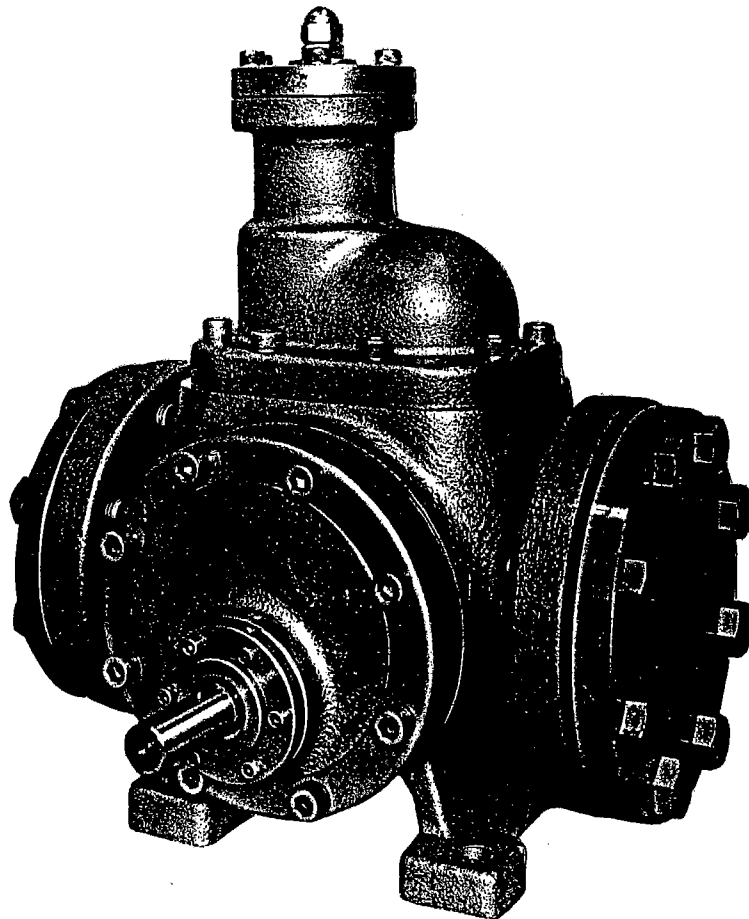


TDP-T04-08

MYCOM OIL PUMP

M80P

Handling Manual



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1. Introduction

The MYCOM oil pump, a specially designed high quality screw gear pump, has been developed out of MYCOM's extensive experience in manufacturing refrigeration screw compressors for many years.

The pump incorporates a specially designed rotor profile, a male rotor with four(4) lobes and a female rotor provided with six(6) lobes.

The MYCOM oil pump, therefore, has the following special characteristics not found on usual gear pumps:

Features:

1) Assures higher pumping efficiency

In comparison with usual gear pumps, the MYCOM screw gear pump assures for higher pumping efficiency.

2) Compactness and high performance

The MYCOM oil pump has larger displacement per rotation than other gear pumps provided with gear profile of the same size (Dia. x Width) as the screw gear pump rotor.

The dimensions of the MYCOM oil pump are therefore relatively smaller than those of other pumps of equivalent capacity.

3) Wide selection of r.p.m. and displacement

The MYCOM oil pump offers a wide selection of r.p.m. specs from low to high speed, and pump displacement can easily be selected based on r.p.m..

4) No axial thrust means longer life

Axial thrust has been completely eliminated in the MYCOM oil pump by utilization of a double helical rotor profile. This minimizes bearing wear and assures longer life of the pump.

- 5) Less noise and vibration during operation
- 6) High sealing efficiency

The mechanical seal material has approximately two times of the frictional durability of parts made of cemented carbide.

The mechanical seal of the MYCOM oil pump is made of silicon carbide to assure long service life.

2. Standard specifications

2-1. Standard specifications

Design pressure	: 20 (kgf/cm ²)
Viscosity range	: 3~500 (cst)
Max. temperature	: 80 (°C)
Adjustable range of the relief valve	: 1~4 (kgf/cm ²)
Driving direction	: Clockwise
Suction	: Right side
Discharge	: Left side

2-2. Capacity

The standard capacity of the MYCOM MP series oil pump is shown in Table 2-1 below:

Table 2-1. Capacity and Brake KW of MYCOM MP series oil pump

Model No.	Total pressure kgf/cm ²	50HZ			60HZ		
		Displacement ℓ /min.	Brake KW KW	r. p. m.	Displacement ℓ /min.	Brake KW KW	r. p. m.
M80P-6PM	3	281	2.71	950	341	3.42	1150
M80P-4PM	3	427	4.64	1450	516	5.68	1750

Note : Figures shown above are based on 100 cst oil viscosity.

