

Lubmann Dual Line Lubrication System Instruction Manual

LID



*Lubmann Centralized
Lubrication System*

LUBMANN GMBH

Navigation

System Overview

System Structure and Working Principle

Technical Parameter

Overall Dimensions

Installation Instructions

Operation of Filling Equipment

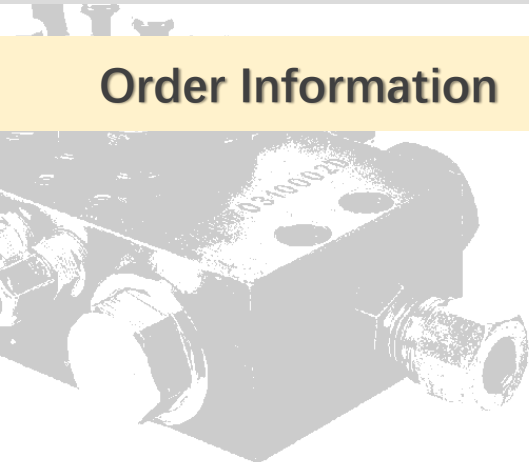
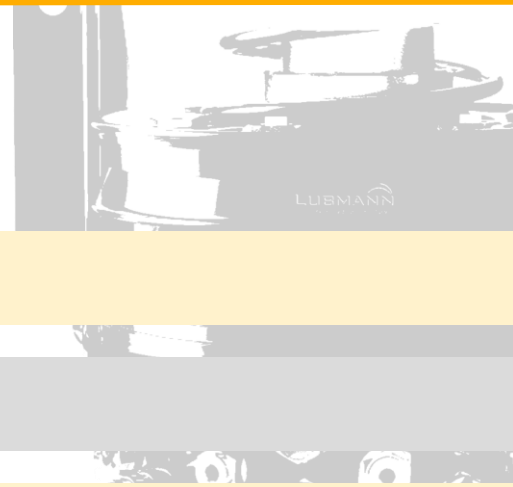
System Commissioning/Maintenance and Servicing

Fault Analysis and Elimination

Transport and Storage

After Sales Service

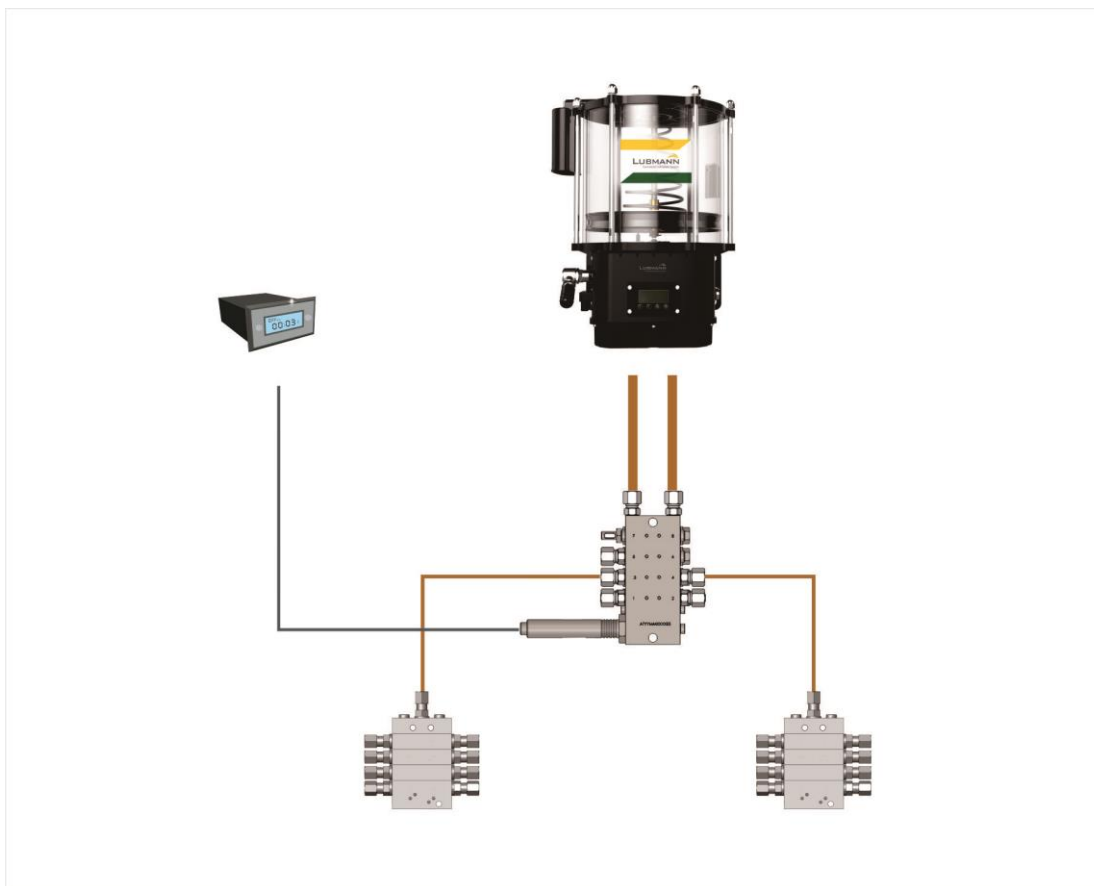
Order Information



System Overview

The LID series Dual Line System are the new generation of centralized lubrication system developed by Lubmann GmbH through long-term market investigation and technical innovation. During the research and development, we applied for a few technical inventions and technological innovation patents for them.

