

## GROUP 2 MAJOR COMPONENT

### 1. MAIN PUMP

Before inspection, wash the parts well and dry them completely.

Inspect the principal parts with care and replace them with new parts when any abnormal wear exceeding the allowable limit or damage considered harmful is found.

Replace the seal also when any remarkable deformation and damage are found.

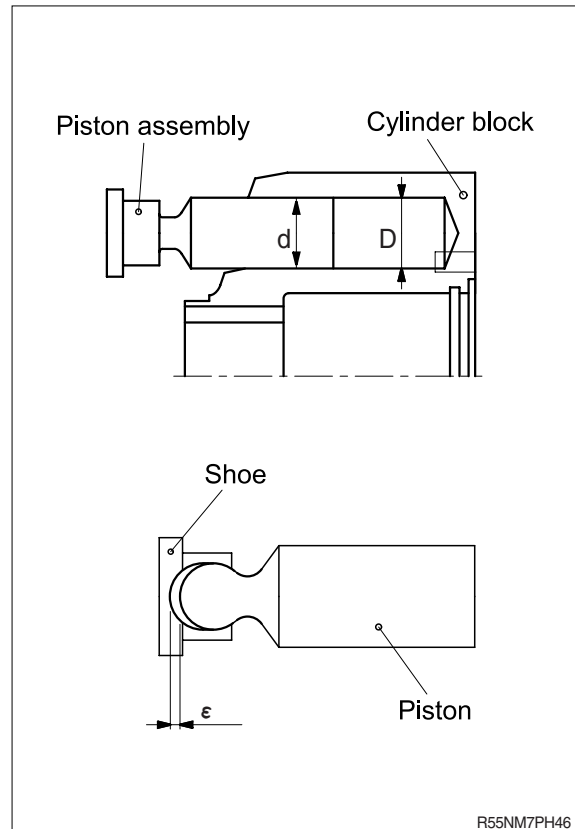
#### 1) PISTON ASSEMBLY AND CYLINDER BLOCK

- (1) Check the appearance visually.

No damage, scouring, abnormal wear (Particularly, in the slide portion) should be found.

- (2) Check the clearance between the piston outside dia and cylinder block inside dia.

$$D-d \leq 0.060\text{mm}$$

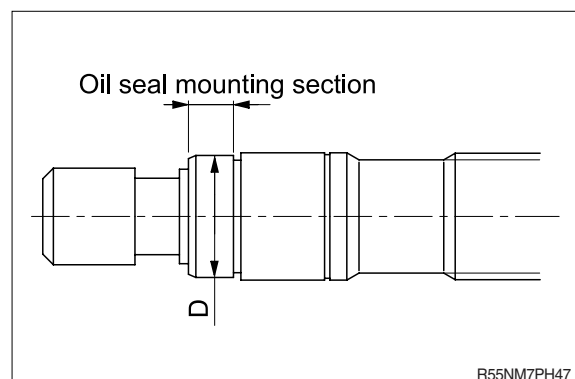


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#### 2) PISTON SHOE AND PISTON

- (1) Check the axial play of the piston and piston shoe.

$$\epsilon \leq 0.2\text{mm}$$

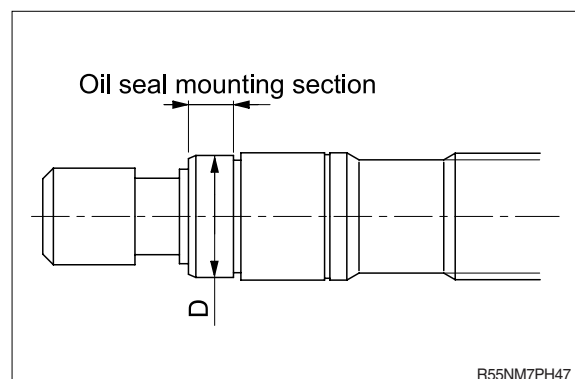


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#### 3) SHAFT

- (1) Check the wear amount of the oil seal mounting section.

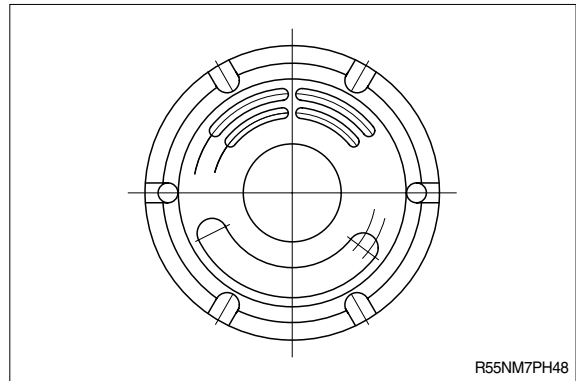
$$\text{Wear amount} \leq 0.025\text{mm}$$



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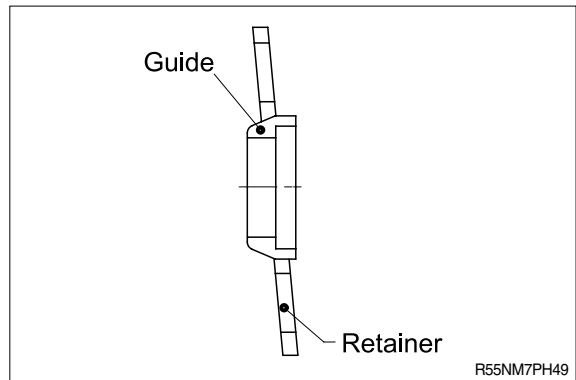
#### 4) CONTROL PLATE

- (1) Check the slide surface for any damage.  
When the damage is large, replace the plate with new one.



