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5-2 Hydraulic Circuit Schematic



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3. Exploded View and Parts Comprised



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3. SERVICING STANDARDS

3-7 List of Tightening Torque

3-7-1 Machine

Unit: N•m

Applicable model:			SV20		
Equipment No.		Tightening part	Thread size	Tightening torque	Adhesive
Engine / Electrical equipment					

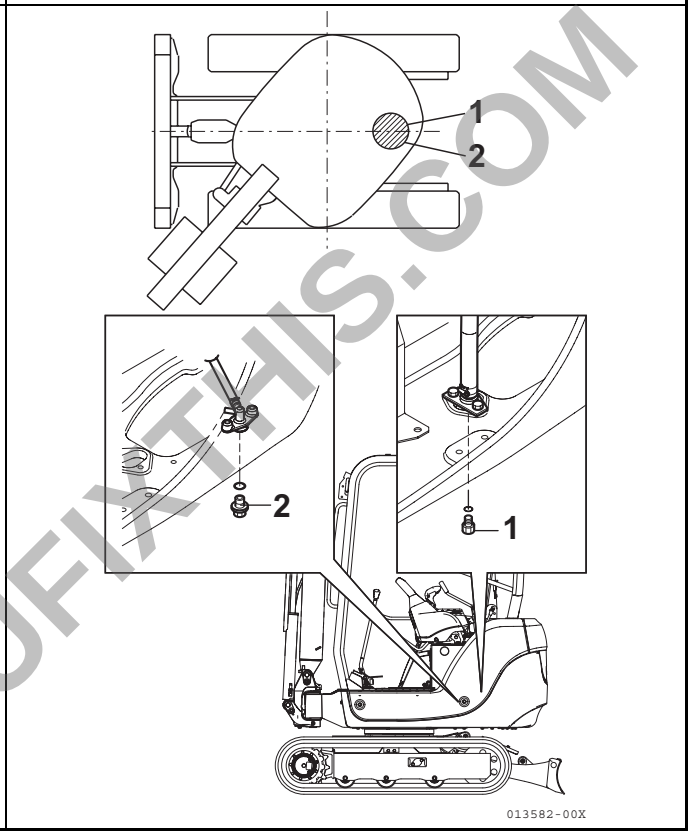
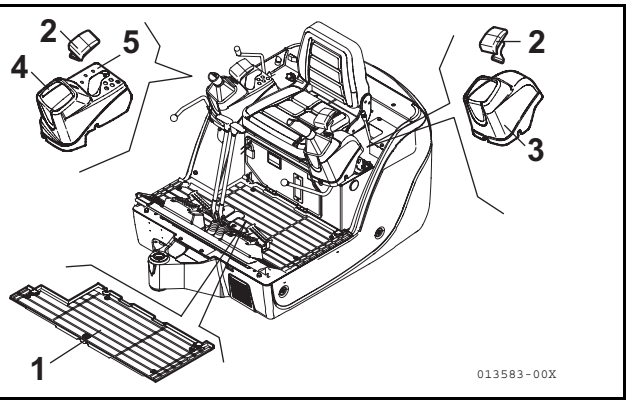
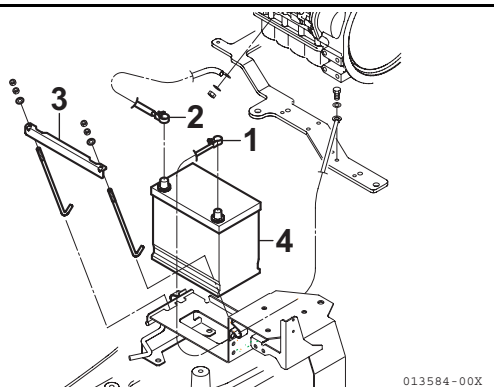
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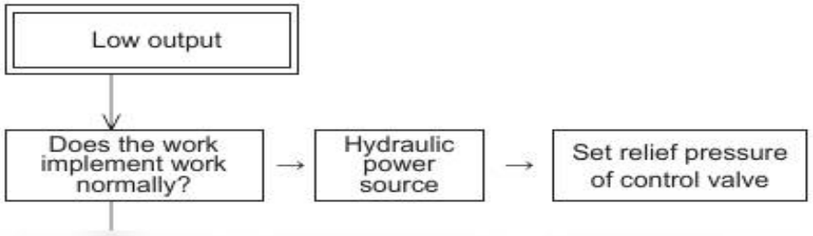
7-1-5 Removal and Reinstallation of Engine

