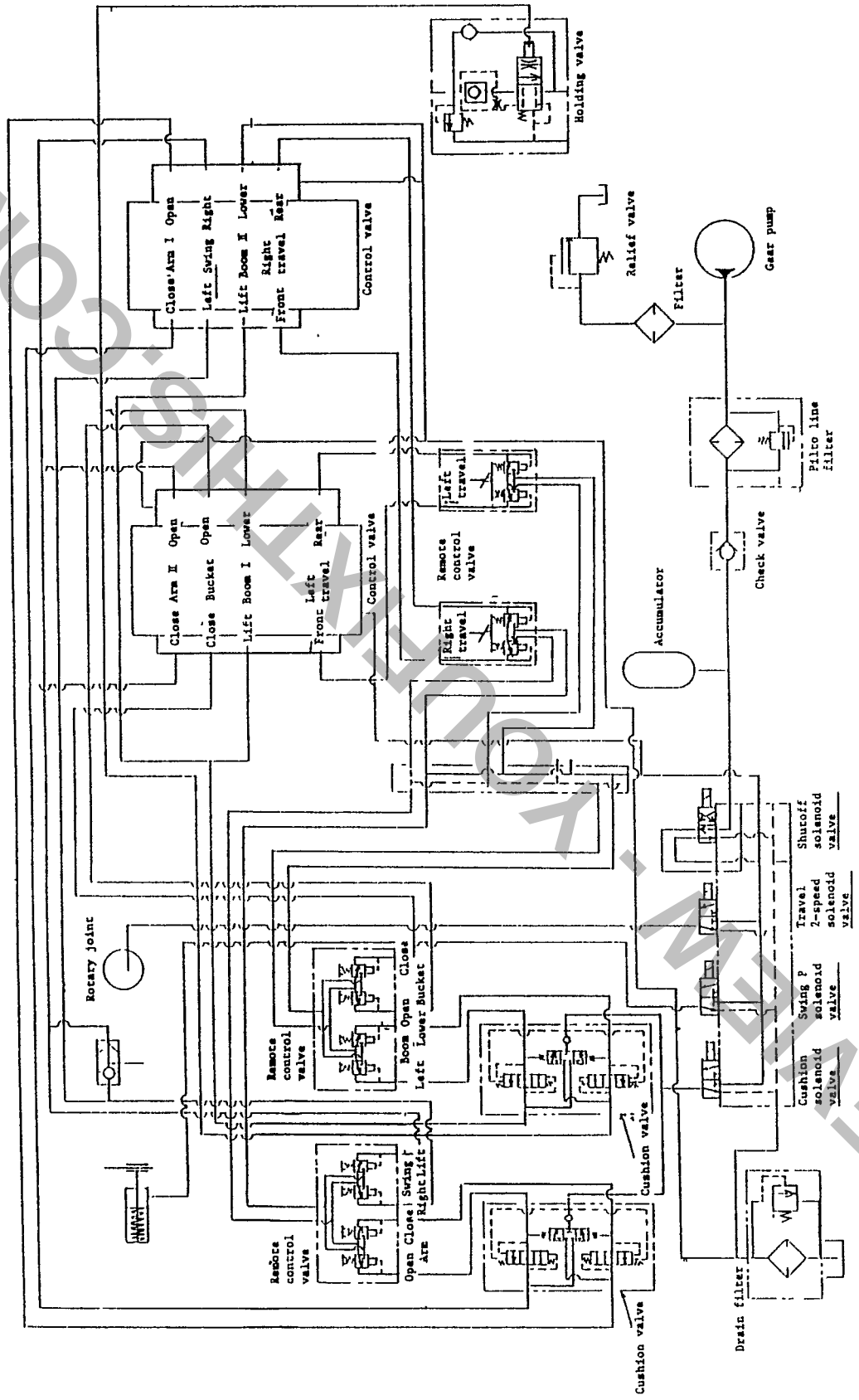
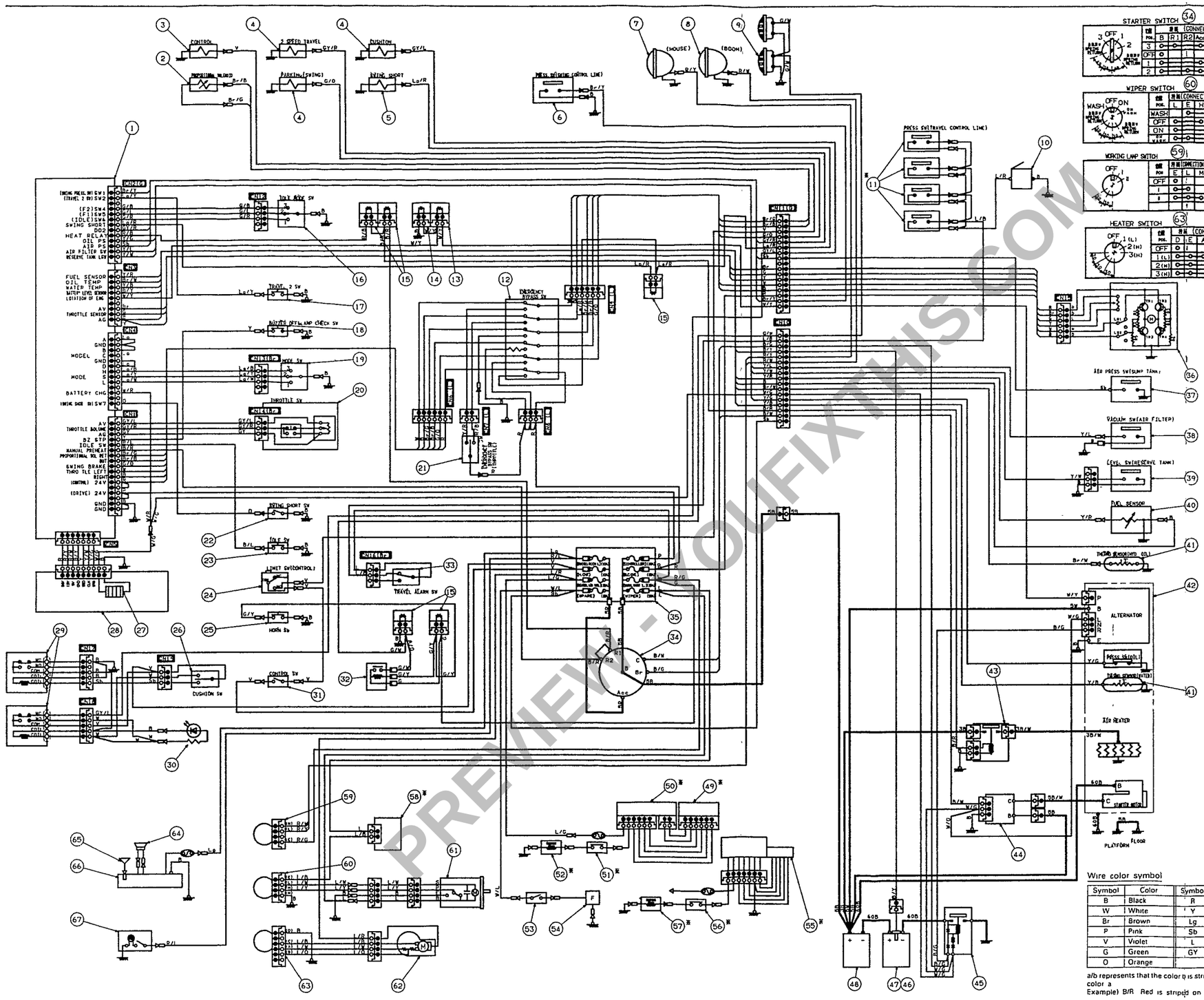


