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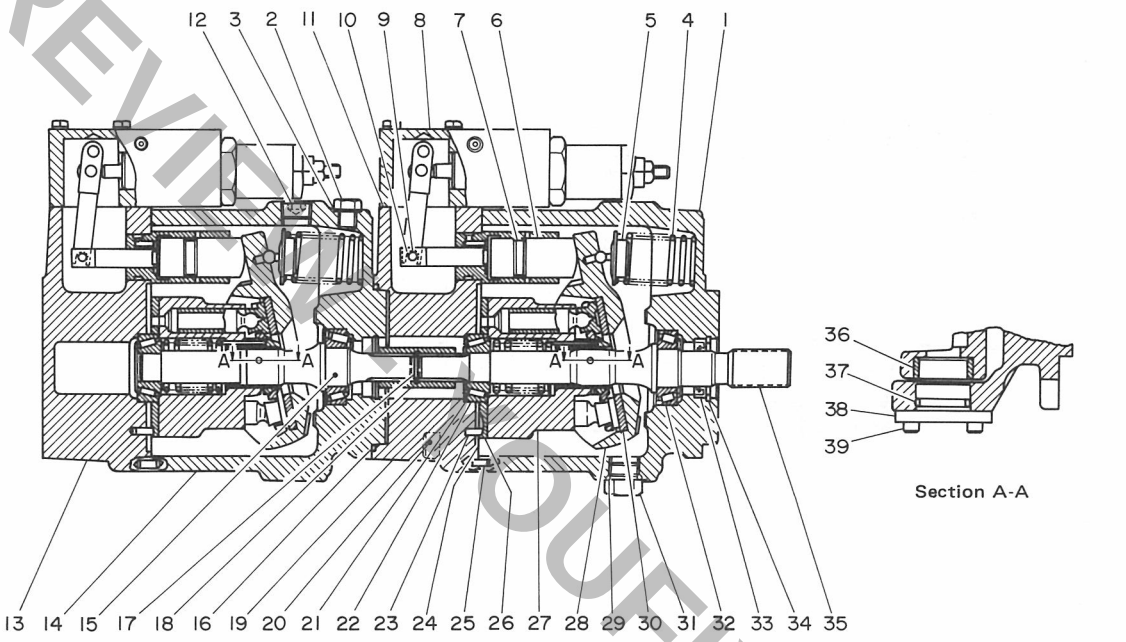
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MAIN PUMP

Structure

The pump is a series of 2 swash plate type axial piston pumps arranged in tandem, composed of a housing, end cap, shaft, cylinder block and other parts. Also, the rotating portions of the 2 pumps are linked together with a coupling.



1	Housing	14	Housing	27	Cylinder Block Kit
2	Plug	15	Shaft	28	Swash Plate
3	Seal Washer	16	O-Ring	29	O-Ring
4	Spring	17	Snap Ring	30	Thrust Plate
5	Spring Holder	18	Coupling	31	Plug
6	Piston	19	End Cap	32	Bearing
7	Rod	20	Socket Bolt	33	Oil Seal
8	Control Valve Assy	21	Shim	34	Snap Ring
9	Pin	22	Bearing	35	Shaft (A)
10	E-Ring	23	Pin	36	Journal Bearing
11	Gasket	24	Gasket	37	O-Ring
12	Plug	25	Pin	38	Trunnion
13	End Cap	26	Valve Plate	39	Socket Bolt

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TIGHTENING TORQUES

Hydraulic Hose Fittings

Thread Size	Union Nut (PF)		Taper Thread (PT)	
	kgf·m	ft·lb	kgf·m	ft·lb
1/8	0.8 ~ 1.2	5.8 ~ 8.6	1.0 ~ 1.3	7.2 ~ 9.4
1/4	2.5 ~ 3.0	18.1 ~ 21.7	2.7 ~ 3.0	19.5 ~ 21.7
3/8	5.0 ~ 6.0	36.2 ~ 43.4	5.0 ~ 6.0	36.2 ~ 43.4
3/4	10.0 ~ 12.0	72.3 ~ 86.7	13.5 ~ 16.5	97.6 ~ 119.3
1	14.0 ~ 15.0	101.2 ~ 108.4	18.0 ~ 22.0	130.2 ~ 159.1

