

Motor driven gear pump

AMI-300

(NO.202035)

(NO.202036)

AMI-1000

(NO.202131)

(NO.202132)

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.

Introduction

■ System application

The AMI-Type continuous delivery motor driven gear pump delivers a relatively small amount of oil for lubrication from the distributor to the lubrication points.

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.

 WARNING	Indicates a potentially hazardous situation which, if ignored, could result in death or serious injury.
 CAUTION	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, contact following:

■ Japan

LUBE Corporation Head Office
3-30-16(Horizon 1), Nishi Waseda, Shinjuku-ku, Tokyo,
169-0051 Japan
TEL:81-3-3204-8431 FAX:81-3-3204-8520

■ China

LUBE LUBRICATING SYSTEM(SHANG HAI)CO.,LTD
C, 3F, 88 Taigu Road, Waigaoqiao Free Trade Zone,
Shanghai
TEL: 021-5868-3818 FAX: 021-5868-3880

■ U.S.A

LUBE USA , Inc.
781 Congaree Road, Greenville, S.C.29607
TEL:800-326-3765 FAX:864-242-1652

■ Details of contents

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 found supplied at the time of initial installation.

■ Disposal of pump/Oil

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

Table of contents

Introduction	1
Table of contents	3
1. Safety precautions	4
1-1 Basic safety precautions.....	4
1-2 Labels.....	4
1-2-1 Type of labels.....	5
1-2-2 Location of labels.....	6
2. Specification and outline.....	8
2-1 Specifications	8
2-2 Name of each component.....	9
3. Installation	11
3-1 Environmental requirement	11
3-2 Mounting unit	11
3-3 Wiring	13
3-4 Tubing connection	15
4. How to Control the Pump	16
5. Lubricating oil and refilling.....	17
5-1 Lubricating oil to be used.....	17
5-2 Refilling lubrication oil	17
6. Maintenance	18
6-1 Suction filter	18
6-2 Troubleshooting	19
Appendix. Oil contamination : Causes and measures	22

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.

1-2-1 Types of labels

AMI-300

①

MODEL	AMI-300
SERIAL NO.	** / *****
CODE NO.	*****

AMI-1000

①'

MODEL	AMI-1000
SERIAL NO.	** / *****
CODE NO.	*****

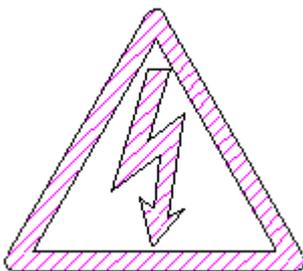
②

 NO REVERSE ROTATION  DIRECTION OF ROTATION	
VOLTAGE	***V
FREQUENCY	50Hz 60Hz
AMPERE	*. **A *. **A
RATED OUTPUT	40W
 LUBE CORPORATION <small>Ins. Class B</small> MADE IN JAPAN	

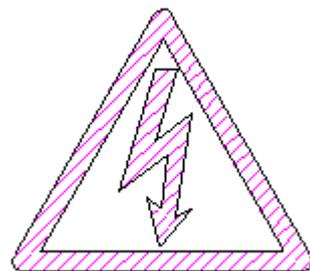
②'

 NO REVERSE ROTATION  DIRECTION OF ROTATION	
VOLTAGE	***V
FREQUENCY	50Hz 60Hz
AMPERE	*. **A *. **A
RATED OUTPUT	60W
 LUBE CORPORATION <small>Ins. Class B</small> MADE IN JAPAN	

