2. TECHNICAL DATA

2. Technical Data

2-1 Specifications

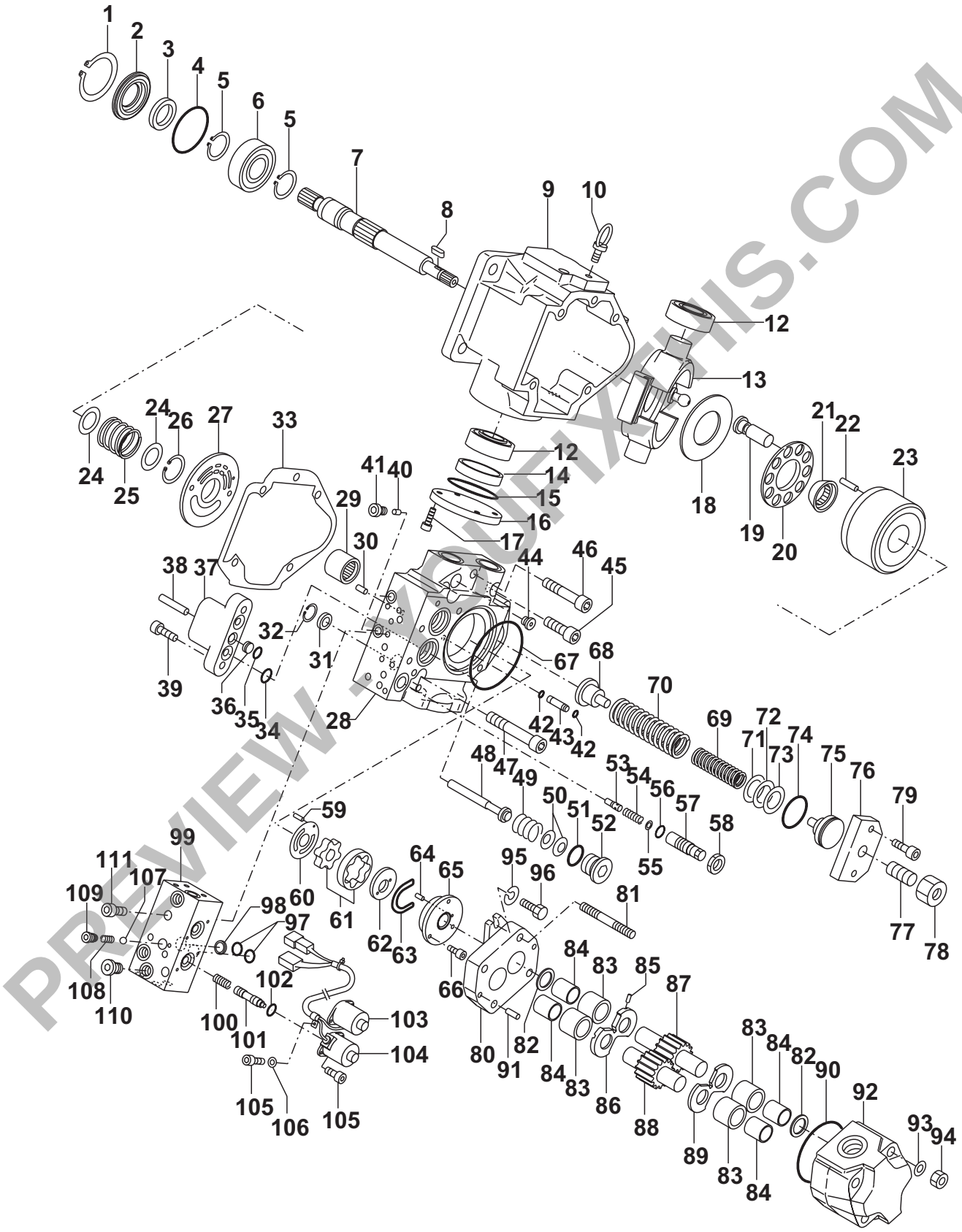
Item	Unit	ViO75	
		Standard arm type	Long arm type
Main specifications of machine			

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3. Exploded View and Parts Comprised



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3-7 List of Tightening Torque

3-7-1 Machine

Applicable model			ViO75		
Equipment			Thread size	Tightening torque ft•lbf (N•m)	Adhesive
	No.	Tightening part			
Engine / Electrical equipment					

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1. GENERAL CAUTIONS FOR MAINTENANCE WORK

1. General Cautions for Maintenance Work

1-1 Correct Work

Correct work means the quickest possible completion of according to the correct procedures and the specified standards.

It is important when conducting certain operations always to bear in mind the equipment, tools, gauges, materials, oil and grease, etc. that you must have ready, as well as items to be checked, adjusted, or disassembled, and cautions to watch out for.