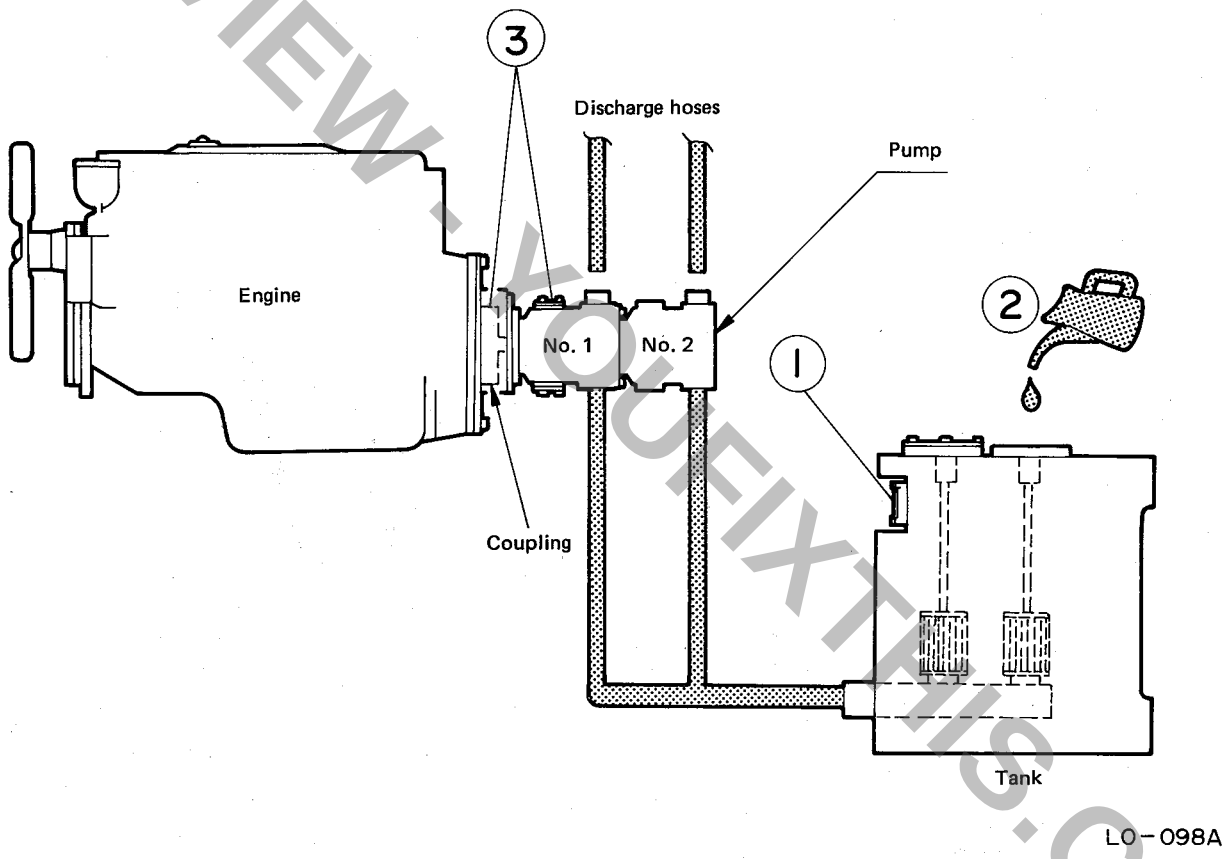
Pipe Fittings (PT)

Thread Size	Steel		Case Steel	
	kgf·m	ft·lb	kgf·m	ft·lb
1/8	1.0 ~ 1.3	7.2 ~ 9.4	0.9 ~ 1.2	6.5 ~ 8.6
1/4	2.7 ~ 3.3	19.5 ~ 23.8	2.2 ~ 2.8	15.9 ~ 20.2
3/8	5.0 ~ 6.0	36.2 ~ 43.4	4.5 ~ 5.5	32.5 ~ 39.7
1/2	8.0 ~ 9.9	57.9 ~ 71.6	6.8 ~ 8.4	49.2 ~ 60.7
3/4	13.5 ~ 16.5	97.6 ~ 119.3	11.7 ~ 14.3	84.6 ~ 103.4
1	18.0 ~ 22.0	130.2 ~ 159.1	15.7 ~ 19.3	113.6 ~ 139.5