The LID Dual Line System is used to supply grease for lube points on the equipment at fixed amount at fixed time based on the demand of them, which may reduce frictional resistance, contact wear, frictional surface temperature and for auxiliary functions of anti-rust, anti-pollution, vibration reduction, sealing, etc.



Layout of Dual Line System

Product	Function Principle	Grease Thickness till	Metering Quantity per Pump Element ml/Min	Reservoir Liter	Operating Max. Pressure in bar	Operating Max. Pressure in psi	Power Supply	Pump Elements
LID	Piston Pump	Up to 2	12	4/8/10	300 bar	4350	12/24 V DC 220V AC	2

System Structure and Working Principle

The LID centralized lubrication system consists of grease pump, distributor, monitoring unit and accessories. The grease pump delivers grease to the distributor through the pipeline and then to lube points at fixed amount to ensure that all the lube points are well lubricated. The monitoring unit controls the operation of the grease pump and detects the operating conditions of the centralized lubrication system.

System Composition

The grease pump is equipped with different distributors to form different centralized lubrication systems. The grease pump is fitted with dual-line distributors to form a dual-line centralized lubrication system. The grease pump is equipped with dual-line distributors and progressive distributors to form a dual-line progressive lubrication system.

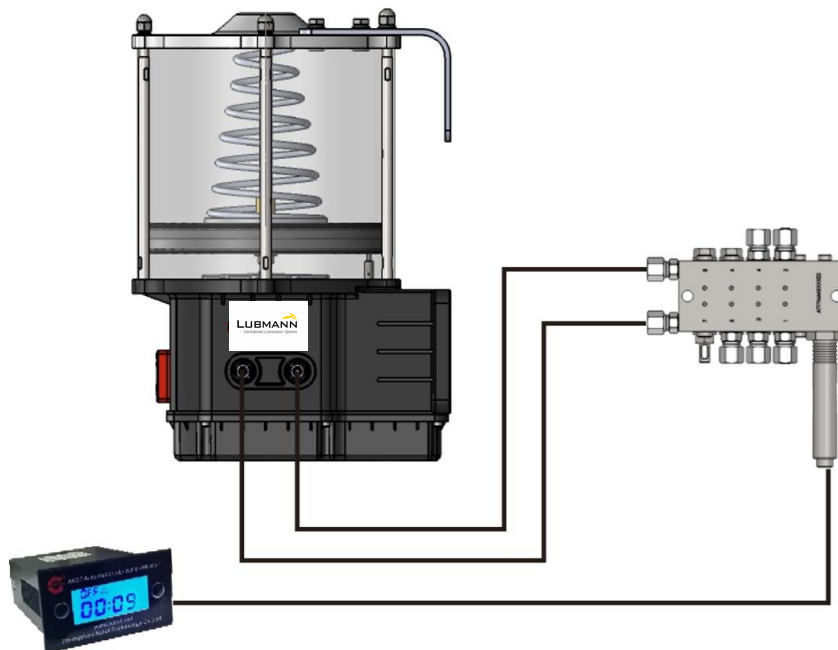
Working Principle

(Pure) Dual Line Centralized Lubrication System

A dual-line centralized lubrication system has many kinds of connection depending on actual demands. The dual-line distributors many be connected in series, parallel, or series-parallel way. A grease sensor is provided at the end of the dual-line distributor to detect the operating conditions of the dual-line centralized lubrication system.

System Components:

- Dual Line Pump
- Dual Line Distributor
- Grease Pressure Sensor
- Monitor
- Accessories