1-2 Safety Precautions

(1) Never attempt servicing while engine is running or immediately after stopping operation.
(2) Wear work cloths, safety shoes and helmet.
(3) Check the equipment and tools before use. Especially, be sure to check the crane, lifting equipment and tools.
(4) When working together with other persons, allocate everyone's share of job, arrange the signals and act in concert with the other persons.
(5) The operation of the crane and slinging work must be performed by qualified persons.
(6) Do not enter or pass under the raised load.
(7) Lift and support the massive parts by crane before removing the installation bolts.
(8) Disconnect cables from battery before repairing the electric system.
(9) Remove the battery when welding the machine.

1-3 Preparations

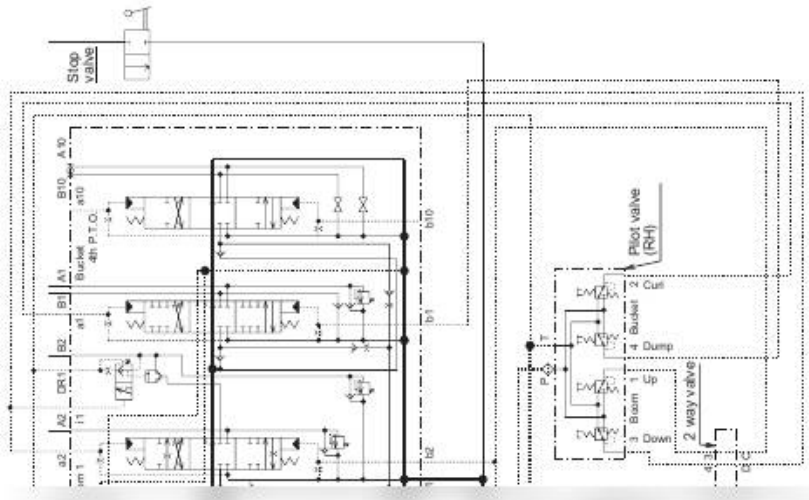
(1) Check the service record of the machine. (That is, check how many months or hours the machine has been used since the preceding overhaul, what was the trouble then and what parts were replaced.)
(2) Have all servicing tools ready, i.e., tools, measuring devices (which have received periodic maintenance), containers, oil & grease, etc.
(3) Have the service literature (operation manual, parts catalog, etc.) ready.

1-4 Cautions for Disassembly and Reassembly

(1) Clean the machine before disassembly.
(2) Check and record the condition of the machine before disassembly :
  • Model, machine number, operation hours
  • Reasons for repair, history of repair
  • Contamination of filters
  • Fuel and oil condition
  • Damage to parts, etc.
(3) Place alignment marks on the necessary parts to facilitate reassembly.
(4) Clean all the removed parts and new replacement parts and put them in order.
(5) Use new seals, split pins, etc. for reassembly.

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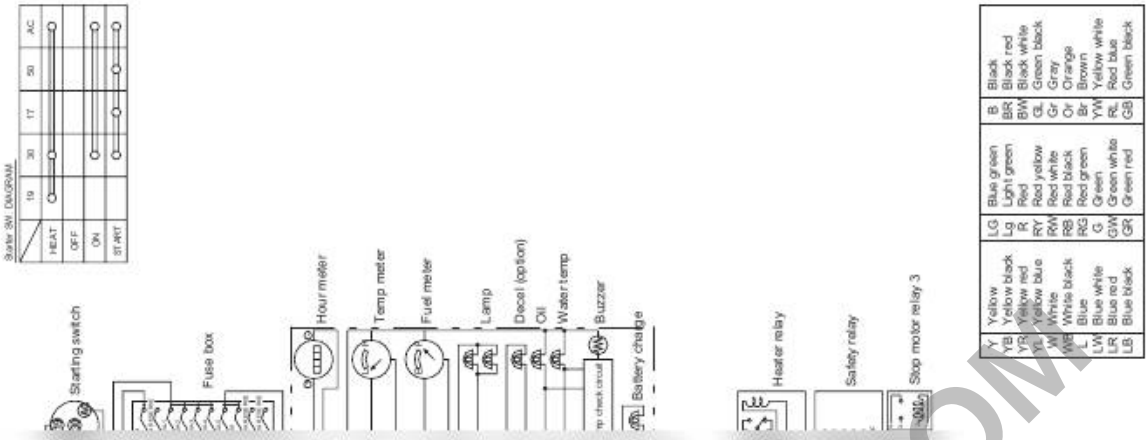
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4-3-12 Periodic Maintenance Schedule

The engine periodic inspection timing is hard to determine as it varies with the application, load status, qualities of the fuel and lubricating oils used and handling status. General rules are described here.