③

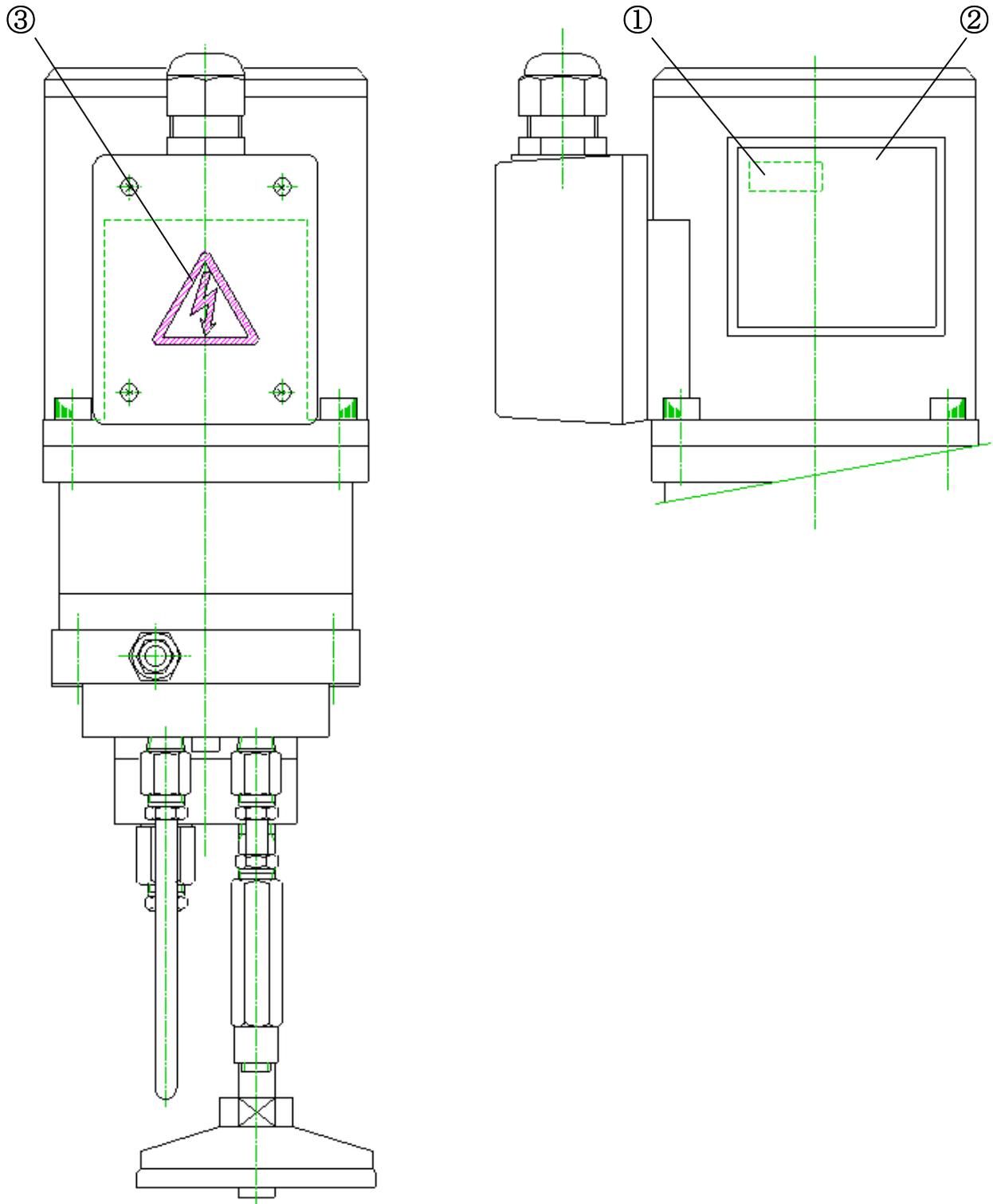


③'