(Pure) Dual Line System

System Structure and Working Principle

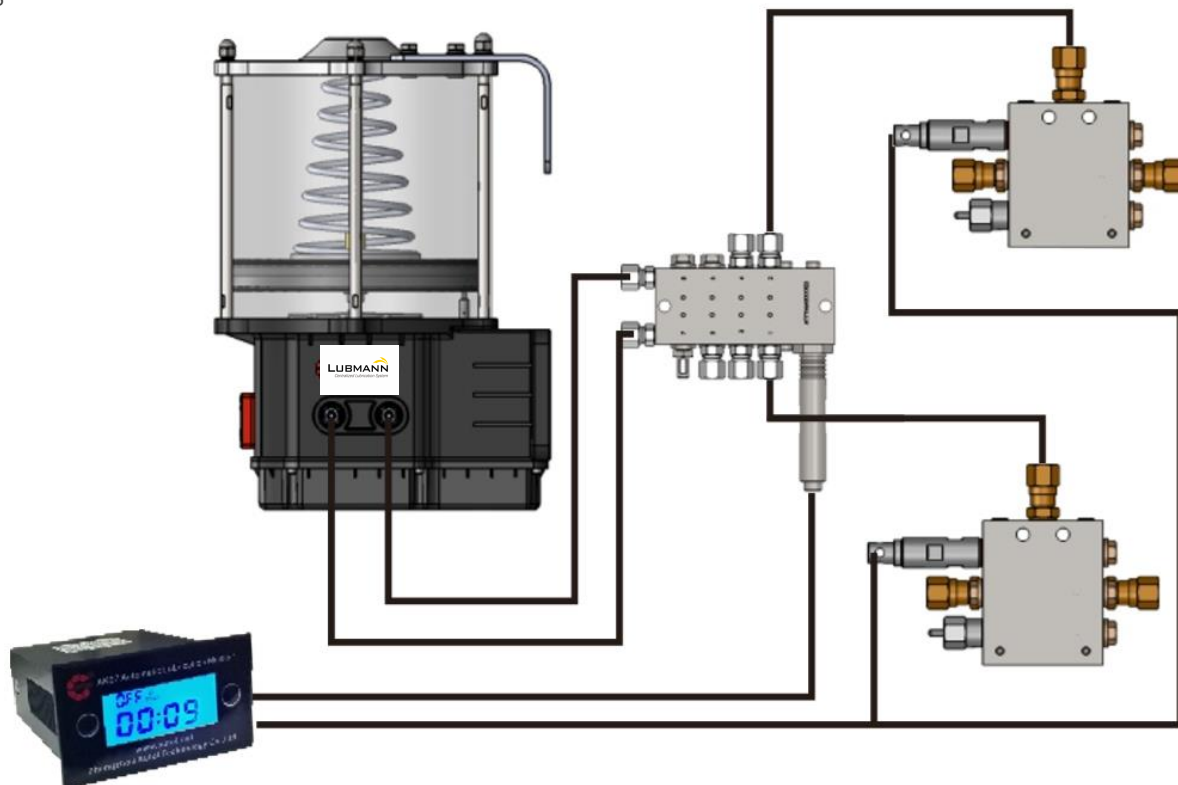
Working Principle

Dual Line – Progressive Centralized Lubrication System

The dual-line pump is equipped with dual-line distributors and a progressive distributors to form a dual-line progressive lubrication system to expanding the range of application for the dual-line centralized lubrication system. A grease pressure sensor is provided at the end of the dual-line distributor to detect the operation of the distributor. The end of the progressive distributor is equipped with a plunger detector to monitor the operating conditions of the progressive distributor. The operating conditions of the whole dual-line progressive lubrication system may be controlled and monitored with grease pressure sensor and plunger detector.

System Components:

- Dual Line Pump
- Dual Line Distributor
- Progressive Distributor
- Grease Pressure Sensor
- Plunger Detector
- Monitor
- Accessories



Dual Line Progressive System

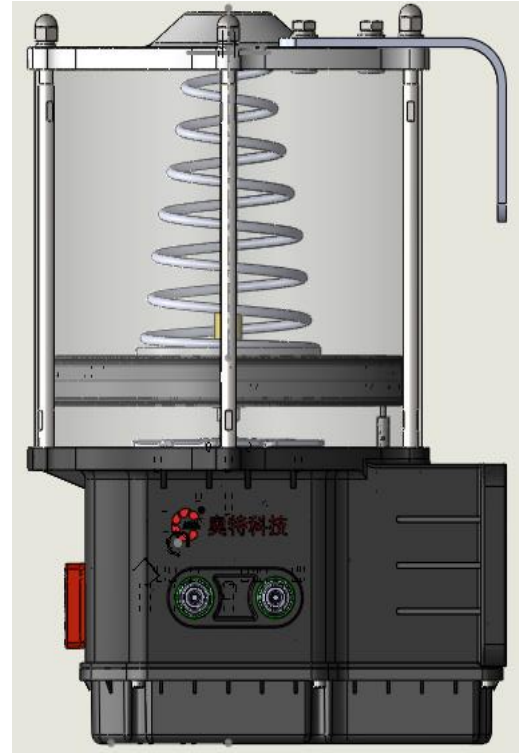
System Structure and Working Principle

Lubrication Pump

The Dual Line series grease pumps are high-pressure plunger grease pumps. Built-in relief valve and mechanical reversing valve allow simple appearance of the grease pump and ensures normal sealing performance of the overflow valve.

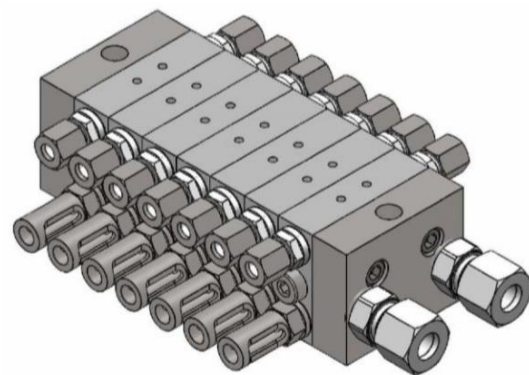
Operating Principle:

The operating principle of a dual-line grease pump is described as follows: The motor starts to drive the plunger pair to suck the grease from the grease reservoir and delivered it to the reversing valve and then to the supply line of the lubrication system. The grease in another supply line of the lubrication system is flows into the grease reservoir for unloading. When the operating hours reaches up to the time set by the monitor, the reversing valve is reversed and the dual-line pump supplies grease to the other grease line while the grease in another supply line returns to the grease reservoir for unloading. When the operating hours of the dual-line pump reach up to the time set by the monitor, it enters the "OFF" state. After the set "OFF" time has elapsed, the dual-line pump has finished a complete lubrication cycle and enters the next cycle. During operation of the dual-line pump, if the pressure in the supply line rises to the opening pressure of the overflow valve, afterwards the pressure in the supply line remains under the overflow valve opening pressure and excessive grease will return to the grease reservoir via the overflow valve. Thus, the system pressure remains under the pressure value set for the overflow valve.

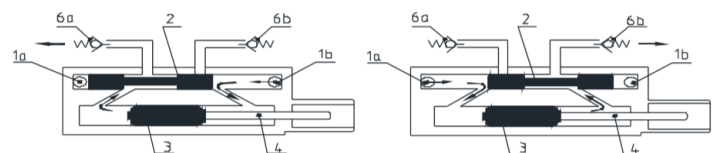


Distributor (Dual Line)

The Dual Line LI-DLA type metering device is a sectional metering device. Its metering sections cover a metering volume per outlet and cycle of 0,10 ml to 1,00 ml. All sections (inlet, intermediate, end) are tightened via tie rods. The delivery ducts are sealed by porting plates in-between the segments. A minimum of ONE intermediate sections is possible.



