SERVICE MANUAL

E45B SR / E50B SR / E55B

Mini Excavators

Print No.84602422A

NEW HOLLAND CONSTRUCTION

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E50B SR
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2.8 ENGINE SPECIFICATIONS

2.8.1 SPECIFICATIONS

Model		E45B SR - E50B SR - E55B	
Engine model		4TNV88-XYB	
Type		Vertical, 4-cycle water-cooled diesel engine	
No. of cylinders - Bore x stroke		4 - 88 mm x 90 mm (3.54 in)	
Total displacement		2.189 litre	
Compression ratio		19.1	
Rated output		31.5 kW at 2400 rpm	
Maximum torque		139.3 Nm at 1440 rpm	
Low idling		1175 ± 25 rpm	
High idling		2600 ± 25 rpm	
Fuel consumption rate		Less than 242 g / kWh	
Allowable tilting angles		Continuous; 30° for all direction	
Rotating direction		Counterclockwise as viewed from flywheel side	
Order of ignition		1-3-4-2-1	
Injection time (injection time before top dead centre)		15.5 ± 1°	
Fuel injection pressure		19.6^{+1}_{0} MPa (2842 psi)	
Valve action		Open	Close
	Intake valve	b.T.D.C. 15 ± 5°	a.B.D.C. 45 ± 5°
	Exhaust valve	b.T.D.C. 56 ± 5°	a.B.D.C. 18 ± 5°
Valve clearance	Intake valve	0.2 mm (0.007 in) in cold condition	
	Exhaust valve	0.2 mm (0.007 in) in cold condition	
Thermostat action		Start 71 ± 1.5 °C / Fully open 85 °C	
Compression pressure		3.4 ± 0.1 MPa at 250 rpm	
Lubrication oil pressure		0.44 MPa at 2300 rpm	
Dimensions L x H x W		684 x 554 x 662 mm	
Dry weight		170 kg	
Injection governor		Mechanical centrifugal governor (All speed type)	
Fuel filtration		Cartridge type paper filter	
Lubrication system		Forced lubrication with trochoid pump	
Cooling system		Coolant / radiator	
Starter capacity		12 V x 2.3 kW	
Generator capacity		12 V x 55 A	
Starting aid		Air heater (12 V - 400 W)	
Cooling water capacity: Max / Engine		6.0 / 2.7 liter	
Engine oil volume: Max / Effective		7.4 / 4.0 liter	

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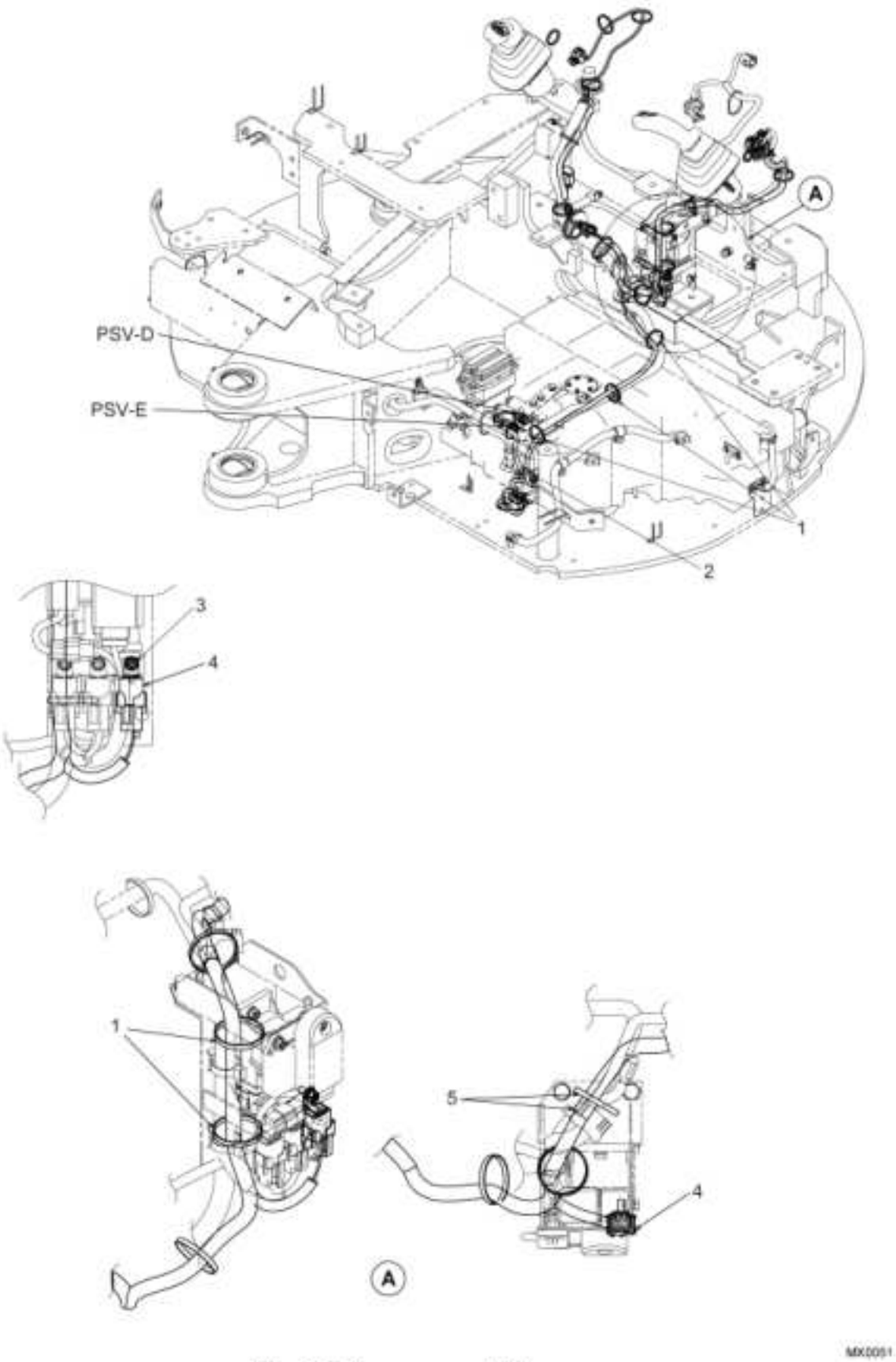


