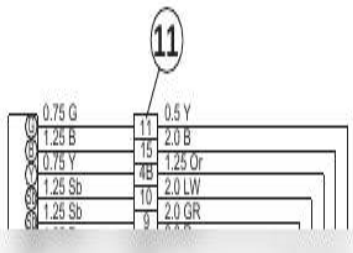
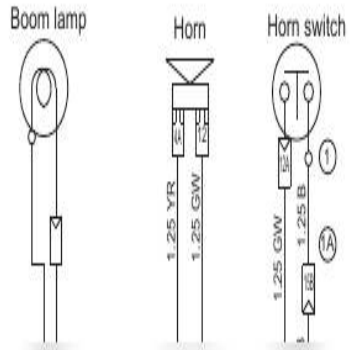
7. ADJUSTMENT AND REPAIR

7-1-3 Wiring Diagram





Starter switch connection

	19	30	17	50	AC
Heater		○			○
Off					
On		○			○
Start		○	○	○	○

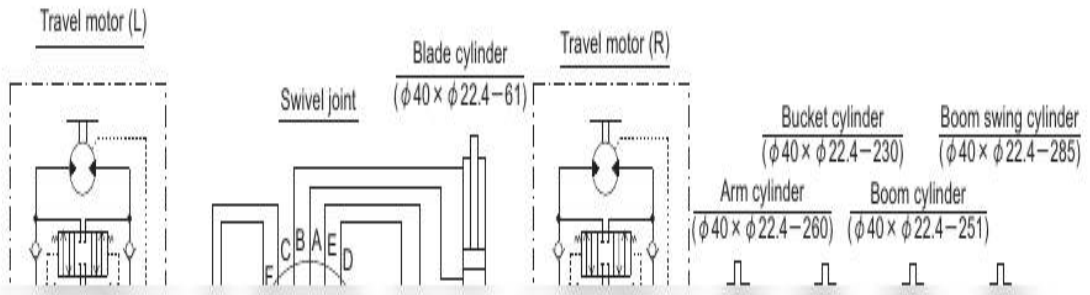
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5. HYDRAULIC SYSTEM