○ : Inspection ◇ : Parts replacement

			Maintenance period				

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en the engine service life.

		Corrective action
		Adjust the valve clearance.
		Lap the valve seat.
		Correct or replace.
		Replace the gasket.
		Replace the piston ring.
		Perform honing and use oversize parts.
		Repair the replace.
		Correct the ring joint positions.
		Reassemble correctly.
		Measure and replace.
		Tighten to the specified torque.
		Disassemble and repair.
		Adjust gear meshing.
		Measure and replace.
		Make adjustment.
		Adjust the valve clearance.

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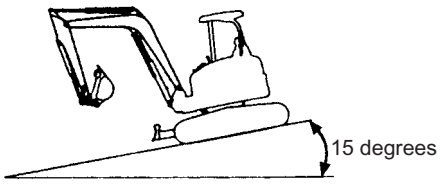
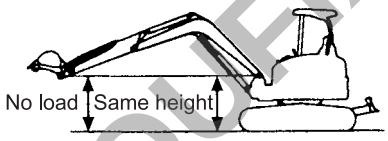
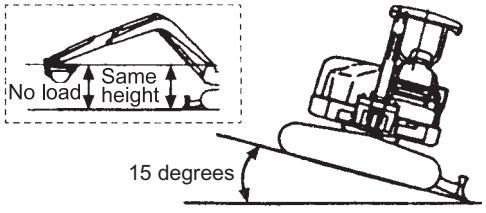
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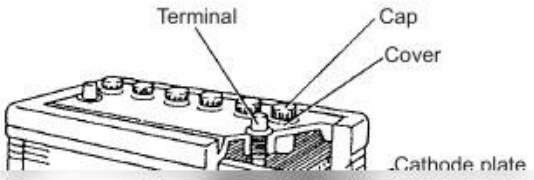
Applicable model			ViO75	
Item	Measuring condition	Unit	Standard	Allowance
Machine performance				
Traveling drift	Machine position  • Engine : stopped • Hydraulic oil temp. : 122 to 140 °F (50 to 60 °C) • Drift of the machine after 5 min. on a slope with an inclination of 15 degrees.	in. (mm)	0 (0) or less	or less
Drift of cylinders				
Boom drift (Cylinder rod retraction)	Machine position  • Engine : stopped • Hydraulic oil temp. : 122 to 140 °F (50 to 60 °C) • Site : Firm, flat ground • Make the boom and bucket pins the same height. • Measure the retraction or extension of each cylinder rod after leaving the machine at the above position for 10 min. • Lift the blade to the highest position, and measure the cylinder rod extension after 10 min.	in. (mm)	0.16 (4) or less	0.24 (6) or less
Arm drift (Cylinder rod extension)			0.39 (10) or less	0.59 (15) or less
Bucket drift (Cylinder rod extension)			0.24 (6) or less	0.35 (9) or less
Blade drift (Cylinder rod extension)			0.24 (6) or less	0.35 (9) or less
Boom offset drift (Cylinder rod extension)	Machine position  • Engine : stopped • Hydraulic oil temp. : 122 to 140 °F (50 to 60 °C) • Make the boom and bucket pins the same height. • Park the machine on a slope with an inclination of 15 degrees and turn the upperstructure 90 degrees to the crawler and engage the swing lock. • Measure the cylinder rod extension after 10 min.	in. (mm)	0.24 (6) or less	0.35 (9) or less

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4-3-9 Battery Inspection

1) Battery Structure



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4-6-3 Disassembly (Reverse the Procedure Below for Assembly)

[1] Remove the alternator. See 4-4-2 2) 1 in Chapter 4-4.
[2] Remove the fan, V-belt and pulley. See 4-4-2 2) 2 in Chapter 4-4.
[3] Remove the thermostat cover. See 4-4-2 2) 3 in Chapter 4-4.
[4] Remove the cooling water pump. ***(Point 1)***
[5] Remove the thermostat. ***(Point 2)***

4-6-4 Servicing Points

Point 1

Disassemble-Reassemble :

- Check to see that the cooling water pump bearing is free from abnormal noise, sticking or play and water leakage from the bearing. If replacement is necessary, replace the whole cooling water pump ass'y.

Point 2

Disassemble :

- Check the thermostat function. See 4-3-8 (1) [1] in Chapter 4-3 for the inspection method.