Fig. 23-8 Harness assy (1/2)

1. Fix to the main harness
2. Fix harness and connector PSV-F and PSV-G to bracket with a clip
3. Tightening torque 5.0 + 0.5 Nm
4. Horn relay
5. Put white tape positioned on plate

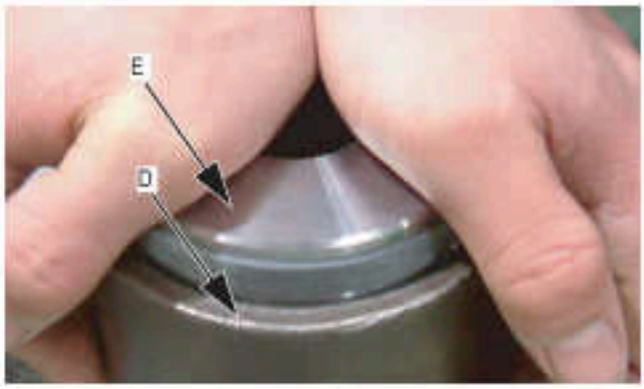
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32.2.1.8 POSSIBLE CAUSES FOR TROUBLE AND REMEDY

Trouble Conditions	Major possible causes	Remedy
Oil leakage from sliding face of piston rod. (A ring shape oil is formed on piston rod and enlarged resulting dripping down of oil).	• Foreign matter is caught by U-ring or wiper ring at its inside periphery.	• Remove foreign matter.
	• Scuffing or fault on O-ring or wiper ring at its inside periphery.	• Replace each part with new one.
	• Scuffing on sliding face of piston rod.	• Grind sliding face with a fine oil stone. (less than 1.6S).
		• If leakage is not stopped by grinding, replace seals such as U-ring, etc. with new ones.
		• If leakage is not stopped by replacing seals, replace piston rod.
	• Peeling off of hard chrome plating.	• Re-plating of hard chrome on piston rod.
Oil leakage from outer periphery of cylinder head.	• Damage to the O-ring.	• Replace.
	• Damages on back-up ring.	• Replace.
Oil leakage from welded portion.	• Damages on welded portion on tube.	• Replace.
Piston movement due to leakage. (In case a static load equivalent to the product of the multiplication between the max. working pressure and the cylinder area is applied to the rod, the maximum movement of the piston is larger than 0,5 mm (0.019 in) for 10 minutes).	• Foreign matter is caught by sliding face of slide ring.	• Remove foreign matter.
	• Scuffing or faulty condition on sliding face of slide ring.	• Replace.
	• Scuffing on sliding face of seal ring assembly.	• Replace.
	• Damage to the O-ring.	• Replace.