Pilot Line Circuit Diagram

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



SYM	DESCRIPTION	QTY
1	CONTROLLER	1
2	PUMP HYD	1
3	VALVE SOLENOID	1
4	VALVE SOLENOID	3
5	VALVE SOLENOID	1
6	SWITCH PRESS	1
7	LAMP WORKING	1
8	LAMP, WORKING	1
9	HORN DOUBLE	1
10	ALARM SPL	1
11	SWITCH PRESS	4
12	SWITCH (BACKUP)	1
13	RESISTOR	1
14	CONDENSER	1
15	DIODE	5
16	SWITCH ROTARY (IDLE)	1
17	SWITCH PUSH BUTTON	1
18	SWITCH PUSH BUTTON	1
19	SWITCH ROTARY (MODE)	1
20	SWITCH (THROTTLE)	1
21	SWITCH TOGGLE	1
22	SWITCH ROCKER (SWING)	1
23	KNOB (SWITCH)	1
24	SWITCH LIMIT	1
25	KNOB (SWITCH)	1
26	SWITCH ROCKER	1
27	METER HOUR	1
28	MONITOR DISPLAY ASSY	1
29	RELAY	2
30	LAMP PILOT	1
31	SWITCH ROCKER	1
32	RELAY HORN	1
33	SWITCH ROCKER	1
34	SWITCH STARTER	1
35	BOX FUSE	1
36	MOTOR THROTTLE	1
37	SWITCH, PRESS	1
38	SENSOR VACUUM	1
39	TANK RESERVE	1
40	SENSOR FUEL	1
41	SENSOR THERMO	2
42	ENGINE DIESEL	1
43	RELAY HEATING	1
44	RELAY, SAFETY	1
45	RELAY, BATTERY	1
46	BATTERY (SENSOR)	1
47	SENSOR SPL (LEVEL)	1
48	BATTERY	1
※ 49	AIR CONDITIONER (UNIT)	1
※ 50	AIR CONDITIONER (PANEL)	1
※ 51	AIR CONDITIONER (DRIER)	1
※ 52	AIR CONDITIONER (COMPRESSOR)	1
53	SWITCH, TOGGLE	1
54	FAN	1
※ 55	COOLER (UNIT)	1
※ 56	COOLER (DRIER)	1
※ 57	COOLER (COMPRESSOR)	1
※ 58	WINDOW WASHER	1
59	SWITCH ROTARY (LAMP)	1
60	SWITCH ROTARY (WIPER)	1
61	MOTOR WIPER	1
62	HEATER	1
63	SWITCH, ROTARY (HEATER)	1
64	SPEAKER	1
65	ANTENNA	1
66	RADIO SET	1
67	LAMP ROOM	1

Note

1 ※ IS OPTIONAL.

2 Earth symbols and wire crossing symbols are as illustrated below

Bind wire | Body earth | with earth wires | Two wires are connected | Two wires are not connected

3 The codes above wires represent wire colors and numbers before the codes represent cross sectional areas of the wires Unless otherwise specified the areas are 0.5sq

4 Connectors are indicated as illustrated below

Connector (male) Terminal (female) | Connector (female) Terminal (male)

CN— ( )
Connector No. | Connector color (Unless otherwise specified it represents W)

Wire color symbol

Symbol	Color	Symbol	Color
B	Black	R	Red
W	White	Y	Yellow
Br	Brown	Lg	Light green
P	Pink	Sb	Sky blue
V	Violet	L	Blue
G	Green	GY	Gray
O	Orange		

a/b represents that the color b is striped on the base color a
Example) B/R Red is striped on the black base

