

# Motor driven gear pump

## ACM-

# 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

The ACM- 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:

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## 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

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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.....	7
2-1 Specifications .....	7
2-2 Name of each component.....	7
3. Installation .....	8
3-1 Environmental requirement.....	8
3-2 Mounting unit .....	8
3-3 Wiring .....	9
3-4 Tubing connection .....	10
3-5 Oil volume adjusting valve.....	10
4. Lubricating oil and refilling.....	11
4-1 Lubricating oil to be used.....	11
4-2 Refilling lubrication oil.....	11
5. Maintenance .....	12
5-1 Suction filter .....	12
5-2 Troubleshooting .....	13
Appendix . Oil contamination : Causes and measures .....	15

# 1. Safety precautions

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## 1-1 Basic safety precautions

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- 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

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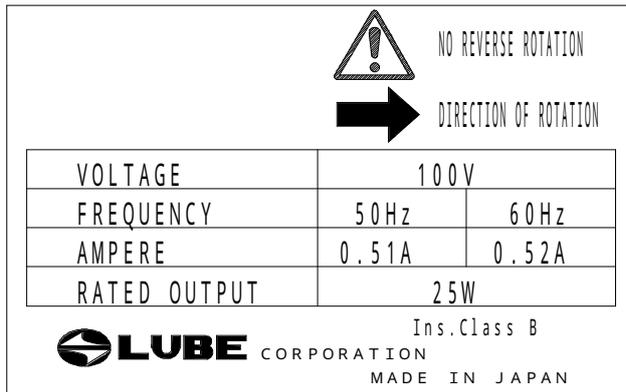
The following labels are affixed on the pump. If any label gets damaged or becomes illegible, contact LUBE immediately. A new one will be supplied at your own cost.



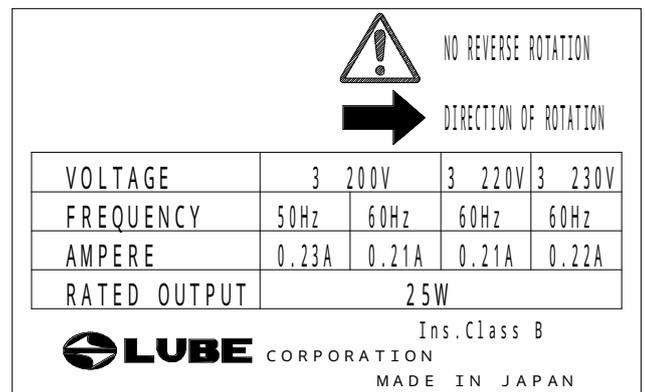
- Strictly observe the instructions on the labels affixed to the pump.