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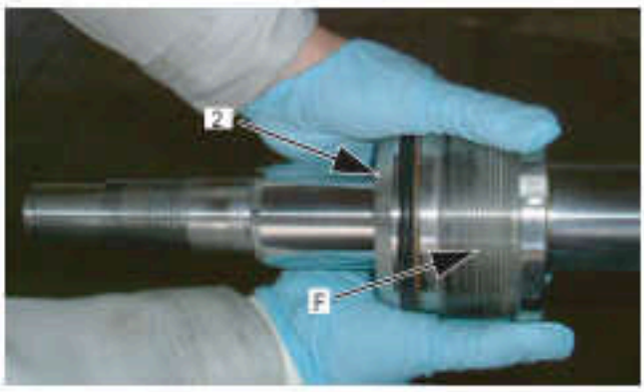
3) The O-ring of seal ring was extremely stretched at the installation, insert the piston subassembly (E) from the taper side of reforming jig (D) to reform the ring.



(4) Cylinder rod assembly

1) Keep clevis of cylinder rod (2) horizontal, and install the head sub-assembly (F).

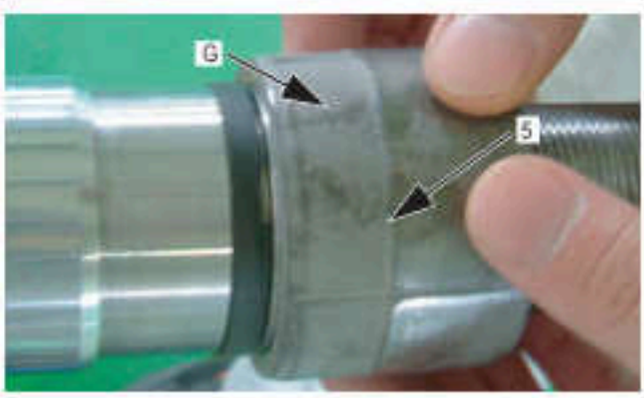
- Apply a light coat of hydraulic oil to the seal ring.
- Take care not to hit the seal against the thread of piston.



2) Face the slit of seal ring (12) to the thread, and install the seal ring into groove of rod.
Install the cushion bearing (5) on the rod from taper (G) side as shown in the photo.

- Take care of the direction of seal ring and cushion bearing.
If the direction is mistaken, the cushion effect is not obtained.





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(6) Assembling hydraulic motor section

1) Put three rollers (151) into the holes of the cylinder block (104).

2) Place the thrust ball (108) on the cylinder block (104).

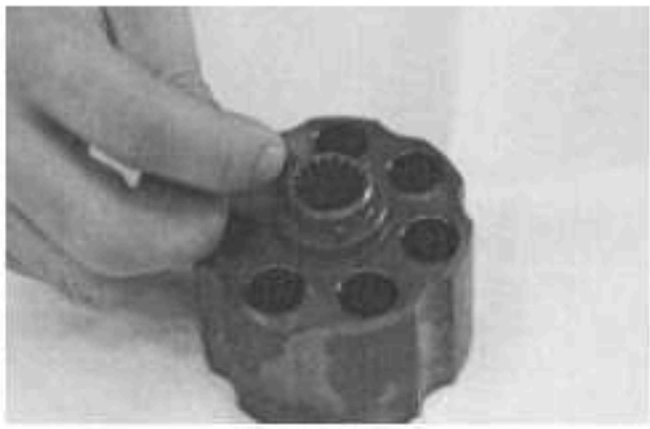


Fig. 34-168 Installing rollers (151)

3) Fit seven piston assemblies to the retainer plate (107).

- After assembling, immerse the whole unit in hydraulic oil.

4) Fit the retainer plate (107) and the seven piston assemblies to the cylinder block (104).

- Carefully match the retainer plate (107) with the spherical part of the thrust ball (108) for installation.

5) Insert the cylinder block (104) onto the drive shaft (102).

- For installation, align the spline hole in the cylinder block (104) with the spline shaft of the drive shaft (102).
- After installing the cylinder block, turn it by hand to make sure that it fits properly. If not, inspect it.
- Do not take up the cylinder block (104). Otherwise the thrust balls (108) may come off, leading to abnormality in rotation.