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ALL OPERATIONS ARE NOT POSSIBLE

1	Check the hydraulic oil	Insufficient	2	Replenish the hydraulic oil
3	Defective main pump or coupling	Disassembly and inspection		Repair the main pump or replace the main pump assembly. Replace the coupling.



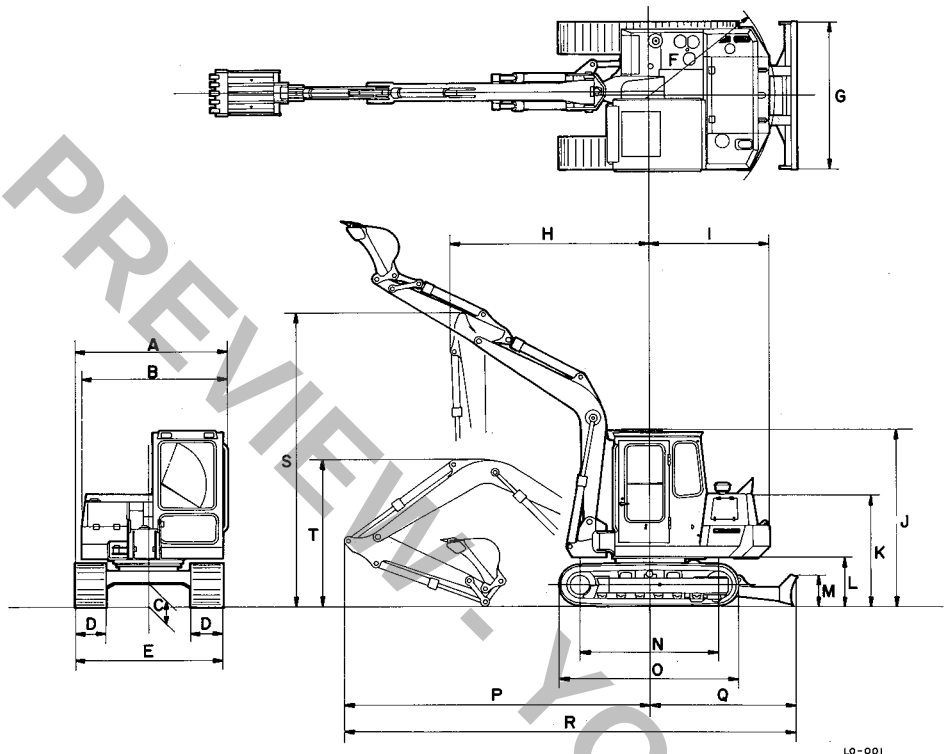
LO-098A

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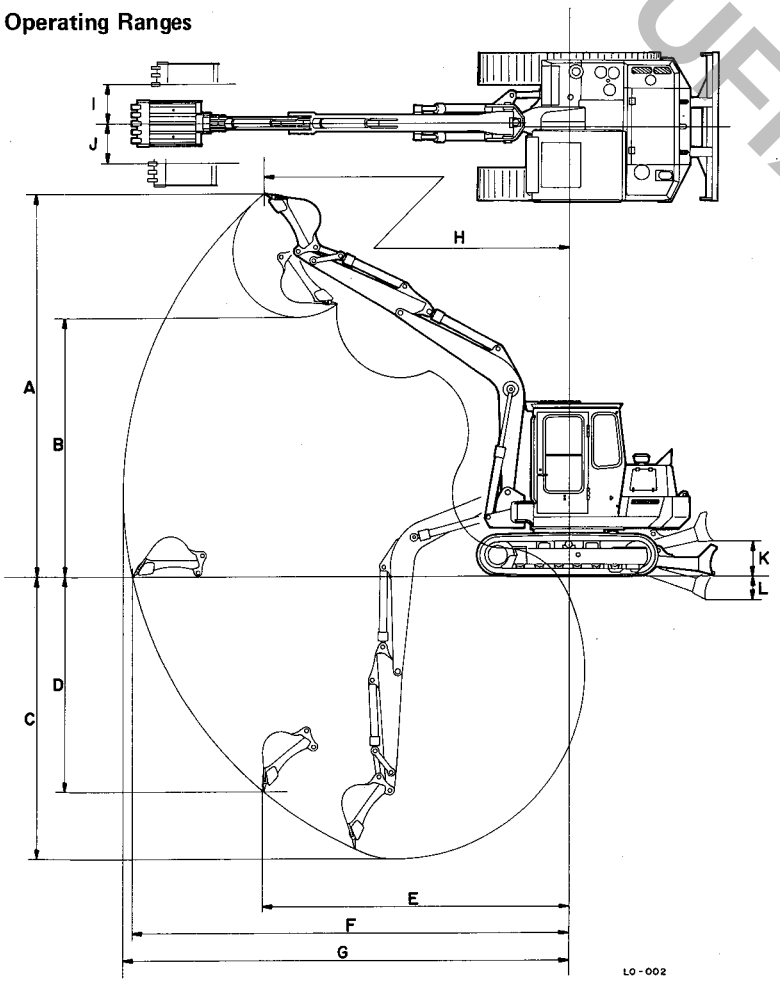
SPECIFICATIONS DIAGRAM

Dimensions



	mm.	in.
A	2180	86
B	2030	80
C	330	13
D	450	18
E	2100	83
F	1800	71
G	2120	83.5
H	2800	110
I	1700	67
J	2550	100
K	1590	62.5
L	690	27
M	420	16.5
N	1990	78
O	2570	101
P	4330	173
Q	2090	82
R	6420	253
S	4190	165
T	2100	83

Operating Ranges



	mm.	in.
A	5470 (5600)	215 (220.5)
B	3700 (3825)	146 (150.5)
C	4000 (4250)	157.5 (167.5)