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Item		Condition	Performance standards
Setting Pressure	• R H Main Relief	• Engine rated rotation • Hydraulic oil temperature 45°~55°C (113~131°F)	320 kg/cm² (4,550 psi)
	• L H Main Relief		320 kg/cm² (4 550 psi)
	• Port Relief		340 kg/cm² (4,835 psi)
	• Port Relief for boom lowering		250 kg/cm² (3,555 psi)
	• Swing Motor		270 kg/cm² (3,039 psi)
	• Traction Motor		330 kg/cm² (4,692 psi)
	• Pilot Control		31 7 kg/cm² (751 psi)
Valve Spool Stroke	• Swing Control Valve		2~27 kg/cm² (28~384 psi) — 10 mm (0 39")
	• Arm Control Valve		I 3~27 kg/cm² (43~384 psi) II 13~30 kg/cm² (185~427 psi) — 10 mm (0 39")
	• Travel Control Valve		2~27 kg/cm² (28~384 psi) — 10 mm (0 39")
	• Bucket Control Valve		2~27 kg/cm² (28~384 psi) — 10 mm (0 39")
	• Boom Lower		2~27 kg/cm² (28~384 psi) — 10 mm (0 39")
	• Boom Hoist		13~30 kg/cm² (185~427 psi) — 10 mm (0 39")
Valve Spool Working Pressure Valve Spool	• Swing Control Lever	• Engine stop • Hydraulic oil temperature 45°~55°C (113~131°F)	85 mm (5 51")
	• Arm Control Lever		IN: 95 mm (3 74") / OUT: 95 mm (3 74")
	• Travel Control Pedal		Forward: 45 mm (1 77") / Backward: 35 mm (1 38")
	• Bucket Control Lever		85 mm (3 35")
	• Boom Control Lever-Down		100 mm (3 94")
	• Boom Control Lever-Hoist		100 mm (3 94")
Control Lever Operating Force	• Swing Operating Force	• Hang a spring balance on the lower part of the operation lever grip and measure • At engine rated rpm • Oil temperature at 45°C~55°C (113~131°F) • Indicates minimum operating force when actuator starts to move, and minimum force to operate full stroke	0 9→2 2 kg (2 0→4 8 lbs)
	• Arm Operating Force		1 0→2 7 kg (2 2→5 9 lbs)
	• Travel Operating Force		Pedal 8 5→12 5 kg (18 7→27 5 lbs)
	• Bucket Operating Force		0 9→1 9 kg (2 0→4 2 lbs)
	• Boom Operating Force-Lower		0 9→2 6 kg (2 0→5 7 lbs)
	• Boom Operating Force-Hoist		1 1→2 4 kg (2 4→5 3 lbs)
Swing Performance	• Flow at time of swivel stop	• With the boom horizontal, the arm cylinder at maximum extension and the bucket in a no-load state, measure the flow (at tooth end) after the completion of one swivel • Long arm with 1 2 m³ Bucket • At engine rated rpm, oil temperature 45°C~55°C (113~131°F)	80°

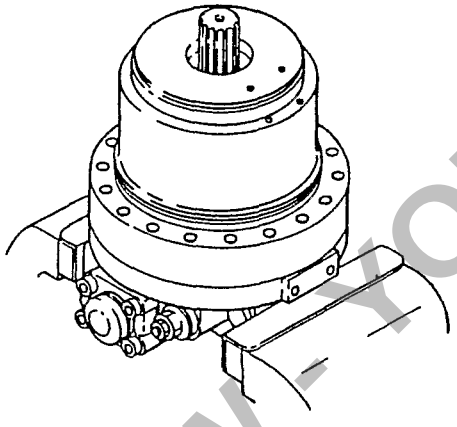
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

7.3 Disassembling Procedure
7 3.1 Cautionary points before disassembly

a) Completely remove mud, dirt, etc. which sticks to the outer surface. (Sufficiently wash the outside)
b) Drain hydraulic oil from the piston motor case and port passage
c) Select a dust-free working site, and take sufficient care to prevent mud, dirt, etc. from sticking to the parts
e) Take sufficient care to prevent scratch marks and damage when a part falls or bumps into another object

7.3.2 Disassembly
Proceed with the following procedure for disassembling

Disassembling procedure	Cautionary points during disassembling
1. Motor fixing Face the output shaft side upward Fix the base plate area ② with the vise 	Applicable tool No.21 Horizontal vise

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

7 Disassembly And Reassembly (Motor Section)

7 1 Bolt tightening torque

The tightening torques of the bolts used in the motor are shown in Table 1 When assembling, securely tighten the bolts refering to Table 1

Table 1.

Reference No	Part Name	Thread Size	Q'ty	Tightening Torque
(2-2-4)	Plug	M24×1 5	2	13~15kg-m (94 0~108 5ft lb)
(2-6-4)	Socket head bolt	M12×1 75 40ℓ	8	10~11kg-m (72 3~79 6ft lb)
(2-6-7)	Plug	PF 1/8	2	2 0~2 2kg-m (14 5~15 9ft lb)
(27)	Relief valve S/A	1 5/16 12UN-2A	2	27~30kg-m (195 3~217 0ft lb)
(2 13)	Plug	PF 3/8	1	5~5 4kg-m (36 2~39 1ft lb)
(2 15)	Plug	PF 1/2	1	7~8kg-m (50 6~57 9ft lb)
(20)	Socket head bolt	M12×1 75 50ℓ	14	10~11kg-m (72 3~79 6ft lb)