1) Removal

Procedure	
(1) Swing the upperstructure so that the drain plug **1** of the hydraulic oil tank and the cooling water drain plug **2** are positioned halfway between the right and left crawlers. Then, lower the bucket to the ground and stop the engine. (2) Remove the drain plug **1** from the hydraulic oil tank and drain the hydraulic oil. Type: ISO VG 46 Quantity: 32 L (3) Remove the drain plug **2** from the two-way cock for cooling water and drain the cooling water. Cooling water quantity: 3.6 L	
(4) Remove the step B **1**, the arm rest **2**, the panel L **3** and the panel R **4**. (5) Remove the indicator box **5**, and then disconnect the harness connectors.	
(6) Disconnect the battery cable (negative) **1** and the battery cable (positive) **2** and remove the battery clamp **3**. Then remove the battery **4**.	

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10. TROUBLESHOOTING



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2. TECHNICAL DATA

2. Technical Data

2-1 Specifications

Item	Unit	SV20
Main specifications of machine		
Dimensions		
Overall length (Transportation position)	mm	3776

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8. Periodic Inspection and Servicing

8-1 List of Periodic Inspection and Servicing

◇: Check ○: Supply ●: Replace □: Adjust (clean) ■: Oil & grease

Check & service items			Daily	Every 50	Every 100	Every 250	Every 500	Every 1000 hrs
General	Check falling off, breakage of parts		◇					
	Check loosened bolts & nuts, retighten		◇					
	Check engine condition		◇					
	Clean		□					
Lube oil	*Swing gear case oil	Check, resupply				◇/○		
		Replace			●1st time			●
	Travel reduction gear oil	Check, resupply				◇/○		
		Replace			●1st time			●
	*Transmission oil	Check, resupply	◇/○					
		Replace			●1st time			●
	*Differential gear oil	Check, resupply			◇/○			
		Replace			●1st time			●
Hydraulic system	Hydraulic oil	Check, resupply	◇/○					
		Replace						●
	Clean suction filter					□1st time		□
	Replace return filter					● 1st time	●	
	Check for abnormality of hydraulic pump		◇					
Grease	Check grease-up positions, grease		■					
	Greasing the swing gears and the swing bearings			■				
	Greasing the track gauge change cylinder and the link fulcrum			■				
Undercarriage	Check, adjust track tension		◇/□					
	*Check air pressure, wear, flaw in tyres		◇					
Steering equipment	*Check performance, play of steering lever		◇					
	Check performance, play of travel lever		◇					
	*Check performance of speed change lever		◇					
	*Check performance of forward/reverse pedal		◇					
	*Check performance, play of steering wheel		◇					
	*Brake pedal	Stroke	◇					
		Performance	◇					
	*Parking brake	Stroke	◇					
		Performance	◇					
	Check performance of accel. lever		◇					
Electric equipment	Check front & work lights, horn		◇					
	Check hourmeter function		◇					
	Check function of change, oil and pilot lamps		◇					
	Check wire breakage, short-circuits, loosened terminals retighten		◇					
	Check, resupply battery fluid		◇/○					
	Check specific gravity of electrolyte						□As required	
	Check function of OK monitor		◇					