D	3060 (3290)	120.5 (129.5)
E	4370 (4480)	172 (176.5)
F	6250 (6480)	246 (255)
G	6350 (6600)	250 (260)
H	4370 (4550)	172 (179)
I	560	22
J	590	23
K	500	19.5
L	340	13

Values in ( ):
with 1950mm (76.8 in.) long arm.

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DISASSEMBLY, REASSEMBLY

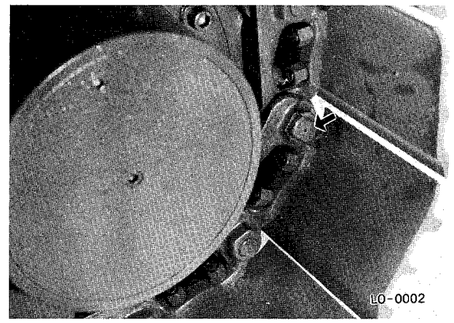
LOWER MACHINERY DISASSEMBLY AND REASSEMBLY

Lower Machinery → Crawler Belt → Carrier Roller
Crawler Belt → Track Roller
Crawler Belt → Travel Motor
Crawler Belt → Front Idler, Track Spring
Lower Machinery → Dozer Blade

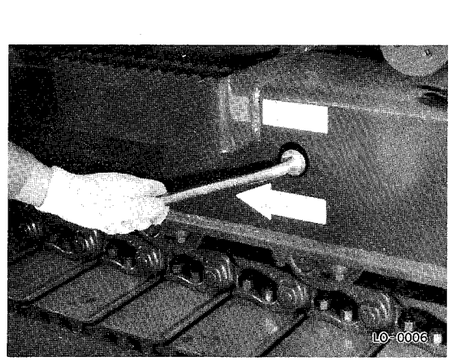
- Before removing hydraulic hoses, the air should be bled from the Hydraulic oil tank.
- Insert plugs in the openings where hydraulic hoses have been removed to keep dirt, etc. from getting in the lines.

