L－０３６４E

Motor Driven Intermittent Type Piston Pump

MMXL－Ⅲ－CE

INSTRUCTION MANUAL

- For your safety, read and understand this Manual thoroughly before handling the pump.
- Keep this Manual at a designated place for easy access at all times.

LUBE CORPORATION

Introduction

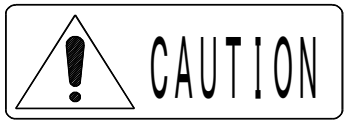
■System Application

his Motorized Gear Pump "MMXL-Ⅲ-Type" is designed to lubricate each point on a machine by delivering relatively small amount of oil through a metering valve.

Do not use this system for any other purposes.

■Marks used in Manual

In this Manual, safety precautions are provided using the marks below in order to prevent accidents which might cause injuries to human bodies. Be sure to carefully read these safety precautions to understand the contents thoroughly before handling the pump.

	Indicates a potentially hazardous situation which, if ignored, could result in death or serious injury.
	Indicates a potentially hazardous situation which, if ignored, may result in minor or moderate injury.

In addition to the above, the marks below will also appear in this manual. Please read the following explanation in order to handle the pump correctly.

	Indicates referential information or points to which special attention should be paid while handling the pump. If ignored, the pump and/or the machine could be damaged.
	Indicates referential information or points which are helpful for handling the pump.
	Indicates a reference clause.

■Questions/Contacts

If any question or doubt arises concerning the contents of this Manual, please contact the following.

■ Japan
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■ U.S.A
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781 Congaree Road, Greenville, S.C.29607
TEL: 800-326-3765 FAX: 864-242-1652

■Changes in Specifications

Details of all illustrations and specifications in this Manual are subject to change without prior notice for improvement and development of the pump.

■Resale or Leasing

At the time of resale, leasing out or lending out the pump to the third party, make sure to include with the pump all the manuals and any other documents supplied with the pump.

■Disposal of Pump/Oil

Make sure to dispose pump or oil as designated by National laws and/or local regulations.

Table of Contents

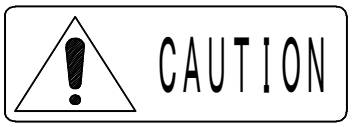
1 . Safety Precautions

1-1 Basic Safety Precautions

- Carefully read this Manual to understand the contents before handling the pump.
- Keep this Manual at a designated place for easy access at all times.
- This pump is handled by only personnel who have the knowledge and skill of its installation and adjustment.
- Never modify or change this pump without prior permission of LUBE.

1-2 Labels

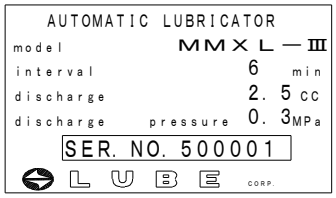
The following labels are affixed on the pump.
If any label gets damaged or becomes illegible, contact LUBE immediately. A new one will be supplied at your own cost.



- Strictly observe the instructions on the labels affixed to the pump.
- Never remove from nor disfigure any labels on the pump.

1－2－1　Types of Labels

①



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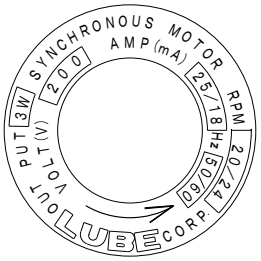

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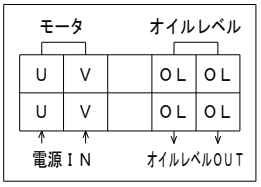

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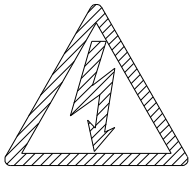
⑤