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4-9-8 Performance Test

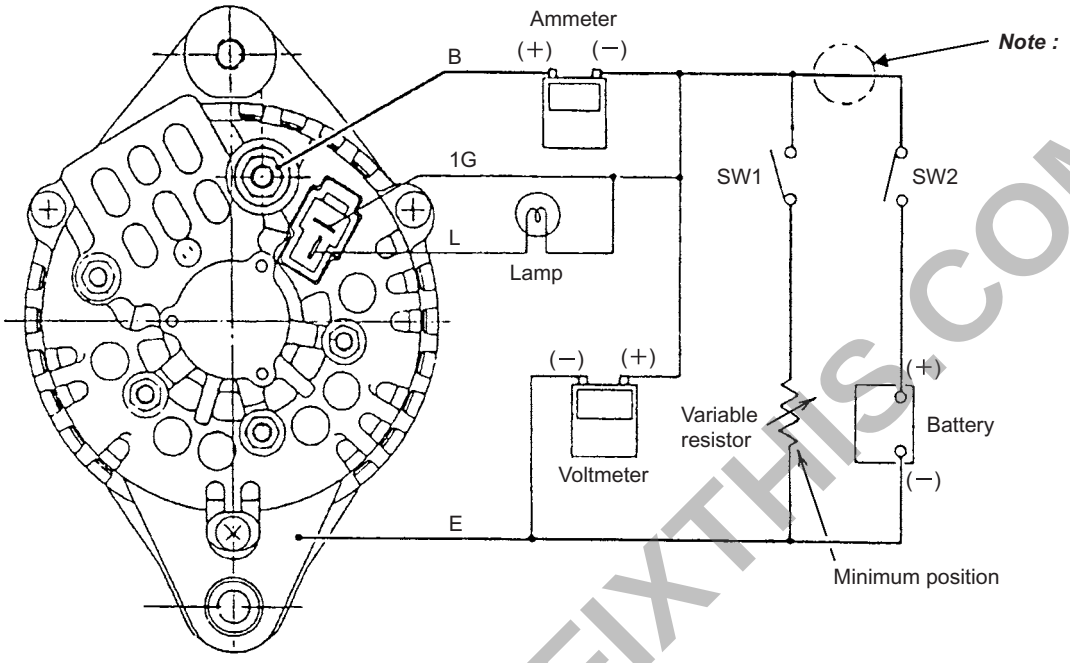


Fig. 20 Test circuits

Note :

The 0.25Ω resistor is connected when the battery is discharging.

Measurement jigs required :

[1] Voltmeter : DC voltmeter 0 to 30V, Class 0.5 (1 set)

[2] Ammeter : DC ammeter 0 to 100A, Class 1 (1 set)

[3] Variable resistor : 0 to 0.25Ω, 1kW (1)

[4] Resistor : 0.25Ω, 25W (1)

1) Voltage Measurement for Adjustment

With the test circuits shown in Fig. 20, open SW1 and close SW2, increase the alternator revolution to the rated speed of 5000 rpm and measure the voltage.

Adjustment voltage : Acceptable if the measured value is between 14.2V and 14.8V.

2) Revolution 13.5V

With the test circuits shown in Fig. 20, open SW1 and close SW2, gradually increase the alternator revolution until the voltmeter reads 13.5V and measure the revolution. The measured value is the operating speed at 13.5V.

Operating speed : Acceptable if the measured value is 1050 rpm or less.

3) Output Current Measurement

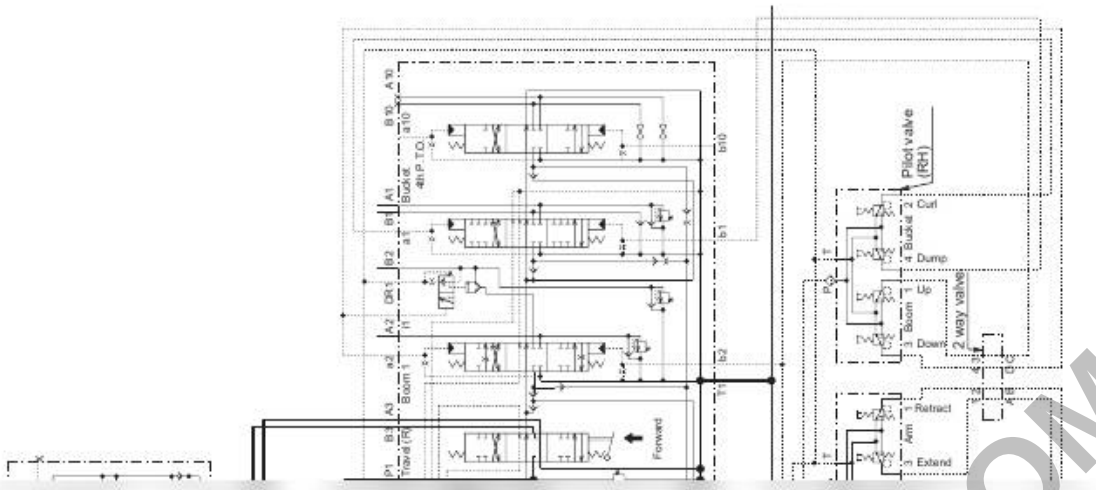
With the test circuits shown in Fig. 20, set the variable resistor to the min. position, close SW1 and SW2, and increase each output of the alternator. Adjust the variable resistor so that the voltmeter reads 13.5V and measure the current. The measured value is at each output current.