## 1-2-1 Types of labels

### Pump label

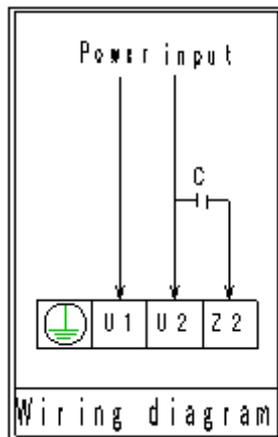


100V

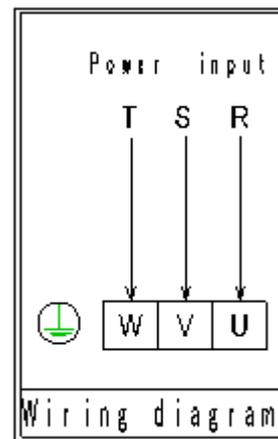


200V

### Terminal connection

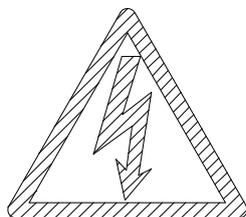


100V

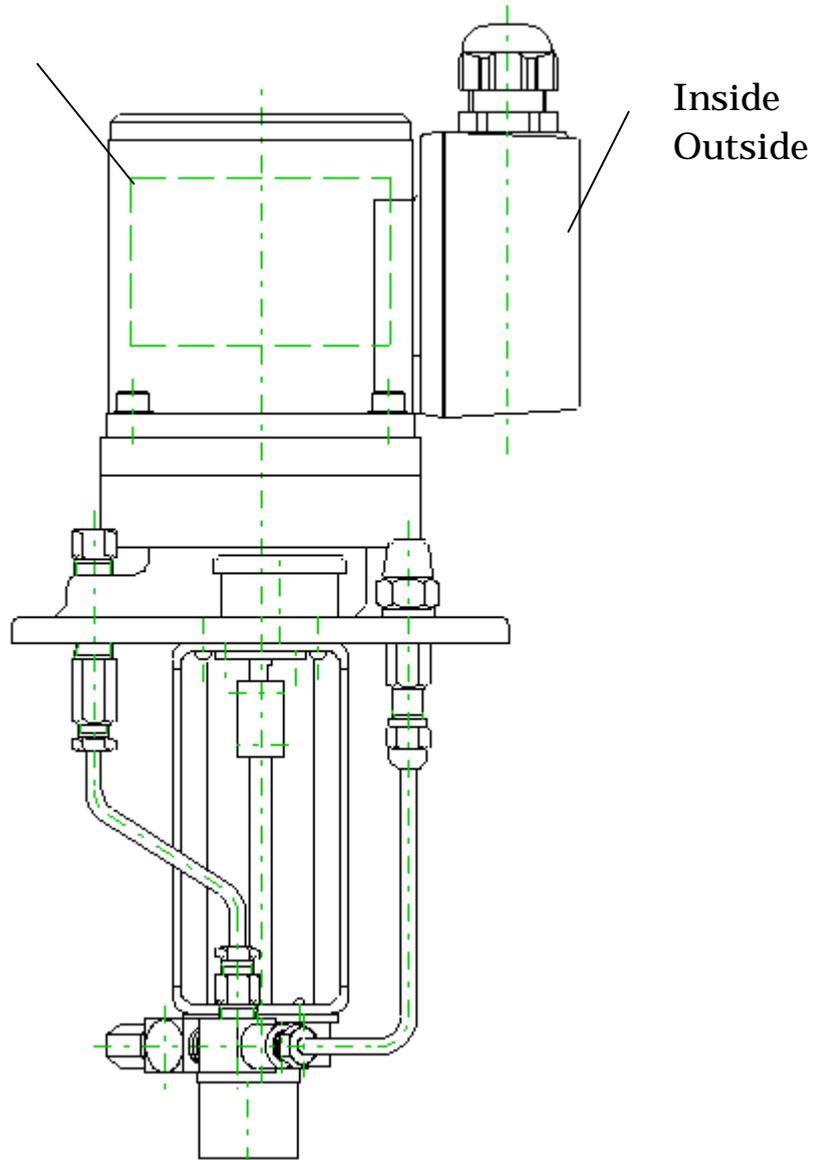


200V

### Electricity warning sign



## 1-2-2 Location of labels

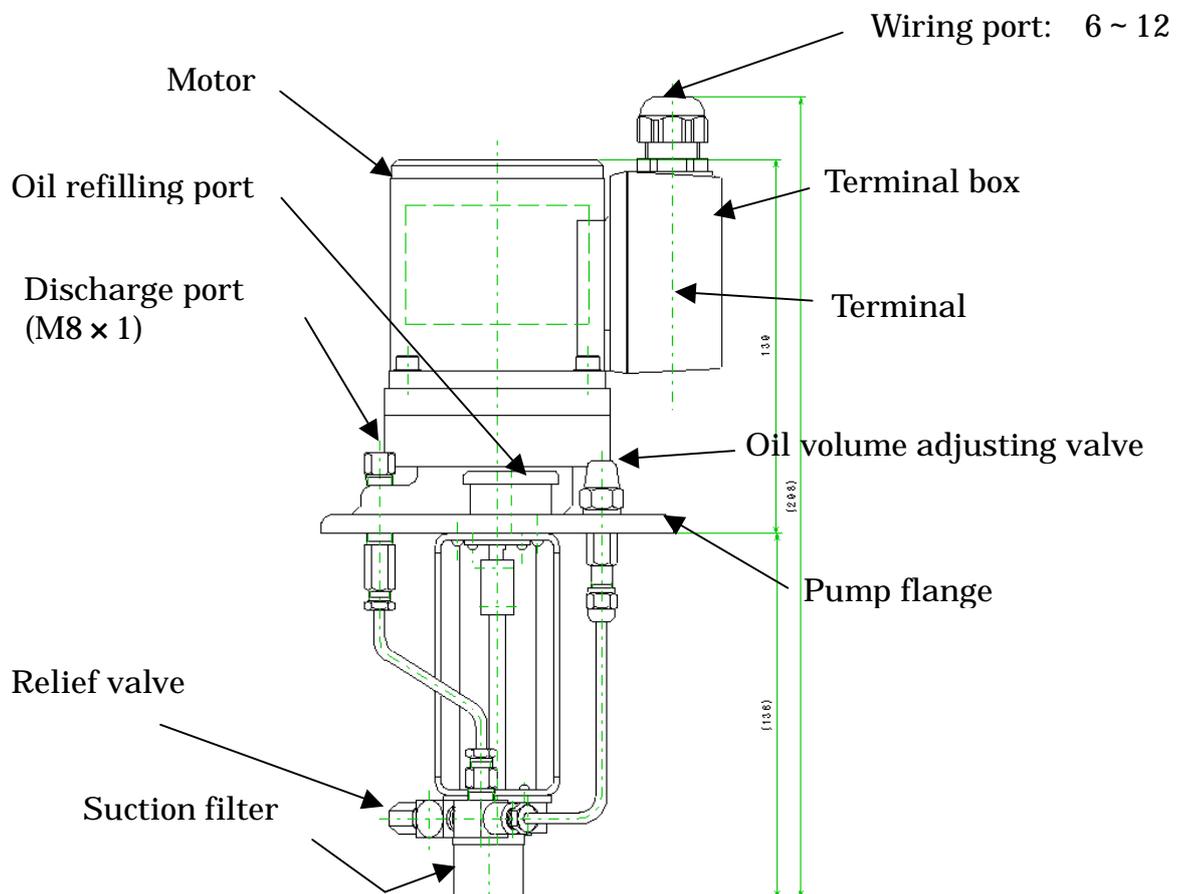


## 2. Specifications and outline

### 2-1 Specification

Item		Specification	
Code No.		102484	102486
Power supply		AC100 V, 1,4P	AC200 V, 3,4P
Motor	Rated voltage	AC100 V, 1,4P	AC200 V, 3,4P
	Frequency	50/60 Hz	50/60 Hz
	Rated amperage	0.51/0.52A	0.23/0.21A
	Rated output	25W	
	Ins. Class	B	
	Direction of rotation	Counter-clockwise from motor upper side	
	Condenser	8 $\mu$ F	
Pump	Discharge volume	60 m <sup>3</sup> /min	
	Discharge pressure	0.8 MPa(Relief valve set pressure)	
	Working viscosity range	32 ~ 1300 mm <sup>2</sup> /s	

### 2-2 Name of each component



# 3. Installation

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## 3-1 Environmental requirement

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Be sure to this pump in the following environment.

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

## 3-2 Mounting unit

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

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 for operation and maintenance.

# 3-3 Wiring

	Only qualified personnel electrical work can connect wiring.
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Rotatory direction of a motor is only constant direction. If the motor is reversely rotated, it becomes an unexpected accident.  
Please wiring refer to terminal connection.