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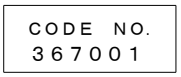
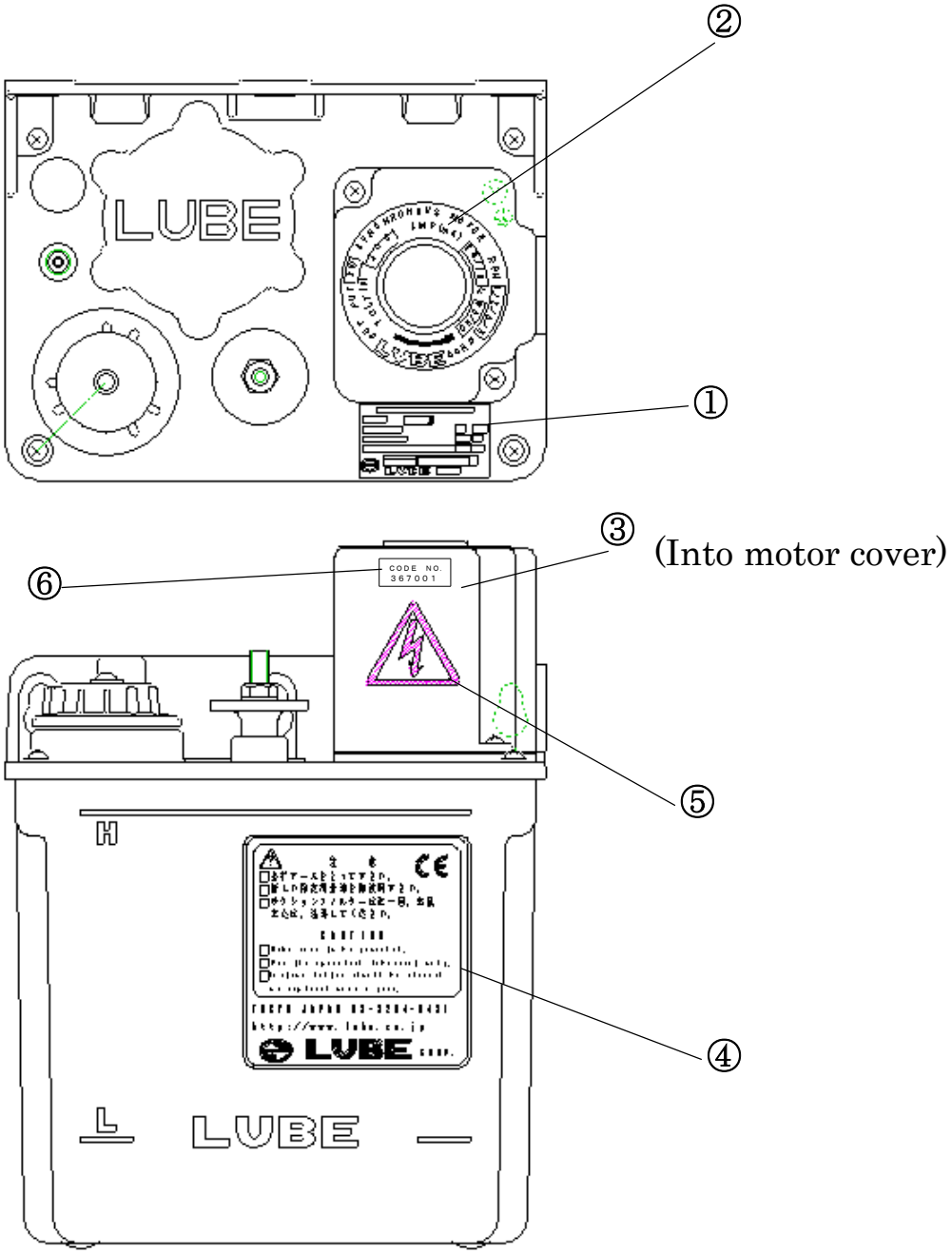