2-3. Model number designation

(Standard Model) (Additional)
M8OP-4PMU-R80H01

Table 2-2. Model number designation

	Whether built-in type relief valve is included or not :
	O 1 : With relief valve (Standard type)
	O 2 : Without relief valve (Special type)
	Fluid temperature :
	S : Max. 80°C (Standard type)
	H : Max. 130°C (Special type)
	Inside dia. of suction and discharge flanges :
	65 : 65A
	80 : 80A
	100 : 100A
	Flow direction (Viewed from drive shaft side) :
	R : Right (Driving direction = CCW)
	L : Left (Driving direction = CW)
	Distinction of features :
	B : Bare pump
	Drive rotor :
	M : Male rotor drive
	No. of motor poles :
	4 P : 4 pole motor
	6 P : 6 pole motor
	Major model No. :
M8OP : Pump with 80 mm dia. rotor	

3. Component parts

3-1. Component parts

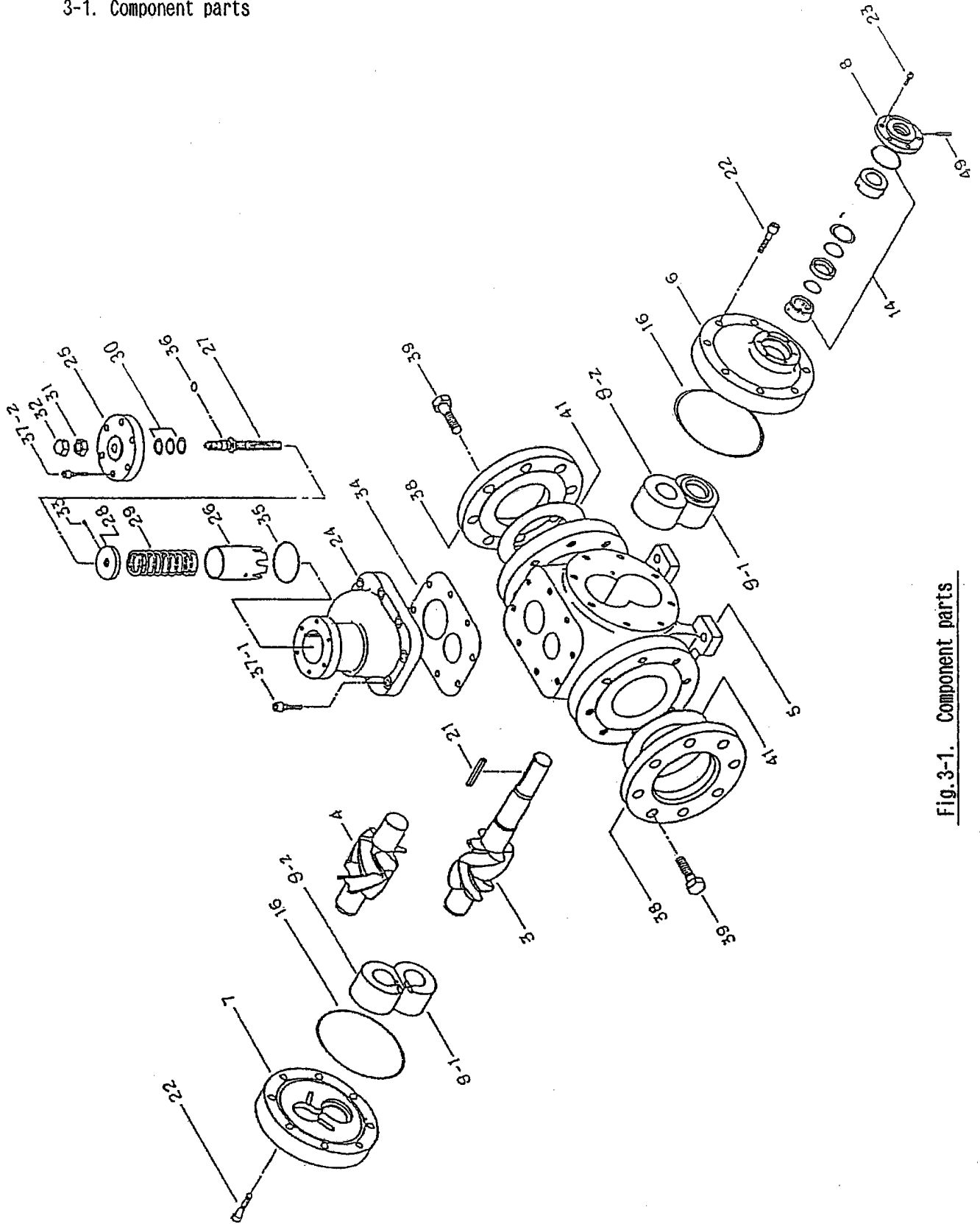


Fig. 3-1. Component parts

3-2. Table of component parts

Table 3-1. Component parts of the pump

No.	PARTS NAME	PARTS No.	Q' ty	REMARKS
3	Drive rotor	08P10300	1	
4	Idle rotor	08P10400	1	
5	Gear casing	08P10500	1	
6	Seal cover	08P10600	1	
7	Bearing cover	08P10700	1	
8	Seal retainer	08P10800	1	
9-1	Drive bearings	08P10910	1set	2pcs/set
9-2	Idle bearings	08P10920	1set	2pcs/set
14	Mechanical seal assembly	08P11400	1set	
16	"O"rings	08P11600	2	JISB2401 G155
21	Key	08P12100	1	8×7×50
22	Hexagon socket head bolts	08P12200	16	M12×50
23	Hexagon socket head bolts	08P12300	6	M6×20
24	Relief valve body	08P22400	1	
25	Body flange	08P22500	1	
26	Piston	08P22600	1	
27	Adjusting bolt	08P22700	1	
28	Spring guide	08P22800	1	
29	Spring	08P22900	1	
30	Thrust bearing	08P23000	1set	
31	Hexagon nut	08P23100	1	JIS M16,Class 3
32	Hexagon cap nut	08P23200	1	JIS M16,Class 3
33	Locking pin	08P23300	1	Φ4×10
34	Gasket	08P23400	1	
35	"O"rings	08P23500	1	JISB2401 G70
36	"O"rings	08P23600	1	JISB2401 P14
37-1	Hexagon socket head bolts	08P23710	8	M12×40
37-2	Hexagon socket head bolts	08P23720	6	M10×35
38	Counter flange	08P13800	2	JIS20k 100A
39	Counter flange bolts	08P13900	16	M20×60
41	Flange gasket	08P14100	1	JIS20k 100A
49	Drain pipe	08P14900	2	Φ6
50	Eye bolts	08P15000	2	M12

4. Special cautions

4-1. Installation

1) Installation point