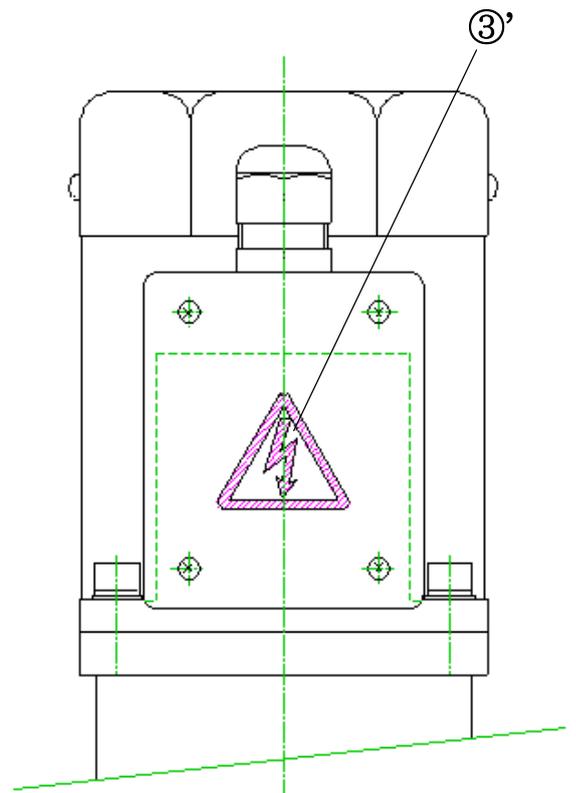
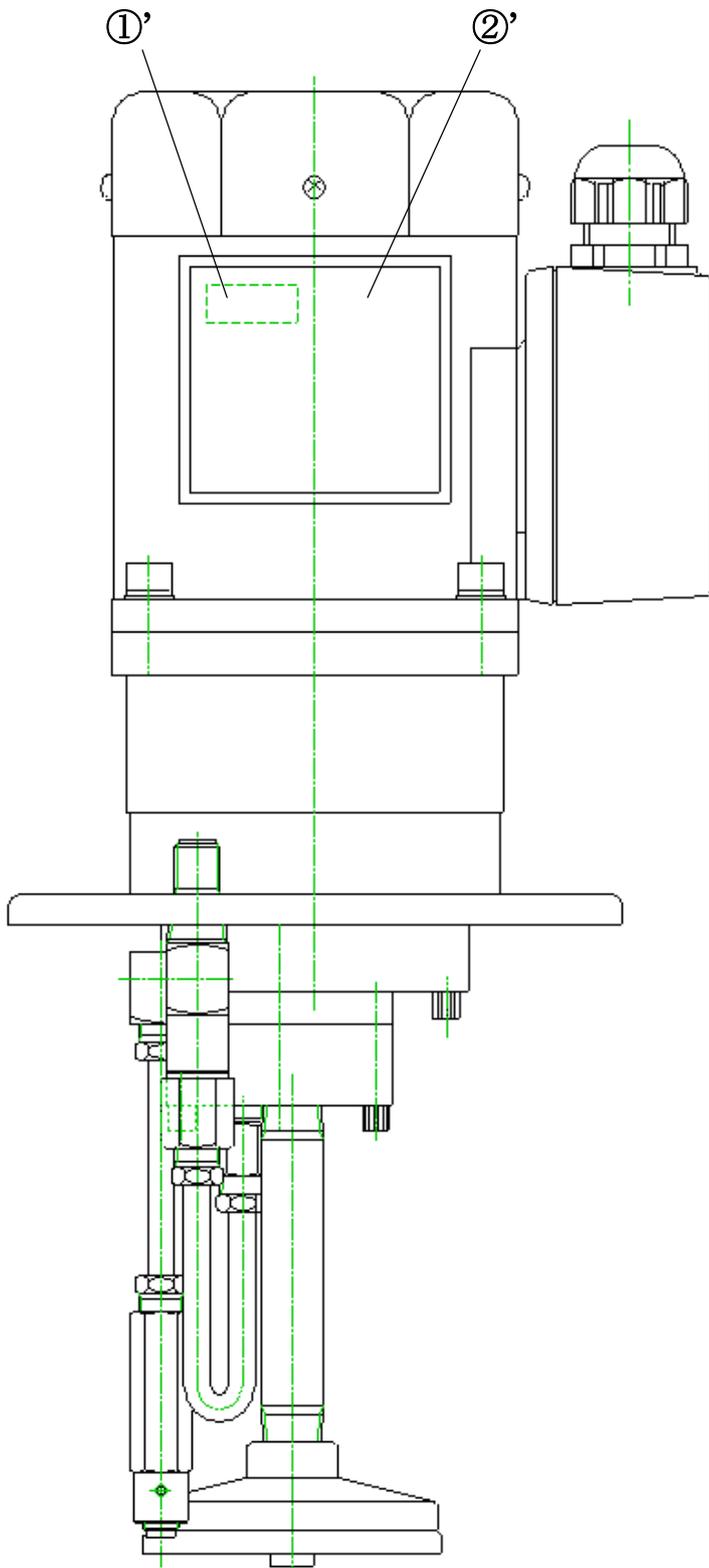