1－2－2　Location of Labels



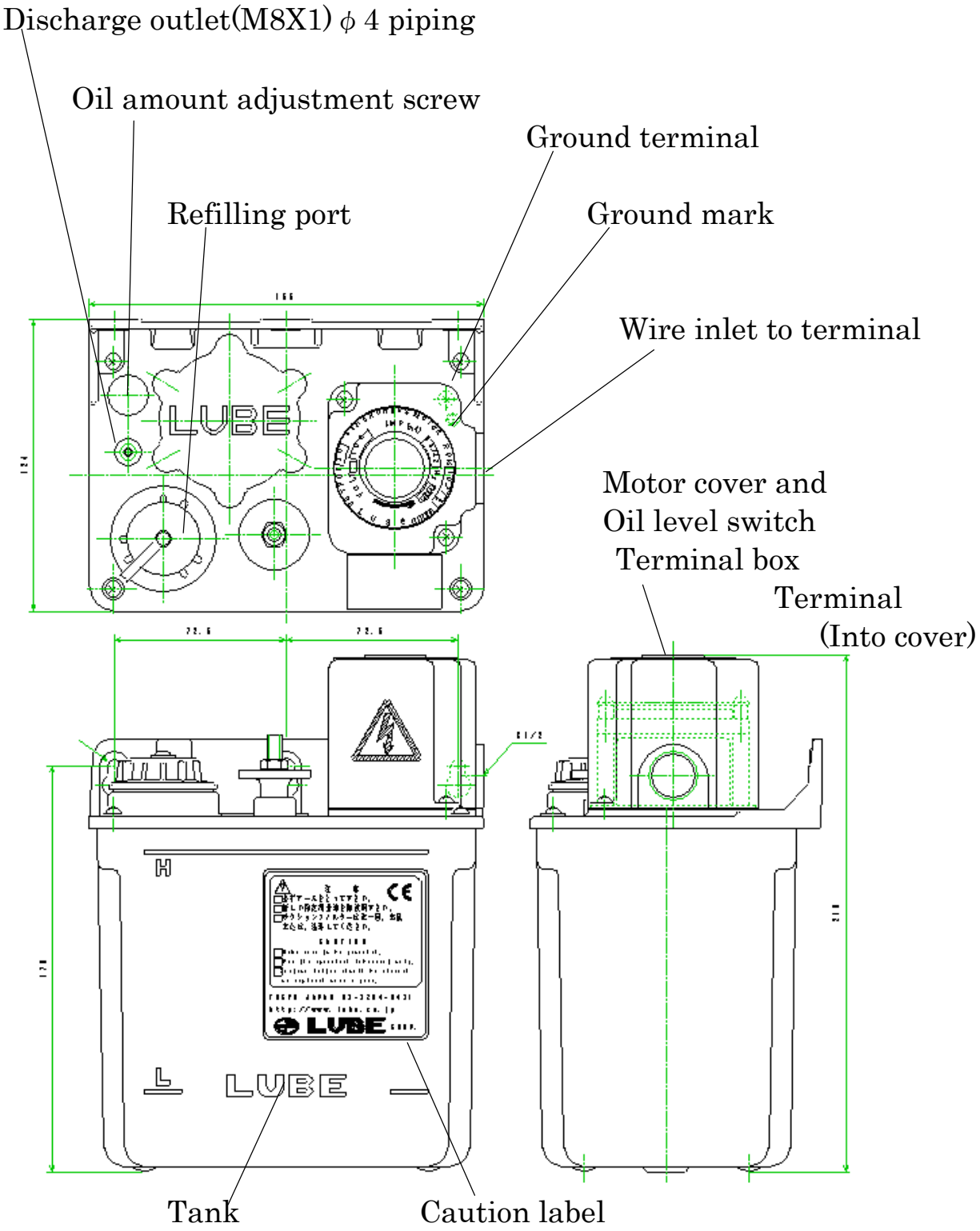
2 . Specification and Outline

1-1 Specification

Item		Specifications	
Power supply		AC100V±10%, φ1	AC200V±10%, φ1
Motor	Rated voltage	AC100V±10%, φ1	AC200V±10%, φ1
	Frequency	50／60Hz	50／60Hz
	Rated output	3W	3W
	Rated amperage	0.050A 50Hz 0.042A 60Hz	0.025A 50Hz 0.018A 60Hz
	Insulated kind	A kind	
	Direction of rotation	Clockwise from top of the motor	
Pump	Discharge volume	0.2～1.0ml/in(It can be adjustment) 1.5～2.5ml/in(It can be adjustment) 2.5～5.5ml/in(It can be adjustment)	
	Discharge pressure	0.3MPa	
	Interval time	3,6,15,30,60,120 min(50Hz) 2.4,5,12.5,25,50,100 min(60Hz)	
Tank	Effective capacity	1.8 litter	
Oil level switch	Rated load	AC,DC200V	
	Contact capacity	5A,30W whichever is smaller	
	Contact type	A contact (on at low level)	

2-2 Name of Each Component

MMXL-Ⅲ-CE



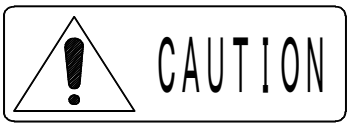
3．Installation

3-1　Environmental Requirement

Be sure to this pump in the following environment.

・Ambient temperature：０～＋４０℃
・Humidity　　：３５～８５％　ＲＨ

3-2　Mounting unit



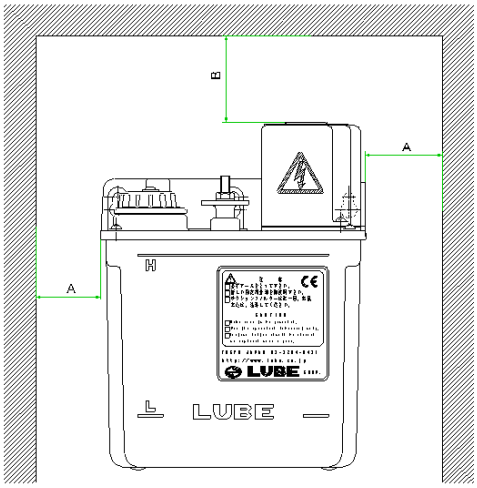
Make sure to fix the pump firmly.
Insufficient mounting of the pump could fall itself and cause injury.

Be sure to fix the pump against the vertical and flat surface, which can sustain its weight sufficiently. Mount and fix the pump firmly using two (2) M6 bolts.

Recommends anti-vibration rubber to be applied when the pump is exposed to vibration.