For each cycle of the indicator rod corresponds to the combined outlet, and the displacement of each cycle is the sum of the output of the combined outlet. The allowable deviation of all outlet discharge is $\pm 10\%$.



For details of progressive distributor please check the instruction manual of Progressive System.

Technical Parameter

Lubrication Pump

	LID
Function principle:	electrically operated piston pump
Metering quantity Grease:	12 ml/Min
Working principle:	Stirring Plate
Reservoir Volume:	4/8/10
Outlets:	2
Lubricant:	Grease up to NLGI 2
Operating Pressure:	300 bar/4350 psi
Operating Temperature:	-40 to +70 °C
Protection Class:	IP 65
Line Connection:	G1/4
Electrical Connection:	12 or 24V DC/220V AC
Mounting Position:	Vertical
Options:	Pressure Sensor/ Main Switch/ Refill Coupling/

Monitor (Integrated)



Control Mode:	ECU Microcomputer Control
Operating Voltage:	12/24V DC/220V AC
Off Time:	1-30 hours
Operating Mode:	Run according to the preset time
Signal Output:	Grease Level/Fault(due to pressure)

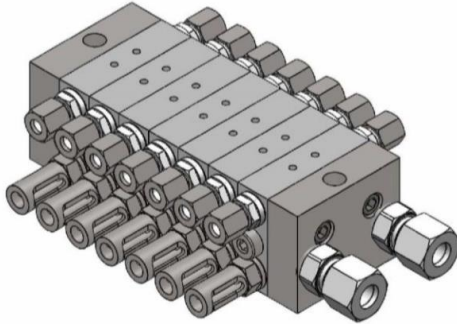
Monitor (External)



Control Mode:	ECU Microcomputer Control
Operating Voltage:	12/24V DC/220V AC
Off Time:	1-30 hours
Operating Mode:	Run according to the preset time
Signal Output:	Grease Level/Fault(due to pressure)

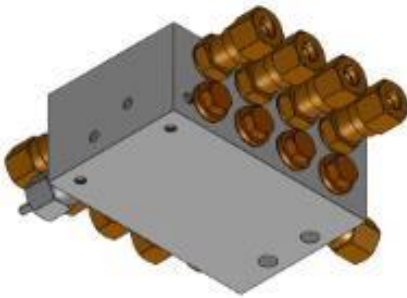
Technical Parameter

Distributor (LI-DLA)



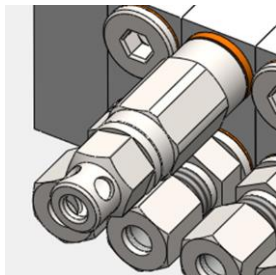
Function principle:	Sectional metering device
Outlets:	2-14
Lubricant:	Grease up to NLGI 2
Input Pressure:	250 bar
Connection Input:	M10*1
Output Pressure:	250 bar
Connection Output:	M10*1
Start Pressure:	20 bar
Displacement:	0.1/0.2/0.4/0.6/0.8/1.0 ml/cy
Working Temperature:	-25 to +70 °C
Material:	Steel
Surface treatment (Coating):	Zn-Ni plated (free of Cr-VI)

Distributor (SSV/SSVA/SSVD)



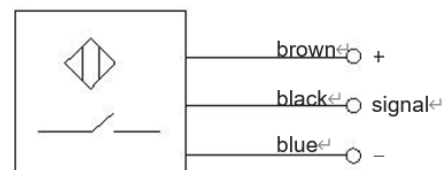
Function principle:	Block metering device
Outlets:	6-20
Lubricant:	Grease up to NLGI 2
Input Pressure:	350 bar
Connection Input:	M10*1
Output Pressure:	200 bar
Connection Output:	M10*1
Start Pressure:	20 bar
Displacement:	0.2 ml/cy
Working Temperature:	-25 to +70 °C
Material:	Steel
Surface treatment (Coating):	Zn-Ni plated (free of Cr-VI)

Sensor



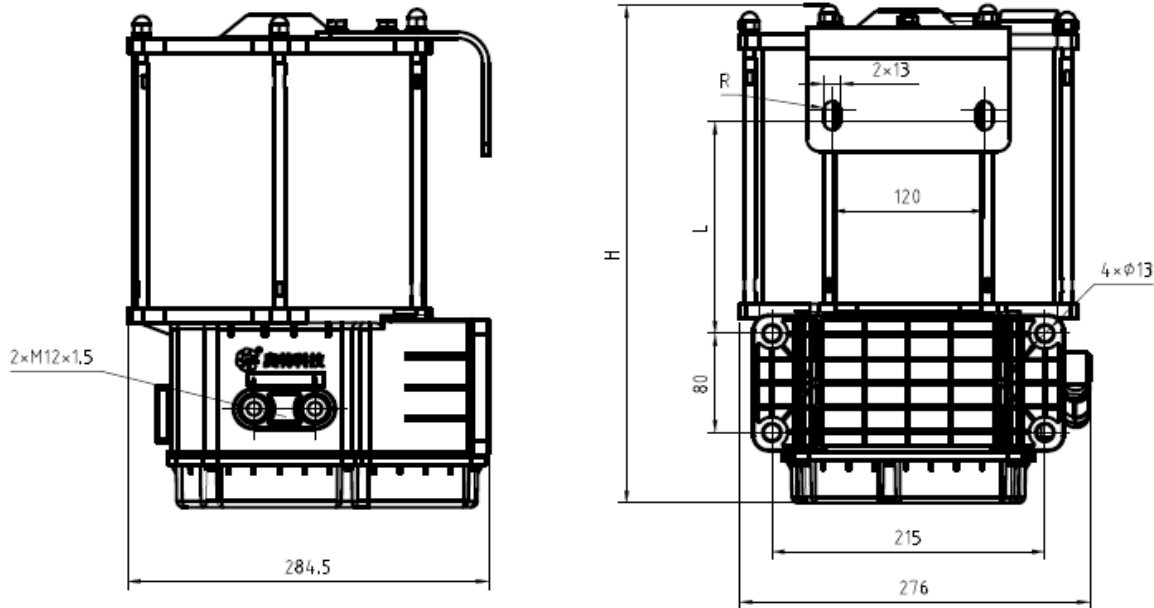
Using the Hall Sensor to detect, and feedback the pulse signal to the monitor. With NPN 3-wire and PNP 3-wire system.