The suction pipe end should be as close to the fluid source as possible and longer than the height of the suction header.

The fewer accessories on the suction side improve on the suction resistance.

2) Foundation

The foundation of the pump should be strong enough to bear motor driving torque and keep shaft of the pump and the motor aligned.

3) Centering

Centering should be carried out after installation is completed.

Centering adjustment should comply with the following allowable specifications:

Parallel error	Less than 0.05 mm
Inclination error	Less than 0.10 mm

Remarks : Poor centering adjustment may cause rapid wear of moving parts, vibration, noise, etc..

4-2. Care must be taken with piping work

1) Resistance in the suction side piping should be kept to a minimum.

Suction strainer : 100 to 200 (mesh)

2) With piping work, care must be taken to prevent prestressing of piping due to welding strain. Sharp pipe bending is to be avoided to minimize fluid resistance.

- 3) During piping work, all openings of the pump should be provided with the blind covers to prevent foreign matter from entering the pump.

Do not forget to remove blind covers after piping work finished.

5. Operation

5-1. Precautions when starting

- 1) Confirm driving direction of the electric motor. (Disconnect the motor coupling.)
- 2) Confirm that suction line is arranged for satisfactory drawing of fluid by the pump.
- 3) Fully open both suction and discharge valves of the pump. When the pump is provided with the relief valve, leave the relief valve as is when starting and carry out adjustment after commencing operation.
- 4) Turn coupling by hand to confirm smooth rotation. If coupling rotation is not smooth, the pump should not be started until rubbing is eliminated.
- 5) When starting operation, first switch on for several seconds to confirm normal operation, then commence operation.

5-2. Caution during operation

- 1) After continuous operation has been started, check for abnormal pressure, vibration, noise, shaft seal mechanism, etc. and remedy if necessary.

5-3. Caution after operation shut down

- 1) Suction and discharge valves should be closed after the motor is stopped.