Be sure to allow necessary space around the pump as shown on the next page for operation and maintenance.

■ Weight of the pump and required space



MMXL-Ⅲ-CE

Pomp Interval time	Code number						Weight (kg) (see note below)	Required space (mm)
	Discharge volume 0.2～1.0ml		Discharge volume 1.5～2.5ml		Discharge volume 2.5～5.5ml			
	100V	200V	100V	200V	100V	200V		
3 min	367001	367007	367019	367025	367037	367043	2.0	A:150 B:200
6 min	367002	367008	367020	367026	367038	367044		
15 min	367003	367009	367021	367027	367039	367045		
30 min	367004	367010	367022	367028	367040	367046		
60 min	367005	367011	367023	367029	367041	367047		
120min	367006	367012	367024	367030	367042	367048		

MMXL-Ⅲ-CE-L (Oil level switch)

Pomp Interval time	Code number						Weight (kg) (see note below)	Required space (mm)
	Discharge volume 0.2～1.0ml		Discharge volume 1.5～2.5ml		Discharge volume 2.5～5.5ml			
	100V	200V	100V	200V	100V	200V		
3 min	367055	367061	367073	367079	367091	367097	2.0	A:150 B:200
6 min	367056	367062	367074	367080	367092	367098		
15 min	367057	367063	367075	367081	367093	367099		
30 min	367058	367064	367076	367082	367094	367100		
60 min	367059	367065	367077	367083	367095	367101		
120min	367060	367066	367078	367084	367096	367102		

＊ : Note: The weight of oil is not included

3-3 Wiring

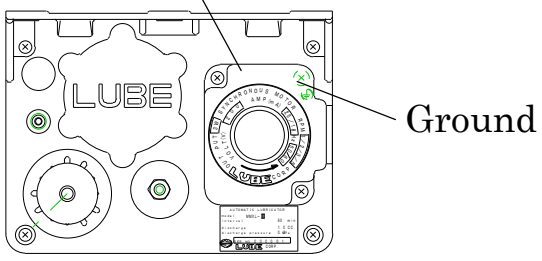
WARNING	Only qualified personnel electrical work can connect wiring.