5-2 Hydraulic Oil Circuit Schematic

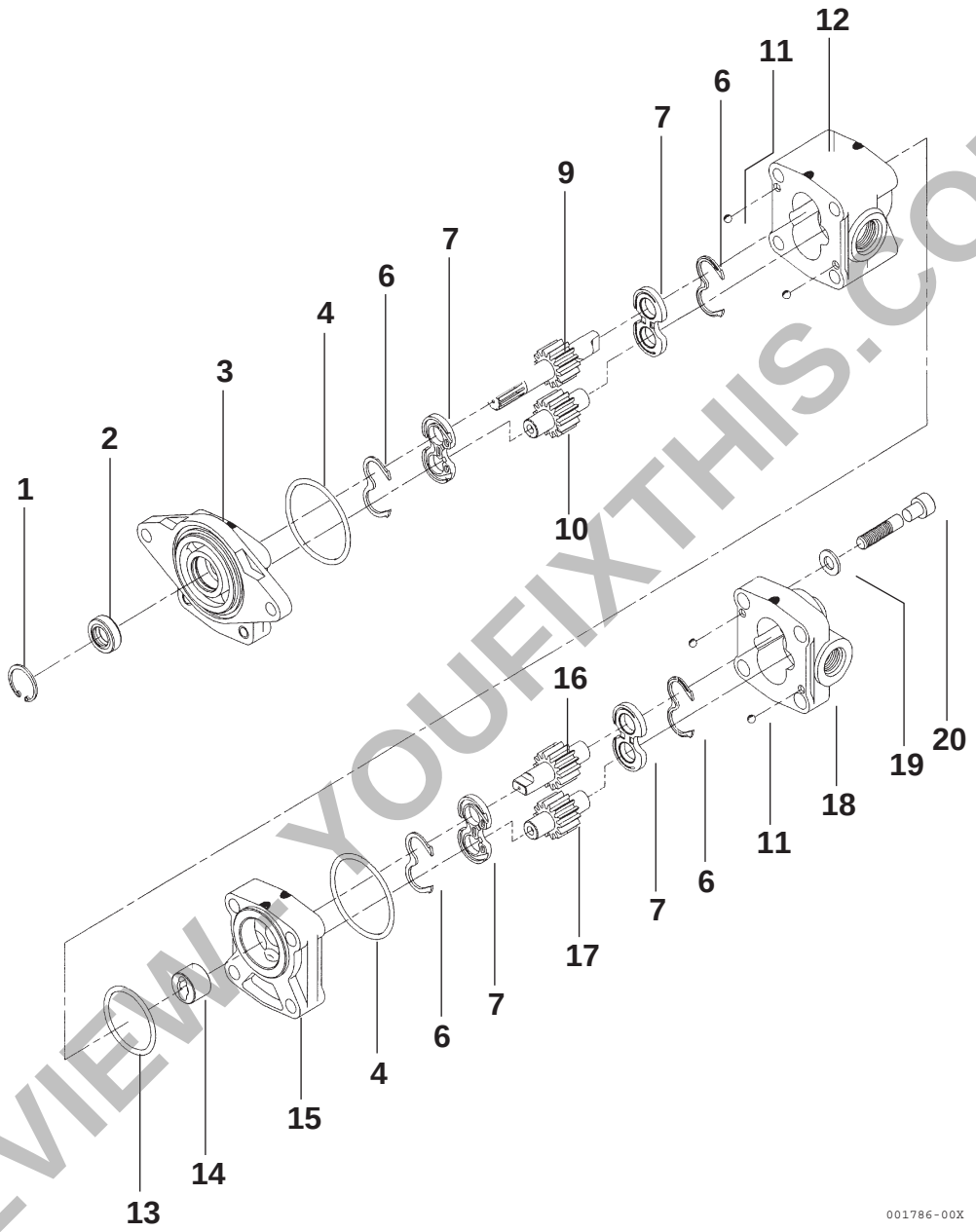


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3. Exploded View and Component Parts



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No.	Part	Q'ty	No.	Part	Q'ty
1	Internal snap ring C	1	12	Body	1
2	Oil seal	1	13	O-ring S39	1
3	Front cover	1	14	Coupling	1
4	O-ring S50	2	15	Front cover	1
6	3-shaped gasket	4	16	Driving gear No.2	1
7	Side plate	4	17	Driven gear No.2	1
9	Driving gear No.1	1	18	Body	1
10	Driven gear No.1	1	19	Washer	4
11	Steel ball	4	20	Hexagon socket head bolt	4

3. SERVICING STANDARDS

3-7-4 Tightening Torque for General Bolts and Nuts (Machine)

Item		Thread size × Pitch	Tightening torque [Unit : N•m (kgf•m)]	Remarks
	Coarse	M6 × 1	7.23 to 8.70 (9.8 to 11.8)	1) Apply 80% of tightening torque when tightened to aluminum
		M8 × 1.25	16.67 to 20.95 (22.6 to 28.4)	
		M10 × 1.5	32.53 to 43.44 (44.1 to 58.9)	
		M12 × 1.75	57.90 to 72.35 (78.5 to 98.1)	

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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.