Fig. 34-169 Assembling piston assembly into retainer plate

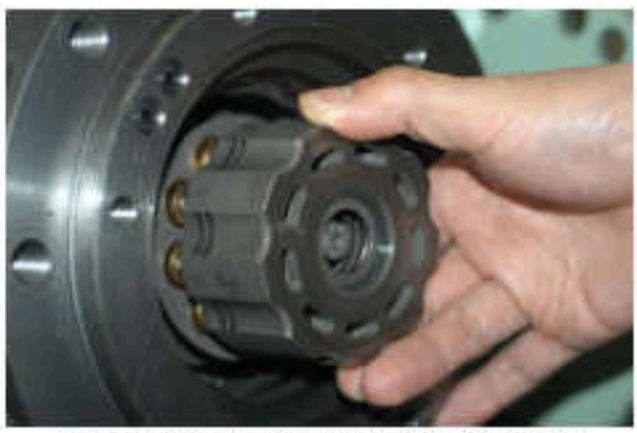


Fig. 34-170 Inserting cylinder block (104)

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(4) BUCKET CIRCUIT: Bucket digging operation

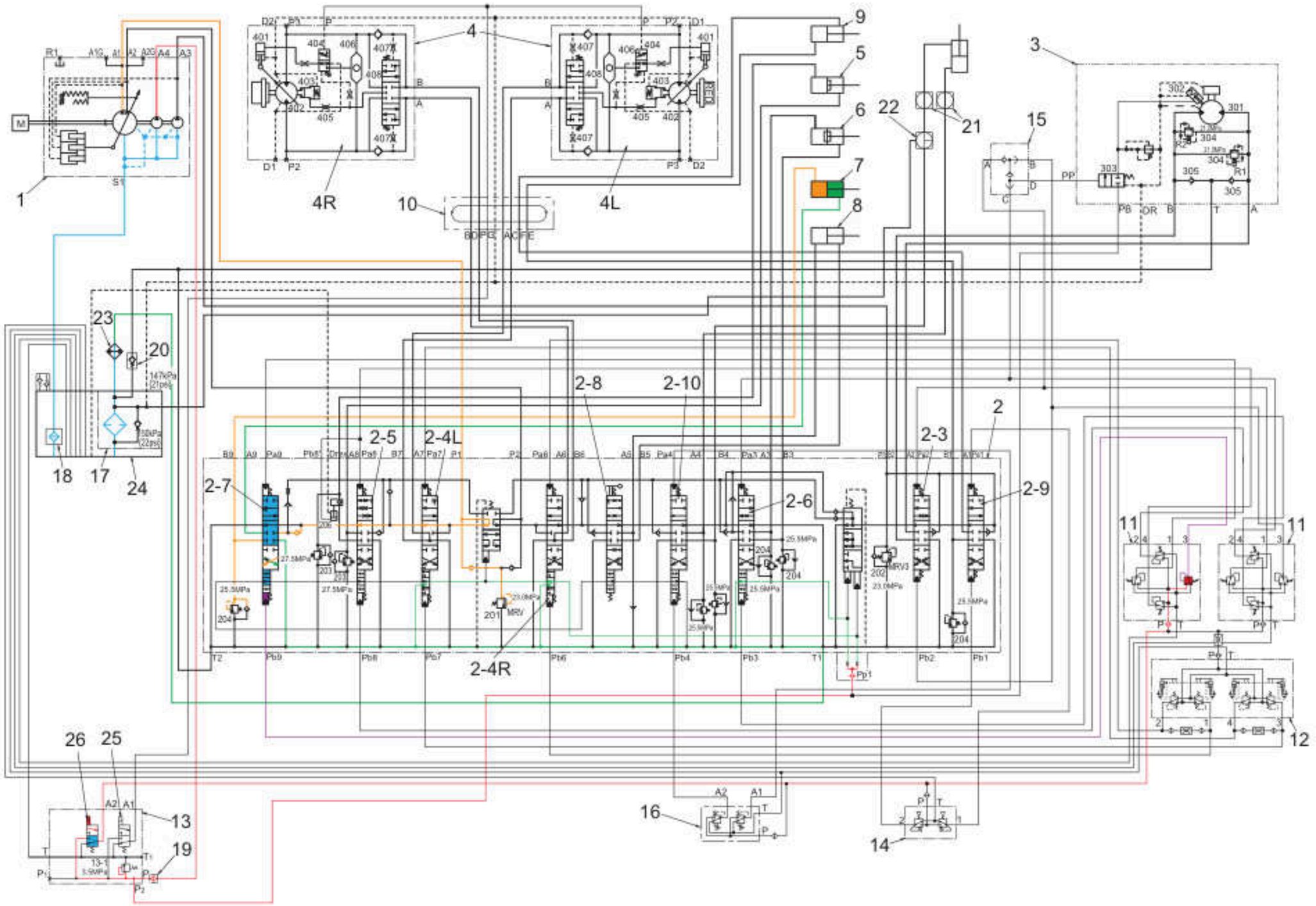


Fig. 71-5

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