5-4. Other cautions

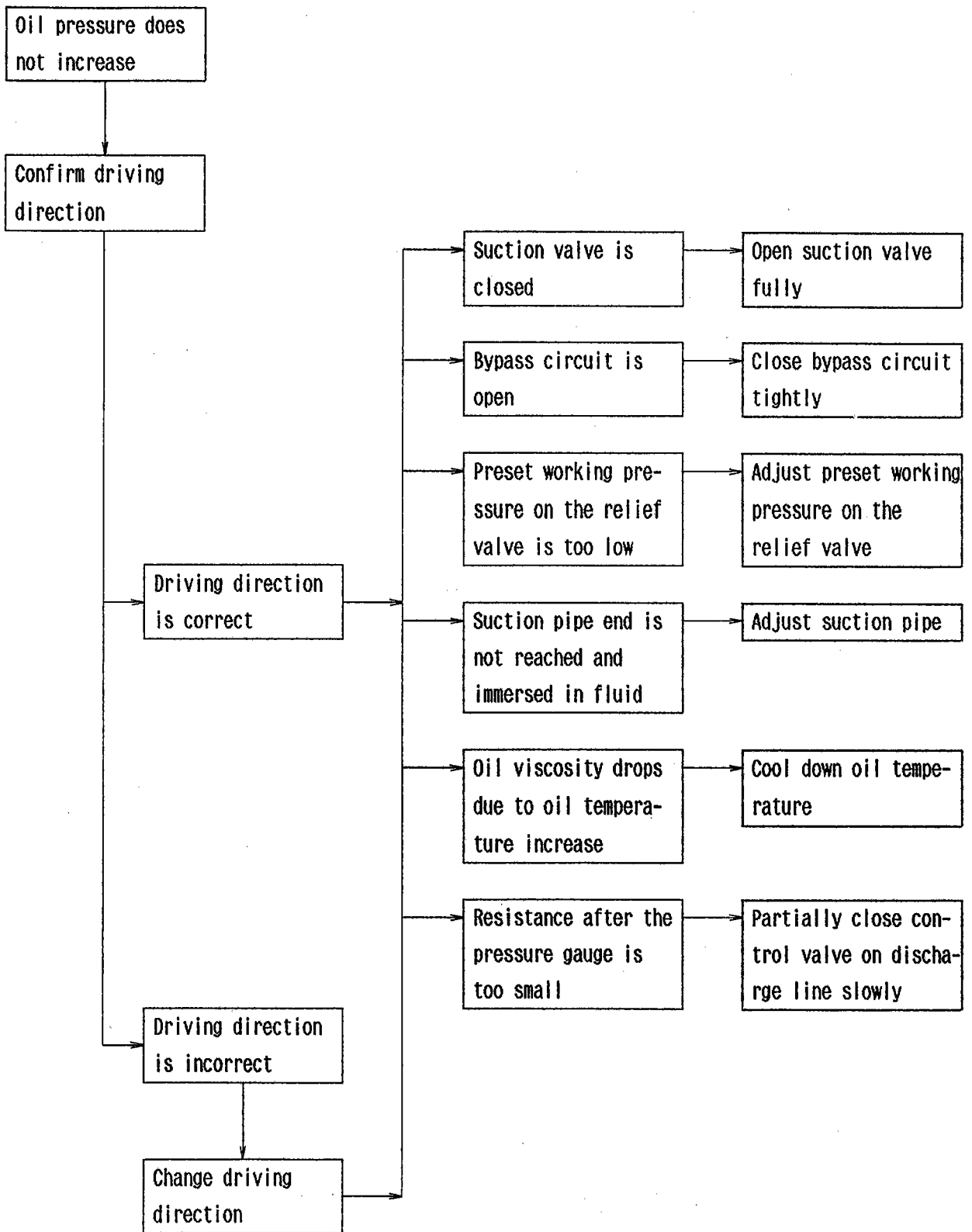
- 1) The pump should be operated strictly in accordance with specifications given.
- 2) A strong shock to on or forcible packaging of the pump are to be avoided.