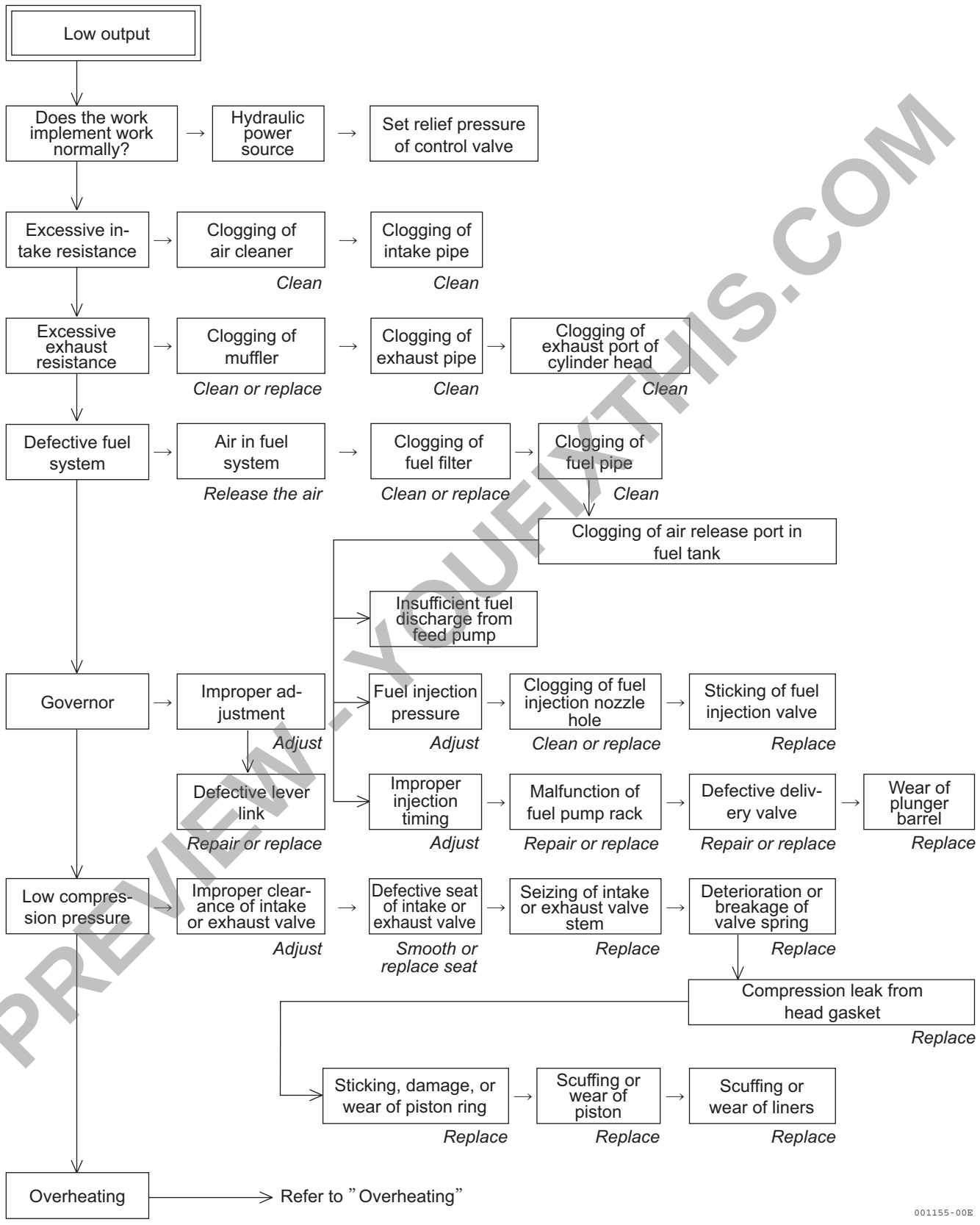
1-3 Preparations

(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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2. TECHNICAL DATA

2. Technical Data
2-1 Specifications
2-1-1 Machine Body

<>: ROPS spec

Item	Unit	SV05-A, SV05-B
Main specifications of machine		
Dimensions		

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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 loose bolts & nuts, retighten		◇					
	Check engine condition		◇					
	Clean		□					
Lube oil	*Swing gear case oil	Check & supply				◇/○		
		Replace				●1st time		●
	Travel reduction gear oil	Check & supply				◇/○		
		Replace				●1st time		●
	*Transmission oil	Check & supply	◇/○					
		Replace				●1st time		●
	*Differential gear oil	Check & supply			◇/○			
		Replace				●1st time		●
Hydraulic system	Hydraulic oil	Check & supply	◇/○					
		Replace						●
	Clean suction filter					□1st time		□
	Replace return filter					● 1st time	●	
	Check for abnormality of hydraulic pump		◇					
Grease	Check grease-up positions, grease		■					
	Greasing swing gears and swing bearings			■				
Undercarriage	Check & adjust crawler 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 work lamp, horn		◇					
	Check hourmeter function		◇					
	Check function of charge, oil and pilot lamps		◇					
	Check wire breakage, short-circuits, loose terminals, retighten		◇					
	Check & supply battery electrolyte		◇/○					
	Check specific gravity of electrolyte						□As required	
	Check function of monitor		◇					