1-2-2 Location of labels

AMI-300



AMI-1000



2. Specifications and outline

2-1 Specification

AMI-300

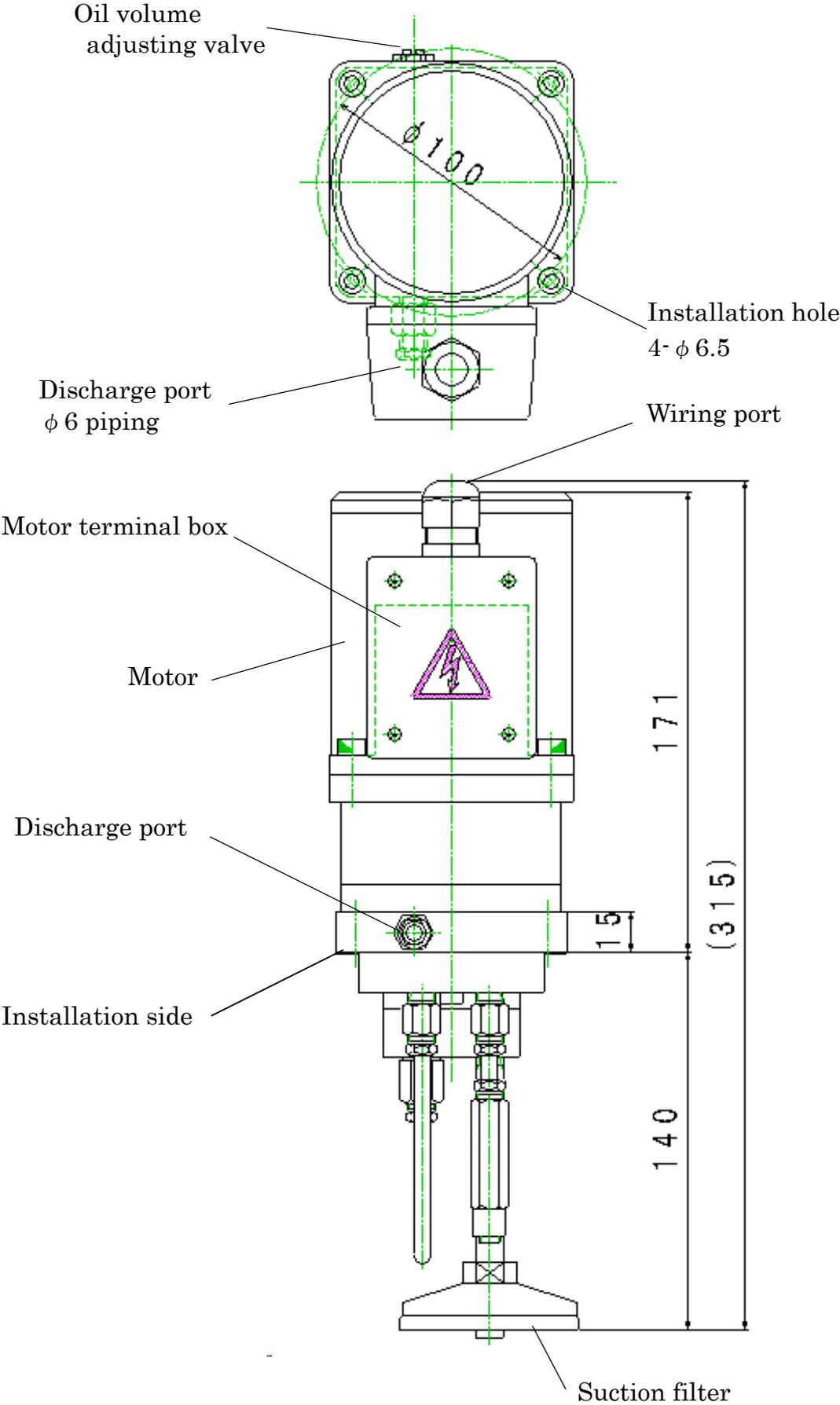
Item		Specification	
Power supply		100V AC \pm 10%, ϕ 1	200V AC \pm 10%, ϕ 3
Motor	Rated voltage	100V AC \pm 10%, ϕ 1	200V AC \pm 10%, ϕ 3
	Frequency	50/60 Hz	50/60 Hz
	Rated amperage	0.76A(50Hz), 0.74A(60Hz)	0.32A(50Hz), 0.30A(60Hz)
	Rated output	40 W	
	Insulated kind	B kind	
	Direction of rotation	Clockwise from top of the motor upper side	
	Condenser	Attached condenser 11 μ F for 100V	
Gear pump	Discharge volume	300m ³ /min(50Hz) , 330m ³ /min(60Hz) Attached oil volume adjusting valve	
	Discharge pressure	0.5 MPa	