7 2 Disassembling and reassembling tools

No	Tool name	Standard	Model and dimensions	Applicable place	Q'ty
1	Pre-set type torque wrench	JIS B4650	Nominal size 60 (0 2 to 0 6kg-m)	(2-8)	1
2			Nominal size 900 (2 to 9kg-m)	(2-6-7), (2-13), (2 15)	1
3			Nominal size 1800 (4 to 18kg-m)	(2 2-4), (20), (2-6-4)	1
4			Nominal size 4200 (10 to 42kg-m)	(2-7)	1
5	Ratchet handle for socket wrench	JIS B4641			
6	Socket for socket wrench	JIS B4636	Width across flats 14	(2-6-7)	1
7					
8			Width across flats 22	(2-13)	1
9			Width across flats 27	(27)	1
10	Hix bit socket wrench		Width across flats 4	(2-8)	1
11			Width across flats 10	(2-6-4), (20), (2-15)	1
12			Width across flats 14	(2-2-4)	1
13	Hex bar wrench	JIS B4648	Width across flats 4	(2-8)	1
14			Width across flats 10	(2-6-4), (20), (2-15)	1
15			Width across flats 14	(2 2-4)	1
16	Long-nose pliers	JIS B4631		(2-7)	1
17	Snap ring pliers			(14)	1
18	Flat-tip screwdriver	JIS B2609	Approx 8×150		2
19	Hand hammer		Standard		1
20	Plastic hammer		Standard		1

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

6 Troubleshooting

If any abnormalities should occur during operation, inspect them and take the appropriate countermeasures or remedies by referring to the following table.

6 1 Troubleshooting table for piston motor

Abnormality	Possible cause	Countermeasure or remedy
I The motor does not run	1. Any device other than the piston motor or reduction gear may malfunction.	Check whether the pressurized oil is delivered to the inlet side of the motor or not. Then, inspect each device, and repair if necessary.
	2. The sliding area of the motor is abnormally worn to allowing the pressurized oil to idle	Replace the abnormally worn part. Remove damage and burrs from the surface, and completely clean all parts. Then, reassemble the parts.
	3 Improper operation results from damage of an important part in the motor In this case, abnormal noise is heard from the motor itself	Disassemble, and replace the damaged part Completely wash all parts, and reassemble them.
	4. The relief valve activates since the motor is excessively loaded.	Check the load state, and operate the machine under a load which matches the relief set pressure
II The motor revolution speed is insufficient.	1. Since oil is not supplied to the motor at the specified flow rate because of trouble in the hydraulic pump, pressure regulating valve, etc., the revolution speed is insufficient.	Inspect whether the oil is supplied to the inlet of the motor at the specified flow rate or not, and then inspect the devices and repair if necessary
	2. Since the volume efficiency of the motor drops, the specified revolution speed can not be achieved	After disassembly, check the sliding area for abnormal wear Recondition or replace the worn area
III. The motor revolution speed varies greatly	1. Since a large amount of pressurized oil idles owing to wear on the sliding area of the motor, the oil flows out at the drain port, and the revolution speed drops excessively and varies. Moreover, the revolution speed variation results from wear in the bearing.	Disassemble, and replace parts which are excessively worn Completely wash all parts, and reassemble them
IV Oil leaks.	1 Oil leaks owing to damage of the oil seal or O-ring.	Replace a broken oil seal or O-ring with a new one When inserting the oil seal, be quite careful not to damage the lip.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Ref No	Part Name	Q'ty
202	Holder B, S/A	1
-1		1
-2	Planetary gear B	3
-3	Needle roller	45
-4	Gear shaft B	3
-5	Thrust washer	6
-6	Spring pin	3
203		1
-1		1
-2		4
-3		72
-4		4
-5	Floating bush	4
-7		8
-8		4
204	Drive gear	1
205	Thrust plate	1
206	Sun gear B	1
207	Snap ring	1
208		1
209		1
210	Flange	1
211	Floating seal	1
212	Angular bearing	2
213	Housing	1
214	Shim	1
214		1
214		1
214		1
214		1
214		1
215	Pin	4
216	Socket head bolt	4
217		16
218	Plate	4
219	Ring gear	1
220	O-ring	1
221		24
222		3
223	Thrust plate	1
223		1
223		1
223		1
223		1
224	Cover	1
225		16
226	Plug	2
227		2
229		1
230		1
231		3
300		3
400	Name plate	1
500	Drive screw	2
600	Coupling	1
601	Spring pin	1

Ref No	Part Name	Q'ty
103	Shaft	1
104	Cylinder block	1
105	Valve plate	1
106	Piston assembly	9
-1		1
-2	Shoe S/A	1
107	Retainer plate	1
108	Retainer holder	1
109	Bellows	1
110	Screw ball	2
111		2
-1		1
-2	Shoe assembly	1
112	Roller bearing	1
113		1
114	Snap ring	1
115		1
116	Spring	1
117	Collar	1
118	Pin	1
119		3
120	Socket head bolt	14
121	Oil seal	1
122	O-ring	1
123		1
124		1
125	Brake piston	1
126	Collar	1
127	Friction plate	3
128	Disk	2
129	Pin	2
130	Spring	8
131		1
132		1
133	Take-up ring	1
134		1
135		3
136	Plug	2
137		4
139	Orifice	1
140		2
141		2
142	Spring	2
143	Shim	3
144		3
145		3
200		1
201	Holder S/A	1
-1		1
-2	Planetary gear A	3
-3	Needle bearing	3
-4	Gear shaft B	3
-5	Thrust washer	6
-6	Spring pin	3