4) Cautions on Performance Test

[1] Use thick wires having a min. cross section of 0.0124 sq•in.(8 sq•mm) and max. length of 98.4 in. (2.5 m) long connecting the alternator B and battery (+) terminals, and the E and battery (–) terminals.

[2] Use switches having small contact resistances.

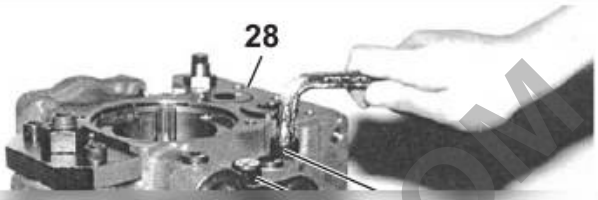
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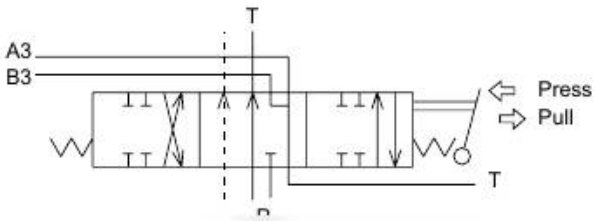
Procedure	
(9) Loosen two hexagon socket head bolts of **45** and **46** each and one hexagon socket head bolt **47** to remove cover **28**. Tool : Hexagon socket screw key 12. (10) Remove cover **28** using special tools, two screws for cover disassembly/reassembly.	

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3) Travel (R)



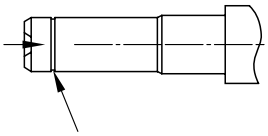
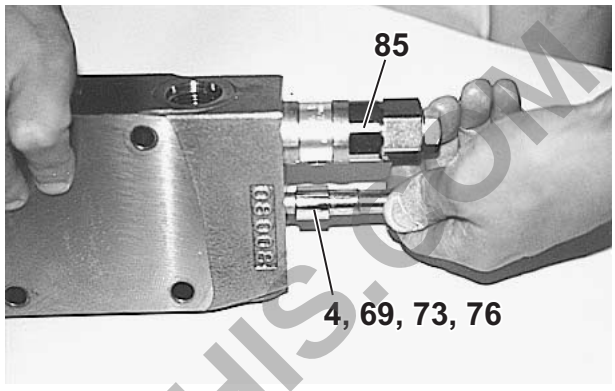
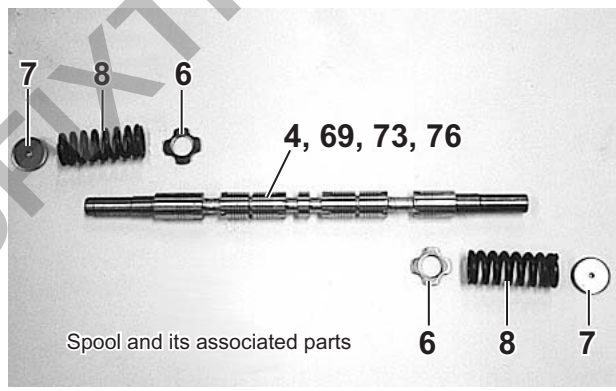
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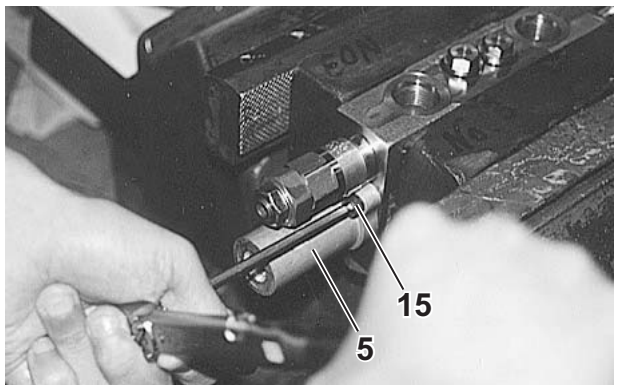
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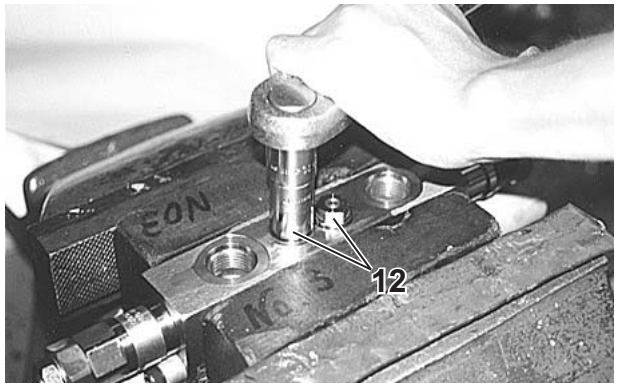
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5) Reassembly