6. Routine checks

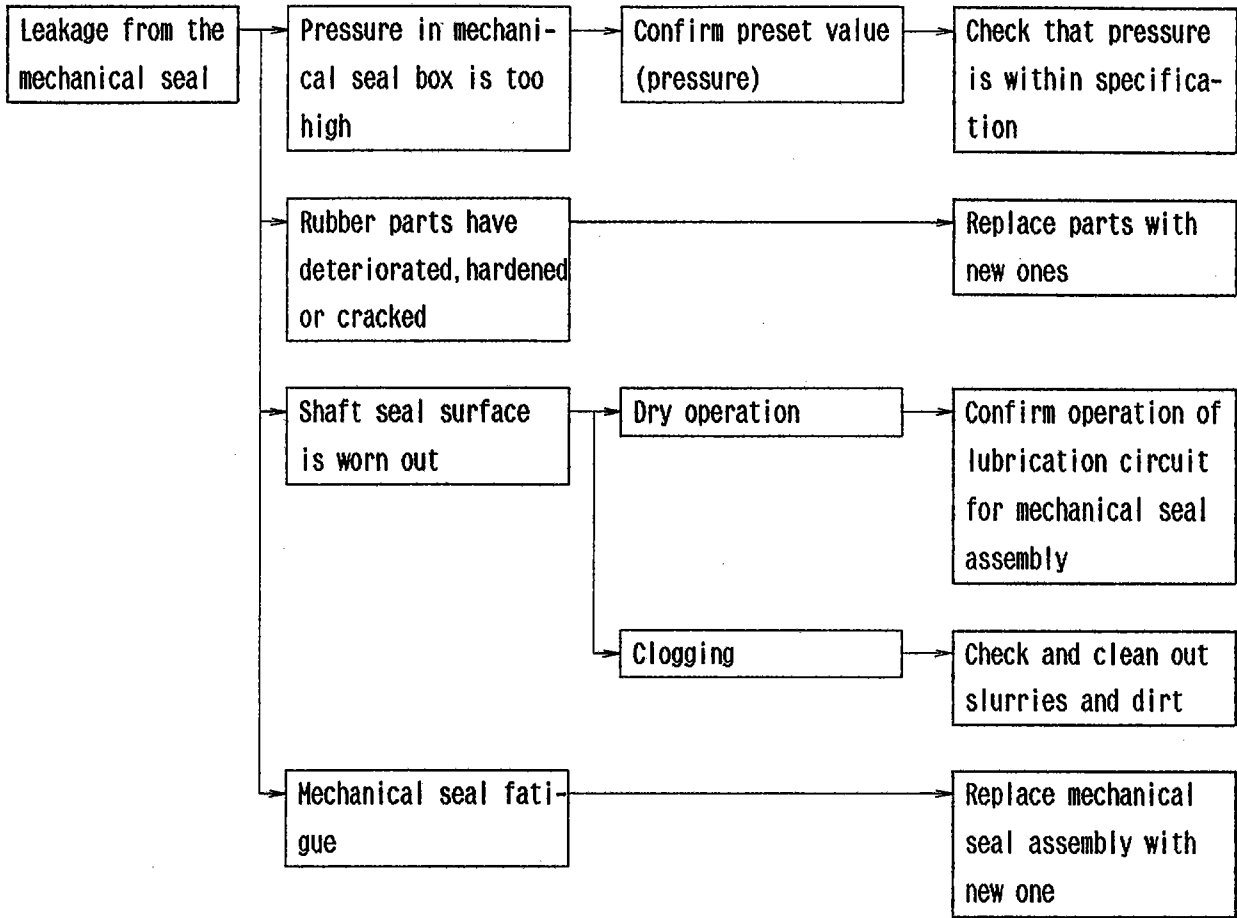
- 1) Leakage from the mechanical seal should not exceed Max. 3 cc/hr.
- 2) Leakage from casings other than the mechanical seal should be checked for constantly.
- 3) Check for changes in pressure and flow rate.
- 4) Mechanical noise should be monitored.
- 5) Abnormal temperature increases of the component parts should be located as soon as possible.