Ref No	Part Name	Q'ty
100	Piston motor	1
101	Case	1
102	Base plate assembly	1
-1		1
-2	Plunger assembly	1
-2-1		1
-2-2	Check valve	2
-2-3	Spring	2
-2-4	Plug	2
-2-5	O-ring	2
-3	Spring seat	2
-4	Spring	2
-5	Spring seat	2
-6	Cap assembly	2
-6-1		1
-6-2		1
-6-4	Socket head bolt	4
-6-5	Steel ball	1
-6-6	Spring	1
-6-7	Plug	1
-6-8		1
-7	Relief valve assembly	2
-7-1	Relief housing assembly	1
-7-2	Poppet	1
-7-3	Poppet seat	1
-7-4	Spring seat	1
-7-5	Spring	1
-7-6	Plug	1
-7-7	Set screw	1
-7-8	Nut	1
-7-9	O-ring	1
-7-10		1
-7-11	Back-up ring	2
-7-12	Spring guide	1
-7-13		1
-7-14	Back-up ring	1
-7-15	Free piston	1
-7-16		1
-7-17		2
-8	Plug	6
-9		2
-12	Valve	1
-13		1
-14		1
-15		1
-16		1
-17	Spring	1
-18		2

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

CONTENTS

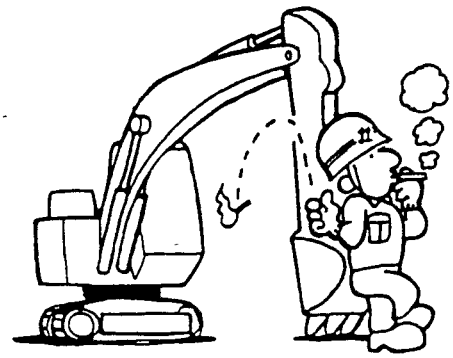
Caution For Inspection And Maintenance 80-10-76-02
Basic Rules 80-11-76-02
Hydraulic Circuit 80-21-92-36
Electric Circuit 80-22-92-36
Performance Standards 80-31-92-36
Measuring Pressure 80-40-92-36
Oil Stopper For Suction Strainer 80-41-82-36
Travel Motor 81-02-42-50
Traction Drive Assembly 81-02-42-72
Upper Roller 81-04-41-70
Lower Roller 81-05-43-70
Recoil Spring 81-06-42-70
Swing Motor 82-02-45-50
Swing Motor Assembly 82-02-45-72
Turntable Bearing 82-02-45-79
Engine Mounting 83-01-43-72
Hydraulic Pump 84-01-44-50
Pump Installation 84-01-44-72
Rotating Joint 84-13-41-50
Pilot Valve 85-01-25-50
Control Valve 85-03-42-50
Hydraulic Cylinder 86-01-44-50
Monitor 91-03-41-50
Weight Of Components 99-60-93-36
Maintenance Standards 99-86-93-36
Conversion Table 99-99-76-80

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

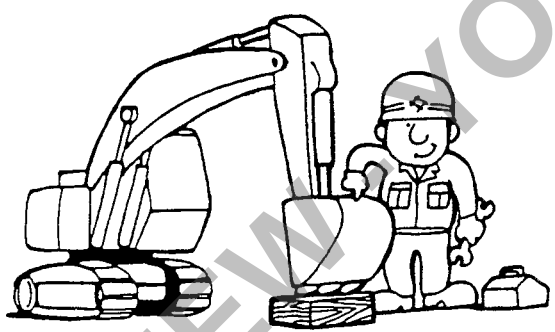
Prevention of fire

- For washing parts, use non flammable solvent. Gasoline and kerosene are flammable and dangerous
- Prohibit smoking during washing



For inspecting the machine

- Park the machine on hard, flat ground
- Lower the attachment to ground

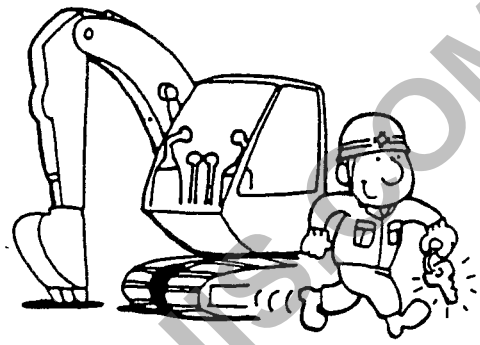


⚠ CAUTION

To carry out inspection with the attachment in the air for some unavoidable reasons, place safety block or pillar underneath

Do not work on machine while in motion.

- Maintenance on a moving machine may cause severe personal injury



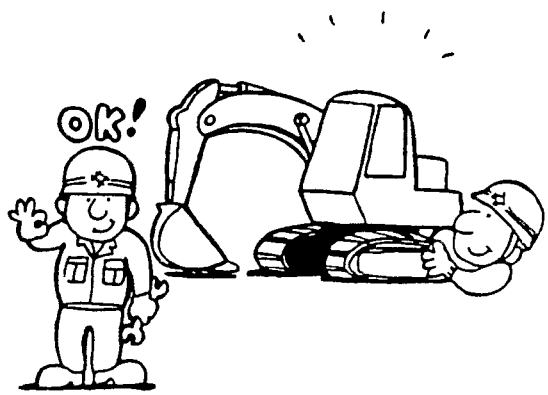
⚠ CAUTION

Particulary be careful about rotating machinery such as fan, etc so that your clothes will not be caught in it

If performing maintenance underneath the machine . . . ??

- Put the "UNDER INSPECTION/MAINTENANCE" sign on operator's seat
- Carry out inspection and maintenance work with more than 2 people together

And Always keep in mind what the other workers are doing

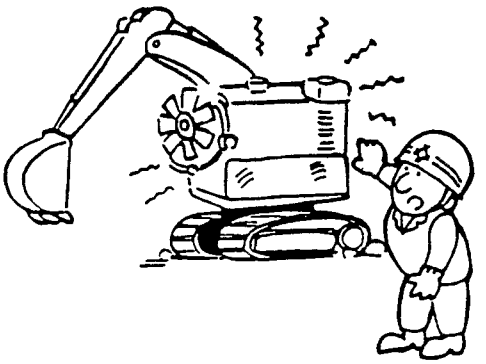


PREVIEW OF YOUFIXTHIS.COM

Download full manual at youfixthis.com

The machine is hot right after operation.