The direction of motor rotation is only one way.

Make sure that you attach the terminal block to a good ground.

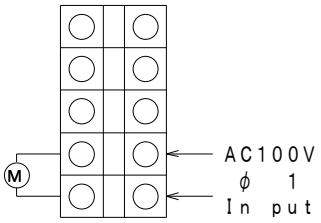
If the outgoing cord touches the outside surface of the equipment or other object or if it comes in contact with the hand of the operator, use an insulated cord.

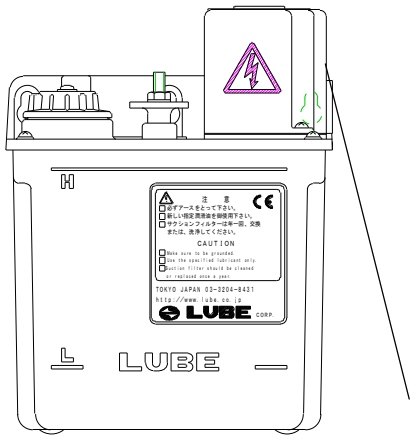
Terminal block(Into motor cover)



Ground

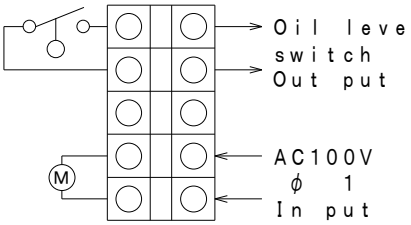
●MMXL-Ⅲ-CE Terminal Connection





Wire inlet to terminal

● MMXL-Ⅲ-CE Terminal Connection
(With oil level switch)



3-4 Tubing connection

Connect tubing to the machine to the discharge port (M8×1).

Use tubing good for the pressure 2.0 MPa or higher.

Fix the joint with hands and then tighten it 2/3turns with a spanner.

refer to '6－2 Trouble Shooting'

After connection, make sure there is no grease leakage from the joint. Make sure to bleed air from the tubing and the pump after connection.

4. Controlling the Pump

Continue energizing the pump. The pump should intake and discharge once within an intermittent time interval.

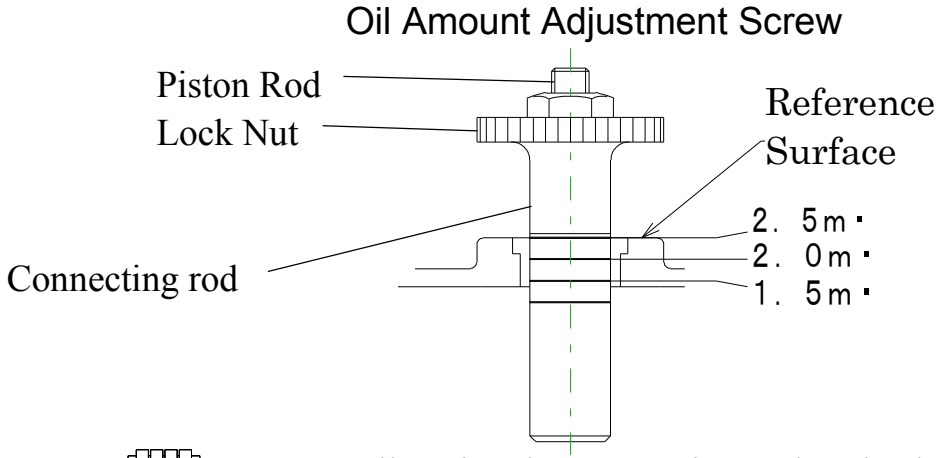
The intermittent time interval is determined by deceleration gears established inside the pump. Thus, this intermittent time interval time cannot be changed.