• Bucket, arm, swing and boom 2 sections

Procedure	
(1) Apply clean hydraulic oil to each spool assembly and slowly install it into the valve housing. ***Notes :*** *a) Take care not to install the spool assembly in the wrong direction.* *b) A left-right asymmetry spool has a groove for identification in its top part. (insert the spool with the groove on the port B side of the section.)* Applicable sections : Bucket and arm  Groove for identification	  Spool and its associated parts

(2) Install caps **5** (with O-rings **14**), spring seats **6** and **7** and springs **8** to each valve housing. Tightening torque: 6.50 to 7.95 ft·lbf (8.8 to 10.8 N·m)	

(3) Install check valves **9** and **10** or **74**, springs **11** and plugs **12** to each valve housing. Tightening torque: 22.4 to 23.9 ft·lbf (30.4 to 32.4 N·m) (4) Install O-ring **19** to the valve housing.	

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2) Motor

(1) Exploded view and parts



No.	Part	Q'ty
1	Taper roller bearing	1
2	Snap ring	1
3	Needle bearing	1

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2. Gear Oil Change Interval

[1] First change (initial change after starting operation) after 100 hours

[2] Second and following changes : after 1000 hours or one year

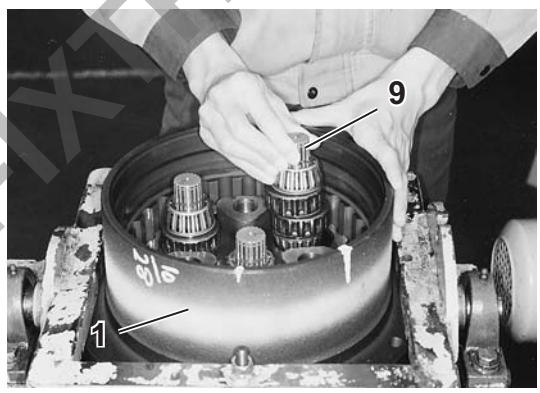
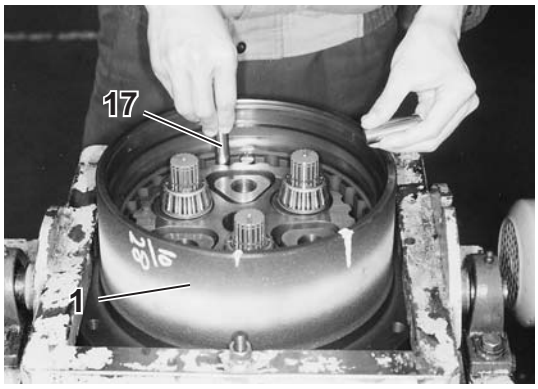
Avoid mixing different types of lubricating oils. When changing the type of lubrication oil, be sure to flush the interior of the reduction gear.

3. Gear Oil Change Volume

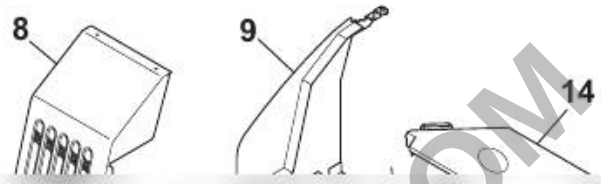
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Procedure	
3. Mount the RV gear assembly. (1) Install RV gear A **4** in the hub **1**.	
(2) Install the crank shaft **9** in the hub **1**. ***Note :*** *Match the inner race of the tapered roller bearing **22** of the crank shaft **9** with the outer race hole of the tapered roller bearing **22** fit in the spindle **2**.*	
(3) Install RV gear B **5** in the hub **1**. ***Note :*** *Match the punch mark of RV gear A **4** and RV gear B **5**.*	
(4) After applying lubricating oil to the pins **17** (24 pins), insert between the pin groove of the hub **1** and gear teeth groove.	