*Applicable to models with the relevant equipment

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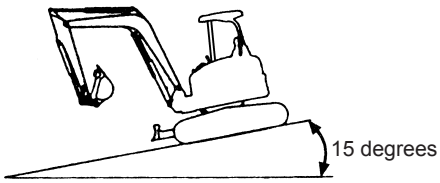
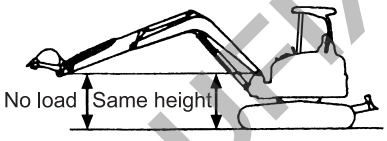
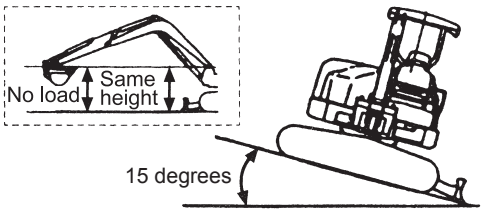
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Applicable model			SV20	
Item	Measuring condition	Unit	Standard	Allowance
Machine performance				
Traveling drift	Machine position  • Engine: stopped • Hydraulic oil temp.: 50 to 60 °C • Drift of the machine after 5 min. on a slope with an inclination of 15 degrees.	mm / 5 min.	90	150
Drift of cylinders				
Boom drift (Cylinder rod retraction)	Machine position  • Engine: stopped • Hydraulic oil temp.: 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.	mm / 10 min.	5	10
Arm drift (Cylinder rod extension)			15	25
Bucket drift (Cylinder rod extension)			5	10
Blade drift (Cylinder rod extension)			5	10
Boom offset drift (Cylinder rod extension)	Machine position  • Engine: stopped • Hydraulic oil temp.: 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.	mm / 10 min.	5	7.5

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4-3-4 Piston and Piston Rings

1) Checking the Piston

(1) Remove carbon deposits from the head and combustion surface of the piston while taking care not to damage the piston. Check if there are any cracks or damage.



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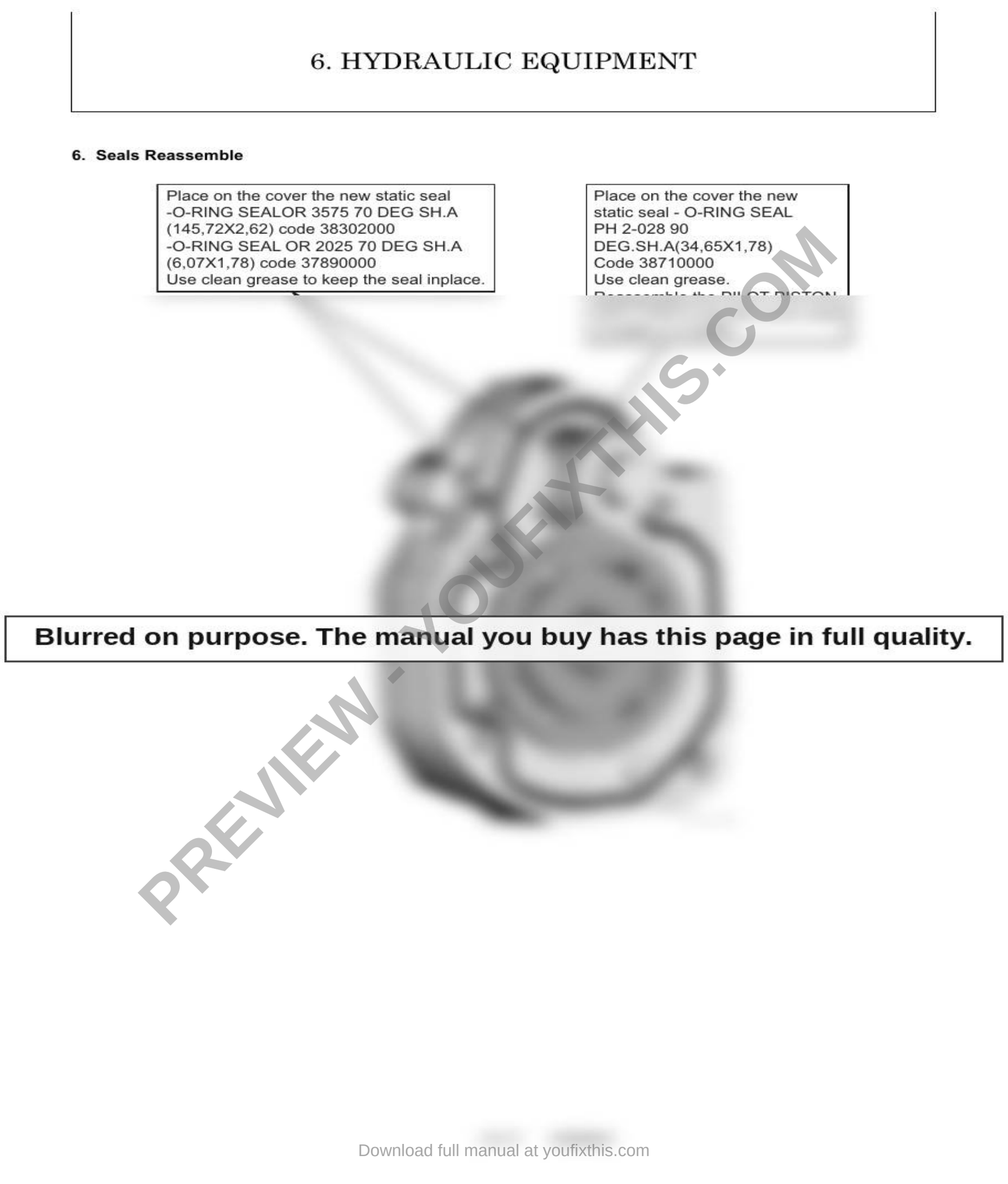
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6. Seals Reassemble