- Touching the engine or other parts with a bare hand right after engine has stopped is very dangerous You may burn your hands
- Do not remove the cap for radiator or hydraulic tank right after operation until all internal pressure is released.



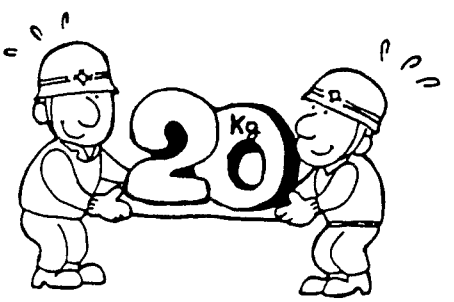
Caution for inspection and adjustment.

- Be careful not to drop bolts, nuts, or tools inside the inspection window or oil supply hole of tank when opening them.



Carrying heavy object

- If the object weighs more than 20 kg (44 lbs), carry with two men or more together or use hoist crane



Caution for use of tools

- Provide safety equipment when grinding or during hammering work Wipe of oil or dust from tools before using



Caution during work on a higher position

- Use scaffolding as much as possible
- Use steps when getting on and off from them

⚠ CAUTION

Do not jum off.



PREVIEW YOUFIXTHIS.COM

Download full manual at youfixthis.com

4 Cautionary points for handling

4 1 Inspection

Before mounting the piston motor, check the following points

a) Is any area damaged during transportation? Is any part missing?

b) Has any part become loose during transportation?

c) Are P_1, P_2 and the drain port completely sealed to prevent entry of dust in the piston motor?

4.2 Rotation direction

The relationship between the oil flow direction and the rotation direction is as follows.

Oil inlet port	Oil outlet port	Rotation direction (viewed from the motor output shaft)
P_1	P_2	Rightward rotation (clockwise)
P_2	P_1	Leftward rotation (counterclockwise)

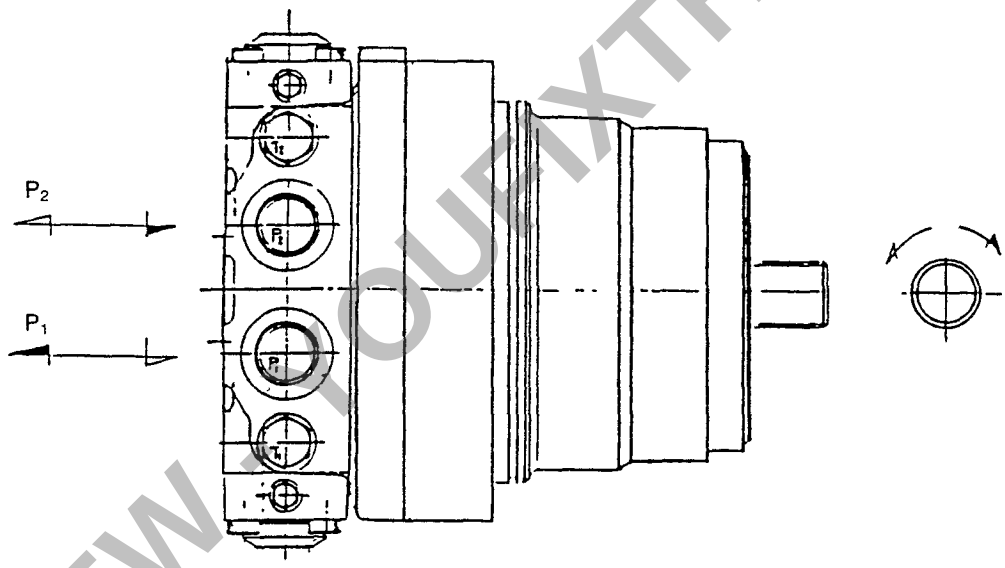


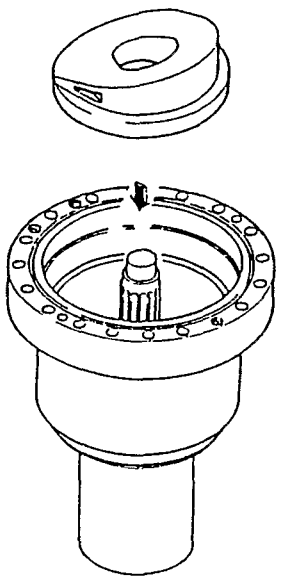
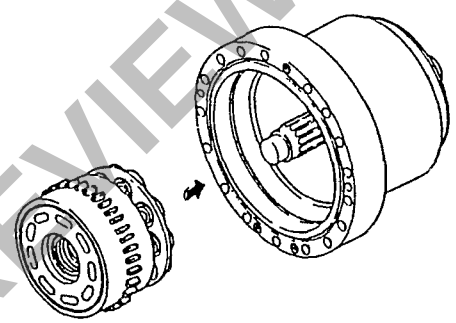
Fig. 6

4.3 Shaft load

The loads (both in the radial and thrust directions) must not be applied to the output shaft.