7. Troubles and remedies

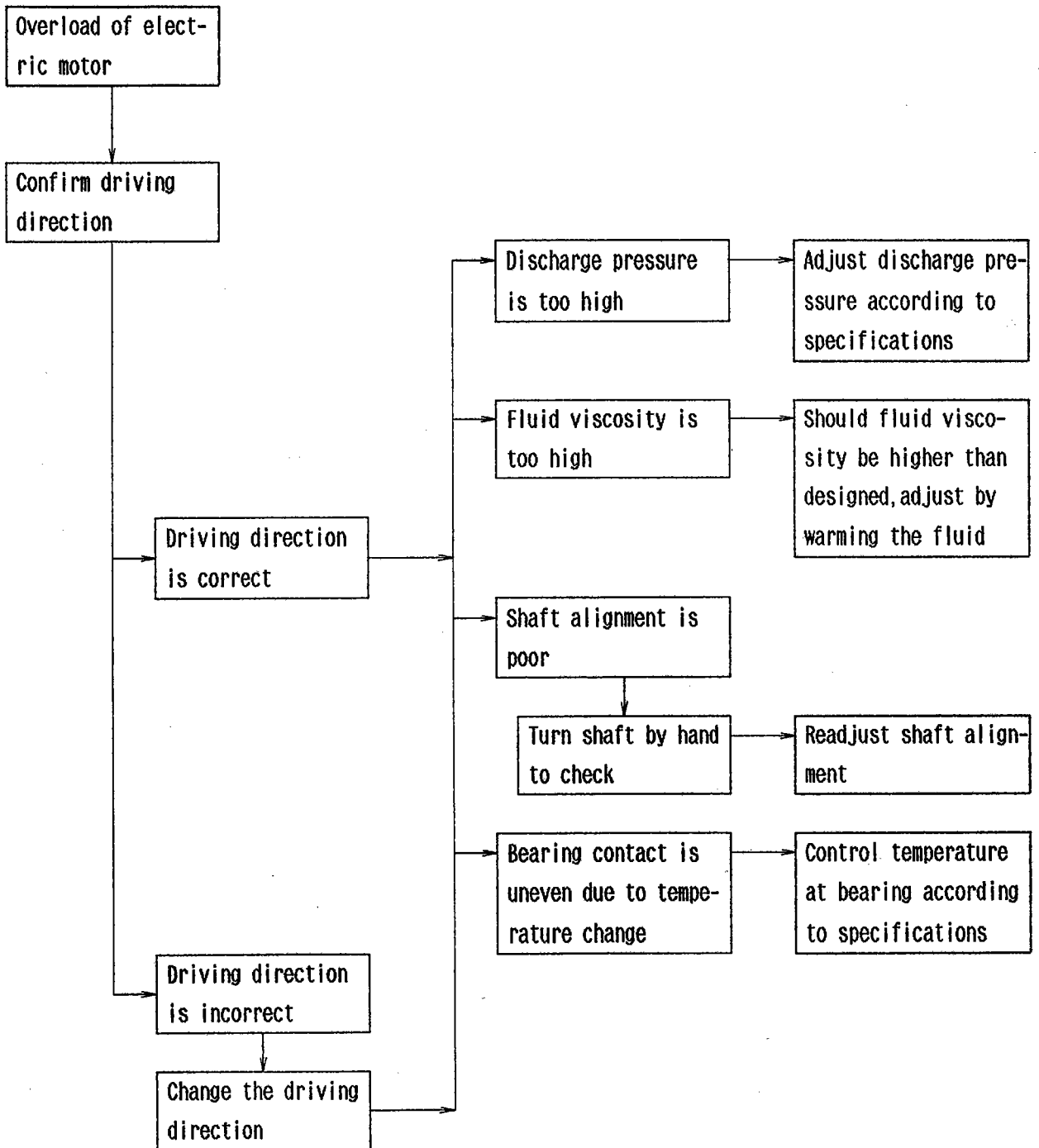
7-1. Oil pressure does not increase



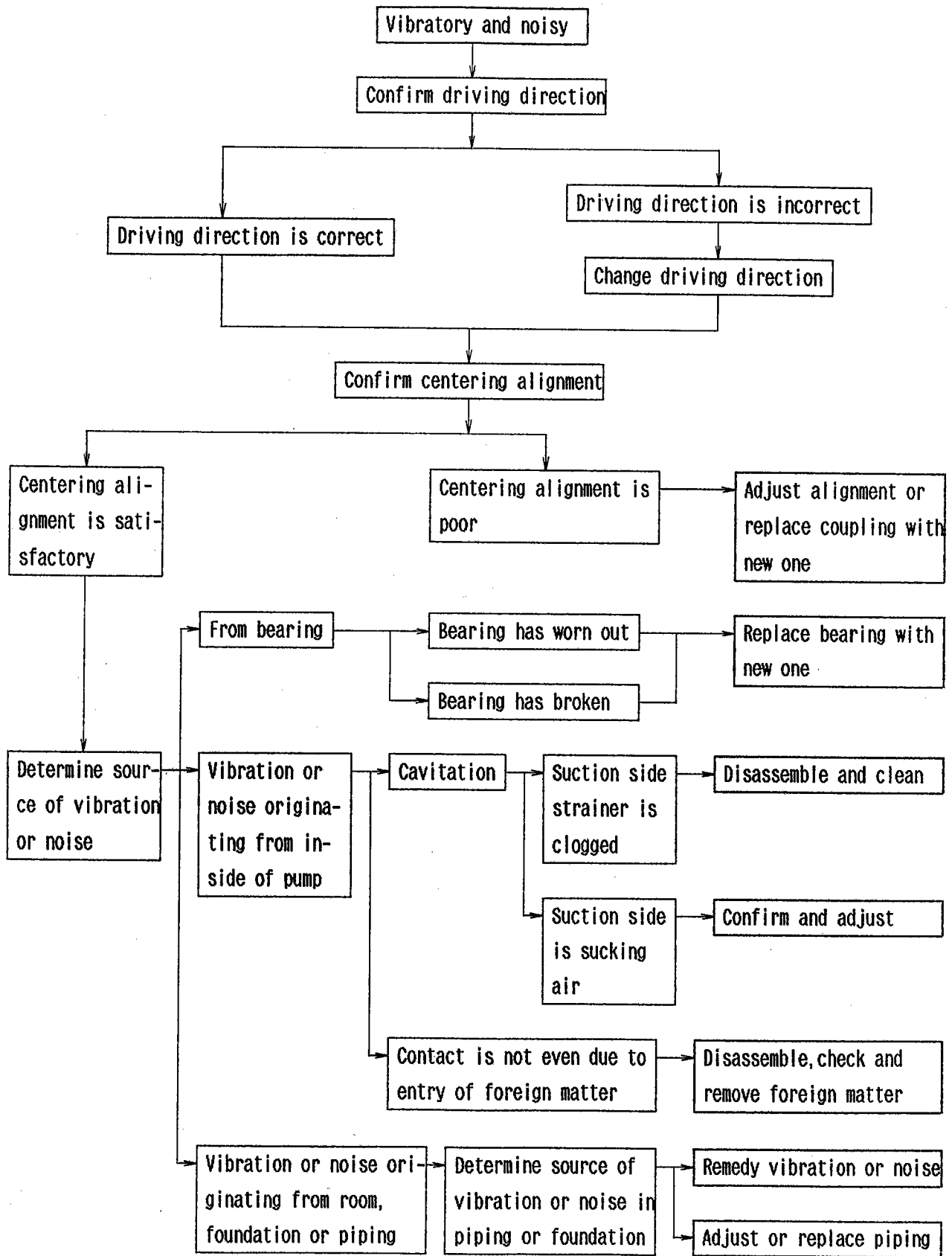
7-2. leakage from the mechanical seal



7-3. Overload of electric motor



7-4. Vibration and noise



8. Disassembly/assembly

8-1. Disassembly of the pump

Disconnect the coupling. Remove the pump from the common base. Loosen the set screw on the coupling. Draw the coupling out of the shaft.