Place on the cover the new static seal
-O-RING SEALOR 3575 70 DEG SH.A
(145,72X2,62) code 38302000
-O-RING SEAL OR 2025 70 DEG SH.A
(6,07X1,78) code 37890000
Use clean grease to keep the seal inplace.

Place on the cover the new
static seal - O-RING SEAL
PH 2-028 90
DEG.SH.A(34,65X1,78)
Code 38710000
Use clean grease.
Reassemble the PILOT PISTON



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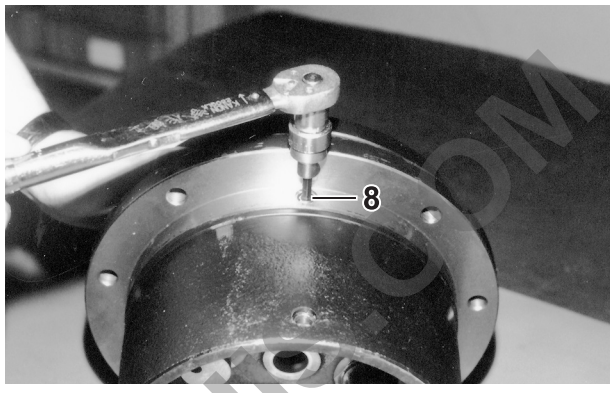
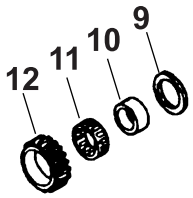
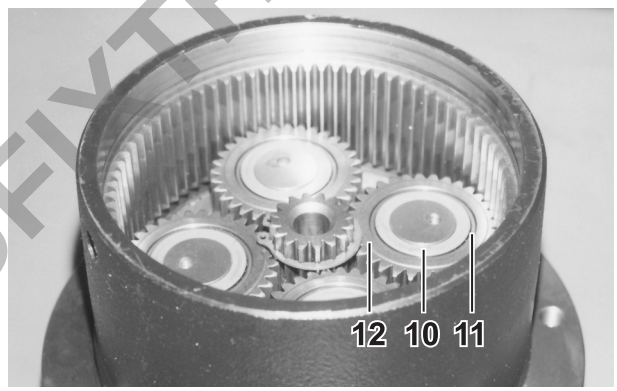
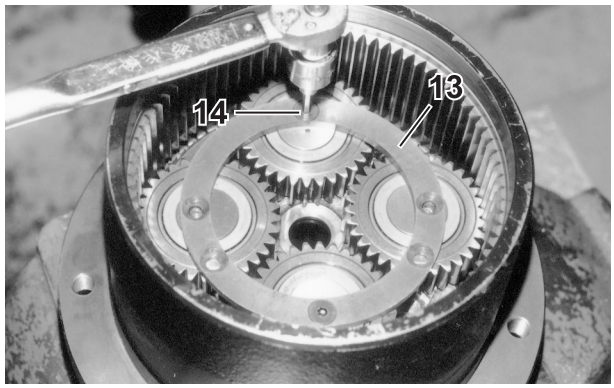
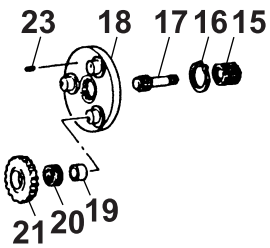
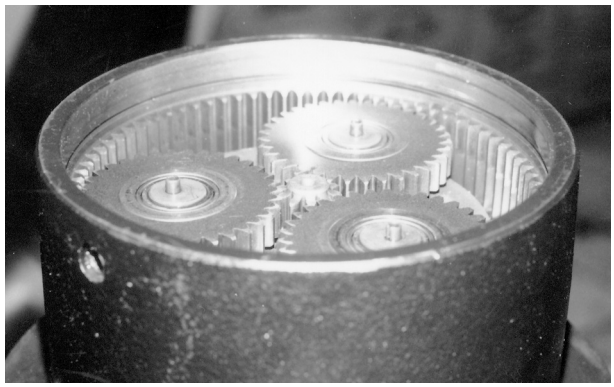
2) Boot or Handle Replacement