#### 5) GUIDE AND RETAINER


- (1) Check for scouring or stepped wear.  
If this can not be corrected, replace the guide and retainer with new full-set.
- (2) Fine scouring or damage can be corrected with lapping.  
Carry out thorough washing after lapping.



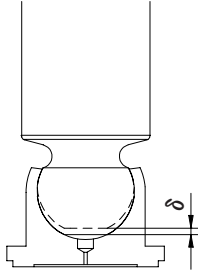
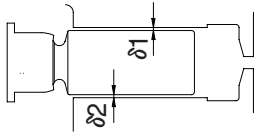
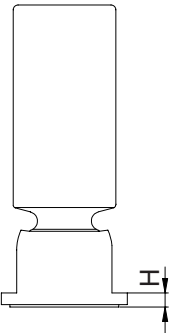
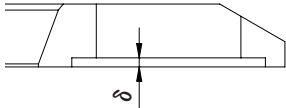

## 2. MAIN CONTROL VALVE

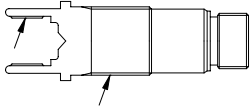
Part name	Inspection item	Criteria & measure
Switching section	<ul style="list-style-type: none"> <li>Existence of scratch, rust and corrosion.</li> </ul>	<ul style="list-style-type: none"> <li>Replace it when there is flaw on the following section.               <ul style="list-style-type: none"> <li>Sliding section against the spool, especially land section where the hold pressure is borne.</li> <li>Seal pocket section where the spool is placed in or flange section.</li> <li>Seat section of relief valve and overload relief valve.</li> <li>Failure it may cause malfunction, etc.</li> </ul> </li> </ul>
Spool	<ul style="list-style-type: none"> <li>Existence of scratch, rust and corrosion.</li> <li>Insert spool in the hole of the switching section, stroke it while rotating.</li> </ul>	<ul style="list-style-type: none"> <li>Replace it when there is scratch on the peripheral sliding surface</li> <li>In case the spool is not smooth, repair or replace it.</li> </ul>
Load check valve	<ul style="list-style-type: none"> <li>Damage of load check valve and spring.</li> <li>Insert load check valve in plug and experimentally operate it.</li> </ul>	<ul style="list-style-type: none"> <li>In case there are flaws and scratches on the seat section, repair or replace it.</li> <li>When it moves smoothly, normal but if it moves unsmoothly, replace it.</li> </ul>
Around spring	<ul style="list-style-type: none"> <li>Rust, corrosion, deformation and breakage of spring, spring seat, plug, and cover.</li> </ul>	<ul style="list-style-type: none"> <li>Replace it when the movement is unsmooth or there is damage causing poor durability.</li> </ul>
Around of seal of spool	<ul style="list-style-type: none"> <li>Hardenig, deformation and flaw of O-ring.</li> </ul>	<ul style="list-style-type: none"> <li>Exchange</li> <li>Replace.</li> </ul>
Main relief valve Overload relief valve	<ul style="list-style-type: none"> <li>Rust on outer surface.</li> <li>Contact surface of valve seat.</li> <li>Spring in abnormal condition.</li> <li>O-ring, back-up ring.</li> </ul>	<ul style="list-style-type: none"> <li>In case there are flaw and dent, replace it.</li> <li>Replace.</li> <li>Replace all parts, as a general rule.</li> </ul>

### 3. SWING DEVICE

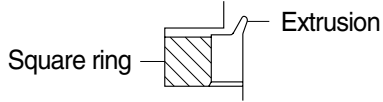
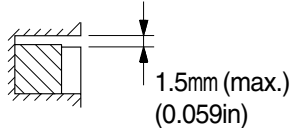
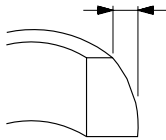
Part name	Inspection item	Remedy
Shoe of piston assembly	<ul style="list-style-type: none"> <li>· Sliding surface has a damage.</li> <li>· Sliding surface depression( ) dimension less than 0.45mm or has a large damage.</li> </ul>	<ul style="list-style-type: none"> <li>· Lapping</li> <li>· Replace parts or motor</li> </ul>
Piston of piston assembly	<ul style="list-style-type: none"> <li>· Sliding surface has a seizure(Even though small).</li> </ul>	<ul style="list-style-type: none"> <li>· Replace motor</li> </ul>
Piston hole of cylinder assembly	<ul style="list-style-type: none"> <li>· Sliding surface has a seizure.</li> <li>· Sliding surface has a damage.</li> </ul>	<ul style="list-style-type: none"> <li>· Replace motor</li> <li>· Replace motor</li> </ul>
Taper roller bearing Needle bearing Roller bearing	<ul style="list-style-type: none"> <li>· In case 3000hour operation.</li> <li>· Rolling surface has a damage.</li> </ul>	<ul style="list-style-type: none"> <li>· Replace</li> <li>· Replace</li> </ul>