- 1) Remove the relief valve from the pump, if there are.
- 2) Remove the seal retainer(8) from the seal cover(6).
- 3) Remove the seal cover(6) from the gear casing(5).
- 4) Loosen the set screw(141) of the collar(149).
- 5) Remove the mechanical seal(14) from the drive rotor(3).
- 8) Remove the blind cover(7) from the gear casing(5).
- 7) Draw the rotors(3 and 4) from the blind cover side of the gear casing(5).

*1 If it is difficult, tap the shaft end softly with a plastic mallet.

*2 The bearings(9-1 and 9-2) at the blind cover side draw with the rotors(3 and 4).

*3 If temperature of bearings exceeds 30°C, do not remove until temperature drops below 30°C

*4 Drive rotor and idle rotor cannot be disassembled.

- 8) Draw the bearings(9-1 and 9-2) at the seal cover side from the gear casing(5).

8-2. Assembly of the pump

Clean the all parts listed in table 3-1, and arrange them on a clean and dry cloth.

- 1) Fit the interlocking marks of the drive rotor(3) and the idle rotor(4), and interlock the rotors.
- 2) Insert the rotors(3 and 4) into the blind cover side of the gear casing(5).
- 3) Coat the all surfaces of bearing with oil.
- 4) Point the groove of the bearing(9-1 and 9-2) to the discharge side, and mount the bearings to the rotors(3 and 4).
- 5) Coat the blind cover(7) and the 'O'ring(16) with oil.
- 6) Set the 'O'ring(16) to the blind cover(7).
- 7) Install the blind cover(7) to the gear casing(5).

8) Assemble the mechanical seal assembly(14), the seal cover(6) and the seal retainer(8).

Refer to details of 8-5, procedure of the mechanical seal assembly.

9) In case the pump has the relief valve(24), install the relief valve to the gear casing(5). If not so, install the blind plate(50) to the gear casing(5).

8-3. Disassembly of the relief valve

Remove the relief valve(24) from the pump.

- 1) Remove the hexagon cap nut(32).
- 2) Loosen the relief valve adjusting bolt(27) by turning counterclockwise fully.
- 3) Remove the hexagon nut(31).
- 4) Draw the hexagon socket head bolts(37-2).
- 5) Remove the relief valve flange(25) with the relief valve adjusting bolt(27) and the spring guide(28).
- 6) Draw the relief valve adjusting bolt(27) with the 'O'ring(36) from the relief valve flange(25).
- 7) Remove the spring guide(28) by turning clockwise.
- 8) Draw the spring(29) and the piston(26) from the relief valve(24).

8-4. Assembly of the relief valve

Arrange the parts listed in No.24~37-2 of table 3-1 on a clean and dry cloth.

- 1) Coat the piston(26) with oil.
- 2) Insert the piston(26) and the spring(29) to the relief valve(24).
- 3) Mount the 'O'ring(36) to the relief valve adjusting bolt(27).
- 4) Insert the relief valve adjusting bolt(27) to the relief valve flange(25).
- 5) Screw the spring guide(28) to the relief valve adjusting bolt(27).
- 6) Coat the 'O'ring(35) with oil.
- 7) Set the 'O'ring(35) in the relief valve flange(25).
- 8) Install the relief valve flange(25) to the relief valve(24).

* Point the locking pin(33) into the groove of the relief valve(24).

9) Screw the hexagon cap nut(32)

*Install the relief valve to the pump in exactly direction.

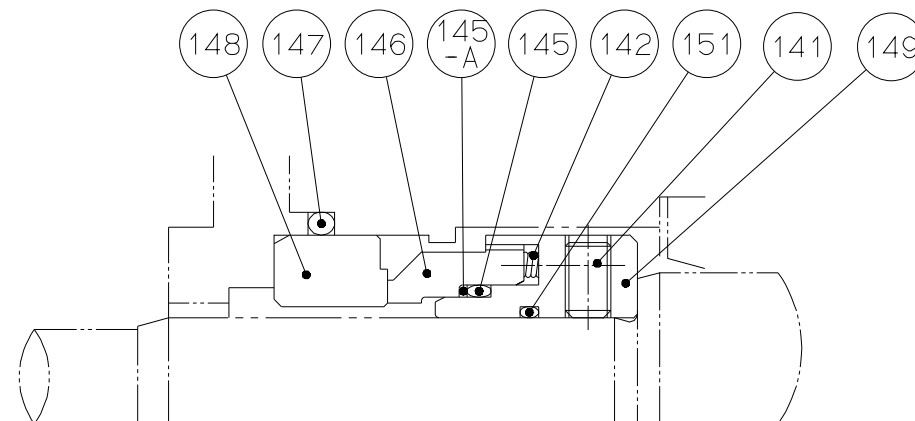
For oil pressure adjustment of the relief valve, refer to page 19~20.