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CONTENTS

CHAPTER 1
GENERAL CAUTIONS FOR MAINTENANCE WORK

1-1 Correct Work 1-1
1-2 Safety Precautions 1-1
1-3 Preparations 1-1
1-4 Cautions for Disassembly and Reassembly 1-1
1-5 Cautions for Removal and Installation of Hydraulic Equipment 1-2
1-6 Cautions for Removal and Installation of Hydraulic Piping 1-2
1-7 Cautions for Handling Seals 1-3
1-8 Correct Installation of Hydraulic Hose 1-3
1-9 Specifications of Hydraulic Hose 1-6
1-10 Air Release of Hydraulic Equipment 1-11

CHAPTER 2
TECHNICAL DATA

2-1 Specifications 2-1-1
2-1-1 Machine Body 2-1-1
2-1-2 Engine 2-1-5
2-2 Outline Drawing and Working Area 2-2-1
2-2-1 W/O ROPS spec. 2-2-1
2-2-2 ROPS spec. 2-2-2
2-3 Weight List of Main Parts 2-3-1
2-4 Lifting Capacity List 2-4-1
2-4-1 W/O ROPS spec. 2-4-1
2-4-2 ROPS spec. 2-4-2

CHAPTER 3
SERVICE STANDARDS

3-1 Machine Performance 3-1-1
3-2 Engine 3-2-1
3-2-1 SV05-A (2TE67-BV2) 3-2-1
3-2-2 SV05-B (2TE67L-XBV3) 3-2-5
3-3 Undercarriage 3-3-1
3-3-1 Rubber Crawler Specifications 3-3-1
3-4 Controls 3-4-1
3-5 Hydraulic Equipment 3-5-1
3-5-1 Hydraulic Cylinders 3-5-1
3-6 Implement 3-6-1
3-6-1 Front Attachments 3-6-1
3-6-2 Blade Moving Device 3-6-2
3-6-3 Bucket Teeth 3-6-2
3-7 List of Tightening Torque 3-7-1
3-7-1 Machine 3-7-1
3-7-2 Engine 3-7-3
3-7-3 Tightening Torque for General Bolts and Nuts (Engine) 3-7-4
3-7-4 Tightening Torque for General Bolts and Nuts (Machine) 3-7-5
3-7-5 Hydraulic Hose Joint 3-7-6

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CHAPTER 4
ENGINE

SV05-A (2TE67-BV2)

4-1 Measurement, Inspection and Adjustment 4-1-1
4-2 Measurement Procedure, Service Data and Corrective Action 4-2-1
4-3 Precautions for Reassembly 4-3-1
4-4 Fuel Oil Injection System 4-4-1
4-5 Electrical Equipment 4-5-1

SV05-B (2TE67L-XBV3)

4-6 Disassembly of Engine 4-6-1
4-7 Disassembly, Inspection and Reassembly of Main Component Parts 4-7-1
4-8 Reassembly of Engine 4-8-1
4-9 Electrical Equipment 4-9-1
4-10 Troubleshooting 4-10-1

CHAPTER 5
HYDRAULIC SYSTEM

5-1 Outline 5-1-1
5-1-1 Control Valve Operation 5-1-4
5-2 Hydraulic Oil Circuit Schematic 5-2-1
5-3 Circuit Operation 5-3-1
5-3-1 Boom 5-3-1
5-3-2 Arm 5-3-3
5-3-3 Bucket 5-3-5
5-3-4 Swing 5-3-7
5-3-5 Boom Swing 5-3-9
5-3-6 Blade 5-3-11
5-3-7 Travel 5-3-13
5-3-8 Simultaneous Operation of Travel and Blade 5-3-15
5-3-9 Simultaneous Operation of Boom Up and Bucket 5-3-17
5-3-10 Hydraulic P.T.O. 5-3-19
5-4 Pressure Adjustment 5-4-1
5-4-1 System Relief Valves 5-4-1
5-4-2 Circuit Relief Valves 5-4-2
5-4-3 Swing Combination Valve (Brake Valve) 5-4-3