Crawler belt Removal

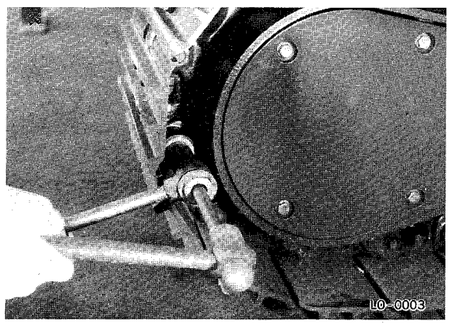
1. Stop the machine so that the position of the master pin is on the travel motor side or on the front idler side.



2. Loosen the check valve and loosen the tension on the crawler belt.
   - If the check valve is turned 7 or 8 times and loosened, the grease in the grease cylinder will ooze out and the track tension will be lessened.



3. Knock out the master pin.



MANUAL OVERVIEW

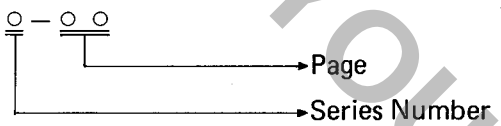
This manual is classified in the following series, and issued for each machine model.

I. GENERAL
II. SPEICIFICATIONS
III. DISASSEMBLY, REASSEMBLY
IV. HYDRAULIC UNITS
V. TROUBLESHOOTING

Sheet numbers

The following sheet numbers are assigned to each respective page. And if there are additional sheets, revisions, etc., an addition code or a revision code is supplied. Please file the sheets in the order of the sheet numbers.

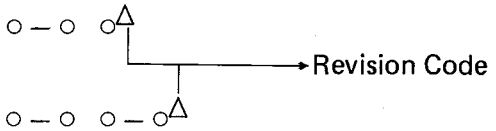
Sheet No.



Sheet Addition



Sheet Revision



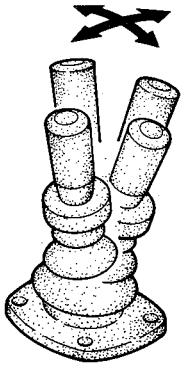
Example: II–08
II–09
II–09–1 . . . A page is added between page 09 and page 10.
II–10
II–11△1 . . . Page 11 has been revised for the first time.

If a sheet has been revised, it is to be used in place of the sheet used before revision and it is not necessary to keep the old sheet.

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LEVER PLAY

Measurement Method:
Measure the amount of play by measuring the amount of movement forward and backward, or left and right, of the indented portion of the top of the levers.

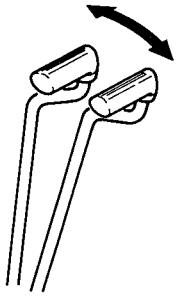


LO-020A

Standard Value

Boom	1.5mm (0.06 in.)
Arm	1.5mm (0.06 in.)
Bucket	1.5mm (0.06 in.)
Slewing	1.5mm (0.06 in.)

Measurement Method:
Measure the amount of play forward and backward in the indented portion of the top end of the levers.



LO-021A

Standard Value

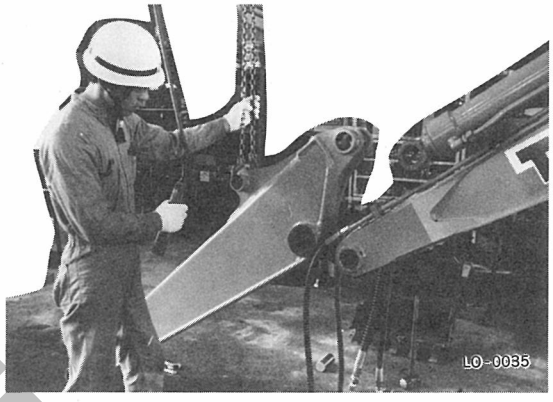
Travelling	30mm (1.18 in.)
Dozer Blade	10mm (0.39 in.)
Service Port	6mm (0.24 in.)

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4. Suspend the arm temporarily with a crane and remove pin (2).