AMI-1000

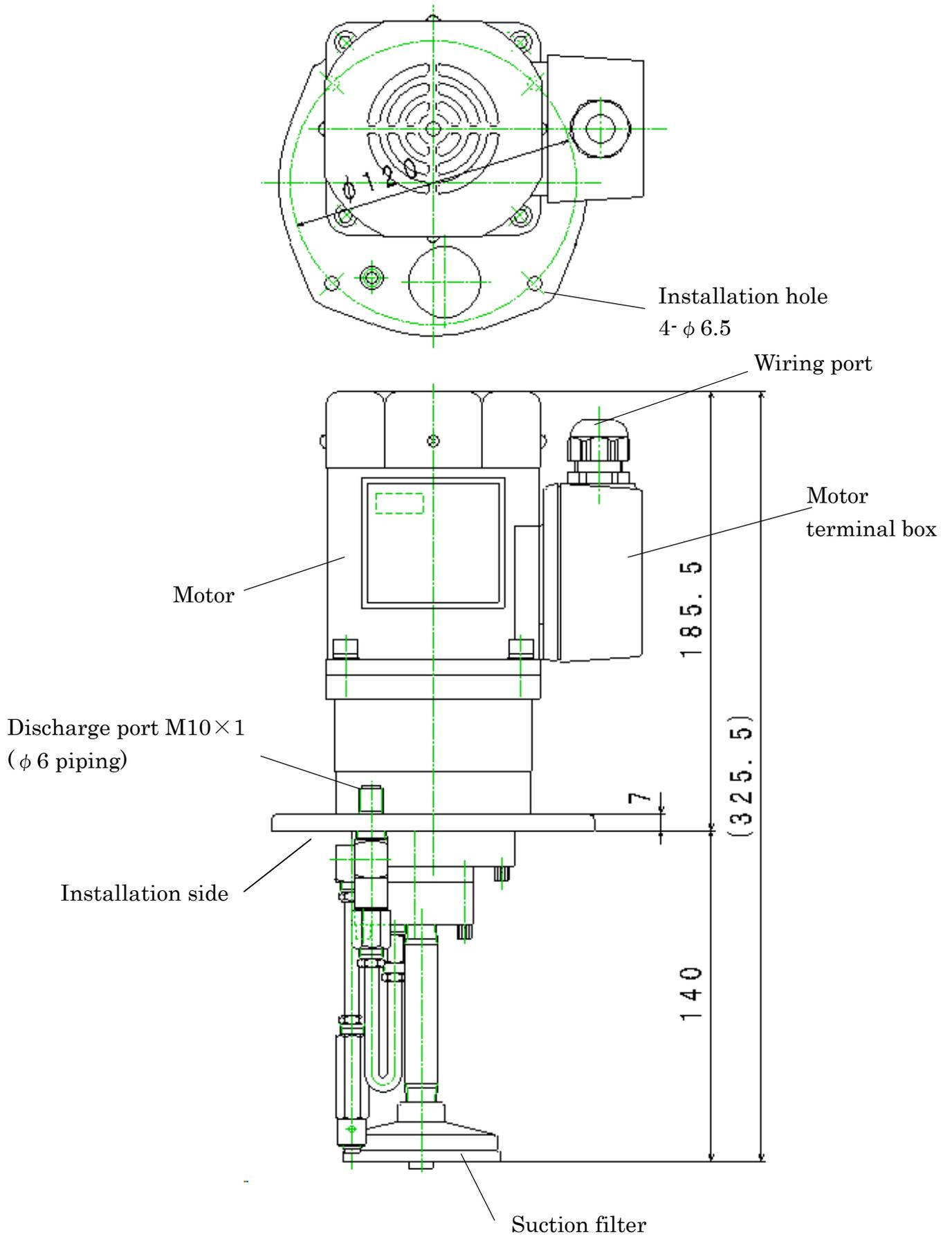
Item		Specification	
Power supply		100V AC \pm 10%, ϕ 1	200V AC \pm 10%, ϕ 3
Motor	Rated voltage	100V AC \pm 10%, ϕ 1	200V AC \pm 10%, ϕ 3
	Frequency	50/60 Hz	50/60 Hz
	Rated amperage	1.20A(50Hz), 1.19A(60Hz)	0.50A(50Hz), 0.43A(60Hz)
	Rated output	60 W	
	Insulated kind	B kind	
	Direction of rotation	Counter-clockwise from top of the motor upper side	
	Condenser	Attached condenser 20 μ F for 100V	
Gear pump	Discharge volume	1000m ³ /min(50Hz) , 1100m ³ /min(60Hz)	
	Discharge pressure	1.2 MPa	

2-2 Name of each component

AMI-300



AMI-1000



3. Installation

3-1 Environmental requirement

Be sure to this pump in the following environment.

- Ambient temperature : 0 ~ +40°C
- 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 four (4) M6 bolts.



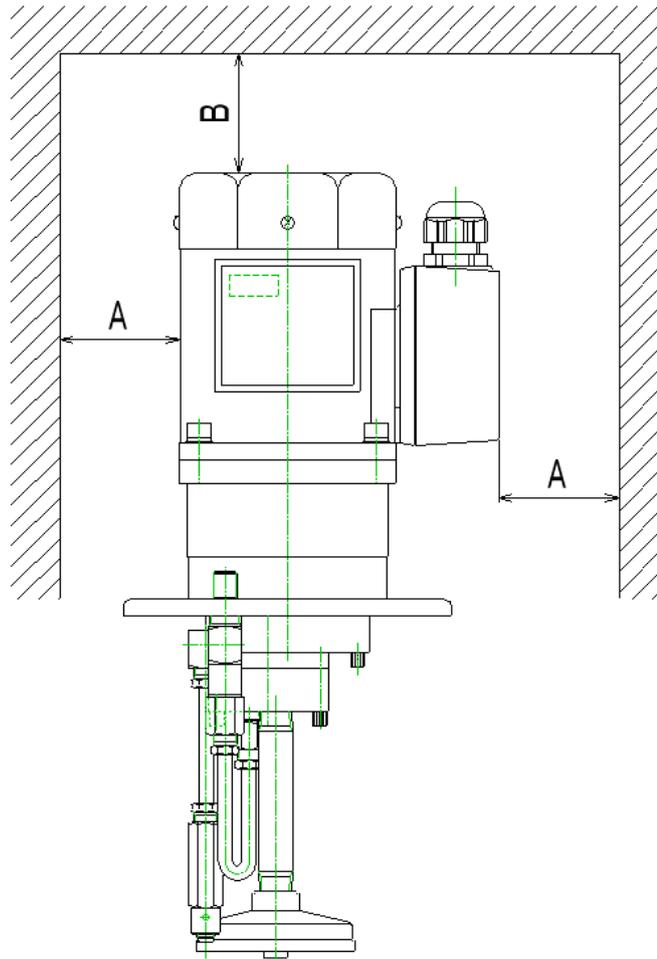
LUBE recommends anti-vibration rubber to be applied when the pump is exposed to vibration.

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



The pump does not have a tank.
Please use attached to the sold separately of tank.

■ Weight of the pump and required space



Pump model	Code number	Weight (kg) (see note below)	Required space (mm)
AMI-300-1	202035	4.1	A:200 B:200
AMI-300-2	202036		
AMI-1000-1	202132	5.2	A:200 B:200
AMI-1000-2	202131		



* : Note: The weight of oil is not included.

3-3 Wiring



Only qualified personnel electrical work can connect wiring.

The direction of the motor rotation is specified one direction. The gear pump is damaged when reversely rotating.



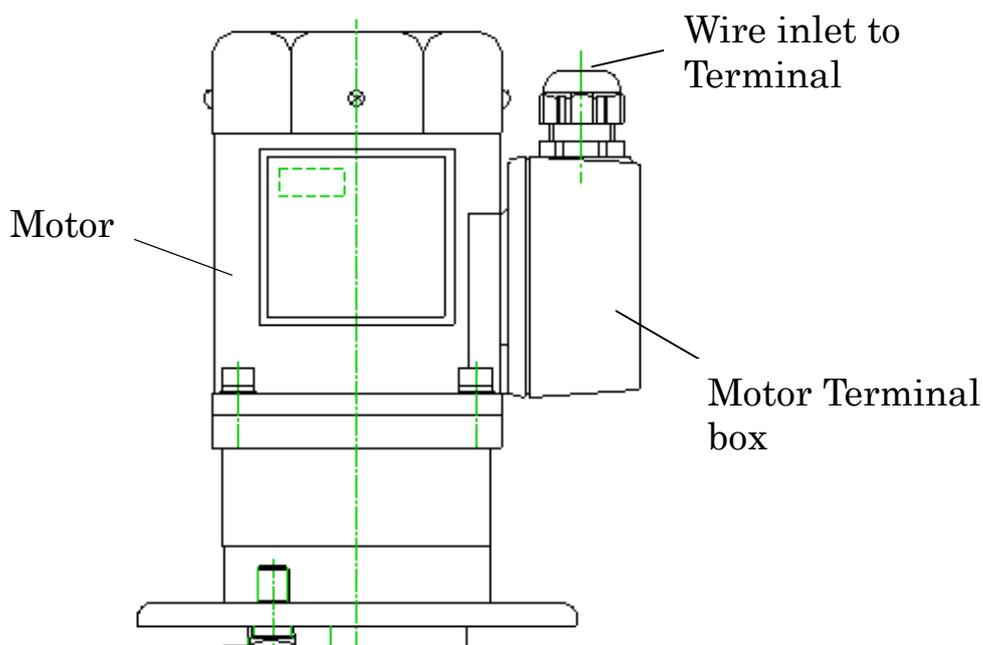
The direction of the rotation is clockwise on the motor . (AMI-300)

The direction of the rotation is counterclockwise on the motor . (AMI-1000)

Please refer to a wiring diagram for the wiring.

Please connect the condenser to a 100V AC motor.

If the wire to the outside touches the outside of the machine or other objects or if it comes in contact with the hand of the operator, use an insulated wire.



Detailed figure of the terminal box

Terminal cover installation screw
(With rubber seal and metal washer)

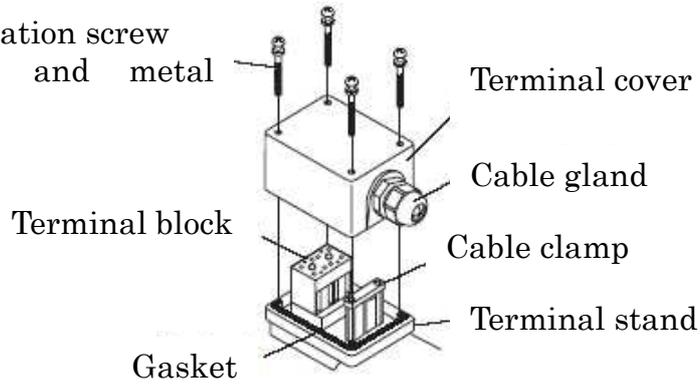


Figure 1

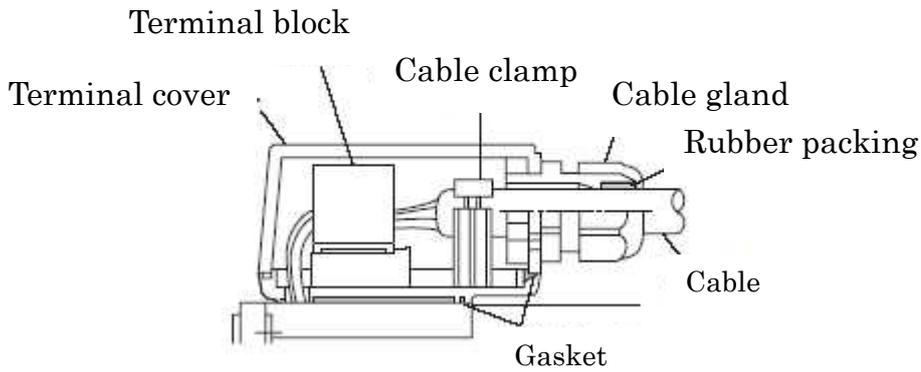
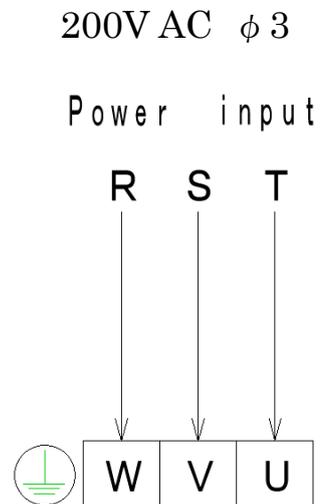
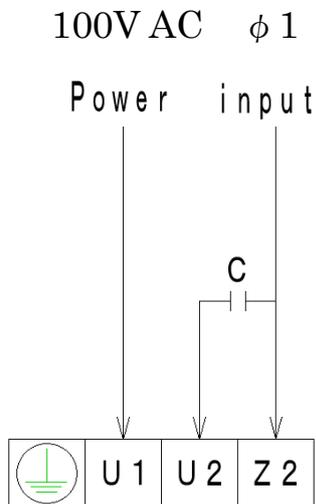


Figure 2

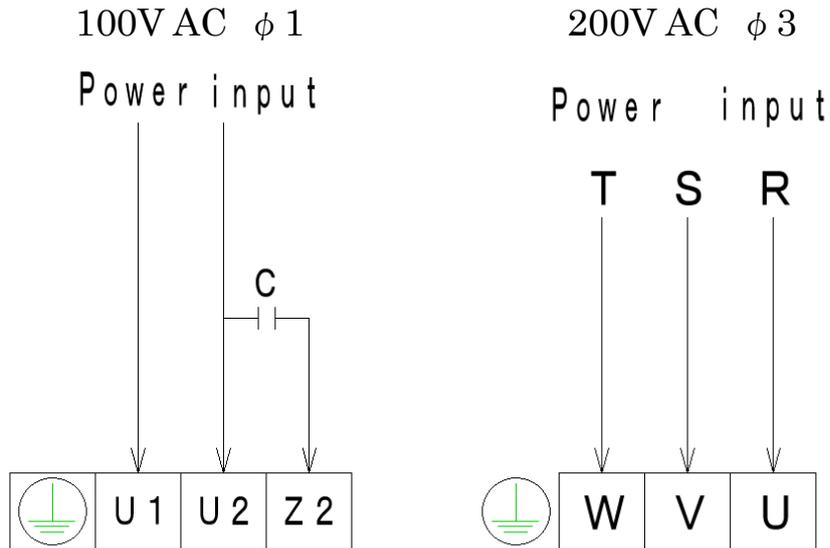
Applicable cable diameter : $\phi 6 \sim 12\text{mm}$
 Applicable lead wire : AWG20~12(0.5~3.5 mm²)
 Stripping length : 8mm

Wiring diagram

AMI-300



AMI-1000



3-4 Tubing connection

Connect tubing to the machine to the discharge Port (M10×1).



Use tubing good for the pressure 2.0 MPa or higher.

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



Clamping torque please refer to “Tightening Level for Connecting Section”

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



Discharge pressure of a pump is adjusted to reasonable pressure at a relief valve. Please do not change discharge pressure.

4. How to control the pump

Install timer(s) on the machine and set the discharge timer and interval cycle as defined below.

The operating time and no operating time are not limited. Within the operating time of the pump, oil is discharged continuously.

The oil amount adjustment screw is set to the full discharge position (maximum discharge amount) when delivered from the factory.

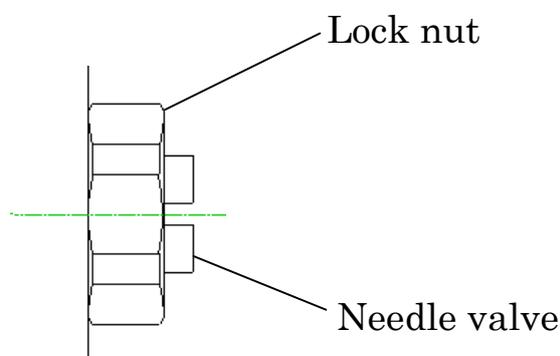
Adjust the oil amount as follows.

- 1) Loosen the lock nut by turning it counterclockwise.
- 2) Loosen the needle valve by turning it counterclockwise using a flathead screwdriver to determine the oil amount.
- 3) Fix the lock nut by turning it clockwise



Adjusting the discharge amount using the oil volume adjusting valve may decrease the oil amount discharged from the discharge outlets extremely. During piping, adjust the discharge amount while checking it.

Oil volume adjusting valve



5. Lubricating oil and refilling

5-1 Lubricating oil to be used

Use industrial lubricating oil in the range from 32 to 1300 mm²/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.

Refill it through the refill port that you find above the pump flange.



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



The pump does not have a tank.

Please use attached to the sold separately of tank.

6. Maintenance

6-1 Suction filter

Replace or clean filter once a year.



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.

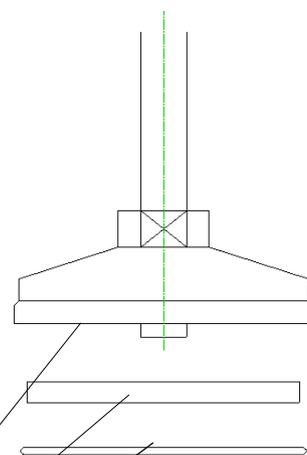


Proper lubrication cannot be expected if the suction filter is clogged or become dirty because oil may not sucked well clogged or dirty suction filter may cause over load, too.

Replacement of suction filter

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

Filter bracket
Suction filter
Filter stopper



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 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 (N·m)
OD 4mm nylon pipe (Valve discharge port)	Turn compression bushing and nut with hands until it stops and then tighten it 2/3 turn with a spanner ,etc	3.5
OD 6mm nylon pipe (Pump discharge port , Main pipe)	Turn compression bushing and nut with hands until it stops and then tighten it 2/3 turn with a spanner ,etc	3.5
OD 4mm copper tubing & steel tubing (Valve discharge port)	Turn compression bushing with hands until it stops and then tighten it 2/3 turn with a spanner ,etc	4.1
OD 6mm copper tubing & steel tubing (Pump discharge port , Main pipe & Undercut joint)	Turn the nut part with hands until it stops and then tighten it 1/4 turn with a spanner ,etc	21
Taper screw for tubing Rc1/8 (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 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.