NPN, PNP 3-wire system provides active contacts:



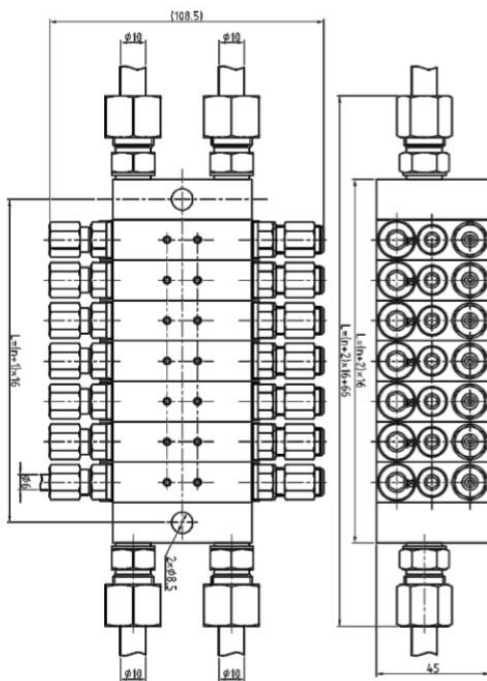
Overall Dimensions

LID Pump



LID

	Reservoir Volume (L)	Width (mm)	Depth (mm)	Height (mm)
LEP	4			402
	8	276	284.5	507
	10			571



Outlets	A (mm)	B (mm)	L1 (mm)	L2 (mm)
2			64	48
4			96	80
6			128	112
8	45	60	160	144
10			192	176
12			224	208
14			256	240

For details of progressive distributor please check the instruction manual of Progressive System.

Installation Instructions

Instruction for Installation of Pump

1. It is forbidden to install with the electricity "ON".
2. When installing, make sure that the grease level on the reservoir is clear and clean.
3. The mounting surface should be flat, and the installation connection should be reliable.
4. Distance from heat source should be more than 1 meter.

Instruction for Installation of Distributor

1. Distributors should be installed firmly for convenient maintenance.
2. Keep the inlets and outlets of distributors clean.
3. Distributors should be placed close to lube points; the longest feed line of progressive distributors needs to be less than 25 meters (Note: Varies according to different grease and temperature).

Instruction for Installation of Hoses

1. The grease hoses should be cut vertically in axial direction, the orifice can't be broken or scratched, what's more, the hoses should not be flattened.
2. During installation, the hoses must be kept clean and free of contaminants.
3. Hoses should be short to reduce the system pressure loss, thus ensuring smooth flow.
4. Minimum bending radius of hoses:
 - 7.9*14.3mm resin hose R >100mm
 - 4.0*8.6mm resin hose R >60mm
5. Hose joints must be securely connected without leakage.

Instruction for Pump Reservoir Refilling

1. The position of grease level upper limit label is set according to the product capacity.
2. The lubrication pump must first be exhausted when filling for the first time. The exhaust vent position is set because when filling for the first time, it should exceed the grease level upper limit until reaching the vent position to exhaust. After the air is completely exhausted, the piston will automatically seal the exhaust vent.
3. When refilling later, just fill to the grease level upper limit to prevent grease spill and foreign matter from entering the reservoir.
4. When fill and exhaust for the first time, in order to completely exhaust the air in the reservoir, there will be a small amount of grease overflowing from the exhaust vent, which is within the normal allowable range, just wipe and clean it.
5. If there is air in the reservoir when refilling later, then implement in the same way as filling for the first time to fill the grease to the position of exhaust vent, after the air is completely exhausted, the piston will automatically seal the exhaust vent.

Operation of Refilling Equipment

Operating procedures of grease gun

Thanks for the special transfer coupling for grease gun (manual, pneumatic, electrical), the refilling nozzle of lubrication pump and grease gun can be easily connected with each other for pump refilling.