The amount of oil discharged is adjusted to its maximum (2.5 mL/shot) at the time of shipment from the factory.
Follow the steps below to adjust the oil discharge amount.

1) Turn the lock nut in the CCW direction until it is loosened.
2) Turn the connecting rod in the CCW direction until its scale is at the reference position.
3) Manually turn the lock nut in the CW direction to fasten the connecting rod.

WARNING

Always turn the power off to stop the pump before adjusting the pump's oil discharge amount.
If the power remains ON while you work, you run the risk of electric shock, or of getting your fingers caught in the rotating parts of the pump.



Manually raise the connecting rod and release it to discharge 1 shot of oil.
Do not discharge oil by manually pressing the connecting rod.

5. Lubricating oil and refilling

5-1 Lubricating oil to be used

Use industrial lubricating oil in the range from 32 to 1300 mm^2/s of ISO viscosity.

Do not use any lubricating oil other than that which has been recommended.
Use lubricating oil of the same grade made by the same manufacturer.

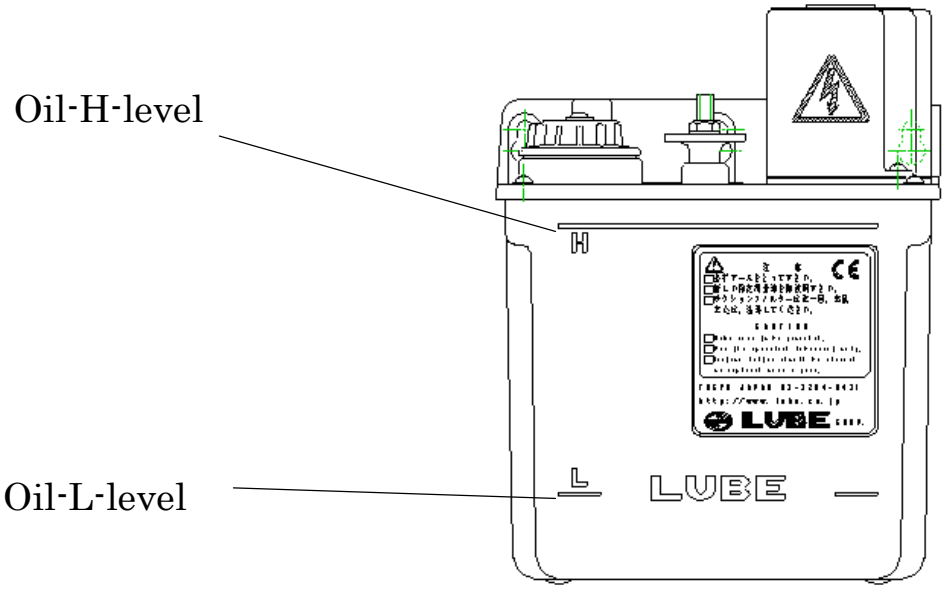
5-2 Refilling lubricating oil

Refill lubricating oil when the level gauge on the tank shows “L.”

In case of using oil level switch, refill oil when signal for low oil level turns on.

Use new lubricating oil. If lubricating oil contains any foreign substances, clogging may occur, causing the pump to stop discharging oil.

If lubricating oil overflows or leaks, wipe off the overflowing or leaking oil.



6. Maintenance

6-1 Suction filter

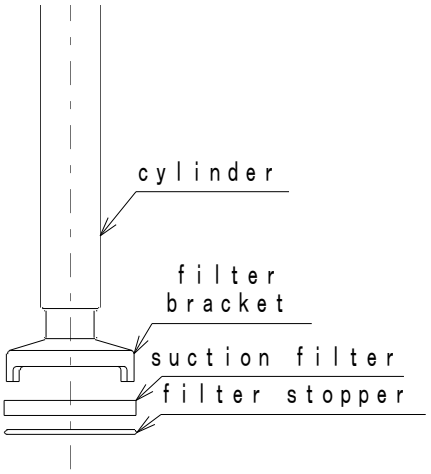
Replace or clean filter once a year.

