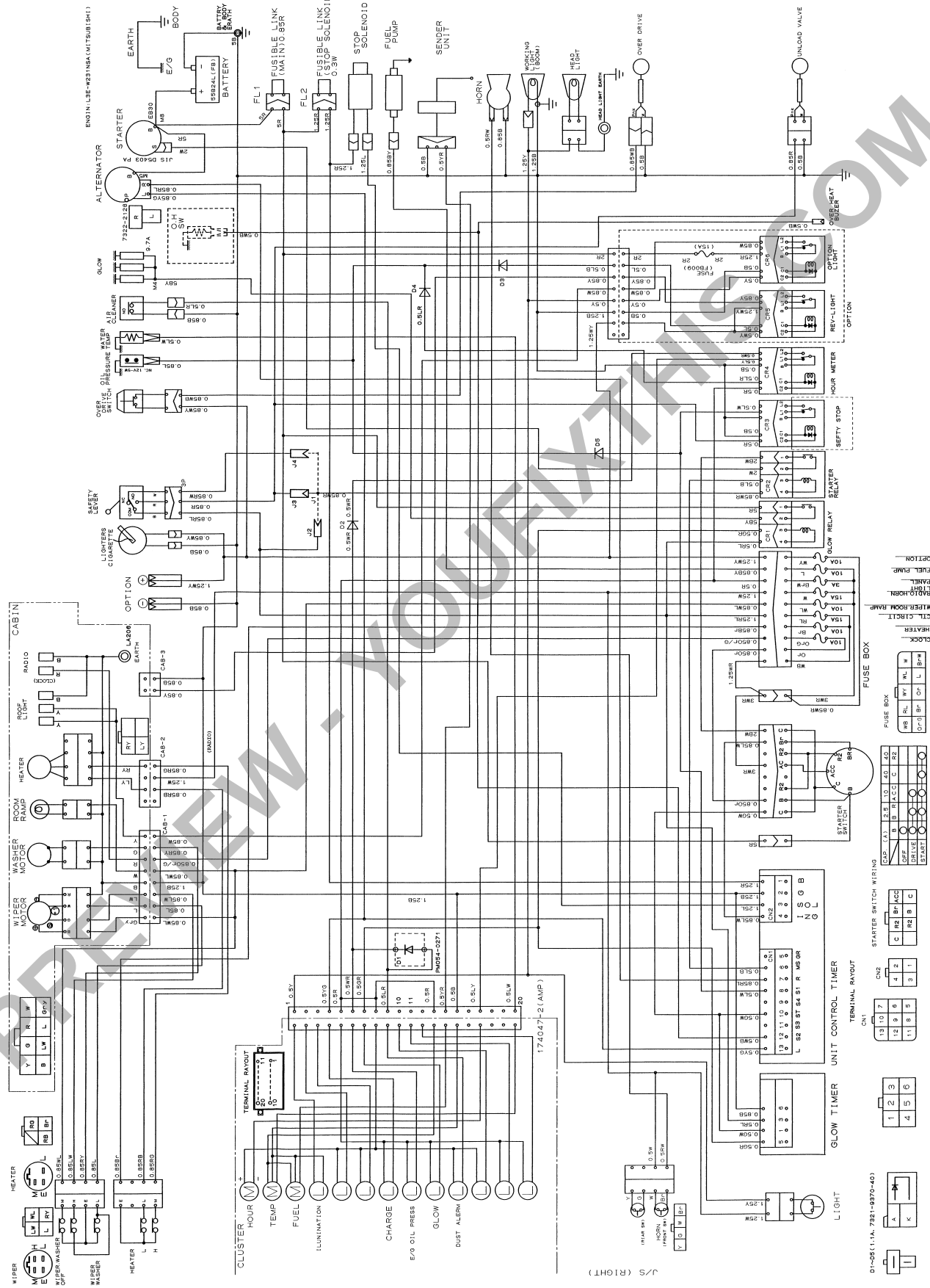


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18-1 Structure and function

18-1-1 Electric circuit diagram



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5-4 Performance test of the hydraulic pump

5-4-1 Measuring instrument

Hydraulic pressure tester	Measuring range of flow rate (ℓ/min)	7~ 200ℓ
	Measuring range of pressure	0 ~ 34.3MPa(350kgf/cm^2)
	Measuring range of temperature (°C)	0 ~ 150
	Port size	PF1 O ring type
Pressure gauge		49.0MPa(500kg/cm^2), 4.9MPa(50kgf/cm^2)
Tachometer		Diesel tachometer (digital type)
Hose for testing		Equivalent to the hose of 20.6MPa (210kgf/cm^2) high pressure (Nominal size PF1/ 2-PF1/ 2 × 1m)

5-4-2 Preparation

1. Park machine on flat ground and stop engine.

5-4-3 Connecting tester

1. Remove the hose on the pump port of the control valve.
2. Connect the removed hose to the outlet of the tester.
3. Connect the hose on the discharge of the pump to the inlet of the tester.
4. Connect pressure gauge to port measuring port.

5-4-4 Measuring procedure

Open the throttle valve of the tester and start the engine. Read the pressures on the pressure gauge and measure the flow at that time. At the same time, record the engine speed.

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11-3 Assembly

11-3-1 Assembly procedure

1. The assembly procedure is the reverse of disassembly.
2. Before assembly, check whether metallic powder or other foreign matter is not sticking to any of the parts and whether the parts can be reused.
3. Coat hydraulic oil on each part before assembling them.
4. Assemble beforehand the parts into the following assemblies.

   • Cylinder tube assembly
   • Rod cover assembly
   • Piston rod
   • Piston assembly

11-3-2 Inspection procedure

Clean each disassembled part with light oil or treated oil except for the packings.
Packings are cleaned with petroleum hydraulic oil.
Other types of oil will remarkably shorten the life of the packing.
Thoroughly clean the sliding surface, oil hole, O ring, packing groove, etc. If the part is not used for a long time after being cleaned, execute a rust proof treatment.
(Coating hydraulic oil is effective for rust prevention to a certain degree.)

1. Check all parts for flaws, cracks, deformation, rust, or burrs which may affect the operation. (Inside of the tube, rod, etc.)
2. Check each part for metallic powder or other foreign matter sticking to it.
3. Check the sliding surface of piston rod for damage, uneven abrasion, discoloring, or any defect which may affect its operation.
4. Packings and seals are usually replaced with new one. If you must reuse them, check that there are no tears, cuts or foreign matter sticking to the packing.

11-3-3 Precautions for assembly

Assemble the cylinder while paying attention to the following matters.

1. Replace the packings with new ones before assembly.
2. Execute assembly work paying attention to the direction of cushion bearings (boom, arm, bucket and swing) and seal rings (arm and swing).
3. Replace the set bolts with new ones.
   In assembling, after tightening the set bolts, further tighten and firmly fix them by hitting with punch at two points on the periphery.
4. Tighten the rod cover, piston and nuts with a specified tightening torque shown in the attached table (page 11-1).
5. Check fully before starting assembly work.

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