8-5. Procedure of the mechanical seal assembly

Arrange the parts in peaces listed in Fig. 8-1 on a clean and dry cloth.

- 1) Coat the "O" ring(151) with oil.
- 2) Set the "O" ring(151) in the collar(149).
- 3) Insert the wave spring(142) in the collar(149).
- 4) Coat the "O" ring(145) with oil.
- 5) Set the "O" ring(145) in the collar (149).
- 6) Insert the adapter(145-A) in the collar (149).
- 7) Mount the seal ring(146) in the collar(149).
- 8) Mount the collar(149) to the drive rotor(3).
- 9) Screw the set screw(141) on the collar(149).
- 10) Coat the "O" ring(16) with oil.
- 11) Set the "O" ring(16) to the seal cover(6).
- 12) Install the seal cover(6) to the gear casing(5).
- 13) Mount the insert(148) to the seal cover(6).
- 14) Coat the "O" ring(147) with oil.
- 15) Set the "O" ring(147) in the seal cover(6).
- 16) Install the seal retainer(8) to the seal cover(6).

Fig. 8-1. Sectional view of mechanical seal assembly



9. Adjustment of the relief valve (24 through 32)

Fig.9-1. Sectional view of the relief valve

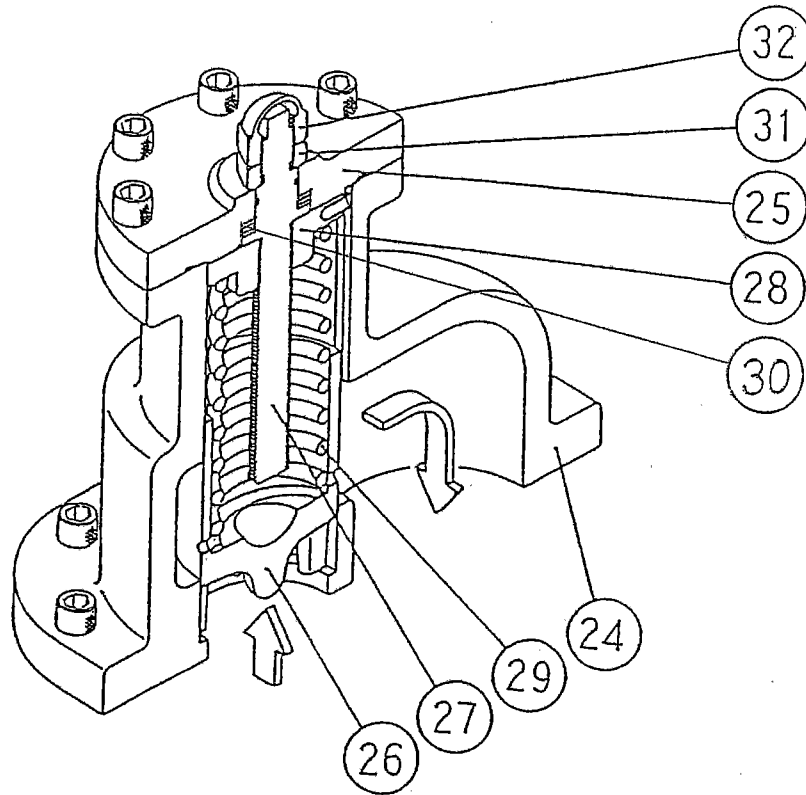


Table 9-1. Parts of the relief valve

No.	PARTS NAME	No.	PARTS NAME
24	Relief valve body	29	Spring
25	Body flange	30	Thrust bearing
26	Piston	31	Hexagon nut
27	Adjusting bolt	32	Hexagon cap nut
28	Spring guide		

9-1. Take off hexagon cap nut(32) and loosen hexagon nut(31).

9-2. Turn adjusting bolt(27) clockwise to increase oil pressure and counterclockwise to decrease.

Remarks :

1) Pressure increase per rotation of adjusting bolt is approximately as shown below :

Model No.	Pressure increase per turn (Kg/cm ²)
M80P	0.25 ~ 0.30

2) Maximum effective rotation of adjusting bolt is 16 turns from fully open status position turning counterclockwise.

Before operating, maintaining, or inspecting this product, read the manual thoroughly and fully understand the contents.

Keep the operation manual in a safe, designated place for future reference whenever the need arises.

Specifications of this product are subject to change without prior notice.

27.APR.2012