Procedure	
Preliminary operations Remove the pilot control unit from the machine's arm rest of free the unit by unscrewing the 4 screws fixing the plate in order to release the electrical cable. Hold the pilot control unit using a vice or a vice-grip wrench (clamp onto the body above the arm rest, 65 opening).	

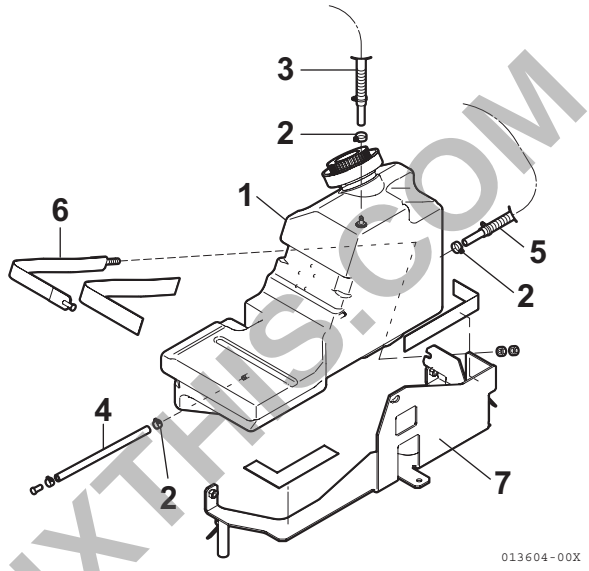
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Procedure	
(9) Wind a seal tape onto the plugs **8** and tighten them. Tightening torque : 6.9 to 8.8 N·m **Tools:** • Torque wrench 1 • Hexagon bit 6	
(10) Install the thrust washers **9**, the collars **10**, the cage & rollers **11** and the planetary gears B **12**. 	
(11) Put the thrust plate **13** on the trunnion of the flange holder **1**, apply adhesive (Loctite #262 or its equivalent) to the four screws **14** and tighten them. Tightening torque : 4.1 to 8.0 N·m ***Note:*** *Before applying adhesive, remove oil and grease completely from the screws, and use hardening accelerator.* **Tools:** • Torque wrench (1) • Hexagon bit (6) for above	
(12) Install the sun gear **15** fitted with the external snap ring **16**, the inner races **19**, the holder **18**, the planetary gears A **21**, the cage & rollers **20** and the drive gear **17**. 	

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Procedure	
(5) Remove the hose clips **2** of the fuel hose **3**, **4** (the fuel filter to the fuel tank) and the fuel hose **5** (the fuel tank to the water separator), and remove the hoses.] (6) Disconnect the wire harness from the fuel level gauge unit. (7) Remove the fuel tank clamp **6** and the support **7**, and then remove the fuel tank **1**.	

2) Reinstallation

Reinstall the fuel tank in the reverse order of the removal procedure.