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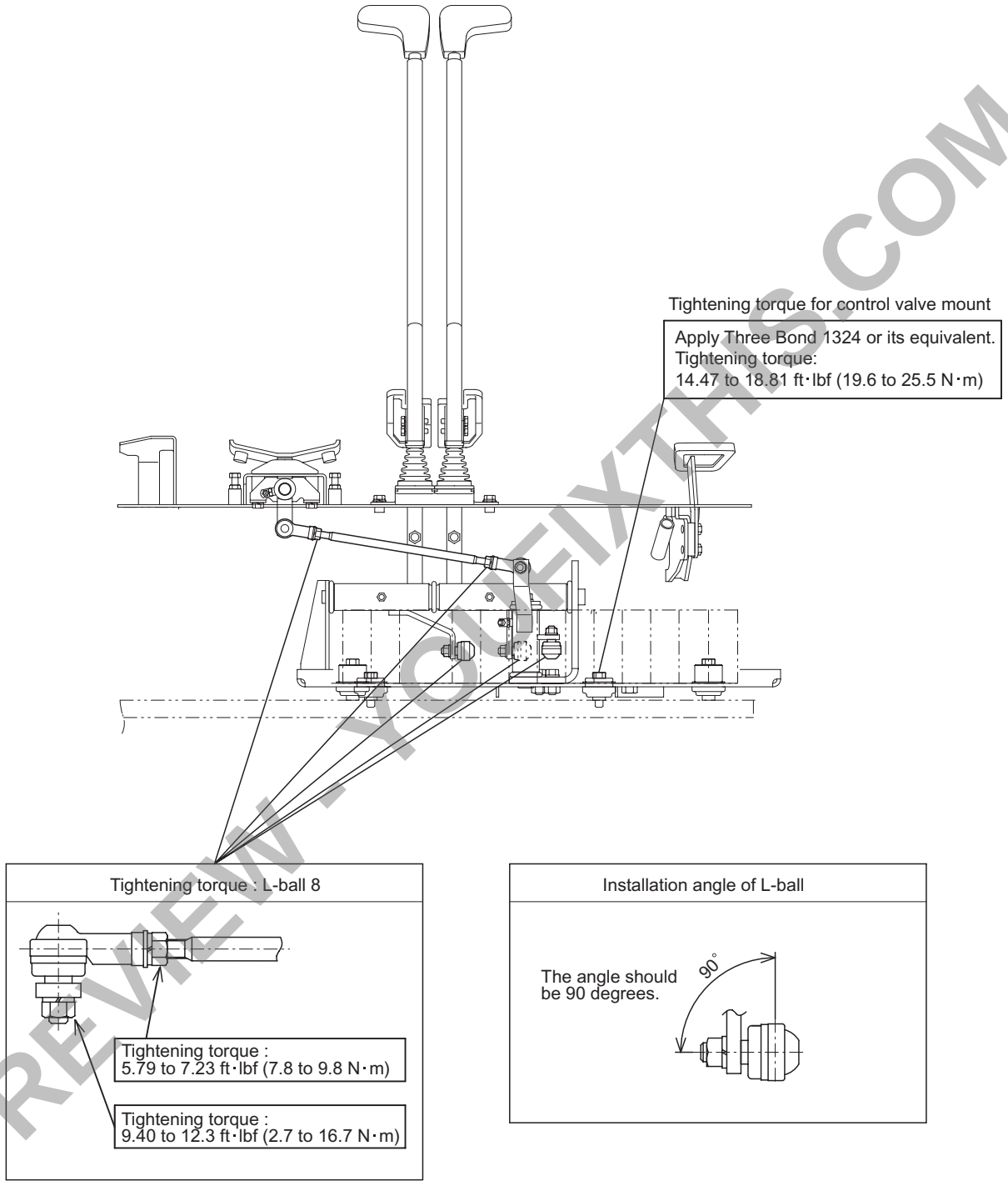
Procedure	
(6) Remove the covers. • Step cover **7** • Center cover **8** • Side cover **9** • Seat cover R **10** • Floor mat and floor step **11** • Multipurpose cover **12**	

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2) Tightening torque for rod joints and control valve mount