5. Remove the arm.



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Control Lever Installation

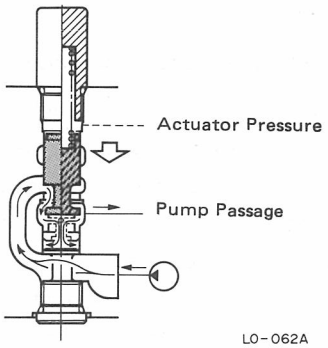
1. After installation, adjust the stroke of the levers.
   - Refer to the item on disassembly and resassembly of the control lever sub ass'y.

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(2) An increase in the actuator pressure upsets the balance of the pressure compensation spool, pushing the spool downward in the figure. This causes a lot of oil to flow in the pump passage, increasing the pump pressure and restoring balance to the pressure compensation spool. As a result, the pressure difference in front of and behind the flow control part is equal to the spring thrust.

(3) Conversely, a drop in the actuator pressure pushes the pressure compensation spool upward, reducing the volume of oil in the pump passage and lowering the pump's pressure. As a result, the pressure compensation spool returns to the balance position where the pressure difference in front of and behind the flow control part is equal to the spring thrust.

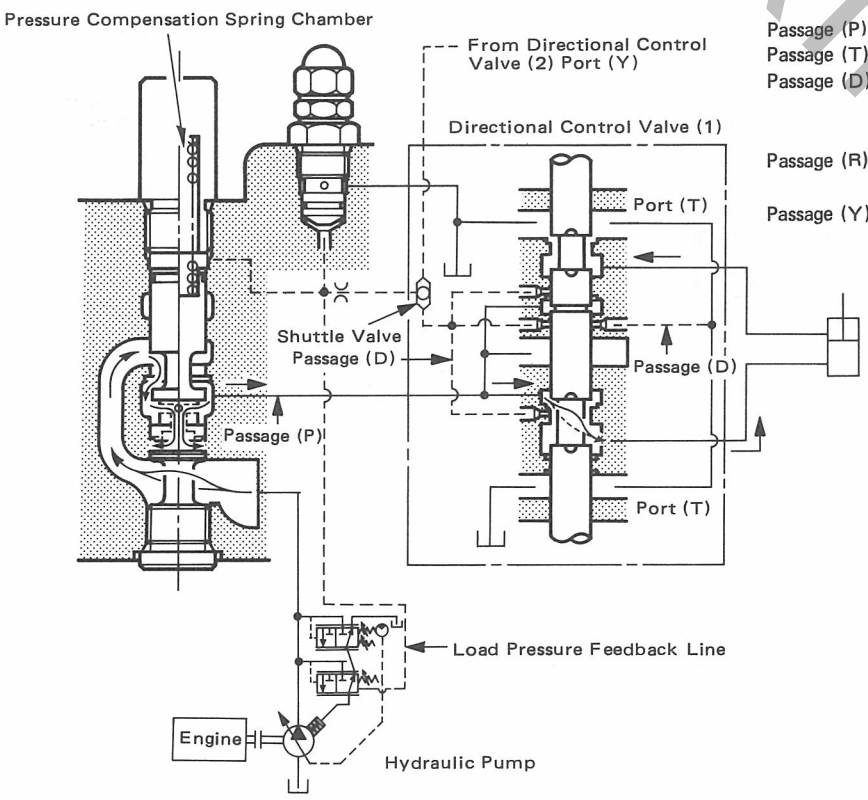


(4) In this way, the flow control unit's front back pressure differential is always kept constant, so if the opening in the flow control part is constant, the flow rate passing through it will be constant regardless of the load pressure.

Load Pressure Feedback Mechanism

The directional control valve with the maximum pressure in the control valve is selected by the shuttle valve incorporated into the directional control valve. Load pressure is transmitted to the pump chamber or to the pressure compensation spring chamber from the small hole in the pressure feedback port along the passage indicated by the dotted line.

For example, in directional control valves (1) and (2), if the pressure at directional control valve (1) is great, the shuttle valve's spool is pushed upward and the pressure of directional control valve (1) is transmitted to the pump chamber or to the pressure compensation spring chamber.