Note:

Before reinstalling the fuel tank, clean up the inside of it. In particular, remove the deposits on the bottom of the fuel tank completely.

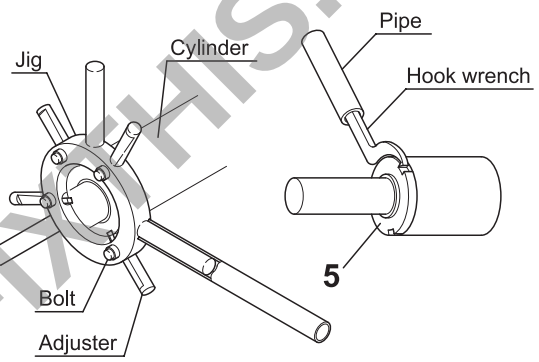
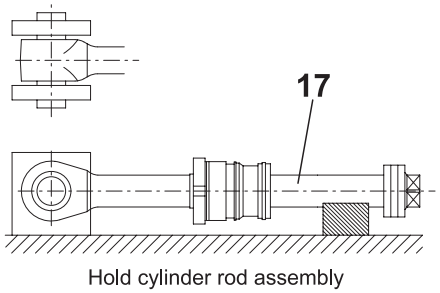
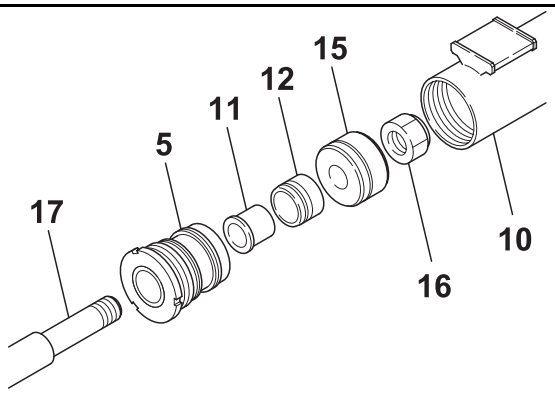
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2) Cautions for Disassembly and Reassembly

(1) Parts are produced so accurately. Be careful not to damage any parts by dropping them or knocking them together.
(2) If there are any burrs on the surface of the seal installation part or the O-ring groove, remove them.
(3) Never use the lock washer removed once.
(4) Replace once removed seals and O-rings with new ones.
(5) Clean all the parts and dry them by air blow.

3) Disassembly

Procedure	
(1) Drain the oil from the hydraulic cylinder. (2) Hold the cylinder in the bottom end or the pin hole on the bottom side, and put the rod side of the cylinder on a block. (3) Raise the pawl of the lock washer **3** on the head **5** to loosen the head **5**. ***Note:*** *Use a hook wrench or a jig to loosen the head **5**.*	
(4) Pull out the rod assembly **17** from the cylinder tube **10**, and then hold the cylinder rod assembly in the rod end or the pin hole on the rod side.	 Hold cylinder rod assembly
(5) Disassembly of boom cylinder. Remove the U-nut **16**, and then the piston **15**, the cushion plunger **12**, the cushion collar **11**, and the head **5** in order.	

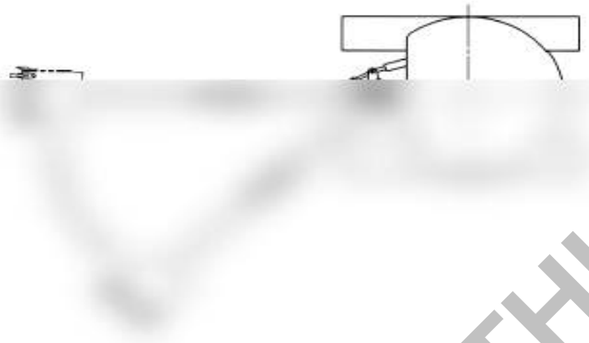
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10-1-6 Telescopic Motion of Boom Swing Cylinder with Lock Lever Set to Lock Position

Phenomenon

When the boom swing pedal is moved with the lock lever set to the Lock position, the boom swings at very low speed.



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