#### 4. TRAVEL DEVICE

Part name	Check point	Standard dimension	Maximum allowable value (Criteria)	Remedy
Piston assy(7) 	Play between piston and slipper	$\delta = 0.1\text{mm}$	$\delta < 0.5\text{mm}$	Replace 9 sets of piston assy
Piston assy(7) and cylinder barrel (3) 	Clearance/diameter between piston diameter and cylinder bore ( $\delta 1 + \delta 2$ )	0.03mm	$< 0.07\text{mm}$	Replace the set of 1 cylinder barrel and 9 piston assys
Slipper(7-2) 	Height of the plate	Height H 5mm	Height $H < 4.6\text{mm}$	Replace 9 sets of piston assy
Retainer(5) 	Wear		Wear depth $\delta < 0.2\text{mm}$	Replace
Cam(6) 	Condition of sliding surface	Roughness $< \text{Ra } 0.2\mu\text{ m}$	Roughness $< \text{Ra } 1.6\mu\text{ m}$	Replace

Part name	Check point	Standard dimension	Maximum allowable value (Criteria)	Remedy
Shaft(2) 	Spline sections(connected to cylinder barrel, and bear part)	-	No abnormality such as crack, chipping, nonuniformly wear-ing out, etc.	Replace
Bearings(1-3), (1-8), (1-13), (11), (12)	Rolling surface	-	No flaking or other abnormal damage on the rolling surface	Replace
Oil seal(13)	Seal lip	-	No damage or partial wear	Replace
O-rings, Back-up rings	-	-	-	In reassembling, they should be replaced with new ones even if no abnormality is detected.
Cylinder barrel(3)	Condition of the surface sliding with valve plate	Roughness < Ra 0.2 $\mu$ m	Roughness < Ra 0.8 $\mu$ m	Replace the set of cylinder barrel and valve plate
Valve plate(8)	Condition of sliding surface	Roughness < Ra 0.4 $\mu$ m	Roughness < Ra 1.6 $\mu$ m	Replace the set of cylinder barrel and valve plate

## 5. TURNING JOINT

Part name		Maintenance standards	Remedy
Body, Stem	Sliding surface with sealing sections.	Plating worn or peeled due to seizure or contamination.	Replace
	Sliding surface between body and stem other than sealing section.	• Worn abnormality or damaged more than 0.1mm (0.0039in) in depth due to seizure contamination.	Replace
		• Damaged more than 0.1mm(0.0039in) in depth.	Smooth with oilstone.
	Sliding surface with thrust plate.	• Worn more than 0.5mm(0.02in) or abnormality.	Replace
• Worn less than 0.5mm(0.02in).		Smooth	
• Damage due to seizure or contamination remediable within wear limit (0.5mm)(0.02in).		Smooth	
Cover	Sliding surface with thrust plate.	• Worn more than 0.5mm(0.02in) or abnormality.	Replace
		• Worn less than 0.5mm(0.02in).	Smooth
		• Damage due to seizure or contamination remediable within wear limit (0.5mm)(0.02in).	Replace
Seal set	-	<ul style="list-style-type: none"> <li>• Extruded excessively from seal groove square ring.</li> </ul> 	Replace
	-	<ul style="list-style-type: none"> <li>• Slipper ring 1.5mm(0.059in) narrower than seal groove, or narrower than back ring.</li> </ul> 	Replace
	-	<ul style="list-style-type: none"> <li>• Worn more than 0.5mm(0.02in) ~ 1.5mm(MAX.) (0.059in)</li> </ul> 	Replace

## 6. CYLINDER

Part name	Inspecting section	Inspection item	Remedy
Piston rod	· Neck of rod pin	· Presence of crack	· Replace
	· Weld on rod hub	· Presence of crack	· Replace
	· Stepped part to which piston is attached.	· Presence of crack	· Replace
	· Threads	· Presence of crack	· Recondition or replace
	· Plated surface	· Plating is not worn off to base metal. · Rust is not present on plating. · Scratches are not present.	· Replace or replate · Replace or replate · Recondition, replate or replace
	· Rod	· Wear of O.D.	· Recondition, replate or replace
	· Bushing at mounting part	· Wear of I.D.	· Replace
Cylinder tube	· Weld on bottom	· Presence of crack	· Replace
	· Weld on head	· Presence of crack	· Replace
	· Weld on hub	· Presence of crack	· Replace
	· Tube interior	· Presence of faults	· Replace if oil leak is seen
	· Bushing at mounting part	· Wear on inner surface	· Replace
Gland	· Bushing	· Flaw on inner surface	· Replace if flaw is deeper than coating