Warning	Before conducting maintenance on the pump, turn off the power and make sure that the pump is not operating. Conducting maintenance with the power turned on will increase the risk of the operator getting an electric shock or the fingers being pinched in moving parts of the pump drive unit. Also make sure that the supply of air is cut at the air supply source.

Proper lubrication cannot be expected if the suction filter is clogged or become dirty because oil may not sucked well. Clogged or dirty suction filter may cause over load and the breakdown of pump (part damage and so on).

Replacement of suction filter

1) Take off pump from reservoir.
2) Take off filter stopper.
3) Take off filter.
4) Replace or clean filter.
5) Set filter and then filter stopper.
6) Set filter stopper.
7) Set pump on the reservoir.



6-2 Troubleshooting

When troubles occur, take the measures as defined in the chart below.

Trouble	Cause	Measures to take
No oil discharged from pump	Low oil level	Refill the same oil in use ☞Refer to "5.Lubricating oil and refilling"
	Clogged suction filter	Clean or replace filter, or change oil to new oil ☞Refer to "6-1 Suction filter"
	Damage in the tubing inside the pump(Twisted, crashed, or disconnected)	Tighten or replace the connecting parts
	Viscosity is too high, so that oil can not be sucked	Recheck oil in use and replace it to proper oil Refer to ☞ " 5.Lubricating oil and refilling"
Pressure in main tubing is not built up	No oil discharged from pump due to any of above causes	Refer to above measures
	Air in the tubing	Take off closure plug(s) at the end and operate pump and bleed air in tubing
	Foreign particle(s) at the ball seating section of relief valve	Contact LUBE
	Pump discharge low pressure due to relief valve wrong pressure setting	Contact LUBE The relief valve pressure has been set before shipment

Trouble	Cause	Measures to take
Pressure in main tubing is not built up	Oil leaking from pump discharge port or pipe connection parts on machine (Due to looseness or excessive tightness)	Tighten them with proper torque or re-pipe them ☞For proper torque refer to "Tightening Level for Connecting Sections" of the next page
	Damaged tubing	Replace damaged tubing
Air in the system	Air in the system due to above reasons	Refer to above measures for "Air in the pump" and "Air in the tubing"
	Due to low level of oil in tank , air is introduced into pump	Refill tank with same or equivalent oil and then bleed air
No oil discharged from valve(S)	Pressure does not increase	Refer to above measures for "Pressure in main tubing is not built up"
	Viscosity is too high, so the reaming pressure are not relieved completely	Check oil and change oil to proper oil Refer to ☞ "5.Lubricating oil and refilling"

■ Tightening Level for Connecting Section

	Tightening level	Reference torque
OD 4mm nylon pipe (Valve discharge port)	Turn compression bushing with hands until it stops and then tighten it 2/3 turn with a spanner ,etc	3．4
OD 4mm copper tubing & steel tubing (Undercut joint)	Turn the nut part with hands until it stops and then tighten it 2/3 turn with a spanner ,etc	4．1
Taper screw for tubing Rc1/8 (Pump discharge port & junction)	Turn the undercut joint with hands until it stops and then tighten it two and a half to three turns with a spanner , etc	7．1

Appendix. Oil Contamination Causes and Measures

■Causes

Causes for contamination can be divided into two categories.

○ Before the completion of installation
Foreign particles in the tubing or pump tank.
(Manufacturing defects of the assembly parts or connecting parts and unconformity during construction.)

○ During operation
Foreign particles from outside or generated inside of the system.
(Condensation of the moisture in the air due to change in temperature or sludge by oxidation of lubrication oil itself.)

■ Measures

1. Clean the tank and remove the remove the foreign particles.

2. Keep the oil for refilling in the proper place.
If the system is installed and/or oil is stored outdoors, proper care must be taken since introduction of dust or rain into the oil would lead to system malfunction.