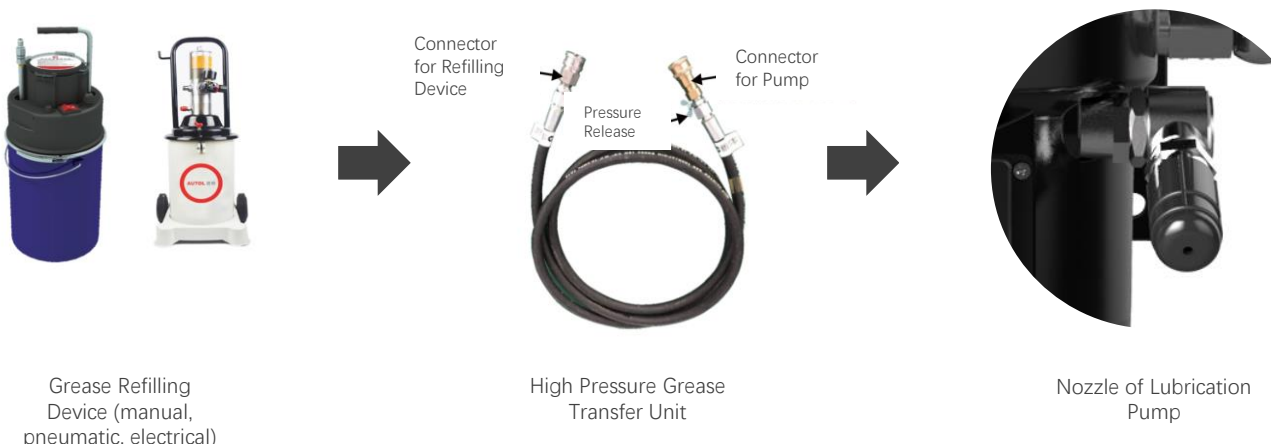
Before connecting the grease gun and refilling nozzle of lubrication pump, it is necessary to read the instruction for pump reservoir refilling again to make sure no air go into the reservoir during the refilling procedure.



Operating procedures of Grease Refilling Device

By high pressure grease transfer unit including high pressure hoses, connectors and pressure relief valve, the refilling nozzle of lubrication pump and grease refilling devices (manual, pneumatic, electrical) can be easily connected with each other for pump refilling.

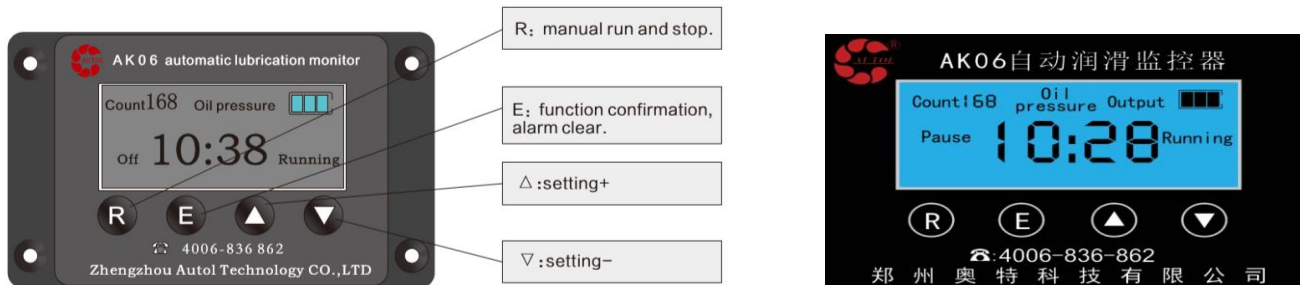
Before connecting the grease refilling devices and refilling nozzle of lubrication pump, it is necessary to read the instruction for pump reservoir refilling again to make sure no air go into the reservoir during the refilling procedure.



System Commissioning

Before System Running

1. Before connecting the grease pump to the system, run the pump to confirm that it may normally output grease.
2. Run the monitor and set the lubrication interval as demanded.



Setting for Integrated/External Monitor:

By pressing both “▲” and “▼” for 4 seconds and over, press the “E” to enter the setting mode. It will be locked again after the setting mode is exited.

The “E” in turn to select the setting items “1P, 2P, 3P and 4P” to confirm.

- 1P: Click “▲” or “▼” to set the off time (1 to 30 hours, can be customized)
- 2P: Click “▲” or “▼” to select the motor clockwise running time (1 to 60 min)
- 3P: Click “▲” or “▼” to select the motor anti-clockwise running time (1 to 60 min)
- 4P: Click “▲” or “▼” to set the low temperature standby value (-50°C to 0°C)
- 5P: Click “▲” or “▼” to select the lubrication interval (1 to 99)
- 6P: Click “▲” or “▼” to select the pressure holding time (1 to 60 min)
- 7P: Click “▲” or “▼” to select the reversing pressure value (10 to 20 Mpa)
- 8P: Click “▲” or “▼” to select the overpressure alarm value (16 to 30 Mpa)

Click “E” to confirm the entering of off status.

System Commissioning

Monitor Interface

1 Off status



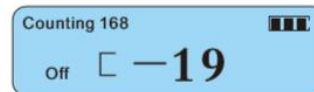
2 Oil quantity pulse not detected during operation



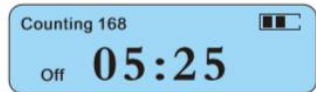
3 Oil quantity pulse detected during operation



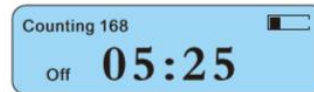
4 Low-temperature standby



5 Low level early warning status



6 Low level early warning status



7 Alarm due to lack of grease
(Alarm sends and the machine will be shut down after 6 consecutive operations, the alarm will be automatically acknowledged after the tank is fully filled)



8 Alarm due to insufficient filling
(It has no influence on system operation. Fault will be automatically cleared at the time of next normal operation)



9 Alarm due to overpressure

(if the pressure in the pipeline is higher than the preset value of 8P, the lubrication alarm will be stopped)

During System Running

1. Press the manual operation key "R" (press the Left key for an external monitor) to make the grease pump work completely. Briefly press again at an interval of every X mins (X=the set value of 3P) after shutdown to make the grease pump operate again until that each lube point discharges grease (Check one by one to confirm normal grease delivery if all the indicator rods are fully extended).