CHAPTER 6
HYDRAULIC EQUIPMENT

6-1 Hydraulic Pump 6-1-1
6-2 Control Valve 6-2-1
6-3 Swing Motor 6-3-1
6-4 Travel Motor 6-4-1

CHAPTER 7
ADJUSTMENT AND REPAIR

7-1 Electrical Equipment and Engine of Machine 7-1-1
7-1-1 Parts Layout of Electrical Equipment 7-1-1

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3. SERVICING STANDARDS

Applicable model			SV05-A, SV05-B	
Item	Measuring condition	Unit	Standard	Allowance
Machine performance				
	Machine position			



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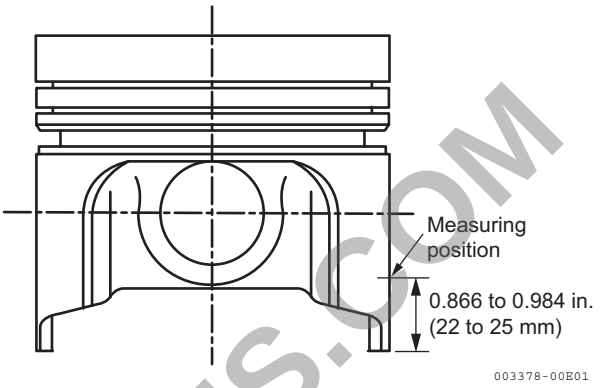
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4-2-4 Piston and Piston Rings

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.

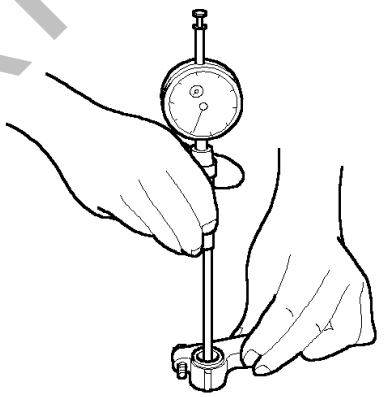
(2) Check the outer surface and ring grooves of the piston, and replace it if worn or damaged.



2) Measuring the Piston Outside Diameter

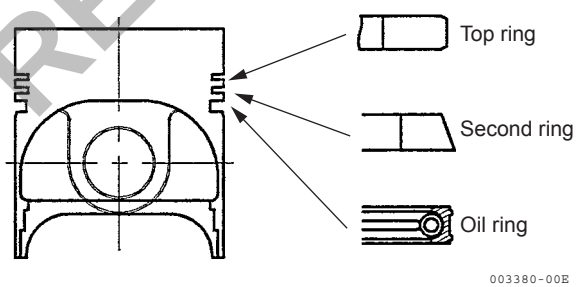
To measure the piston outside diameter, measure the long diameter of the oval hole in the vertical direction to the piston pin bush hole at a position which is 0.866 to 0.984 in. (22 to 25 mm) above from the lower end of the piston.

	Standard	Wear limit
Piston outside dia.	Refer to Section 3-2-1 of Chapter 3	
Minimum clearance between piston and cylinder		



(Measuring the rocker arm busu inside diameter)

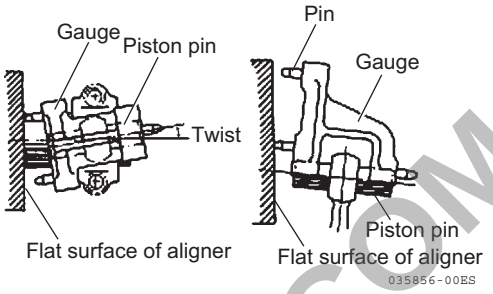
3) Shapes of Piston Rings



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4-7-5 Connecting Rod

(1) Check each connecting rod for twist, parallelism and damage as follows.
- Measure the twist and parallelism of the connecting rod using a connecting rod aligner and if any of the measured values exceeds the allowable limit, replace the connecting rod.



Connecting rod twist and parallelism [in. (mm)]		
	Standard	Allowable limit
Twist per 3.937 in. (100 mm)	Refer to Section 3-2-2 of Chapter 3	
Parallelism per 3.937 in. (100 mm)		

(2) Measure the inside diameter of the connecting rod small end bush and if the clearance between the connecting rod small end bush and the piston pin exceeds the allowable limit, replace the connecting rod.

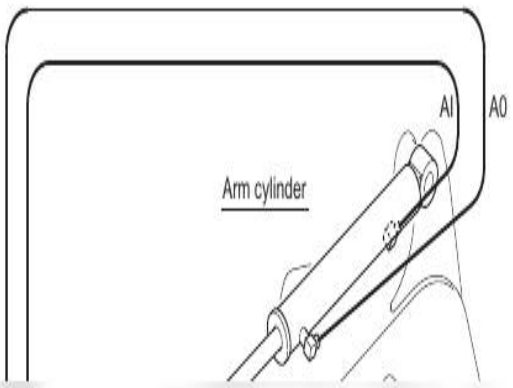
Clearance between small end bush and piston pin [in. (mm)]	
Standard	Allowable limit
Refer to Section 3-2-2 of Chapter 3	

(3) Install the connecting rod onto the crankshaft and check the play between the connecting rod and the crank pin. If the play exceeds the standard, replace the connecting rod.

Play between connecting rod and crank pin [in. (mm)]	
Standard	Allowable limit
Refer to Section 3-2-2 of Chapter 3	

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5. HYDRAULIC SYSTEM



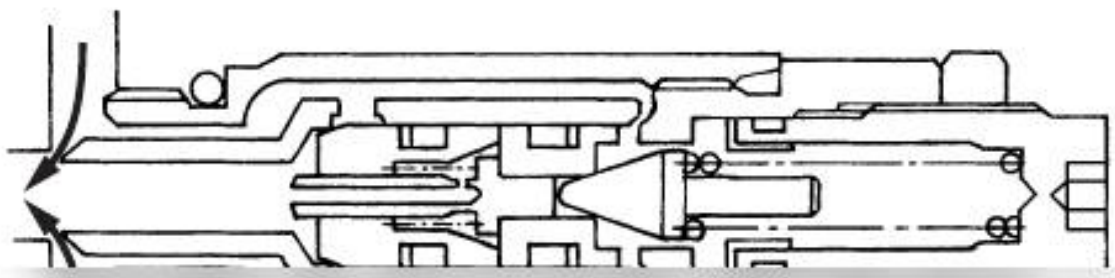
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2) Suction Operation

When the pressure in the tank passage exceeds that in the port P, upward force is applied to the socket. This creates an opening between the section body seat and the socket and oil flows from the tank passage to the port P, so that the space in the port P is filled with

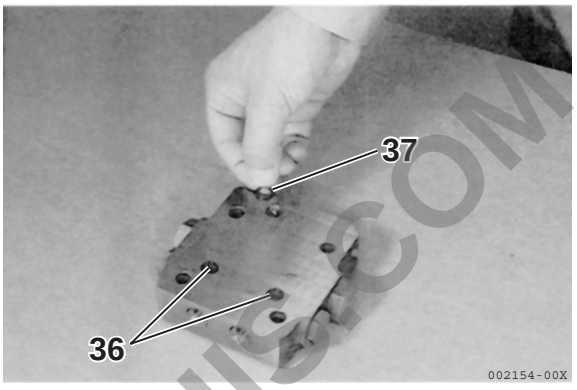
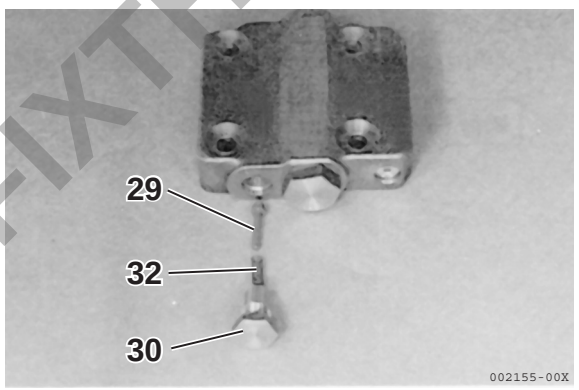
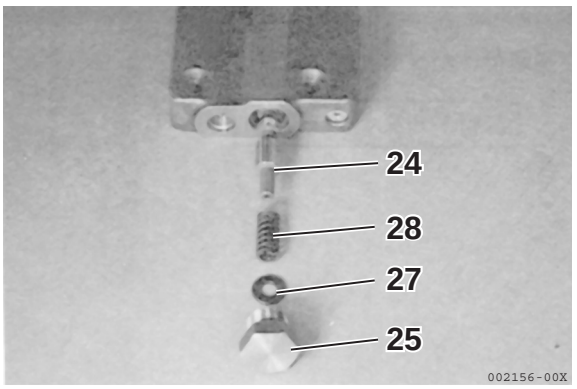
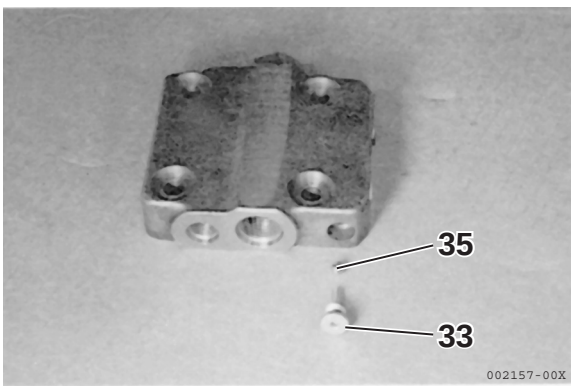


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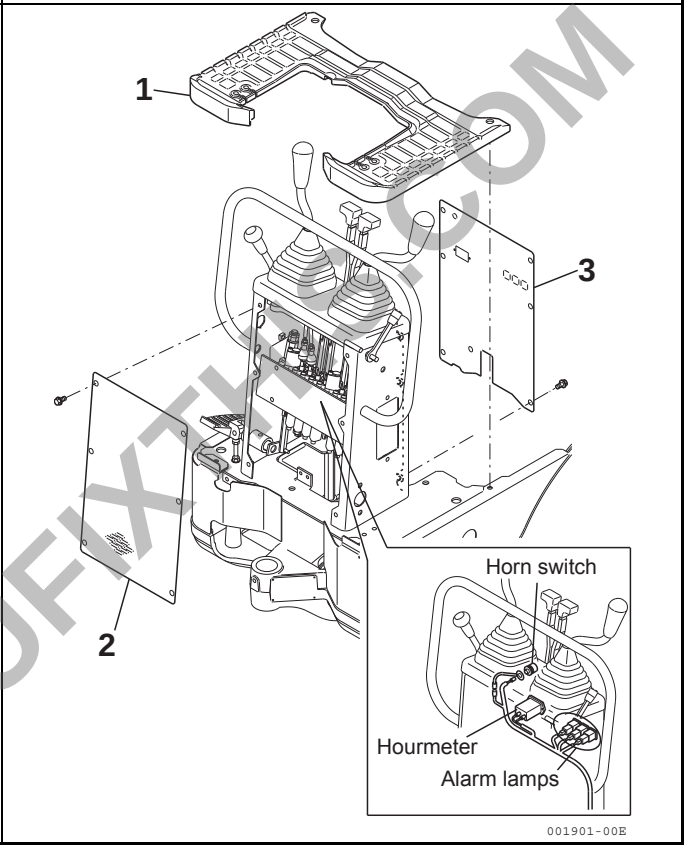
5) Disassembly <End Cover Section>

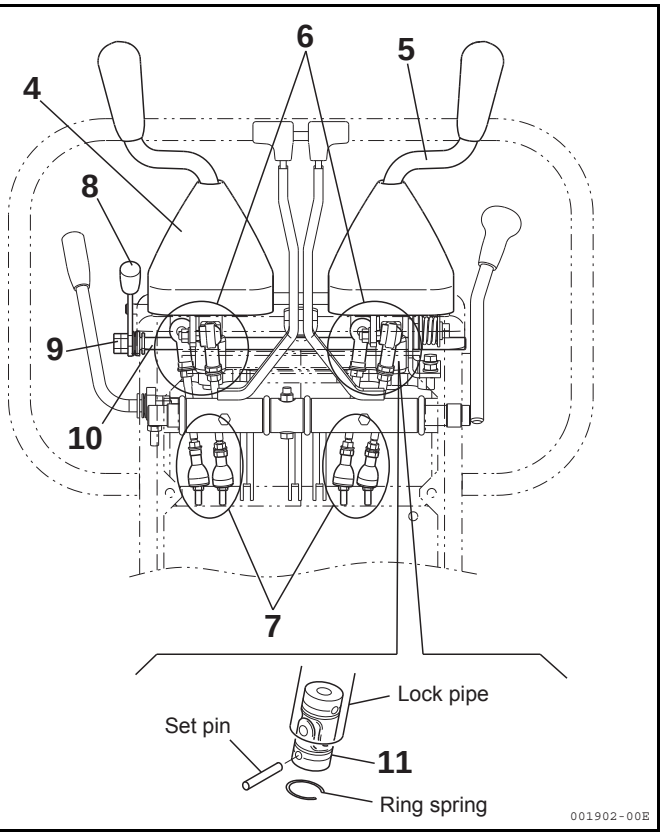
Procedure	
(1) Remove the O-rings **36** and **37**.	
(2) Remove the plug **30**, the spring **32** and the poppet **29**. Then remove the O-ring **31** from the plug **30**.	
(3) Remove the plug **25**, the spring **28**, the washer **27** and the spool **24**. Then remove the O-ring **26** from the plug **25**.	
(4) Remove the plug **33** and the ball **35**. Then remove the O-ring **34** from the plug **33**.	

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7-3-2 Removal and Reinstallation of Control Levers

1) Removal

Procedure	
(1) Remove the floor mat **1**. (2) Remove the stand cover F **2** and the stand cover R **3**. ***Note :*** *Disconnect the harness connectors from the hourmeter, the horn switch and the alarm lamps.*	

(3) Remove the lever boot **4** to move it up along the control lever **5**. (4) Remove the L-balls **6** and the link balls **7** connecting to the control lever **5**. (5) Remove the lock nut **9** from the lock lever **8** and the snap pin from the link **10**, and then remove the link **10**. (6) Move the lock pipe upward to remove the ring spring and set pin from the joint **11**. (7) Remove the control lever CMP from the lever stand.	

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8. PERIODIC INSPECTION AND SERVICING

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

Check & service items		Daily	Every 50	Every 200	Every 400	Every 1000	Every 2000 hrs
Fuel oil	Check & supply fuel to fuel tank	◇/○					
	Drain water and deposits in fuel tank		□				
	Clean water separator		□				
	Replace fuel filter element, pre-filter				●		
Lube oil	Check quantity of engine oil	◇/○					
	Replace engine oil		● 1st time	● within six months			
	Replace engine oil filter		● 1st time	● within six months			
Cooling water	Check & supply cooling water	◇/○					
	Clean radiator fin			□			
	Check & adjust fan belt tension	◇/○					
	Replace cooling water					●	
	Clean & check cooling system					● within one year	
Rubber hose	Check & replace fuel pipe, cooling water pipe						●
Operation system	Check & adjust governor lever, accelerator	◇/□		□			
Intake system	Clean air cleaner & replace element			□	●		
	*Check turbocharger, adjust					□	
Cylinder head	Adjust intake and exhaust valve clearances					□	
	Lap intake and exhaust valves						□
Fuel feed pump & injection valve	Check & clean fuel injection valve nozzle					□	
	Check & adjust fuel injection pressure & atomizing condition					□	
	Check & adjust fuel feed pump						□

*Applicable to models with the relevant equipment

Note :

When the machine is used at dusty worksites, clean and replace the filter elements twice as often as specified in the table.

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