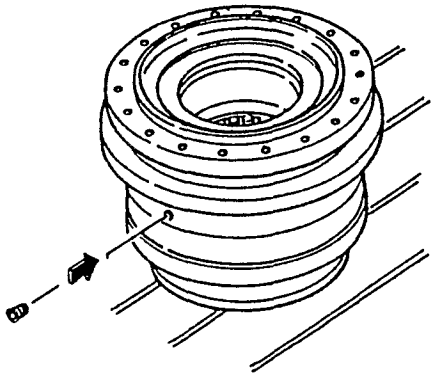
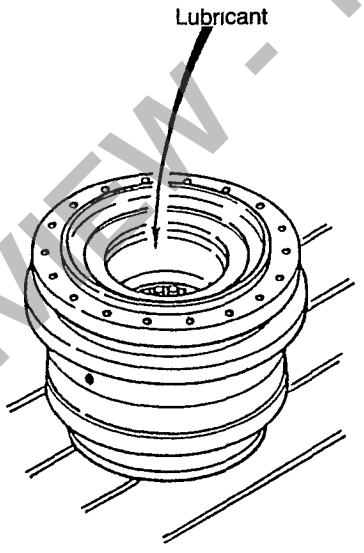
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Assembling procedure	Cautionary points during assembling
c Assemble the swash plate ⑨ into the case ① 	
d Insert the cylinder block S/A into the case ① for assembly 	Slowly carry out the insertion with care to prevent the piston S/A ⑥, retainer holder ⑧, etc from coming off

PREVIEW - YOUFIXTHIS.COM

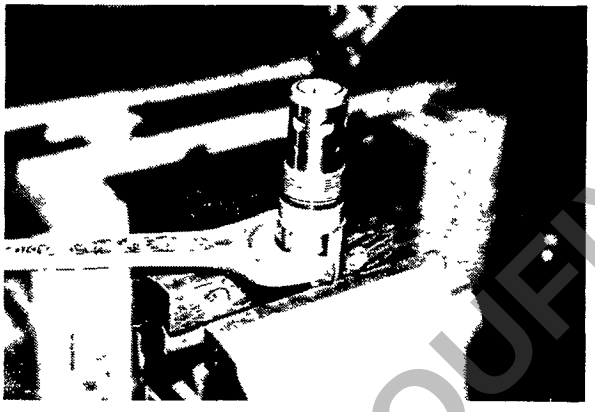
Download full manual at youfixthis.com

Assembling procedure	Cautionary points during assembling
16 Wrap seal tape on the plug ㉗, and screw it into the housing ⑬. Tightening torque 1 to 1.5kg-m (7.2~10.8ft.lb)  17. Fill lubricant. Oil amount: 8.5 liters (2.24gal) 	Applicable tools No.1 Preset type torque wrench No.5 Ratchet handle for socket wrench No.6 Hex. bit for socket wrench No.11 Hex. bar wrench

The above completes the assembling procedure

PREVIEW - YOUFIXTHIS.COM

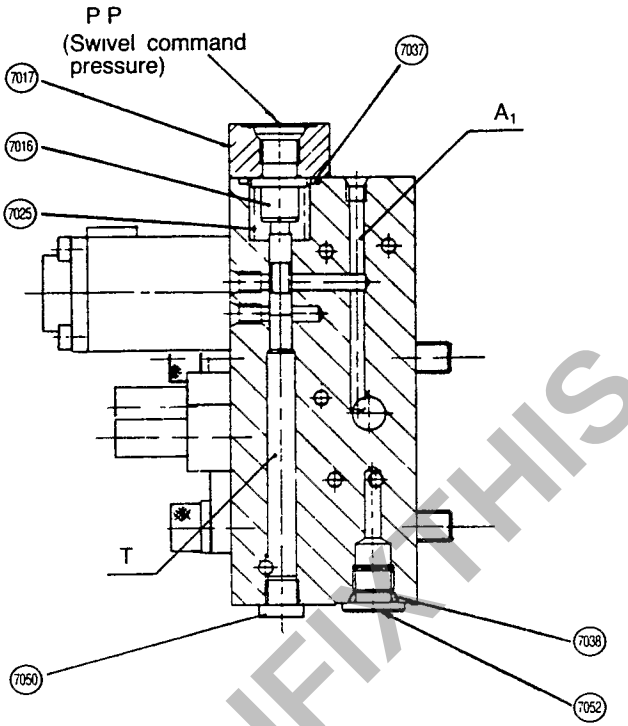
Download full manual at youfixthis.com

	Disassembling procedure	Cautionary points
15	④ Relief valve disassembling Hold the plug (201) and the body (101) respectively, and pressing them against each other, bend them. The C-ring will be removed for disassembly. The piston (302), plunger (301) and seat (341) can be removed from the body side. The springs (321 and 322) can be pulled out from the plug side. Face the plug downward and lightly hit it, and the piston (303), spring (323) and spring seat (333) will be ready for pulling out.  	If they are bent with the cut end of the C-ring facing upwards, it will facilitate removal. If any damage is found on the parts, remove them as an assembly unit.

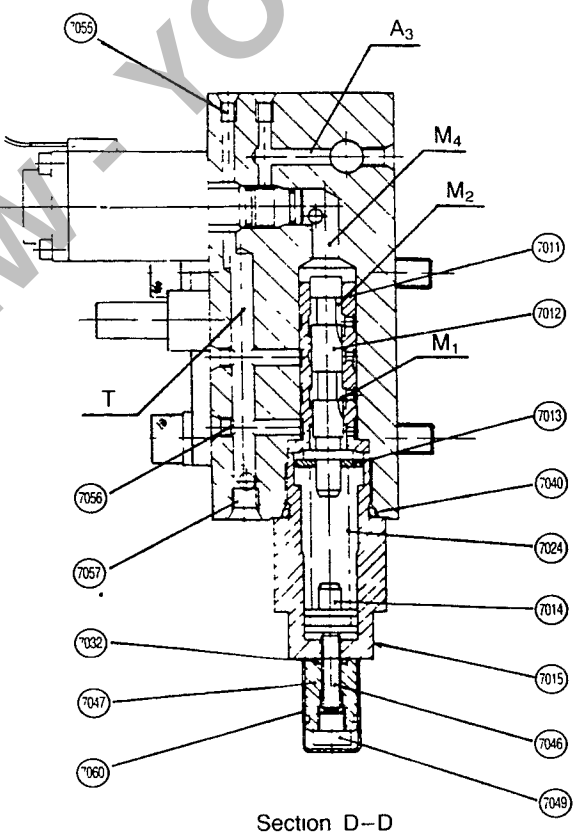
The above completes the disassembling procedure. Sufficiently check the parts for abnormalities.