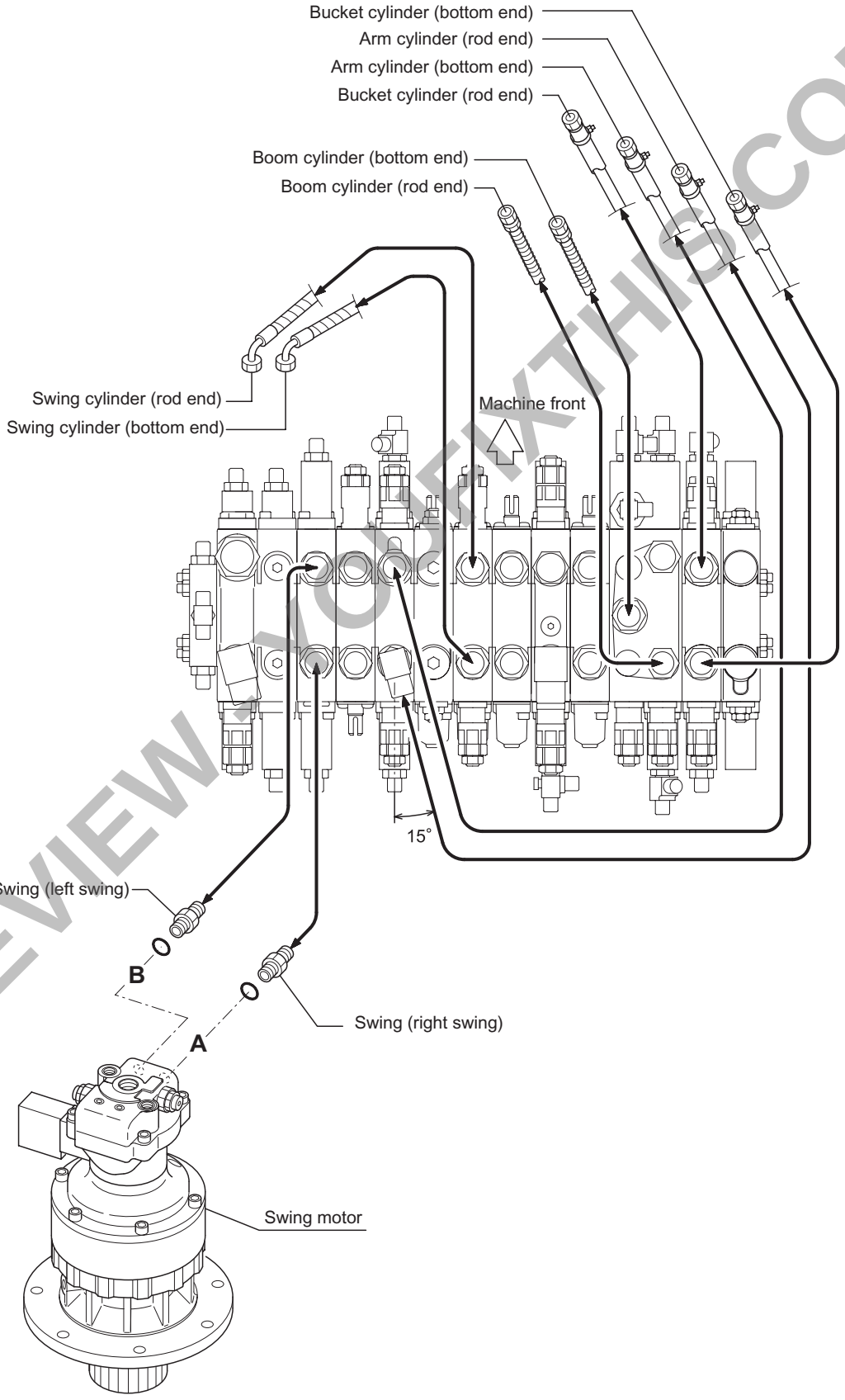
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2) Upperstructure

(Control valve ←→ swing motor)

(Control valve ←→ implement cylinders)



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10. Troubleshooting

10-1 Non-breakdowns

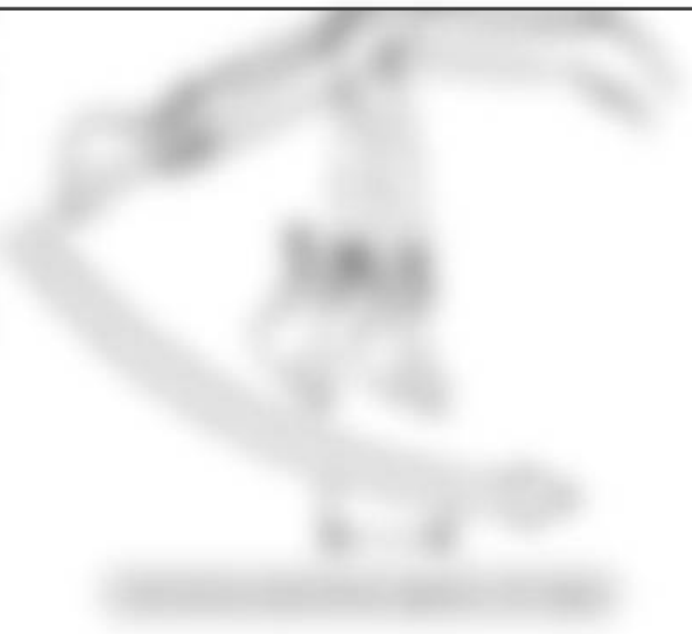
10-1-1 Natural Release of Bucket

Phenomenon

When the arm is extended while scooping with the



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