2. If no grease flows out from some lube points, remove their pipelines and observe whether grease may flow out from the distributor outlet. If yes, confirm whether the lubrication pipelines and connector is clogged or leaked. If no, the distributor is faulty. In such case, replace it with a new one and re-start the system until grease may flow out from every lube point.

System Commissioning

After System Running (Maintenance and Servicing)

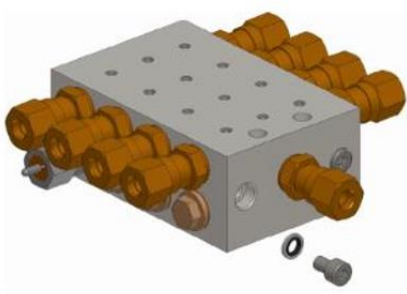
1. Start manually the grease pump to observe that the monitor is running normally.
2. Check that fresh grease may flow out from all the lube points.
3. Check that the tube bundle is fixed, and wiring harness is connected firm.
4. For maintenance and repair of the lubrication system, replace all the sealing elements such as combination gasket, aluminum gasket, etc.
5. Check that all the pipelines are not damaged or fractured.
6. Check the level of the grease reservoir, refill it if necessary.
7. Make records of maintenance.
8. Maintenance of block type progressive distributor (SSV/SSVA/SSVD): When storage time or stoppage time reaches 6 months, it is necessary to use the same grade grease running dispenser to drain the grease and drain out the internal grease.

The method as follows:

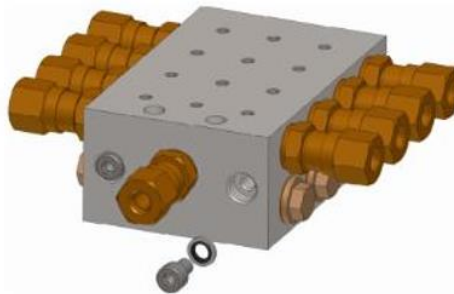
Step 1: Screw out one bolt and washer, start lubrication system to make distributor working. Discharging time should not be less than 1 min. Screw block and washer back as original after finish discharging.

Step 2: Discharge waste grease of another hole as step 1.

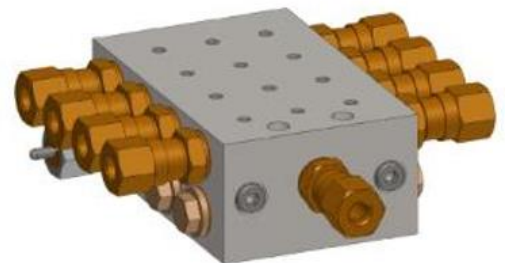
Step 3: After 2 holes both finish discharging, start lubrication system and operate at least 2 circles, make sure the distributors work normally.



Step 1



Step 2



Step 3

Fault Analysis and Elimination

Faults	Reasons	Solution
No Grease comes out from lubrication pump	Faulty Monitor	Replace monitor
	The motor does not work	Test the motor and power supply
	Lubricant is completely pumped out	Exhaust the air
No signal outputs from the grease pressure sensor	Damaged grease pressure sensor	Replace the grease pressure sensor
	Damaged overflow valve of grease pump	Replace the overflow valve
	Disconnected Signal cable	Check the signal cable
	Leaky pipe connectors	Replace the pipe connectors
Insufficient Lubrication of some lube points Fault code EE-1	Distributor plunger jammed	Replace the distributor plunger
	Leaky connector of grease delivery outlet	Replace the connector
Alarm due to low level	Grease Level at low position	Refill grease

Transport and Storage

Transport

During loading/unloading, be careful and avoid upside down.
During loading/unloading and transportation, avoid collision with other items.

Storage

The products should be stored in a ventilated and dry warehouse free from direct sunlight and without corrosive gas in the air.
Close all open pipelines to prevent dust and impurities from entering.
The products should be packed neatly in the warehouse and ensure the ventilation, meanwhile pay attention to the logo on the packing box and avoid upside down. The packing box should keep a distance of at least 100mm from the ground and wall.

After Sales Service

The Service network of AUTOL Group is worldwide. You can contact us for the information for local AUTOL/Lubmann Branch or Dealer to get the technology or business support.

info@lubmann-gmbh.de

Order Information – LID Serie

Identification Code

LID



Reservoir Size

1=4L
2=8L
3=10L

Power Supply and Monitor

A=12VDC internal Monitor
C=24VDC internal Monitor
E=230VAC internal Monitor
G=Customized Power Supply with internal Monitor
B=12VDC external Monitor
D=24VDC external Monitor
F=230VAC external Monitor
H=Customized Power Supply with external Monitor

Prefilling

J=Un-prefilled (empty reservoir)
L=Prefilled with default NGLI 1
N=Prefilled with Customized Lubricant
K=Prefilled with default NGLI 0
M=Prefilled with default NGLI 2

Pump Elements (2)

P=12ml/Min
Q=Customized Special Flowrate

Type of Electrical-Magnet Valve

T=Electrical-Magnet Valve with grease return
U=Electrical-Magnet Valve without grease return

Additional Functions

0=Without any additional Function
8=With Grease Level Warning
7=With Pressure Lost Warning
9=With Pressure Lost and Grease Level Warning

Parameter Presetting

Y=Default Setting by Lubmann
Z=Customized Setting based on Requirement

For the pump components like pump element, safety valve, refill coupling, fixing part and sensors please check the following pages.