## Detailed figure of the terminal box

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

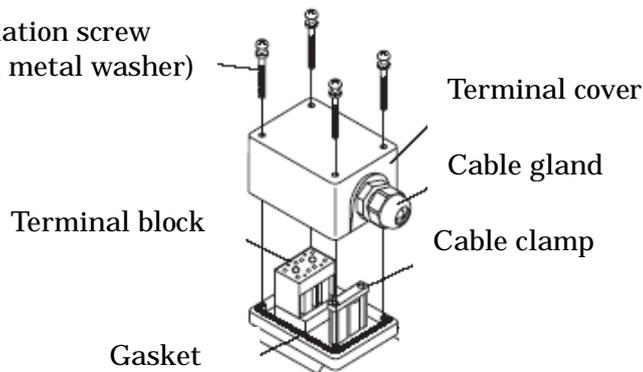


Figure 1

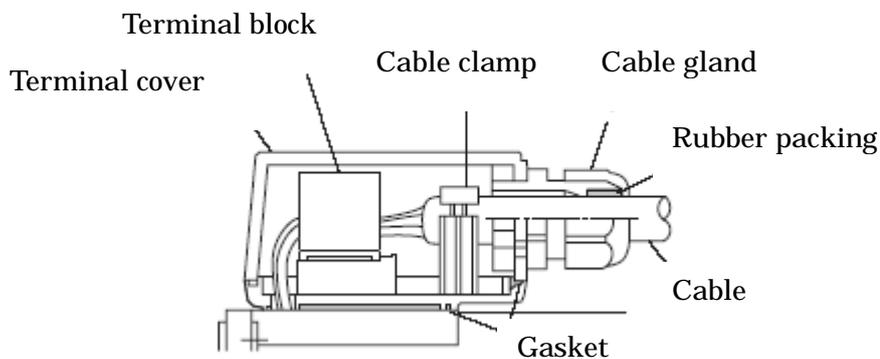


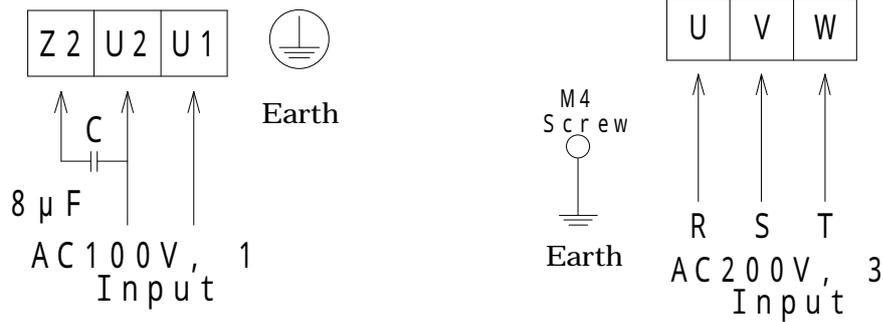
Figure 2

- Applicable cable diameter : 6 ~ 12mm
- Applicable lead wire : AWG20 ~ 12(0.5 ~ 3.5 mm<sup>2</sup>)
- Stripping length : 8mm

In the case of stick terminal use

Conformity stick terminal : For 0.75 ~ 2.5 mm<sup>2</sup>

Use a  $8\ \mu\text{F}$  condenser for 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.

## 3-4 Tubing connection

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



Use tubing good for the pressure 1.0 MPa or higher.



Clamping torque please refer to “Tightening level for connecting section”

After connection, make sure there is no oil leakage from the joint.



Discharge pressure of a pump is adjusted 0.8 MPa at a relief valve.  
Please do not change discharge pressure.

## 3-5 Oil volume adjusting valve

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

## 4. Lubricating oil and refilling

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### 4-1 Lubricating oil to be used

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Use industrial lubricating oil in the range from 32 to 1300 mm<sup>2</sup>/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.

### 4-2 Refilling lubrication oil

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When the oil in the tank reaches the L level on the oil level gauge provided, refill the tank with more oil, up to the H level, from the refill port on the pump flange.



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.

Keep checking the oil level gauge provided when refilling the tank with oil.



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

# 5. Maintenance

## 5-1 Suction filter

Replace or clean filter once a year.



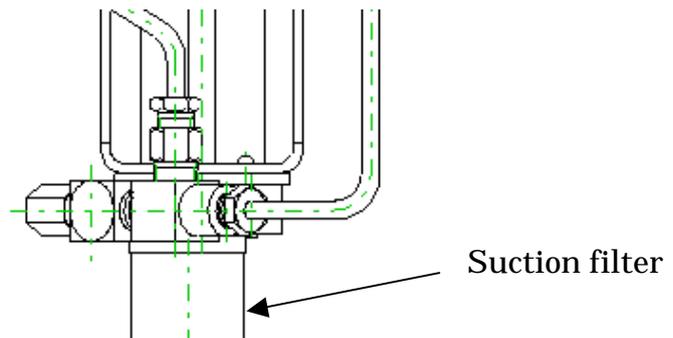
Before conducting maintenance on the pump, turn off the power and make sure that the pump is not operating. Conducting maintenance with the power turned on will increase the risk of the operator getting an electric shock or the fingers being pinched in moving parts of the pump drive unit.



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.



When oil is reused, remove sediments in the tank. Otherwise, sediments will flow to the pump suction opening and may clog the suction filter.



## 5-2 Troubleshooting

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

Trouble	Cause	Measures to take
No oil discharged from pump	The motor is not running	Check the wire connection
	Motor is rotating backward	Check the wire connection
	Low oil level	Refill the same oil in use  Refer to "4. Lubricating oil and refilling"
	Clogged suction filter	Clean or replace filter, or change oil to new oil  Refer to "5-1 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 "4. 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
	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
	Air in the tubing	Take off closure plug(s) at the end and operate pump and bleed air in tubing

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

### Tightening level for connecting section

	Tightening level	Reference torque (N·m)
OD 4mm nylon pipe (Valve discharge port & main pipe)	Turn compression bushing 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 & main pipe)	Turn compression bushing with hands until it stops and then tighten it 2/3 turn with a spanner, etc	4.1
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

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## Causes and measures

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### 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.