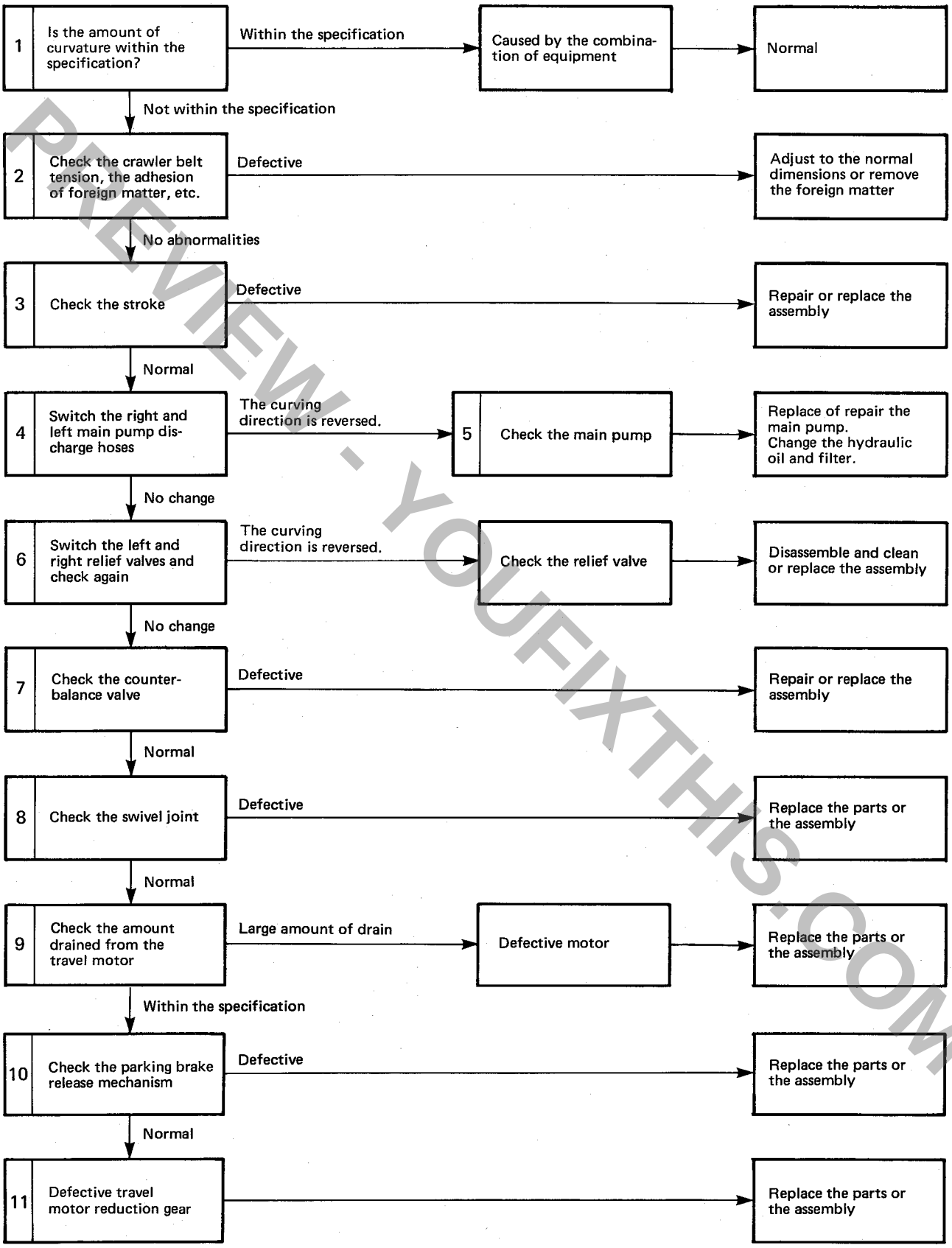


Passage (P)....Hydraulic passage from the pump
Passage (T)....Passage to the tank
Passage (D)....Connected to port (T) through the groove in the spool when the spool is in neutral.
Passage (R)....Connected to port (T), returns internal relief oil to the tank.
Passage (Y)....Passage which feeds back the load pressure from the actuator.

LO-063A

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THE SPEED OF EITHER THE RIGHT OR THE LEFT CRAWLER HAS DROPPED AND THE MACHINE DOES NOT TRAVEL STRAIGHT



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