Order Information – LI DLA Distributor

Identification Code

LI-
DLA

X

-

X

-

XXX

-

X

-

X

Number of Middle piece

1=1 middle piece

2=2 middle pieces

3=3 middle pieces

4=4 middle pieces

5=5 middle pieces

6=6 middle pieces

7=7 middle pieces

Min. 1 and Max. 7

Number of blinded Outlets

0= no blinded Outlets

X=Number of blinded Outlets

X <= (Number of Middle piece*2)

Type of all Middle Pieces

10=Piece 10 (0.10 ml/cy per Outlet)

20=Piece 20 (0.20 ml/cy per Outlet)

40=Piece 40 (0.40 ml/cy per Outlet)

60=Piece 60 (0.60 ml/cy per Outlet)

80=Piece 80 (0.80 ml/cy per Outlet)

100=Piece 100 (1.00 ml/cy per Outlet)

AR= section has not been merged, grease comes out from **Both Sides**, on Right-Side the outlet of the section has been connected with the Right-outlet of the next section by an external 2 to 1 outlet connector (**DMU-DLO21**)

AL= section has not been merged, grease comes out from **Both Sides**, on Left-Side the outlet of the section has been connected with the Left-outlet of the next section by an external 2 to 1 outlet connector (**DMU-DLO21**)

For ex. 10-10-80AL-20-20=5 middle pieces, the sequence of the middle piece from Top piece to bottom piece is 1(10-10) 2(10-10) 3(0-80) 4(100-20) 5(20-20)

Internal Merge of Bottom Piece

L=pre merged

M=no Merging

Additional Functions

N=Without any additional Function

P=With Indicator Rod

Q=With Hall Sensor

R=With Indicator Rod and Hall Sensor

For the distributor components like indicator rod, inlet fitting, outlet fitting, pressure sensor, fixing plate and external joint fitting please check the following pages.

Order Information – LR-VPKA/VPKB Distributor

Identification Code

LR-
VPK

X

-

X

-

X

-

XXX

-

X

-

X

Block Type

A=VPKA Type

B=VPKB Type

Number of Middle piece

3=2 middle pieces

4=3 middle pieces

5=4 middle pieces

6=5 middle pieces

7=6 middle pieces

8=7 middle pieces

Min. 2 and Max. 7 middle pieces

Number of non-blinded Outlets

0= no blinded Outlets

X=Number of non-blinded Outlets

X <= ((Number of Middle piece+1)*2)

Type of all Middle Pieces

8=Piece 8 (0.08 ml/cy per Outlet)

16=Piece 16 (0.16 ml/cy per Outlet)

24=Piece 24 (0.24 ml/cy per Outlet)

32=Piece 32 (0.32 ml/cy per Outlet)

64=Piece 64 (0.64 ml/cy per Outlet)

96=Piece 96 (0.96 ml/cy per Outlet)

128=Piece 128 (1.28 ml/cy per Outlet)

160=Piece 160 (1.60 ml/cy per Outlet)

L= section has been merged and grease comes out from **Left-Side**

R= section has been merged and grease comes out from **Right-Side**

AR= section has not been merged, grease comes out from **Both Sides**, on Right-Side the outlet of the section has been connected with the Right-outlet of the next section by an external 2 to 1 outlet connector (**PMU-VPKO21**)

AL= section has not been merged, grease comes out from **Both Sides**, on Left-Side the outlet of the section has been connected with the Left-outlet of the next section by an external 2 to 1 outlet connector (**PMU-VPKO21**)

ARL= section has not been merged, grease comes out from **Both Sides**, the outlets on both sides of the section have been connected with the corresponding outlets of the next section by 2 external 2 to 1 outlet connectors (**PMU-VPKO21**), and the next section must **not be merged**

BR= section has not been merged, grease comes out from **Both Sides**, on Right-Side the outlet of the section has been connected with the Right-outlet of the next section by an external 2 to 0 outlet connector (**PMU-VPKO20**), and the next section **must be merged, and keeps the grease comes out from Left-Side of the section**

BL= section has not been merged, grease comes out from **Both Sides**, on Left-Side the outlet of the section has been connected with the Left-outlet of the next section by an external 2 to 0 outlet connector (**PMU-VPKO20**), and the next section **must be merged, and keeps the grease comes out from Right-Side of the section**

For ex. 8-8L-32AL-16AR-16=5 middle pieces, the sequence of the middle piece from Top piece to bottom piece is 1(8-8) 2(16-0) 3(0-32) 4(64-0) 5(16-32)

Only VPKB has piece with flowrate 64/96/128/160

Type of bottom Piece

C=Piece 8 (0.08 ml/cy per Outlet)

D=Piece 16 (0.16 ml/cy per Outlet)

E=Piece 24 (0.24 ml/cy per Outlet)

L=section has been merged and grease comes out from Left Side

R=section has been merged and grease comes out from Right Side

Only Piece 8,16,24 can be chosen as the bottom Piece.

Additional Functions

N=Without any additional Function

P=With Indicator Rod

Q=With Hall Sensor

M=With Indicator Rod and Hall Sensor

For the distributor components like indicator rod, inlet fitting, outlet fitting, pressure sensor, fixing plate and external joint fitting please check the following pages.



Lubmann GmbH

Web: www.lubmann-gmbh.de

Mail: info@lubmann-gmbh.de

LUBMANN GMBH