PREVIEW: YOUFIXTHIS.COM

Download full manual at youfixthis.com



Section C–C



Section D–D

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Mount the electromagnetic proportional pressure reduction valve and fasten it in place with four hexagonal socket head cap bolts (M4 × 75)

Grease the O-rings and check that they are undamaged

[3mm A/F Allen key
Tightening torque
0.35~0.45kgf·m (2.5~3.3ft.lb)]



No 5-6

[Mounting the negacon pistons]

Mount the spring and shims

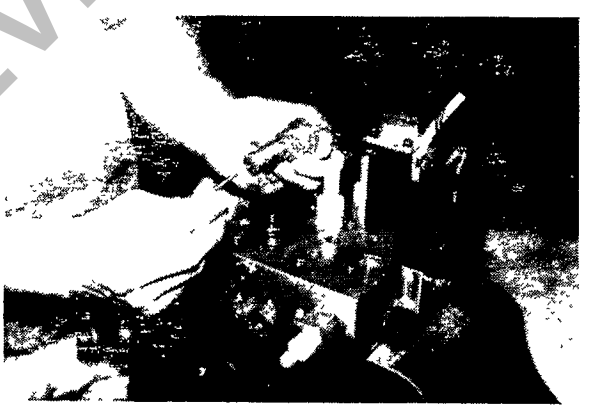
Do not forget to place the O-ring at the mouth of the regulator cover



No 4-6

Insert the small piston inside the large piston, and insert them together into position under the regulator cover

Grease the small piston to prevent it from falling out of the large piston.



No 4-5

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

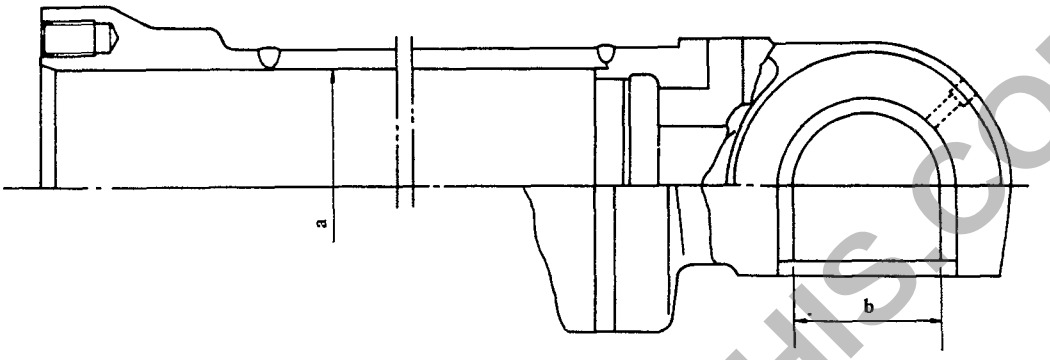
No	Operation	Cautions
7	Mount the O-rings ㉑④ onto the plugs ㉑① 	
8	Mount the seals ㉑③ into the plugs ㉑ 	Mount the seals so that the lips are as shown in the figure below
9	Mount the push rods ㉑ on 	Apply hydraulic oil to the surfaces of the push rods

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

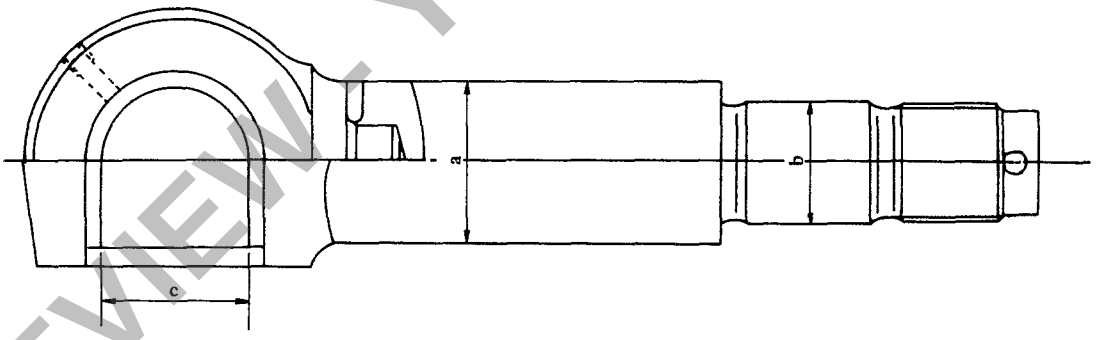
3 Maintenance Standard

3.1 Tube Complete



No	Name	Dimension	Replacement standard
(1)	Tube	a	• When scratch detectable with a finger nail arises • When dimension increases to nominal size plus 0 2 mm (0 008″) or more
(2)	Pin bushing	b	• When wear exceeds 0 5 mm (0 020″) • When an excessive binding arises

3.2 Piston Rod Complete



No	Name	Dimension	Replacement standard
(1)	Piston rod	a	• When scratch, dent or hollow detectable with a finger nail arises • When a bend of 0 5/1,000 arises
		b	• When outer diameter decreases over 0 1 mm (0 004″)
(2)	Pin bushing	c	• When wear exceeding 0 5 arises • When excessive binding arises

(mm)

PREVIEW YOUFIXTHIS.COM
Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 18 of 339 pages

The full manual includes:

- All 339 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Link-Belt LS-4300 Shop Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual