LUBE USA

GENERAL PRODUCT CATALOG

Keeping machinery running all over the world!

Automatic Lubrication Systems

2018

LUBE original catalog
Automatic lubrication systems

GREASE SYSTEM
OIL SYSTEM
TUBING PARTS
SERVICE

With the advancement of the industrial marketplace, the progress in automation, and the expansion of manufacturing facilities, machinery has enjoyed a tremendous leap-forward. Lubrication technology has contributed in many ways to this advancing technical evolution. Automatic Lubrication Systems can consolidate multiple lubrication areas and control lubricant usage. LUBE Centralized Lubrication Equipment, as major part of preventive maintenance, helps our customers increase their profitability.

LUBE Automatic Lubrication

- While contributing to Japan and the world market, we aim to improve the quality of and development of our employees and the company. We aim to enrich society and trust as a responsible corporate citizen.
- To build corporate culture which promotes creativity, respectful employees, team work, and provides products which meet the needs of the industry.
- To conduct business activities in harmony with the local communities and countries where we are located, strengthen the capabilities of our offices, and establish a network which can provide high quality products and services.

ISO14001 Certified

Registered at Ibaraki plant

Company evolution

July 1963	Incorporated in Shiba Tamura-cho, Minato-ku, Tokyo with the paid-up capital at ¥300,000
November 1967	Increased investment capital to ¥1,000,000
October 1968	Opened Osaka and Nagoya Sales Offices
November 1968	LUBE Matic won Outstanding Product Prize on 9th PM
October 1969	Increased investment capital to ¥3,000,000
March 1971	Opened Hiroshima Sales Office
June 1971	Increased investment capital the capital to ¥12,000,000
April 1973	Opened Kanazawa Sales Office
November 1977	Increased investment capital to ¥24,000,000
December 1978	Opened Shizuoka Sales Office
March 1979	Opened Niigata Sales Office
June 1979	Increased investment capital to ¥36,000,000
November 1979	Opened Kita-Kanto Sales Office and Kanagawa Sales Office
June 1982	Ibaraki Plant was moved to newly constructed Iwase-cho, Nagakata Industrial Park
January 1985	Opened Ibaraki Sales Office
March 1986	Opened Komaki Sales Office
July 1986	Opened Nishi-Tokyo, Chiba and Hamamatsu Sales Office
May 1987	Set Up LUBE USA Inc (South Carolina, USA)
December 1987	Increased investment capital to ¥70,200,000
August 1988	Opened Nagano Sales Office
March 1989	Opened Nagano Plant
July 1990	Opened Kobe and Tochigi Sales Offices
January 1992	Ibaraki Plant was expanded
March 1992	Computer network completed
July 1992	Opened Toyota Sales Office
June 1994	Set up LUBE Machine Lubricant Co, Ltd, a joint-stock company, in China
March 1995	Opened Toyama Sales Office
July 1995	Ibaraki and Tochigi Sales Offices merged and renamed Higashikanto Sales Office
December 1996	Passed NACCB ISO 9001
December 1997	Ibaraki Plant expansion
June 1998	Nagano Plant expansion
March 2000	Kita Kanto Sales Office was integrated into Tokyo Sales Office
July 2000	Komaki Sales Office was integrated into Nagoya Sales Office
June 2001	Passed RvA ISO 14001
September 2003	Toyama and Kanazawa Sales Offices merged and renamed Hokuriku Sales Office
December 2003	Passed UKAS ISO9001, ISO 2000.
January 2004	Kobe Sales Office was integrated into Osaka Sales Office
January 2005	Set up LUBE LUBRICATING SYSTEM CO.,LTD. (China)
August 2007	Increased investment capital to ¥100,000,000
September 2008	Set up LUBE AUTOMATIC SYSTEMS PRIVATE LIMITED (India)
January 2009	Nishi-tokyo and Chiba Sales Office was integrated into Tokyo Sales Office
February 2009	Toyota Sales Office was integrated into Nagoya Sales Office
March 2009	Hamamatsu Sales Office was integrated into Shizuoka Sales Office
July 2009	Set up KAA-Europa GmbH (Germany)
March 2010	Opened LHL service support station Ota
June 2010	Opened LHL service support station Anjo
April 2011	Opened Mie Plant
April 2012	Opened LHL service support station Yamanashi
May 2012	Opened LHL service support station Tsu
March 2013	Opened LHL service support station Kurume
September 2014	Opened LUBE Global center
February 2015	Changed Nagano Sales Office to SSS Ueda

Company profile

Corporation name:	LUBE Corporation
Incorporation:	8th July 1964
Head office:	Horizon 1, 169-0051 Shinjukuku, Tokyo, Japan
CEO:	Eijiro Horikoshi
A brief profile:	Full-service provider of central lubrication systems for industrial production machinery (key areas: machine tools and electric injection moulding machines)
Product portfolio:	Lubrication system pumps, lubricants, piping and dispensing systems (hoses, tubes, valves, manifolds, etc.)
Service portfolio:	Machine-specific system design, installation of lubrication systems, maintenance, repairs, operator training courses
Employees:	215 (2015)
Production plants:	Mie, Nagano, and Ibaraki (Japan)
Sales offices:	Anjo, Higashikanto, Hiroshima, Hokuriku, Kanagawa, Kita-Kanto, Nagoya, Niigata, Osaka, Ota, Shizuoka, Tokyo (Japan)

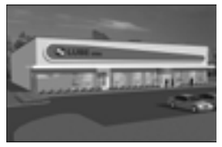
LUBE GLOBAL SERVICE NETWORK

●**Germany**
KAA-Europa GmbH

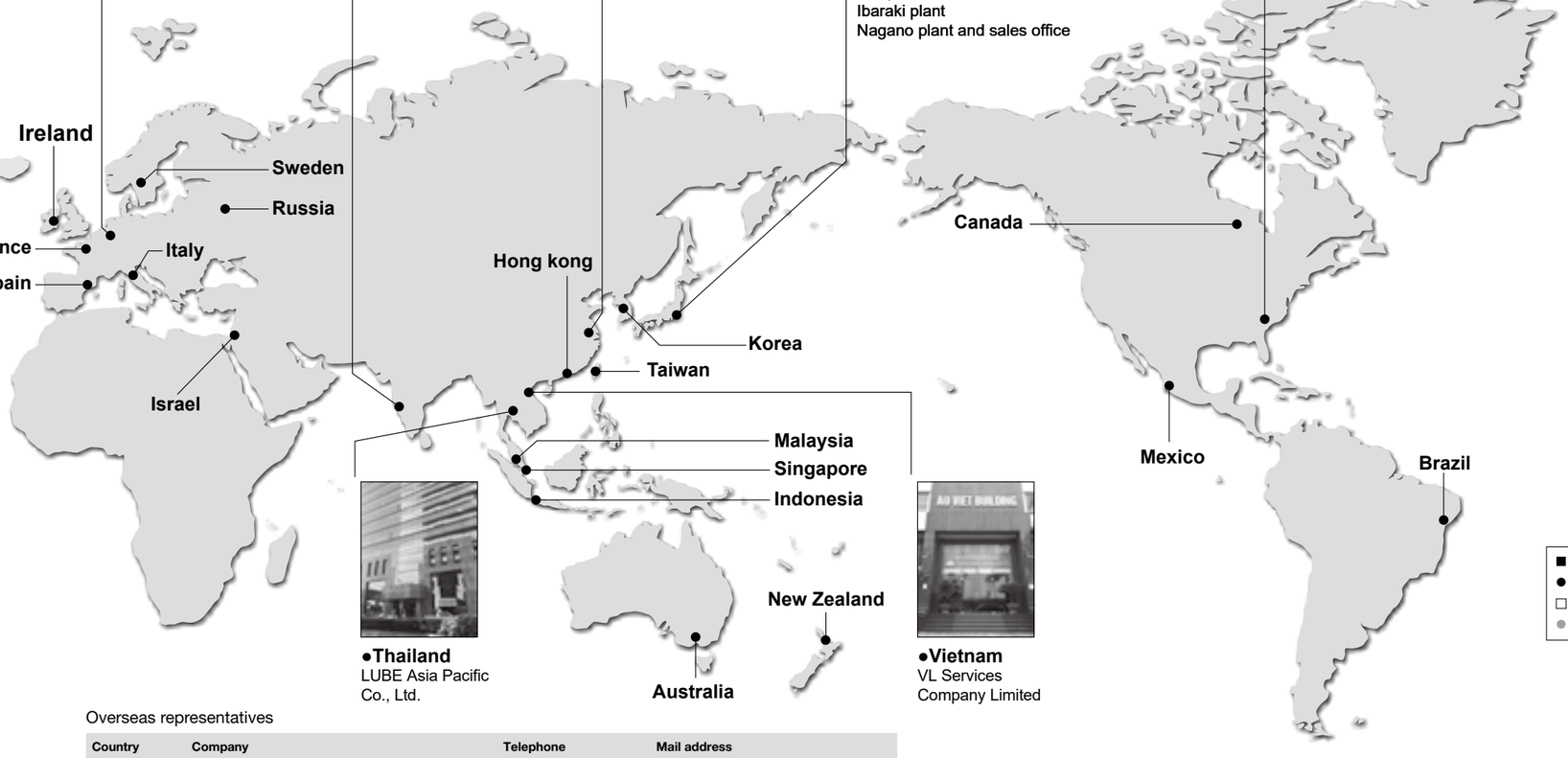
●**India**
LUBE AUTOMATIC
SYSTEMS Private Limited

●**China**
LUBE LUBRICATING SYSTEM
(SHANGHAI) Co.Ltd.

●**Japan**
Tokyo world Head Quarters
LUBE Global Center
Mie plant
Ibaraki plant
Nagano plant and sales office



●**USA**
LUBE USA, INC.



●**Thailand**
LUBE Asia Pacific
Co., Ltd.

●**Vietnam**
VL Services
Company Limited

Overseas representatives

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LUBE Global network

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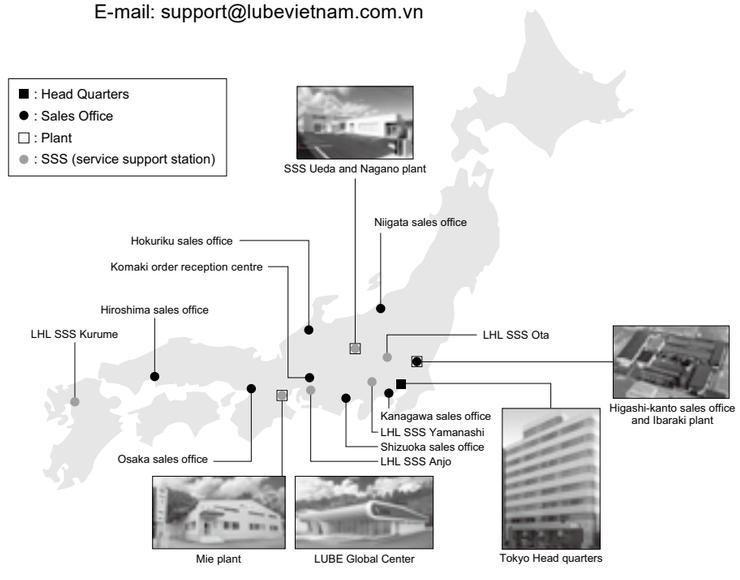
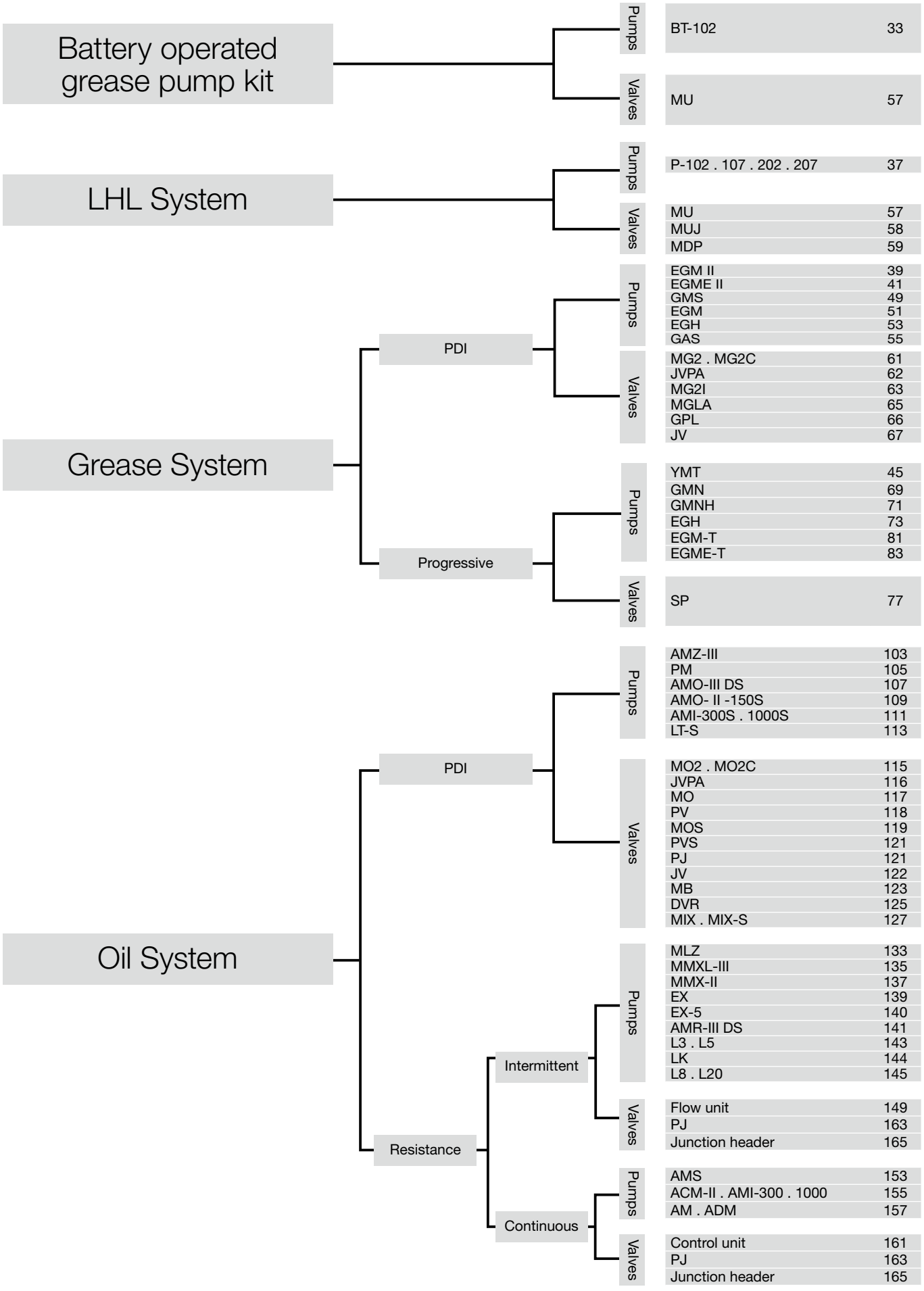


Sales Office
Tokyo/Kanagawa/Higashi-kanto/Niigata/Shizuoka/Osaka/Hokuriku/Hiroshima

service support station
Anjo/Ota/Yamanashi/Kurume/Ueda

http://www.lube.co.jp

Outline of lubrication systems



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Grease System

Battery operated grease pump kit

BT-102 **P.33**

LHL System

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EGM II **P.39**

EGME II **P.41**

Multi-Port Centralized Lubrication System

YMT **P.45**

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GMS-4-8P **P.49**

EGM-10S-4-4C **P.51**

EGM-10S-4-7C **P.51**

EGH-3P **P.53**

EGH-2C **P.53**

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GAS-8P **P.55**

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MUJ **P.58**

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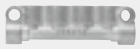

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Series Progressive System for Small-Large Machines

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Compatible with Both PDI and Series Progressive Metering Valve System for Small-Medium Machine

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LUBE original grease

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Pressure gauge **P.95**

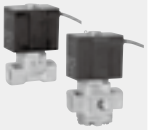
Pneumatic pump for pail **P.96**

Grease gun **P.96**

Lub pack **P.96**

Grease vacuum cleaner **P.97**

Steel dust meter **P.98**



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■ Oil System

Positive Displacement Injector (PDI) System for large machines


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JVPA
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MO
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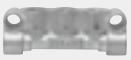
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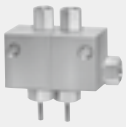
MB
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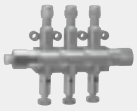
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Single Line Resistance (SLR) System for small machines with intermittent delivery


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MMX-II
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EX
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EX-5
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AMR-III DS
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L3 . L5
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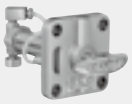
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Single Line Resistance (SLR) System for small to large machines with continuous (recirculating) delivery


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AMI-300
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AMI-1000
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AM
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T-4LP
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T-8LP
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T-18LP
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T-30LP
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2ℓ Metal Reservoir
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3ℓ Metal Reservoir
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4ℓ Metal Reservoir
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8ℓ Metal Reservoir
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Eliminator
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Pressure gauge
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Pneumatic System for delivering small volume of vanishing or biodegradable oil


VBP
P.193

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Accessories for MH-20D-A
P.197


LUBFIT
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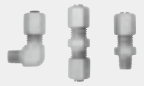
Tubing parts

Tubing parts (Grease system)

								
Compression Parts	Plugging parts	Tubing parts	Tube clips	Flexible Hose	Adapters	Connectors	Coupling parts	Push in fitting
P.201	**P.202**	**P.203**	**P.204**	**P.205**	**P.207**	**P.211**	**P.213**	**P.214**

		
Application brushes	Universal elbow connector	Fittings
P.215	**P.216**	**P.217**

Connectors

				
Swivel fittings	Jet nozzle	Sight feed	Indicator pin	Drive bushing
P.219	**P.219**	**P.220**	**P.220**	**P.221**

Alternate product information

Old product **Updated product**

Model	Part No.		Part No.	Model	Changes from the last time
GHS-4C-B	103535	→	103781*1	EGH-4C-B	Depressurizing lever operation is no longer necessary. Weight is lighter, but the mounting dimensions are the same. When the lever is pulled, grease is discharged (when the lever of GHS is pushed, grease is discharged).
GHS-4C	103536	→	103782	EGH-4C	
GHS-3P	103501	→	103783	EGH-3P	
GHN-4C-B	103537	→	103781*1	EGH-4C-B	Weight is lighter, but the mounting dimensions are the same. When the lever is pulled, grease is discharged (when the lever of GHS is pushed, grease is discharged).
GHN-4C	103538	→	103782	EGH-4C	
GHN-3P	103503	→	103783	EGH-3P	
GMS-20-80-CB-4L	103539	→	103810	EGM-10S-4C	There is the built-in depressurization solenoid, so stable depressurization becomes possible. Since the mounting dimensions are different, contact us for a consultation.
GMS-20-80-CB-7L	103570	→	103811	EGM-10S-7C	
GMS-20-80-CB-TS-4L	103546	→	103810	EGM-10S-4C	Since the mounting dimensions are different, contact us for a consultation.
GMS-20-80-CB-TS-7L	103546	→	103811	EGM-10S-7C	
AMO-II -150S (With controller)	*2	→	*2	AMO-III DS	Setting the time accurately is possible by seeing LCD screen displays on the operation side.
AMR-II -150S (With controller)	*2	→	*2	AMR-III DS	Setting the time accurately is possible by seeing LCD screen displays on the operation side.
AMZ100S (With controller)	*2	→	*2	AMO-III DS	Setting the time accurately is possible by seeing LCD screen displays on the operation side. Since the mounting dimensions are different, contact us for a consultation.
AMZ100S (Without controller)	*2	→	*2	AMZ-III	Lightweight and low cost become possible. Since the mounting dimensions are different, contact us for a consultation.

*1 Contact LUBE for a consultation. *2 There are multiple specifications difference such as discharging pressure and/or Reservoir capacity.

System Layout

LHL/Grease System Layout

Oil System Layout

■ LUBE Hybrid Lubrication System (LHL)

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Tubing
P.203

P-102, P-202
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Pressure gauge
P.95

Adapter assemblies
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Junction
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Junction
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Adapter assemblies
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Junction
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Flexible Hose
P.206

Pressure switch GPL
P.66

Compression bushing
P.201

Compression sleeve
P.201

MU Valve
P.57

Blanking plug
P.202

MUJ Junction
P.58

Compression nut
P.201

MU Valve
P.57

Blanking plug
P.202

MUJ Junction
P.58

Fitting for limited space
P.215

Elbow adapter
P.209

Banjo Elbow
P.216

Linier guide

Ball screw

MUJ Junction
P.58

Compression bushing
P.201

Straight adapter
P.207

Compression sleeve
P.201

Pillow block

Push-in fitting
P.214

Fitting for limited space
P.215

Cam

Compression bushing
P.201

Straight adapter
P.207

Compression bushing
P.201

Pillow block

Push-in fitting
P.214

MU Valve
P.57

Fitting for limited space
P.215

MUJ Junction
P.58

Blanking plug
P.202

Cam

●Tubing
- φ6 Steel tubing
- φ4 Steel tubing
- φ4 Nylon tubing
- Flexible hose

●Related parts

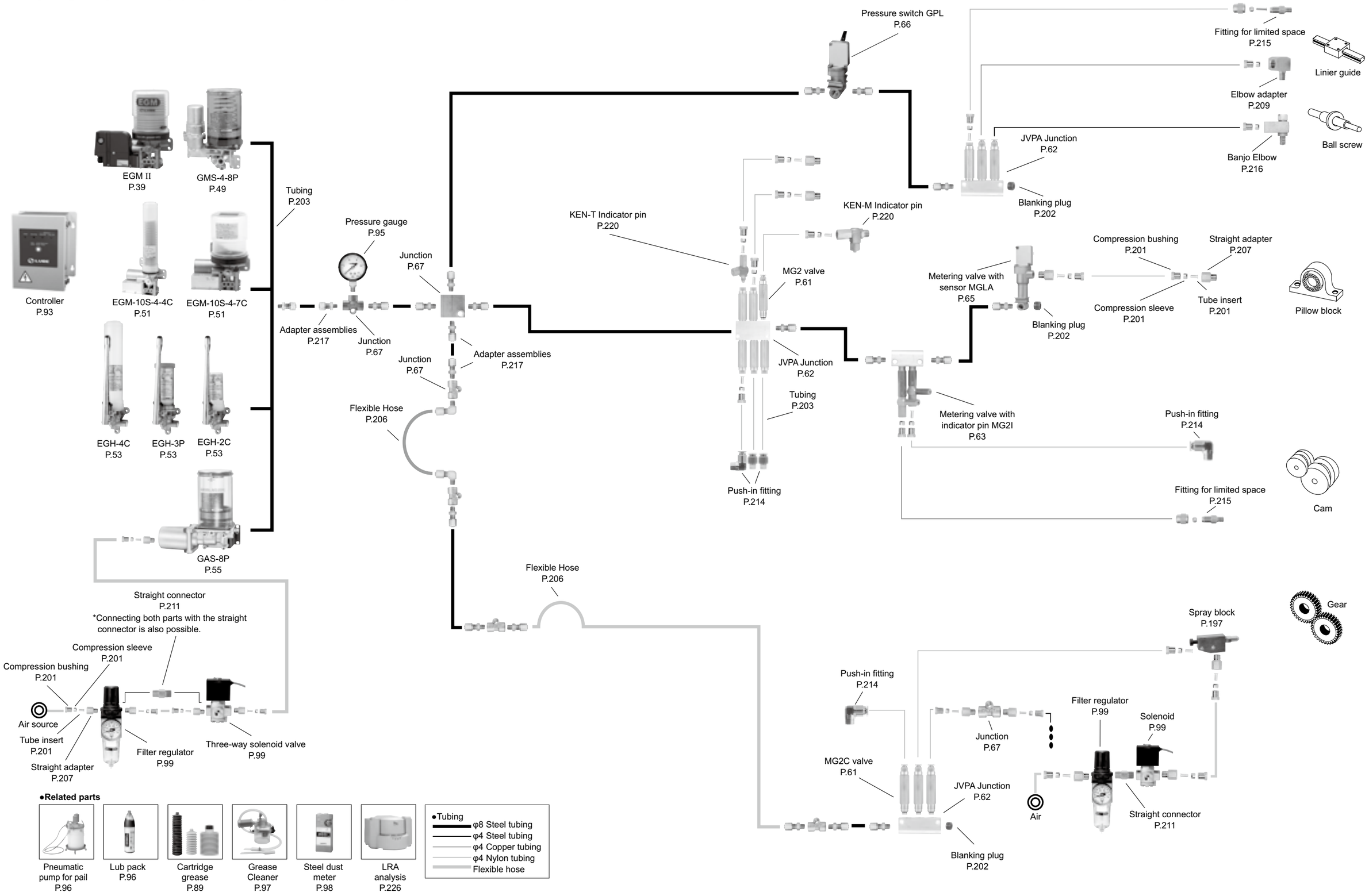
LHL X-100
cartridge grease
P.90

Grease
Cleaner
P.97

LRA
analysis
P.226

Pneumatic
pump for pail
P.96

■ Positive Displacement Injector (PDI) System for Small-Medium Size Machines



■ Series Progressive System for Small-Large machines

Wiring


GMNH-4-4C
P.71


GMNH-4-7C
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GMN-4-8P
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YMT
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GMNH-2-4C
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GMNH-2-7C
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EGH-2C
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EGH-3P
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EGH-4C
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Signal

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Pressure gauge
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P.98

Sealing washer
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Box nut
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Outlet check body
P.77

Clamping ring
P.77

SP series progressive valve SP-8S
P.77

Elbow adapter
P.209

Compression bushing
P.201

Tube insert
P.201

Compression sleeve
P.201

SP series progressive valve SP-8K
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Fitting for limited place
P.215

Straight adapter
P.207

Liner guide

Flexible hose
P.206

SP series progressive valve SP-8K
P.77

Ball screw

Pillow block

Gear

Flexible hose
P.206

SP series progressive valve SP-8K
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Adapter assemblies
P.217

Cam

●**Related parts**


Pneumatic pump for pail
P.96


Lub pack
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Cartridge grease
P.89


Grease Cleaner
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Steel dust meter
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LRA analysis
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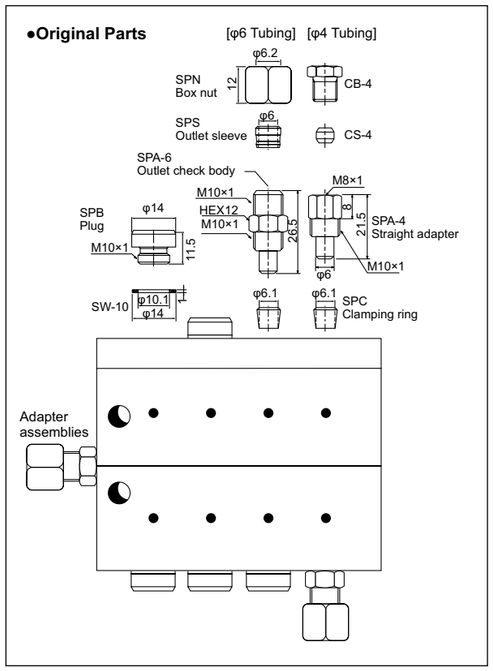
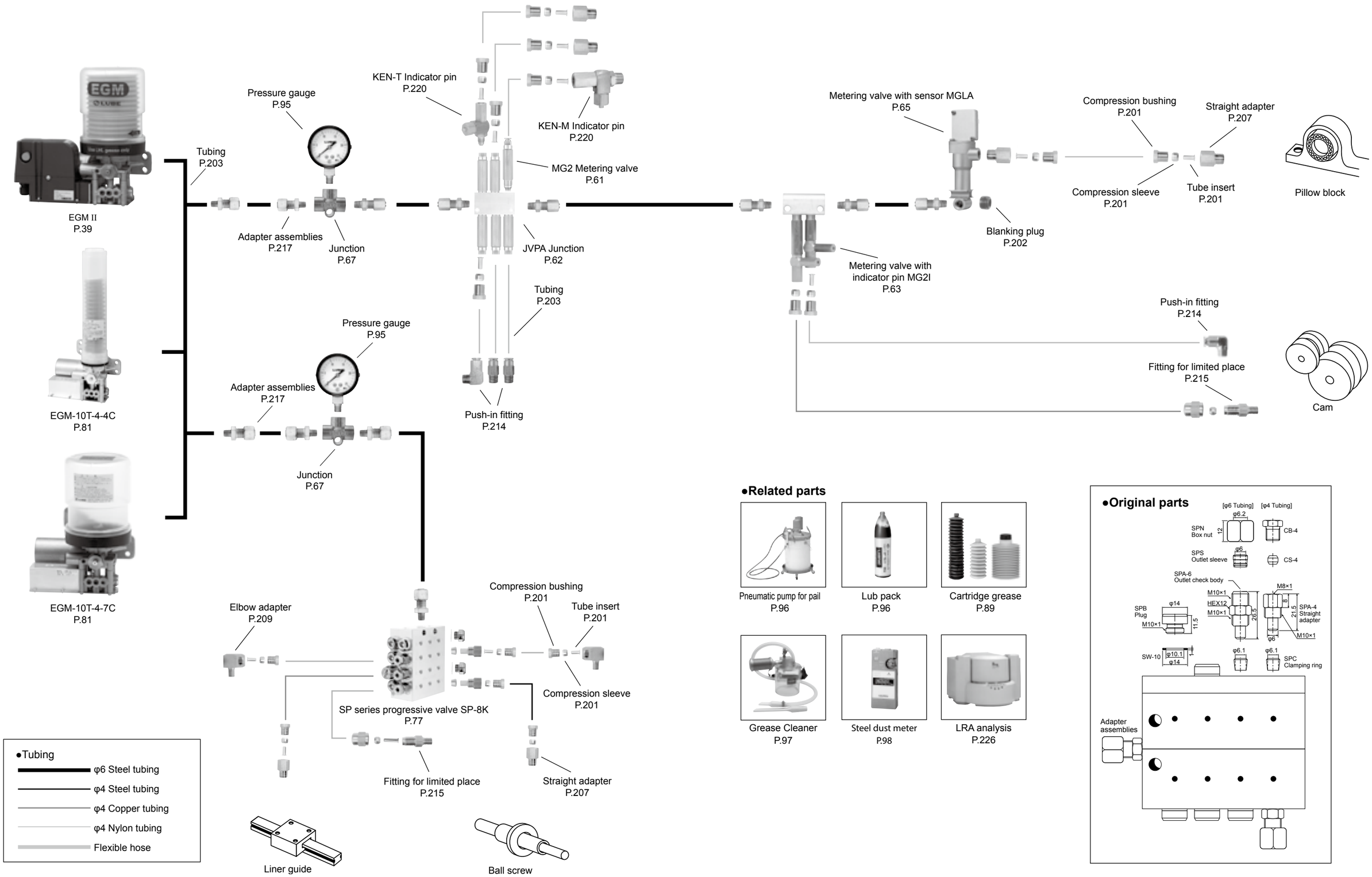
●**Original Parts**



●Tubing
- φ6 Steel tubing
- φ4 Steel tubing
- φ4 Copper tubing
- φ4 Nylon tubing
- Flexible hose

■ Compatible with both PDI and series progressive metering valve system for small -medium size machine



●Related parts

Pneumatic pump for pail
P.96

Lub pack
P.96

Cartridge grease
P.89

Grease Cleaner
P.97

Steel dust meter
P.98

LRA analysis
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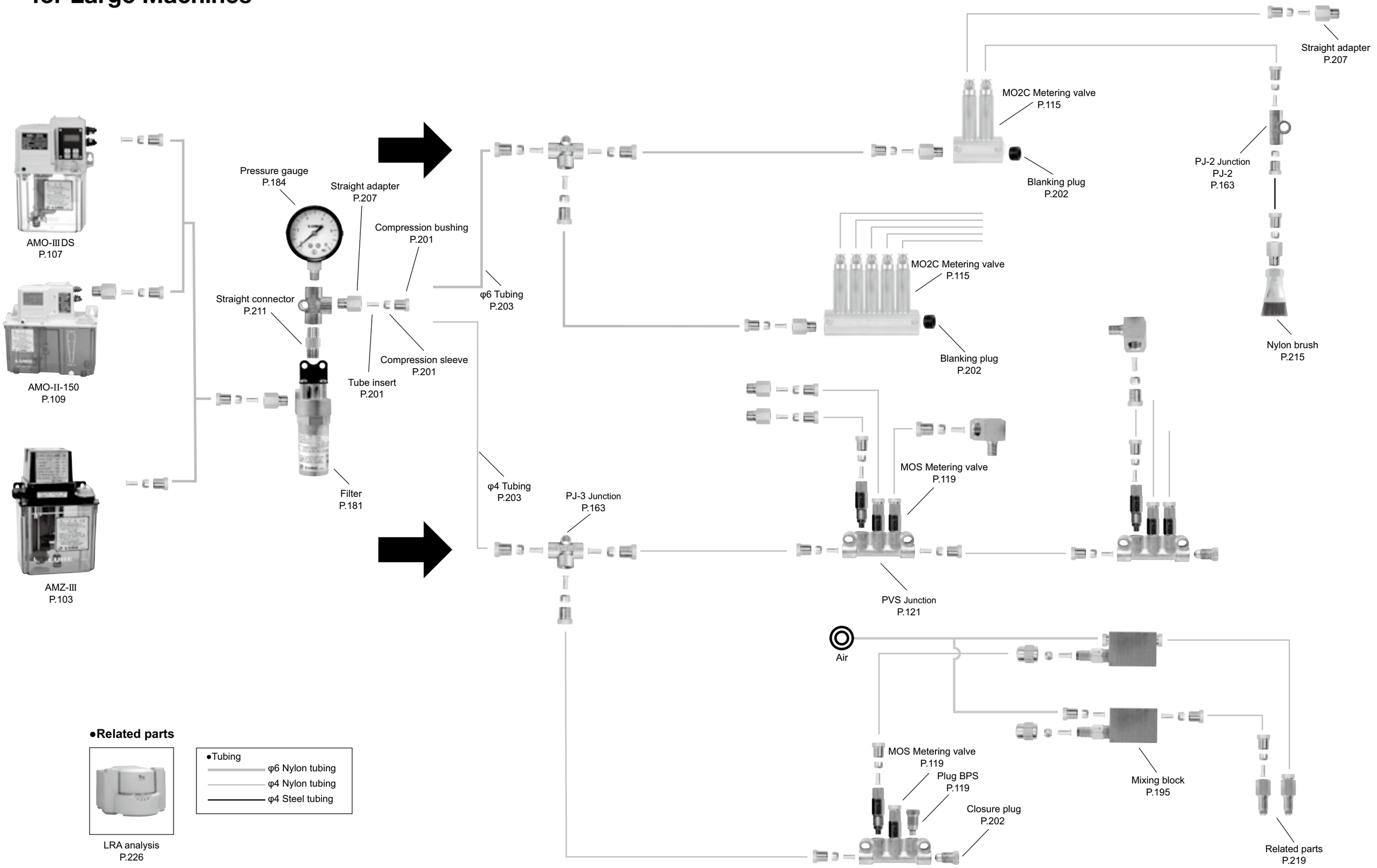
●Original parts

■ Positive Displacement Injector (PDI) System for Large Machines

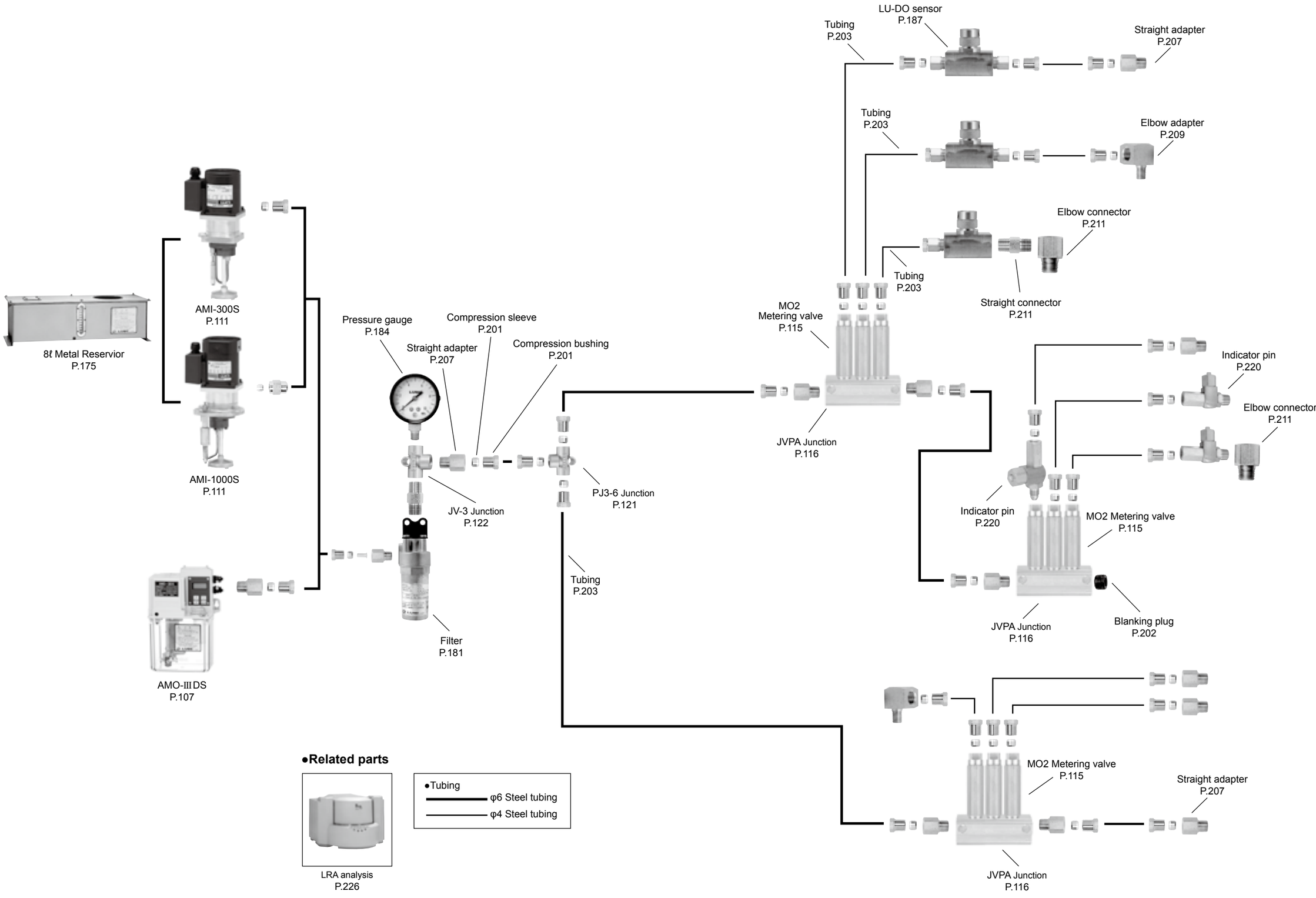


●Related parts

LRA analysis
P.226

●Tubing
- φ6 Nylon tubing
- φ4 Nylon tubing
- φ4 Steel tubing

■ Positive Displacement Injector (PDI) System for Large Machines

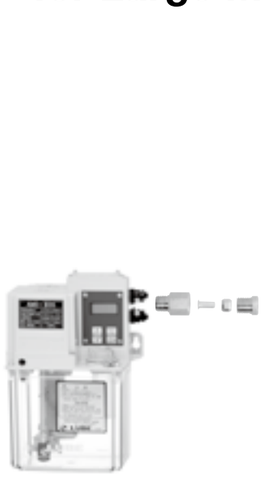


●Related parts

LRA analysis
P.226

●Tubing
- φ6 Steel tubing
- φ4 Steel tubing

■ Positive Displacement Injector (PDI) System for Large Machines



AMO-III DS
P.107

AMZ-III
P.103

Pressure gauge
P.184

JV-3 Junction
P.122

Straight adapter
P.207

Compression bushing
P.201

Compression sleeve
P.201

Tube insert
P.201

Tubing
P.203

Filter
P.181

PJ3-6 Junction
P.121

Elbow adapter
P.209

Air-Oil sensor
P.189

Elbow adapter
P.209

Straight adapter
P.207

Tube insert
P.201

Compression sleeve
P.201

Compression bushing
P.201

Air-Oil valve MIX
P.127

Tubing
P.203

Filter regulator
P.99

Eliminator
P.183

Air

Straight connector
P.211

Solenoid
P.99

Nozzle adapter
P.219

Closure plugs
P.202

Tube insert
P.201

Compression bushing
P.201

Compression sleeve
P.201

MIX-S
P.127

Push-in fitting
P.214

MIX-S
P.127

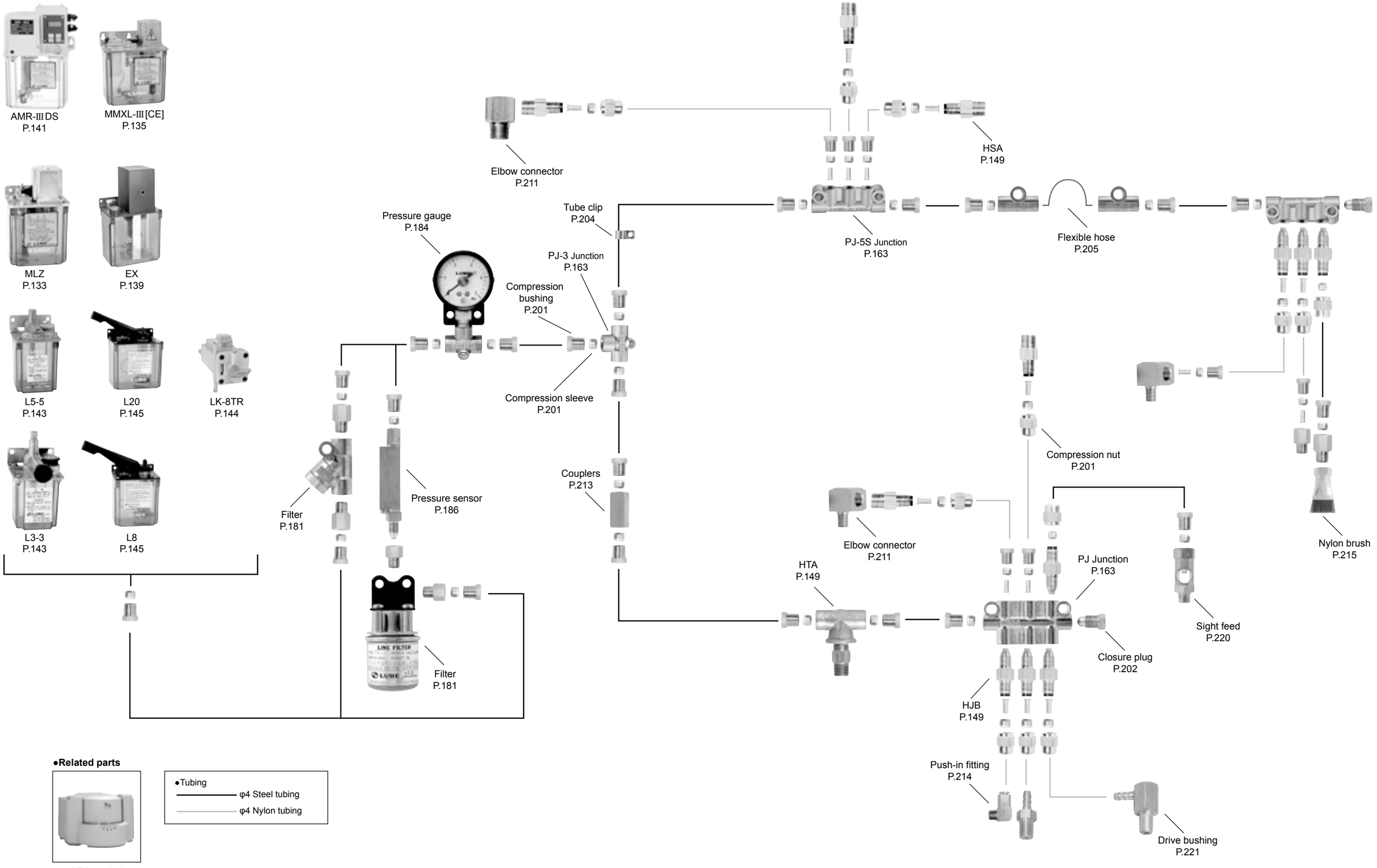
Nozzle adapter
P.219

●Related parts

LRA analysis
P.226

●Tubing
- φ8 Nylon tubing
- φ6 Nylon tubing
- φ4 Nylon tubing

■ Single Line Resistance (SLR) compact system for Small Machines with intermittent delivery

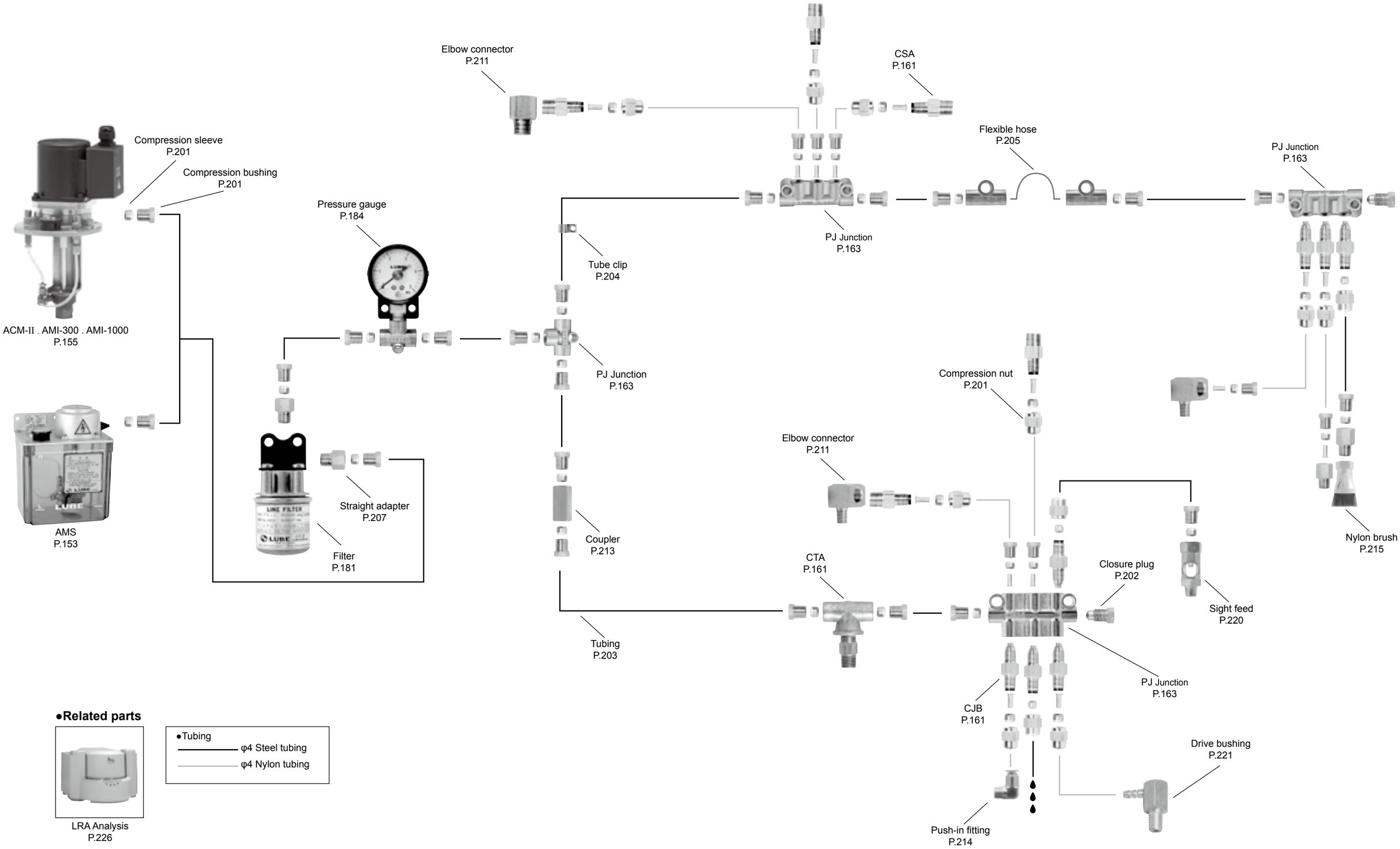


●**Related parts**

LRA analysis
P.226

●Tubing
- φ4 Steel tubing
- φ4 Nylon tubing

■ Single Line Resistance (SLR) compact system for Small to Large Machines with continuous (recirculation) delivery



●Related parts

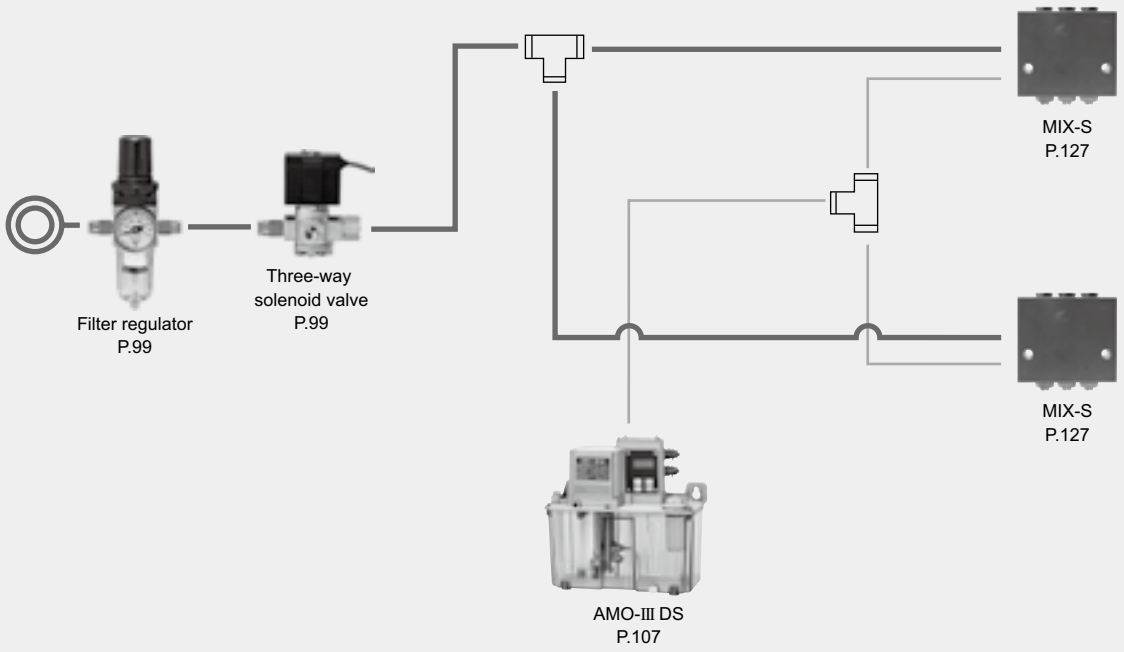
LRA Analysis
P.226

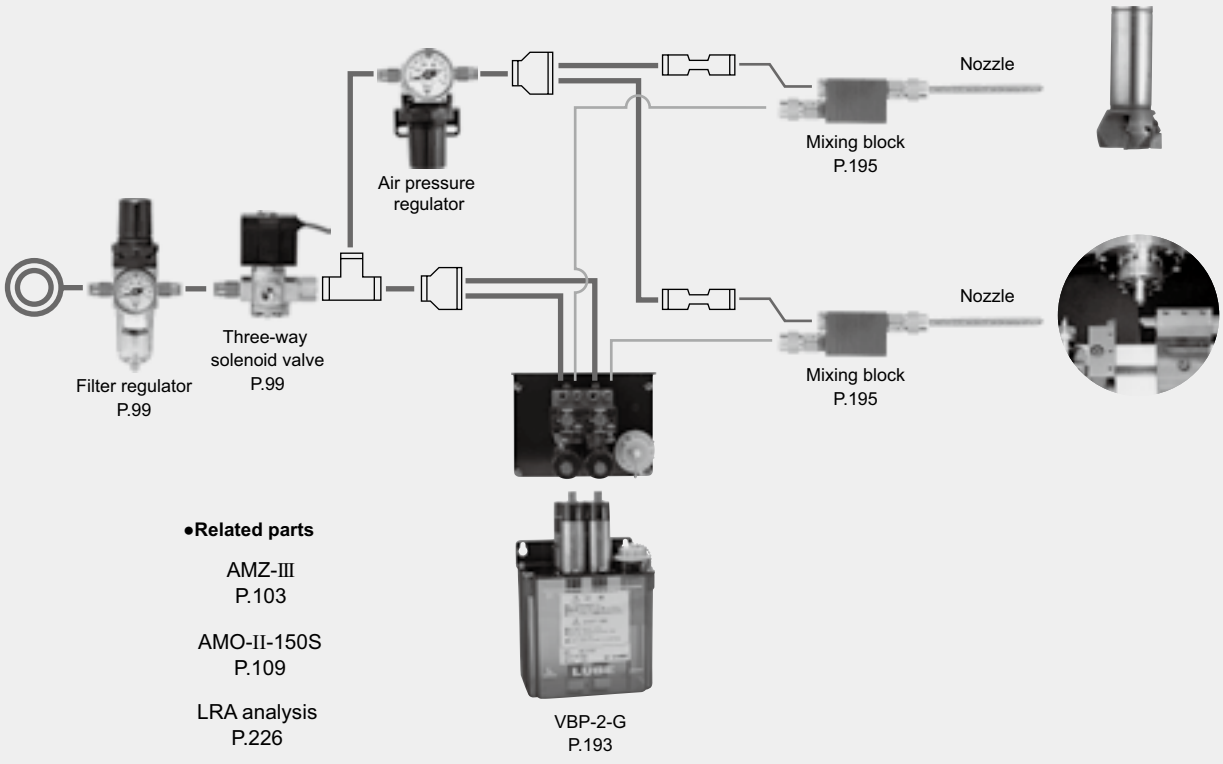
●Tubing
- φ4 Steel tubing
- φ4 Nylon tubing

OIL APPLICATION

Air and oil lubrication

Small volume of oil is applied consecutively, so the consumption of oil can be reduced.
This system is not oil mist type, so there is no pollution of the working environment.





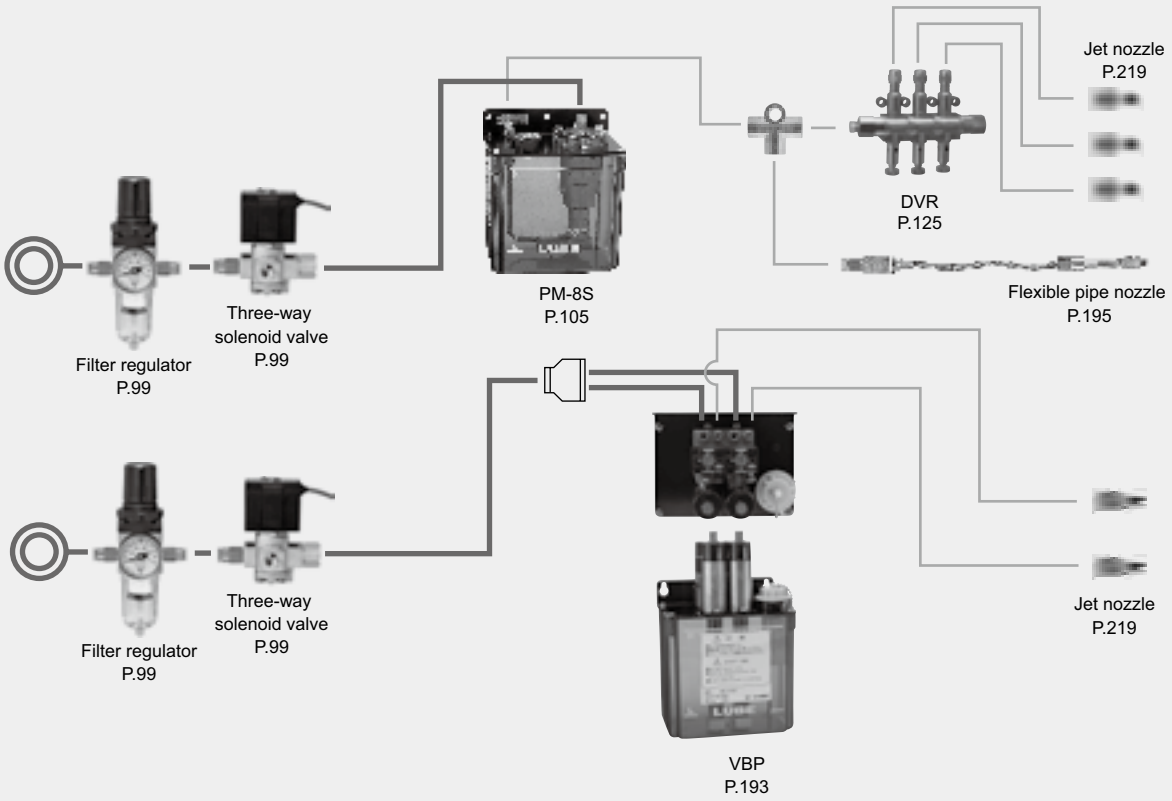
●Related parts

AMZ-Ⅲ
P.103

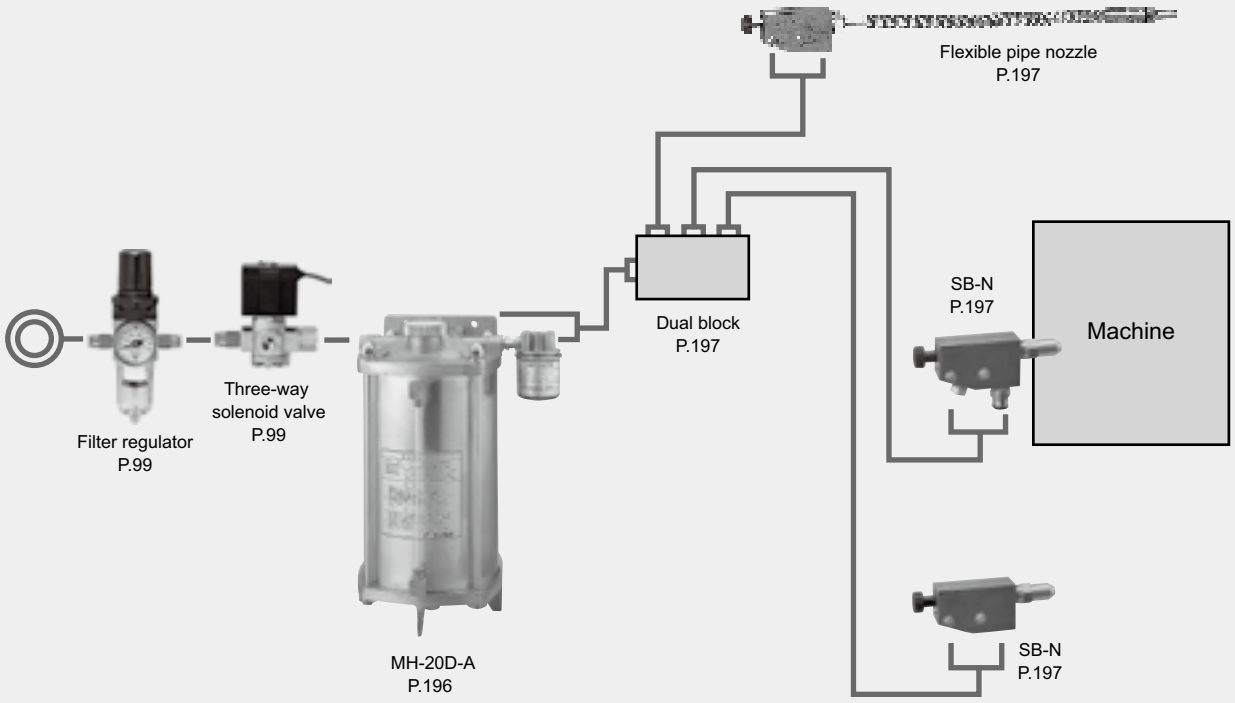
AMO-Ⅱ-150S
P.109

LRA analysis
P.226

Oil shot



Oil mist



Warning

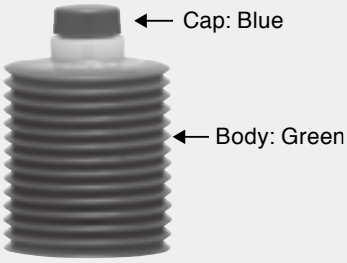
Please make sure to use Lube original grease cartridges designated by your machine manufacturer. The use of non-specified or counterfeit grease may cause significant damage to the lubrication system and key moving components of your machines.

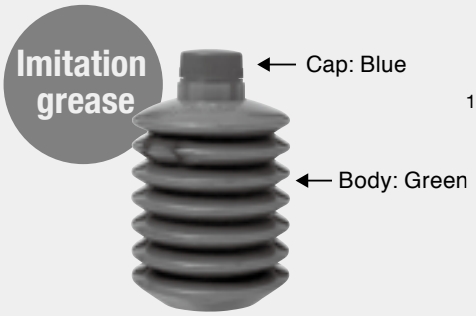
Developed through the collaboration with our machine manufacturer partners, Lube original cartridge grease is specifically designed to guarantee the long-term and stable performance of machinery. Using non-designated or counterfeit grease may cause serious loss or damage not only to your lubrication system but also the key moving components of the machine. This will result in machine breakdowns that require considerable recovery time and costs. Lube is not responsible for any loss or damage caused by the use of non-designated or counterfeit grease.

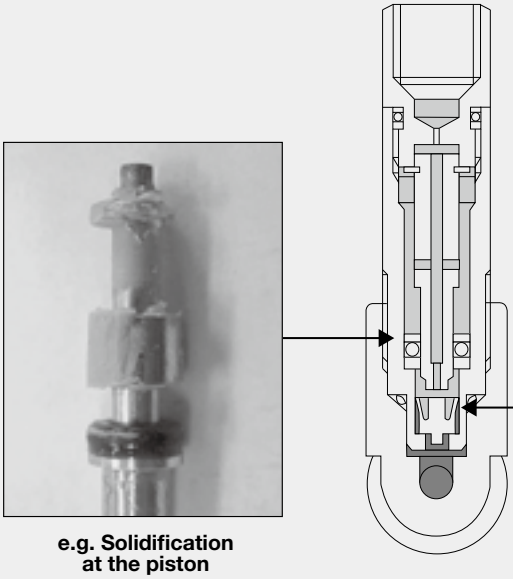
e.g. Metering valve failure from imitation grease

LUBE original cartridge grease

Registration of Designs : Registration No. 1324342





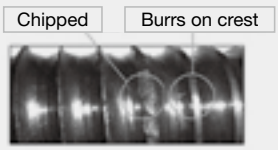


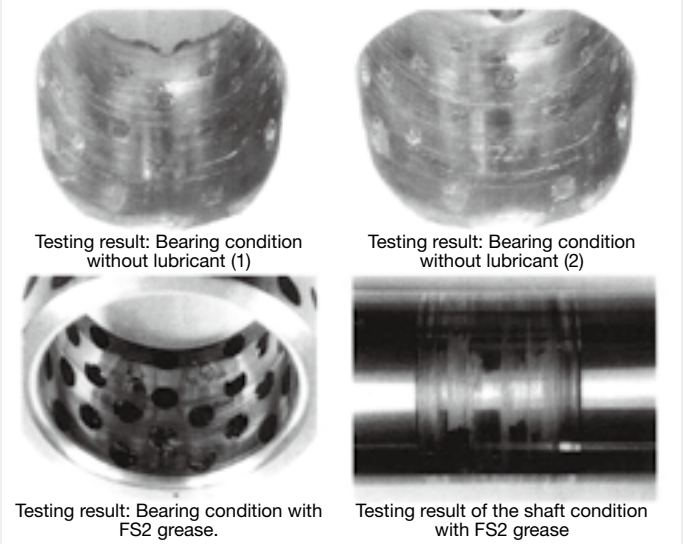
e.g. Solidification at the piston

1 Extreme wear and shape changes caused by poor lubrication at the ball screw.

e.g. Solidification at the check valve

2 Damage caused by premature wear at the ball screw.





Testing result: Bearing condition without lubricant (1)

Testing result: Bearing condition without lubricant (2)

Testing result: Bearing condition with FS2 grease.

Testing result of the shaft condition with FS2 grease

Testing result: FS2 grease vs non-lubrication with self lubricating bushings

Pictured left is testing result of bearing surfaces without any lubricant. End surface of bearing is changing shape. This is caused by high temperature and damage at the sliding surface.
Additionally, it was confirmed that OILES#500HP-101 is problematic in regards to keeping its performance until target testing time.
LUBE FS2 has superior sliding charaterisitcs. In this test, the effect of the additives in the grease is also superior. FS2 grease and it's special additives combine heavy load carry capacity with oxidation stability to improve overall sliding charaterisitcs.

Information provided by OILES CORPORATION

General Catalog
Centralized Lubrication Systems

LHL/Grease System

LUBE Hybrid Lubrication system

Positive Displacement Injector (PDI) System
for Small-Medium Machines

Series Progressive System for Small-Large Machines

RIGHT **TIME**
RIGHT **VOLUME**
RIGHT **LUBRICANT**

BT-102 System Kit

BT-102

Battery operated grease pump kit

BT-102

Compact cartridge-type centralized lubrication kit, powered by four AA batteries.

[BT-102]

Model Reference

BT-102□

(8)	8 Ports
(4)	4 Ports

Model

Model	Number of port	Part Number
BT-102(8)	8	101111
BT-102(4)	4	101112

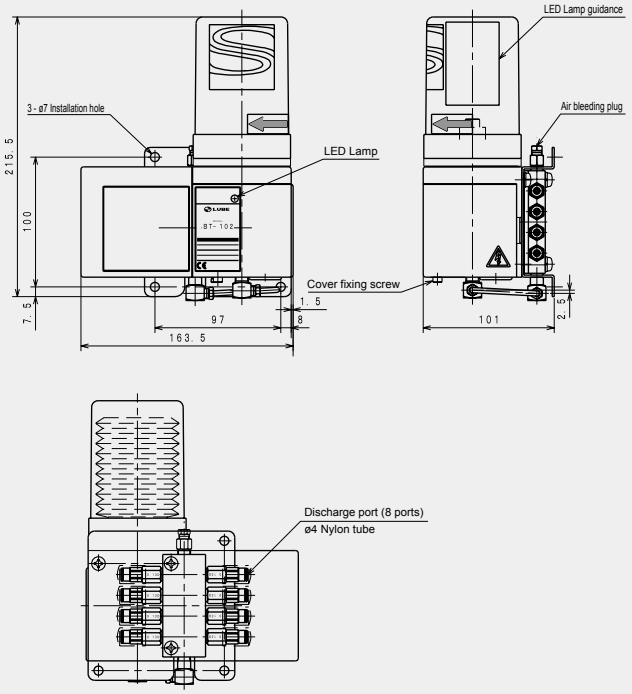
Specifications

Power	AA batteries (Alkaline)
Continuous run time (MAX)	5 minutes (6 hours cumulative)
Interval time	1-24 hours, 1-31 days
Discharge pressure	2.5MPa or more
Pump discharge capacity	1.5mℓ/min
Pump life	100 hours
Lubricant used	CBT-SU03-2 (LUBRICANT) Code No. 249150
Cartridge capacity	200mℓ
Weight	2.0kg (Including cartridge and batteries)

LED lamp	
During operation	LED lamp ON
During interval	LED lamp OFF
Cartridge replacement	LED lamp flashes once (5 seconds intermittence)
Battery replacement	LED lamp flashes twice (5 seconds intermittence)
Abnormal setting	LED lamp flashes three times (5 seconds intermittence)
Abnormal pressure error	LED lamp flashes four times (5 seconds intermittence)
Continuous operation mode (21 times) Filling mode (3 of SW1))	LED lamp flashes once continuously (1 second intermittence)

Conditions for unit usage:
Grease supply tubing: 2 m or less (use nylon tubing)
Valve discharge and number of points:
MU valve (0.1 ml), 1–8 points

Dimensional drawing



Environmental conditions

Use this pump in the following environment.
Ambient temperature: 5–45°C (indoor use only)
Humidity: 35–85%RH (zero condensation)
Vibration: 9 G or less
(* Battery life is extremely short when used at 5°C or less)

- Plug MU-BP (Code No. 619840)
  8 ports : 7 pieces 4 ports : 3 pieces
- Push-in fitting KBE4-01-Fφ4 R1/8 (Code No. 209523)
  8 ports : 8 pieces 4 ports : 4 pieces
- Nylon tubing φ4mm x 2m (CBT-SU03-2 (LUBRICANT) filled)
  8 ports : 8 pieces 4 ports : 4 pieces
- LUBE Original Battery (Code No. 531300)

Related parts

MU valve
: P.57

MUJ junction
: P.58

Push-in fitting
: P.214

CBT cartridge
: P.89

LUBE Hybrid Lubrication Systems LHL

■ Next-Generation Hybrid Lubrication System

LHL®

- **Reduces lubricant consumption**
- **Prevents the deterioration and decomposition of cutting fluids**
- **Reduces the abrasion of machine parts**

Problems with Oil Lubrication
Oil mixed into cutting fluid causing deterioration and /or decomposition of cutting fluid.
Oil washing away with cutting fluid (Causing rust).
Large oil consumption
Environmental problems
Oil disposal cost

Problems with Grease Lubrication
Grease solidification
Used grease accumulation in guides or other parts that requires clean-up
Metal chips caught by piled up grease can be pulled into moving parts
Clogged coolant filters

Advantages of Oil
Liquidity / Excellent transport properties
No solidification

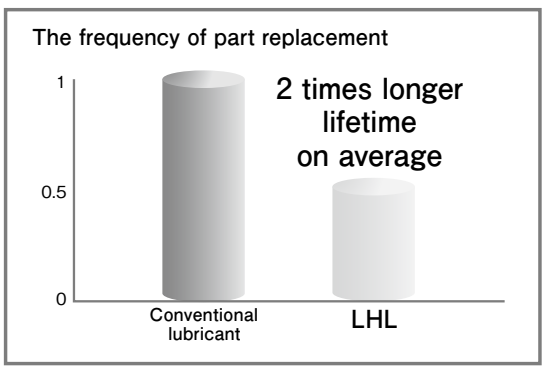
Combining the advantage of Oil and Grease

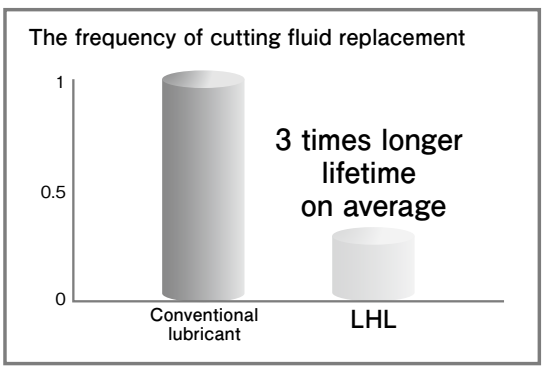
Advantages of Grease
High Load-carrying capacity / Wear resistance
Water resistance / Excellent film maintenance properties / Adherent properties

Production Cost Reduction

Comparison between lubricant consumption and machine tool costs

Machining center	BT-30		BT-40		BT-50	
Lubrication system	Oil	LHL	Oil	LHL	Oil	LHL
Number of lubrication points	23		23		36	
Lubricant	OIL#68	LHL-X100	OIL#68	LHL-X100	OIL#68	LHL-X100
Cutting fluid	Soluble		Soluble		Soluble	
Lubricant consumption/cycle	2.5mℓ	1.45mℓ	5.5mℓ	2.5mℓ	4.3mℓ	8.8mℓ
Comparison of Annual Lubricant Consumption	23.14gal 87.6ℓ / 0.42gal 1.6ℓ		38.17gal 144.5ℓ / 1.16gal 4.4ℓ		99.51gal 376.7ℓ / 4.59gal 18.9ℓ	
Comparison of Number of Refills per Year	48 times / 2 times		80 times / 6 times		63 times / 27 times	





※These comparisons are just examples. Actual results vary depending on machine operating conditions and environments.
※Please ask our sales staff for further details.

Positive Displacement Injector (PDI) System for Small-Medium Machines

P-102/107/202/207

EGM II

■ Pump

Positive Displacement Electric Pump

PDI plus Progressive Electric Twin Pump

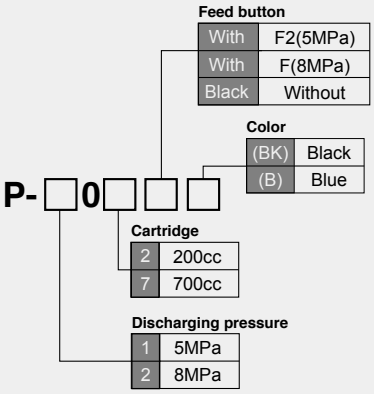
Electric Pump for LHL

P-102/107/202/207

Small, low cost pump, exclusively
for our LHL original cartridge grease.

[P-107F-BK]

Model Reference



Specifications

Power	DC24V
Power Consumption	24W
Discharging pressure	5MPa/8MPa
Discharging time	No restriction
Minimum interval time	10 seconds
Wiring method	Terminal connection
Manual override switch	Yes (Optional)
Grease level switch	Yes
Cover	Non combustible plastic (UL94-V0)
NEMA rating	IP54
CE approval	Yes
Pump air bleeding valve	Yes
Weight	P-102:1.2kg, 107:1.6kg, 202:1.2kg, 207:1.6kg

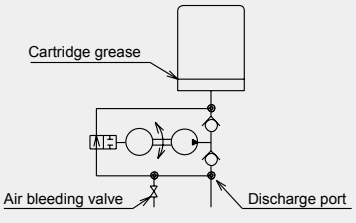
Model

Model	Part Number	Model	Part Number
P-102(BK)	101002	P-202(BK)	101032
P-102(B)	101006	P-202(B)	101036
P-102F2(BK)	101082	P-207(BK)	101033
P-102F2(B)	101086	P-207(B)	101037
P-107(BK)	101003	P-202F(BK)	101042
P-107(B)	101007	P-202F(B)	101046
P-107F2(BK)	101083	P-207F(BK)	101043
P-107F2(B)	101087	P-207F(B)	101047

Directions for use

- Use LUBE original LHL cartridge only.
- When the cartridge is changed, take care that foreign particles are not getting inside.
- Do not discharge continuously.
- After changing the cartridge, bleed the air inside the pump by opening the air bleeding valve.

Hydraulic circuit diagram



Related parts

MU valve
: P.57

MUJ junction
: P.58

MDP valve
: P.59

GPL Pressure Switch
: P.66

Pressure gauge
: P.95

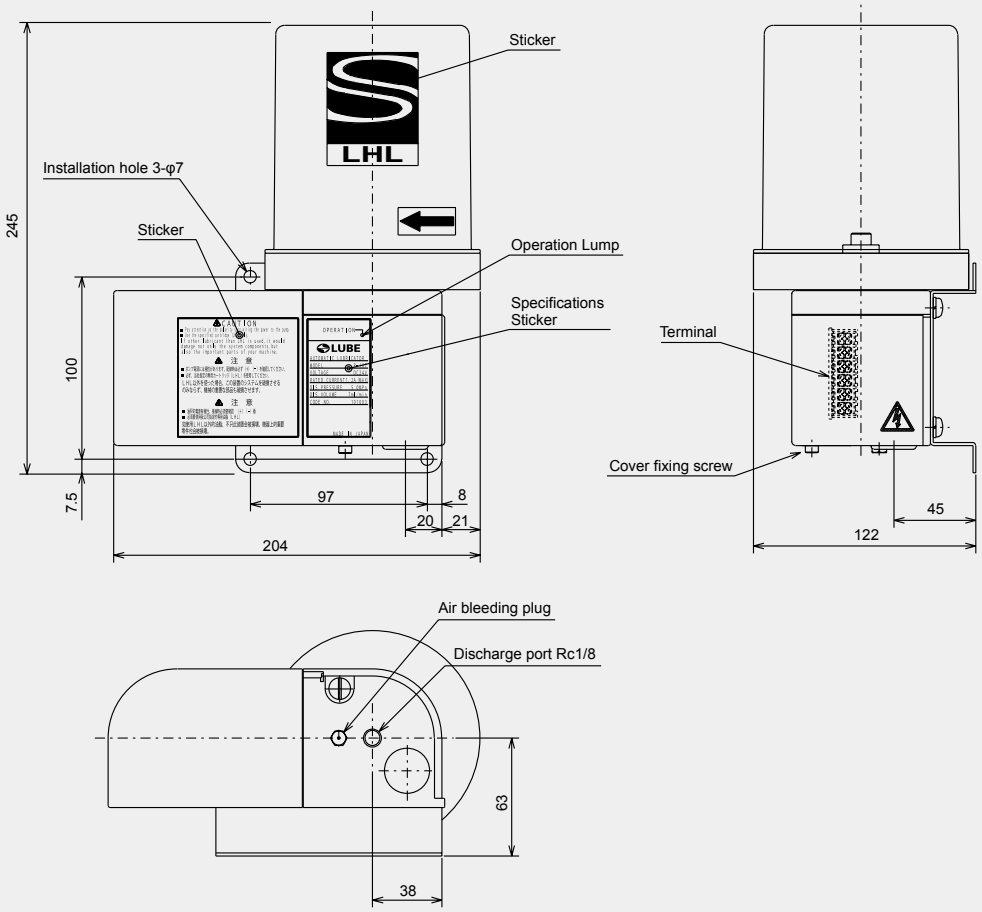
Main tubing
: P.203

Adapter assemblies
: P.217

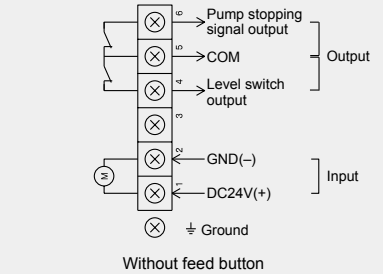
LHL-X100
: P.90

Controller
: P.93

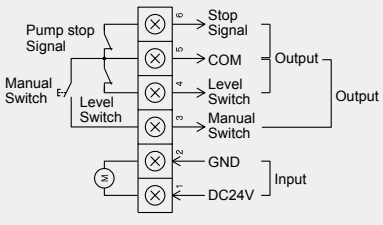
Dimensional drawing



Wiring diagram

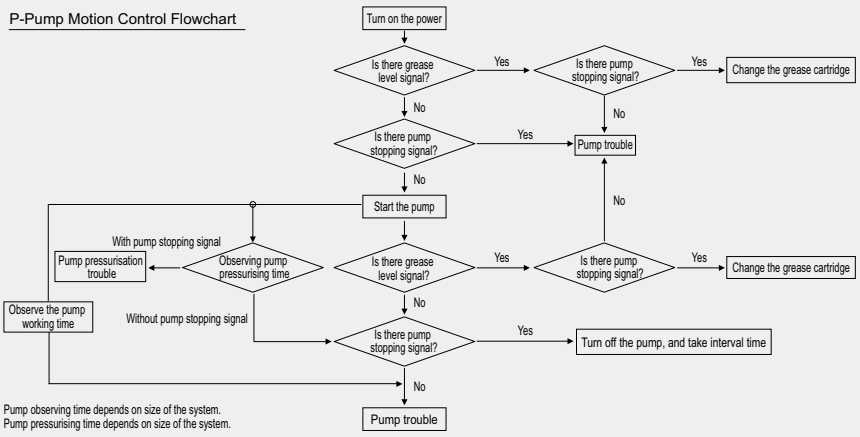


Without feed button



With feed button

P-107 Pump motion control flowchart



Positive Displacement Injector Electric Pump PDI plus Progressive Twin Electric Pump

EGM II

Small, low cost pump for our original cartridge grease.

[EGM II]

Model Reference

Feed button

FB	With
Black	Without

* T-type not available with manual override switch.

EGM II-□□-4-7CL□- (LHL)

*2: 8MPa Only.

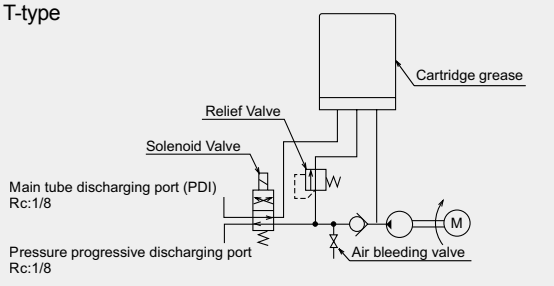
S	Positive Displacement Injector(PDI) System
T	Positive Displacement Injector(PDI) System and Progressive System

*8MPa for Positive Displacement Injector(PDI) System only.

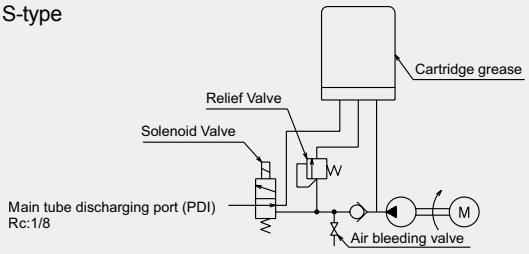
8	8MPa (Only for LHL System)
10	10MPa

Hydraulic circuit diagram

T-type



S-type



Model

Model	Part Number
EGMII -10S-4-7CL	103937
EGMII -10S-4-7CLFB	103938
EGMII -10T-4-7CL	103947
EGMII -8S-4-7CLFB-LHL	103936
EGMII -8S-4-7CL-LHL	103935

Specifications

Power	DC24V
Power Consumption	45.6W
Discharging pressure	8MPa (Only for LHL System)
	10MPa
Maximum discharging time	7m 30s
Minimum interval time	3 times discharging time
Wiring method	Terminal connection
Manual override switch	Yes (Optional: Only PDI system) *1
Grease level switch	Yes
Solenoid cover	Non combustible plastic (UL94-V0)
NEMA rating	IP54
CE approval	Yes
Pump air bleeding valve	Yes
Weight	2.0kg (With manual operating switch: 2.1kg)

*1 Although the Manual Override Switch provides a dry contact to activate the pump, its capacity is not sufficient to sustain the power required to operate the pump. Therefore, the power needs to be provided directly to the pump from the machine control panel. See wiring diagram P.40.

Directions for use

- Use recommended grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium grease. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases containing substances that attack brass or rubber.
- When the cartridge is changed, take care that foreign particles are not getting inside.
- Do not discharge continuously.
- After changing the cartridge, bleed the air inside the pump by opening the air bleeding valve.

Related parts

MG2 metering valve : P.61

MG2C metering valve : P.61

JVPA Junction : P.62

MG2I metering valve : P.63

MGLA metering valve : P.65

GPL pressure switch : P.66

Pressure gauge : P.95

Main tubing : P.203

Adapter assemblies : P.217

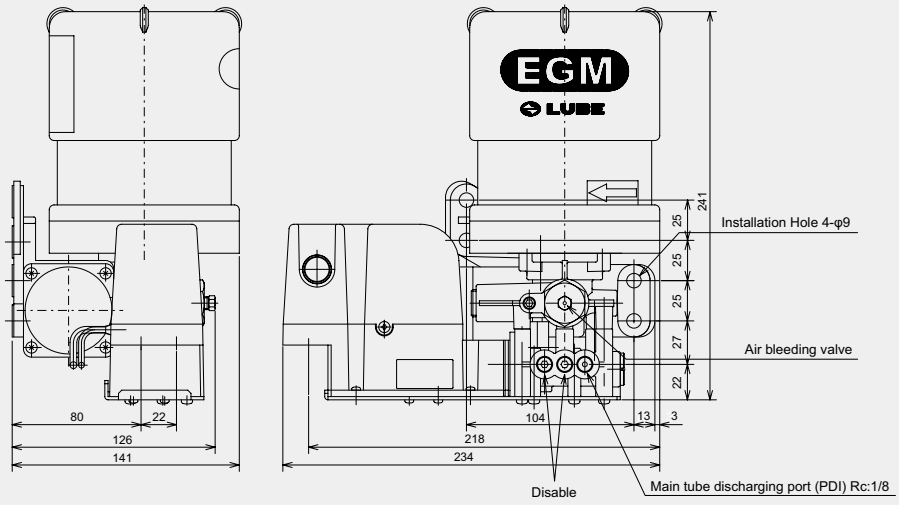
LUBE original grease : P.89

LHL-X100 : P.90

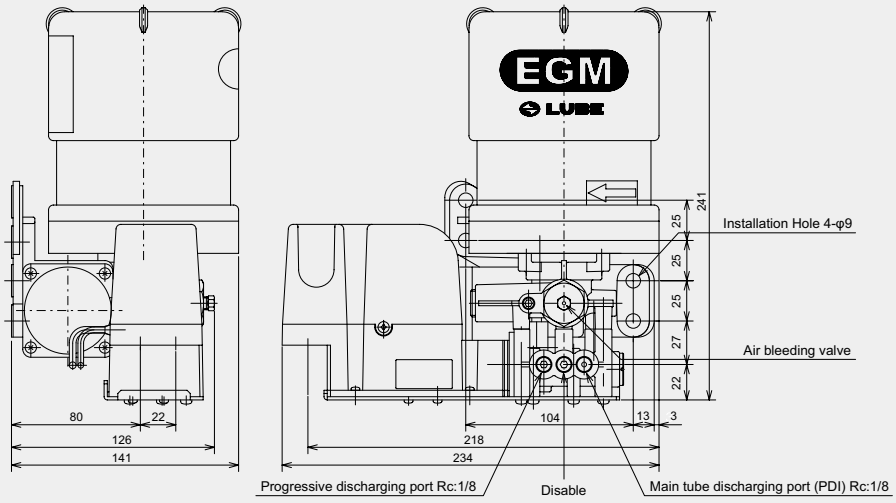
Controller : P.93

Dimensional drawing

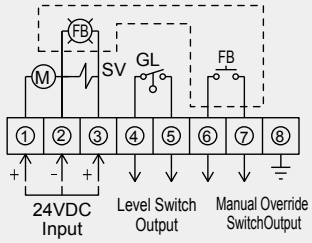
[EGM II-10S-4-7CLFB]



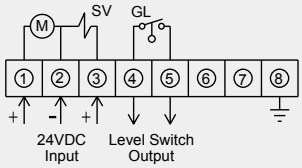
[EGM II-10T-4-7CL]



Wiring diagram

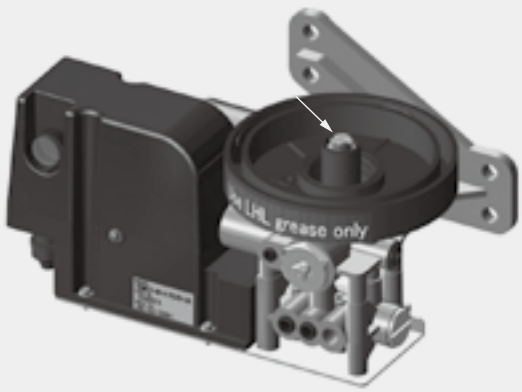


With feed button



Without feed button

Grease level switch



Positive Displacement Injector Electric Pump with solenoid protection PDI plus Progressive Twin Electric Pump

EGME II

Small, low cost pump for use with our original cartridge grease. EGME-II pumps have a built in solenoid protection circuit which eliminates the 7.5 minute maximum running time of other EGM pumps.

[EGME II]

Model Reference

Feed button

With	FB
Without	Without

* If it is T-type, it hasn't got manual override switch.

EGMEⅡ-□□-4-7CL□-(LHL)

*2: Only if it's 8MPa.

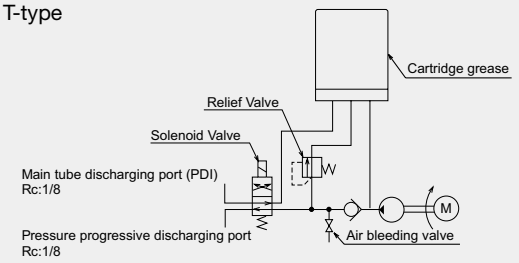
S	Positive Displacement Injector(PDI) System
T	Positive Displacement Injector(PDI) System and Progressive System

*If it's 8MPa, it must be only Positive Displacement Injector(PDI) System

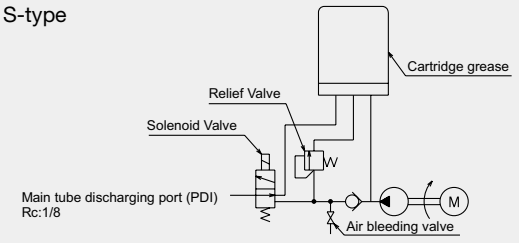
8	8MPa (Only for LHL System)
10	10MPa

Hydraulic circuit diagram

T-type



S-type



Model

Model	Part Number
EGMEII-10S-4-7CL	103922
EGMEII-10S-4-7CLFB	103923
EGMEII-10T-4-7CL	103932
EGMEII-8S-4-7CLFB-LHL	103921
EGMEII-8S-4-7CL-LHL	103920

Specifications

Power	DC24V
Power Consumption	28.8W
Discharge pressure	8MPa (Only for LHL System)
	10MPa
Maximum discharging time	No restriction
Minimum interval time	10 seconds
Wiring method	Terminal connection
Manual override switch	Yes (Optional: Only PDI system) *
Grease level switch	Yes
Solenoid cover	Non combustible plastic (UL94-V0)
Protection class	IP54
CE approval	Yes
Pump air bleeding valve	Yes
Weight	2.0kg (With manual operating switch: 2.1kg)

* Although the Manual Override Switch provides a dry contact to activate the pump, its capacity is not sufficient to sustain the power required to operate the pump. Therefore, the power needs to be provided directly to the pump from the machine control panel. See wiring diagram P.42.

Directions for use

- Use recommended grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium grease. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases containing substances that attack brass or rubber.
- When the cartridge is changed, take care that foreign particles are not introduced to pump.
- Do not discharge continuously.
- After changing the cartridge, bleed the air inside the pump by opening the air bleeding valve.

Related parts


MG2 metering valve : P.61


MG2C metering valve : P.61


JVPA Junction : P.62


MG2I metering valve : P.63


MGLA metering valve : P.65


GPL pressure switch : P.66


Pressure gauge : P.95

Main tubing : P.203


Adapter assemblies : P.217

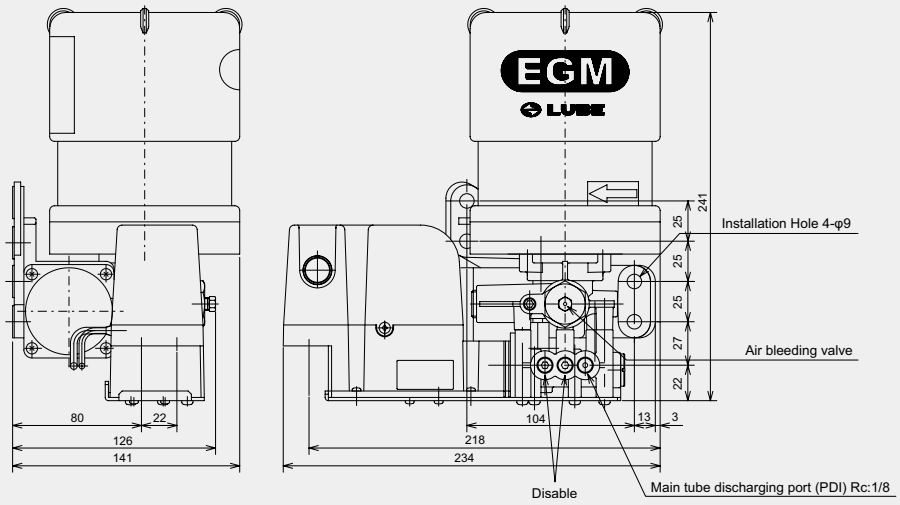

LUBE original grease : P.89


LHL-X100 : P.90

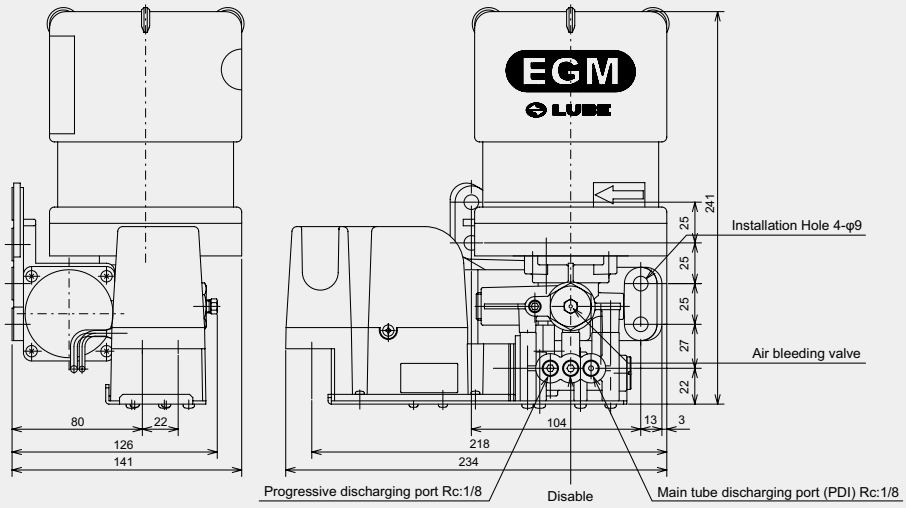

Controller : P.93

Dimensional drawing

[EGME II-10S-4-7CLFB]

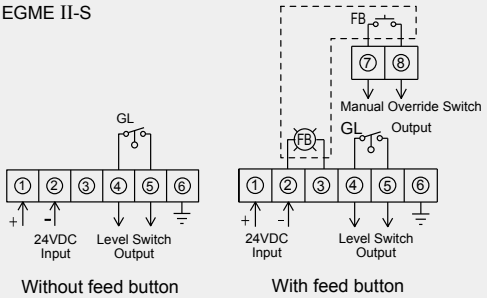


[EGME II-10T-4-7CL]



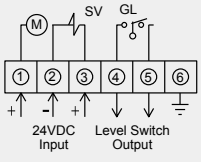
Wiring diagram

EGME II-S



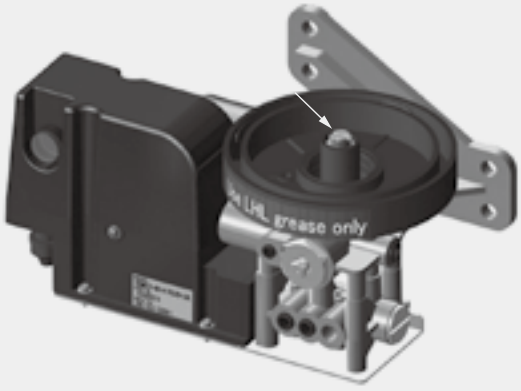
Without feed button　　With feed button

EGME II-T



Without feed button

Grease level switch



Multi-Port Centralized Lubrication System

YMT

■ [YMT]

Cartridge type grease pump

YMT

The only centralized lubrication system that offers grease cartridges. Suitable to lubricate industrial machines working in various and severe environments.

Model Reference

Pumping unit

6	Discharge volume 2ml/min (539291)
8	Discharge volume 3.9ml/min (539292)

YMT–□–□T–□

Quantity of pumping unit 1 – 5

Capable of controlling up

3	Maximum 3
5	Maximum 5

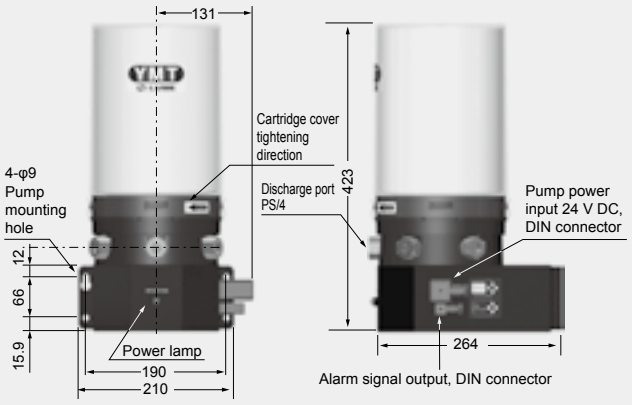
Specifications

Discharge Pressure	Rated 25MPa, Maximum 35Mpa
Discharge Volume	2.1ml/min. (with 6mm Dia. Pumping Unit) 3.9ml/min. (with 8mm Dia. Pumping Unit)
Number of Pumping Unit	1 to 3 Units or 1 to 5 Units(The number of pumping units varies depending on model.)
Voltage	24VDC ± 10%
Reservoir Capacity	4 Liter LUBE Original Grease Cartridge
Grease	Specified grease for YMT (NLGI No. 000 to 2)
Alarm Outputs	Grease Level Alarm , No Cartridge Alarm
Weight	6kg (Without cartridge)

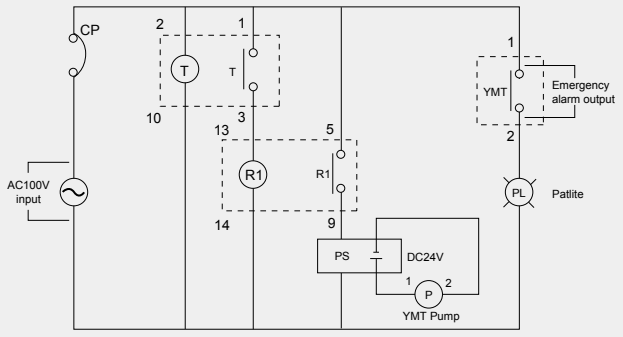
Model

Model	Part Number
LHLPX1	103990

Dimensional drawing



Electric circuit drawing



Directions for use

- Use recommended grease only
- Never use greases containing molybdenum disulfide.
- Use lithium grease. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases containing substances that attack brass or rubber.
- Avoid continuous operation

Related parts

SP series progressive valve
: P.77

Main tubing
: P.203

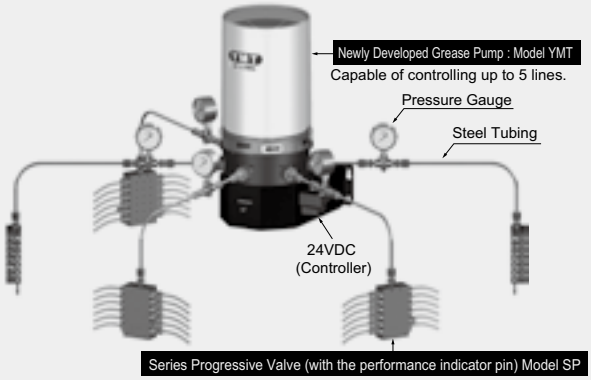
Adapter assemblies
: P.217

Pneumatic pump for pail
: P.96

Cartridge
: P.46

Controller
: P.46

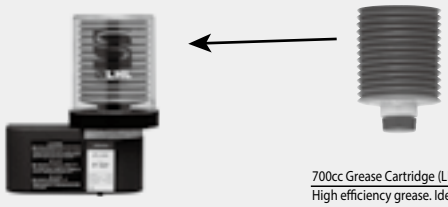
Multi-Port Centralized Lubrication System YMT



Lube offers ferrography analysis to check lubrication conditions.
* Free of charge for the first analysis.

Why Grease Cartridges?

Grease cartridges are not only easy to replace but also prevent the introduction of air and/or foreign substances into the system during grease refilling, thus insuring a steady delivery of clean grease to lubrication points.



700cc Grease Cartridge (LHLX100)
High efficiency grease. Ideal for upgrades and retrofits

Cartridge pump
All-weather reinforced plastic
Integrated low level switch

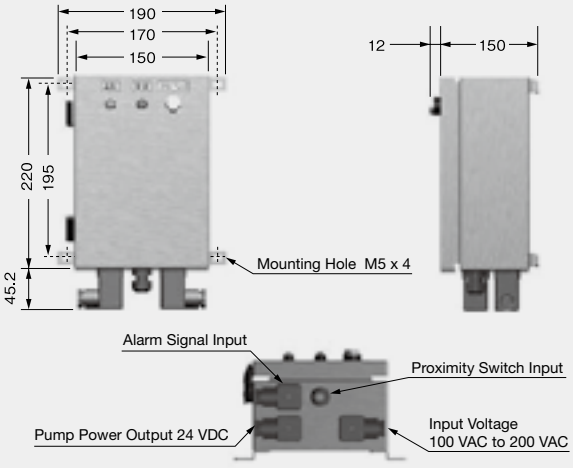
Advantages of LUBE Cartridge Pump
- Significantly reduces grease refilling time comparing to a conventional reservoir pump.
- Eliminates the introduction of air and/or foreign substances during storage and/or refilling.
- Prevents mixing different kinds of grease which causes performance degradation and/or solidification of grease.
- Prevents contamination of working environment around machines often seen during refilling procedure for a conventional reservoir pump.

Lube Original Grease Cartridge Specified for the YMT Centralized Lubrication System (Large 4 liter capacity eliminates need for frequent replacement.)

The original grease cartridges for LUBE centralized lubrication systems were developed from over 30 years of experience.

MP2 High-performance General Purpose Grease for Industrial Machines.	Lithium-based grease for general industrial machines with extreme pressure properteis and a wide range of applications.
YM2 High Load and High Pressure Grease	Grease containing organic molybdenum with excellent heavy load carrying capacity, abrasion resistance and seizure resistance.

YMT Pump Controller

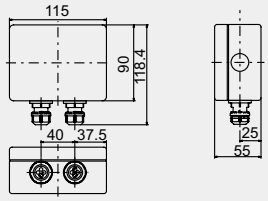


Controller Specifications

Input Voltage	AC100V, AC200V 50/60Hz
Discharge Volume Control	Timer or Count
Discharge Time	(Selectable) 1 to 99 minutes (1-minute increments)
Number of Count	1 to 99 counts (1-count increments)
Interval	1 to 99 hours (1-hour increments)
Alarm Detection	- Grease Level - No Cartridge - Pressure Alarm - Valve Malfunction (Count Mode only)
Alarm Signal Output	Normally Open or Normally Closed Rated Load : 200V 2A or less
Input Signal	Proximity Switch Number of Signal Input : 1 to 5
Protection Class and Standards	CE (Applied), IP65

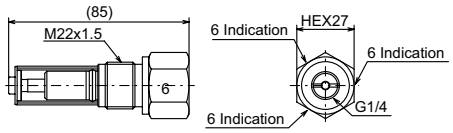
Model	Part Number
YMT-C-E-S-AC	300421

Terminal box



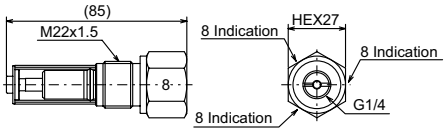
Model	Part Number
YMT-TBOX	300423

Pumping unit



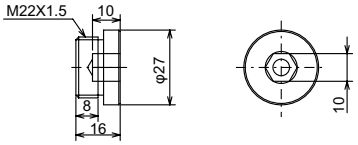
Model	Part Number
PUY-6	539291

Material: SCM435H



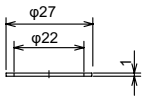
Model	Part Number
PUY-8	539292

Material: SCM435H



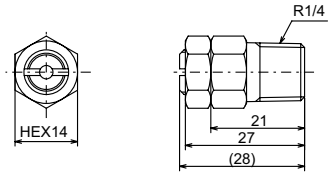
Model	Part Number
BPY	530911

Material: A2011



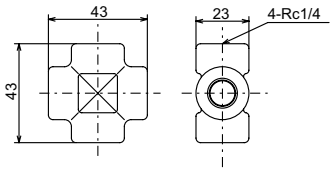
Model	Part Number
SWY	530910

Material: Teflon



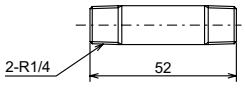
Model	Part Number
RTY	539310

Material: S45C



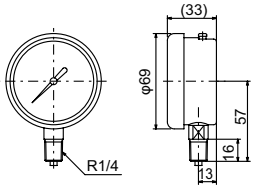
Model	Part Number
JVY	530937

Material: S45C



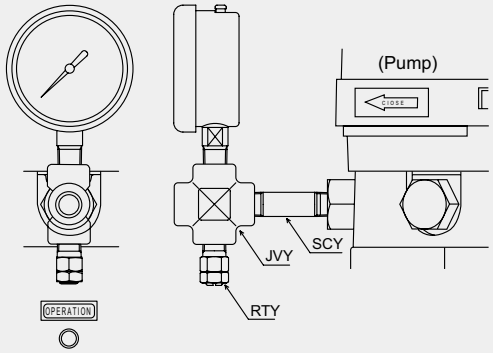
Model	Part Number
SCY	550130

Material: SGP



Model	Part Number
GV50-R	500649

Assembly



Positive Displacement Injector (PDI) System for Small-Medium Machines

GMS-4-8P

EGM-10S-4-7C

EGH-3P

EGH-4C

GAS

■ [Pump]

Positive Displacement Injector (PDI) System

GMS

Motor driven piston pump with refillable reservoir.

[GMS-4-3P]

[GMS-4-8P]

Model Reference

GMS– 4 □ – □ P

Tye of reservior

P	Reservior type

Reservior capacity

3	260mℓ
8	800mℓ

Grease level switch

Blank	Without
L	With

Voltage

4	DC24V

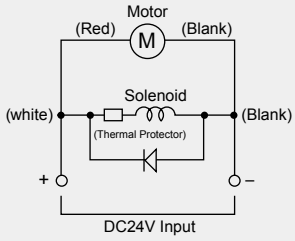
Specifications

Pump	Discharge volume	20mℓ/min
	Discharge pressure	8.0MPa
Power DC24V	Motor	15W/0.65A
	Pressure relief solenoid	30W/1.25A
	Total	45W/1.9A
Maximum run time	7.5 min	
Depressurization time	Minimum interval time: 1 hour	
Working consistency	NLGI No.000, 00, 0 and 1 (Lithium grease)	
Recommended greases	MP0, FS2	
Weight	1.8kg(3P), 2.8kg(8P)	
Pressure relief	Built-in solenoid	
Grease level switch (Option)	Contact type	NC, OFF at low level
	Contact capacity	AC250V 2A DC30V 3A (Smaller one)

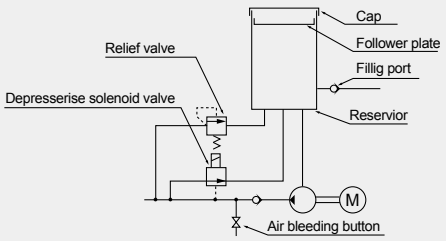
Model

Model	Part Number
GMS-4-3P	103624
GMS-4-8P	103625
GMS-4L-3P	103619
GMS-4L-8P	103654

Wiring diagram



Hydraulic circuit drawing



Directions for use

- Use recommended grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium grease. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use grease containing substances that attack brass or rubber.
- When filling the reservoir, take care that foreign particles are not introduced into the grease or the pump.
- Do not discharge continuously.
- Follow air-bleeding procedure after refilling.
- For normal operation or main tube filling, adhere to the 3 to 1 ratio for off time to running time, not exceeding 7.5 minutes run time. Failure to follow this could result in permanent damage to the solenoid, preventing the pump from building pressure.

Related parts

MG2 metering valve
: P.61

MG2C metering valve
: P.61

JVPA Junction
: P.62

MG2I metering valve
: P.63

MGLA metering valve
: P.65

GPL pressure switch
: P.66

Pressure gauge
: P.95

Main tubing:
P.203

Adapter assemblies
: P.217

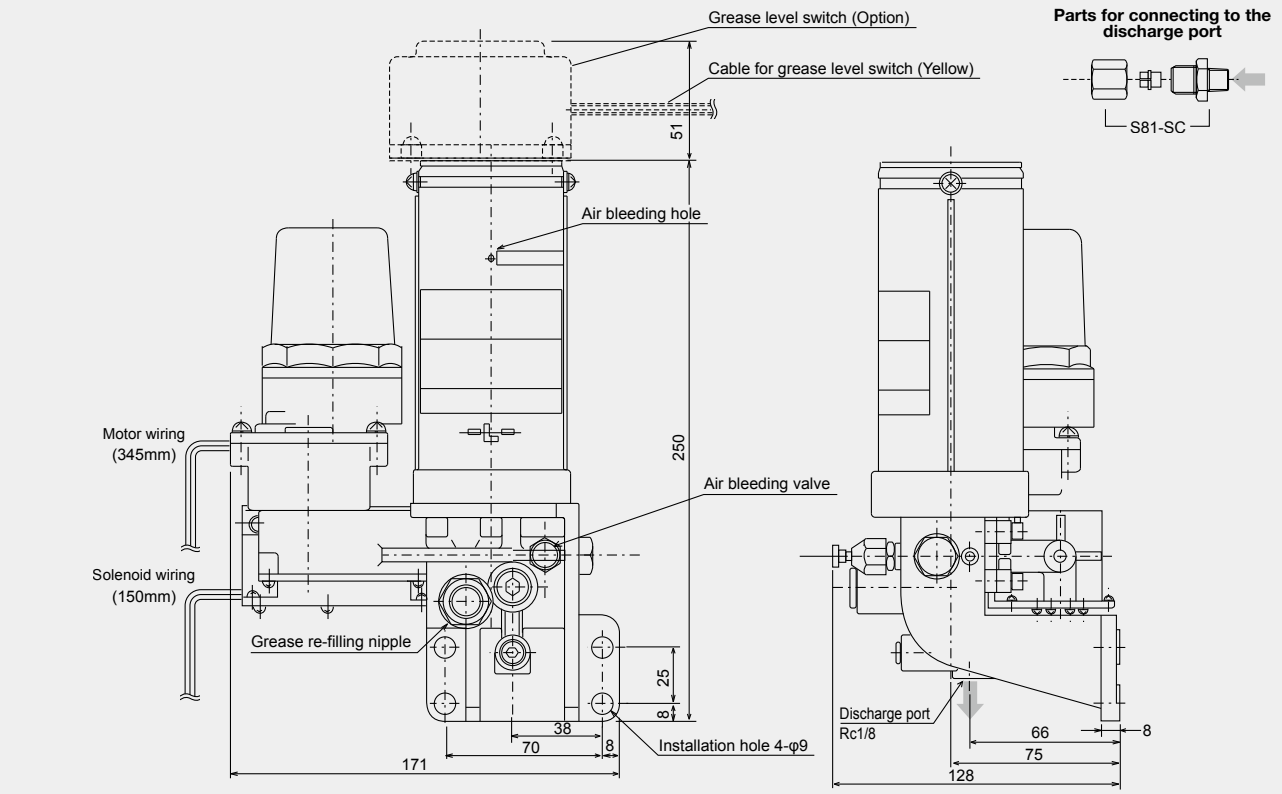
Pneumatic pump for pail
: P.96

Hand grease gun
: P.96

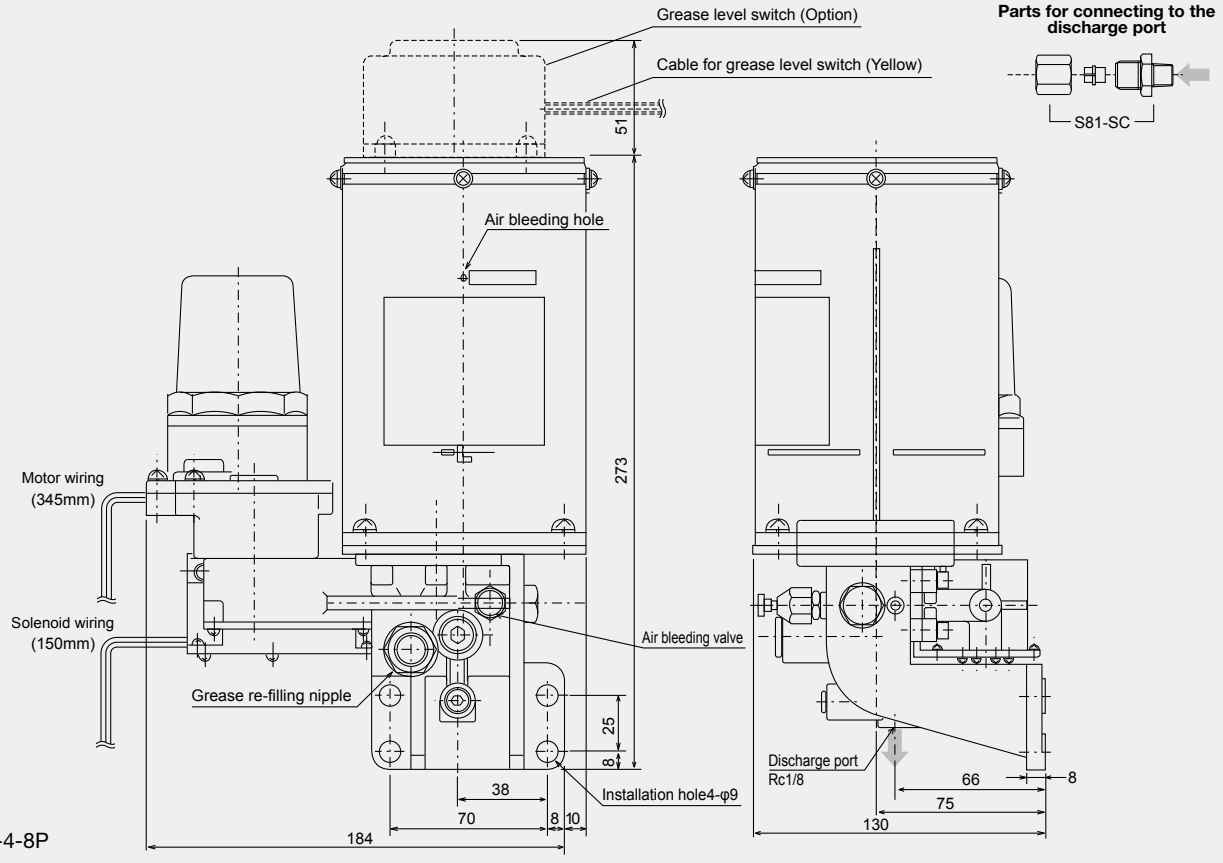
Lub pack
: P.96

Controller
: P.93

Dimensional drawing



GMS-4-3P



GMS-4-8P

Positive Displacement Injector (PDI) System

EGM

Motor driven piston pump for cartridge grease

[EGM-10S-4-4C]

[EGM-10S-4-7C]

Model Reference

EGM－10S－4－□C

Type of reservoir

C	Cartridge type

Cartridge

2	200mℓ
4	400mℓ
7	700mℓ

Model

Model	Part Number
EGM-10S-4-2C	103809
EGM-10S-4-4C	103810
EGM-10S-4-7C	103811

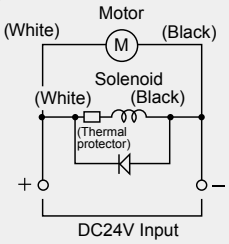
Specifications

Pump	Discharge volume	10mℓ/min
	Discharge pressure	10MPa
Power DC24V	Motor	20W/0.8A
	Pressure relief solenoid	26W/1.1A
	Total	46W/1.9A
Maximum run time	7.5 min.	
Power distribution rate	Max.25% (20°C)	
Working consistency	NLGI No.000,00,0,1	
Recommended grease	MP0, FS2, MT1	
Cartridge size	200mℓ , 400mℓ , 700mℓ	
Weight	1.8kg (4C) , 2.8kg (7C)	
Pressure relief	Built-in solenoid	

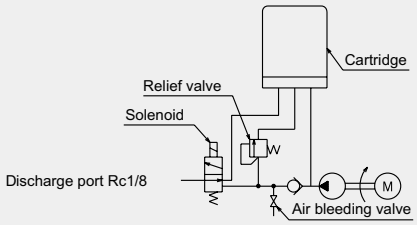
Directions for use

- Use recommended grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium greases. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases which may contain substances that attack brass or rubber.
- When refilling, take care not let foreign matter in the grease.
- Avoid continuous operation.
- For normal operation or when filling grease into the main tubing, please remember to adhere to the 3 to 1 ratio for off time to running time not exceeding 7.5 minutes. Failure to follow this could result in permanent damage to the solenoid not allowing the pump to ever build pressure.

Wiring diagram



Hydraulic circuit drawing



Related parts

MG2 metering valve
: P.61

MG2C metering valve
: P.61

JVPA Junction
: P.62

MG2I metering valve
: P.63

MGLA metering valve
: P.65

GPL pressure switch
: P.66

Pressure gauge
: P.95

Main tubing
: P.203

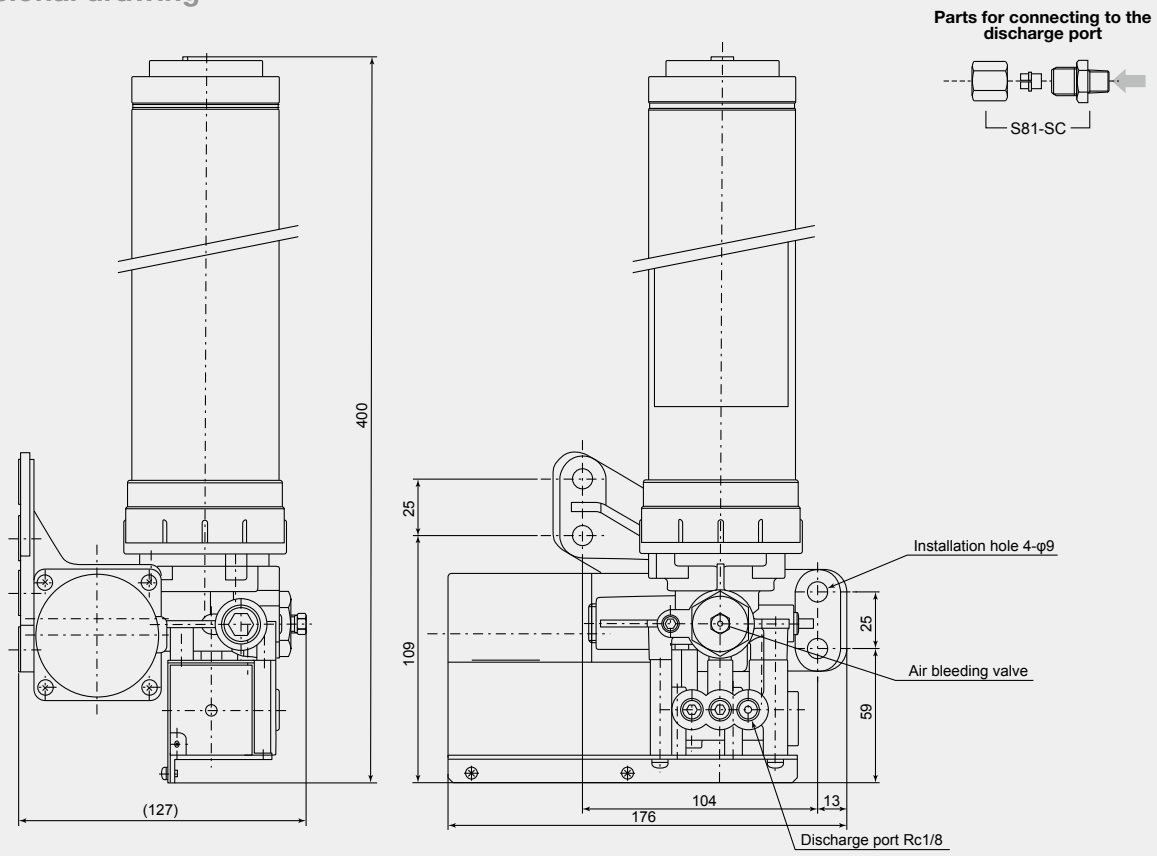
Adapter assemblies
: P.217

LUBE original grease
: P.89

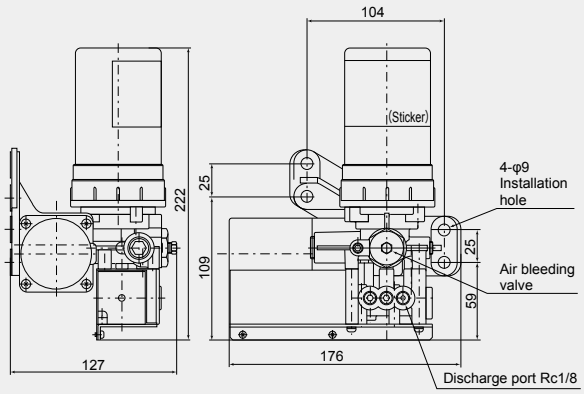
LHL-X100
: P.90

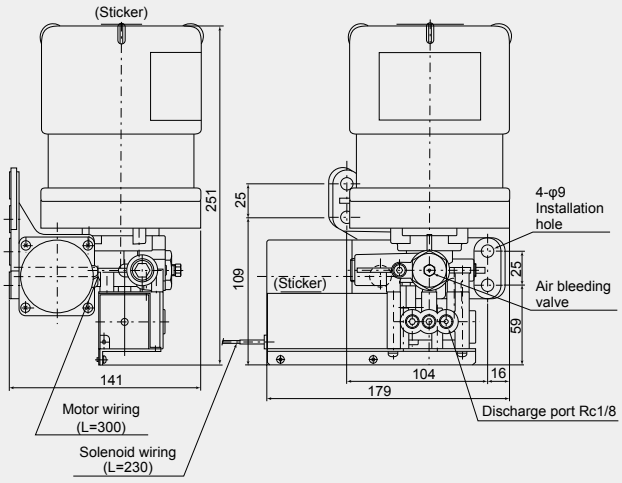
Controller
: P.93

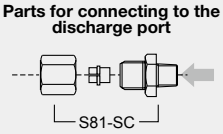
Dimensional drawing



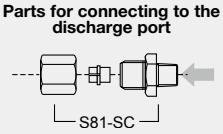
[EGM-10S-4-4C]







[EGM-10S-4-2C]



[EGM-10S-4-7C]

Positive Displacement Injector (PDI) System

EGH

Compact, low-cost manually operated pump

Reservoir type
[EGH-3P]

Cartridge type
[EGH-2C]

Cartridge type
[EGH-4C]

Model Reference

EGH-□□

Type of reservoir (effective capacity)

3P	Reservoir type (260mℓ)
2C	Cartridge type (200mℓ)
4C	Cartridge type (400mℓ)

Model

Model	Part Number
EGH-2C	103780
EGH-3P	103783
EGH-4C	103782

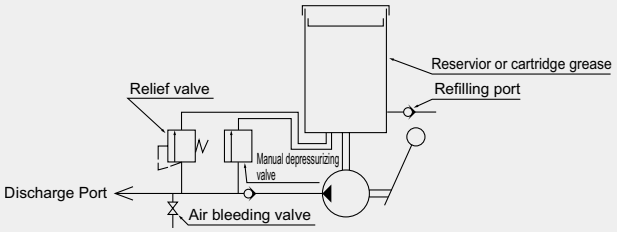
Directions for use

- Use recommended cartridge grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium greases. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases containing substances that attack brass or rubber.
- When refilling reservoir or replacing cartridge, take care not to let foreign matter into the grease or pump.
- After refilling reservoir or replacing cartridge, bleed air from the pump by opening the air bleeding valve.
- Always return operating lever to locked position to relieve system pressure.

Specifications

EGH-3P		
Pump	Discharge volume	1mℓ/stroke
	Discharge pressure	10MPa (safety valve set pressure)
Working consistency		NLGI No.000, 00, 0, 1 (lithium grease)
Recommended grease		MP0, FS2, MT1
Reservoir Size		260mℓ
Weight		1.4kg
Pressure relief		Manual pressure relief lever
EGH-2C / EGH-4C		
Pump	Discharge volume	1mℓ/stroke
	Max Discharge pressure	10MPa (safety valve set pressure)
Working consistency		Cartridge grease No.000, 00, 0, 1 (lithium grease)
Recommended grease		MP0, FS2, MT1
Cartridge size		200mℓ, 400mℓ Cartridge
Weight		1.4kg
Pressure relief		Manual pressure relief lever

Hydraulic circuit drawing



Related parts

MG2 metering valve
: P.61

MG2C metering valve
: P.61

JVPA Junction
: P.62

MG2I metering valve
: P.63

Pressure gauge
: P.95

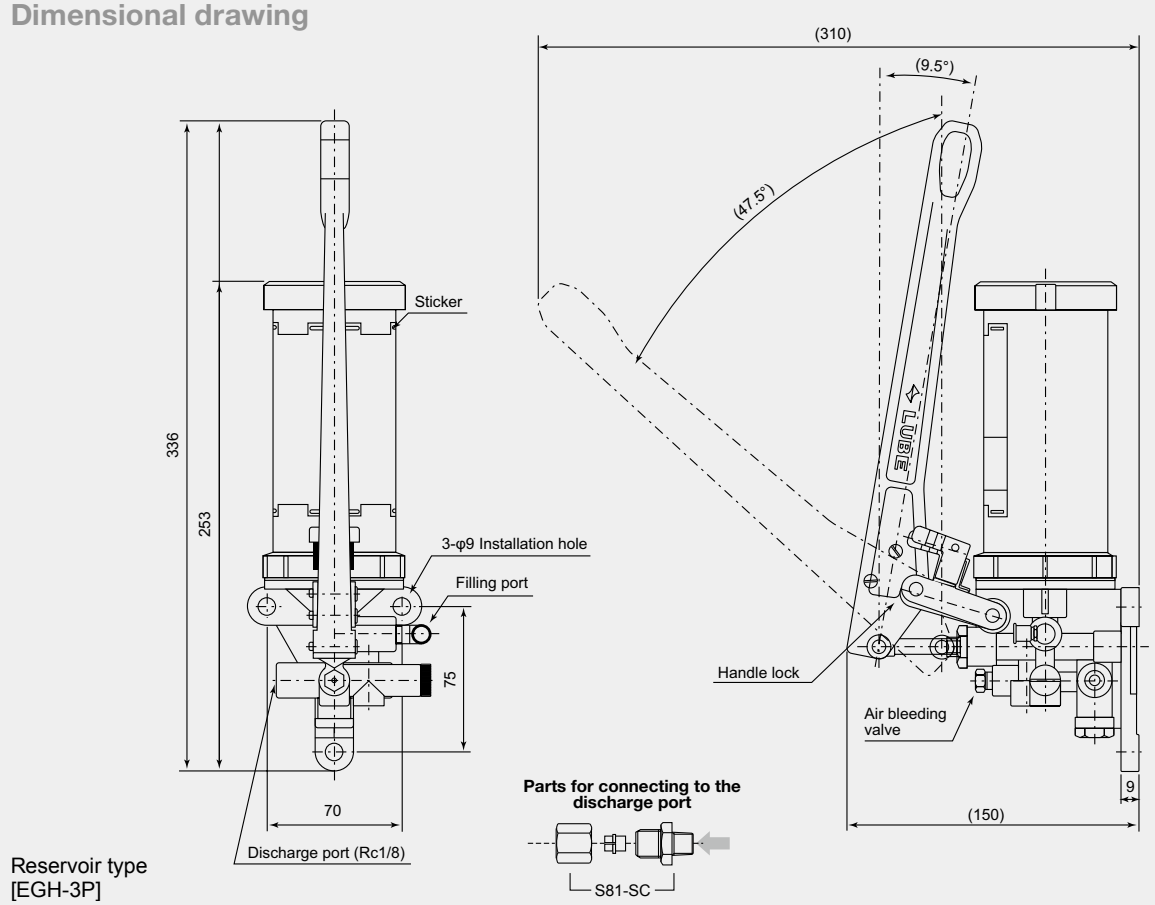
Main tubing
: P.203

Adapter assemblies
: P.217

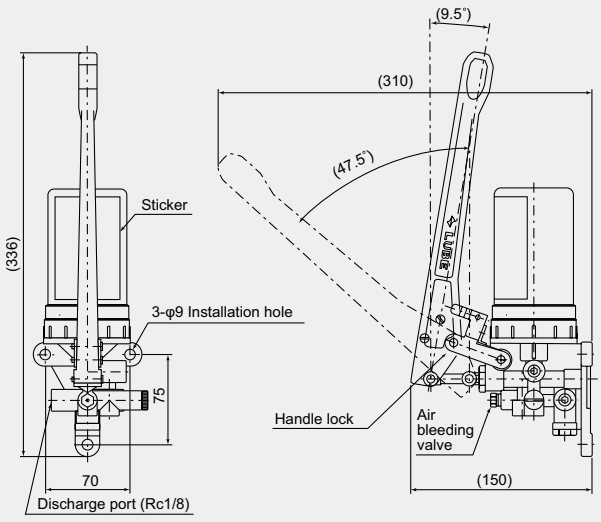
Pneumatic pump for pail
: P.96

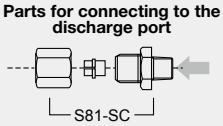
LUBE original grease
: P.89

Dimensional drawing

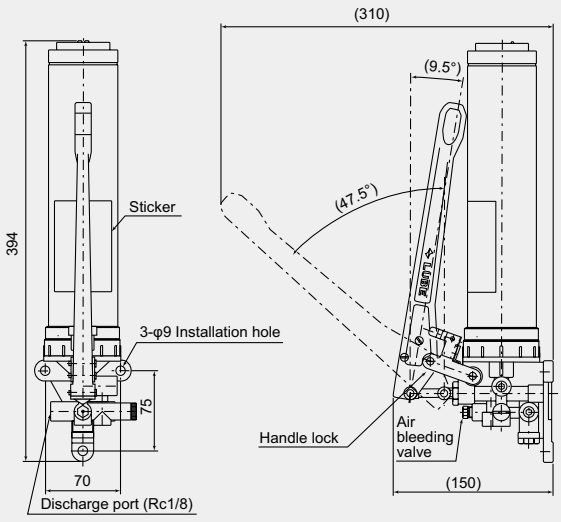


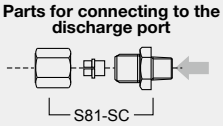
Reservoir type
[EGH-3P]





Cartridge type
[EGH-2C]





Cartridge type
[EGH-4C]

Pneumatic grease pump

GAS

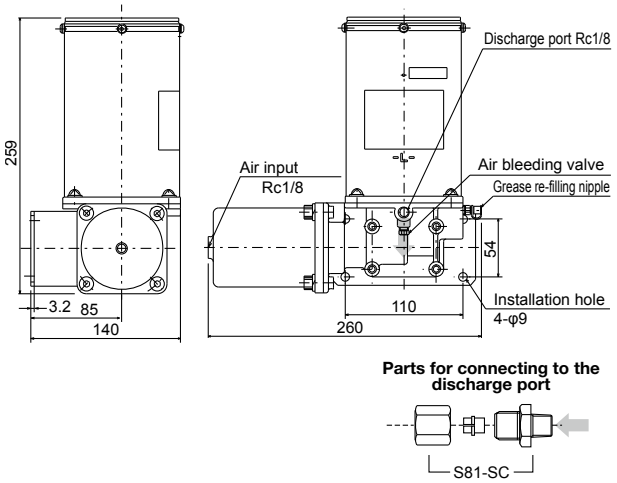
Pneumatically operated grease pump for use with metering valves, or as a simple dispenser. Suitable for explosion-proof applications.

[GAS-8P]

Specifications

Pump	Discharge volume	16mℓ/Stroke(MAX)
	Discharge pressure	1:7 Air pressure / Grease pressure ratio. (E.g. : Air pressure 0.3MPa×7=2.1MPa)
Available air pressure range	0.3 - 0.56MPa(MAX)	
Working consistency	NLGI No.000, 00, 0 and 1 (Lithium grease)	
Recommended grease	MP0, FS2	
Grease level switch	Optional	
Reservoir capacity	800mℓ	
Weight	3.6kg	
Pressure relief	Automatic	

Dimensional drawing



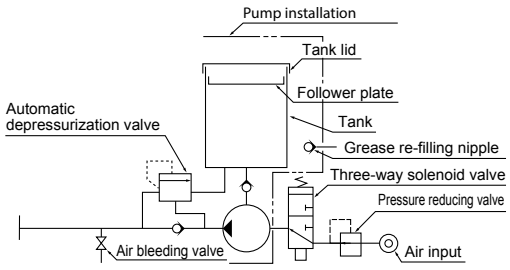
Model

Model	Part Number
GAS-8P	102621

Directions for use

- Use recommended grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium greases. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases containing substances that attack brass or rubber.
- When refilling reservoir, take care that foreign particles are not introduced.
- Do not discharge continuously.
- After refilling reservoir, bleed the air inside the pump by opening the air bleeding valve.

Hydraulic circuit drawing



Related parts


MG2 metering valve : P.61


MG2C metering valve : P.61


JVPA Junction : P.62


MG2I metering valve : P.63


GPL pressure switch : P.66


Pressure gauge : P.95

Main tubing : P.203


Adapter assemblies : P.217


Three-way solenoid valve : P.99


Filter regulator : P.99


Pneumatic pump for pail : P.96

Hand grease gun : P.96


Lub pack : P.96

Positive Displacement Injector (PDI) System for Small-Medium Machines

MU · MDP

MG2 · MG2C

JVPA

MG2I

MGLA

GPL

■ [Valve]

Metering valves for LHL system

S Series MU

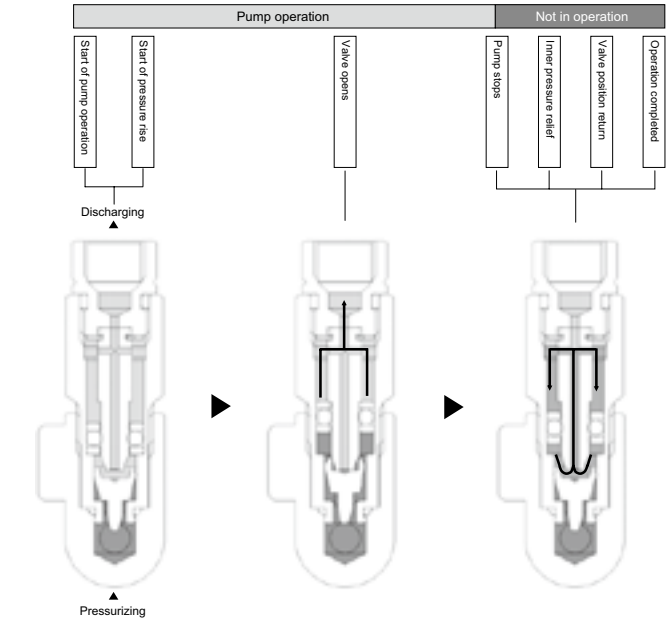
Junction mounted Positive Displacement Injectors. Designed with lower operating pressure. Suitable for use only with LHL and the P-107 pump. MU Injectors are available with 3 distinct connection types.

[MU-10] [MU-10N] [MU-10C]

Specifications

Operating pressure	1.5MPa
Reset pressure	0.4MPa

Operation chart



Pressure rises, discharge cycle starts (start of pressure build up)

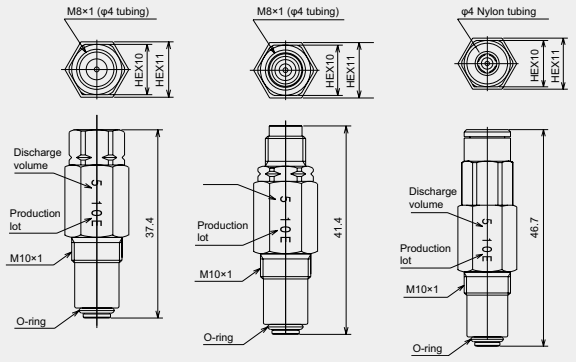
Grease discharge complete (maximum pressure)

Upper chamber refills (piston returns to home position)

Model

Model	Part Number	Discharge volume (mℓ)	Con-nection method	L (mm)	Mark	
MU-5	205872	0.05	Bushing	37.4	5	HEX11
MU-10	205873	0.1			10	
MU-20	205874	0.2		50.4	20	
MU-30	205935	0.3		57.8	30	
MU-50	205936	0.5		57.8	50	
MU-5N	205912	0.05	Nut	41.4	5	
MU-10N	205913	0.1			10	
MU-20N	205914	0.2		54.4	20	
MU-30N	205915	0.3		61.8	30	
MU-50N	205916	0.5		61.8	50	
MU-5C	205922	0.05	Push in fitting	46.7	5	
MU-10C	205923	0.1			10	
MU-20C	205924	0.2		59.7	20	
MU-30C	205925	0.3		66.1	30	
MU-50C	205926	0.5		67.1	50	

Dimensional drawing



[MU-5] [MU-5N] [MU-20N]

Related parts

P-107
: P.37

Pressure gauge
: P.95

Main tubing
: P.203

Branch tubing
: P.203

Adapter assemblies
: P.217

Compression parts
: P.201

Adapters
: P.207

KEN-T
: P.220

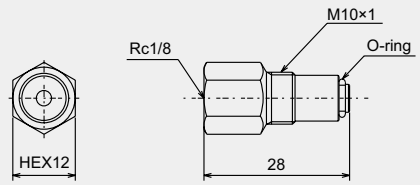
KEN-M
: P.220

*Production lot is indicated by a number and letter code. Number indicates year of production, letter indicates month of production. [A(January)-L(December)]

MU Valve Junctions & Special Fittings

For MU small metering valve installation

Dimensional drawing

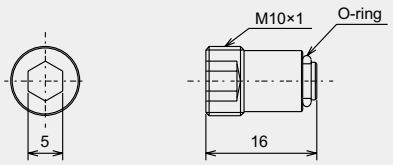


[Connector assembly]

Model

Model	Part Number
MU-SC	619841

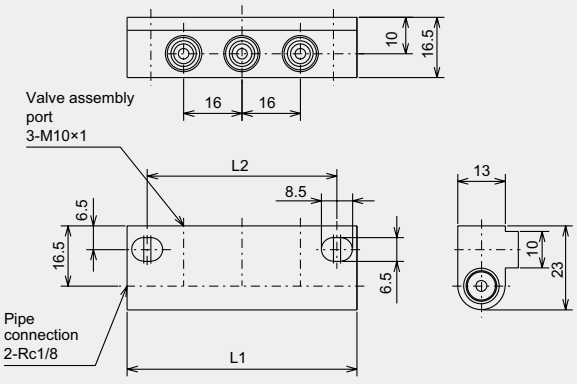
Material: Brass (C3604)



[Plug assembly]

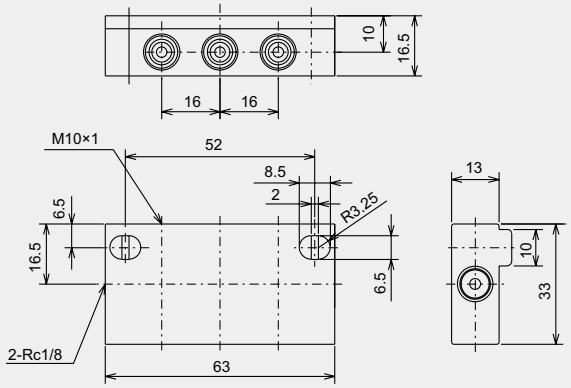
Model	Part Number
MU-BP	619840

Material: Steel (SUM24)



[Junction MUJ-3S]

Model	Part Number	Specifilcation	L¹	L²
MUJ-1S	216101	Single type for 1 port	31	20
MUJ-2S	216102	Single type for 2 ports	47	36
MUJ-3S	216103	Single type for 3 ports	63	52
MUJ-4S	216104	Single type for 4 ports	79	68
MUJ-5S	216105	Single type for 5 ports	95	84
MUJ-6S	216106	Single type for 6 ports	111	100
MUJ-7S	216107	Single type for 7 ports	127	116
MUJ-8S	216108	Single type for 8 ports	143	132
MUJ-9S	216109	Single type for 9 ports	159	148
MUJ-10S	216110	Single type for 10 ports	175	164



[Junction MUJ-6D]

Model	Part Number	Specifilcation	L¹	L²
MUJ-2D	216121	Double type for 2 ports	31	20
MUJ-4D	216122	Double type for 4 ports	47	36
MUJ-6D	216123	Double type for 6 ports	63	52
MUJ-8D	216124	Double type for 8 ports	79	68
MUJ-10D	216125	Double type for 10 ports	95	84
MUJ-12D	216126	Double type for 12 ports	111	100
MUJ-14D	216127	Double type for 14 ports	127	116
MUJ-16D	216128	Double type for 16 ports	143	132

Material: Aluminium (A6063S-T5)

Metering valves for LHL system

S Series MDP

MDP (Metering Direct Plunger) valves are designed to be installed at the lubrication point. Minimizes clogging due to separation and allows further monitoring of main line pressure.

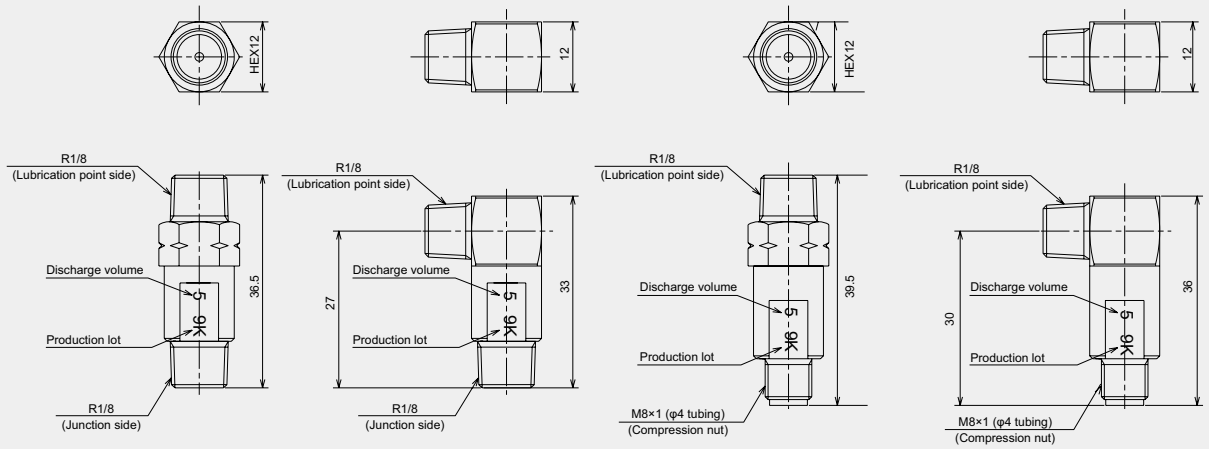
Specifications

Operating pressure	1.5MPa
Reset pressure	0.4MPa

Model

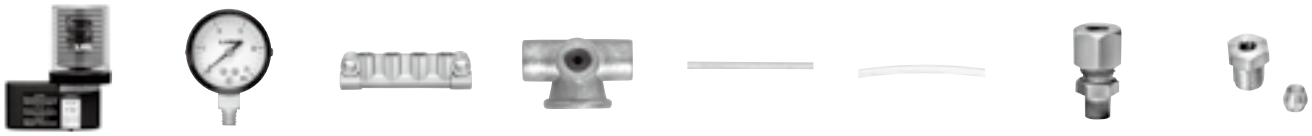
Model	Part Number	Discharge volume (mℓ)	L (mm)	Mark
MDP-3S	205891	0.03		3
MDP-5S	205892	0.05	39.5	5
MDP-10S	205893	0.1		10
MDP-3E	205896	0.03		3
MDP-5E	205897	0.05	36	5
MDP-10E	205898	0.1		10
MDP-3HS	205901	0.03		3
MDP-5HS	205902	0.05	36.5	5
MDP-10HS	205903	0.1		10
MDP-3HE	205906	0.03		3
MDP-5HE	205907	0.05	33	5
MDP-10HE	205908	0.1		10

Dimensional drawing



[MDP-5HS] [MDP-5HE] [MDP-5S] [MDP-5E]

Related parts

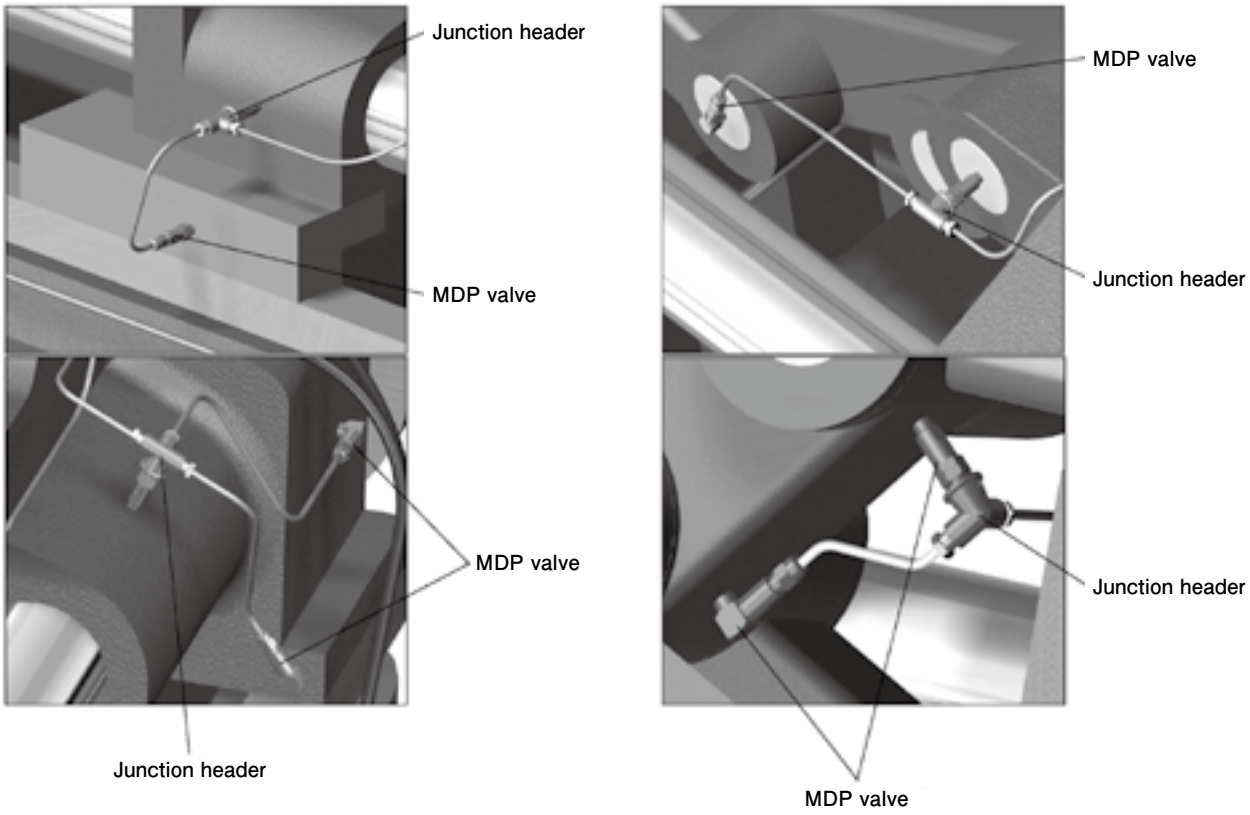


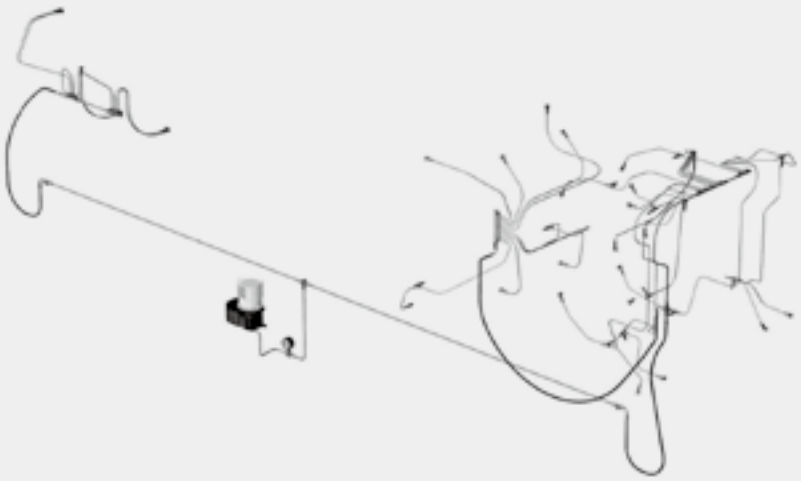
P-107 : P.37 | Pressure gauge : P.95 | Junction : P.163 | Junction header : P.165 | Main tubing : P.203 | Branch tubing : P.203 | Adapter assemblies : P.217 | Compression parts : P.201

Adapters : P.207 | KEN-T : P.220 | KEN-M : P.220

*Production lot is indicated by a number and letter code. Number indicates year of production, letter indicates month of production. [A(January)-L(December)]

Example


Junction header
MDP valve
MDP valve
Junction header
MDP valve
Junction header
Junction header
MDP valve



Grease metering valve
MG2 · MG2C

Positive displacement injectors for use with metal or nylon tail tubing.

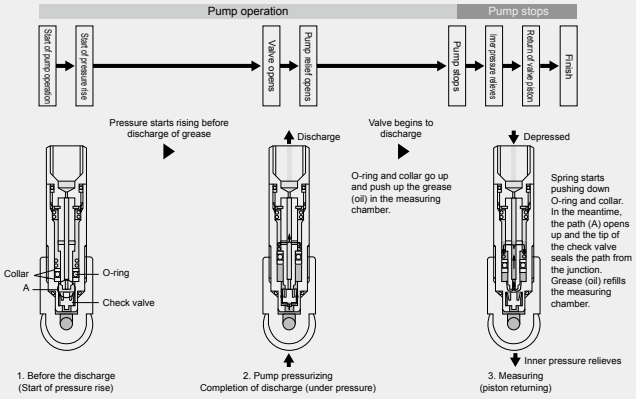
[MG2 . MG2C]

Specifications

Operating pressure	2.5MPa
Reset pressure	1.4MPa

*Grease valve have grooving as shown in the picture.

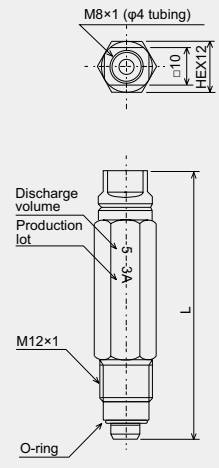
Operation chart



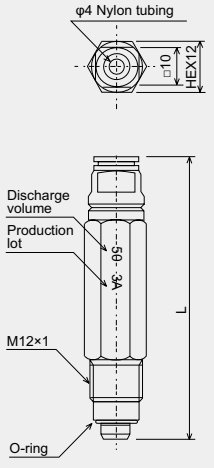
Model

Model	Part Number	Discharge volume (mℓ)	L (mm)	Mark	
MG2-3	205741	0.03	48	3	HEX12
MG2-5	205742	0.05		5	
MG2-10	205743	0.1		10	
MG2-20	205744	0.2	64	20	
MG2-30	205745	0.3		30	
MG2-50	205746	0.5		50	
MG2C-3	205731	0.03	53.5	3	
MG2C-5	205732	0.05		5	
MG2C-10	205733	0.1		10	
MG2C-20	205734	0.2	69.5	20	
MG2C-30	205735	0.3		30	
MG2C-50	205736	0.5		50	

Dimensional drawing



[MG2]



[MG2C]

Related parts

GMS-4-8P
: P.49

EGM-10S-4-7C
: P.51

EGH-3P
: P.53

EGH-4C
: P.53

GAS-8P
: P.55

Pressure gauge
: P.95

Main tubing z
: P.203

Branch tubing
: P.203

Adapter assemblies
: P.217

Compression parts
: P.201

Adapters
: P.207

KEN-T
: P.220

KEN-M
: P.220

*MG2C for use with nylon tubing only

**Production lot is indicated by a number and letter code. Number indicates year of production, letter indicates month of production. [A(January)-L(December)]

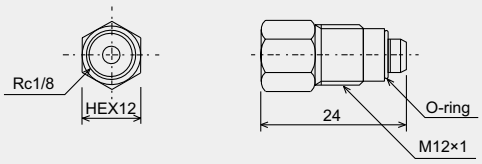
MG2 Valve Junctions & Special Fittings

JVPA

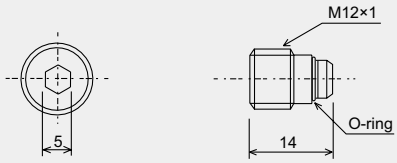
For MG2・MG2C metering valve installation

For piping connection parts, see P. 200

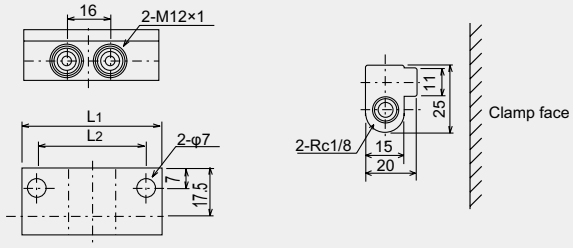
Dimensional drawing



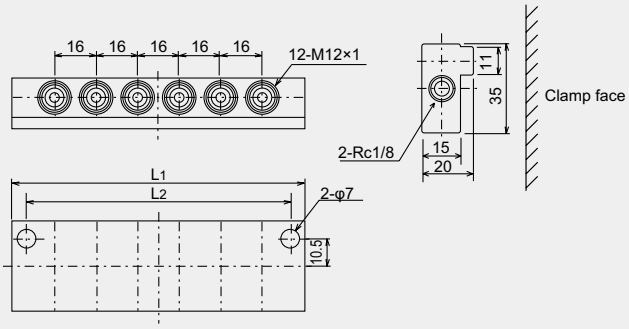
[Connector assembly]



[Plug assembly]



[Junction JVPA-2S]



[Junction JVPA-12D]

Model

Model	Part Number
SCP	619803

Material: Brass (C3604)

Model	Part Number
BPP	619802

Material: Steel (SUM24)

Model	Part Number	Specifilcation	L_1	L_2
JVPA- 1S	216001	Single type for 1 port	33	22
JVPA- 2S	216002	Single type for 2 ports	49	38
JVPA- 3S	216003	Single type for 3 ports	65	54
JVPA- 4S	216004	Single type for 4 ports	81	70
JVPA- 5S	216005	Single type for 5 ports	97	86
JVPA- 6S	216006	Single type for 6 ports	113	102
JVPA- 7S	216007	Single type for 7 ports	129	118
JVPA- 8S	216008	Single type for 8 ports	145	134
JVPA- 9S	216009	Single type for 9 ports	161	150
JVPA-10S	216010	Single type for 10 ports	177	166
JVPA-11S	216011	Single type for 11 ports	193	182
JVPA-12S	216012	Single type for 12 ports	209	198

Model	Part Number	Specifilcation	L_1	L_2
JVPA- 2D	216021	Double type for 2 ports	33	11
JVPA- 4D	216022	Double type for 4 ports	49	38
JVPA- 6D	216023	Double type for 6 ports	65	54
JVPA- 8D	216024	Double type for 8 ports	81	70
JVPA-10D	216025	Double type for 10 ports	97	86
JVPA-12D	216026	Double type for 12 ports	113	102
JVPA-14D	216027	Double type for 14 ports	129	118
JVPA-16D	216028	Double type for 16 ports	145	134

Material: Aluminium (A6063S-T5)

Grease metering valve with clogged line detection
MG2I

Positive displacement injectors with clogging indication.
When there is a clogging issue, the red pin pops out for visual indication of a problem.

[MG2I-30 MG2I-10]

Specifications

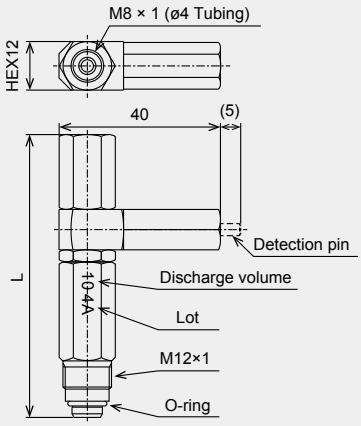
Operating pressure	1.5MPa
Reset pressure	0.5MPa
Detection pin operating pressure	1.5MPa

Material: Brass

Model

Model	Part Number	Discharge volume (mℓ)	L (mm)	Mark
MG2I-5	205822	0.05	70	5
MG2I-10	205823	0.1	70	10
MG2I-20	205824	0.2	86	20
MG2I-30	205825	0.3	86	30
MG2I-50	205826	0.5	86	50

Dimensional drawing



*Production lot is indicated by a number and letter code. Number indicates year of production, letter indicates month of production. [A(January)-L(December)]

Directions for use

- When installing the valve on a junction side, screw it into place with a wrench applied to the valve body.
- When connecting the valve to piping, turn bushing holding nipple with a wrench.

Related parts


GMS-4-8P
: P.49


EGM-10S-4-7C
: P.51


EGH-3P
: P.53


EGH-4C
: P.53


GAS-8P
: P.55


JVAP junction
: P.62


Pressure gauge
: P.95

Main tubing φ8
: P.203

Branch tubing
: P.203


Adapter assemblies
: P.217

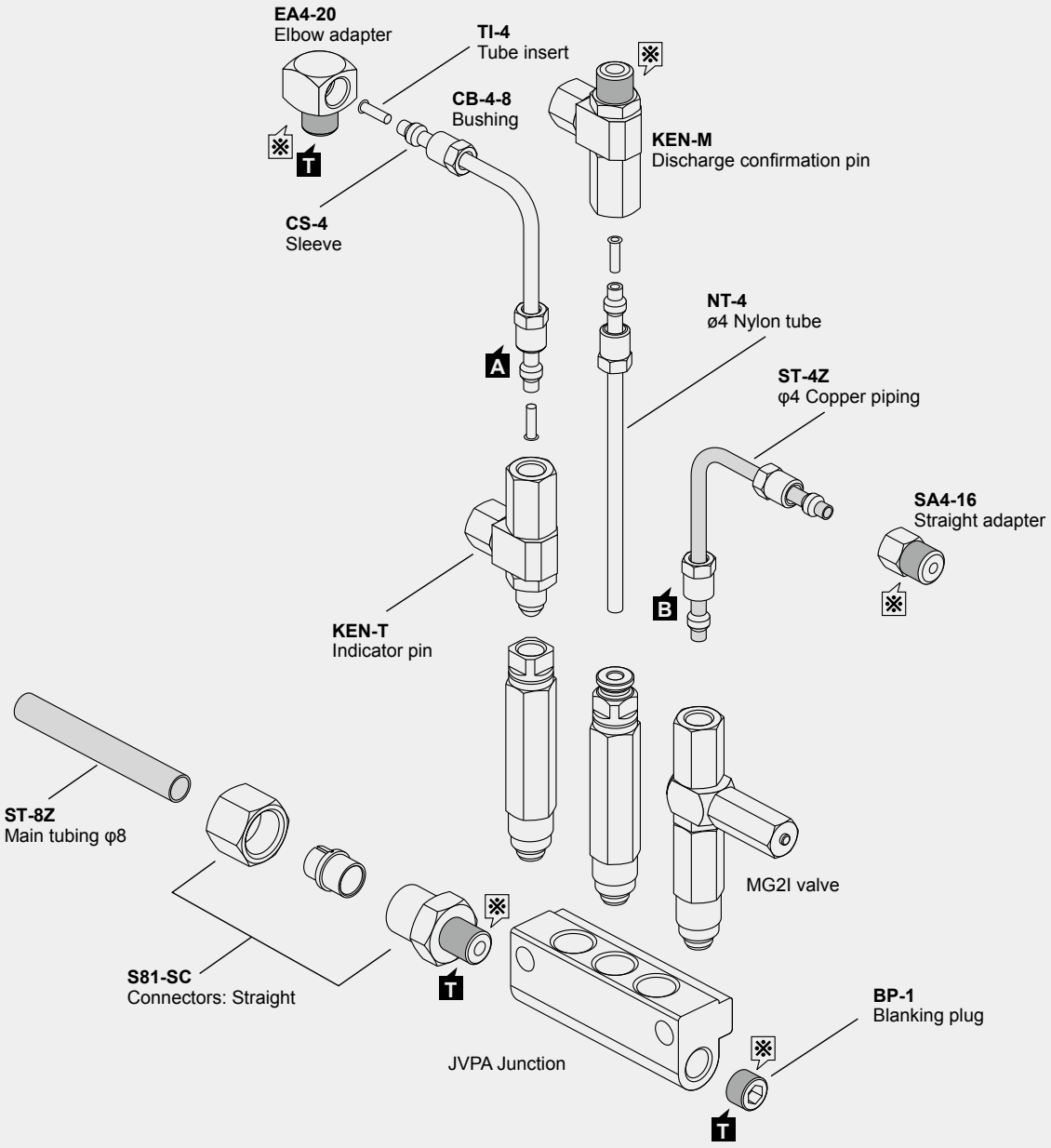

Compression parts
: P.201


Adapters
: P.207


KEN-T
: P.220


KEN-M
: P.220

Piping layout (Example)



Metering valve for grease with electronic performance monitoring

MGLA

[MGLA]

MGLA Valves are designed to be used with grease and incorporate the use of a Micro Switch to allow monitoring of the most critical lubrication points on the machine. They can be wired either normally open, normally closed or both to monitor both pressure rise and pressure relief. Can also be installed near the end of the main tubing to monitor integrity of main line tubing.

Specifications

Discharge volume	0.1, 0.2, 0.3, 0.5mℓ/stroke
Operating pressure	2.5MPa
Reset pressure	1.2MPa
Contact capacity	AC125V 2A AC250V 2A DC30V 2A

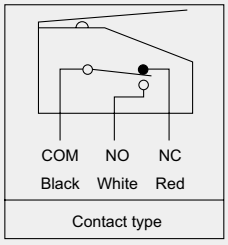
Material:Zinc Die Casting (ZDC)

Model

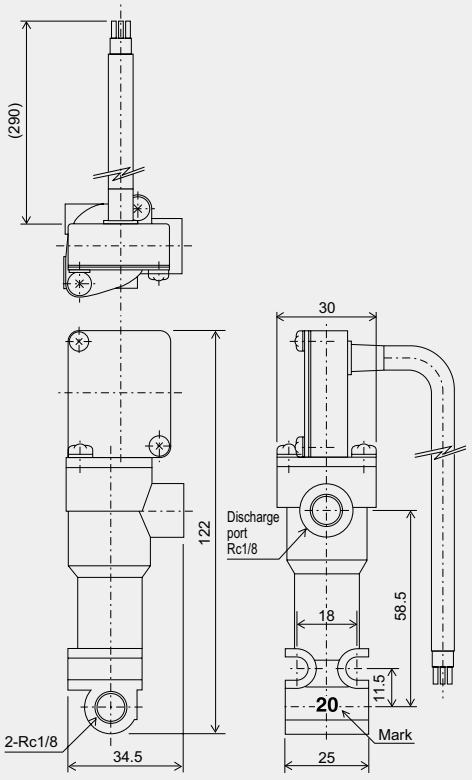
MGLA

Model	Part Number	Discharge volume (mℓ)	Mark
MGLA-10	205515	0.1	10
MGLA-20	205518	0.2	20
MGLA-30	205588	0.3	30
MGLA-50	205589	0.5	50

Wiring diagram



Dimensional drawing



[MGLA-20]

Related parts

GMS-4-8P
: P.49

EGM-10S-4-7C
: P.51

EGH-3P
: P.53

EGH-4C
: P.53

GAS-8P
: P.55

Pressure gauge
: P.95

Main tubing
: P.203

Branch tubing
: P.203

Adapter assemblies
: P.217

Compression parts
: P.201

Adapters
: P.207

KEN-T
: P.220

KEN-M
: P.220

Pressure switch for grease system

GPL

GPL pressure switches are designed to be used with grease and are intended to be installed very near the end of the main line tubing. The design of the GPL allows grease to pass through the body of the switch making them extremely reliable and long lasting. GPL pressure switches are also available with a din plug option.

[GPL-30]

[GPL-30-D]

Specifications

GPL-30

Operating pressure		3.0MPa±20%
Reset pressure		2.5MPa±20%
Max. working pressure		10MPa
Micro switch spec	Rated voltage	AC250V, DC30V, DC24V (only "-D")
	Resistance load	2A(AC250V, DC30V)
	Service life:	200,000 switchings (loaded)
	Structrual protection:	JIS moisture-tight, conforming to IEC IP67

GPL-55

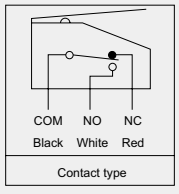
Operating pressure		5.5MPa±0.4MPa
Micro switch spec	Rated voltage	AC250V, DC30V, DC24V (only "-D")
	Resistance load	2A(AC250V, DC30V)
	Service life:	200,000 switchings (loaded)
	Structrual protection:	JIS moisture-tight, conforming to IEC IP67

* Production lot is indicated by a number and letter code. Number indicates year of production, letter indicates month of production. [A(January)-L(December)]

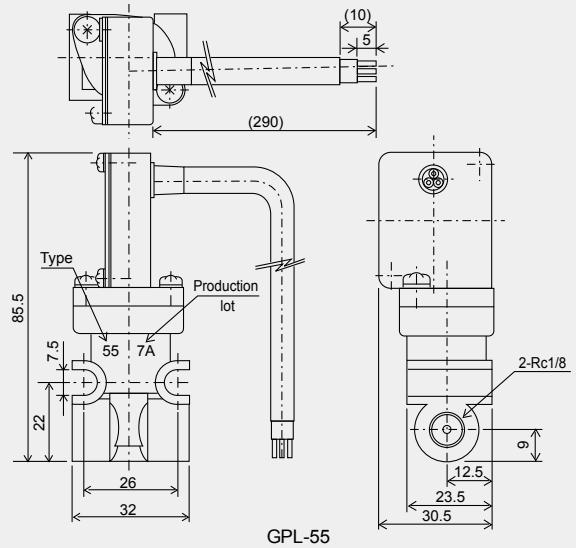
Model

Model	Part Number
GPL-30	209282
GPL-30-D	209409
GPL-55	209392
GPL-55-D	209403

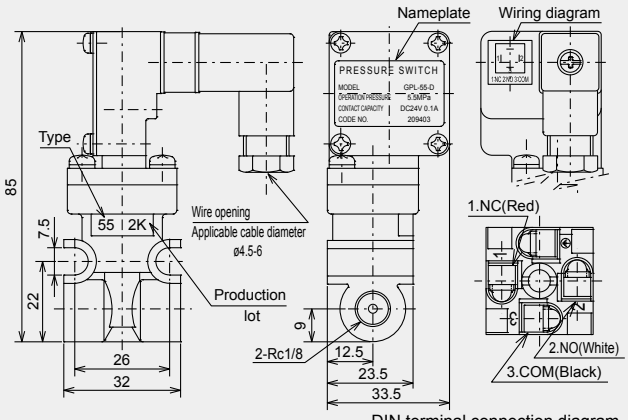
Wiring diagram



Dimensional drawing



GPL-55



GPL-55-D DIN terminal connection diagram

Material: Alminium Die-casting (ADC)

Related parts

GMS-4-8P
: P.49

EGM-10S-4-7C
: P.51

EGH-3P
: P.53

EGH-4C
: P.53

GAS-8P
: P.55

Pressure gauge
: P.95

Main tubing
: P.203

Branch tubing
: P.203

Adapter assemblies
: P.217

Compression parts
: P.201

Adapters
: P.207

KEN-T
: P.220

KEN-M
: P.220

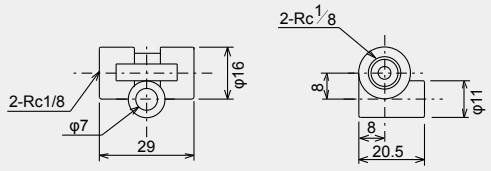
Junction

JV

For main line piping, separating and MGI metering valve installation

[JV-6S]

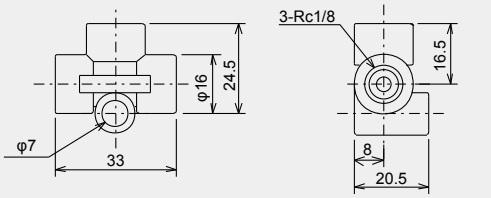
Dimensional drawing



Model

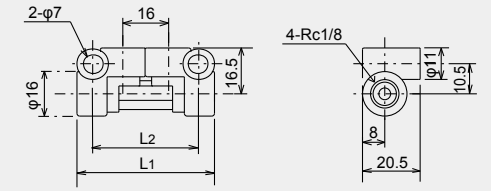
Model	Part Number
JV-2	206470

Material: Zinc Die-casting (ZDC)



Model	Part Number	Specifications
JV-3	206471	Single type for 1port

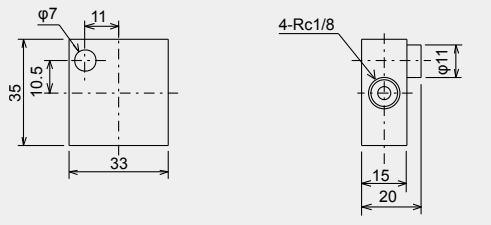
Material: Zinc Die-casting (ZDC)



[JV-4S]

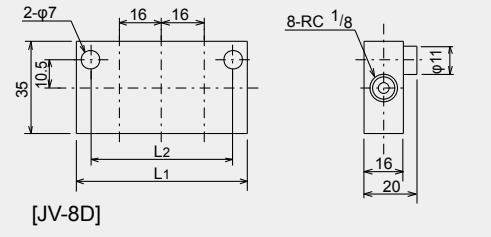
Model	Part Number	Specifications	L1	L2
JV-4S	206472	Single type for 2 ports	49	38
JV-5S	206473	Single type for 3 ports	65	54
JV-6S	206474	Single type for 4 ports	81	70
JV-7S	206475	Single type for 5 ports	97	86
JV-8S	206476	Single type for 6 ports	113	102
JV-9S	206479	Single type for 7 ports	129	118
JV-10S	206543	Single type for 8 ports	145	134

Material: Zinc Die-casting (ZDC)



Model	Part Number	Specifications
JV-4D	206464	Double type for 2 ports

Material: Brass (C3604)



[JV-8D]

Model	Part Number	Specifilcation	L^1	L^2
JV-6D	206465	Double type for 4 ports	49	38
JV-8D	206466	Double type for 6 ports	65	54
JV-10D	206467	Double type for 8 ports	81	70
JV-12D	206468	Double type for 10 ports	97	86
JV-14D	206469	Double type for 12 ports	113	102

Material: Brass (C3604)

Series Progressive System for Small-Large Machines

GMN-4-8P

GMNH-4-7C

EGH-4C

■ [Pump]

Progressive electric pump

Progressive manual pump

Series Progressive System motorized grease pump

GMN

Motor-driven reservoir grease pump. For use with progressive metering blocks making it possible for discharge volume adjustment in accordance with pump operation time.

[GMN-4-8P]

Model Reference

GMN－4－8P

Tank model (capacity)

8P	Re-filling type	800mℓ

Working voltage

4	DC24V

Directions for use

- Use recommended grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium grease. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases containing substances that attack brass or rubber.
- When the cartridge is changed, take care that foreign particles are not introduced to pump.
- Do not discharge continuously.
- After filling the pump, bleed the air inside the pump by opening the air bleeding valve.

Model Reference

Model	Part Number
GMN-4-8P	102909

Specifications

GMN-4-8P	
Discharge volume	20mℓ/min
Discharge pressure	8 MPa (Safety valve set pressure)
Working consistency	NLGI No.000, 00, 0 and 1 (Lithium grease)
Recommended grease	MP0 and FS2
Motor	
Working voltage/ Working current	DC24V/1A
Output	15W DC Brush motor
Grease level switch	Optional
Reservoir capacity	800mℓ
Weight	2.8kg

Related parts

SP series progressive valve
: P.77

Pressure gauge
: P.95

Main tubing
: P.203

Adapter assemblies
: P.217

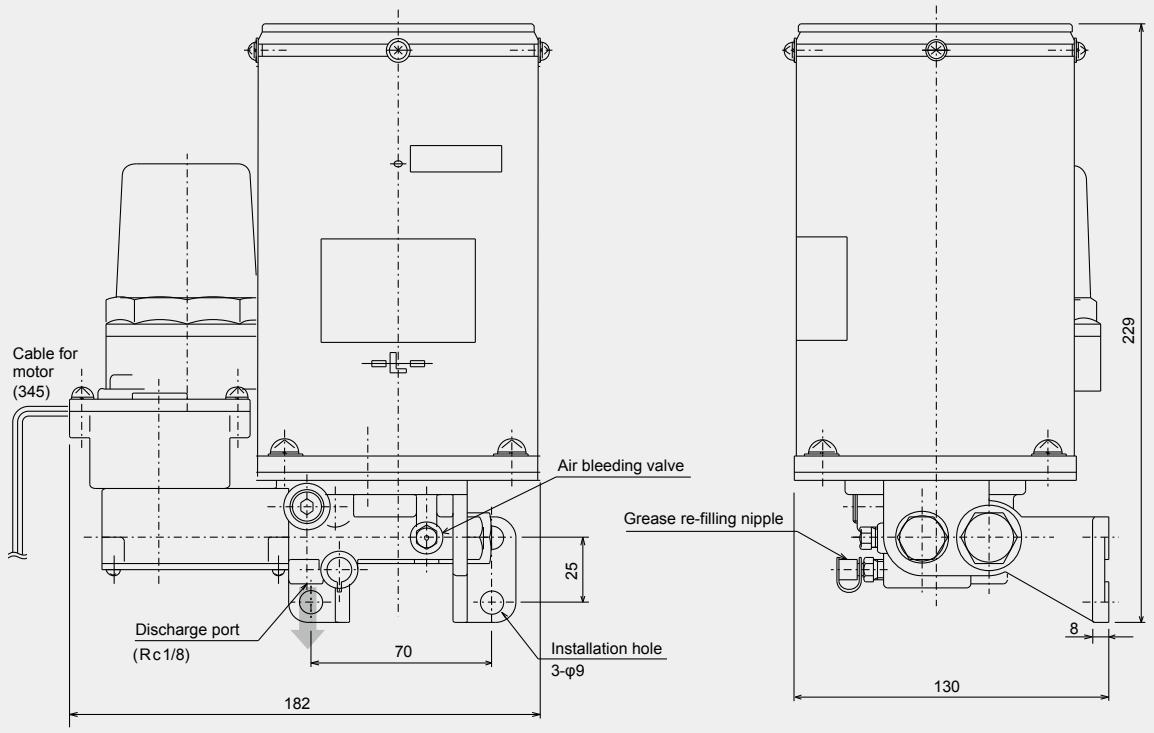
Pneumatic pump for pail
: P.96

Hand grease gun
: P.96

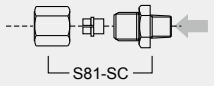
Lub pack
: P.96

Controller
: P.93

Dimensional drawing

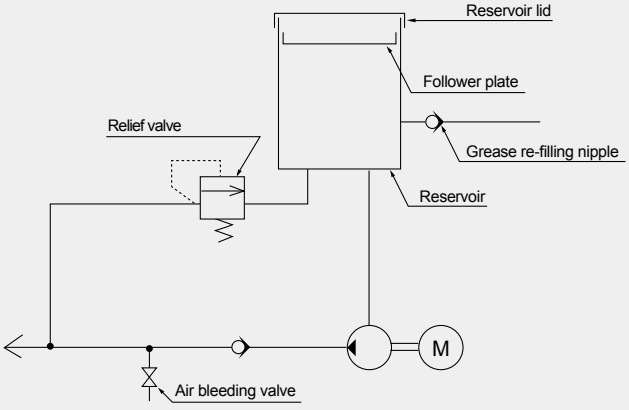


Parts for connecting to the discharge port



[GMN-4-8P]

Hydraulic circuit drawing



Series Progressive System motorized grease pump

GMNH (High pressure type)

Motor-driven cartridge grease pump. Use with progressive metering blocks makes possible discharge volume adjustment according to pump operation time.


[GMNH-4-4C]


[GMNH-1-4C · GMNH-2-4C]


[GMNH-4-7C]


[GMNH-1-7C · GMNH-2-7C]

Model Reference

GMNH−□−□C

Cartridge type
- C: Cartridge type

Cartridge
- 4: 400mℓ
- 7: 700mℓ

Voltage
- 1: AC100V
- 2: AC200V
- 4: DC24V

High pressure type

Model

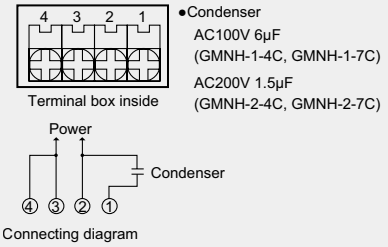
Model	Part Number
GMNH-1-4C	103553
GMNH-1-7C	103550
GMNH-2-4C	103554

Model	Part Number
GMNH-2-7C	103551
GMNH-4-4C	103552
GMNH-4-7C	103549

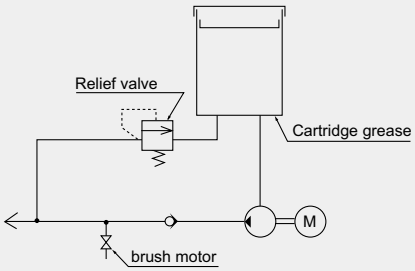
Specifications

Pump	Discharge volume	10mℓ/min		
	Discharge pressure	20MPa (safety valve set pressure)		
Motor	Power	DC24Vφ 1/0.65A	AC100Vφ 1/0.65A	AC200Vφ 1/0.65A
	Output	15W DC brush motor	25W ignition motor	
Working Viscosity	Cartridge grease No.000,00, 0, 1 (lithium grease)			
Recommended grease	MP0, MP1, FS2			
Cartridge size	400mℓ, 700mℓ			
Weight	2.8kg (DC24V), 3.1kg (AC100V, 200V)			

Wiring diagram



Hydraulic circuit drawing



Directions for use

- Use recommended grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium grease. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases containing substances that attack brass or rubber.

Related parts


SP series progressive valve
: P.77


Pressure gauge
: P.95

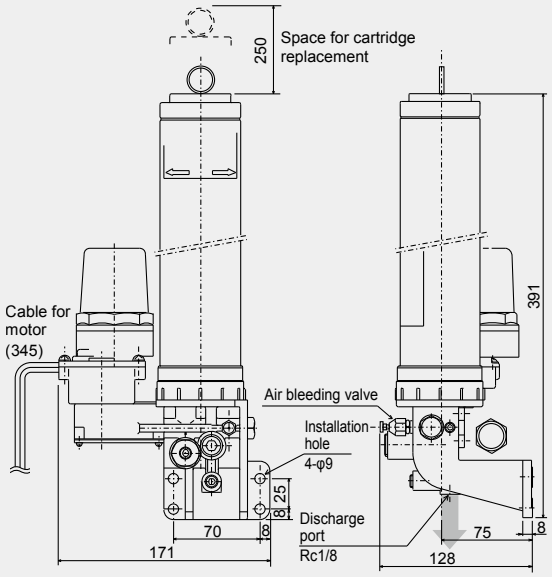
Main tubing
: P.203


Adapter assemblies
: P.217


LUBE original grease
: P.89

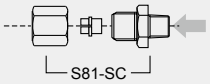

Controller
: P.93

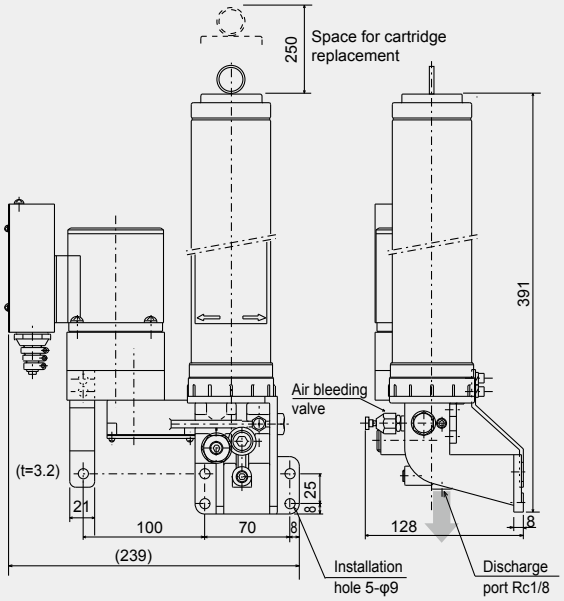
Dimensional drawing



[GMNH-4-4C]

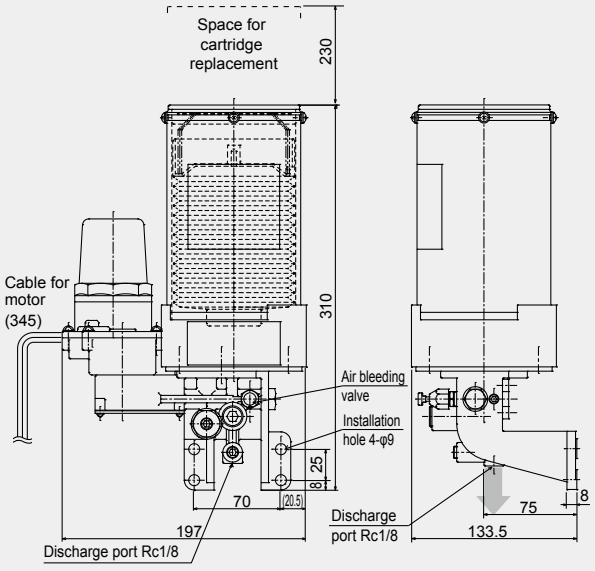
Parts for connecting to the discharge port





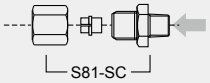
[GMNH-2-4C · GMNH-1-4C]

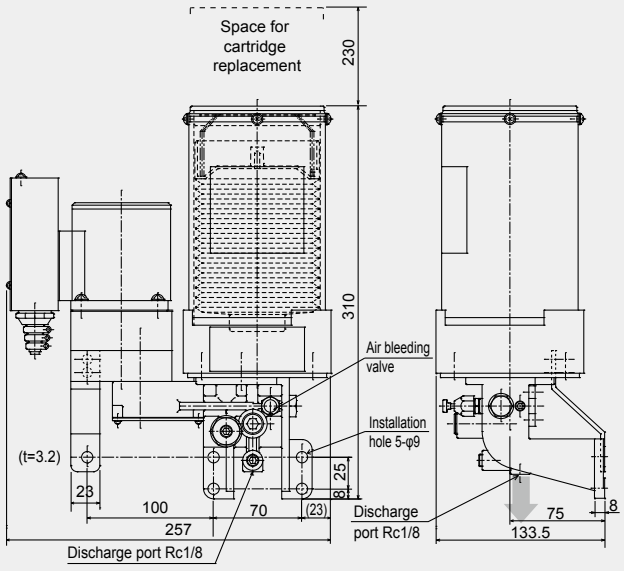
Parts for connecting to the discharge port



[GMNH-4-7C]

Parts for connecting to the discharge port





[GMNH-1-7C · GMNH-2-7C]

Parts for connecting to the discharge port

Series Progressive System manual grease pump

EGH

Compact, low-cost manually operated pump

EGH-3P EGH-2C EGH-4C

Model Reference

EGH−□□

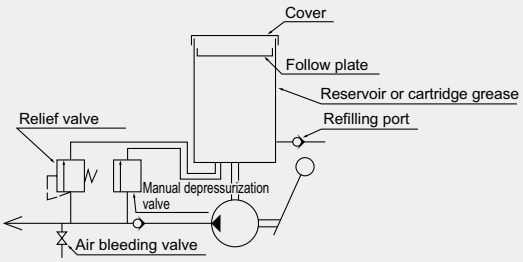
Type of reservoir (effective capacity)

3P	Reservoir type (260mℓ)
2C	Cartridge type (200mℓ)
4C	Cartridge type (400mℓ)

Model

Model	Part Number
EGH-2C	103780
EGH-3P	103783
EGH-4C	103782

Hydraulic circuit drawing



Specifications

EGH-3P		
Pump	Discharge volume	1mℓ/stroke
	Discharge pressure	10MPa (safety valve set pressure)
Working Viscosity		NLGI No.000, 00, 0, 1 (lithium grease)
Recommended grease		MP0, FS2, MT1
Reservoir Capacity size		260mℓ
Weight		1.4kg
Pressure relief		Manual pressure relief lever
EGH-2C EGH-4C		
Pump	Discharge volume	1mℓ/stroke
	Discharge pressure	10MPa (safety valve set pressure)
Working viscosity		Cartridge grease No.000, 00, 0, 1 (lithium grease)
Recommended grease		MP0, FS2, MT1
Cartridge size		200mℓ, 400mℓ Cartridge
Weight		1.4kg
Pressure relief		Manual pressure relief lever

Directions for use

- Use recommended cartridge grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium greases. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases containing substances that attack brass or rubber.
- When refilling reservoir or replacing cartridge, take care not to let foreign matter into the grease or pump.
- After refilling reservoir or replacing cartridge, bleed air from the pump by opening the air bleeding valve.
- Always return operating lever to locked position to relieve system pressure.

Related parts

SP series progressive valve
: P.77

Pressure gauge
: P.95

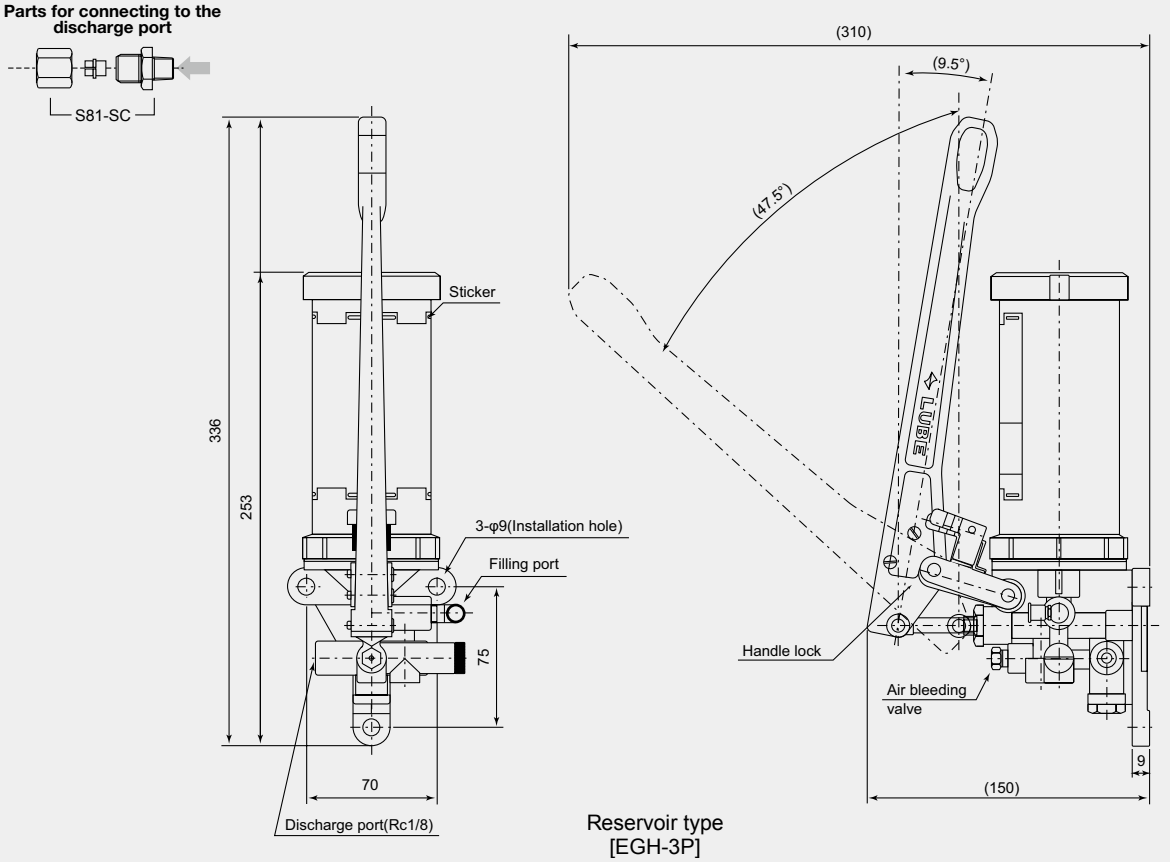
Main tubing φ8
: P.203

Adapter assemblies
: P.217

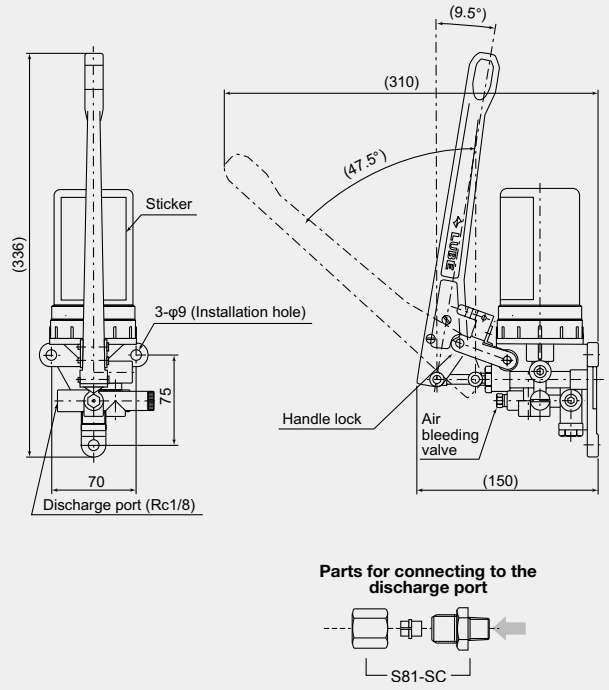
Pneumatic pump for pail
: P.96

LUBE original grease
: P.89

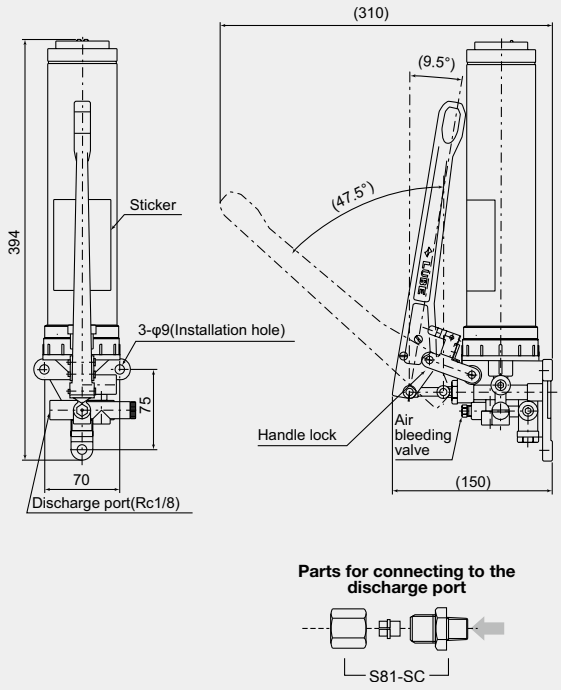
Dimensional drawing



Reservoir type
[EGH-3P]



Cartridge type
[EGH-2C]



Cartridge type
[EGH-4C]

Series Progressive System for Small-Large Machines

SP-8

■ [Valve]

Series progressive valve

Series Progressive Valve

SP

SP is mono style progressive metering blocks, and a piston-type metering device which reliably dispenses lubricant to each point on the machine. The mono style of fixed displacement, and the flexibility of combining outlets provides a large variety of metering possibilities. Monitoring can be done visually with a pin movement or electronically with a proximity sensor.

[SP-8]

Specifications

Discharge volume	0.2mℓ/stroke
Discharge port	6mm or 4mm tube
Grease inlet	Rc1/8
Max. working pressure	20MPa
Minimum operating pressure	2MPa
Working consistency	NLGI No.000-2
Performance monitor	Indicator pin (K type)
Material	SP:Aluminum

Specialty Parts

Model	Part Number
SPB	611785
SW-10	207611
SPC	611677
SPA-6	619780
SPS	611695
SPN	611784
SPA-4	166005

* See sample layout P.78.

Model

Model	Part Number	No. of discharge ports	Length (L)
SP-4K	205530	4	60
SP-4	205540		
SP-6K	205531	6	
SP-6	205541		
SP-6S	205536		
SP-8K	205532	8	75
SP-8	205542		
SP-8S	205537		
SP-10K	205533	10	90
SP-10	205543		
SP-10S	205538		
SP-12K	205534	12	105
SP-12	205544		
SP-12S	205539		

Related parts

GMN-4-8P
: P.69

GMNH-4-7C
: P.71

EGH-3P
: P.53

EGH-2C
: P.53

EGH-4C
: P.53

Pressure gauge
: P.95

Main tubing
: P.203

Branch tubing
: P.203

Adapter assemblies
: P.217

Compression parts
: P.201

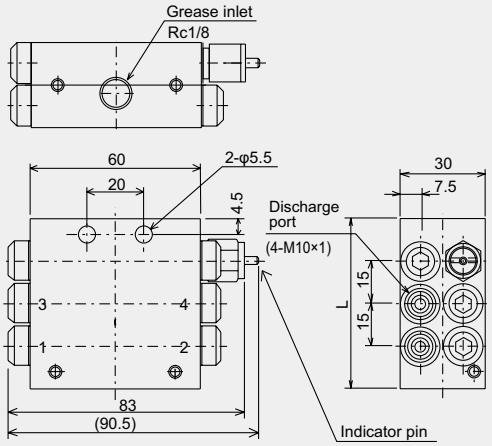
Adapters
: P.207

KEN-T
: P.220

KEN-M
: P.220

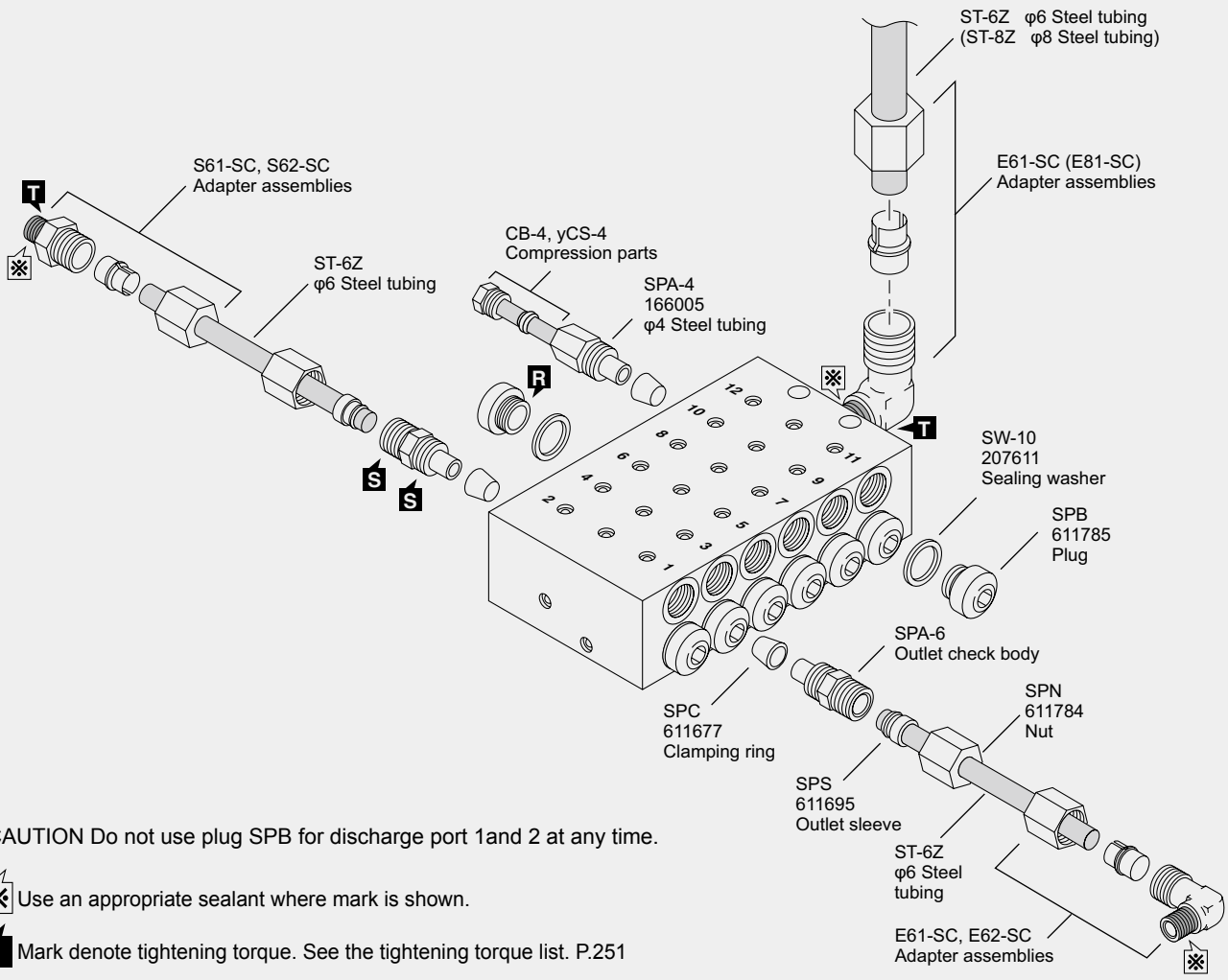
S: With proximity sensor adaptor
K: With indicator pin
*L: See dimensional drawing.

Dimensional drawing



[SP-4K]

Piping Layout (Example)



*CAUTION Do not use plug SPB for discharge port 1and 2 at any time.

※ Use an appropriate sealant where mark is shown.

Mark denote tightening torque. See the tightening torque list. P.251

Operation chart

Step1

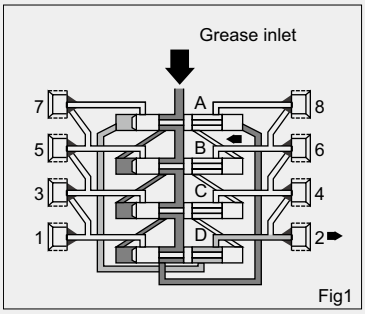


Fig1

The grease is sent by the pump or the grease gun enters from the inlet of the block upper part. The sent grease passes along the port shown in the dark gray color, reaches the right-hand side of a piston "A", and moves piston "A" leftward. At this time, the grease on the left-hand side of a piston "A" passes along the port shown in the light gray color, and is discharged from the outlet of No. 2.

Step2

If piston "A" carries out a full stroke leftward, as shown to Fig. 2 by the dark gray color, the port which results in surface of a piston "B" will be connected, and the grease from a pump will move a piston "B" leftward through this port. At this time, the grease on the left-hand side of a piston "B" is discharged from the outlet of No. 7 through the port shown in the light gray color.

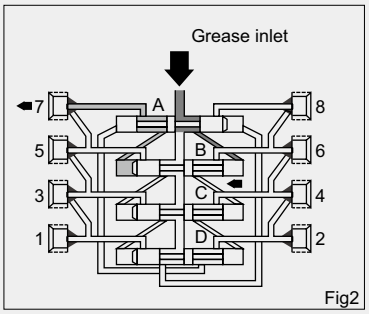


Fig2

Step3

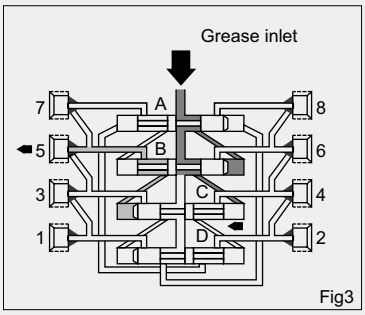


Fig3

Like last time, if piston "B" carries out a full stroke leftward, as shown to Fig. 3 by the dark gray color, the port which results in right-hand side edge of piston "C" will be connect, grease will pass along this port, and a piston "C" will be moved leftward. At this time, the grease on the left-hand side of piston "C" is discharged from a No. 5 outlet through the port shown in the light gray color.

Step4

If piston "C" carries out a full stroke, as shown by the dark gray color among the right figure, the port which results in right-hand side edge of a piston "D" will be connected, and a piston "D" will be moved leftward. At this time, the grease on the left-hand side of a piston "D" is discharged from No. 3 outlet through the port shown in the light gray color.

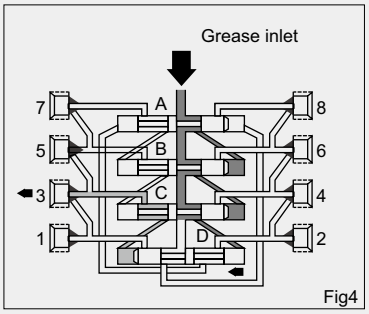


Fig4

Step5

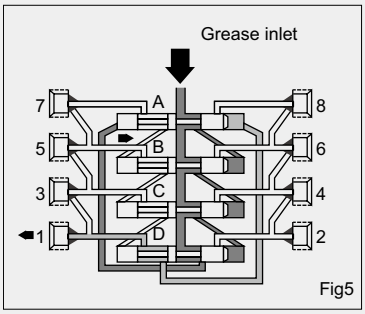
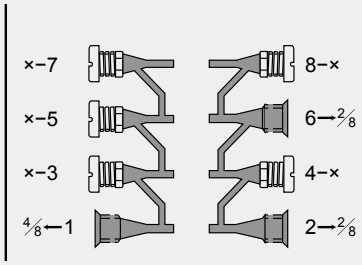


Fig5

This time, as a result of piston's "D"" carrying out a full stroke, as shown by the dark gray color among the figure, the port which results in left-hand side edge of a piston "A" is connected, and a piston "A" is moved rightward. At this time, the grease on the right-hand side of piston "A" which worked as last operation grease is discharged from a No. 1 outlet through the port shown in the light gray color.
Grease will be discharged by the same repetition as henceforth in order of the outlet of 8, 6, 4, 2, 7, 5, 3, and 1.

Setting of discharge volume/ Suggestions

Example



× : Plugged port will not discharge.
1 : Discharge will be four (4) times the normal amount.
2, 6 : Discharge will be twice the normal amount.

■ Setting of discharge volume

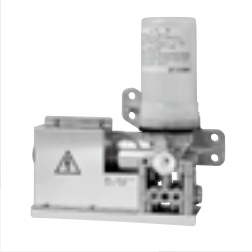
As for each discharge port, 0.2 ml/stroke grease is discharged at the time of a pump operation. If one discharge port is closed, the quantity from the closed port will be added to and discharged by the next discharge port below.

■ Suggestions

1. Use only the specially designed SP fittings for discharge ports of the SP type valve.
2. When you attach the dischagre port Outlet Check Body please be sure to check whether the Clamping Ring is set correctly. Moreover, when you attach SPB plug into the grease dischagre port, please be sure to remove the Clamping Ring, if present. If a Port Plug is attached with the Clamping Ring. set, the whole valve stops operating.
3. Use proper torque when installing AP & SP Progressive Block specialty adapters.
4. Installation will become difficult if assembly of AP & SP Progressive Blocks is begun with the middle discharge ports. Begin assemble at one end and continue to the other on each side to insure proper and more efficient assembly.
5. Use the correct washer and proper torque when installing AP & SP Progressive Block port plugs.

Compatible with Both PDI and Series Progressive Metering Valve System for Small-Medium Machine

EGM-T



EGME-T

■ [Pump]

Motorized grease pump

Dual-function motorized pump

EGM-T

Designed to operate both PDI and series progressive systems by use of its built-in solenoid valve.

[EGM-10T-4-4C]

[EGM-10T-4-7C]

Model Reference

EGM-10T - 4 - □ C

Cartridge type

C	Cartridge type

Cartridge

4	400mℓ
7	700mℓ

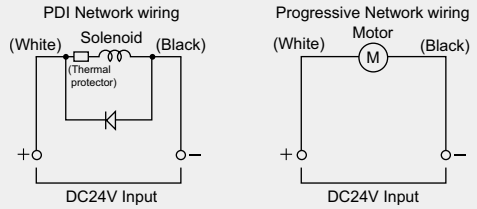
Model

Model	Part Number
EGM-10T-4-4C	103834
EGM-10T-4-7C	103835

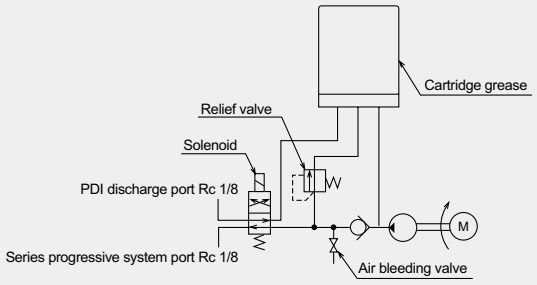
Specifications

Pump	Discharge volume	10mℓ/min
	Discharge pressure	10MPa (safety valve set pressure)
Power DC24V	Motor	20W/0.8A
	Pressure relief solenoid	26W/1.1A
	Total	46W/1.9A
Pressurization	Max. ON time: 7.5 min. (PDI Port)	
Power distribution rate	Max.25% (20°C)	
Working Viscosity	Cartridge Grease No.000,00,0,1	
Recommended grease	MP0, FS2, MT1	
Cartridge size	200mℓ, 400mℓ, 700mℓ	
Weight	1.78kg (2C), 1.83kg (4C), 1.8kg (7C)	
Pressure relief	Built-in solenoid	

Wiring diagram



Hydraulic circuit drawing



Directions for use

- Use recommended grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium grease. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases containing substances that attack brass or rubber.
- Avoid continuous operation.
- Normal operation or when filling grease into the (PDI) main tubing, please remember to adhere to the 3 to 1 ratio for off time to running time not exceeding 7.5 minutes. Failure to follow this could result in permanent damage to the solenoid not allowing the pump to ever build pressure.
- When filling grease into the (progressive) main tubing there is no limitation of time which will damage the pump. Be cautious not to over lubricate your bearing surfaces.

Related parts

MG2 metering valve
: P.61

MG2C metering valve
: P.61

JVPA Junction
: P.62

MG2I metering valve
: P.63

MGLA metering valve
: P.65

GPL pressure switch
: P.66

Pressure gauge
: P.95

Main tubing
: P.203

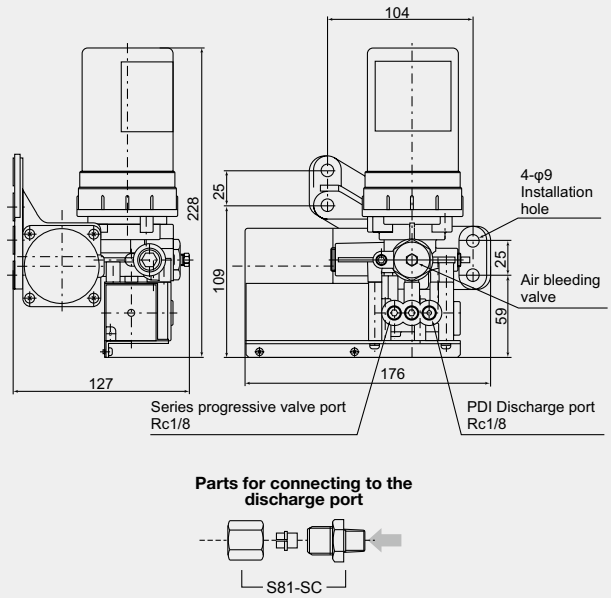
Adapter assemblies
: P.217

LUBE original grease
: P.89

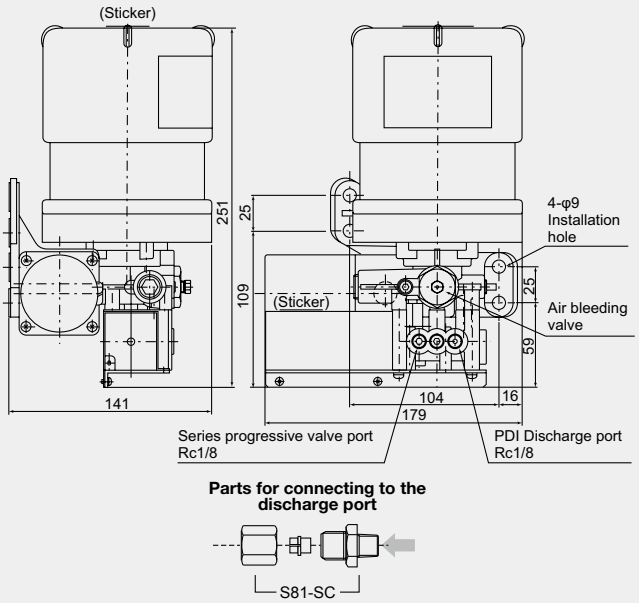
Controller
: P.93

SP series progressive valve
: P.77

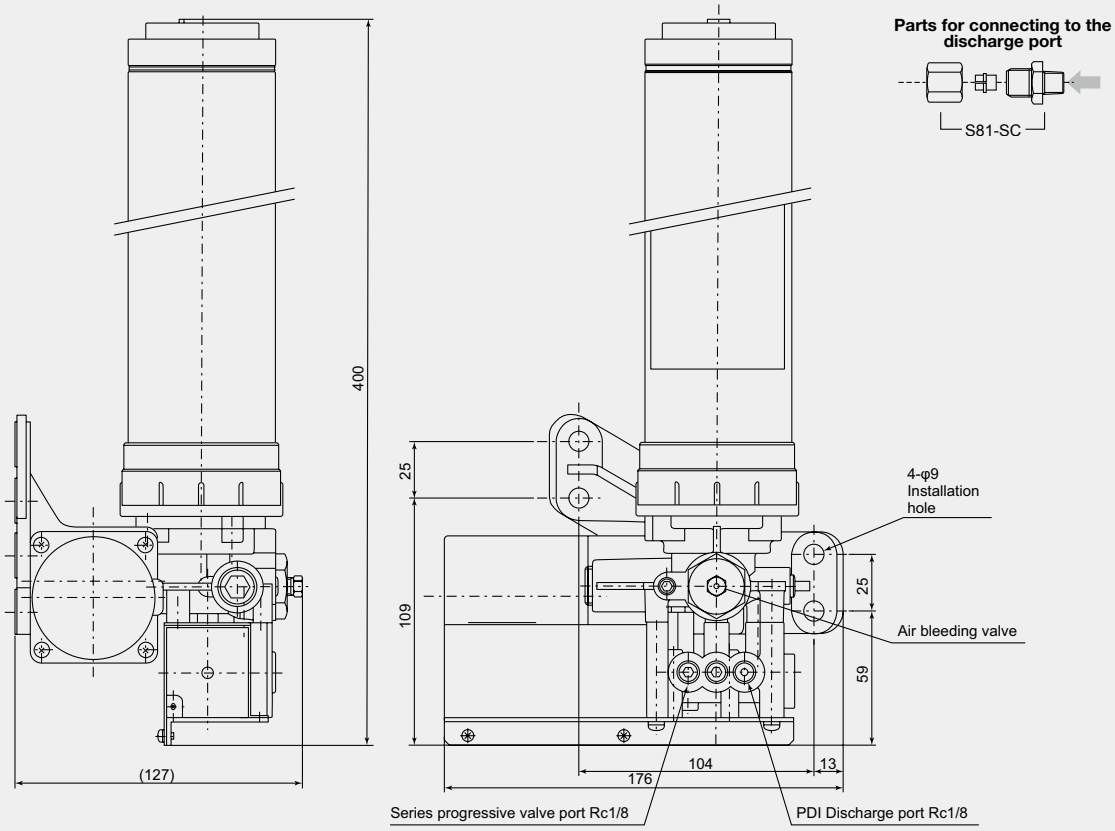
Dimensional drawing



[EGM-10T-4-2C]



[EGM-10T-4-7C]



[EGM-10T-4-4C]

Dual-function motorized pump

EGME-T

Operates both PDI and series progressive systems by use of its built-in-solinoid valve. EGME pumps utilize an internal solenoid protection circuit which eliminates the 7.5 minute maximum running time of other EGM pumps.

[EGME-10T-4-2C]

Model Reference

EGME−10T− 4 −□C

Cartridge type

C	Cartridge type

Cartridge

2	200mℓ
4	400mℓ
7	700mℓ

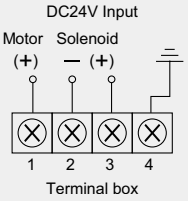
Model

Model	Part Number
EGME-10T-4-2C	103902
EGME-10T-4-7C	103911

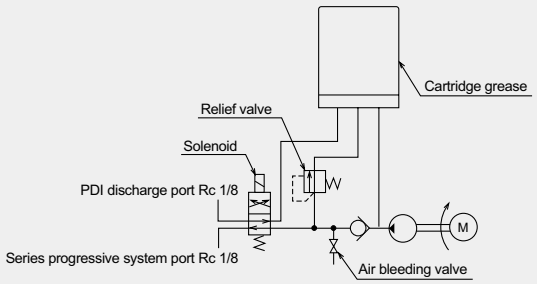
Specifications

Pump	Discharge volume	10mℓ/min
	Discharge pressure	10MPa (safety valve set pressure)
Power DC24V	Motor	20W/0.8A
	Pressure relief solenoid	10W/0.4A
	Total	30W/1.2A
Working Viscosity	Cartridge Grease No.000,00,0,1	
Recommended grease	MP0, FS2, MT1	
Cartridge size	200mℓ, 400mℓ, 700mℓ	
Weight	1.8kg (4C), 2.8kg (7C)	
Pressure relief	Built-in solenoid	

Wiring diagram



Hydraulic circuit drawing



Directions for use

- Use recommended grease only.
- Never use greases containing molybdenum disulfide.
- Use lithium grease. (Contact LUBE for consultation when non-lithium greases must be used.)
- Do not use any greases containing substances that attack brass and rubber.
- Avoid continuous operation.

Related parts

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: P.61

MG2C metering valve
: P.61

JVPA Junction
: P.62

MG2I metering valve
: P.63

MGLA metering valve
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GPL pressure switch
: P.66

Pressure gauge
: P.95

Main tubing
: P.203

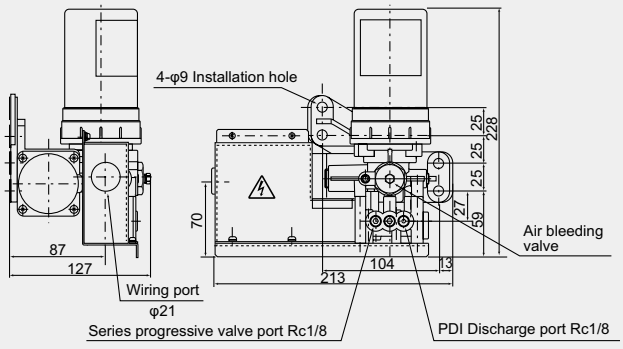
Adapter assemblies
: P.217

LUBE original grease
: P.89

Controller
: P.93

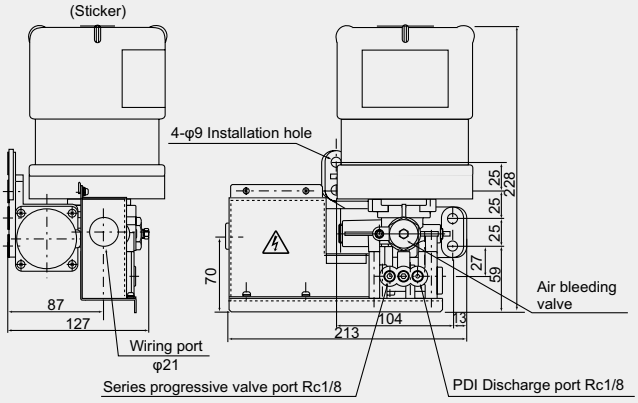
SP series progressive valve
: P.77

Dimensional drawing

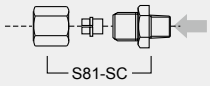


Parts for connecting to the discharge port

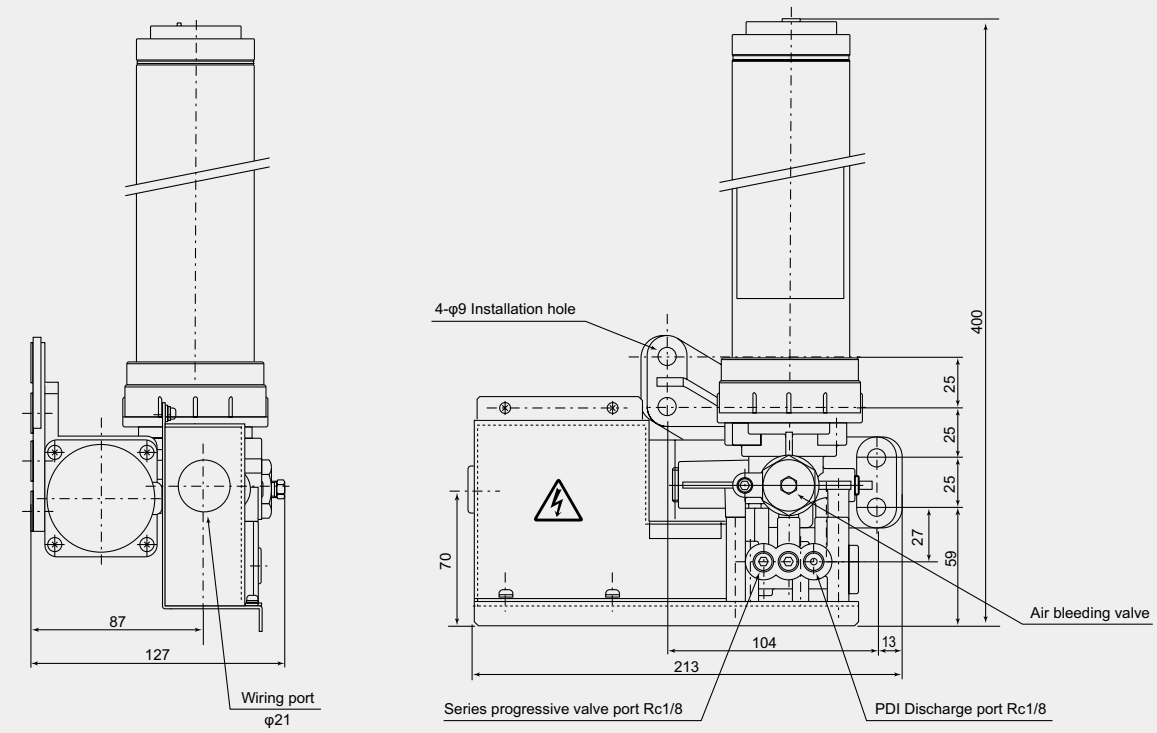
[EGME-10T-4-2C]



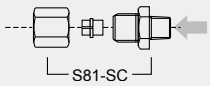
Parts for connecting to the discharge port



[EGME-10T-4-7C]



Parts for connecting to the discharge port



[EGME-10T-4-4C]

memo

LUBE Original Grease
LUBE Hybrid Lubricant

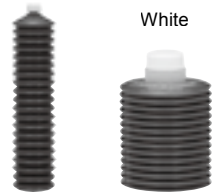
LUBE Original Grease

LUBE Hybrid Lubricant

LUBE Original Grease

MP0 [High-performance all-purpose lithium grease]

Excellent shear stability, heat resistance, oxidation stability, water resisitance, rust prevention, and load carrying capacity.



Operating temperature limit/MP0 –20°C - +130°C

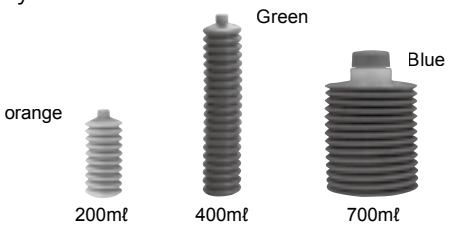
Model

Model	Part Number	Capacity	consistency
MP0(1)-4	249050	400mℓ	0
MP0(1)-7	249060	700mℓ	

Color of Grease: Brown

FS2 [High-performance grease for high load applications]

Excellent heavy load carrying capacity, wear resistance, shear stabitity, heat resistance, oxidation stability, water resistance, and rust preventive property.

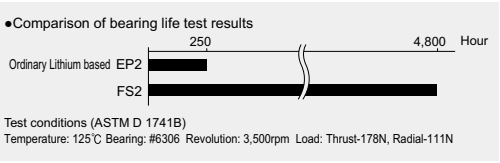


Service temperature range/FS2 –20°C - +130°C

Model

Model	Part Number	Capacity	consistency
FS2-2	249069	200mℓ	
FS2-4	249053	400mℓ	2
FS2-7	249063	700mℓ	

Color of Grease: Green



LFL-H1 [High-performance grease for food, medical and cosmetic machines]

LFL is NSF H1 certified food grade grease suited for machines which need to comply with the Food and Drug Administration's regulations. Available in 400cc cartridges to provide safety and simplicity of use.

Model

Model	Part No.	Capacity	consist-ency	NSF Regis-tration No.
LFL50-H1-7	249322	700mℓ	2	151701
LFL50-H1-4SC	249326	400mℓ	2	151701
LFL180-H1-7	249324	700mℓ	0	154492
LFL180-H1-4	249323	400mℓ	0	154492

Color of Grease: LFL50-H1 Beige, LFL180-H1 White

YS2 [High-performance grease for high load applications]

Suitable as a lubricant for guides and ball screws. Capable of handling high load applications. YS2 is a recommended grease for parts manufacturers.

Operating temperature limit/YS2 –20°C - +130°C

Model

Model	Part Number	Capacity
YS2-4	249106	400mℓ
YS2-7	249107	700mℓ

Color of Grease: Beige

CBT [High performance Special Urea Grease]

Operating temperature limit/CBTSU03 –20°C - +150°C

Model

Model	Part Number	Capacity
CBT-SU03-2	249150	200mℓ

Color of Grease: Beige

LUBE Hybrid Lubricant

LHL

High performance lubricant which incorporates all the advantages of both oil & grease. Eliminates the disadvantages of both.

- Next generation lubricant which contributes to the protection of the environment.
- Reduces lubricant consumption.
- Prevents the deterioration and decomposition of the cutting fluids; drastically reducing hazardous waste disposal.
- Reduces machine part abrasion.

Advantages of Oil: Liquidity, excellent migration properties, transport properties, no solidification.

+

Advantages of Grease: High load carrying capacity, wear resistance, excellent oil film retention and adhesion properties.

II

The advantages of Oil and Grease.

Operating temperature limit/LHL300 –20°C - +130°C
Operating temperature limit/LHL-X100 –20°C - +150°C

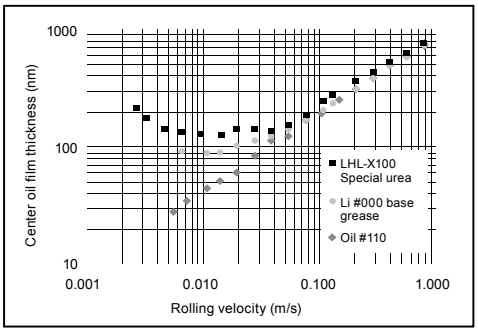
Model

Model	Part Number	Capacity	Color
LHL300-7	249112	700mℓ	yellow
LHL-X100-2	249139	200mℓ	yellowish brown
LHL-X100-4	249136	400mℓ	
LHL-X100-7	249137	700mℓ	

200mℓ [LHL-X100-2] 400mℓ [LHL-X100-4] 700mℓ [LHL-X100-7]

LHL-X100 Performance Test Data Ambient Temperature Range –20°C - +120°C

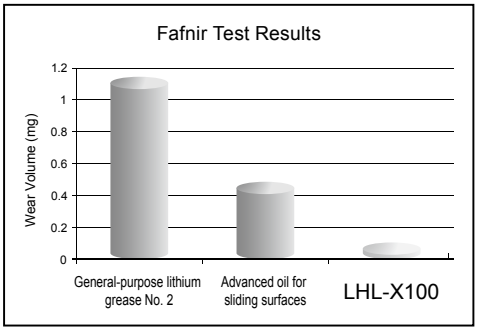
Basic Oil Film Thickness Evaluation Test



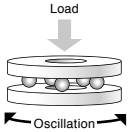
LHL-X100 special urea grease maintains a film at a lower speed than that of oil-soap grease.

Test results on oil film thickness as a basis of lubrication performance shows that the oil film is thinnest when rolling velocity is zero (or close to zero).
Compared to oil, grease can form thicker oil films. However, this special urea grease can form thicker oil films than lithium grease can, preventing insufficient oil films.

Fretting Resistance Test

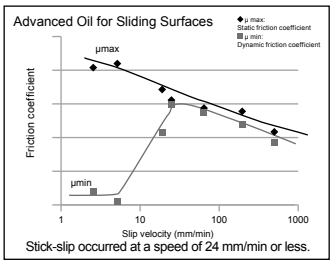


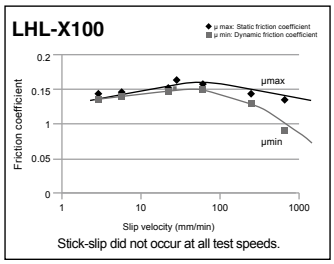
1. Evaluation method
   Fafnir test (as per ASTM D 4170)
2. Test conditions (ASTM D 4170)
   Bearings: ANDREWS W 5/8 (Use 2 sets.) Load: 2450 N (Contact pressure: 1861 MPa)
   Angle of oscillation: 12 degrees (Average rolling speed: 0.065 m/s)
   Oscillation cycle: 25 Hz Time: 22 hours Temperature: 25 degrees C
   Amount of grease per bearing set: 1.0±0.05g
   Measured amount of wear: Wear of each race way grinder per bearing set is reduced. (Gross mass wear of the test race way grinder is halved.)



Friction Coefficient Test (Stick-Slip Resistance Performance)

LHL-X100 did not cause stick-slip at all test speeds. Compared to even the most advanced oils for sliding surfaces, LHL forms lubrication films on metallic sliding surfaces successively to avoid metallic contact, even in low-speed areas because of special urea structure and additive.





- Test method
  1. Tester: Bowden tester
  2. Test conditions Material: Steel-Steel Temperature: Room temperature
     Load: 4 kgf Speed: 3, 6, 24, 30, 60, 240, 600 mm

Label description of LUBE Original Cartridge Grease

Example: Manufactured in July 2012

Part No.

Year (the last digit of the year)

A:Jan. B:Feb. C:Mar. D:Apr. E:May. F:Jun.
G:Jul. H:Aug. J:Sep. K:Oct. L:Nov. M:Dec.

Accessories

Controller

Pressure gauge

Hand grease gun

Grease vacuum cleaner

Steel dust meter

Controller

For use with electric grease pumps. It allows custom settings of the discharge time and the interval time.

Specifications

Power input	AC100 to 240V 50/60Hz
Setting the operation time	1 to 990 Seconds
Setting the interval time	1 to 99.5 hours
Setting the interval count	10 to 99,000 counts
Emergency alarm output	Both NO and NC are possible. Rated load AC250V 5A or DC24V 5A

Directions for use

- Handle with care

Model

Model	Part Number
VUC-II	300460

Caution Emergency error works when the setting is "0".

If both of MGL or GPL is not installed, eliminate the emergency alarm function.

Pump mounting panel

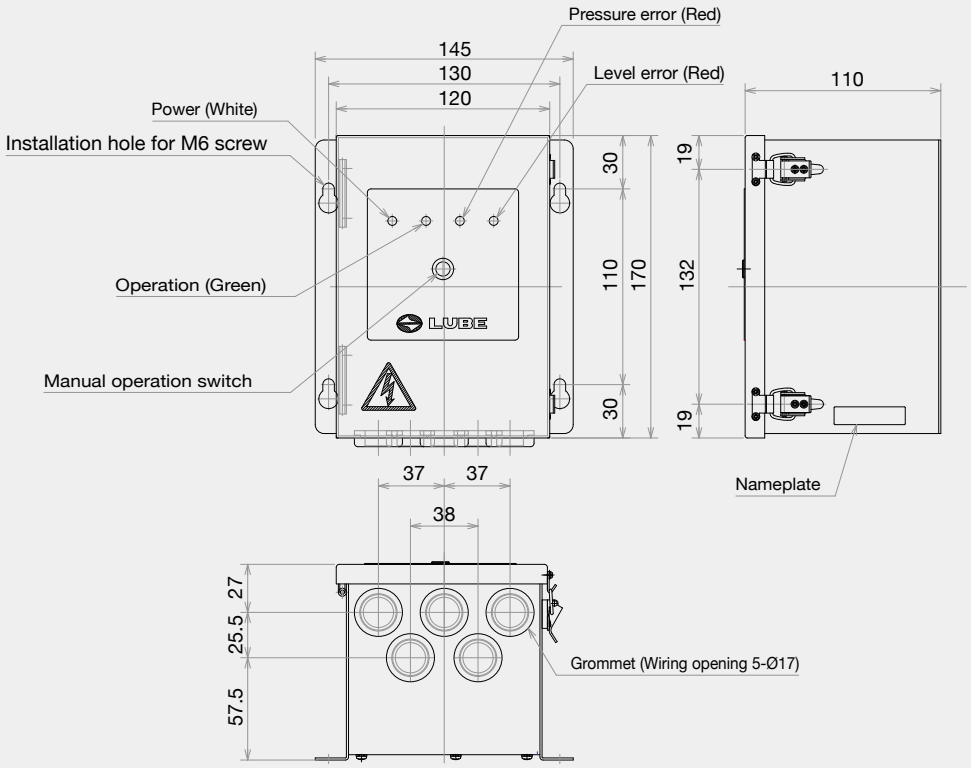
Mounting panel for installing the pump and controller.

Model

Model	Part Number
S series Pump mounting panel Vertical	531155
S series Pump mounting panel Horizontal	531187

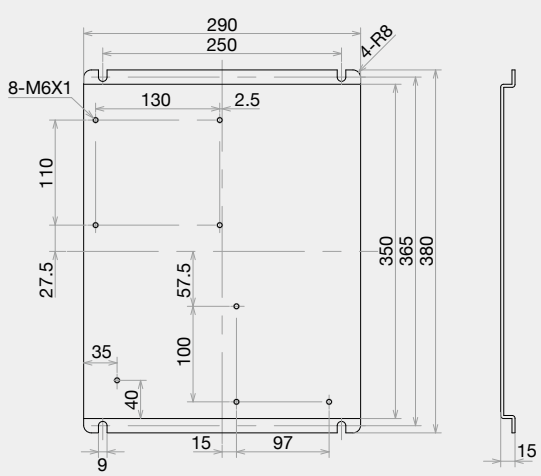
Dimensional drawing

[Controller]

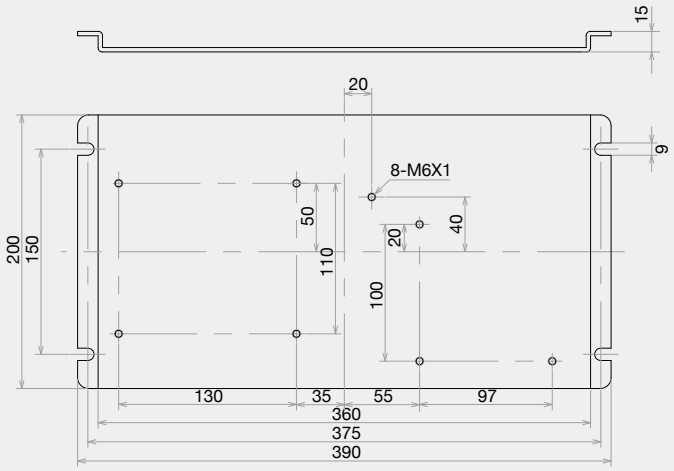


Dimensional drawing

[Pump mounting panel]



[vertical]



[horizontal]

Pressure gauge

Pressure gauges with reference pointer for visual mounting


[PB100]


[PB250]


[PB250B]


[GV50-G]

Specifications

		PB	GV
Accuracy		±3%F.S.	±1.5%F.S.
Temperature range		–5°C - 40°C	–5°C - 45°C
Material	Bourdon tube	C6872T (C5191T at over 10MPa)	SUS316
	Outer frame	SPCC Steel plate	SUS304 Stainless

Directions for use

- Use care not to drop or exert other strong impact.
- Do not apply pressure beyond the specified range.

Model

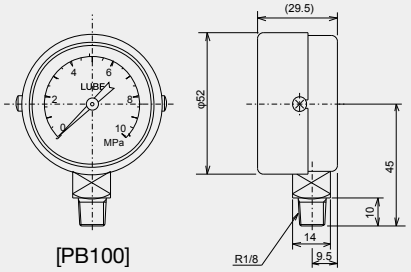
Pressure gauge

Model	Part Number	Pressure range (MPa)	Thread
PB100	109146	10	R1/8
PB250	109147	25	
PB250B	209288	25	
GV50-G	500598	50	PF1/4
GV50-R	500649	50	R1/4

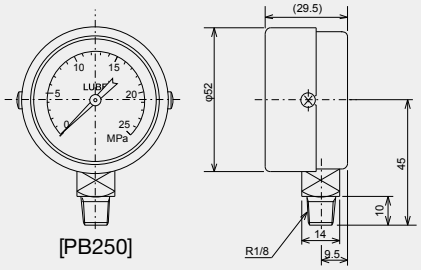
Pressure gauge fitting plate

Model	Part Number
PP	109102

Dimensional drawing



[PB100]



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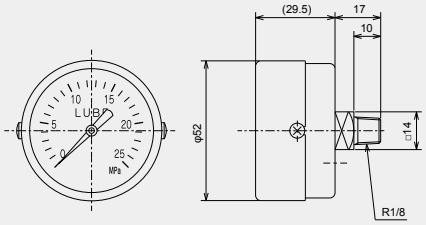

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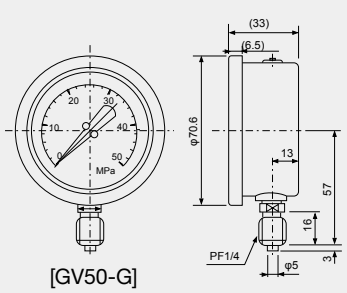
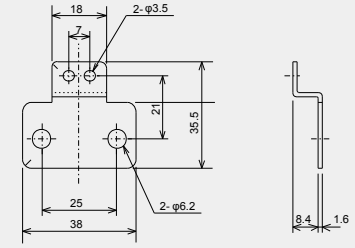


[GV50-G]



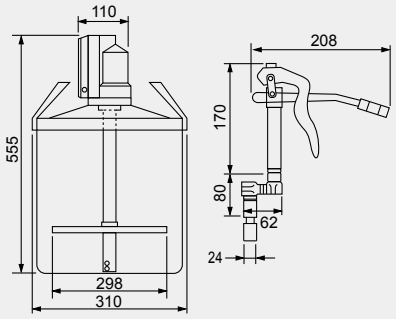
[PP]
Pressure gauge fitting plate

Grease filler pump

Pneumatic pump for pail

Grease can be filled pneumatically.

Dimensional drawing



Specifications

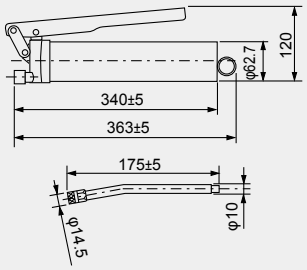
Discharge volume	540mℓ/min
Discharge pressure	34.3MPa
Working air pressure	0.4 - 0.7MPa
Air consumption	315ℓ/min(ANA)
Grease capacity	16kg
PumpWeight	6kg

Model

Model	Part Number
P3-C	JC0005

Hand Grease gun

Dimensional drawing



Specifications

Discharge volume	1.2mℓ/Stroke
Maximum pressure	40MPa
Grease capacity	400g
Weight	1.4kg

Model

Model	Part Number
LG-400	252422

*For use with LUBE original 400cc grease cartridges

Lub pack

Specifications

Capacity	300g/piece
1 box	24pieces

Model

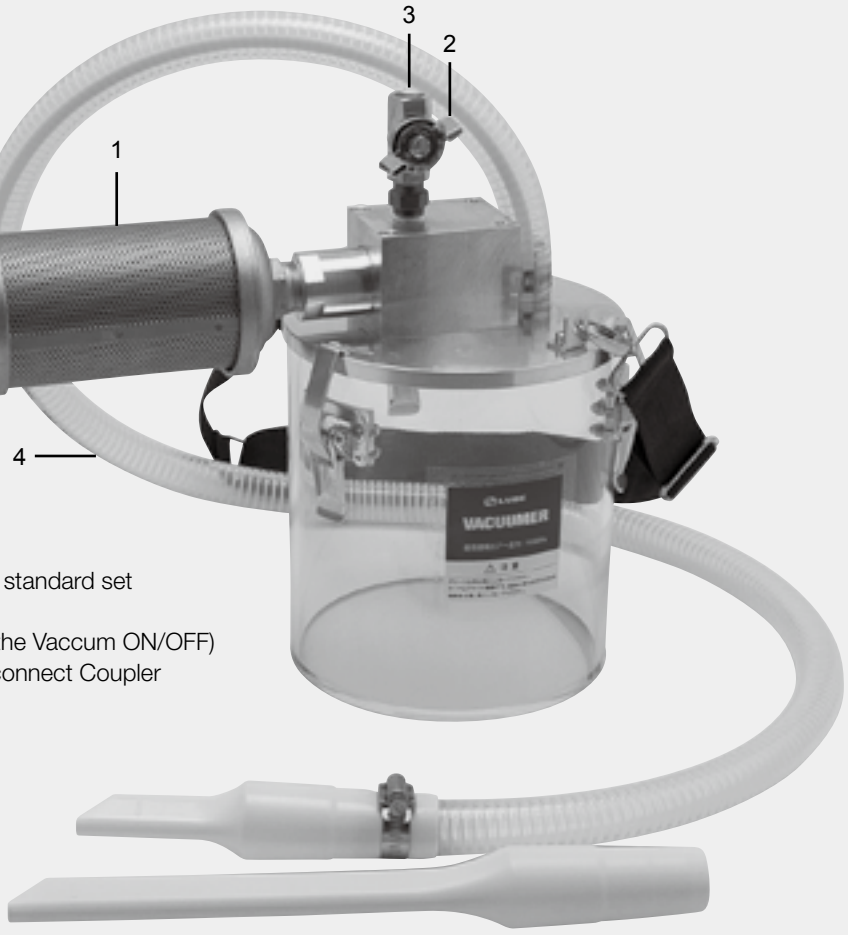
Model	Part Number
XP-0	250036

Grease vacuum cleaner

Pneumatically operated grease vacuum removes excess grease. Compact and portable.
Reduces consumption of workshop rags.

Model

Model	Part Number	Height×Width	Weight
VACUUMER	222301	340×270mm	3.4kg



▪ Items contained in standard set
1. Silent filter
2. Air Valve (To turn the Vaccum ON/OFF)
3. Air Inlet Push-to-connect Coupler
4. Vacuum Hose

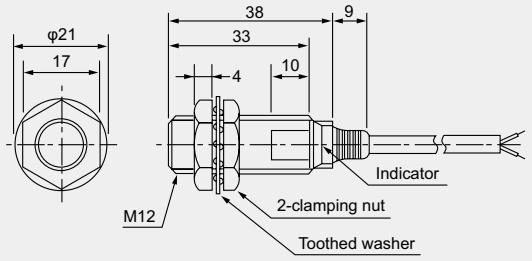
Proximity sensor for series progressive valve

Electrically monitors the movement of the indicator pin of progressive valve.
Proximity sensor can be used to monitor for a Progressive Valve or system failure, and can also be used to monitor pump discharge time.

Specifications

	E2E-X2E1	E2F-X2E1	E2F-X2Y1
Power voltage	DC10-24V		AC24-240V
Working voltage range	DC10-40V	DC10-30V	AC20-264V
Output Form	DC 3 leads NPN		AC 2 leads
Detecting Distance	2mm±10%		
Setting Distance	0-1.6mm		
Detecting Object	Iron12×1mm		
Protection class	IEC Standards IP67	IEC Standards IP68	

Dimensional drawing



Model

Model	Part Number
E2E-X2E1	733225
E2F-X2E1	730797
E2F-X2Y1	730721

Steel dust meter

The New Cosmos SDM-72 steel dust meter employs a magnetic balance type electromagnet induction method for measuring.
The SDM-72 is a useful and simple diagnostic tool for inspecting the abrasion status of bearings and gears.

Specifications

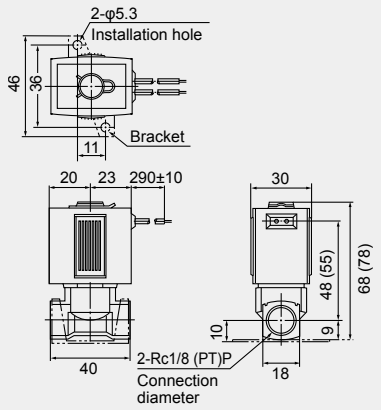
Measurement principle	Magnetic balance type electromagnetic
Substance measured	Steel dust concentration in grease
Measurement range	0 to 19999 ppm (Wt)
Zero adjustment	Automatic adjustment
Amount of sample	1.5ml
Power	4× AA (R6) alkaline dry cells or AC adaptor
Battery life	Up to 30 hours by alkaline cells
Operating temperature	0 to 40 °C
Dimensions	W84 × H190 × D40mm
Weight	Approx. 500g (including batteries)

Model

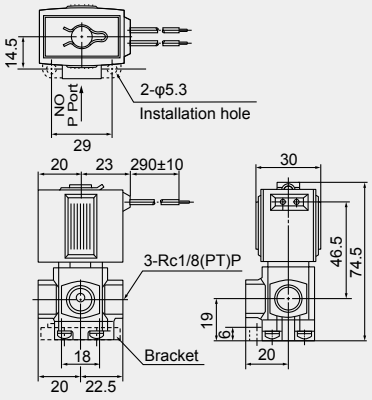
Model	Part Number
SDM-72	—

Solenoid valve

Dimensional drawing



[Two-way]



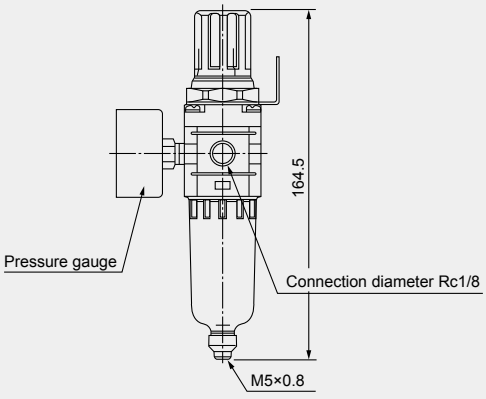
[Three-way]

Model

Model	Part Number	Specifications	Working voltage	Maximum working pressure difference
AB31013	229439	Two-way	AC100V	0.7MPa
AB31013	229440		AC200V	
AB31013	229438		DC24V	
VX3114-1G	229548	Three-way	AC100V	
VX3114-2G	229549		AC200V	
VX3114-5G	229550		DC24V	

Filter regulator

Dimensional drawing



Model

Model	Part Number
AW20-01BG	229570

General Catalog
Centralized Lubrication Systems

Oil system

Positive Displacement Injector (PDI) System for Large Machines

Single Line Resistance (SLR) compact system for
Small Machines with intermittent delivery

Single Line Resistance (SLR) compact system for
Small to Large Machines with continuous (recirculation) delivery

RIGHT **TIME**
RIGHT **VOLUME**
RIGHT **LUBRICANT**

Positive Displacement Injector (PDI) System for Large Machines

AMZ-III [CE]

PM

AMO-III DS

AMI-300S

LT-S

■ Pump

Automatic intermittent gear pump / Pneumatic piston pump

Manually operated high pressure intermittent piston pump

Automatic intermittent gear pump

AMZ - Ⅲ [CE]

Lightweight and compact pump unit without controller. Conforms to European Safety Standard. Oil level and pressure switches are standard equipment.

[1.8ℓ]

[3ℓ]

Model Reference

AMZ－Ⅲ－□－□□

Voltage

1	AC100Vφ1
2	AC200Vφ1
23	AC230Vφ1

Reservoir Mounting Poition

Blank	Resin
F	Foot Mount
B	Wall Mount

*Metal reservoir only

Reservoir capacity

Blank	1.8ℓResin reservoirs
3	3ℓResin reservoirs
30	3ℓMetal reservoirs
40	4ℓMetal reservoirs
80	8ℓMetal reservoirs

*Pump is installed on the right side, if a metal reservoir is selected.

Model

Model	Part Number
AMZ-Ⅲ-1	285017
AMZ-Ⅲ-1-3	285024
AMZ-Ⅲ-2	285016
AMZ-Ⅲ-2-3	285023

Low viscosity oil pump (On the page of AMZ-III)

No	Model	Part No.	Voltage	Tank capacity	Working viscosity range
1	AMZ-3-100SL-18LP	285224	100V	1.8L	22～800mm2/S
2	AMZ-3-100SL-18LP	285426	200V	1.8L	22～800mm2/S
3	AMZ-3-23	285433	230V	1.8L	22～800mm2/S

Specifications

Pump	Discharge volume	90mℓ/min (50Hz), 110mℓ/min (60Hz)
	Discharge pressure	1.5MPa/217.5psi (safety valve set pressure)
Motor	Voltage / current	AC100Vφ1/1.5A, AC200Vφ1/0.8A (50Hz) AC100Vφ1/1.3A, AC200Vφ1/0.7A (60Hz)
	Output	19W (50Hz), 18W (60Hz) Shading motor
Emergency detection	Oil level switch	Contact type (NO) ON at low level Contact capacity 0.5A, AC DC200V/30W smaller
	Pressure switch	Contact type (NO) Operating pressure: 1.3M ON Reset pressure: 0.9MPa OFF Contact capacity AC DC250V/2A
Operation	Max. discharge time: 1 min. Min.interval time: 3 min.	
Working viscosity range	50-1300mm^2/S (50Hz)	
Reservoir capacity	1.8ℓ, 3ℓ (plastic) 3ℓ, 4ℓ, 8ℓ (sheet metal)	
Weight	1.8ℓ: 2.7kg 3ℓ: 3.6kg	
External fuse	100V/2.0A, 200V/1.0A	

* Should the pump malfunction, contact LUBE for consultation.

Directions for use

- This pump unit requires a separate control circuit to operate.
- Do not remove the oil fill strainer in order to keep the pump clear of foregn matter.
- Replace the suction filter at least once a year.
- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any special additive-contained oil, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace it, if necessary, with fresh oil immediately. Be sure to clean the reservoir before replacing oil.
- Make sure that proper voltage is applied.
- Do not over tighten the discharge joint.
- Refer to the torque table. (P. 251)
- Low-oil viscosity versions are available. Contact us for information.

Related parts

MO2(C) Metering valve: P.115

For MO2(C) Valve

JVPA Junction : P.116

MO Metering valve: P.117

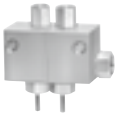
For MO Valve

PV Junction : P.118

MOS Metering valve : P.119

For MOS Valve

PVS Junction : P.121



MB Metering valve : P.123

MIX-S Metering valve : P.127

F-3D Filter : P.181

Pressure gauge : P.184

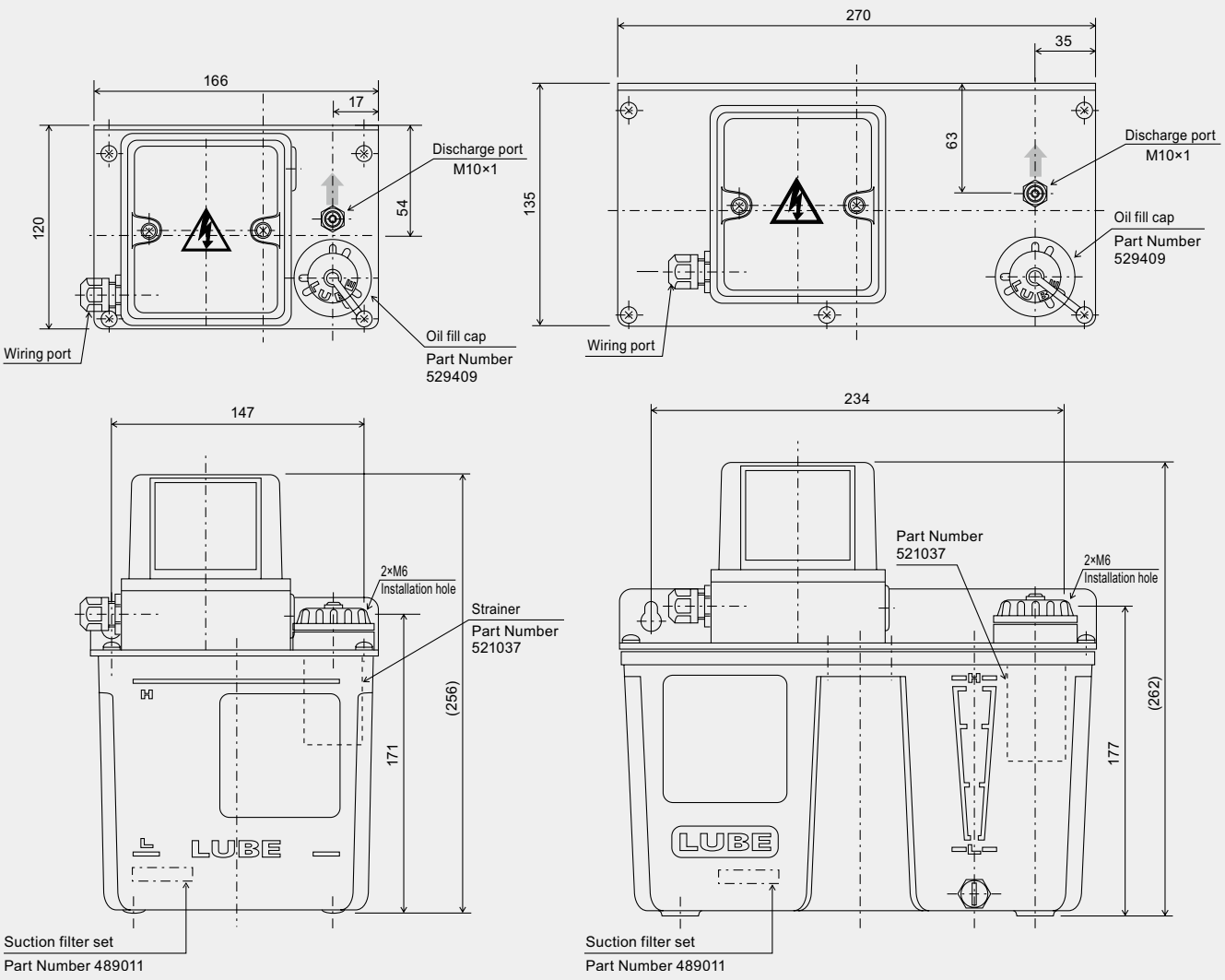
Tubing : P.203

Compression parts : P.201

Adapters : P.207

Metal reservoirs : P.170

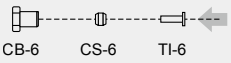
Dimensional drawing



[1.8ℓ]

[3ℓ]

Parts for connecting to the discharge port

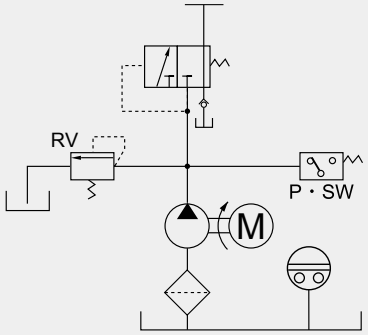


Improper handling can result in a death or serious injury

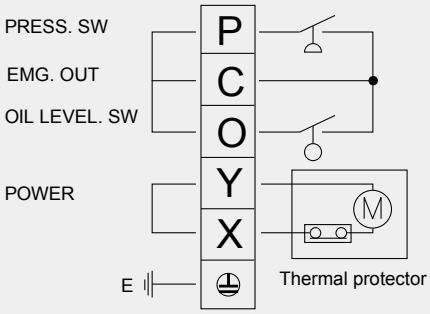
Electrical shock may be received under certain conditions

Be sure to ground.

Hydraulic circuit drawing



Wiring diagram



Pneumatic piston pump

PM-8S

Pneumatically actuated piston pump for use with positive displacement injectors.

[PM-8S]

Model Reference

PM − 8S − □ − □□□

Oil level switch

Blank	Without
L	With (A contact)

Reservoir capacity

Blank	1.8ℓ Resin reservoirs
3	3ℓ Resin reservoirs
30	3ℓ Metal reservoirs
40	4ℓ Metal reservoirs
80	8ℓ Metal reservoirs

Reservoir Mounting Poition

Blank	1.8ℓ Resin
F	Foot Mount
B	Wall Mount

*Metal reservoir only

Pump Position

L	Pump position-Left
R	Pump position-Right

*Except 1.8ℓ reservoir.

*Pump is installed on the right side, if a metal reservoir is selected.
*Specify the pump location (right or left) if 13L reservoir is selected.

Model

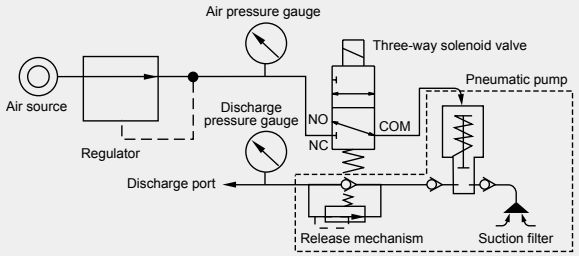
Model	Part Number
PM-8S	102660
PM-8S-L	102754
PM-8S-L	112988*

*With Terminal box and Terminal strip

Specifications

Pump ratio	1:5 (under air pressure of 0.5MPa)	
Discharge volume	8mℓ/shot (6mℓ, 7mℓ: available by special order)	
Working viscosity	Spray method: Oil shot 10-100cSt Oil/air 10-1800cSt Contact us when a special lubricant is required.	
Air pressure vs. air consumption	0.4MPa - 0.27Nl/shot; 0.5MPa - 0.3Nl/shot Total valve discharge: Approx. 5mℓ	
System capacity	When using 0.5mℓ valve, up to 10 points.	
Reservoir capacity	1.8ℓ, 3ℓ resin reservoir (standard) 3ℓ resin reservoir, 3ℓ, 4ℓ, 81 metal reservoir (optional)	
Options	3-way solenoid valve	Voltage: AC100V, AC200V, DC24V
	Oil level switch	(NO) ON at low level
	Contact capacity	AC, DC200V 30W or resistance load 0.5A, whichever smaller
Weight	1.8ℓ reservoir: 1.2 kg, 8ℓ reservoir: 11.0kg	

Hydraulic circuit drawing



Related parts

MO2(C) Metering valve: P.115

For MO2(C) Valve

JVPA Junction : P.116

MO Metering valve: P.117

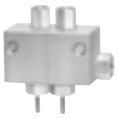
For MO Valve

PV Junction : P.118

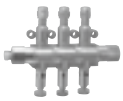
MOS Metering valve : P.119

For MOS Valve

PVS Junction : P.121



MB Metering valve : P.123



DVR Metering valve : P.125

MIX-S Metering valve : P.127

F-3D Filter : P.181

Pressure gauge : P.184

Tubing : P.203

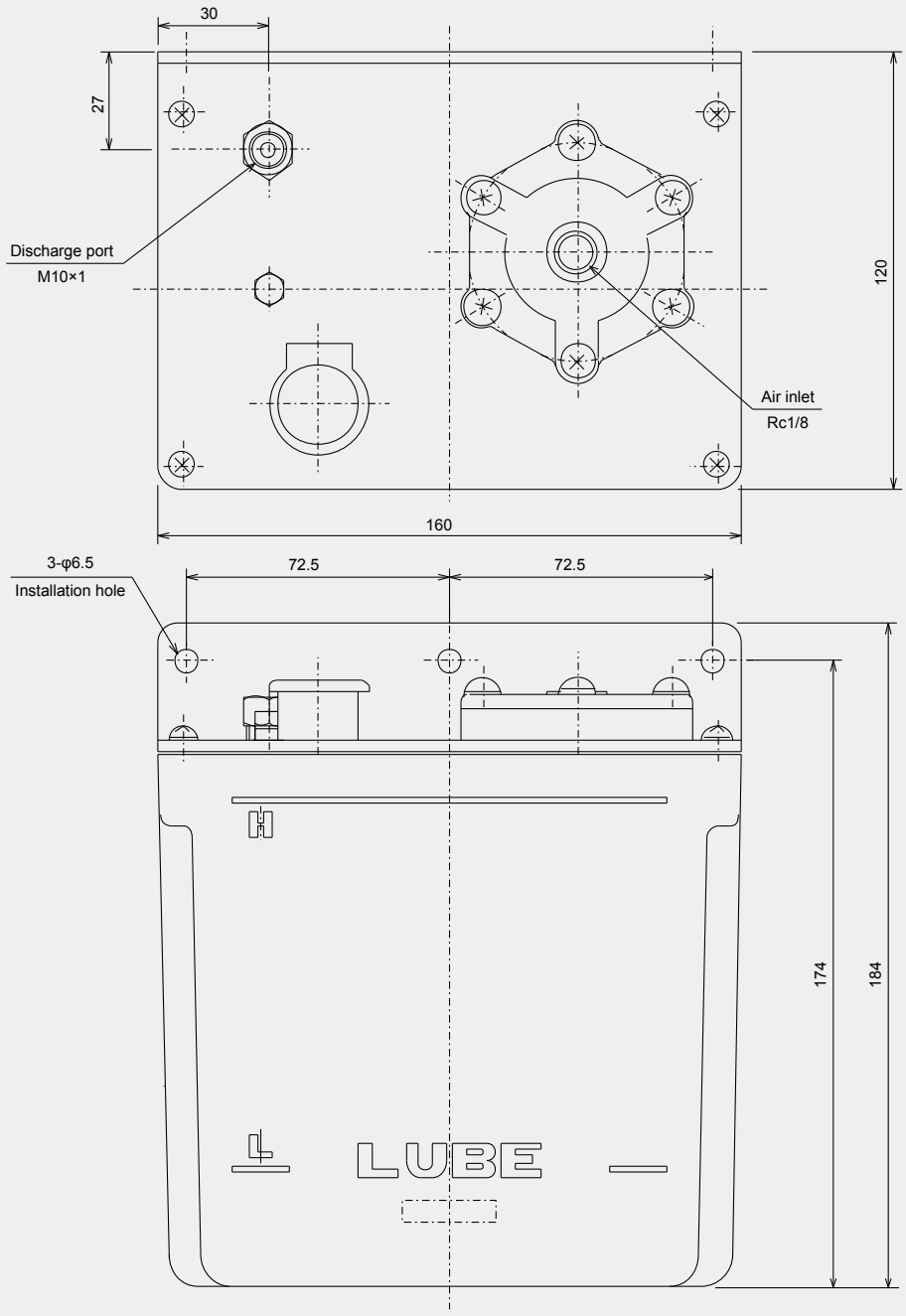
Compression parts : P.201

Adapters : P.207

Metal reservoirs : P.170

Flexible pipe nozzle with metering valve: P.195

Dimensional drawing



[PM-8S]

Directions for use

1. Install a timer on a machine to be lubricated, and make the operation and pause cycle settings of the three-way solenoid valve drive the pump.
2. Due to the minimum metering valve operating pressure (1.6MPa), adjust the air supply pressure in the range from 0.45 MPa to 0.7 MPa.
3. Use industrial lubricating oil in the range from 10 to 100 mm2/s of ISO viscosity. If the viscosity is too high, oil can not be pumped during short interval operation.
4. Pump contains components manufactured from aluminium (pump body), acetate resin (reservoir) and NBR (o-ring). Contact LUBE if special fluids must be used.

Automatic intermittent gear
AMO-ⅢDS

Capable of operating over a wide viscosity range.
Digital display gives on sight visual indication.
Interval can be a function of time or count.


[1.8ℓ]


[3ℓ]

Model Reference

AMO-ⅢDS-□-□□

Voltage

1	AC100Vφ1
2	AC200Vφ1

Reservoir Mounting Poition

Blank	Resin
F	Foot Mount
B	Wall Mount

*Metal reservoir only

Reservoir capacity

Blank	1.8ℓ Resin reservoirs
3	3ℓ Resin reservoirs
30	3ℓ Metal reservoirs
40	4ℓ Metal reservoirs
80	8ℓ Metal reservoirs

*Pump is installed on the right side, if a metal reservoir is selected.

Model

Model	Part Number
AMO-ⅢDS-1	285301
AMO-ⅢDS-1-3	285303
AMO-ⅢDS-2	285302
AMO-ⅢDS-2-3	285304

Low viscosity oil pump (On the page of AMO-IIIDSL)

No	Model	Part No.	Voltage	Tank capacity	Working viscosity range
1	AMO-IIIDSL-1	285331	100V	1.8L	10~1800mm2/S
2	AMO-IIIDSL-2	285332	200V	1.8L	10~1800mm2/S
3	AMO-IIIDSL-2	285333	100V	3.0L	10~1800mm2/S
4	AMO-IIIDSL-2	285334	200V	3.0L	10~1800mm2/S

Specifications

Pump	Discharge volume	150mℓ/min (50Hz), 180mℓ/min (60Hz)	
	Discharge pressure	2.0MPa/284psi (safety valve setting)	
Motor	Power	AC100Vφ1/0.83A, AC200Vφ10.41A (50Hz) AC100Vφ1/0.64A, AC200Vφ1/0.33A (60Hz)	
	Output	20W (50Hz/ 60Hz) Capacitor motor	
Controller	Timer Counter	Discharge time adjustable range: 1-99 seconds Interval time adjustable range: 1 to 9999 minutes 1 to 9999 counts	
	Emergency output	Contact type (NO)	
		Contact capacity AC250V 1.5A	
	Emergency detection	Oil level switch	Contact type (NO) ON at low level
		Prerssure switch	Contact type (NC) Operating pressure: 1.7MPa OFF Reset pressure: 0.9MPa ON
	Liquid crystal display	INTERVAL	display: 'INT'
		DISCHARGE	display: 'DIS'
		ALARM	Low oil level: 'OILLEVEL ERR' Low pressure: 'PRESSURE ERR'
Working viscosity range	68-1800mm^2/S (50Hz)		
Reservoir capacity	1.8ℓ, 3ℓ (plastic) 3ℓ, 4ℓ, 8ℓ (sheet metal)		
Weight	1.8ℓ Reservoirs: 3.2kg 3ℓ Reservoirs: 4kg		

Directions for use

- Do not remove the oil fill strainer in order to keep the pump clear of foreign matter.
- Replace the suction filter at least once a year.
- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any special additive-contained oil, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace it, if necessary, with fresh oil immediately. Be sure to clean the reservoir before replacing oil.
- Make sure that proper voltage is applied.
- Do not over tighten the discharge joint.
- Refer to the torque table. (P. 251)
- Low-oil viscosity versions are available. Contact us for information.

* Should the pump malfunction, contact LUBE for consultation.

Related parts


MO2(C) Metering valve: P.115

For MO2(C) Valve

JVPA Junction : P.116


MO Metering valve: P.117

For MO Valve

PV Junction : P.118


MOS Metering valve : P.119

For MOS Valve

PVS Junction : P.121


MB Metering valve : P.123


MIX-S Metering valve : P.127


F-3D Filter : P.181


Pressure gauge : P.184

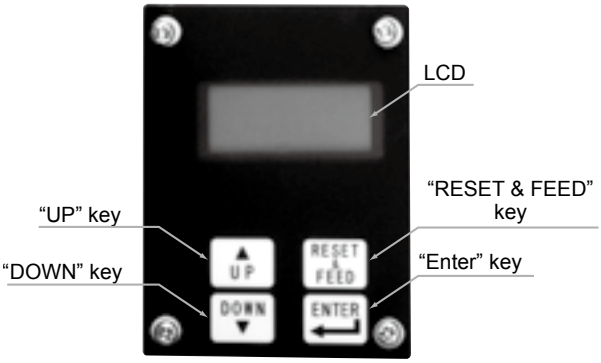
Tubing : P.203


Compression parts : P.201


Adapters : P.207


Metal reservoirs : P.170

Exterior features of the controller

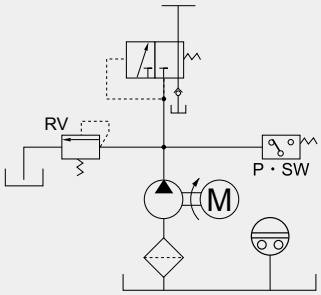


Operation panel of the controller

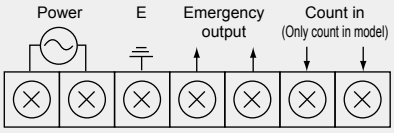
LCD shows the below:

INTERVAL → INT
DISCHARGE → DIS
ALARM → Low oil level OILLEVEL ERR
Low pressure PRESSURE ERR

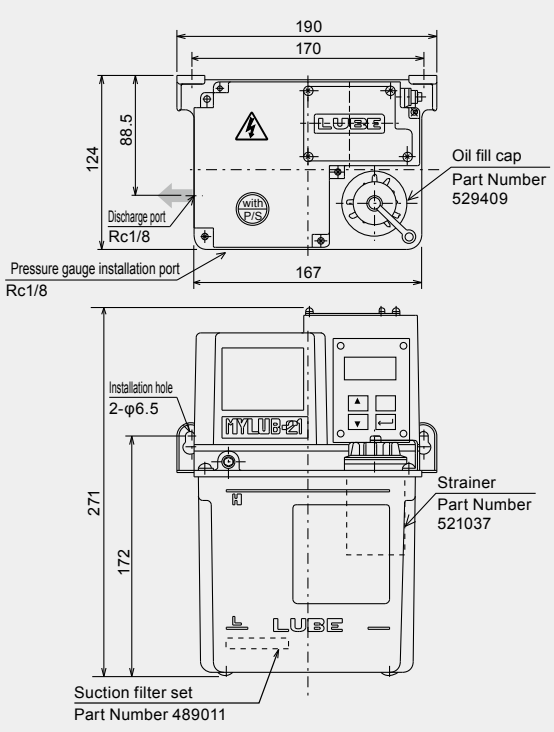
Hydraulic circuit drawing



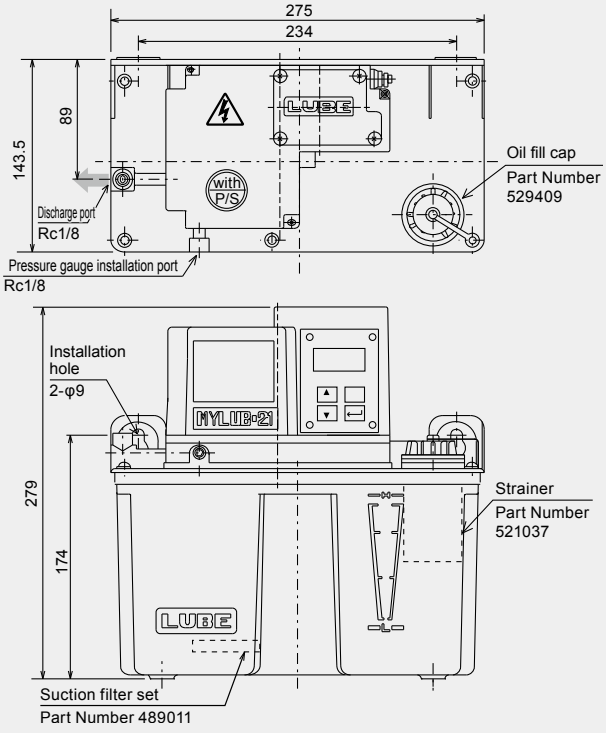
Wiring diagram



Dimensional drawing



[1.8ℓ]



[3ℓ]

Parts for connecting to the discharge port

Improper handling can result in a death or serious injury Electrical shock may be received under certain conditions Be sure to ground.

Automatic intermittent gear pump

AMO-Ⅱ-150S

Automatic intermittent gear pump without controller. Capable of working with a wide range of oil viscosities.

[1.8ℓ]

[3ℓ]

Model Reference

AMO－Ⅱ－150S－□－□－□□

Voltage

1	AC100Vφ1
2	AC200Vφ1

Pressure Switch

Blank	Without Pressure Switch
P	With Pressure Switch

Reservoir Mounting Poition

Blank	Resin
F	Foot Mount
B	Wall Mount

*Metal reservoir only

Reservoir capacity

Blank	1.8ℓ Resin reservoirs
3	3ℓ Resin reservoirs
30	3ℓ Metal reservoirs
40	4ℓ Metal reservoirs
80	8ℓ Metal reservoirs

*Pump is installed on the right side, if a metal reservoir is selected.

Directions for use

- This pump unit requires a separate control circuit to operate.
- Do not remove the oil fill strainer in order to keep the pump clear of foregn matter.
- Replace the suction filter at least once a year.
- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any special additive-contained oil, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace it, if necessary, with fresh oil immediately. Be sure to clean the reservoir before replacing oil.
- Make sure that proper voltage is applied.
- Do not over tighten the discharge joint.
- Refer to the torque table. (P. 251)
- Low-oil viscosity versions are available. Contact LUBE for information.

*Should the pump malfunction, contact LUBE for consultation.

Model

Model	Part Number
AMO-Ⅱ-150S-1	202067
AMO-Ⅱ-150S-1-3	202069
AMO-Ⅱ-150S-1-P	202071
AMO-Ⅱ-150S-1-P-3	202073
AMO-Ⅱ-150S-2	202068
AMO-Ⅱ-150S-2-3	202070
AMO-Ⅱ-150S-2-P	202072
AMO-Ⅱ-150S-2-P-3	202074

Specifications

Pump	Discharge volume	150mℓ/ min (50Hz), 180mℓ/ min (60Hz)
	Discharge pressure	2.0Mpa (20kgf/cm²) 284psi
Motor	Voltage/ current	AC100Vφ1/0.83A, AC200Vφ1/0.41A (50Hz) AC100Vφ1/0.64A, AC200Vφ1/0.33A (60Hz)
	Output	20W (50Hz/ 60Hz) Condenser Motor
Emergency detection	Oil level switch	Contact type (NO) ON at low level Contact capacity 0.5A AC DC200V/30W smaller
	Pressure switch	Contact type (NO) Operating pressure: 1.7MPa ON Reset pressure: 0.9MPa OFF Contact capacity AC DC250V/3A
Discharge time	Max. Discharge time:99sec Min. Interval time:1min	
Working viscosity range	68-1800mm²/S (50Hz)	
Reservoir capacity	1.8ℓ, 3ℓ (plastic) 3ℓ, 4ℓ, 8ℓ (sheet metal)	
Weight	1.8ℓ Reservoirs: 3.2kg 3ℓ Reservoirs: 4kg (plastic)	

Related parts

MO2(C) Metering valve: P.115

For MO2(C) Valve

JVPA Junction : P.116

MO Metering valve: P.117

For MO Valve

PV Junction : P.118

MOS Metering valve : P.119

For MOS Valve

PVS Junction : P.121

MB Metering valve : P.123

MIX-S Metering valve : P.127

F-3D Filter : P.181

Pressure gauge : P.184

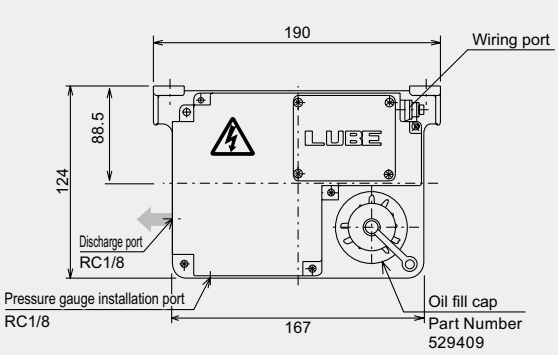
Tubing : P.203

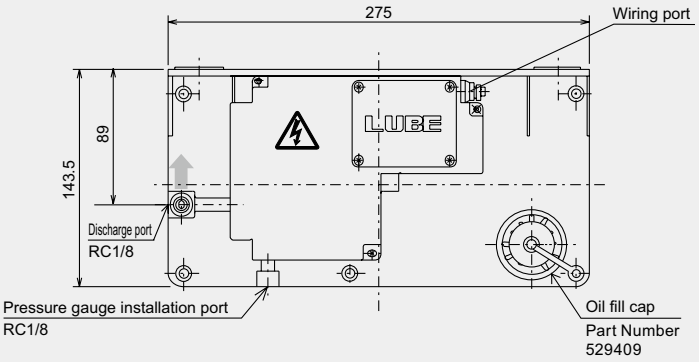
Compression parts : P.201

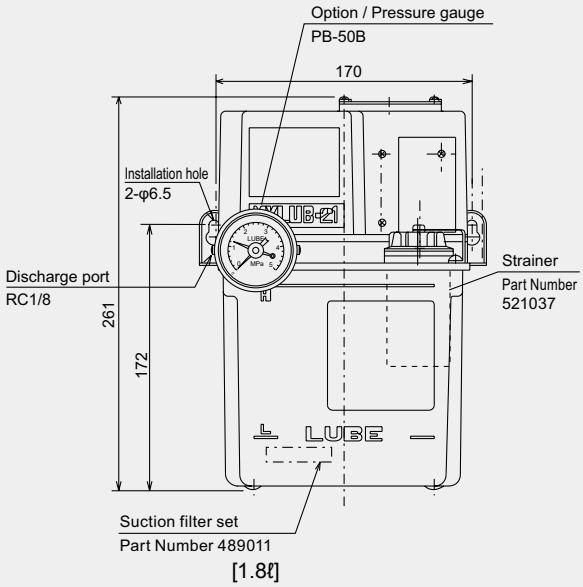
Adapters : P.207

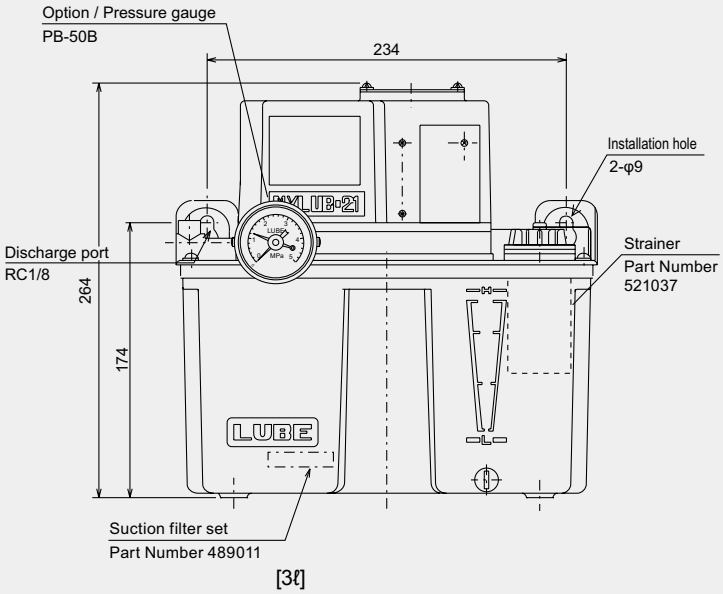
Metal reservoirs : P.170

Dimensional drawing





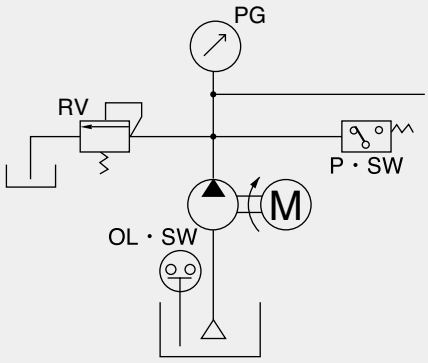




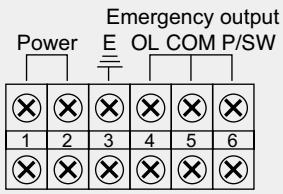
Parts for connecting to the discharge port

Improper handling can result in a death or serious injury. Electrical shock may be received under certain conditions. Be sure to ground.

Hydraulic circuit drawing



Wiring diagram



Automatic intermittent gear pump

AMI-300S . AMI-1000S

[AMI-300S] [AMI-1000S]

Model Reference

AMI − □ S − □ − □□□ − □

Discharge volume (50Hz/60Hz)

300	300mℓ/min / 330mℓ/min
1000	1000mℓ/min / 1100mℓ/min

Voltage

1	AC100Vφ1
2	AC200Vφ3

Reservoir capacity

2	2ℓ Metal
3	3ℓ Resin reservoirs
30	3ℓ Metal reservoirs
40	4ℓ Metal reservoirs
80	8ℓ Metal reservoirs

Oil level switch

Blank	Without
L	With

*If the controller is used, please select "With".

Reservoir Mounting Position

Blank	Resin reservoirs
F	Foot Mount
B	Wall Mount

Pump Position

L	Pump position-Left
R	Pump position-Right

*Except 2ℓ reservoir.

Directions for use

- Replace or clean the suction filter at least once a year.
- Do not remove the oil fill strainer in order to keep the pump clear of foregn matter.
- Oil viscosity varies with oil temperature. Be sure to use oil within specified working viscosity range. (P.237)
- Do not use any special additive-contained oil, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace it, if necessary, with fresh oil immediately. Be sure to clean the reservoir before replacing oil.
- Make sure that proper voltage is applied.
- Do not over tighten the discharge joint.
- Refer to the torque table. (P. 251)

* Should the pump malfunction, contact LUBE for consultation.

Specifications

		AMI-300S	AMI-1000S
Pump	Discharge volume	300mℓ/min (50Hz) 330mℓ/min (60Hz)	1000mℓ/min (50Hz) 1100mℓ/min (60Hz)
	Discharge pressure	2.5MPa (25kgf/cm²) 362.5 psi	
Motor	Power	AC100Vφ1/0.76/0.74A (condenser 11 μF)	AC100Vφ1/1.2/1.19A (50Hz) (condenser 20 μF)
		AC200Vφ3/0.32A/0.3A	AC200Vφ3/0.5/0.43A
	Output	40W Induction motor	60W Induction motor
Operation rate		Max. Discharge time :3min Min. Interval time : 3min	
Working viscosity range		65-1300mm²/S (50Hz)	
Reservoir capacity		Standard reservoir up to 50 liters available.	
Weight		4.4kg	7.1kg
Others		With Pressure relief mechanism, Motor rotation: Clockwise	
		Meca-tron controller is available.	
External fuse		100V/2A 200V/1A	100V/3A 200V/1A

Model

Model	Part Number
AMI-1000S-1	202103
AMI-1000S-2	202101
AMI-300S-1	202033
AMI-300S-2	202034

Related parts

MO2,MO2C Metering valve: P.115

For MO2(C) Valve

JVPA Junction : P.116

MO Metering valve: P.117

For MO Valve

PV Junction : P.118

MOS Metering valve : P.119

For MOS Valve

PVS Junction : P.121

MB Metering valve : P.123

F-3D Filter : P.181

Pressure gauge : P.184

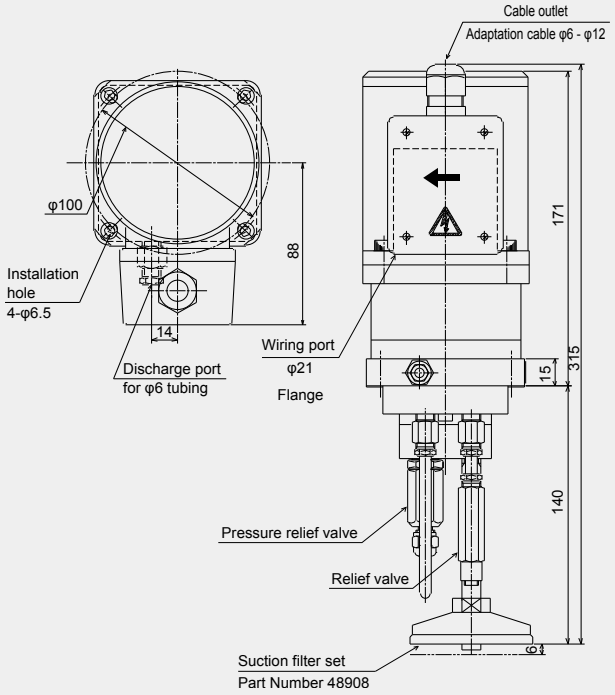
Tubing : P.203

Compression parts : P.201

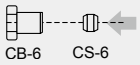
Adapters : P.207

Metal reservoirs : P.170

Dimensional drawing (AMI-300S)

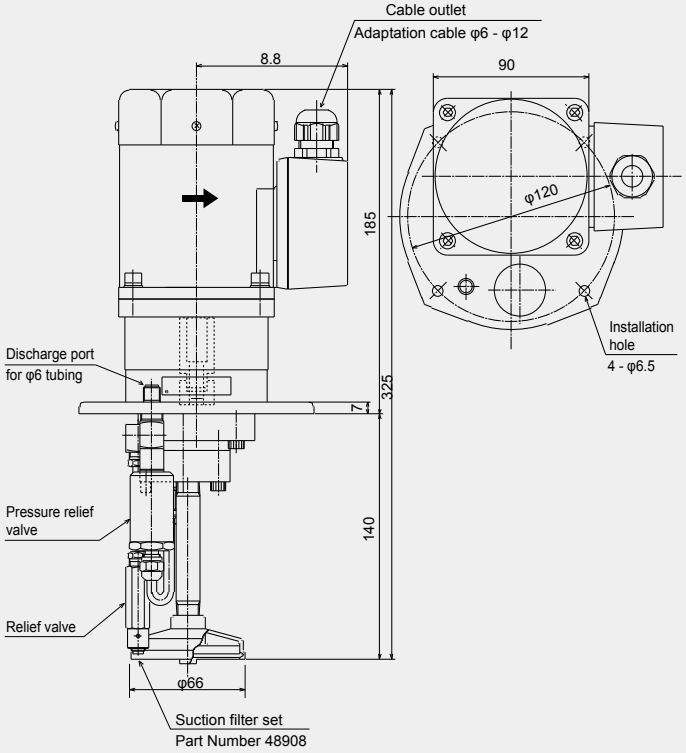


Parts for connecting to the discharge port

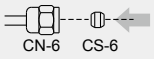


[AMI-300S]

Dimensional drawing (AMI-1000S)

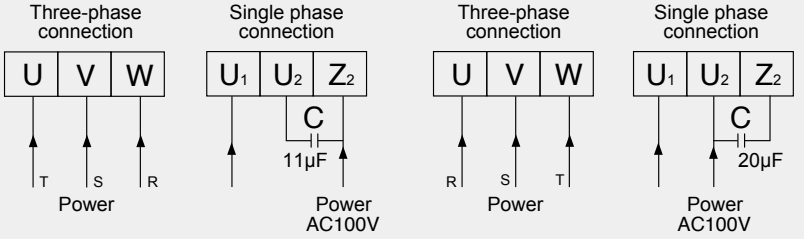


Parts for connecting to the discharge port



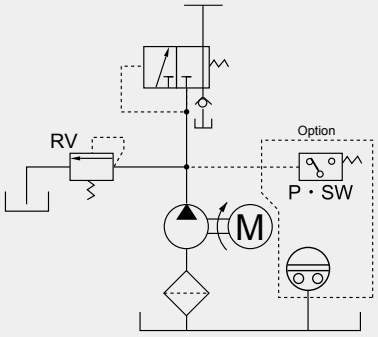
[AMI-1000S]

Wiring diagram



[AMI-300S] [AMI-1000S]

Hydraulic circuit drawing



Manually-operated high pressure intermittent piston pump

LT-S

Suitable for intermittent manual lubrication.
Reservoirs and pump are assembled as a unit.

[LT-S]

Specifications

Pump	Discharge volume	8mℓ/Shot
	Discharge pressure	3.4MPa (Safety valve set pressure)
Working viscosity range		65 - 1300mm²/s
Reservoir capacity		260mℓ (Resin)
Weight		1.2kg
Others		Depressurizing mechanism is built-in

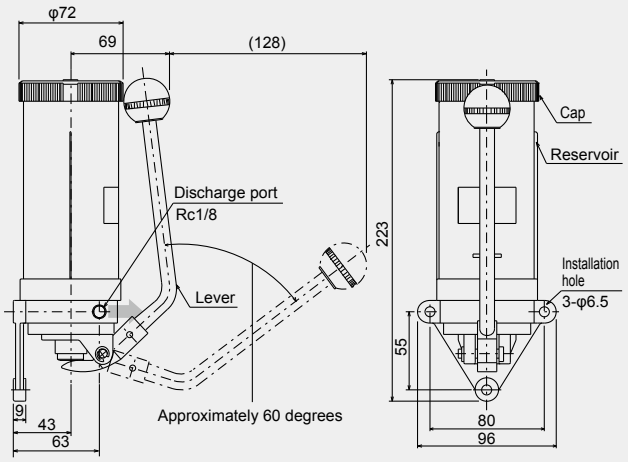
Model

Model	Part Number
LT-S	103421

Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not remove the oil fill strainer in order to keep the pump clear of foregn matter.
- Do not use any special additive-contained oil, water soluble oil and solvent.
- Periodically check the oil in the reservoir for impurities. Replace it, if necessary, with fresh oil immediately. Be sure to clean the reservoir before replacing oil.
- Do not over tighten the discharge joint.
- Refer to the torque table. (P. 251)
- Use clean oil.
- Total discharging volume from all of the metering valves must be below 5 ml per cycle.
- Contact LUBE when the system is designed with this pump.

Dimensional drawing



Related parts

MO Metering valve
: P.117

For MO Valve

PV Junction
: P.118

MOS Metering valve
: P.119

For MOS Valve

PVS Junction
: P.121

MB Metering valve
: P.123

F-3D Filter
: P.181

Pressure gauge
: P.184

Tubing
: P.203

Compression parts
: P.201

Adapters
: P.207

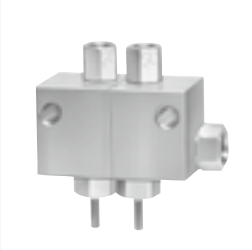
MO2 . MO2C Metering valve : P.115

JVPA junction
: P.116

Positive Displacement Injector (PDI) System for Large Machines

MO2 . MO2C

MO



MB

DVR

MIX

MIX-S

■ Valve

Metering valve
MO2 . MO2C

Positive displacement injectors are available with compression or push to connect tail tubing connections.

[MO2] [MO2C]

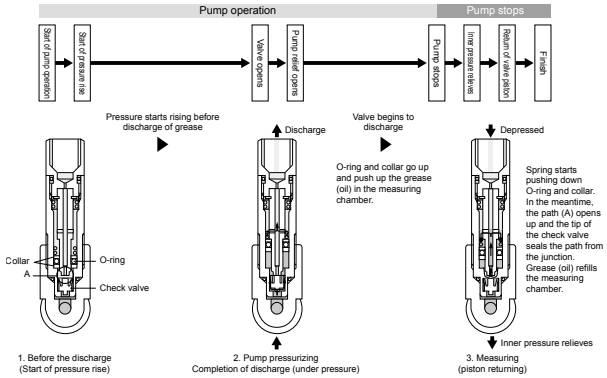
Specifications

Discharge volume	0.03, 0.05, 0.1, 0.2, 0.3, 0.5 mℓ/stroke
Operating pressure	1.0MPa
Reset pressure	0.3MPa

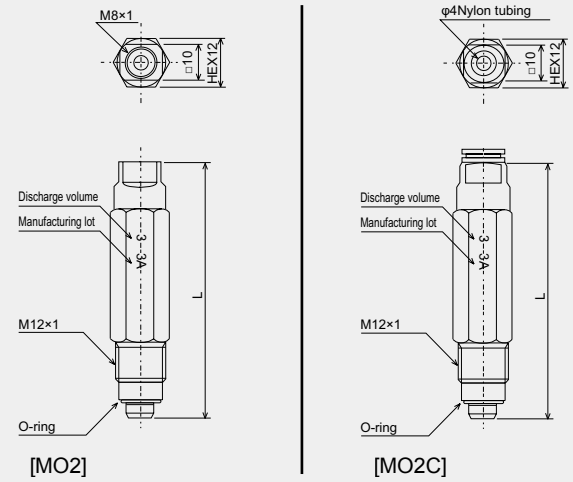
Model

Model	Part Number	Discharge volume (mℓ)	L (mm)	Mark	
MO2-3	205761	0.03	48	3	HEX12
MO2-5	205762	0.05		5	
MO2-10	205763	0.1		10	
MO2-20	205764	0.2	64	20	
MO2-30	205765	0.3		30	
MO2-50	205766	0.5		50	
MO2C-3	205751	0.03	53.5	3	
MO2C-5	205752	0.05		5	
MO2C-10	205753	0.1		10	
MO2C-20	205754	0.2	69.5	20	
MO2C-30	205755	0.3		30	
MO2C-50	205756	0.5		50	

Operation Sequence



Dimensional drawing



Related parts

AMZ-Ⅱ
: P.103

AMO-ⅢDS
: P.107

AMO-Ⅱ-150S
: P.109

AMI-300S · 1000S
: P.111

PM Pump
: P.105

LT-S
: P.113

Tubing
: P.203

Branch tubing
: P.203

Adapters
: P.207

Compression parts
: P.201

Push-in-Fitting
: P.214

Pressure switch
: P.185

Ludo-sensor
: P.187

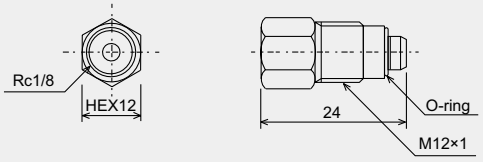
*Production lot is indicated by a number and letter code. Number indicates year of production, letter indicates month of production. [A(January)-L(December)]

Junctions and special fittings for MO2 series valve installation

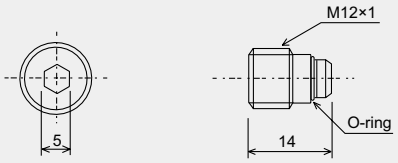
JVPA

For MO2 valve installation

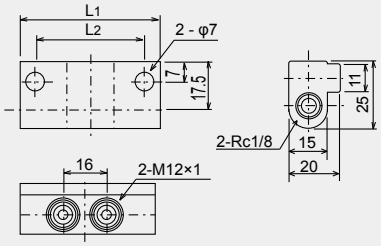
Dimensional drawing



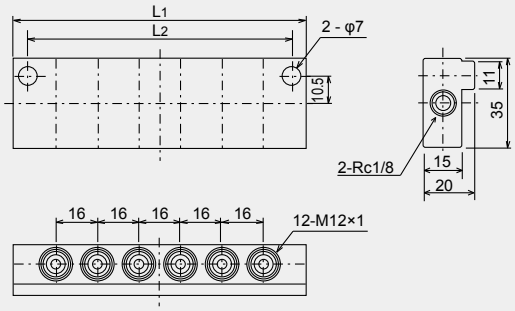
[Connector assembly]



[Plug assembly]



[Junction JVPA-2S]



[Junction JVPA-12D]

Model

Model	Part Number
SCP	619803

Material: Brass (C3604)

Model	Part Number
BPP	619802

Material: Steel (SUM24)

Model	Part Number	Specification	L_1	L_2
JVPA-1S	216001	Single type for 1 port	33	22
JVPA-2S	216002	Single type for 2 ports	49	38
JVPA-3S	216003	Single type for 3 ports	65	54
JVPA-4S	216004	Single type for 4 ports	81	70
JVPA-5S	216005	Single type for 5 ports	97	86
JVPA-6S	216006	Single type for 6 ports	113	102
JVPA-7S	216007	Single type for 7 ports	129	118
JVPA-8S	216008	Single type for 8 ports	145	134
JVPA-9S	216009	Single type for 9 ports	161	150
JVPA-10S	216010	Single type for 10 ports	177	166
JVPA-11S	216011	Single type for 11 ports	193	182
JVPA-12S	216012	Single type for 12 ports	209	198

Model	Part Number	Specification	L_1	L_2
JVPA-2D	216021	Double type for 2 ports	33	11
JVPA-4D	216022	Double type for 4 ports	49	38
JVPA-6D	216023	Double type for 6 ports	65	54
JVPA-8D	216024	Double type for 8 ports	81	70
JVPA-10D	216025	Double type for 10 ports	97	86
JVPA-12D	216026	Double type for 12 ports	113	102
JVPA-14D	216027	Double type for 14 ports	129	118
JVPA-16D	216028	Double type for 16 ports	145	134

Material: Aluminum A6063S-T5

Metering valve
MO

Positive displacement injectors (PDI) for oil.
Nine different discharge volumes are available.

[MO]

Specifications

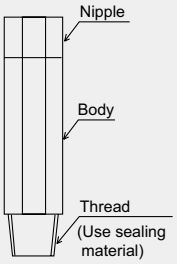
Discharge volume	0.03, 0.05, 0.1, 0.2, 0.3, 0.5mℓ/stroke
Operating pressure	1.0MPa
Reset pressure	0.3MPa

Model

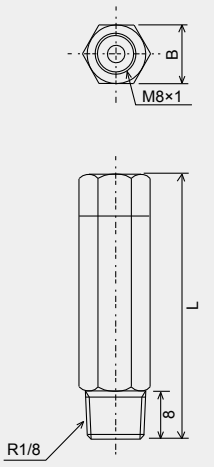
Model	Part Number	Discharge volume (mℓ)	L (mm)	Mark	B
MO-1	205070	0.01	44.5	1	HEX12
MO-3	205071	0.03		3	
MO-5	205072	0.05		5	
MO-10	205073	0.1		10	
MO-20	205074	0.2	53.5	20	
MO-30	205075	0.3		30	
MO-50	205076	0.5	65	50	
MO-100	205077	1	74.5	100	HEX19
MO-150	205078	1.5		150	

Directions for use

- When installing the valve to a junction, screw it into place with a wrench applied to the valve body.
- When connecting the valve to tail tubing, turn bushing holding the nipple with a wrench.



Dimensional drawing



Related parts

AMZ-Ⅲ
: P.103

AMO-ⅢDS
: P.107

AMO-Ⅱ-150S
: P.109

AMI-300S · 1000S
: P.111

PM Pump
: P.105

LT-S
: P.113

Tubing
: P.203

Branch tubing
: P.203

Adapters
: P.207

Compression parts
: P.201

Push-in-Fitting
: P.214

Pressure switch
: P.185

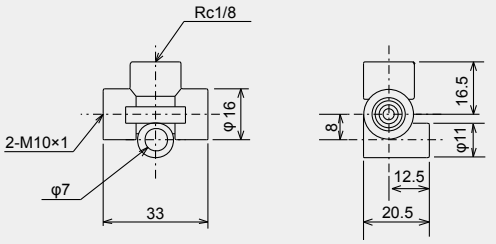
Ludo-sensor
: P.187

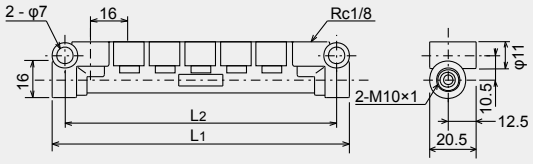
Junction for MO valve

PV

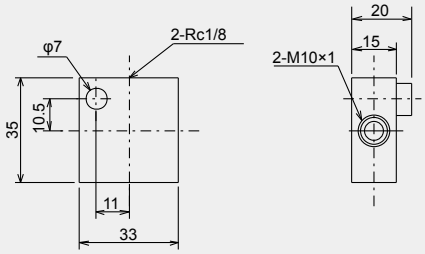
For MO valve installation

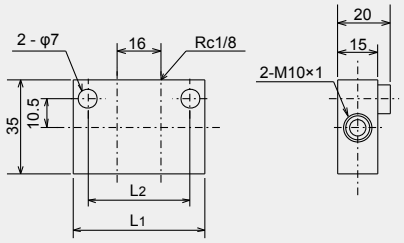
Dimensional drawing





[PV-7]





[PV-4D]

Model

Model	Part Number	Specifications
PV-1	206481	Single type for 1 port

Material: Zinc Die Casting (ZDC)

Model	Part Number	Specifications	L_1	L_2
PV-2	206482	Single type for 2 ports	49	38
PV-3	206483	Single type for 3 ports	65	54
PV-4	206484	Single type for 4 ports	81	70
PV-5	206485	Single type for 5 ports	97	86
PV-6	206486	Single type for 6 ports	113	102
PV-7	206487	Single type for 7 ports	129	118
PV-8	206489	Single type for 8 ports	145	134

Material: Zinc Die Casting (ZDC)

Model	Part Number	Specifications
PV-2D	206491	Double type for 2 ports

Material brass C3604

Model	Part Number	Specifications	L_1	L_2
PV-4D	206492	Double type for 4 ports	49	38
PV-6D	206493	Double type for 6 ports	65	54
PV-8D	206494	Double type for 8 ports	81	70
PV-10D	206495	Double type for 10 ports	97	86
PV-12D	206496	Double type for 12 ports	113	102

Material brass C3604

Compact metering valve

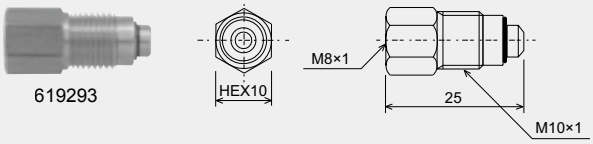
MOS

MOS metering valve is the compact version of MO valve.
Four different discharge volumes are available.

Specifications

Discharge volume	0.01, 0.03, 0.05, 0.1mℓ/Stroke
Operating pressure	0.9MPa
Reset pressure	0.3MPa

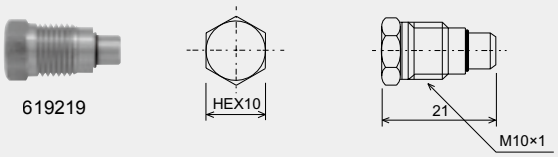
Adapters(SAS)



Model

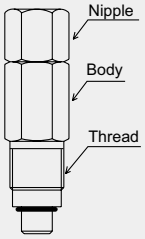
Model	Part Number	Didcharge volume (mℓ)	Mark
MOS-1	205300	0.01	1
MOS-3	205301	0.03	3
MOS-5	205302	0.05	5
MOS-10	205303	0.1	10

Plug(BPS)



Directions for use

- When installing the valve to a junction, screw it into place with a wrench applied to the valve body (Tightening torque : 50kgf·cm)
- When connecting the valve to tail tubing, turn bushing holding the nipple with a wrench.



Related parts


AMZ-Ⅱ
: P.103


AMO-ⅢDS
: P.107


AMO-Ⅱ-150S
: P.109


AMI-300S · 1000S
: P.111


PM Pump
: P.105


LT-S
: P.113

Tubing
: P.203

Branch tubing
: P.203


Adapters
: P.207

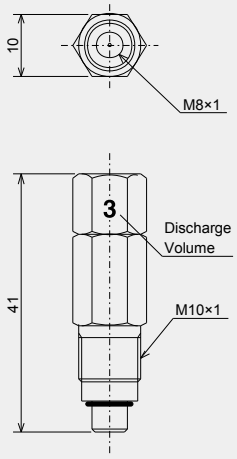

Compression parts
: P.201


Push-in-Fitting
: P.214

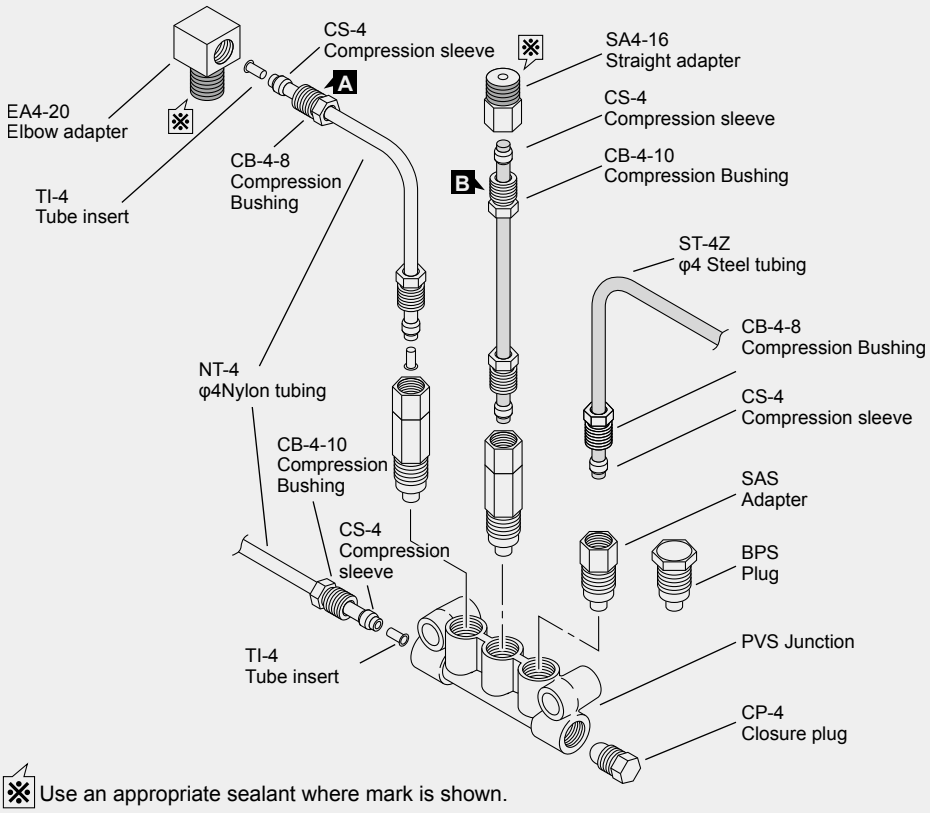

Pressure switch
: P.185


Ludo-sensor
: P.187

Dimensional drawing



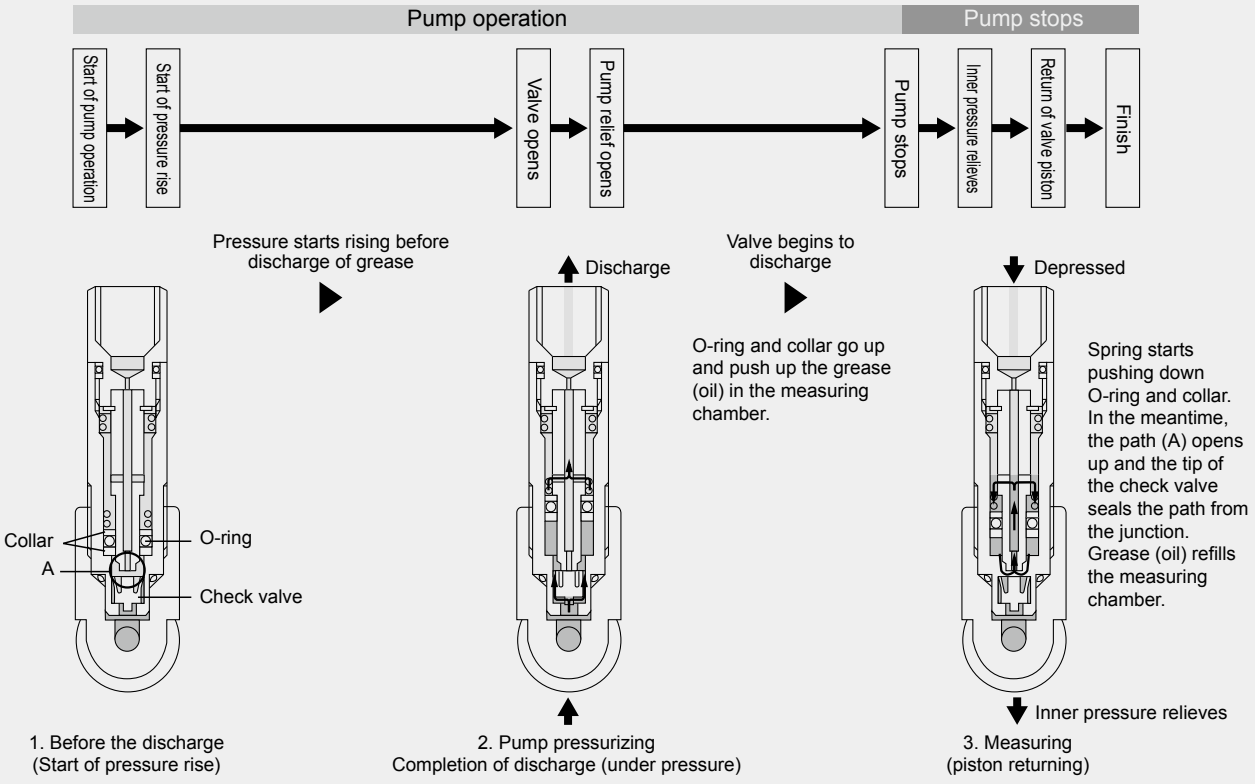
Piping layout (Example)



※ Use an appropriate sealant where mark is shown.

■ Mark denote tightening torque. See the tightening torque list. P.251

Operation Sequence

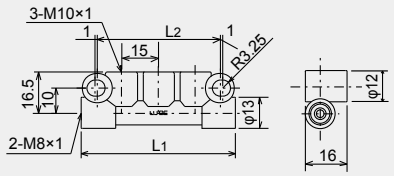


Junction for MOS compact metering valve

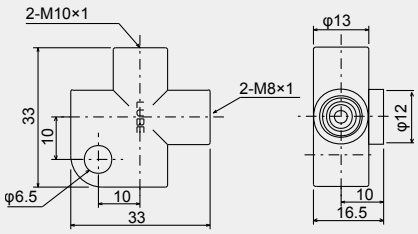
PVS

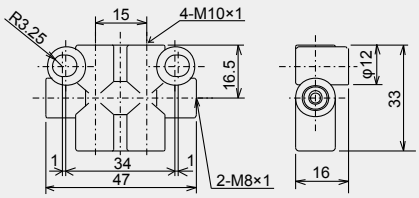
Valve installation ports are threaded in M10x1 specially for MOS valves.
Plug the installation ports not in use with Blanking Plug (BPS).
When connecting tubing, use the adapter (SAS).

Dimensional drawing



[PVS-3S]





Model

Model	Part Number	Specifications	L_1	L_2
PVS-2S	206572	Single type for 2 ports	47	34
PVS-3S	206573	Single type for 3 ports	63	50
PVS-4S	206574	Single type for 4 ports	78	65
PVS-5S	206575	Single type for 5 ports	93	80
PVS-6S	206576	Single type for 6 ports	108	95
PVS-7S	206577	Single type for 7 ports	123	110
PVS-8S	206578	Single type for 8 ports	138	125

Material: Zinc Die Casting (ZDC)

Model	Part Number	Specifications
PVS-2D	206554	Double type 2ports

Material: Zinc Die Casting (ZDC)

Model	Part Number	Specifications
PVS-4D	206557	Double type 4ports

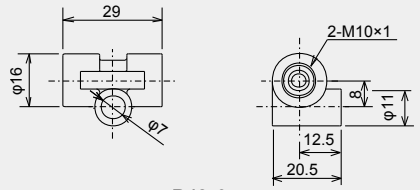
Material: Zinc Die Casting (ZDC)

Junction for main tubing

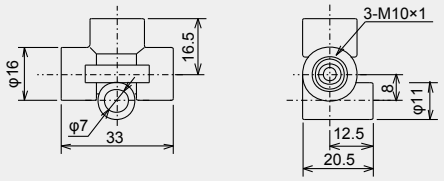
PV

For 6mm O.D tubing

Dimensional drawing



PJ2-6



PJ3-6

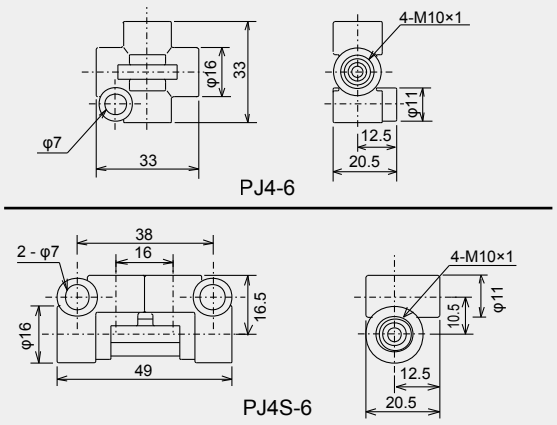
Model

External diameter

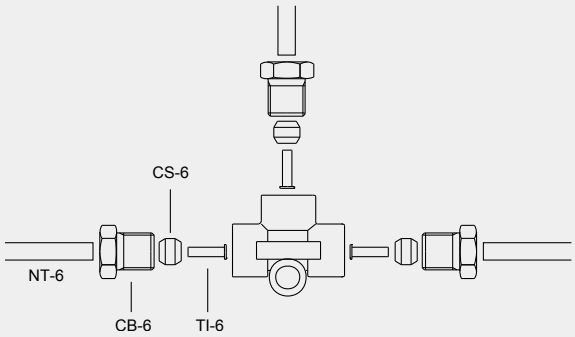
Model	Part Number	Specifications
PJ2-6	206452	Two-way
PJ3-6	206453	Three-way
PJ4-6	206454	Four-way
PJ4S-6	206461	

Material: Zinc Die Casting (ZDC)

Dimensional drawing



Example of connecting nylon tubing NT-6.



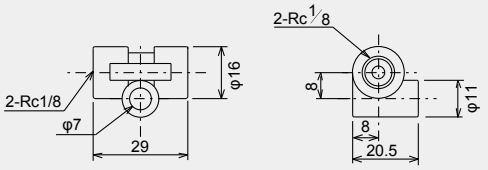
Junction

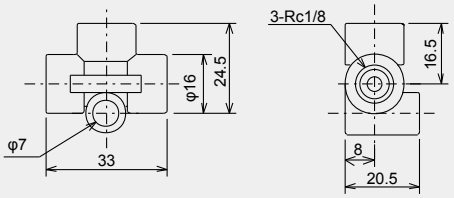
JV

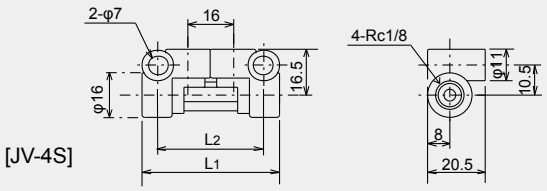
For, MGI, valve installation / 6mm / 8mm O.D tubing


[JV-6S]

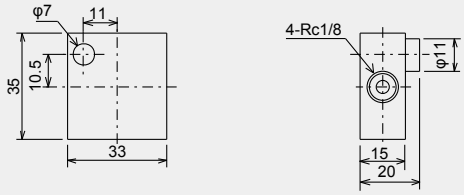
Dimensional drawing

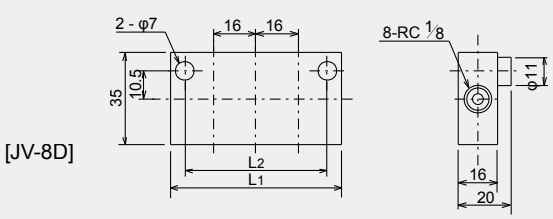






[JV-4S]





[JV-8D]

Model

Model	Part Number
JV-2	206470

Material: Zinc Die Casting (ZDC)

Model	Part Number	Specifications
JV-3	206471	Single type for 1 port

Material: Zinc Die Casting (ZDC)

Model	Part Number	Specifications	L1	L2
JV-4S	206472	Single type for 2 ports	49	38
JV-5S	206473	Single type for 3 ports	65	54
JV-6S	206474	Single type for 4 ports	81	70
JV-7S	206475	Single type for 5 ports	97	86
JV-8S	206476	Single type for 6 ports	113	102
JV-9S	206479	Single type for 7 ports	129	118
JV-10S	206543	Single type for 8 ports	145	134

Material: Zinc Die Casting (ZDC)

Model	Part Number	Specifications
JV-4D	206464	Double type for 2 ports

Material: brass (C3604)

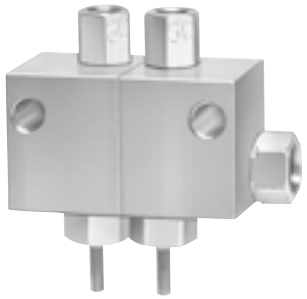
Model	Part Number	Specifications	L1	L2
JV-6D	206465	Double type for 4 ports	49	38
JV-8D	206466	Double type for 6 ports	65	54
JV-10D	206467	Double type for 8 ports	81	70
JV-12D	206468	Double type for 10 ports	97	86
JV-14D	206469	Double type for 12 ports	113	102

Material: brass (C3604)

Spring piston metering valve

MB

Low pressure discharge metering valve.
Discharge is confirmed by indicator pin.



Specifications

Discharge volume	0.03, 0.05, 0.1, 0.2, 0.3, 0.5mℓ/stroke
Working pressure	0.6MPa
Reset pressure	0.25MPa
Normal pressure for operation	1.5 - 2.5MPa
Permissible range of discharge volume	±20%

Model

		MB-L	MB-C	MB-R
Discharge volume	**Mark**	**Model**	**Model**	**Model**
0.03	3	MB-L-3	MB-C-3	MB-R-3
0.05	5	MB-L-5	MB-C-5	MB-R-5
0.1	10	MB-L-10	MB-C-10	MB-R-10
0.2	20	MB-L-20	MB-C-20	MB-R-20
0.3	30	MB-L-30	MB-C-30	MB-R-30
0.5	50	MB-L-50	MB-C-50	MB-R-50

Material: brass

Combinations dimension list

Number of port	**Size**	
	A	**B**
1	25	–
2	39	50
3	54	65
4	69	80
5	84	95
6	99	110
7	114	126
8	129	140
9	144	155
10	159	170

* Model of MB valves depend on the number of port and discharge volume. Please contact LUBE for consultation when selecting model.

Directions for use

- Fasten main pipe fittings and tighten the bushings to install the tubing.

Related parts

AMZ-Ⅱ
: P.103

AMO-ⅢDS
: P.107

AMO-Ⅱ-150S
: P.109

AMI-300S · 1000S
: P.111

LT-S
: P.113

Tubing
: P.203

Branch tubing
: P.203

Adapters
: P.207

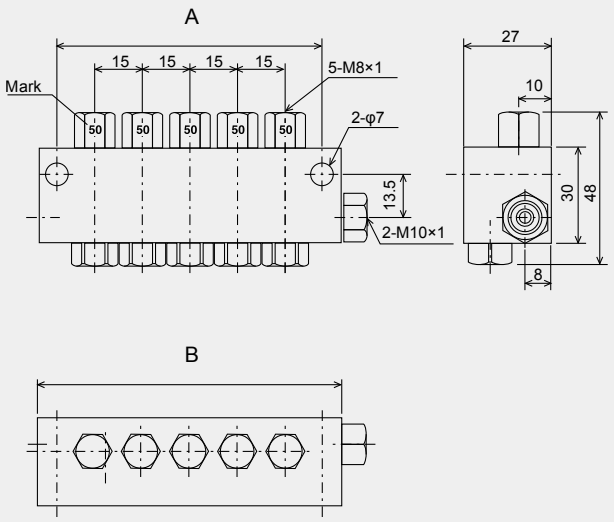
Compression parts
: P.201

Push-in-Fitting
: P.214

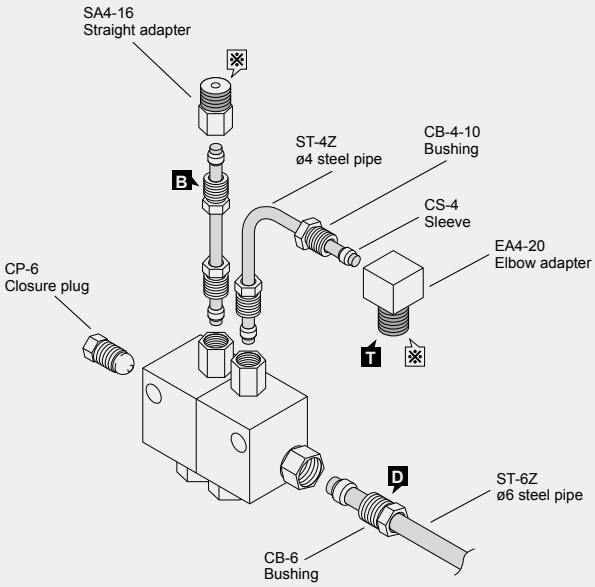
Pressure switch
: P.185

Ludo-sensor
: P.187

Dimensional drawing



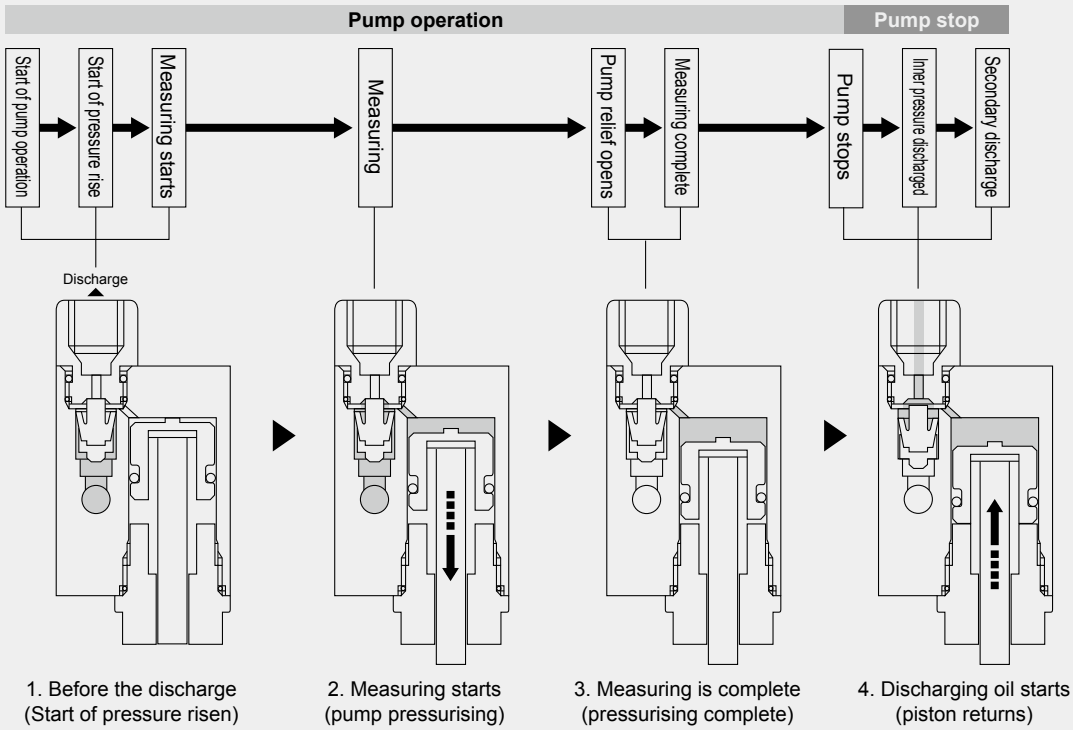
Piping layout (Example)



※ Use an appropriate sealant where mark is shown.

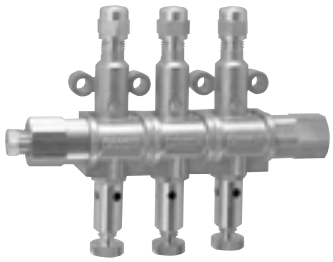
Mark denote tightening torque. See the tightening torque list. P.251

Operation sequence



Adjustable PDI valve (DVR-M) including DVR

Discharges a metered volume of oil which is delivered from a PM pump.



Model

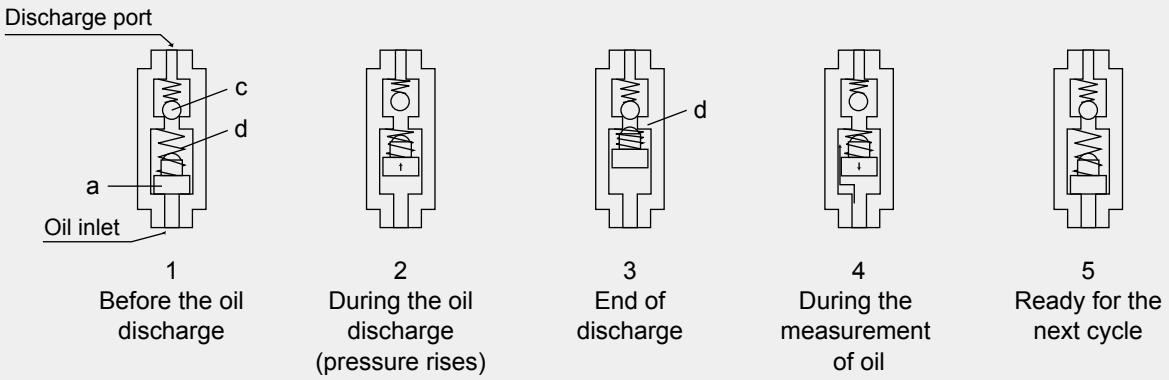
Model	Part number	Number of port	L_1	L_2
DVR-1	619041	1	71	—
DVR-2	619042	2	96	—
DVR-3	619043	3	121	27
DVR-4	619044	4	146	52
DVR-5	619045	5	171	77
DVR-6	619046	6	196	52
DVR-7	619047	7	221	77
DVR-8	619048	8	246	102
DVR-9	619049	9	271	127
DVR-10	619050	10	296	102

Specifications

Discharge volume	0.03, 0.05, 0.1, 0.2, 0.3, 0.5cc/stroke
Operating pressure	1.2MPa
Reset pressure	0.5MPa

Discharge volume	Piston stroke (mm)	L_3 scale(mm)
0.5	10	10.6
0.3	6	6.6
0.2	4	4.6
0.1	2	2.6
0.05	1	1.6
0.03	0.6	1.2
0	0	0.6

Motion flow chart



1 Before the oil discharge

2 During the oil discharge (pressure rises)

3 End of discharge

4 During the measurement of oil

5 Ready for the next cycle

1. Once the pump starts running, the check valve c is in the ready position

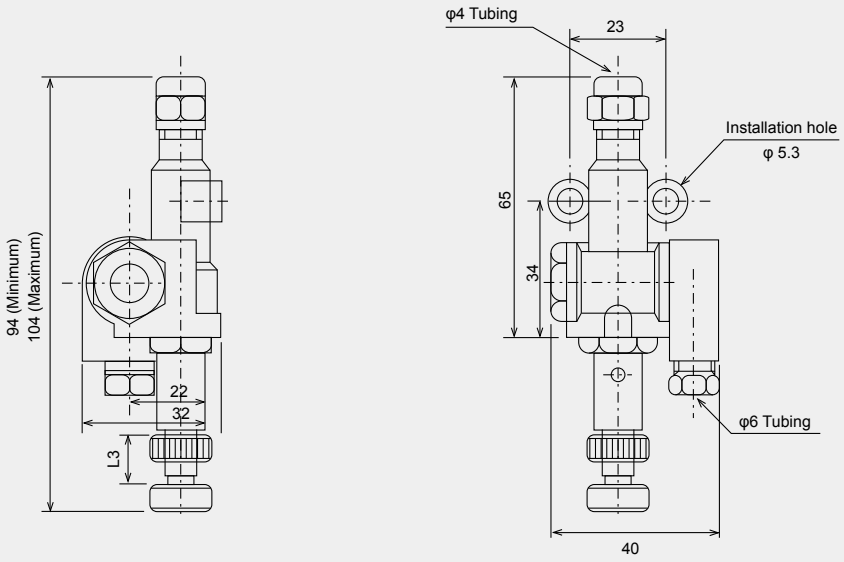
2. When check valve c is open, piston a is push up. The oil in cylinder will be discharged.

3. When piston a completes its stroke, the discharge ends.

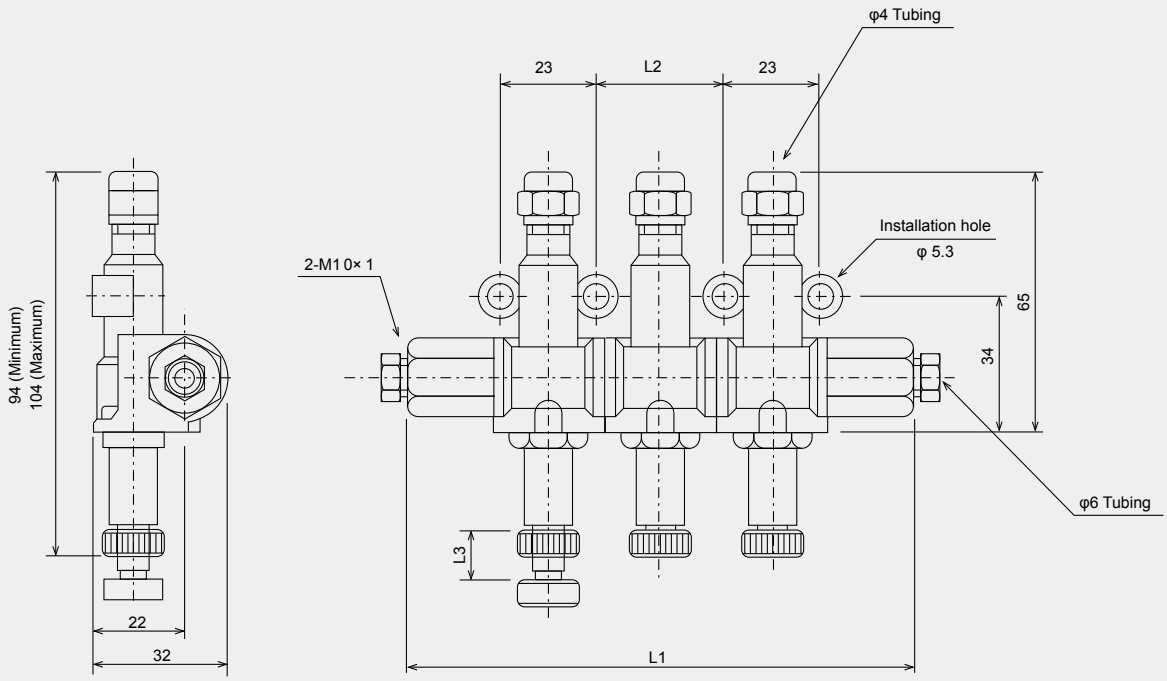
4. When pump stops, pressure relives.
Once the pressure in the tubing reduce, the piston a is being pushed down by the spring b.
At the same time, the valve reloading oil in the chamber above piston a.

5. The piston has returned and is ready for the next cycle.

Dimensional drawing



Part number	Specifications
205140	L
205141	R

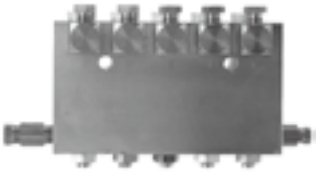


Air-oil metering valve

MIX . MIX-S

Air Oil Mixing Blocks have precision Positive Displacement Injectors built into them.

[MIX-S]



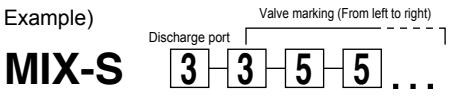
[MIX]

Model Reference

Fill the blanks with the valve marking from the left to right.

* Markings designate discharge volume. (Ex:5→0.05mℓ/ stroke)

Example)



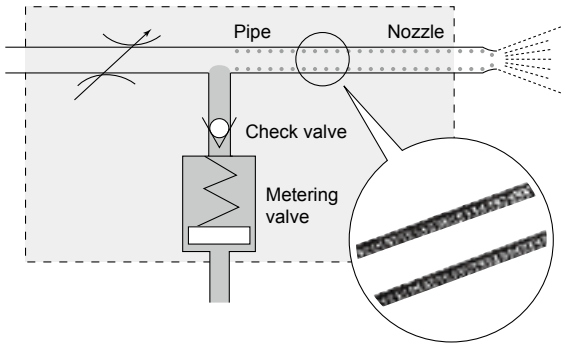
When ordering Mix-S, use the order sheet on P.128.

* Please contact LUBE when specifying MIX valves.

Model

		MIX	MIX-S
Discharge volume (mℓ)	**Mark**	**Model**	**Model**
0.005	05	—	MIX-S-05
0.01	1	MIX-1	MIX-S-1
0.015	1.5	—	MIX-S-1.5
0.03	3	MIX-3	MIX-S-3
0.05	5	MIX-5	MIX-S-5
0.1	10	MIX-10	—
0.2	20	MIX-20	—

Air Oil system



Specifications

Discharge volume	MIX: 0.01, 0.03, 0.05, 0.1, 0.2 MIX-S: 0.005, 0.01, 0.015, 0.03, 0.05mℓ/Stroke
Operating pressure	1.0MPa
Reset pressure	0.3MPa

Combination dimension list

MIX

Number of port	1 port	2 ports	3 ports	4 ports	5 ports	6 ports
L_1	—	50	70	90	110	130
L_2	—	40	60	40	60	80

Material: Aluminum

MIX-S

Number of port	1 port	2 ports	3 ports	4 ports	5 ports	6 ports
L_1	38	54	70	86	102	118
L_2	22	38	54	70	86	102

Material: Aluminum

*Model of Mix valves depend on the number of port and discharge volume. Please contact LUBE when selecting the model.

Directions for use

■ Please read Operation Manual before operation.

Related parts

AMZ-Ⅱ
: P.103

AMO-ⅢDS
: P.107

AMO-Ⅱ-150S
: P.109

Main tubing
: P.203

Branch tubing
: P.203

Compression parts
: P.201

Adapters
: P.207

Push-in fitting
: P.214

Jet nozzle
: P.219

Pressure switch
: P.185

O/A sensor
: P.189

LUBE OIL / AIR MIXING Valve
STANDARD PRODUCT INQUIRY&ORDER SHEET

L-MIX-S CODE NO.SL4020

Block assembly		Valve assembly					
Namber of port	CODE No.	①	②	③	④	⑤	⑥
1	619861						
2	619862						
3	619863						
4	619864						
5	619865						
6	619866						

× _____PCS

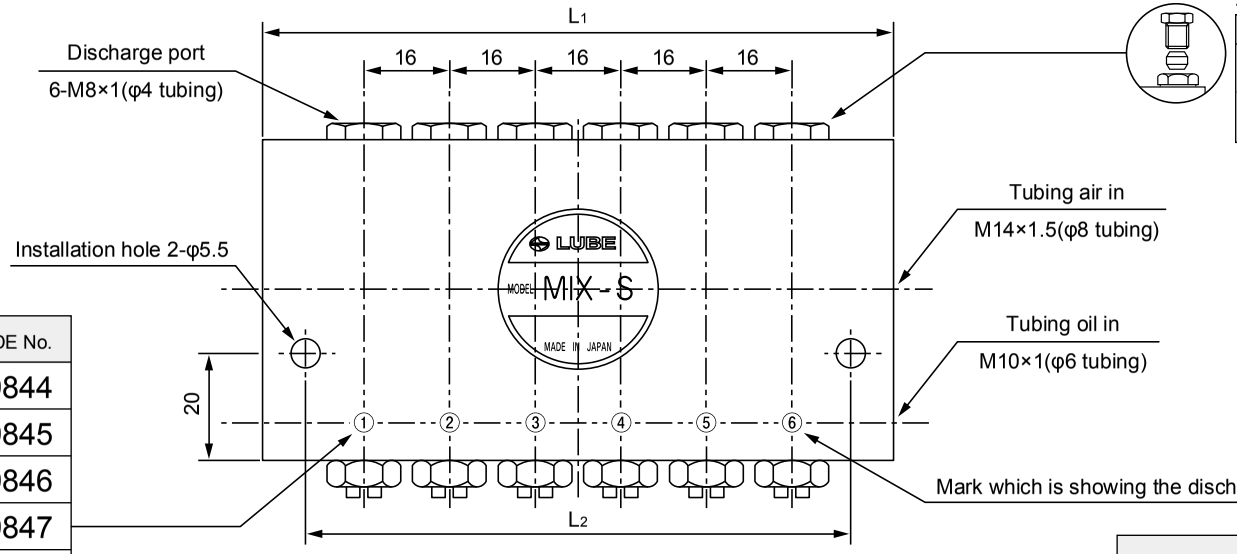
Visitor order affirmation		sign
LUBE affirmation		sign

Mounting pitch

Namber of port	1	2	3	4	5	6
mm	22	38	54	70	86	102

Size (mm)

Namber of port	1	2	3	4	5	6
L_1	38	54	70	86	102	118
L_2	22	38	54	70	86	102



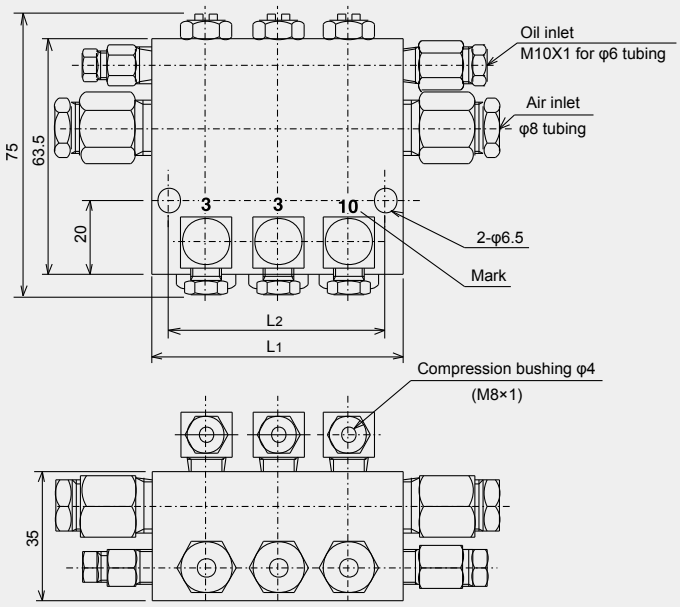
Accessory

	Model	Part number
	CB-4-8	106253
	CS-4	106254

Valve block assembly

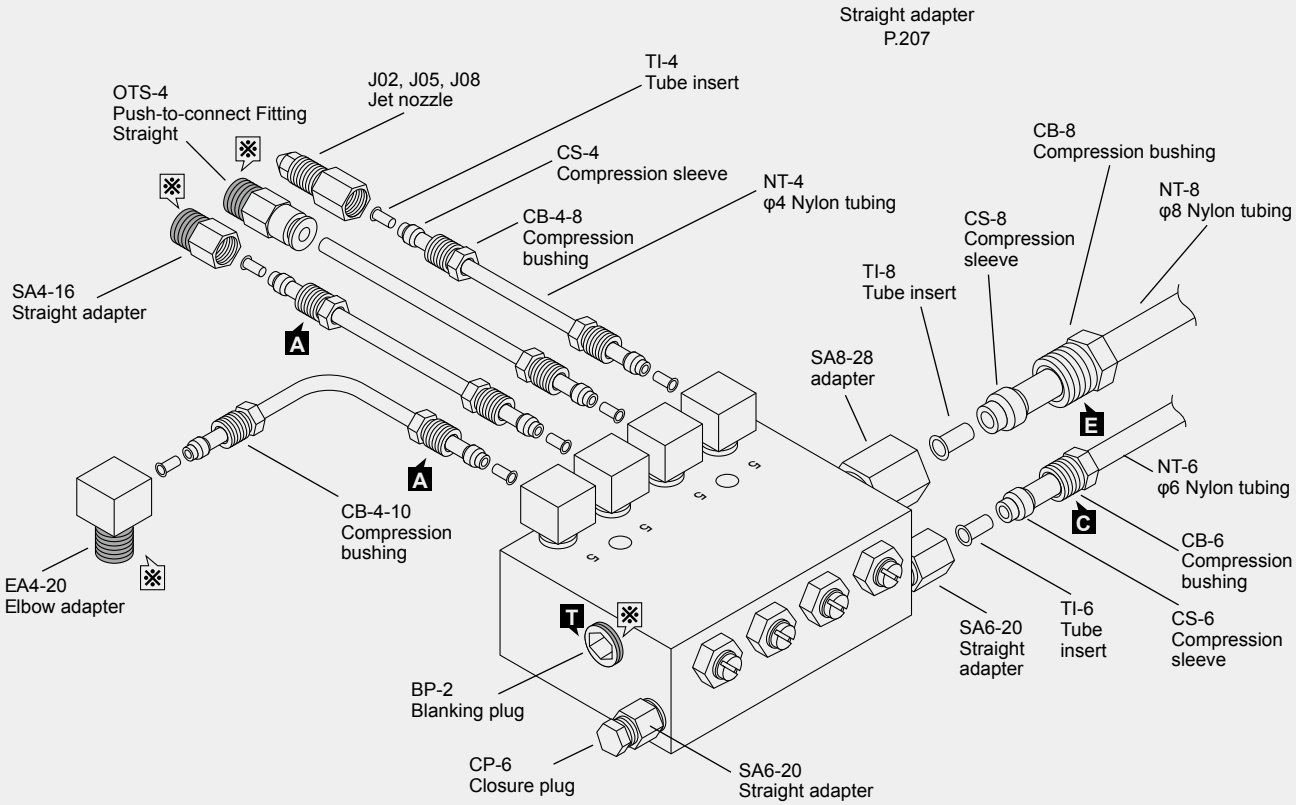
No.	Discharge volume(mℓ)	CODE No.
05	0.005	619844
1	0.01	619845
15	0.015	619846
3	0.03	619847
5	0.05	619848

Dimensional drawing



[MIX]

Piping layout (Example)

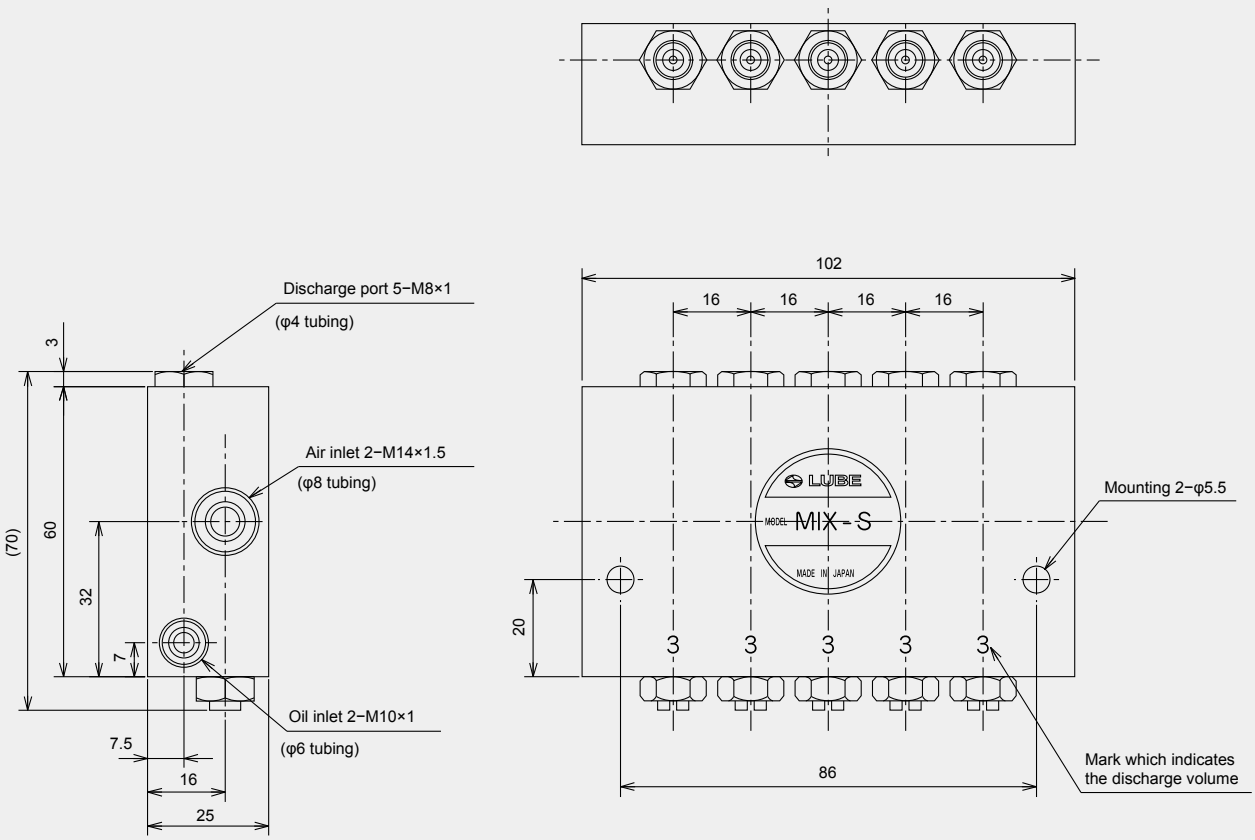


[MIX]

※ Use an appropriate sealant where mark is shown.

Mark denote tightening torque. See the tightening torque list. P.251

Dimensional drawing



[MIX-A]

Single Line Resistance (SLR) compact system for small machines with intermittent delivery

MLZ

MMXL-Ⅲ


MMX-Ⅱ


EX


AMR-Ⅲ DS

■ Valve [Pump]

Automatic intermittent piston pump

Automatic intermittent piston pump

Solenoid driven intermittent piston pump

Automatic intermittent gear pump

Manually operated piston pump

Automatic intermittent piston pump

MLZ

Compact version of MMXL-III. Ideal for small machines with limited installation space.

[CE]

Model Reference

MLZ-CE-□-□□

Interval (50Hz/60Hz)

A	6min/4min48sec
B	15min/12min
C	30min/24min
D	60min/48min
E	120min/96min

Oil level switch

Blank	Without
L	With

Voltage

1	AC100V φ1
2	AC200V φ1

Model

Model	Part Number
MLZ-CE-A-1	367201
MLZ-CE-A-1L	367216
MLZ-CE-A-2	367206
MLZ-CE-A-2L	367221
MLZ-CE-B-1	367202
MLZ-CE-B-1L	367217
MLZ-CE-B-2	367207
MLZ-CE-B-2L	367222
MLZ-CE-C-1	367203
MLZ-CE-C-1L	367218

Model	Part Number
MLZ-CE-C-2	367208
MLZ-CE-C-2L	367223
MLZ-CE-D-1	367204
MLZ-CE-D-1L	367219
MLZ-CE-D-2	367209
MLZ-CE-D-2L	367224
MLZ-CE-E-1	367205
MLZ-CE-E-1L	367220
MLZ-CE-E-2	367210
MLZ-CE-E-2L	367225

Specifications

Pump	Discharge volume	1.5-2.5mℓ/stroke
	Discharge pressure	0.3MPa
Motor	Voltage/ current	AC100Vφ1/50mA, AC200Vφ1/25mA (50Hz) AC100Vφ1/42mA, AC200Vφ1/18mA (60Hz)
	Output	3W Synchronous
Emergency detection	Oil level switch	Contact type A contact (NO) ON at low level Contact capacity 0.5A, AC DC200V/30W smaller
Operation rating	Continuous	
Working viscosity range	30-1300mm²/s	
Reservoir capacity	0.8ℓ	
Weight	1.2kg	
Protection class	IP54 (CE Approved type)	

Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Make sure that proper voltage is applied.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Do not press the discharge volume adjusting knob down by force.
- Adjust discharge volume only when the piston is fully relaxed (The knob is at the lowest position.).
- Replace the suction filter at least once a year. Do not remove the oil fill strainer in order to keep the pump clear of foreign matter.

*Should the pump malfunction, contact LUBE for consultation.

Related parts

Flow unit
: P.149

PJ junction
: P.163

Tubing
: P.203

Pressure gauge
: P.184

Filter FX1
: P.181

Filter FY20
: P.181

Pressure switch
: P.185

Compression parts
: P.201

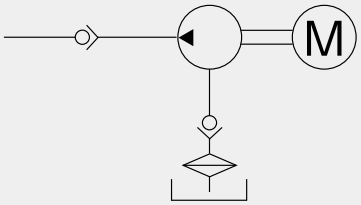
Adapters
: P.207

Reservoir
: P.168

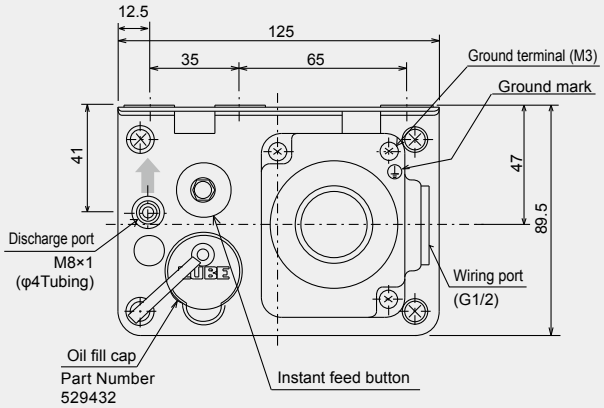
Replacement Motor Model

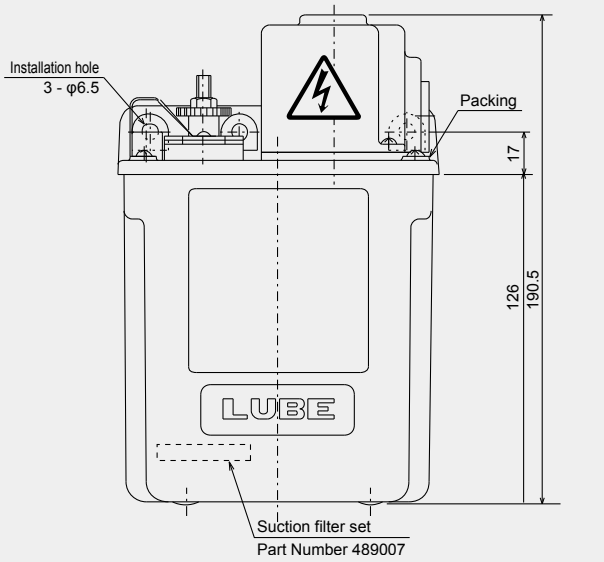
Interval			6min	15min	30min	60min	120min
Motor RPM (50Hz)			10	4	2	1	1/2
Replacement Motor Model	100V	Model	M-B1	M-C1	M-D1	M-E1	M-F1
		Part Number	521194	521193	520062	520061	520060
	200V	Model	M-B2	M-C2	M-D2	M-E2	M-F2
		Part Number	521196	521195	520067	520066	520065

Replacement Motor Model



Dimensional drawing

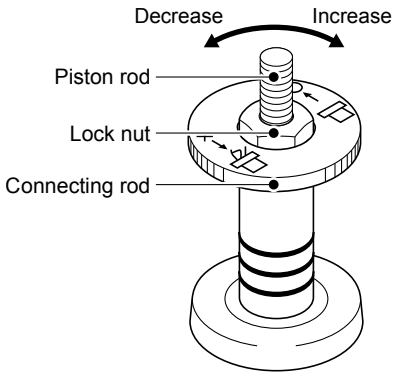




[CE]

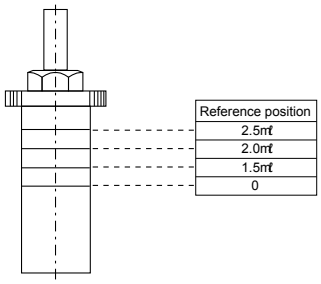
⚠ Improper handling can result in a death or serious injury ⚠ Electrical shock may be received under certain conditions ⏚ Be sure to ground.

Discharge Volume Adjustment

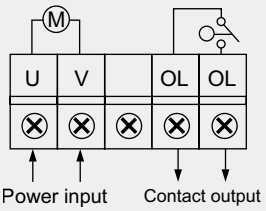


[Oil volume adjustment knob]

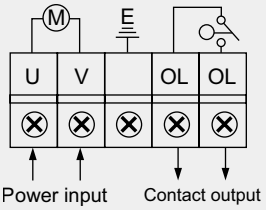
1. Loosen lock-nut by turning it counter-clockwise.
2. After loosening lock-nut, turn and adjust the connecting rod to the desired discharge volume and tighten lock-nut.
3. Turn clockwise to increase discharge and turn counter-clockwise to decrease discharge.
4. Adjusting scale is shown below.



Wiring diagram



[Standard]



[CE]

Automatic intermittent piston pump

MMXL-III

Automatic intermittent pump incorporating a small energy-saving motor. Interval is controlled by the RPM of the motor so no external controllers or timers are needed. Widely used for small machines in many different industries.

[CE]

Model Reference

MMXL – Ⅲ – CE – □□ – □□ – □□□

Discharge volume

1	1mℓ
2	2.5mℓ
5	5.5mℓ

Interval (50Hz/60Hz)

A	3min/2min24sec
B	6min/4min48sec
C	15min/12min
D	30min/24min
E	60min/48min
F	120min/96min

Voltage

1	AC100V φ1
2	AC200V φ1

Oil level switch

Blank	Without
L	With

Reservoir Mounting Poition

Blank	Resin
F	Foot Mount
B	Wall Mount

*Metal reservoir only

Pump Position

L	Pump position-Left
R	Pump position-Right

*Metal reservoir only

Reservoir capacity

Blank	1.8ℓ Resin reservoirs
3	3ℓ Resin reservoirs
30	3ℓ Metal reservoirs
40	4ℓ Metal reservoirs
80	8ℓ Metal reservoirs

Specifications

Pump	Discharge volume	0.2-1.0mℓ/stroke 1.5-2.5mℓ/stroke 2.5-5.5mℓ/stroke
	Discharge pressure	0.3MPa
Motor (Other voltages available.)	Power	AC100Vφ1/50mA, AC200Vφ1/25mA (50Hz) AC100Vφ1/42mA, AC200Vφ1/18mA (60Hz)
	Output	3W Synchronous Motor
Emergency detection	Oil level switch	Contact type A contact (NO) ON at low level Contact capacity 0.5A, AC DC200V/30W smaller
Operation rating	Continuous	
Working viscosity range	32-1300mm²/s	
Reservoir capacity	1.8ℓ, 3ℓ (plastic) 3ℓ, 4ℓ, 8ℓ (sheet metal)	
Weight	1.8kg (With 1.8ℓ Reservoirs)	
Protection class	IP54 (CE Approved type)	

Model

Model	Part Number	Model	Part Number	Model	Part Number
MMXL-ⅢCE-1A-1	367001	MMXL-ⅢCE-1D-1L	367058	MMXL-ⅢCE-2A-2	367025
MMXL-ⅢCE-1A-1L	367055	MMXL-ⅢCE-1D-2	367010	MMXL-ⅢCE-2A-2L	367079
MMXL-ⅢCE-1A-2	367007	MMXL-ⅢCE-1D-2L	367064	MMXL-ⅢCE-2B-1	367020
MMXL-ⅢCE-1A-2L	367061	MMXL-ⅢCE-1E-1	367005	MMXL-ⅢCE-2B-1L	367074
MMXL-ⅢCE-1B-1	367002	MMXL-ⅢCE-1E-1L	367059	MMXL-ⅢCE-2B-2	367026
MMXL-ⅢCE-1B-1L	367056	MMXL-ⅢCE-1E-2	367011	MMXL-ⅢCE-2B-2L	367080
MMXL-ⅢCE-1B-2	367008	MMXL-ⅢCE-1E-2L	367065	MMXL-ⅢCE-2C-1	367021
MMXL-ⅢCE-1B-2L	367062	MMXL-ⅢCE-1F-1	367006	MMXL-ⅢCE-2C-1L	367075
MMXL-ⅢCE-1C-1	367003	MMXL-ⅢCE-1F-1L	367060	MMXL-ⅢCE-2C-2	367027
MMXL-ⅢCE-1C-1L	367057	MMXL-ⅢCE-1F-2	367012	MMXL-ⅢCE-2C-2L	367081
MMXL-ⅢCE-1C-2	367009	MMXL-ⅢCE-1F-2L	367066	MMXL-ⅢCE-2D-1	367022
MMXL-ⅢCE-1C-2L	367063	MMXL-ⅢCE-2A-1	367019	MMXL-ⅢCE-2D-1L	367076
MMXL-ⅢCE-1D-1	367004	MMXL-ⅢCE-2A-1L	367073	MMXL-ⅢCE-2D-2	367028

Related parts

Flow unit
: P.149

PJ junction
: P.163

Tubing
: P.203

Pressure gauge
: P.184

Filter FX1
: P.181

Filter FY20
: P.181

Pressure switch
: P.185

Compression parts
: P.201

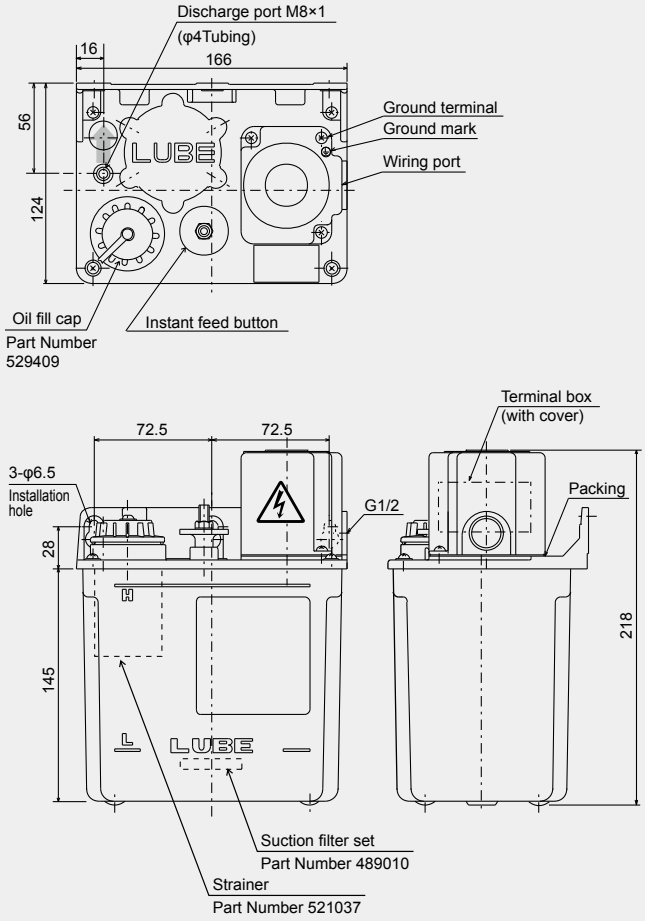
Adapters
: P.207

Reservoir
: P.168

Model

Model	Part Number
MMXL-ⅢCE-2D-2L	367082
MMXL-ⅢCE-2E-1	367023
MMXL-ⅢCE-2E-1L	367077
MMXL-ⅢCE-2E-2	367029
MMXL-ⅢCE-2E-2L	367083
MMXL-ⅢCE-2F-1	367024
MMXL-ⅢCE-2F-1L	367078
MMXL-ⅢCE-2F-2	367030
MMXL-ⅢCE-2F-2L	367084
MMXL-ⅢCE-5A-1	367037
MMXL-ⅢCE-5A-1L	367091
MMXL-ⅢCE-5A-2	367043
MMXL-ⅢCE-5A-2L	367097
MMXL-ⅢCE-5B-1	367038
MMXL-ⅢCE-5B-1L	367092
MMXL-ⅢCE-5B-2	367044
MMXL-ⅢCE-5B-2L	367098
MMXL-ⅢCE-5C-1	367039
MMXL-ⅢCE-5C-1L	367093
MMXL-ⅢCE-5C-2	367045
MMXL-ⅢCE-5C-2L	367099
MMXL-ⅢCE-5D-1	367040
MMXL-ⅢCE-5D-1L	367094
MMXL-ⅢCE-5D-2	367046
MMXL-ⅢCE-5D-2L	367100
MMXL-ⅢCE-5E-1	367041
MMXL-ⅢCE-5E-1L	367095
MMXL-ⅢCE-5E-2	367047
MMXL-ⅢCE-5E-2L	367101
MMXL-ⅢCE-5F-1	367042
MMXL-ⅢCE-5F-1L	367096
MMXL-ⅢCE-5F-2	367048
MMXL-ⅢCE-5F-2L	367102

Dimensional drawing



[CE]

Improper handling can result in a death or serious injury Electrical shock may be received under certain conditions Be sure to ground.

Directions for use

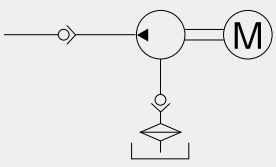
- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Make sure that proper voltage is applied.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Do not press the discharge volume adjusting knob down by force.
- Adjust discharge volume only when the piston is fully relaxed (The knob is at the lowest position.).
- Replace the suction filter at least once a year.
- Do not remove the oil fill strainer in order to keep the pump clear of foreign matter.

* Should the pump malfunction, contact LUBE for consultation.

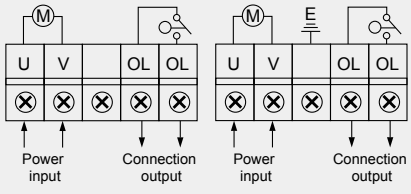
Replacement Motor Model

Interval			3min	6min	15min	30min	60min	120min
Motor RPM (50Hz)			20	10	4	2	1	1/2
Replacement Motor Model	100V	Model	M-A1	M-B1	M-C1	M-D1	M-E1	M-F1
		Part Number	521210	521194	521193	520062	520061	520060
	200V	Model	M-A2	M-B2	M-C2	M-D2	M-E2	M-F2
		Part Number	521328	521196	521195	520067	520066	520065

Hydraulic circuit drawing

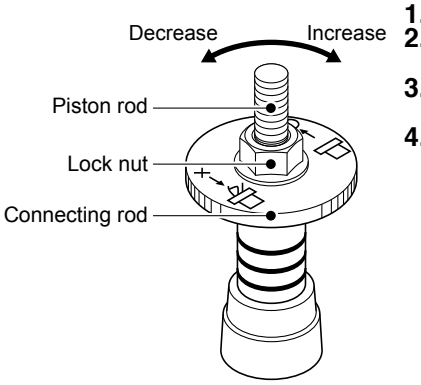


Wiring diagram



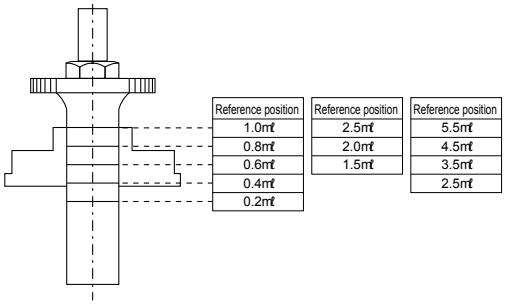
[Normal type] [CE type]

Discharge Volume Adjustment



[Oil volume adjustment knob]

1. Loosen lock-nut by turning it counter-clockwise.
2. After loosening lock-nut, turn and adjust the connecting rod to the desired discharge volume and tighten lock-nut.
3. Turn clockwise to increase discharge and turn counter-clockwise to decrease discharge.
4. Adjusting scale is shown below.



Reference position	Reference position	Reference position
1.0mℓ	2.5mℓ	5.5mℓ
0.8mℓ	2.0mℓ	4.5mℓ
0.6mℓ	1.5mℓ	3.5mℓ
0.4mℓ		2.5mℓ
0.2mℓ		

Automatic intermittent piston pump

MMX-Ⅱ

Highly reliable pump with a long history of service.
Now Discontinued.

* Refer to MMXL-III for replacement

Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Make sure that proper voltage is applied.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Do not press the discharge volume adjusting knob down by force.
- Adjust discharge volume only when the piston is fully relaxed (The knob is at the lowest position.).
- Replace the suction filter at least once a year.
- Do not remove the oil fill strainer in order to keep the pump clear of foreign matter.
- Check the direction of motor rotation. Change U and W of the three-phase connection to change the direction of rotation.
- Do not place the pump sideways or upside down.

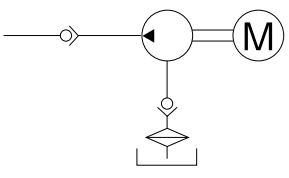
Specifications

Pump	Discharge volume	1.5 - 2.5cc/stroke 2.5 - 5.5cc/stroke
	Discharge pressure	0.4MPa
Motor (Capable of coping with a different voltage)	Working voltage/ Working current	AC100Vφ1/0.23A AC200Vφ3/0.11A (50Hz) AC100Vφ1/0.23A AC200Vφ3/0.10A (60Hz)
	Output	5W Direction of rotation: CW Induction generator E-class
Anomaly detection	Oil level switch	Contact type: NO Contact capacity 0.5A,AC DC200V/30W Smaller one
Operation rate	Continuous	
Working viscosity range	32 - 1300cSt	
Reservoir capacity	1.8ℓ, 3ℓ (plastic) 3ℓ, 4ℓ, 8ℓ (sheet metal)	
Weight	3kg (1.8ℓ plastic reservoirs)	
Others	2μF condenser is built into the terminal box at 100V motor	

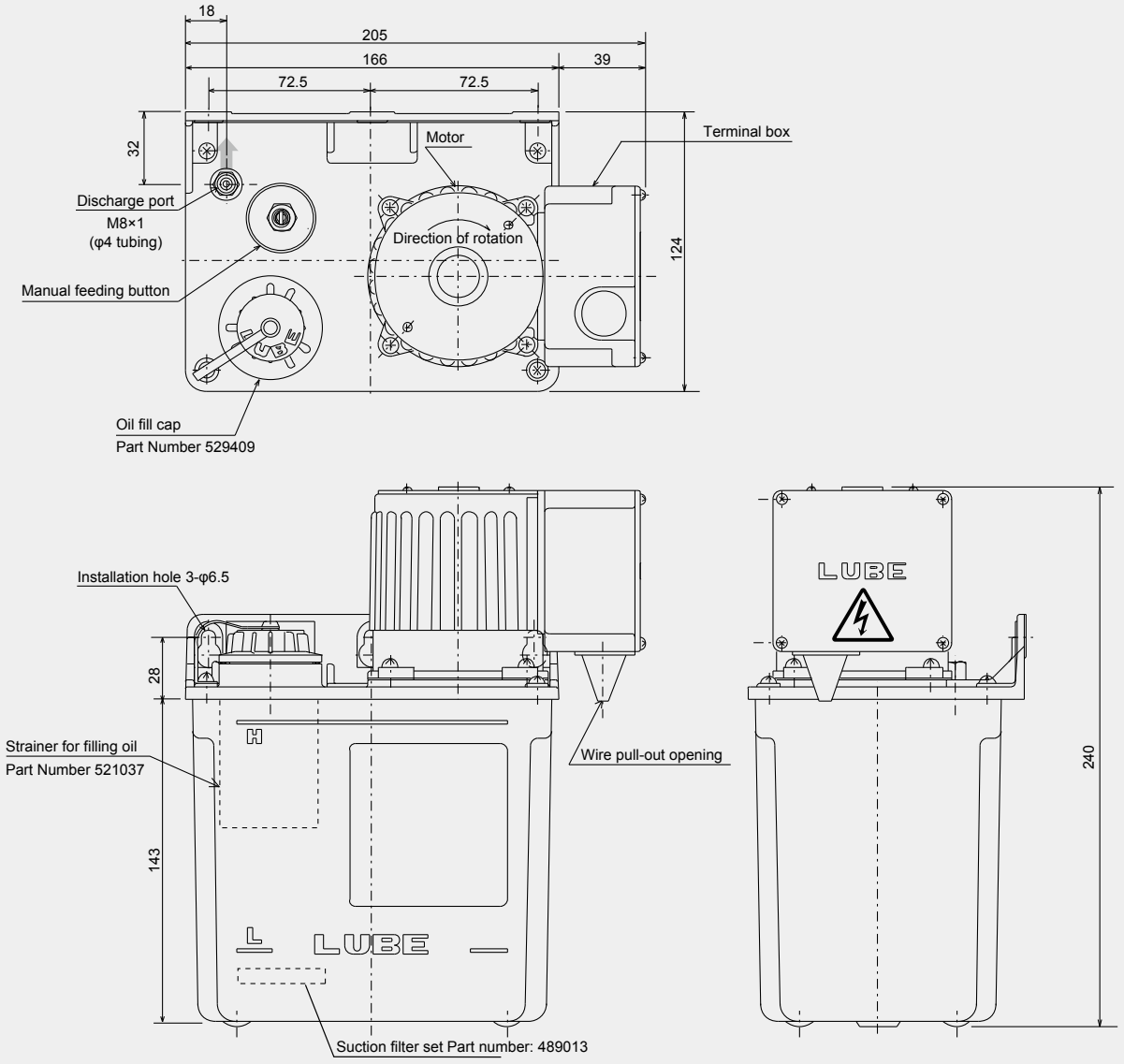
Replacement motor

Model	Working voltage
N-02	AC100Vφ1 5W
N-10	AC200Vφ3 5W
N-08	AC200Vφ1 5W

Hydraulic circuit drawing

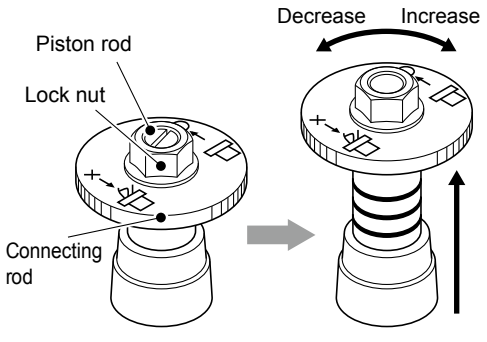


Dimensional drawing



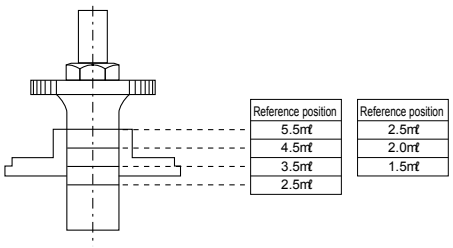
Improper handling can result in a death or serious injury Electrical shock may be received under certain conditions Be sure to ground.

Discharge Volume Adjustment



[Oil volume adjustment knob]

1. Loosen lock-nut by turning it counter-clockwise.
2. After loosening lock-nut, turn and adjust the connecting rod to the desired discharge volume and tighten lock-nut.
3. Turn clockwise to increase discharge and turn counter-clockwise to decrease discharge.
4. Adjusting scale is shown below.

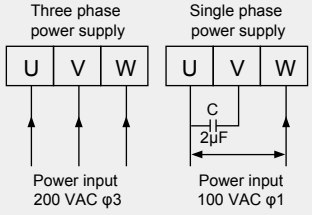


Reference position
5.5㎖
4.5㎖
3.5㎖
2.5㎖

Reference position
2.5㎖
2.0㎖
1.5㎖

Wiring diagram

Oil level switch	OL	OL	
Motor	U	V	W
Power input	V	V	W
Oil level switch connection output	OL	OL	



Solenoid driven intermittent piston pump

EX

Economical intermittent piston pump with low power consumption.
Uses a solenoid to operate the piston.

Model Reference

EX−□□□

Solenoid cover

Blank	Without
C	With

Working voltage

1	AC100V φ1
2	AC200V φ1

Oil level switch

Blank	Without
L	With

Model

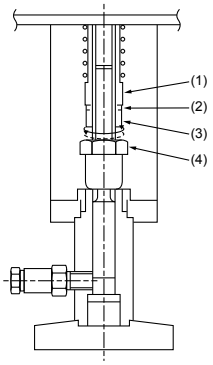
Model	Part Number
EX-1	102703
EX-1C	102701
EX-1L	102707
EX-1LC	102705

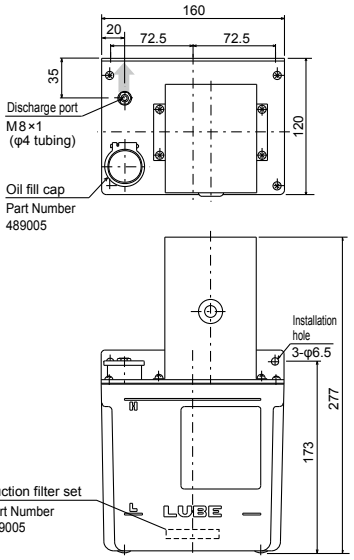
Model	Part Number
EX-2	102702
EX-2C	102700
EX-2L	102706
EX-2LC	102704

Dimensional drawing

■How to change the oil discharging volume

1. Hold the connecting hexagonal rod (1), and loosen the lock-nut (3) till the spring washer (2) moves freely.
2. To increase the discharging volume, roll the adjusting screw (4) according to the solid arrow. After setting the volume, fix the screw with (2) and (3).
3. To decrease the discharge volume, roll the adjusting screw (4) according to the dotted arrows. After setting the volume, fix the screw with (2) and (3).
4. One revolution of the adjusting screw (4) roll makes 0.06ml of discharge volume difference.

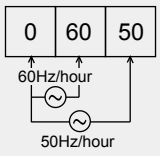




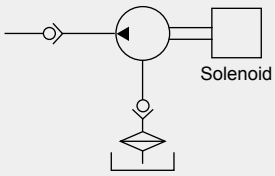
Specifications

Pump	Discharge volume	0.4 - 0.9mℓ/Stroke (adjustable)	
	Discharge pressure	0.4MPa (maximum)	
	Working voltage / Working current	AC100V φ1 AC200V φ1 50/60Hz	
Working voltage/ Working current		AC 100V	50Hz Retention 0.5A Start-up 5.8A
			60Hz Retention 0.52A Start-up 6.0A
		AC 200V	50Hz Retention 0.25A Start-up 2.9A
			60Hz Retention 0.26A Start-up 3.0A
Working viscosity range	32-1300mm²/s		
Reservoir capacity	1.8ℓ		
Weight	1.85kg		

Wiring diagram



Hydraulic circuit drawing



Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Make sure that proper voltage is applied.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Do not operate with reservoir empty.

⚠ Improper handling can result in a death or serious injury ⚠ Electrical shock may be received under certain conditions ⏚ Be sure to ground.

Related parts


Flow unit
: P.149


PJ junction
: P.163

Tubing
: P.203


Pressure gauge
: P.184


Filter FX1
: P.181


Filter FY20
: P.181


Pressure switch
: P.185


Compression parts
: P.201


Adapters
: P.207

Solenoid driven intermittent piston pump

EX-5

Economical, small discharge volume, compact, and lightweight intermittent piston pump.

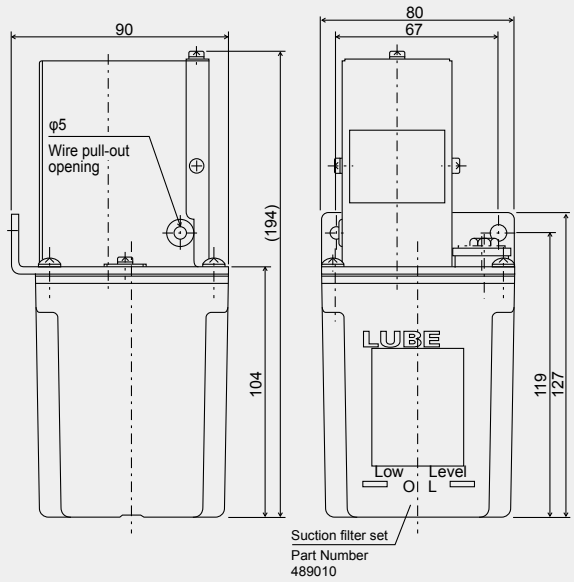
Model

Model	Part Number
EX-5	112828

Specifications

Pump	Discharge volume	0.5mℓ/Stroke
	Discharge pressure	0.2MPa
Working voltage/ Working current	DC24V 3.0A	
Energization time	2 seconds (Max. below 30 seconds)	
Interval time	Min. 3 Minutes (Current rate: below 1%)	
Anomaly detection	Oil level switch	Contact type (NO) ON at low level
		Contact capacity 0.5A,AC DC200V/30W Smaller one
Working viscosity range	32 - 1300mm^2/s	
Reservoir capacity	400mℓ	
Weight	1kg	

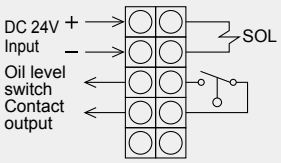
Dimensional drawing



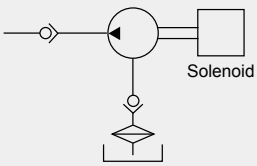
Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Make sure that proper voltage is applied.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Do not operate with reservoir empty.

Wiring diagram



Hydraulic circuit drawing



Improper handling can result in a death or serious injury

Electrical shock may be received under certain conditions

Be sure to ground.

Related parts

Flow unit
: P.149

PJ junction
: P.163

Tubing
: P.203

Pressure gauge
: P.184

Filter FX1
: P.181

Filter FY20
: P.181

Pressure switch
: P.185

Compression parts
: P.201

Adapters
: P.207

Reservoir
: P.167

Automatic intermittent gear pump

AMR-Ⅲ DS

Capable of operating over a wide viscosity range.
Digital display gives on sight visual indication.
Interval can be a function of time or count.

[1.8ℓ Reservoir type]

[3ℓReservoir type]

Model Reference

AMR－Ⅲ DS－□－□□

Voltage

1	AC100Vφ1
2	AC200Vφ1

Reservoir Mounting Poition

Blank	Resin
F	Foot Mount
B	Wall Mount

*Metal reservoir only

Reservoir capacity

Blank	1.8ℓ Resin reservoirs
3	3ℓ Resin reservoirs
30	3ℓ Metal reservoirs
40	4ℓ Metal reservoirs
80	8ℓ Metal reservoirs

*Pump is installed on the right side, if a metal reservoir is selected.

Model

Model	Part Number
AMR-ⅢDS-1	112141
AMR-ⅢDS-1-3	112143
AMR-ⅢDS-2	112142
AMR-ⅢDS-2-3	112144

Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Make sure that proper voltage and pressure are proper.
- Replace the suction filter at least once a year.
- Do not remove the oil fill strainer in order to keep the pump clear of foreign matter.

Specifications

Pump	Discharge volume	150mℓ/min (50Hz) 180mℓ/min (60Hz)	
	Discharge pressure	0.8MPa (safety valve set pressure)	
Motor	Power	AC100Vφ1/0.83A, AC200Vφ1/0.41A (50Hz) AC100Vφ1/0.64A, AC200Vφ1/0.33A (60Hz)	
	Output	20W (50Hz/60Hz) Capacitor motor	
Controller	Timer counter	Discharge time adjustable range: 1-99 seconds (2.5-247.5mℓ) 50Hz, (3-297mℓ) 60Hz Interval time adjustable range: 1 to 9999 minutes 1 to 9999 counts	
	Emergency output	Contact type A contact (NO)	
		Contact capacity AC250V 1.5A	
	Emergency detection	Oil level switch	Contact type A contact (NO) ON at low level
		Prerssure switch	Contact type A contact (NO) ON at low pressure
	Liquid crystal display	INTERVAL	display 'INT'
		DISCHARGE	display 'DIS'
		ALARM	When oil side decreases, display 'OILLEVEL ERR' When pressure is abnormal, display 'PRESSURE ERR'
Working viscosity range	68-1300mm²/s (50Hz)		
Reservoir capacity	1.8ℓ, 3ℓ (plastic) 3ℓ, 4ℓ, 8ℓ (sheet metal)		
Weight	1.8ℓ Reservoirs: 3.2kg, 3ℓ Reservoirs: 4kg		

*Should the pump malfunction, contact LUBE for consultation.

Related parts

Flow unit
: P.149

PJ junction
: P.163

Tubing
: P.203

Pressure gauge
: P.184

Filter FX1
: P.181

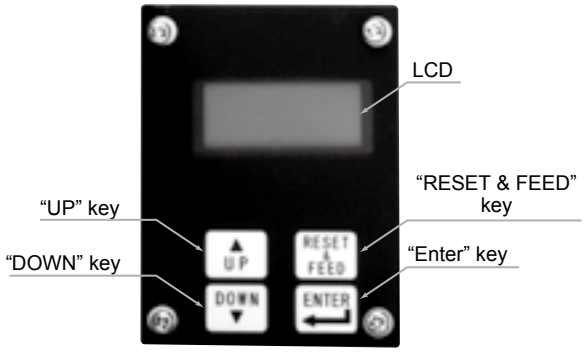
Filter FY20
: P.181

Pressure switch
: P.185

Compression parts
: P.201

Adapters
: P.207

Exterior features of the controller

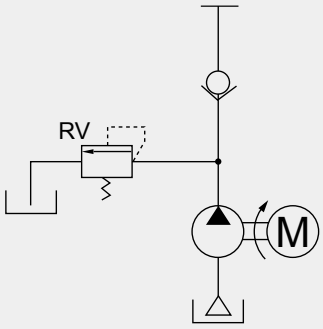


Operation panel of the controller

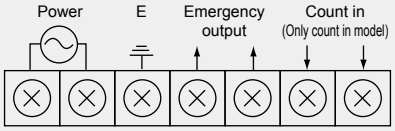
LCD shows the below:

INTERVAL → INT
DISCHARGE → DIS
ALARM → Low oil level OILLEVEL ERR
Low pressure PRESSURE ERR

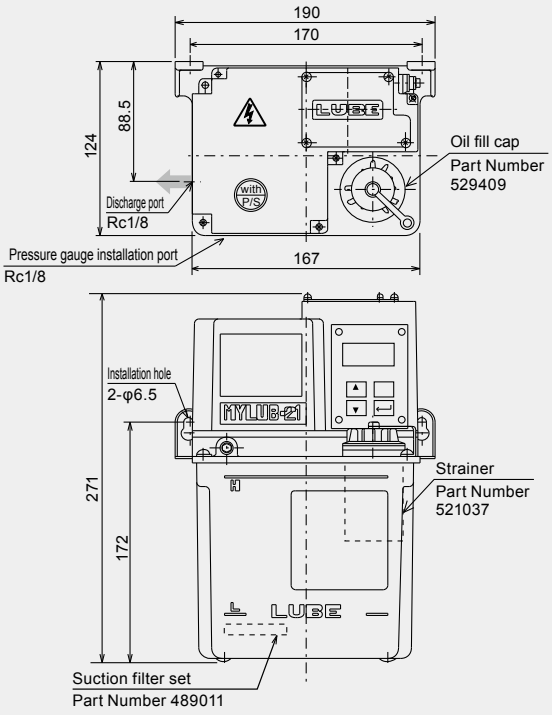
Hydraulic circuit drawing



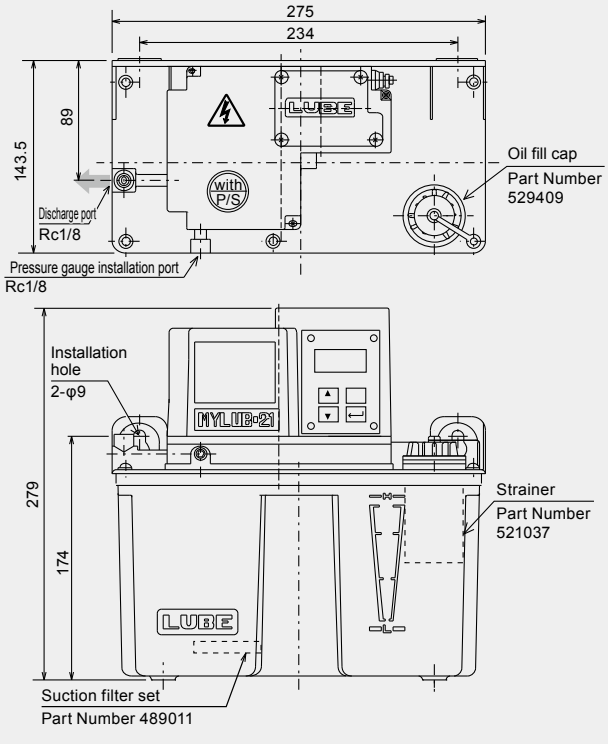
Wiring diagram



Dimensional drawing

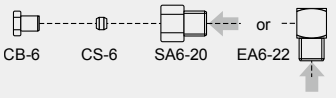


[1.8ℓ reservoir type]



[3ℓ reservoir type]

Parts for connecting to the discharge port



⚠ Improper handling can result in a death or serious injury ⚠ Electrical shock may be received under certain conditions ⏚ Be sure to ground.

Manually operated piston pump

L3 · L5

Small sized manual piston pump

[L3]

[L5]

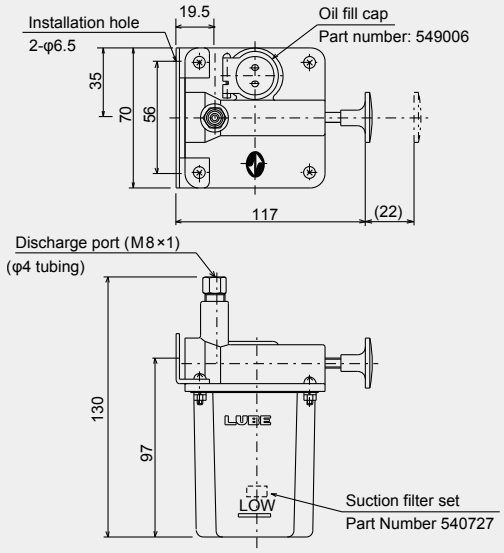
Model Reference

Model	Part Number	Discharge volume mℓ/Stroke	Discharge pressure (MPa)	Reservoir capacity (mℓ)	Weight (kg)
L3-2	103031	2	0.3	220	0.34
L3-3	103030	3	0.3	220	0.34
L5-3	103051	3	0.3	400	0.4
L5-4	103052	4	0.3	400	0.4
L5-5	103053	5	0.3	400	0.4

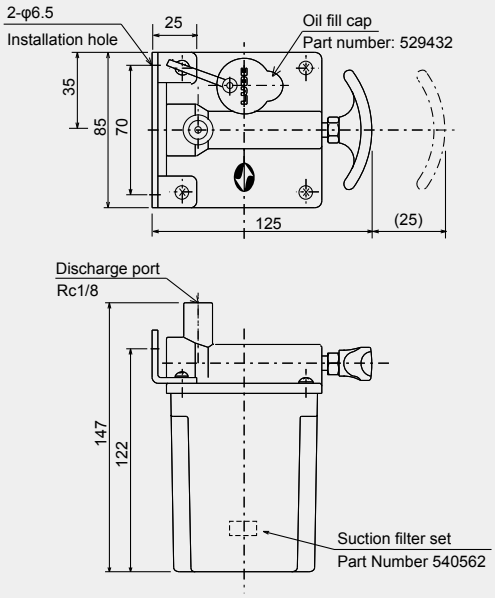
Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Do not pull or press the discharge lever with excessive force.

Dimensional drawing



[L3-3]



[L5-5]

Related parts

Flow unit
: P.149

PJ junction
: P.163

Tubing
: P.203

Pressure gauge
: P.184

Filter FX1
: P.181

Filter FY20
: P.181

Pressure switch
: P.185

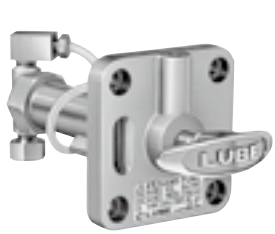
Compression parts
: P.201

Reservoir
: P.167

Manually operated piston pump

LK

Direct machine integration & installation available.



[LK-8]

[LK-8TR]

Specifications

Discharge volume	8mℓ/Stroke
Discharge pressure	0.35MPa
Weight	0.32kg(LK), 0.75kg(LK-8T)

Model

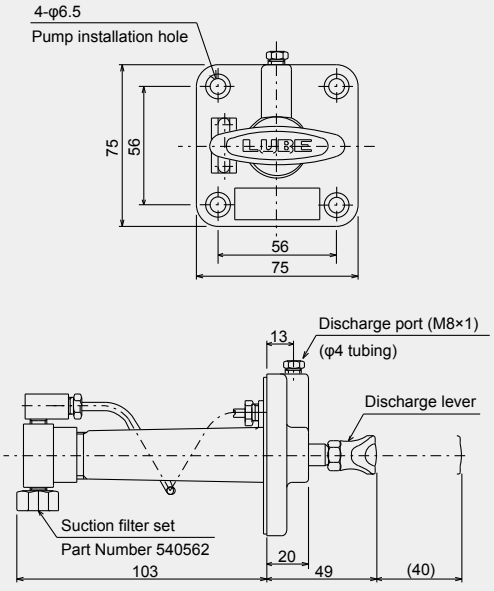
Model	Part Number	Reservoir
LK-8	103401	—
LK-8TL	103402	○
LK-8TR	103403	○

Directions for use

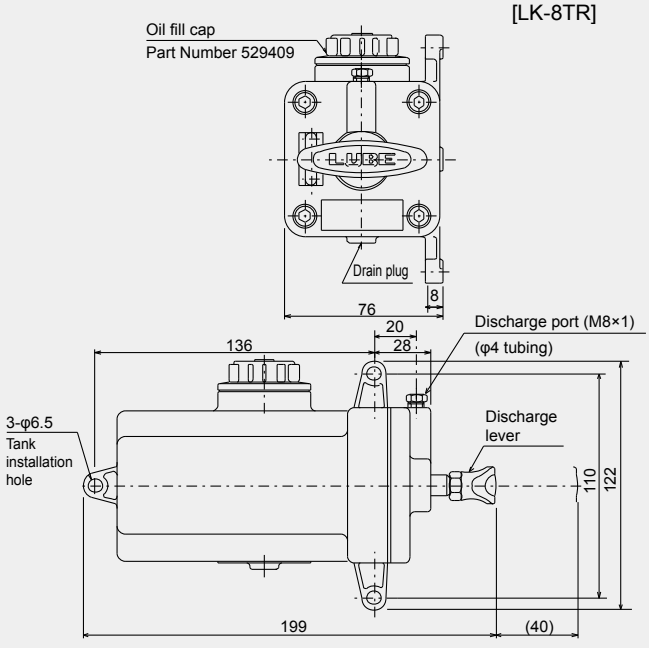
- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Do not pull or press the discharge lever with excessive force.
- Choose LK8-TL in order to install the pump on the right side of the machine, and choose LK8-TR in order to install the pump on the left side of the machine.

Dimensional drawing

[LK-8]



[LK-8TR]



Related parts

Flow unit
: P.149

PJ junction
: P.163

Tubing
: P.203

Pressure gauge
: P.184

Filter FX1
: P.181

Filter FY20
: P.181

Pressure switch
: P.185

Compression parts
: P.201

Manually operated piston pump

L8 · L20

Lever operated piston pump. When the lever is released a spring will reset the piston to discharge oil.

[L8-L]

[L20-R]

Specifications

Discharge volume	2 - 7mℓ/Stroke (Changeable)
Discharge pressure	0.5MPa
Working viscosity range	32 - 1300mm^2/s
Reservoir capacity	0.8ℓ (L8), 1.8ℓ (L20)
Weight	1.2kg (L8), 1.8kg (L20)

Model

Model	Part Number	Lever direction	Reservoir capacity
L8-L	103111	Left	0.8ℓ
L8-R	103112	Right	
L20-L	103211	Left	1.8ℓ
L20-R	103212	Right	

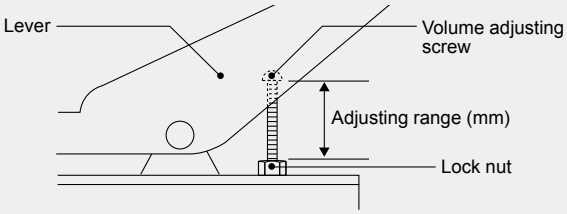
Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Do not pull or press the discharge lever with excessive force.
- Choose L8-L (L20-L) in order to install the pump on the right side of the machine, and choose L8-R (L20-R) in order to install the pump on the left side of the machine.

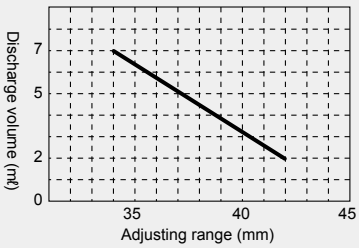
How to change the discharge volume

Discharge volume is set to 7ml when the pump is shipped from the factory. Refer to the following manner in order to change the volume.

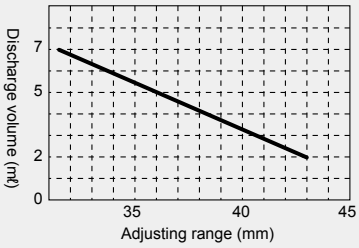
1. Turn the lock nut CCW to loosen it.
2. After loosening, turn the volume adjusting screw, and tighten the lock nut in order to fix the volume.



[L8]



[L20]



Related parts

Flow unit
: P.149

PJ junction
: P.163

Tubing
: P.203

Pressure gauge
: P.184

Filter FX1
: P.181

Filter FY20
: P.181

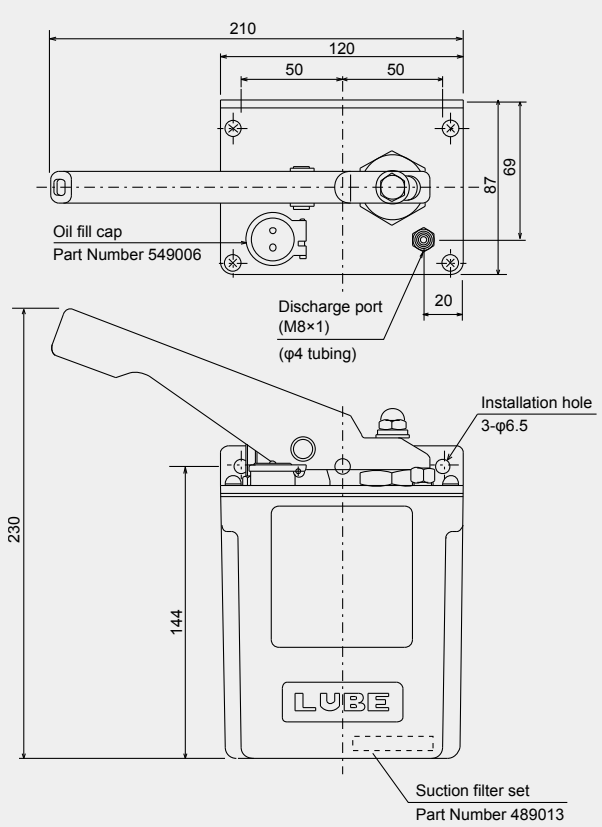
Pressure switch
: P.185

Compression parts
: P.201

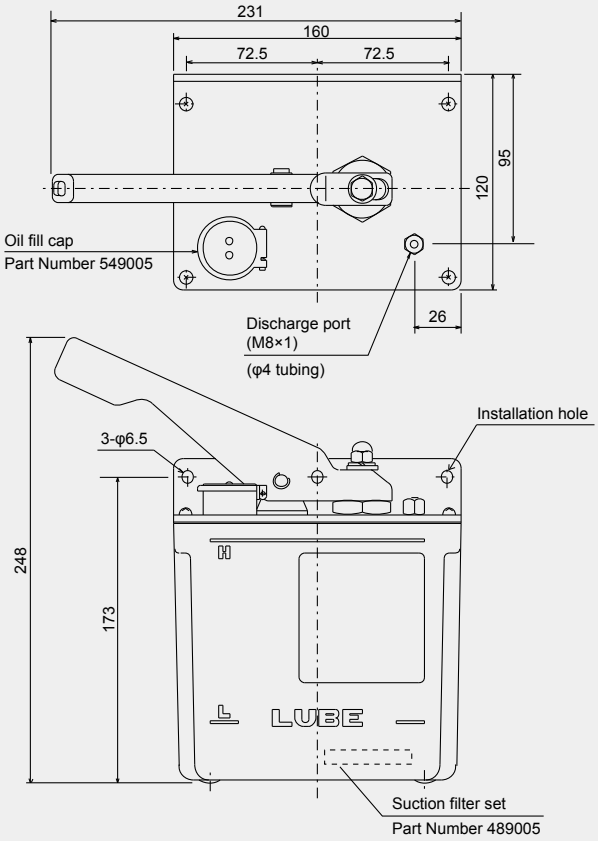
Adapters
: P.207

Reservoir
: P.168

Dimensional drawing



[L8-L]



[L20-L]

(SLR) Single Line Resistance compact system for small machines with intermittent delivery

HSA-1

HTU-02

HJB-1

PJ-2


TG

■ [Valve]

Resistance type valve

Junction for main tubing

Junction for installing flow units and control units

Resistance type valve

Flow unit

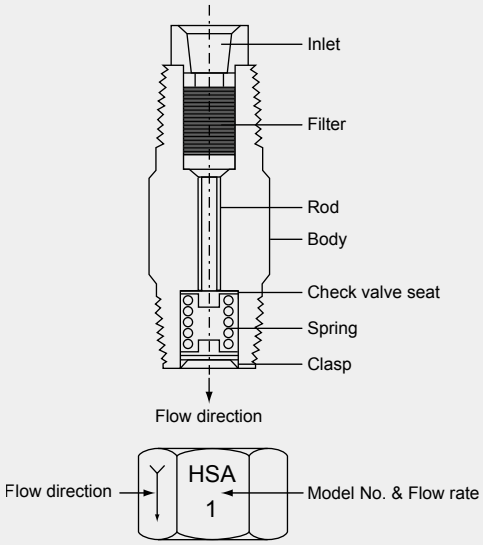
Flow Units are resistance devices used for intermittent delivery type systems.

[HSA-1] [HTU-02] [HJB-1]

Specifications

Normal working pressure	Under 0.8 MPa

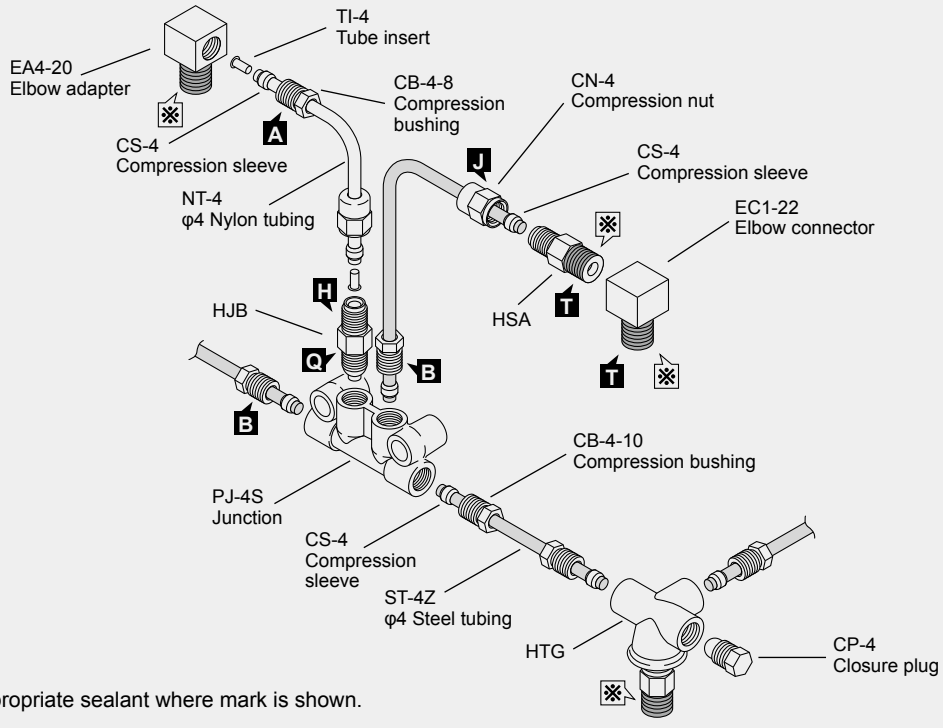
Internal construction



Directions for use

- Please conform the flow direction and thread size to connect to the junction.
- Do not over tighten any joints. Refer to the tightening torque table. (P.251)
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)

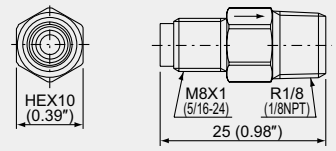
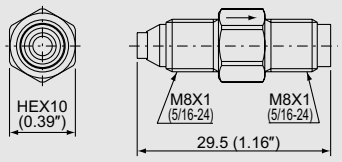
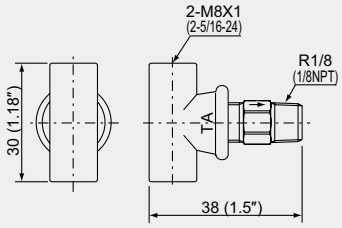
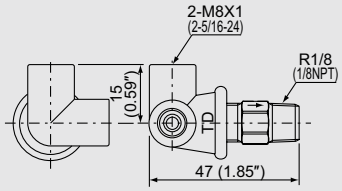
Piping layout (Example)



※ Use an appropriate sealant where mark is shown.

Mark denote tightening torque. See the tightening torque list. P.251

RoHS compliant products are also available.
Please contact us for details.

Part Number		Model		Dimensional drawing
Metric	Inch			
105501	185501	HSA	03	
105001	185001		02	
105002	185002		0	
105003	185003		1	
105004	185004		2	
105005	185005		3	
105006	185006		4	
105007	185007		5	
105502	185502	HJB	03	
105008	185008		02	
105009	185009		0	
105010	185010		1	
105011	185011		2	
105012	185012		3	
105013	185013		4	
105014	185014		5	
105503	185503	HTA	03	
105015	185015		02	
105016	185016		0	
105017	185017		1	
105018	185018		2	
105019	185019		3	
105020	185020		4	
105021	185021		5	
105504	185504	HTD	03	
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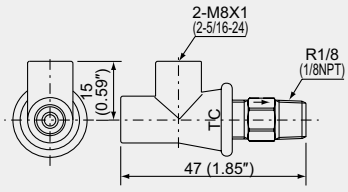
105026	185026		3	
105027	185027		4	
105028	185028		5	
105505	185505	HTC	03	
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105030	185030		0	
105031	185031		1	
105032	185032		2	
105033	185033		3	
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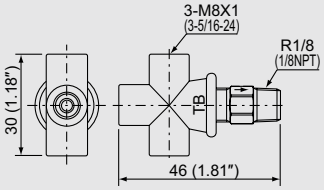
105035	185035		5	
105506	185506	HTB	03	
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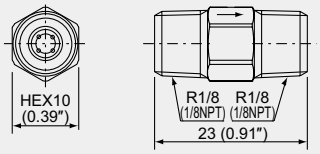
105038	185038		1	
105039	185039		2	
105040	185040		3	
105041	185041		4	
105042	185042		5	

Part Number		Model		Dimensional drawing
Metric	Inch			
105513	185513	HTU	03	
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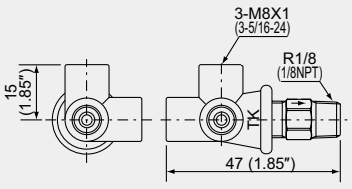
105507	185507	HTK	03	
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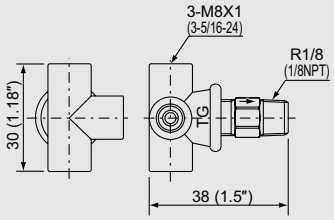
105508	185508	HTG	03	
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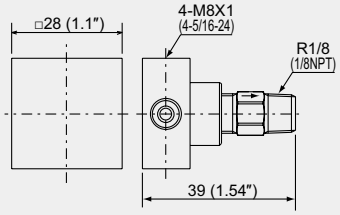
105509	185509	HTH	03	
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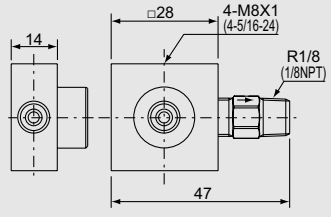
105510	185510	HTL	03	
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105069	185069		3	
105070	185070		4	
105071	185071		5	

Single Line Resistance (SLR) compact system for small machines to large machines with continuous (recirculation) delivery

AMS


AMI-300


AMI-1000


AM


ADM

■ [Pump]

Automatic small discharge volume gear pump

AMS

Motor driven gear pump for continuous micro-volume lubrication used with a resistance type centralized lubrication equipment

Model Reference

AMS – □ – □□ – □□□

Discharge volume (50Hz / 60Hz)

1	1.25/1.5mℓ/min
3	2.5/3mℓ/min
6	5/6mℓ/min
15	15/18mℓ/min

Voltage

1	AC100V φ1
2	AC200V φ1

Oil level switch

Blank	Without
L	With

Reservoir Mounting Position

Blank	Resin reservoirs
F	Foot Mount
B	Wall Mount

*Metal reservoir only

Pump Position

L	Pump position-Left
R	Pump Position-Right

*Except 1.8ℓ Resin reservoir

Reservoir capacity

Blank	1.8ℓ Resin reservoirs
3	3ℓ Resin reservoirs
30	3ℓ Metal reservoirs
40	4ℓ Metal reservoirs
80	8ℓ Metal reservoirs

Model

Model	Part Number	Model	Part Number
AMS-1-1	102401	AMS-3-1	102405
AMS-1-1L	102403	AMS-3-1L	102407
AMS-1-2	102402	AMS-3-2	102406
AMS-1-2L	102404	AMS-3-2L	102408
AMS-15-1	102416	AMS-6-1	102489
AMS-15-1L	102418	AMS-6-1L	112094
AMS-15-2	102417	AMS-6-2	102490
AMS-15-2L	102419	AMS-6-2L	112095

*Should the pump malfunction, contact LUBE for consultation.

Specifications

AMS-1, AMS-3		
Pump	Discharge volume	AMS-1: 1.25mℓ/min (50Hz), 1.5mℓ/min (60Hz) AMS-3 : 2.5mℓ/min (50Hz), 3mℓ/min (60Hz) AMS-6 : 5mℓ/min (50Hz), 6mℓ/min (60Hz)
	Discharge pressure	0.8MPa (safety valve setting)
Motor (Other voltages available.)	Power	AC100Vφ1/50mA AC200Vφ1/25mA (50Hz) AC100Vφ1/42mA AC200Vφ1/18mA (60Hz) AC100Vφ1/25mA (50Hz) AC200Vφ1/18mA (60Hz)
	Output	3W Synchronous Motor
Emergency detection	Oil level switch	Contact type A contact (NO) ON at low level Contact capacity 0.5A, AC DC200V/30W smaller
Operation rate	Continuous	
Working viscosity range	32-1300mm^2/s	
Reservoir capacity	1.8ℓ, 3ℓ (plastic) 3ℓ, 4ℓ, 8ℓ (sheet metal)	
Weight	1.8kg	

Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Make sure that proper voltage and pressure are proper.
- Replace the suction filter at least once a year.

Related parts

control unit
: P.161

PJ junction
: P.163

Tubing
: P.203

Pressure gauge
: P.184

Filter
FX1: P.181

Filter
FY20: P.181

Pressure switch
: P.185

Compression parts
: P.201

Adapters
: P.207

Metalreservoir
: P.170

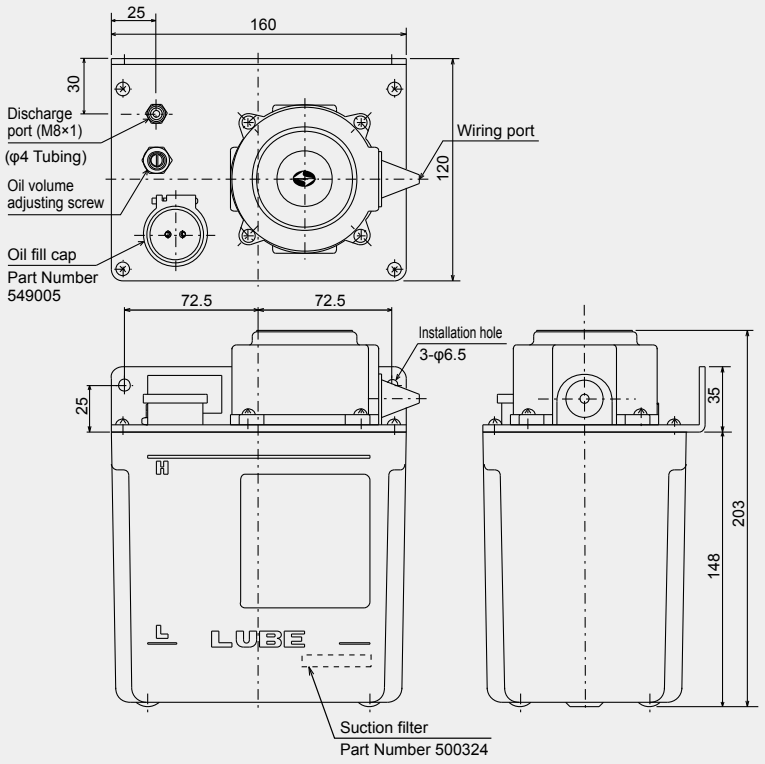
Specifications

AMS-15		
Pump	Discharge volume	15mℓ/min (50Hz) 18mℓ/min (60Hz)
	Discharge pressure	0.8MPa (safety valve setting)
Motor (Other voltages available.)	Power	AC100Vφ1/0.25A (50Hz/60Hz) 200Vφ1
	Output	5.0W Accessory - Condesor 3.0μF
Gear Head	Speed Reduction Ratio: 1/25	
Working viscosity range	32-1300mm²/s	
Reservoir capacity	1.8ℓ, 3ℓ (plastic) 3ℓ, 4ℓ, 8ℓ (sheet metal)	
Weight	2.3kg	

Replacement Motor Model

Pump	Part Number	Voltage	Replacement Motor Model
AMS-1	521194	100V	M-B1
	521196	200V	M-B2
AMS-3	521194	100V	M-B1
	521196	200V	M-B2
AMS-6	521210	100V	M-A1
	521328	200V	M-A2

Dimensional drawing



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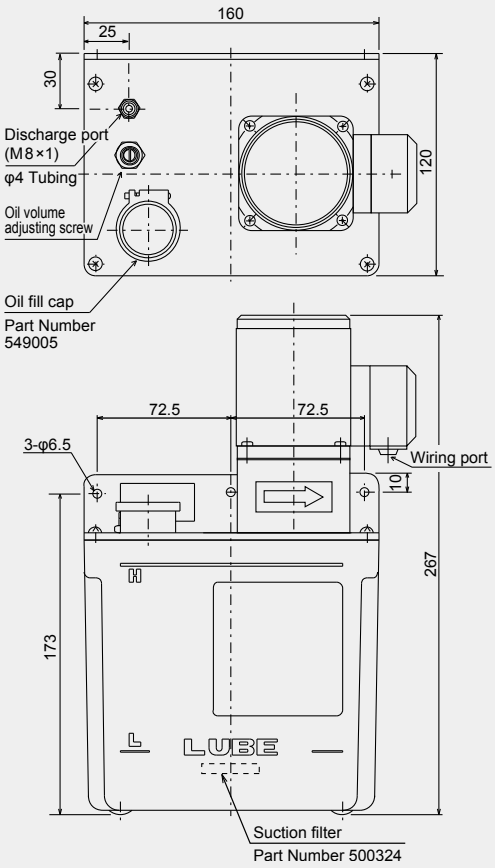
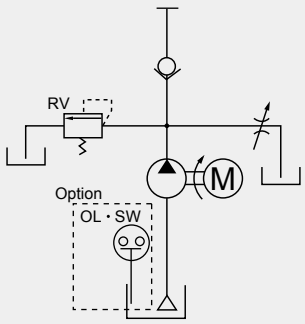


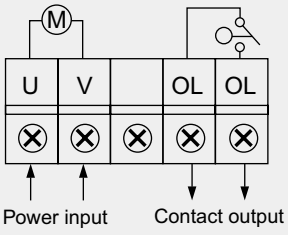
[AMS-15]

Improper handling can result in a death or serious injury Electrical shock may be received under certain conditions Be sure to ground.

Hydraulic circuit drawing



Wiring diagram



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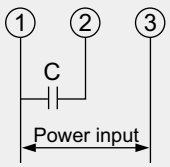


[AMS-15]

Motor driven continuous gear pump

ACM-II . AMI-300 . AMI-1000

[ACM-II]

[AMI-300]

[AMI-1000]

Model Reference

ACM-II
AMI-300-□-□□□-□
AMI-1000

Voltage

1	AC100V φ1
2	AC200V φ3
3	AC200V φ3 With needle valve

*AC200V φ3 Needle valve available only with AMI-1000

Reservoir capacity

30	3ℓ Metal reservoirs
40	4ℓ Metal reservoirs
80	8ℓ Metal reservoirs

Reservoir Mounting Position

L	Pump position-Left
R	Pump Position-Right

Reservoir Mounting Position

Blank	Resin reservoirs
F	Foot mount
B	Wall mount

Oil level switch

Blank	Without
L	With

Model

Model	Part Number
ACM-II-1	102484
ACM-II-2	102486

* Should the pump malfunction, contact LUBE for consultation.

Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Make sure that proper voltage and pressure are proper.
- Replace the suction filter at least once a year.

Specifications

		ACM-II	AMI-300	AMI-1000
Pump	Discharge volume	60mℓ/min (50Hz) 70mℓ/min (60Hz)	300mℓ/min (50Hz) 330mℓ/min (60Hz)	1000mℓ/min (50Hz) 1100mℓ/min (60Hz)
	Discharge pressure	0.8MPa (safety valve setting)	0.5MPa (safety valve setting)	1.2MPa (safety valve setting)
Motor (Other voltages available.)	Voltage / Current	AC100Vφ1/0.51/0.52A (Condenser: 8μF) AC200Vφ3/0.23/0.21A	AC100Vφ1/0.76/0.74A (Condenser: 11μF) AC200Vφ3/0.32A/0.3A	AC100Vφ1/1.2/1.19A (Condenser: 20μF) AC200Vφ3/0.50/0.43A
	Output	25W Induction motor	40W Induction motor	60W Induction motor
Operation rate		Continuous		
Working viscosity range		32-1300mm²/s	65-1300mm²/s	
Reservoir capacity		2ℓ, 3ℓ, 4ℓ, 8ℓ (sheet metal)		
Weight		4.0kg	4.4kg	7.1kg
Other		Motor rotary direction: Counter- clockwise	Motor rotary direction: Clockwise	Motor rotary direction: Counter- clockwise
External fuse		100V/1A 200V/0.5A	100V/2A 200V/1A	100V/3A 200V/1A

Related parts

control unit
: P.161

PJ junction
: P.163

Tubing
: P.203

Pressure gauge
: P.184

Filter FX1
: P.181

Filter FY20
: P.181

Pressure switch
: P.185

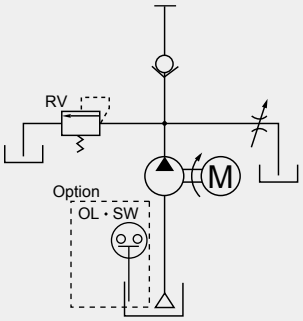
Compression parts
: P.201

Adapters
: P.207

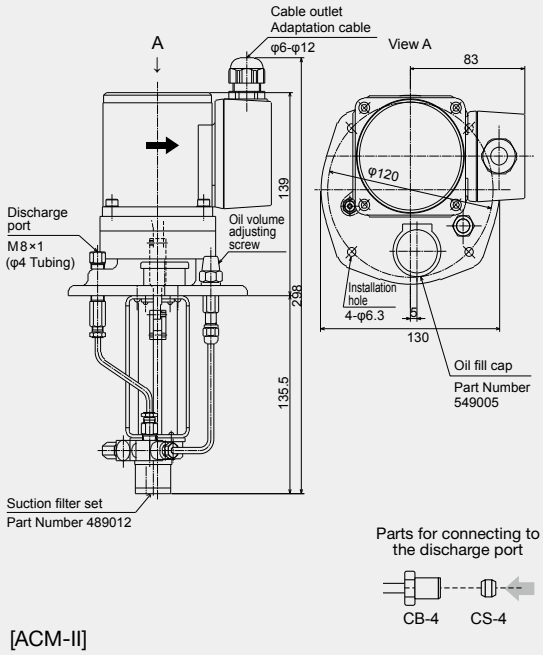
Metalreservoir
: P.170

AMI-300 with 3L reservoir and low level switch

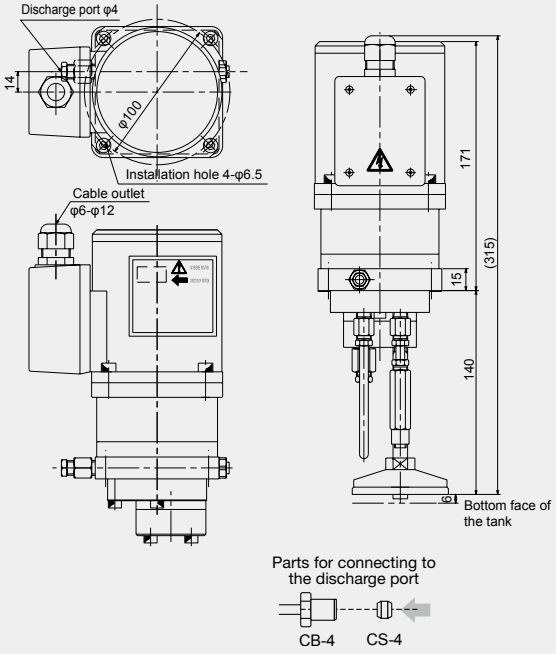
Hydraulic circuit drawing



Dimensional drawing



[ACM-II]



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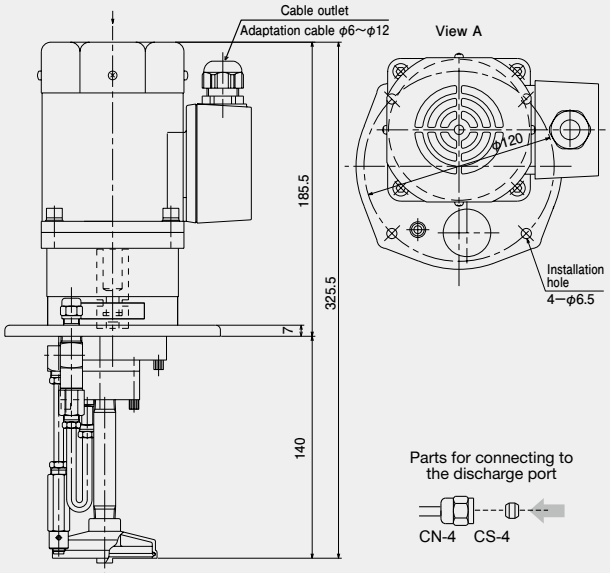
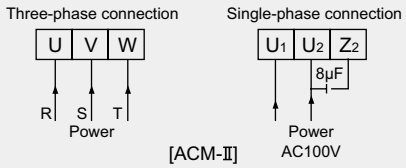


[AMI-1000]

Wiring diagram



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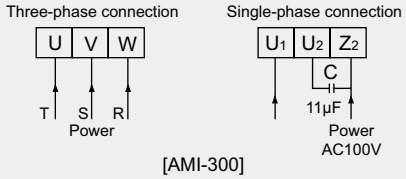

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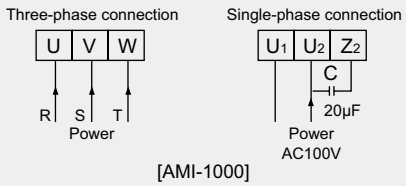


[AMI-1000]

⚠ Improper handling can result in a death or serious injury ⚠ Electrical shock may be received under certain conditions ⏚ Be sure to ground.

Automatic intermittent gear pump

AM

High durability and low revolution gear pump.

[AM]

Discontinued product

[ADM]

Model Reference

AM−□−□□□−□

Voltage

1	AC100V φ1
2	AC200V φ3

Tank capacity

20	2ℓ Metal reservoirs
30	3ℓ Metal reservoirs
40	4ℓ Metal reservoirs
80	8ℓ Metal reservoirs

Oil level switch

Blank	Without
L	With

*Except 2L metal reservoir

Reservoir mounting position

F	Foot mount
B	Wall mount

Pump position

L	Pump position-left
R	Pump position-right

*Except 2L metal reservoir

Specifications

Pump	Discharge volume	50mℓ/min(50HZ), 60mℓ/min(60HZ)
		10 - 300m/hour Changeable by adjusting the cam
	Discharge pressure	0.8MPa (Safety valve set pressure)
Motor (Capable of coping with a different voltage)	Working voltage/ Working current	AC100Vφ1 25W: 0.51/0.52A
		AC200Vφ3 25W: 0.23/0.21A
	Output	Induction generator B-class, 4P 25W
Oil level switch		Optional on the reservoirs flange
Rated operation		Continuous
Working viscosity range		32 - 1300mm^2/s
Weight		AM: 5.4kg ADM: 5.9kg
Others		Direction of rotation: CCW
		Condenser 100V 8μF
External fuse		100V/1A 200V/0.5A

* Contact us if the working viscosity range of the oil exceeds 1300mm2/s

Related parts

Flow unit
: P.149

PJ junction
: P.163

Tubing
: P.203

Pressure gauge
: P.184

Adapters
: P.207

MetalReservoir
: P.170

Relational table between cam setting, interval time and discharge volume

Cam No.	Interval time		Discharge volume per a cycle (ml)	Discharge volume per hour (ml)		Required time to discharge 1L.	
	50Hz	60Hz		50Hz	60Hz	50Hz	60Hz
1	30min	25min	5	8	10	125hour	100hour
2	30min	25min	10	15	20	66hour-40min	50hour
3	30min	25min	15	23	30	43hour-28min	35hour
4	30min	25min	20	30	40	33hour-20min	25hour
5	7min-30sec	6min-15sec	10	75	100	13hour-20min	10hour
6	7min-30sec	6min-15sec	15	113	150	8hour-50min	7hour
7	7min-30sec	6min-15sec	20	150	200	6hour-40min	5hour
8	7min-30sec	6min-15sec	30	225	300	4hour-26min	3hour

Model

Model	Part Number
AM-1	102054
AM-2	102050

Directions for use

- Oil viscosity varies with oil temperature. Be sure to use oil within the working viscosity range. Refer to the viscosity table. (P.237)
- Do not use any oil containing special additives, water soluble oil, or solvent.
- Periodically check the oil in the reservoir for impurities. Replace with fresh oil immediately, if necessary. Be sure to clean the reservoir before oil adding new oil.
- Do not over tighten the discharge joint. Refer to the tightening torque table. (P.251)
- Make sure that proper voltage and pressure are proper.
- Replace the suction filter at least once a year.
- Check the direction of motor rotation. Change U and W of three-phase connection to change the direction of rotation. Do not lie upside down or sideways pump.

Filter FX1
: P.181

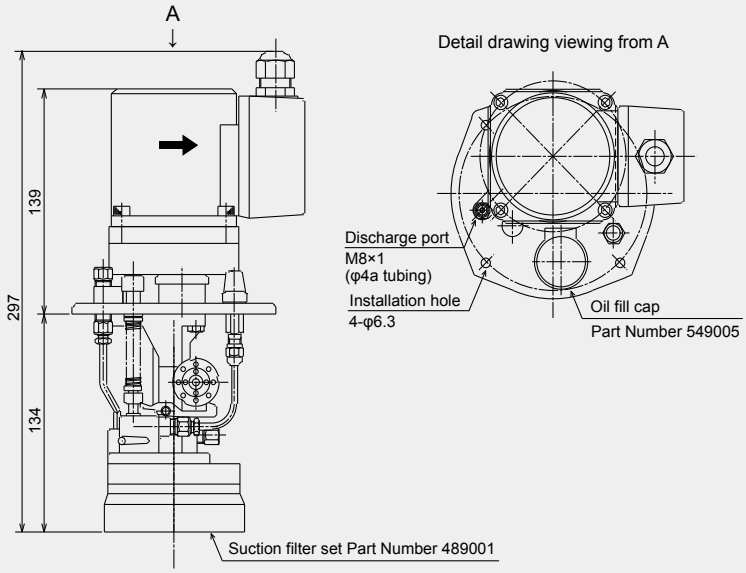
Filter FY20
: P.181

Pressure switch
: P.185

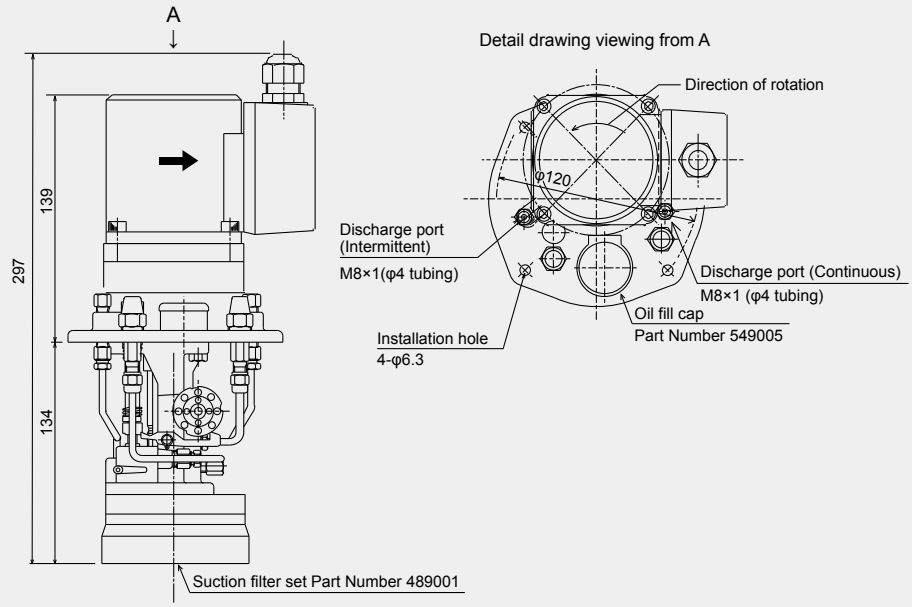
Compression parts
: P.201

Dimensional drawing

[AM]

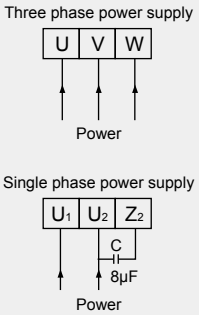


[ADM]

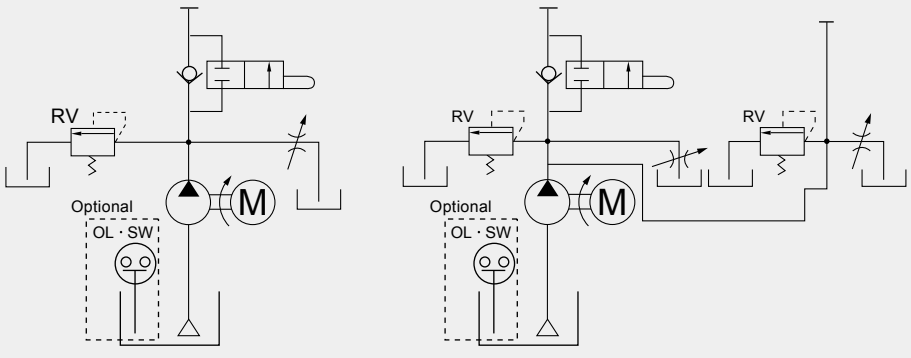


Improper handling can result in a death or serious injury Electrical shock may be received under certain conditions Be sure to ground.

Wiring diagram



Hydraulic circuit drawing



Single Line Resistance (SLR) compact system for small machines to large machines with continuous (recirculation) delivery

CSA-04

CTU-2

CJB-04


PJ-2


TG

■ [Valve]

Single line resistance valve (continuous)

control unit

[CSA-04] [CTU-2] [CJB-04]

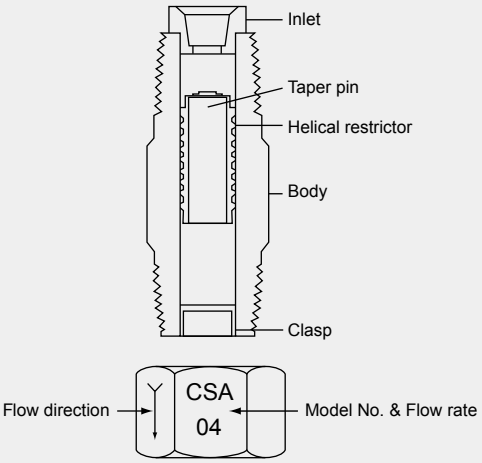
Specifications

Normal working pressure	Under 0.8 MPa

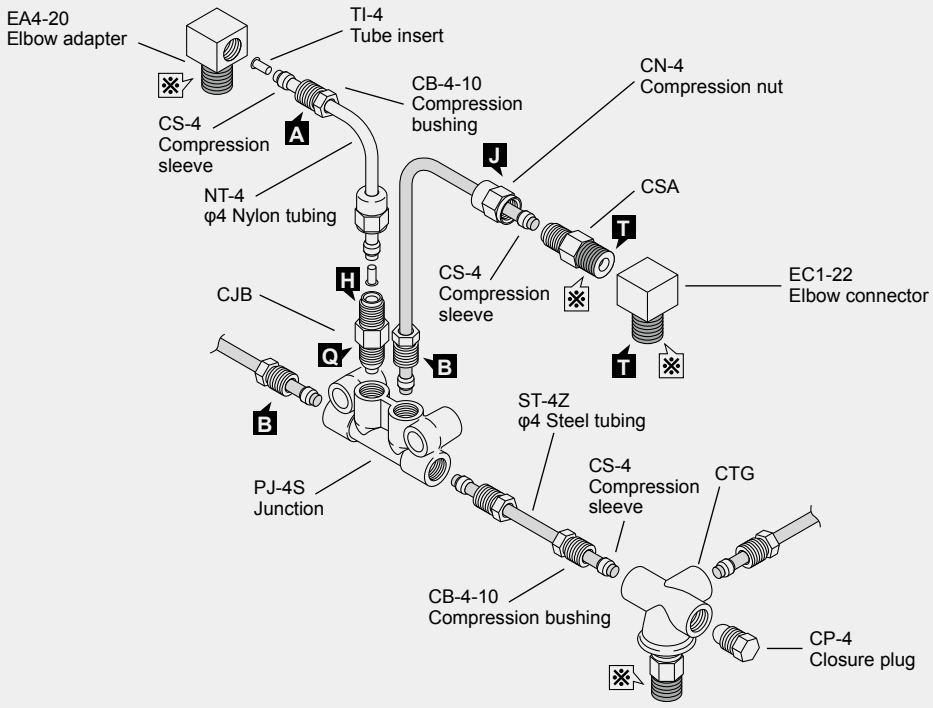
Directions for use

- Please conform the flow direction and thread size to connect to the junction.
- Do not over tighten any joints. Refer to the tightening torque table. (P.251)

Internal construction

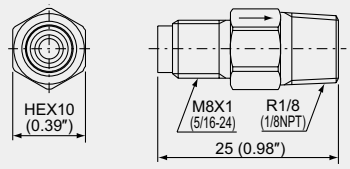


Tubing connection (This is just an example.)



※ Use an appropriate sealant where mark is shown.

Mark denote tightening torque. See the tightening torque list. P.251

Part Number		Model		Dimensional drawing
Metric	Inch			
105201	185201	CSA	05	
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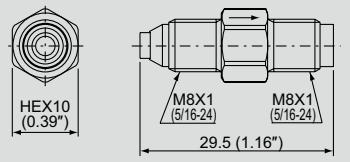
105204	185204		02	
105205	185205		0	
105206	185206		1	
105207	185207		2	
105208	185208		3	
105209	185209		4	
105210	185210		5	
105211	185211	CJB	05	
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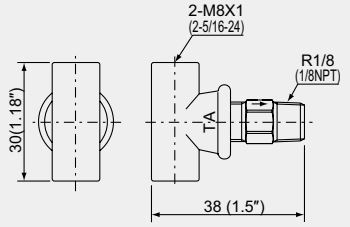
105216	185216		1	
105217	185217		2	
105218	185218		3	
105219	185219		4	
105220	185220		5	
105221	185221	CTA	05	
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105224	185224		02	
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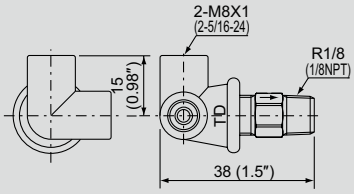
105226	185226		1	
105227	185227		2	
105228	185228		3	
105229	185229		4	
105230	185230		5	
105231	185231	CTD	05	
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105233	185233		03	
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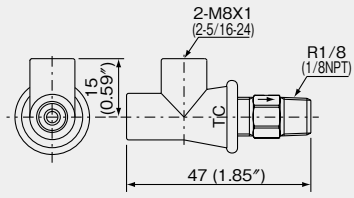
105240	185240		5	
105241	185241	CTC	05	
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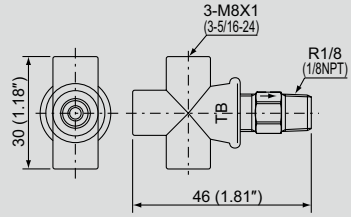
105248	185248		3	
105249	185249		4	
105250	185250		5	
105251	185251	CTB	05	
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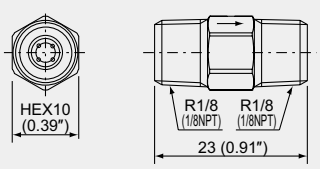
105257	185257		2	
105258	185258		3	
105259	185259		4	
105260	185260		5	

Part Number		Model		Dimensional drawing
Metric	Inch			
105321	185321	CTU	05	
105322	185322		04	
105323	185323		03	
105324	185324		02	
105325	185325		0	
105326	185326		1	
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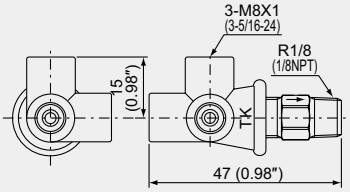
105328	185328		3	
105329	185329		4	
105330	185330		5	
105261	185261	CTK	05	
105262	185262		04	
105263	185263		03	
105264	185264		02	
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105266	185266		1	
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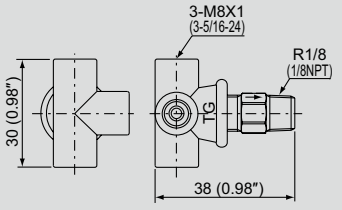
105270	185270		5	
105271	185271	CTG	05	
105272	185272		04	
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105276	185276		1	
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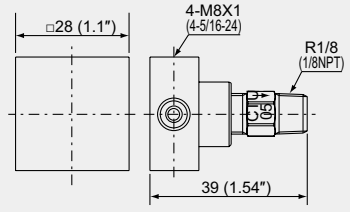
105278	185278		3	
105279	185279		4	
105280	185280		5	
105281	185281	CTH	05	
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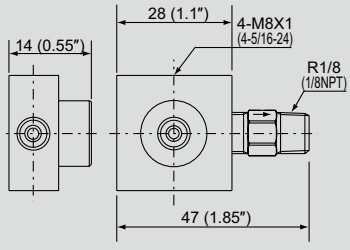
105289	185289		4	
105290	185290		5	
105291	185291	CTL	05	
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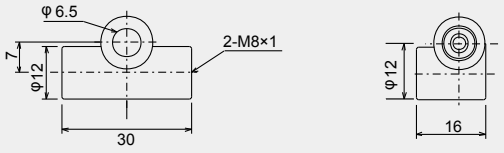
105295	185295		0	
105296	185296		1	
105297	185297		2	
105298	185298		3	
105299	185299		4	
105300	185300		5	

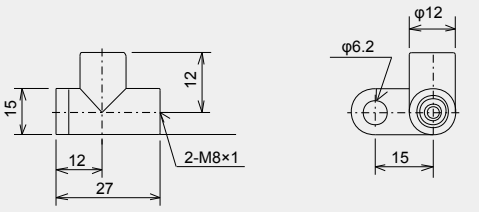
Junction

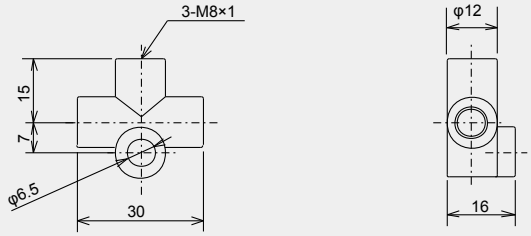
PJ

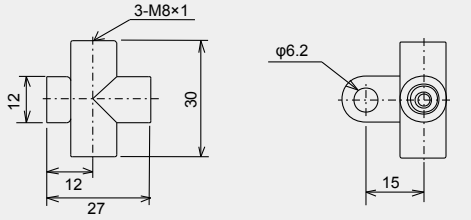
Junction for main tubing PJ

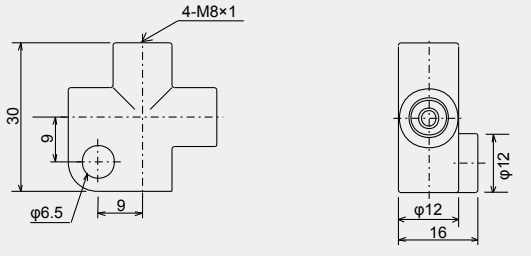
Dimensional drawing











Model

For 4mm(5/32)tubing

Model	Part Number	Specifications
PJ-2	106421	Two-way

Material: ZDC

Model	Part Number	Specifications
PJ-2F	106424	Two-way

Material: ZDC

Model	Part Number	Specifications
PJ-3	106420	Three-way

Material: ZDC

Model	Part Number	Specifications
PJ-3F	106425	Three-way

Material: ZDC

Model	Part Number	Specifications
PJ-4	106423	Four-way

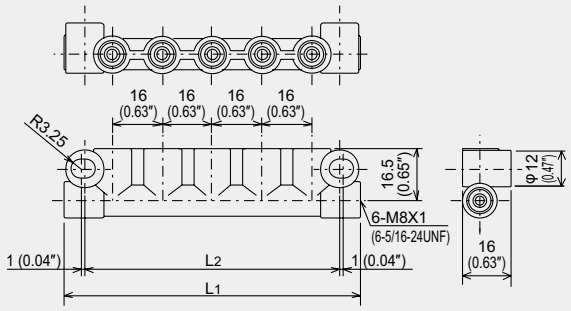
Material: ZDC

Junction

PJ

For Flow unit/control unit installation

Dimensional drawing

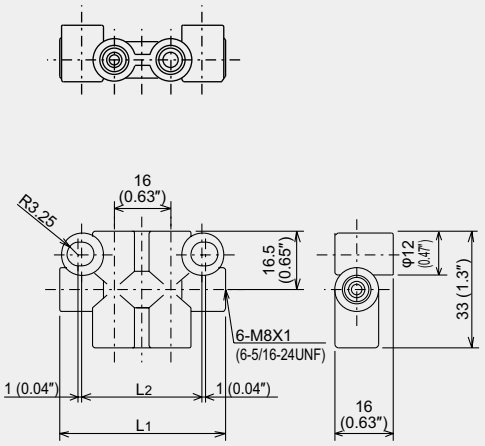


[PJ-7S]

Model

Model	Part Number		Specifications	Size	
	M8×1	5/16-24 UNF		L1	L2
PJ-4S	106401	186401	Single type for 2ports	47 (1.85″)	34 (1.34″)
PJ-5S	106402	186402	Single type for 3ports	63 (2.48″)	50 (1.97″)
PJ-6S	106403	186403	Single type for 4ports	79 (3.11″)	66 (2.60″)
PJ-7S	106404	186404	Single type for 5ports	95 (3.74″)	82 (3.23″)
PJ-8S	106405	186405	Single type for 6ports	111 (4.37″)	98 (3.86″)
PJ-9S	106406	186406	Single type for 7ports	127 (5.00″)	114 (4.49″)
PJ-10S	106407	186407	Single type for 8ports	143 (5.63″)	130 (5.12″)
PJ-12S	106408	186408	Single type for 10ports	175 (6.89″)	162 (6.38″)

Material: ZDC



[PJ-6D]

Model	Part Number		Specifications	Size	
	M8×1	5/16-24 UNF		L1	L2
PJ-6D	106411	186411	Double type for 4ports	47 (1.85″)	34 (1.34″)
PJ-8D	106412	186412	Double type for 6ports	63 (2.48″)	50 (1.97″)
PJ-10D	106413	186413	Double type for 8ports	79 (3.11″)	66 (2.60″)

Material: ZDC

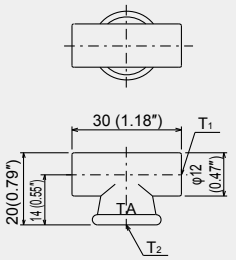
Model	Part Number	Specifications	Size	
			L1	L2
PJ-12D	106414	Double type for 10ports	82 (3.23″)	94 (3.70″)
PJ-14D	106415	Double type for 12ports	98 (3.86″)	110 (4.33″)
PJ-16D	106416	Double type for 14ports	114 (4.49″)	126 (4.96″)

Material: ZDC

Junction header

For use with Flow and Control unit

Dimensional drawing

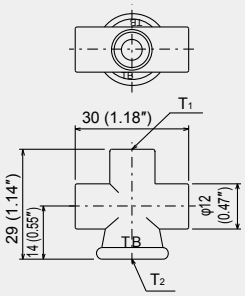


Model

Model	Part Number	T1	T2
TA	106431	2-M8×1	Rc 1/8
TA	186431	2-5/16-24 UNF	1/8 NPT

Material: ZDC

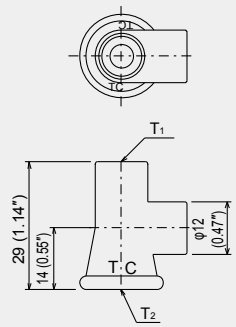
Dimensional drawing



Model

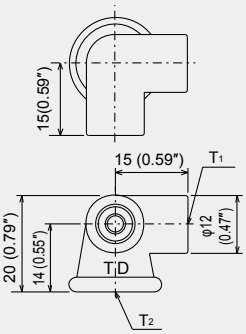
Model	Part Number	T1	T2
TB	106432	3-M8×1	Rc 1/8
TB	186432	3-5/16-24 UNF	1/8 NPT

Material: ZDC



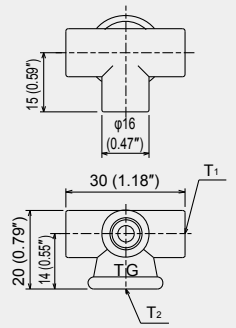
Model	Part Number	T1	T2
TC	106433	2-M8×1	Rc 1/8
TC	186433	2-5/16-24 UNF	1/8 NPT

Material: ZDC



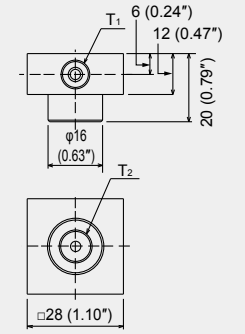
Model	Part Number	T1	T2
TD	106434	2-M8×1	Rc 1/8
TD	186434	2-5/16-24 UNF	1/8 NPT

Material: ZDC



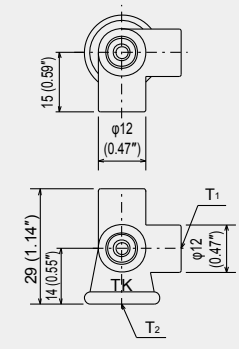
Model	Part Number	T1	T2
TG	106435	3-M8×1	Rc 1/8
TG	186435	3-5/16-24 UNF	1/8 NPT

Material: ZDC



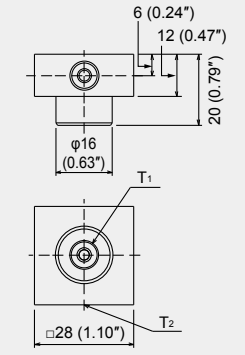
Model	Part Number	T1	T2
TH	106436	4-M8×1	Rc 1/8
TH	186436	4-5/16-24 UNF	1/8 NPT

Material: C3604



Model	Part Number	T1	T2
TK	106437	3-M8×1	Rc 1/8
TK	186437	3-5/16-24 UNF	1/8 NPT

Material: ZDC



Model	Part Number	T1	T2
TL	106438	4-M8×1	Rc 1/8
TL	186438	4-5/16-24 UNF	1/8 NPT

Material: C3604

Reservoirs

Reservoir (Resin) 0.2L

Reservoir (Resin) 3L

Reservoir (Metal) 2L

Reservoir (Metal) 4L

Reservoir (Metal) 8L

Resin reservoirs

Metal reservoirs

Resin reservoirs

0.2 . 0.4ℓ

[T-2LP]

[T-4LP]

Model

Applicable pump	Model	Part Number	Useful capacity	Total capacity
L3	T-2LP	254104	0.2ℓ	0.22ℓ
EX-5, L5	T-4LP	254106	0.4ℓ	0.5ℓ

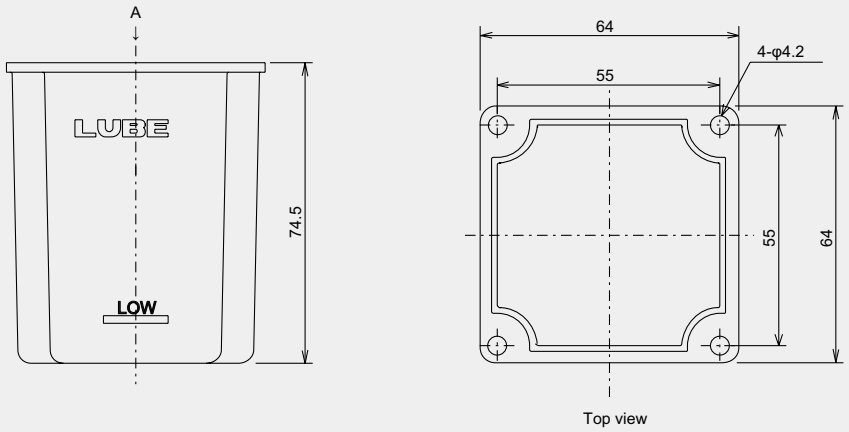
Material: PCTA

Directions for use

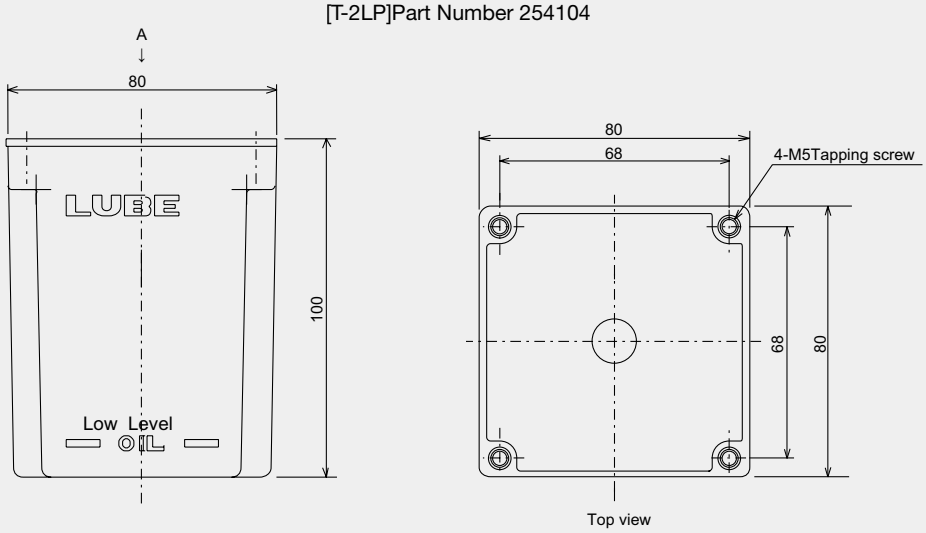
- Do not use solvents.
- Clean at least once a year.
- For details, see instruction manual.

*Should the pump malfunction, contact LUBE for consultation.

Dimensional drawing



[T-2LP]Part Number 254104



[T-4LP]Part Number 254106

Resin reservoirs

0.8 . 1.8ℓ

[T-8LP]

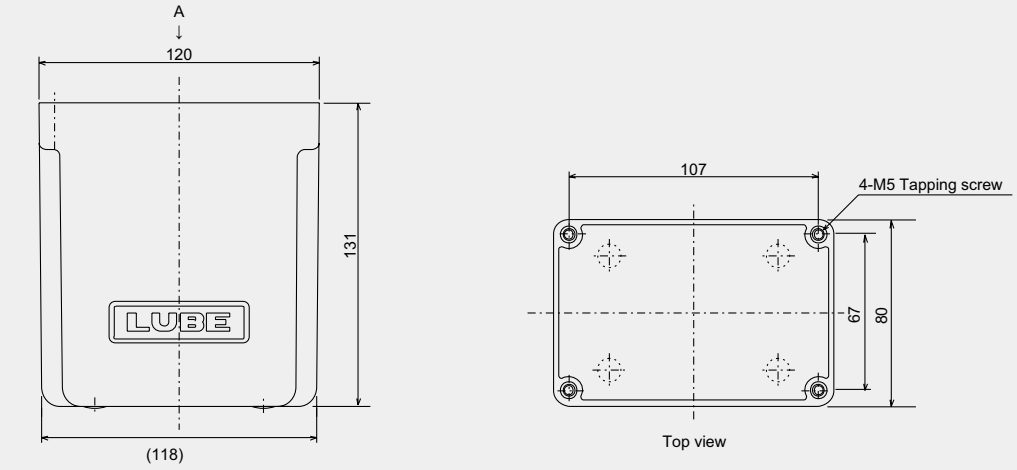
[T-18LP]

Model

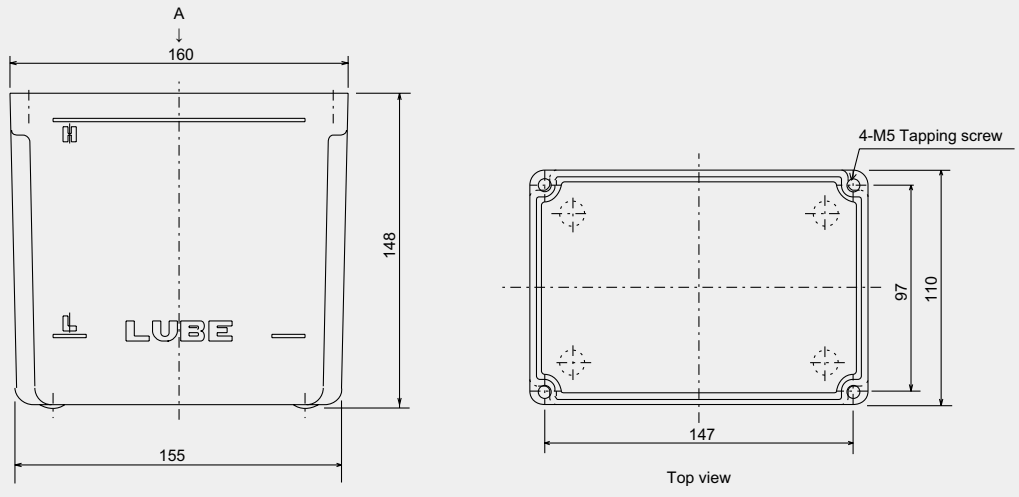
Applicable pump	Model	Part Number	Useful capacity	Total capacity
L8 MLZ	T-8LP	254102	0.8ℓ	1.0ℓ
AMZ-Ⅲ, AMZ100S, AMO, MMXL-Ⅲ, MMX-Ⅱ, EX, AMR-Ⅲ -150, L20, AMS, PM-8S	T-18LP	609576	1.8ℓ	2.0ℓ

Material: PCTA

Dimensional drawing



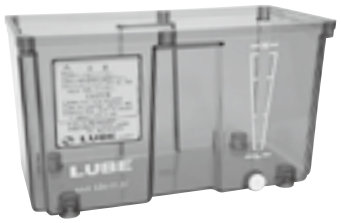
[T-8LP]Part Number 254102



[T-18LP]Part Number 609576

Resin reservoirs

3ℓ



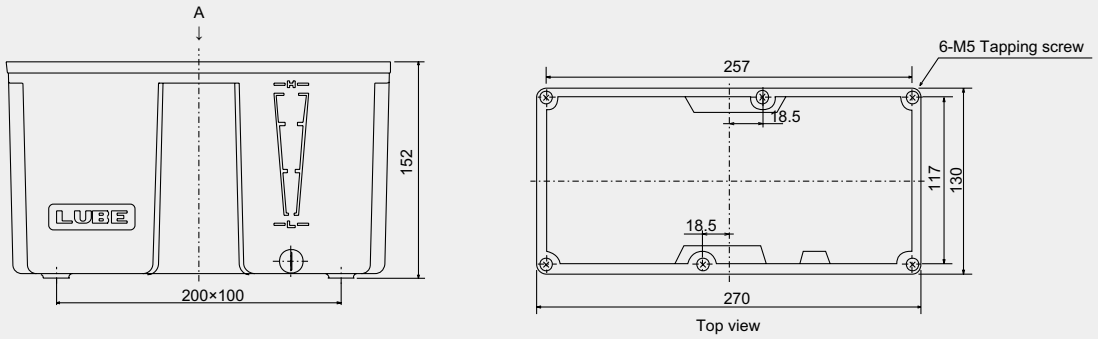
[T-30LP]

Model

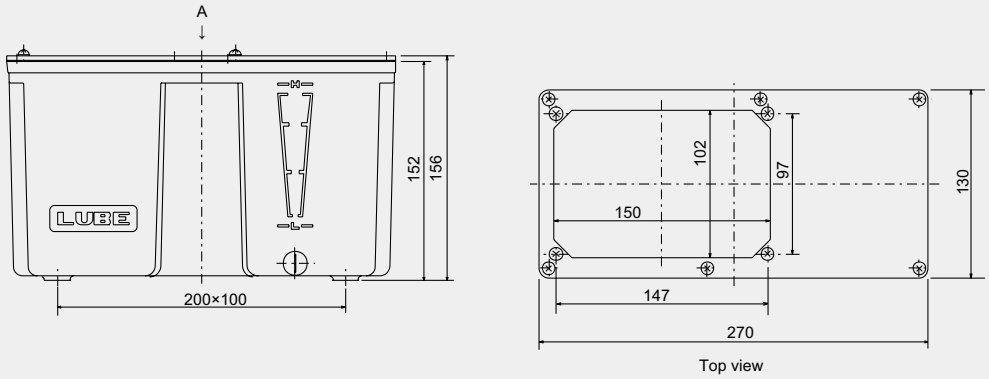
Applicable pump	Model	Part Number	Pump position
AMZ100S, AMO, MMXL-III , MMX-II , AMR-III -150, AMS, PM-8S	T-30LP	609583	—
	T-30LP-LX	104657	Left
	T-30LP-RX	104658	Right

Material: PCTA
Useful capacity: 3L
Total capacity: 4L

Dimensional drawing



[T-30LP]Part Number 609583



[T-30LP-LX]Part Number 104657

Metal reservoirs

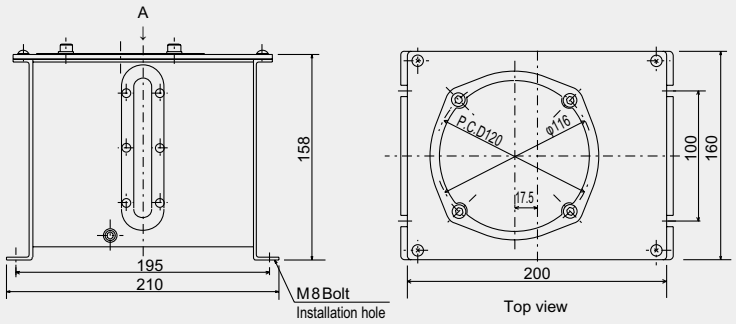
2ℓ

Model

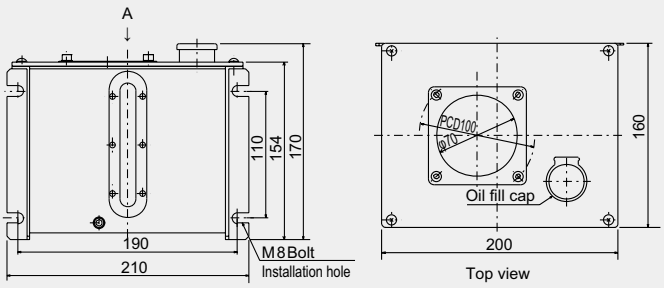
Applicable pump	Model	Part Number	Mounting
ACM-Ⅱ, AM, ADM	T-20L-AF	104301	Foot
	T-20L-AB	104401	Back
AMI-300S, AMI-300	T-20L-HF	104303	Foot
	T-20L-HB	104403	Back
AMI-1000S, AMI-1000	T-20L-KF	104302	Foot
	T-20L-KB	104402	Back

Material: SPCC Total capacity: 3.2L Useful capacity: 2.1L Coating color: Silver

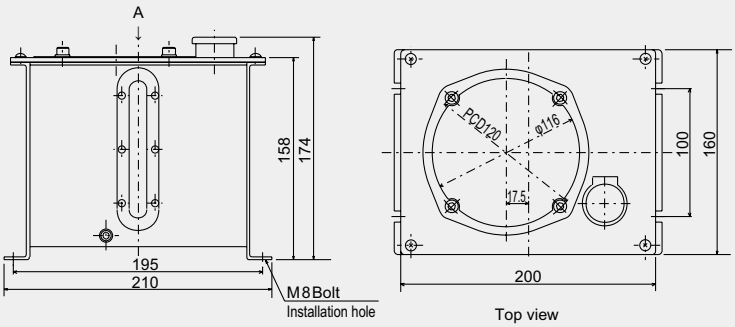
Dimensional drawing



[T-20L-AF]Part Number 104301



[T-20L-HB]Part Number 104403



[T-20L-KF]Part Number 104302

Metal reservoirs

3ℓ

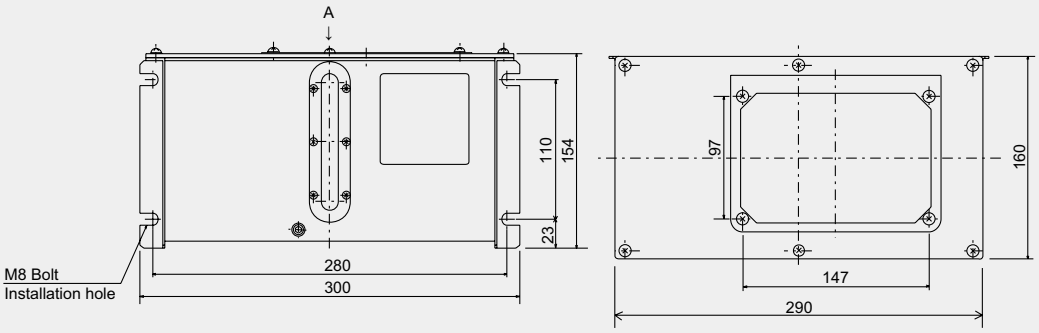
[T-30L-OLH]

Model

Applicable pump	Model	Part Number	Pump position	Mounting	Oil level switch
AMZ100S AMO AMR-III -150	T-30L-AOF	104326	Right	Foot	—
	T-30L-AOB	104426	Right	Back	—
MMXL-III MMX-II AMS PM-8S	T-30L-LXF	104313	Left	Foot	—
	T-30L-LXB	104413	Left	Back	—
	T-30L-RXF	104314	Right	Foot	—
	T-30L-RXB	104414	Right	Back	—
AMI-300S AMI-300	T-30L-LHF	104318	Left	Foot	Without
	T-30L-LHB	104418	Left	Back	Without
	T-30L-RHF	104319	Right	Foot	Without
	T-30L-RHB	104419	Right	Back	Without
	T-30L-OLHF	104324	Left	Foot	With
	T-30L-OLHB	104424	Left	Back	With
	T-30L-ORHF	104325	Right	Foot	With
	T-30L-ORHB	104425	Right	Back	With
AMI-1000S AMI-1000	T-30L-LKF	104316	Left	Foot	Without
	T-30L-LKB	104416	Left	Back	Without
	T-30L-RKF	104317	Right	Foot	Without
	T-30L-RKB	104417	Right	Back	Without
	T-30L-OLKF	104322	Left	Foot	With
	T-30L-OLKB	104422	Left	Back	With
	T-30L-ORKF	104323	Right	Foot	With
	T-30L-ORKB	104423	Right	Back	With
ACM-II AM ADM	T-30L-LAF	104311	Left	Foot	Without
	T-30L-LAB	104411	Left	Back	Without
	T-30L-RAF	104312	Right	Foot	Without
	T-30L-RAB	104412	Right	Back	Without
	T-30L-OLAF	104320	Left	Foot	With
	T-30L-OLAB	104420	Left	Back	With
	T-30L-ORAF	104321	Right	Foot	With
	T-30L-ORAB	104421	Right	Back	With

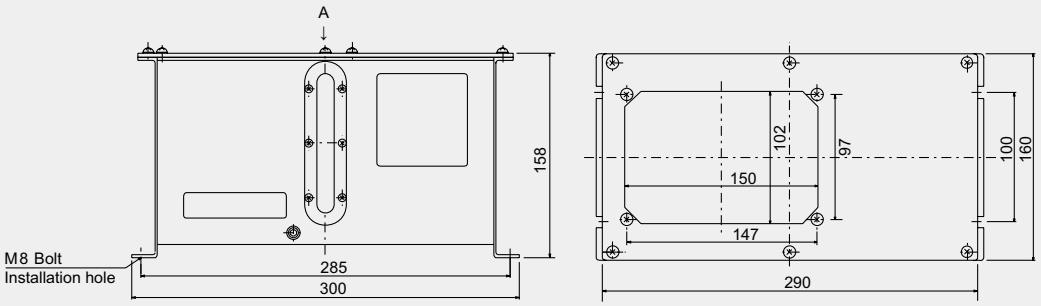
Material: SPCC Total capacity: 3.2L Useful capacity: 2.1L Coating color: Silver

Dimensional drawing



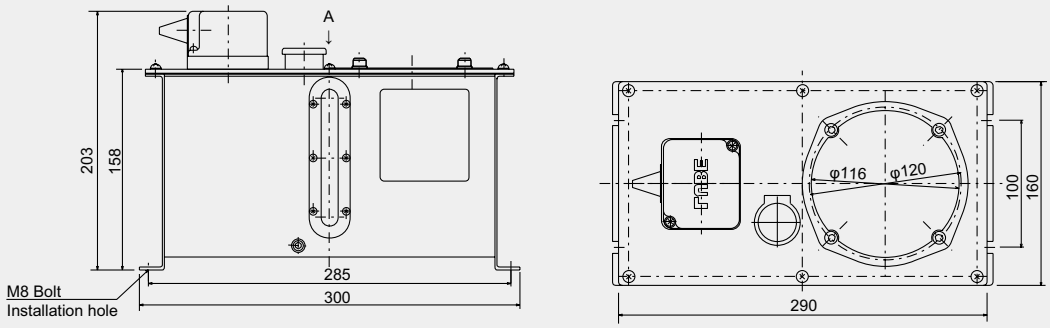
[T-30L-AOB]Part Number 104426

Top view



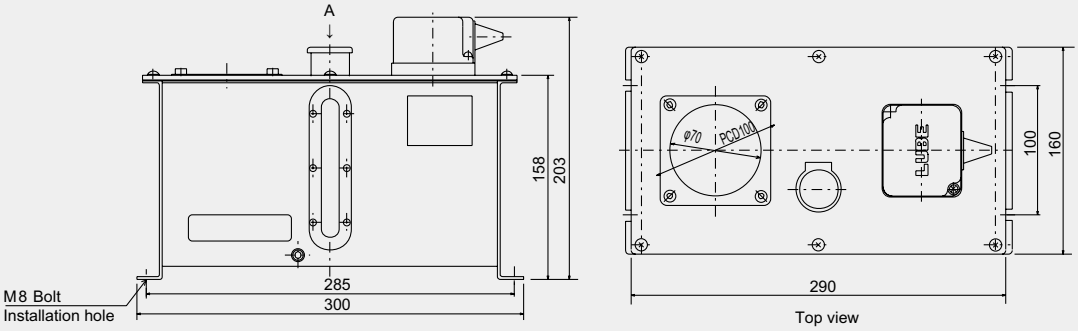
[T-30L-LXF]Part Number 104313

Top view



[T-30L-ORAF]Part Number 104321

Top view



[T-30L-OLHF]Part Number 104324

Top view

Metal reservoirs

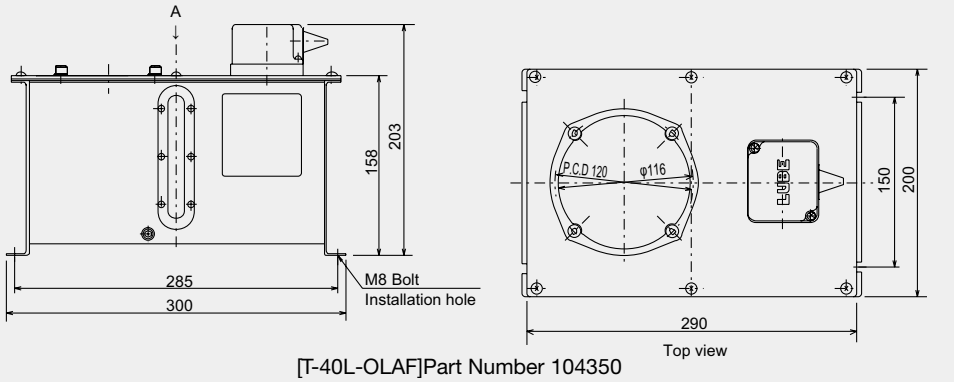
4ℓ

Model

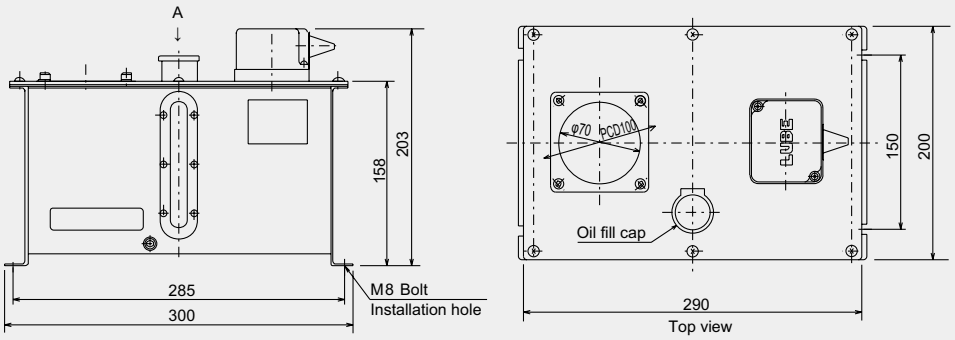
Applicable pump	Model	Part Number	Pump position	Mounting	Oil level switch
AMZ100S AMO AMR-III-150	T-40L-AOF	104356	Right	Foot	—
	T-40L-AOB	104456	Right	Back	—
MMXL-III MMX-II AMS PM-8S	T-40L-LXF	104343	Left	Foot	—
	T-40L-LXB	104443	Left	Back	—
	T-40L-RXF	104344	Right	Foot	—
	T-40L-RXB	104444	Right	Back	—
AMI-300S AMI-300	T-40L-LHF	104348	Left	Foot	Without
	T-40L-LHB	104448	Left	Back	Without
	T-40L-RHF	104349	Right	Foot	Without
	T-40L-RHB	104449	Right	Back	Without
	T-40L-OLHF	104354	Left	Foot	With
	T-40L-OLHB	104454	Left	Back	With
	T-40L-ORHF	104355	Right	Foot	With
	T-40L-ORHB	104455	Right	Back	With
AMI-1000S AMI-1000	T-40L-LKF	104346	Left	Foot	Without
	T-40L-LKB	104446	Left	Back	Without
	T-40L-RKF	104347	Right	Foot	Without
	T-40L-RKB	104447	Right	Back	Without
	T-40L-OLKF	104352	Left	Foot	With
	T-40L-OLKB	104452	Left	Back	With
	T-40L-ORKF	104353	Right	Foot	With
	T-40L-ORKB	104453	Right	Back	With
ACM-II AM ADM	T-40L-LAF	104341	Left	Foot	Without
	T-40L-LAB	104441	Left	Back	Without
	T-40L-RAF	104342	Right	Foot	Without
	T-40L-RAB	104442	Right	Back	Without
	T-40L-OLAF	104350	Left	Foot	With
	T-40L-OLAB	104450	Left	Back	With
	T-40L-ORAF	104351	Right	Foot	With
	T-40L-ORAB	104451	Right	Back	With

Material: SPCC Total capacity: 6.3L Useful capacity: 4.2L Coating color: Silver

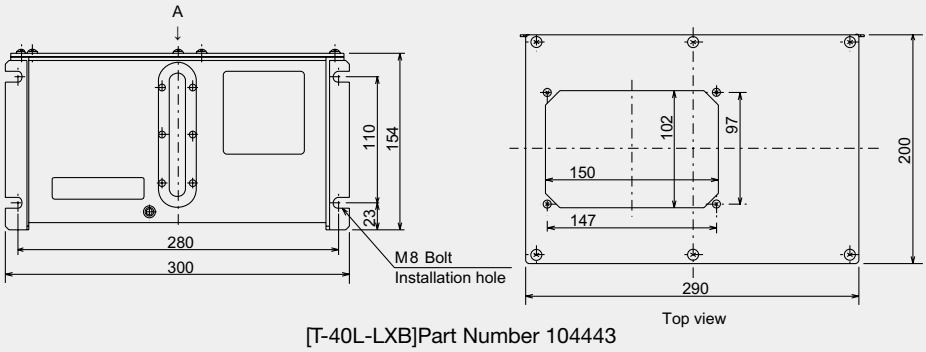
Dimensional drawing



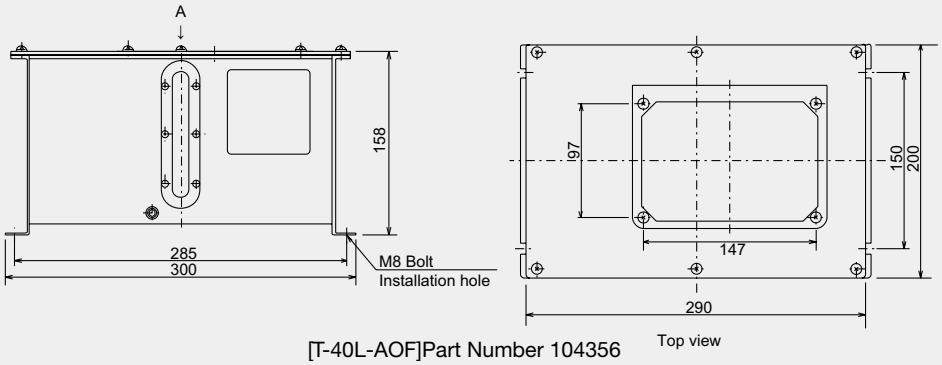
[T-40L-OLAF]Part Number 104350



[T-40L-OLHF]Part Number 104354



[T-40L-LXB]Part Number 104443



[T-40L-AOF]Part Number 104356

Metal reservoirs

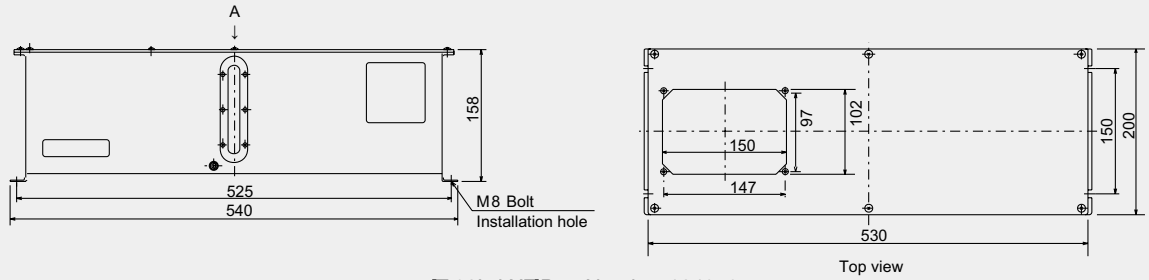
8ℓ

Model

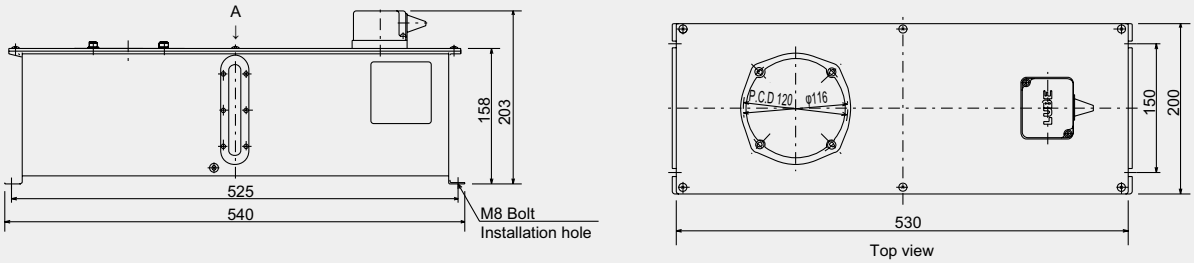
Applicable pump	Model	Part Number	Pump position	Mounting	Oil level switch
AMZ100S AMO AMR-III -150	T-80L-AOF	104386	Right	Foot	—
	T-80L-AOB	104486	Right	Back	—
MMXL-III MMX-II AMS PM-8S	T-80L-LXF	104373	Left	Foot	—
	T-80L-LXB	104473	Left	Back	—
	T-80L-RXF	104374	Right	Foot	—
	T-80L-RXB	104474	Right	Back	—
AMI-300S AMI-300	T-80L-LHF	104378	Left	Foot	Without
	T-80L-LHB	104478	Left	Back	Without
	T-80L-RHF	104379	Right	Foot	Without
	T-80L-RHB	104479	Right	Back	Without
	T-80L-OLHF	104384	Left	Foot	With
	T-80L-OLHB	104484	Left	Back	With
	T-80L-ORHF	104385	Right	Foot	With
	T-80L-ORHB	104485	Right	Back	With
AMI-1000S AMI-1000	T-80L-LKF	104376	Left	Foot	Without
	T-80L-LKB	104476	Left	Back	Without
	T-80L-RKF	104377	Right	Foot	Without
	T-80L-RKB	104477	Right	Back	Without
	T-80L-OLKF	104382	Left	Foot	With
	T-80L-OLKB	104482	Left	Back	With
	T-80L-ORKF	104383	Right	Foot	With
	T-80L-ORKB	104483	Right	Back	With
ACM-II AM ADM	T-80L-LAF	104371	Left	Foot	Without
	T-80L-LAB	104471	Left	Back	Without
	T-80L-RAF	104372	Right	Foot	Without
	T-80L-RAB	104472	Right	Back	Without
	T-80L-OLAF	104380	Left	Foot	With
	T-80L-OLAB	104480	Left	Back	With
	T-80L-ORAF	104381	Right	Foot	With
	T-80L-ORAB	104481	Right	Back	With

Material: SPCC Total capacity: 12.3L Useful capacity: 8.0L Coating color: Silver

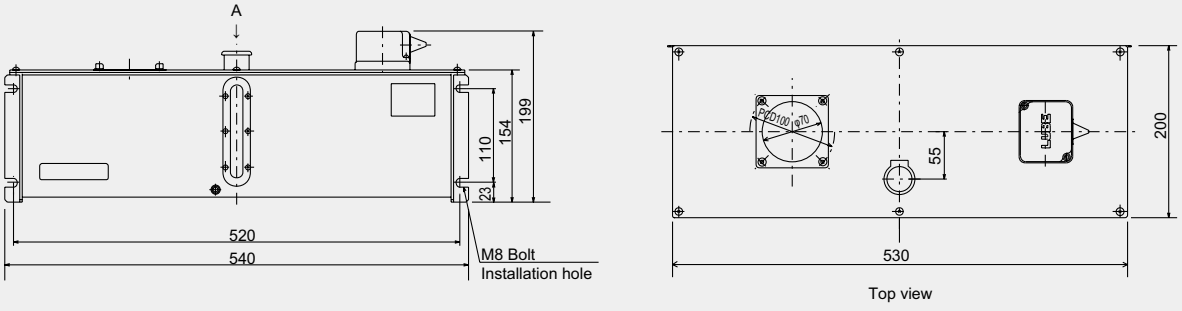
Dimensional drawing



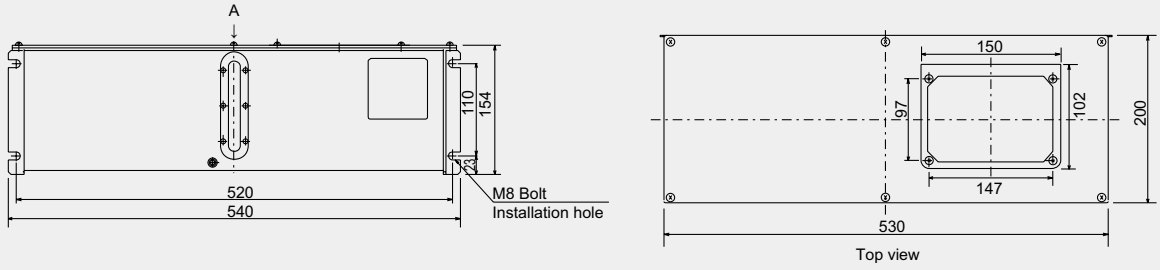
[T-80L-LXF]Part Number 104373



[T-80L-OLAF]Part Number 104380



[T-80L-OLHB]Part Number 104484



[T-80L-AOB]Part Number 104486

Accessories

Oil level switch

Filter / Strainer

Pressure gauge

Pressure switch

Ludo-sensor

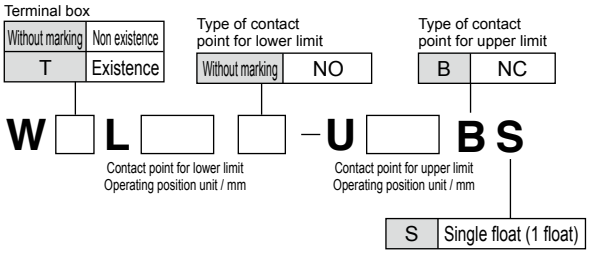
Oil level switch

Use for oil level detection.

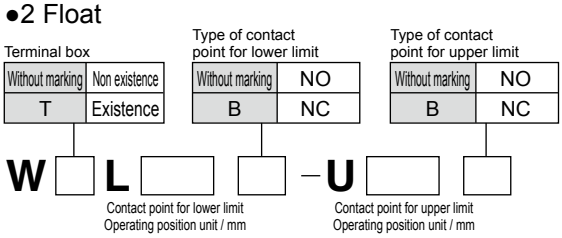
[W-105-02]

[W-105B]

●1 Float



●2 Float



Specifications

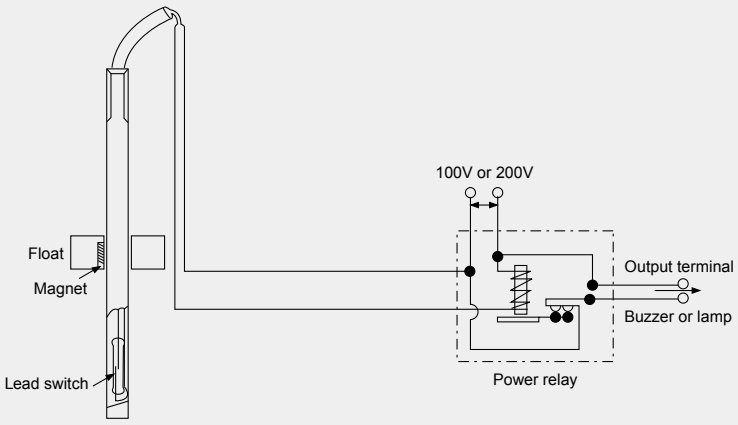
Contact type	(NO) On at low level (NC) Off at low level
Contact capacity	0.5A,AC DC200V/30W smaller
Working tempeature range	–10 - 80°C (limited to liquid in nonfreezing condition)
Working liguid specific gravity	over 0.7
Max. pressure	0.1MPa

Model

Model	Part Number	Contact type	Specification
W-105-02	109704	NO	Without terminal box Cord length 20cm
W-105-02 (B)	109705	NC	
W-105B	109706	NO	With terminal box
W-105B (B)	109707	NC	

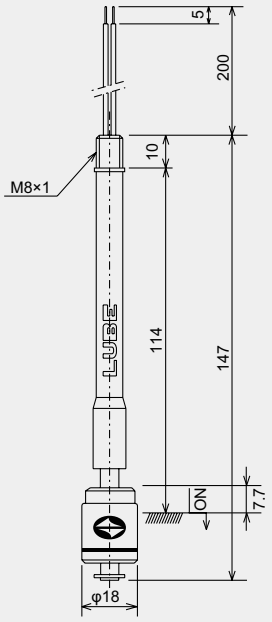
Model	Part Number	Terminal box
WL-100-U30BS	109221	–
WL-105-U32BS	109222	
WL-120-U50BS	109223	
WL-150-U35BS	109224	
WL-150-U50BS	109225	
WL-160-U80BS	109226	
WL-190-U80BS	109227	
WL-210-U50BS	109228	
WTL-100-U30BS	109271	○
WTL-105-U32BS	109272	
WTL-120-U50BS	109273	
WTL-150-U35BS	109274	
WTL-150-U50BS	109275	
WTL-160-U80BS	109276	
WTL-190-U80BS	109277	
WTL-210-U50BS	109278	

Examples for using oil level switch

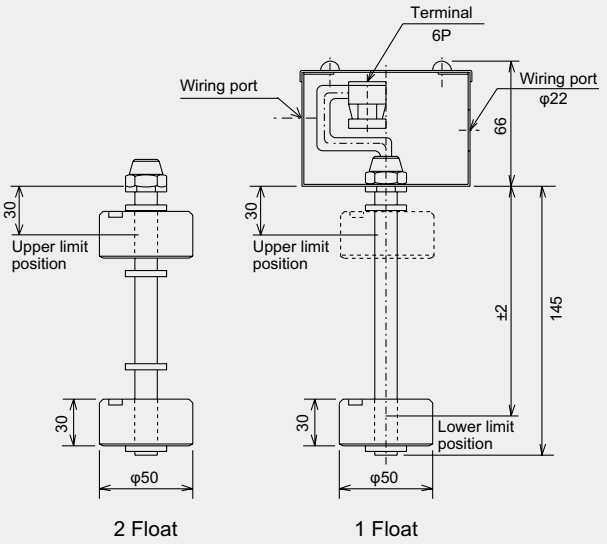


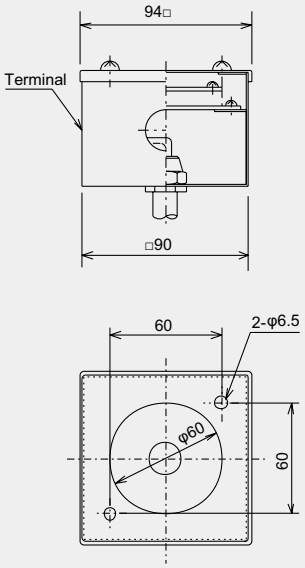
Dimensional drawing

[W-105-02]



[WTL]

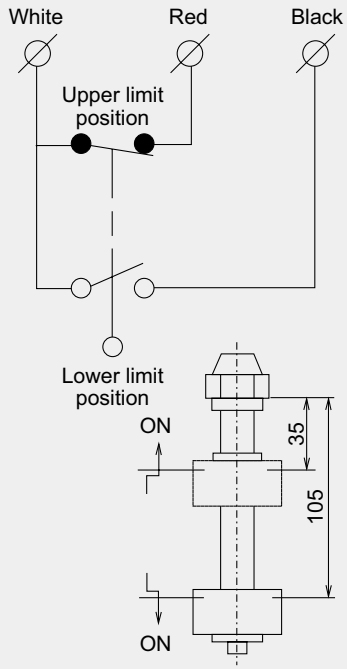




Float Positions

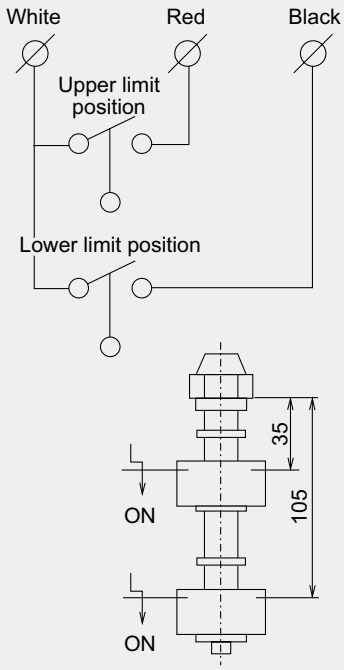
Example : 1 float

WL105-U35BS

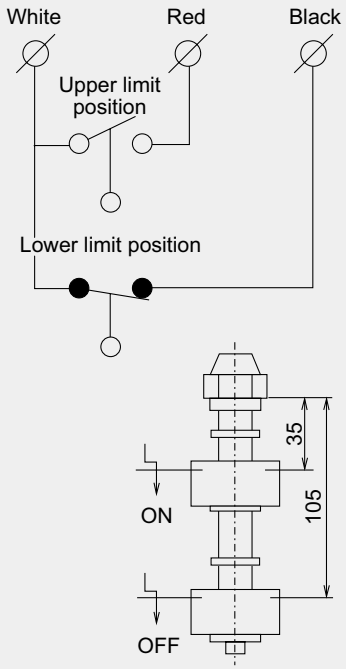


Example : 2 float

WL105-U35



WL105B-U35



Filter / Strainer

In-Line oil filters help eliminate contamination from the oil supply before the metering devices.

[FX1-4]

[FY20]

[RF-250]

[F3-6-125]

Model

Line Filter

Model	Part Number	Connecting port	Normal working pressure (MPa)	Pressure Loss	Filtration rating	Additional parts
FX1-4	109311	M8×1	1.0	0.1	40μ	SA4-16
FX1-6	209311	M10×1				SA6-20
F3-4-125	109308	M8×1	Max.2.9		125μ	SA4-16
F3-6-125	209308	M10×1				SA6-20
F3-6-40	209310				40μ	
F3-6-10	209309			0.15	10μ	
FY20	109313	Rc1/8	2.5	0.1	20μ	—

Replacement Filter Element

Model	Part Number	Filtration rating
FXE	259304	40μ
F3E-125	259311	125μ
F3E-40	259312	40μ
F3E-10	259313	10μ

Sintered Strainer

Model	Part Number	Filtration rating	Material
FYE	650147	20μ	BC3

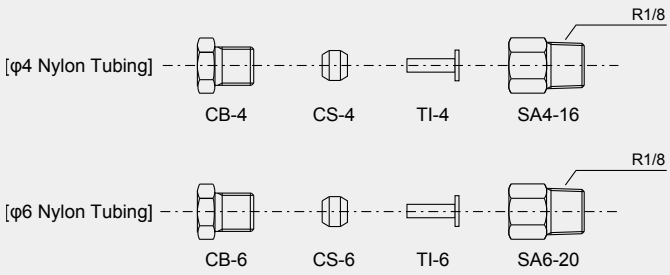
Recirculation Filter

Model	Part Number	Filtration rating
RF-250	109317	250μ

Strainer

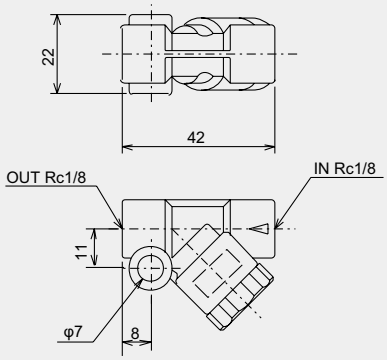
Model	Part Number	D	H	L	d	d1	P	Installation Screw
SAB-30	259353	56	33	44	30	35	48	4-M4
SAB-40	259354	65	34	69	40	45	57	
SAB-50	259355	80	34	135	50	56	75	4-M5
SAB-70	259358	108	70	120	70	80	100	6-M6

Connecting parts

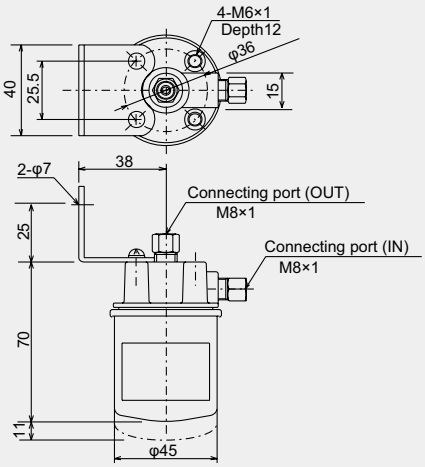


Dimensional drawing

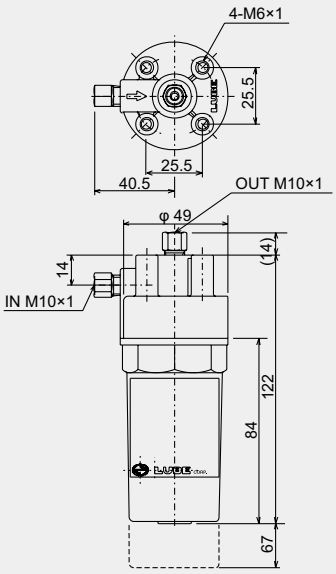
[Line filter]



[FY20]

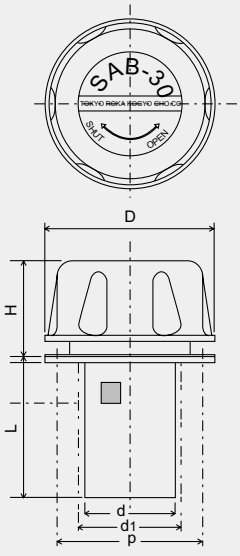


[FX1-4]



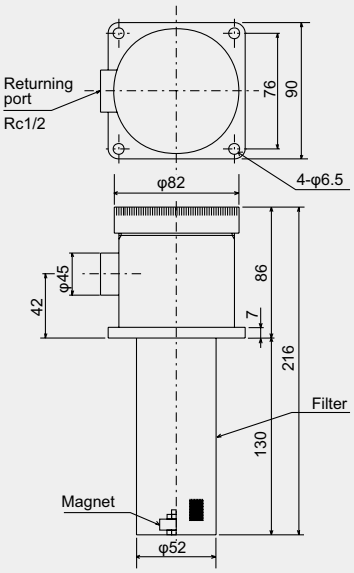
[F3-6-125]

[Strainer]



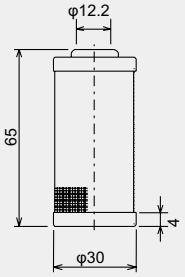
[SAB-30]

[Recirculation filter]

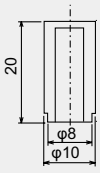


[RF-250]

[Element / Strainer]



Replacement filter element
[F3E-125 • F3E-40 • F3E-10]



Sintered strainer

[FY-20]

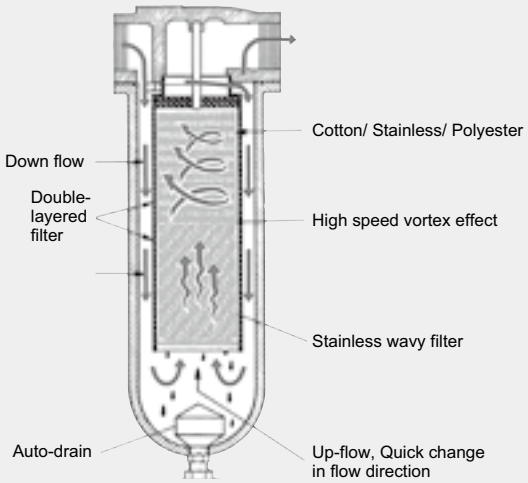
Eliminator

Removes impurities down to 1 micron in size.
Vaporizes water completely.
Standard automatic drain as standard equipment to automatically drain removed impurities.
Easy to maintain.
(Simple bowl removal, quick-change cartridge).

Specifications

Filtration	Particles down to 1 micron in size
Max. working atmosphere	Plastic bowl=1.0MPa Metal bowl=1.7MPa
Max. working temperature	Plastic bowl=52 Metal bowl=80
Applicable flow rate	76ℓ/min.-19,800ℓ/min.

Principle of operation and feature



1. Efficient separation
As air flows, forced to change its direction in the bowl, moisture, oil and dirt particles in it are coagulated and accumulated on the bottom of bowl and intermittently drained.

2. Coagulation
Air entering stainless steel filter is rubbed by stainless steel mesh screen and rid of foreign particles down to 2 microns in size.

3. 1-micron filtration
Submicron particles in the air are separated by cotton/polyester filter.

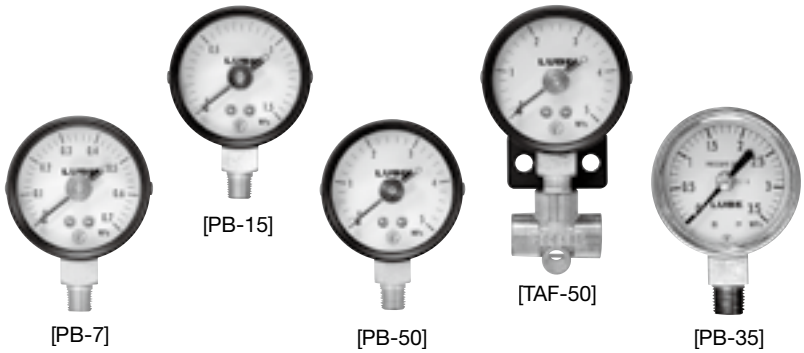
4. Vaporization
Air pressure is reduced to a minimal level at the final point of filter medium, where air temperature is slightly increased by friction between air and filter medium to heat and vaporize micro-drops of moisture left in the air.

Model. Specifications. Dimension.

	Model	Flow rate (l/min)		Bore (Rc)	Outside dimension (mm)			Weight (kg)	Material	
		Max.	Min.		Overall height	Overall width	Depth		Head	Bowl
Plastic bowl type	3P-020-PT2-Fi	560	170	1/4	190	76	76	1.5	Zinc diecast	Poly-carbonate
	3P-035-PT2-Fi	980	300		290	95	95	1.5		
	3P-060-PT4-Fi	1,750		1/2						
	3P-090-PT6-Fi	2,450	850	3/4	390	127	127	2.5		
	3P-150-PT8-Fi	4,250	1,275	1						
Metal bowl type	3P-020-PT2-Fi	560	170	1/4	190	75	66	1	Zinc diecast	Aluminum
	3P-035-MT2-Fi	980	300		290	95	95	1.5		
	3P-060-MT4-Fi	1.75	300	1/2						
	3P-090-MT6-Fi	2,450	850	3/4	490	127	127	2.5	Aluminum diecast	
	3P-150-MT8-Fi	4,250	1,275	1						
	3M-400-M12-Fi	11,300	3,400	1-1/2	770	217	217	217		
	3M-700-M16-Fi	19,600	5,950	2						

Pressure gauge

Recommended for visual inspection of the lubrication systems performance and future troubleshooting.



Specifications

Accuracy	±3%F.S
Temperature range	15°C - 40°C
Material	Bourdon tube C6872T (Min.10MPa C5191T)
	Frame SPCC steel plate

Model

Pressure gauge

	Model	Part Number	Pressure range (MPa)	Connection	Installation pin
	PB-7	109166	0.7	R1/8	Available
	PB-15	109167	1.5		
	PB-50	109161	5		
	PB-50B	109162			
	TAF-7	109154	0.7	M8×1	—
	TAF-15	109155	1.5		
	TAF-50	209117	5	M10×1	Available
*	PB-35	209136	3.5	R1/8	Not available
*	PB-35B	209137			

Pressure gauge fitting plate

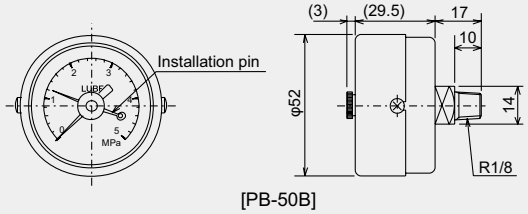
Model	Part Number
PP	109102

* Not usable for PB-35 and PB-35B

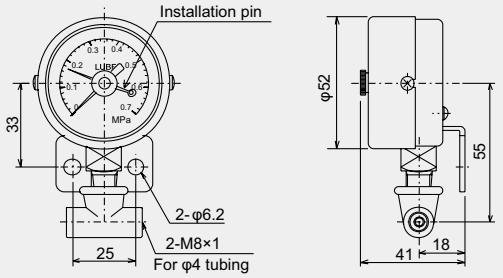
Directions for use

- Use caution. Do not to drop or expose to strong impact.
- Do not apply pressure beyond specified range.

Dimensional drawing



[PB-50B]



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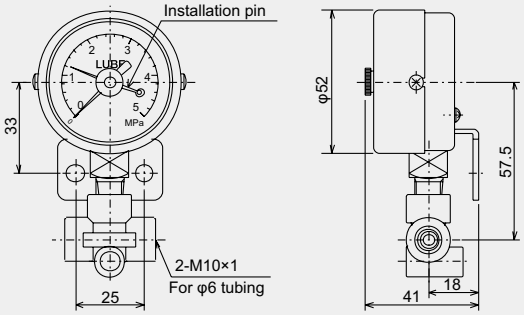
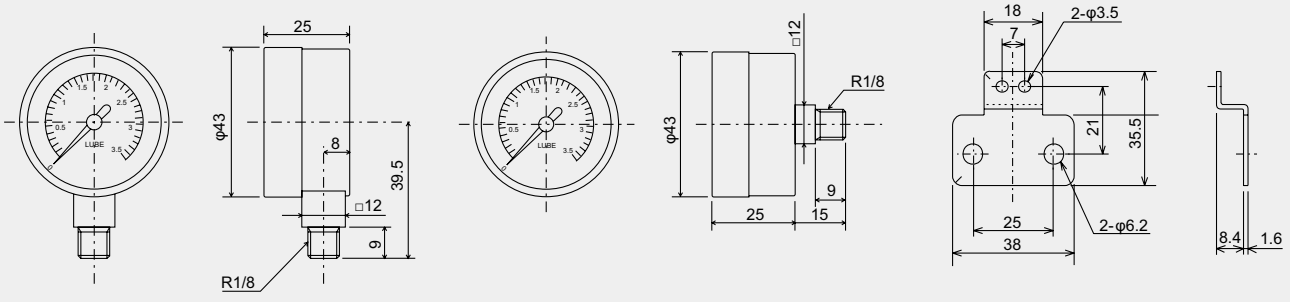


[TAF-50]



[PB-35] [PB-35B] Pressure gauge fitting plate[PP]

Pressure switch

Installed on main piping to detect any abnormal pressure in the lubrication system.

[PS]

PS

Specifications

Electrical ratings	AC120/240V 135VA(AC240V for non-electrical appliance application) DC28V 2A
Operating pressure	See list below.
Proof pressure	4.4MPa
Burst Pressure	14.7MPa

Directions for use

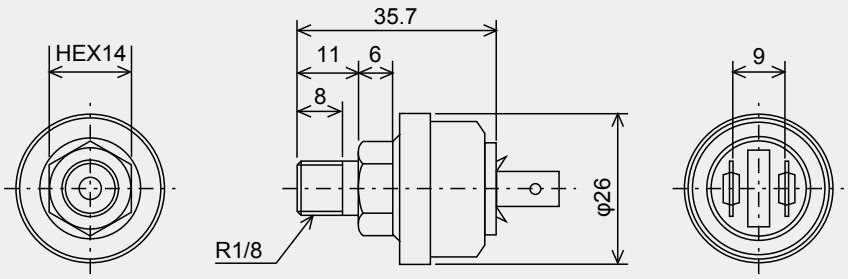
- Use caution. Do not drop or expose to strong impacts or shocks.

Model

Model	Part Number	Contact type	Upper limit pressure(MPa)	Lower limit pressure(MPa)
PS-B170	209170	NC	1.667±0.049	0.883±0.147
PS-A170	209171	NO	1.667±0.049	0.883±0.147
PS-B014	209172	NC	0.137±0.029	0.069±0.029
PS-B150	209173		1.471±0.049	0.883±0.147
PS-B021	209174		0.206±0.029	0.147±0.029
PS-B015	209175		0.147±0.029	0.098±0.029
PS-A115	209176	NO	1.128±0.049	0.441±0.098
PS-A011	209177		0.108±0.029	0.049±0.029
PS-A150	209178		1.471±0.049	0.883±0.147
PS-A014	209203		0.137±0.029	0.069±0.029
PS-A180	209204		1.765±0.049	0.883±0.147
PS-A110	209205		1.079±0.049	0.558±0.147

*Use PS pressure switches in combination with junction PV-1.

Dimensional drawing



[PS]

SPS

[SPS]

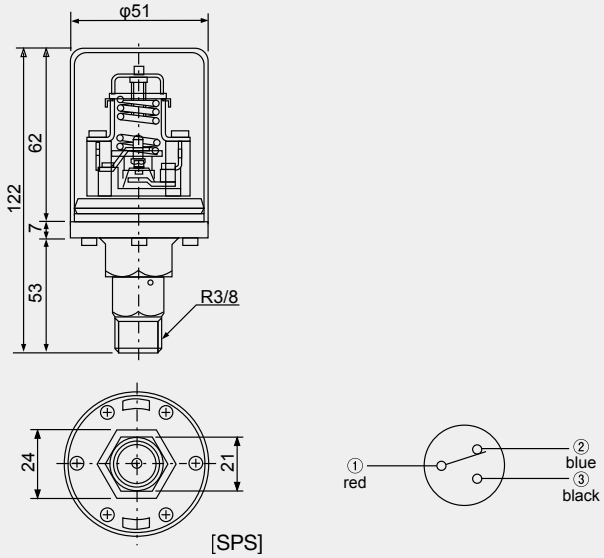
Specifications

Rating	250V,5A 125V,10A
Contact type	Switch OFF on pressure rise in red-blue circuit Switch ON on pressure rise in red-black circuit

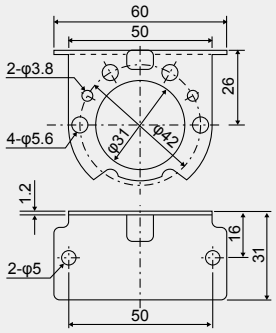
Model

Model	Part Number	Upper limit pressure (MPa)	Lower limit pressure (MPa)	Durable pressure (MPa)
SPS-8TP-1.7-1.4-3/8	209181	1.7	1.4	21
SPS-8T-0.1-0.05-1/4	109181	0.1	0.05	1
SPS-8T-0.25-0.2-1/4	109182	0.25	0.2	2
SPS-8T-0.4-0.35-1/4	109183	0.4	0.35	
SPS-8T-1.2-0.9-1/4	109184	1.2	0.9	

Dimensional drawing



L-shape mounting bracket
Model: SPS-T

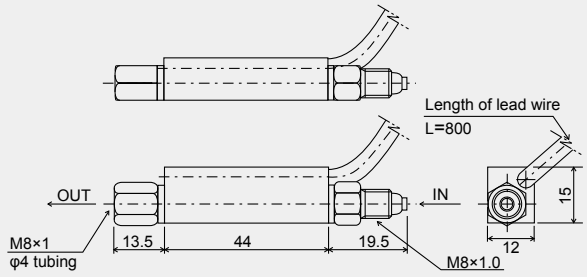


Pressure sensor

Specifications

Maximum contact capacity	50W (Pure resistance)
Maximum working voltage / Maximum working current	DC200V/1.0A, AC200V/0.6A
Maximum conduction current	DC, AC, 2.0A
Maximum initial resistance	0.1Ω
Insulation resistance	10^9Ω

Dimensional drawing



Model

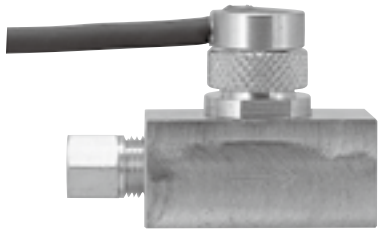
Model	Contact type	Remarks
OFS-A	NO	Lead wire drawing direction IN side
OFS-B	NC	Lead wire drawing direction OUT side

Directions for use

- See the instruction manual.

LUDO-sensor

Oil flow monitoring device. For installation after the metering unit.



Specifications

LUDO-sensor	
Detection capacity	1mℓ/cycle (working viscosity 65mm^2/s)
Working viscosity range	65 - 1300mm^2/s

Directions for use

■ See the instruction manual

Model Reference

■ LUDO-sensor

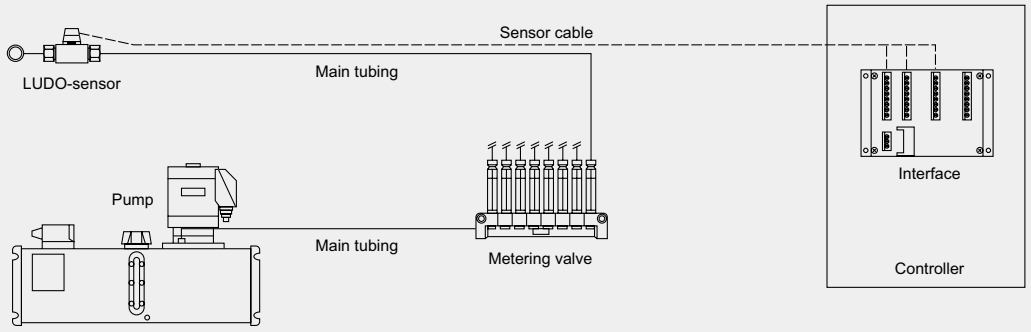
LS – □ M

The length of cable (1m increment)

■ Interface

IF – 8CH

System Planning



Install the sensor near the end of the tubing after the metering valve to detect oil flow inside the tubing.

Related parts

AMZ-Ⅱ
: P.103

AMO-ⅢDS
: P.107

AMO-Ⅱ-150S
: P.109

AMI-300S · 1000S
: P.111

MO Metering valve
: P.117

For MO Metering valve

PV Junction
: P.118

MOS Metering valve
: P.119

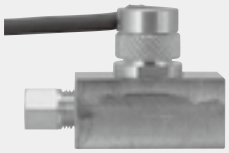
For MOS Metering valve

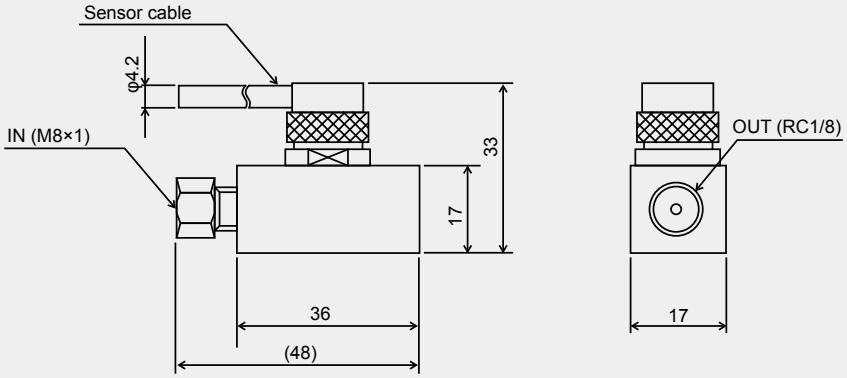
PVS Junction
: P.121

MB Metering valve
: P.123

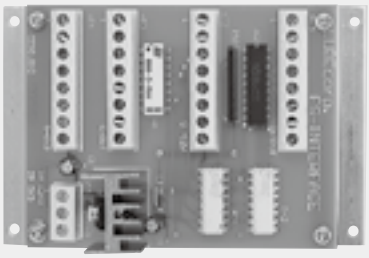
Dimensional drawing

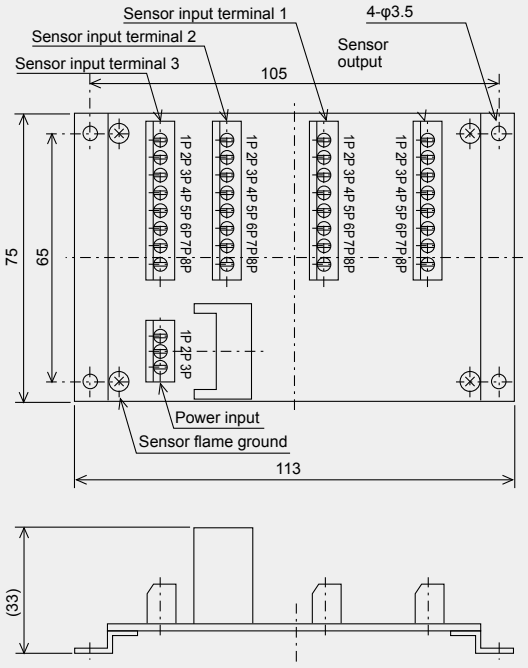
[LUDO-sensor]





[Interface]





Air-Oil sensor

OA- I

Integral element of oil/air lubrication system. (suitable for installation on oil tubing beyond mixing valve)

Specifications

Power/Voltage	DC24±10%
Abnormal output	Photo coupler (open collector)
Working tempeature range	0-+50°C (no sweating)
Working ambient humidity	35-85%RH

OA-I- □ □

4	ϕ4
6	ϕ6

1	1 Port
2	2 Ports
3	3 Ports
4	4 Ports
5	5 Ports
6	6 Ports

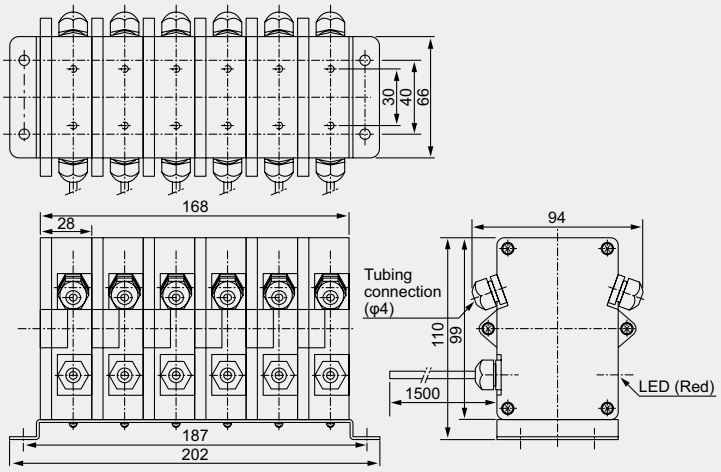
Model

Part Number	Pipe O.D (φ)
420031	4
420032	6

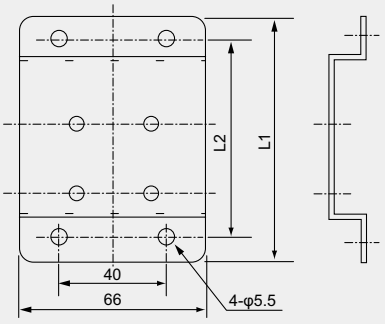
Air-Oil sensor mounting plate

Sequential number	L1	L2	Part Number
1	60	44	613011
2	88	72	613012
3	116	100	613013
4	144	128	613014
5	172	156	613015
6	200	184	613016

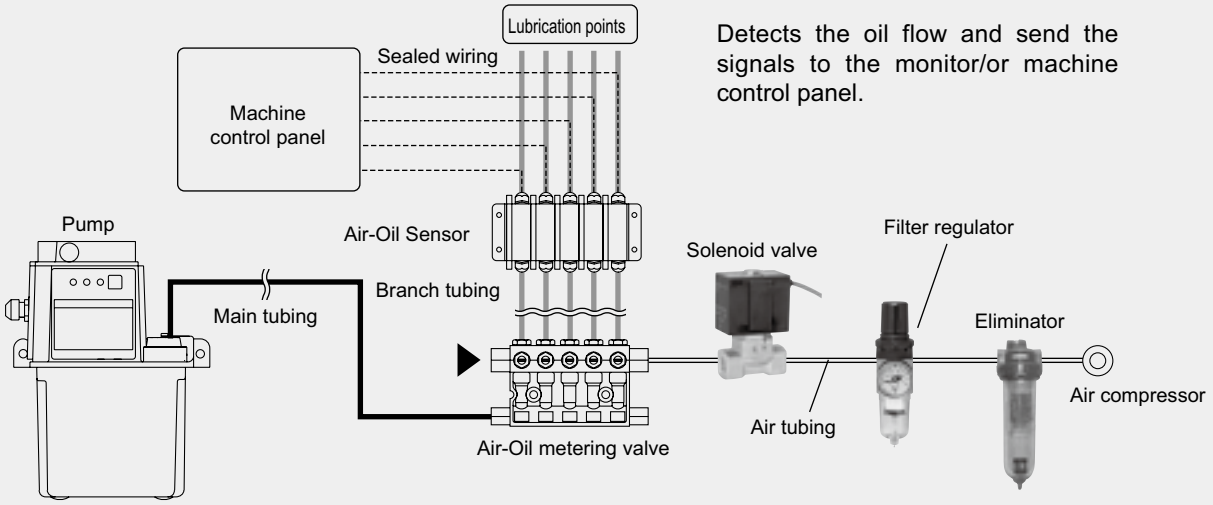
Dimensional drawing



Model



System planning

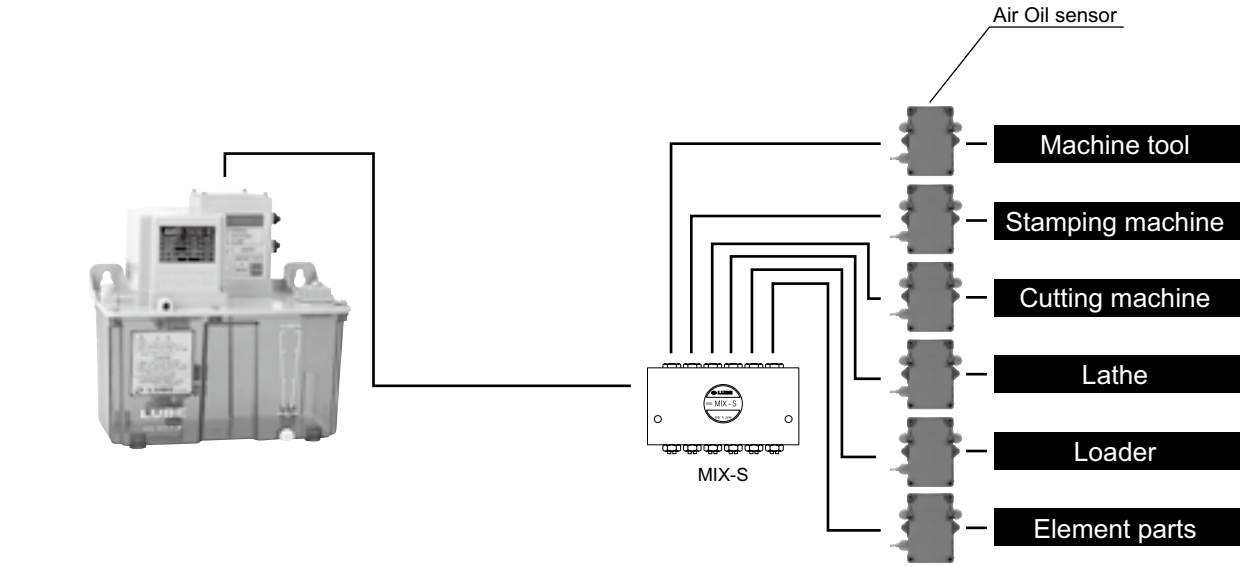


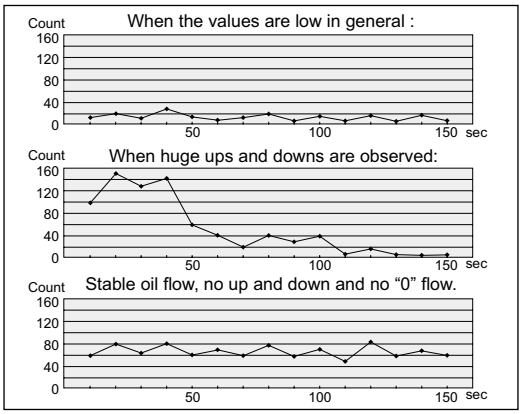
Detects the oil flow and send the signals to the monitor/or machine control panel.

Air-Oil Sensing and Logging System

Air-Oil sensor / logger

As the air/oil particles move down the tail tubing to the lubrication points, the air/oil sensors detect this movement to monitor proper delivery. The air/oil loggers can count these signals generated from the Sensors so that proper adjustments can be made to air flow, air volume or system interval during setup to stabilize the air/oil delivery. The loggers can also be used during your PM cycles to ensure none of the adjustments have been changed and the system is operating properly.





Store the data obtained when the machine is operating in fine conditions and use it as the standard data for the comparison.

Air-driven System delivers small volume of vanishing or biodegradable oil

VBP

MH-20D-A

LUBFIT

Air-driven pump for delivering small volumes of vanishing or biodegradable oil

VBP

For use with many kinds of lubricant oil. Such as biodegradability processing oil and quick-dry processing oil.
Electrical power supply is not needed. With a pulse generator, the pump is capable of controling itself, making it suitable for use in explosion proof areas.

[VBP-3]

Model Reference

VBP–□–□–□

Tank capacity

Blank	1.8ℓ
3	3.0ℓ

Pulse generator

Blank	Without
G	With

Number of pumps

Note: Max. 3 pumps for 1.8L reservoir
Max. 5 pumps for 3.0L reservoir

Model

Model	Part Number	Number of pump unit	Generator	Reservoir	
				1.8ℓ	3.0ℓ
VBP-1	112740	1		○	
VBP-2	112741	2		○	
VBP-3	112742	3		○	
VBP-1-G	112746	1	○	○	
VBP-2-G	112747	2	○	○	
VBP-3-G	112748	3	○	○	
VBP-1-3	112752	1			○
VBP-2-3	112753	2			○
VBP-3-3	112754	3			○
VBP-4-3	112755	4			○
VBP-5-3	112756	5			○
VBP-1-G-3	112762	1	○		○
VBP-2-G-3	112763	2	○		○
VBP-3-G-3	112764	3	○		○
VBP-4-G-3	112765	4	○		○
VBP-5-G-3	112766	5	○		○

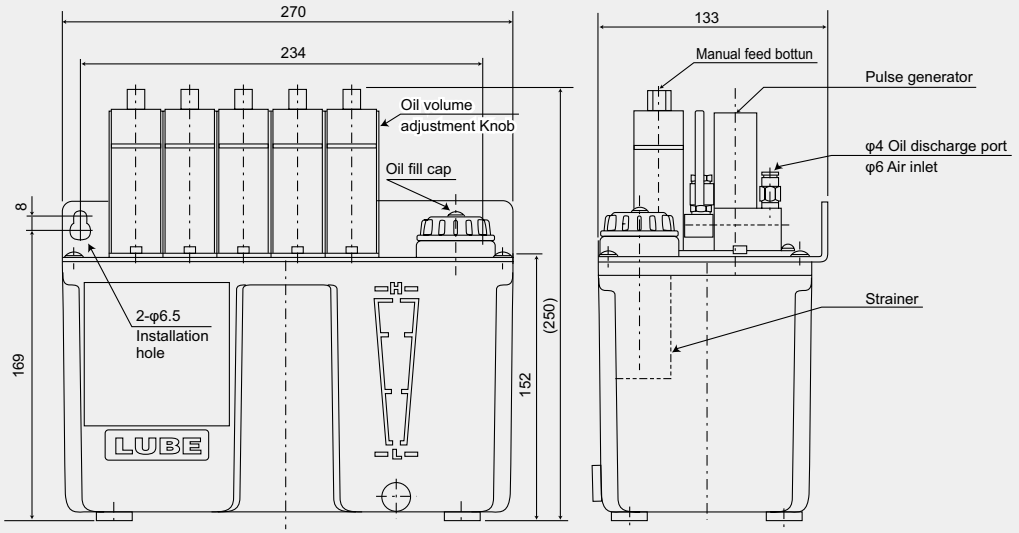
Specifications

Discharge volume	0 - 0.07mℓ/shot
Discharge cycle	2shot / sec (MAX)
Effective pump ratio	1 : 5 (Discharge pressure 1.5Mpa when air pressure 0.3Mpa discharge volume 0.05mℓ/shot)
Air pressure range	0.3 - 0.7MPa 0.4 - 0.7MPa (with pulse generator)
Working viscosity range	2 - 180mm²/s
Number of pump units (Standard spec.,)	1.8ℓ reservoir : 3 pumps 3ℓ reservoir : 5 pumps
Reservoir capacity	1.8ℓ, 3ℓ resin reservoir (standard)

Directions for use

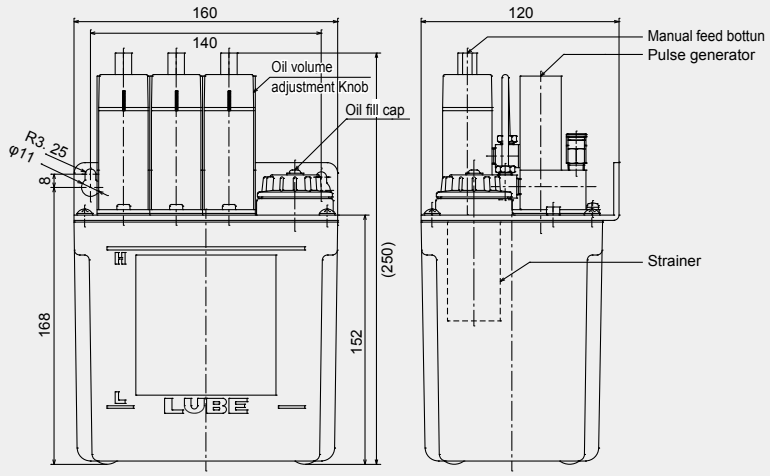
- Contact LUBE for consultation if special fluids must be used.
- Refer to instruction manual

Dimensional drawing



[VBP-5-G]

Dimensional drawing



[VBP-3-G]

Adjustment of VBP pulse generator

Revolution number of Discharging Volume Adjustment Knob – Discharging Volume

Revolutions of knob	0	1	2	4	6	8	10	12	14
Dischage volume for 1 shot	0	0.005	0.01	0.02	0.03	0.04	0.05	0.06	0.07

Discharging: mℓ/shot
Note: 1 revolution is the minimum setting

Pulse generator adjustment method

Please use flat-head screwdriver for adjusting and refer to table 2. The discharge volume table is just a reference. Pulse oscillator has error rage about ±30%. Please use the table as a rough indication of discharge.

Scale – Discharging Volume

Position	Scale	Pressure of pressured air		
		0.3	0.4	0.5
1	*	150	130	120
2	III	3	3	3

Discharging times/min

Air Bleeding Method

Air bleeding is necessary for pump running first time. Bleeding the air with maximum discharging volume.

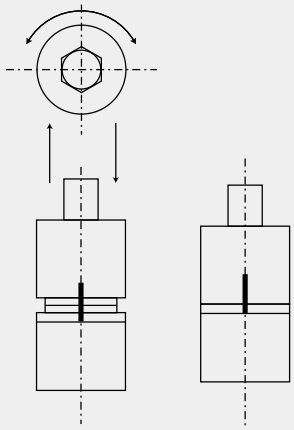
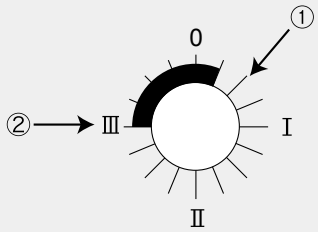


Figure 1 Figure 2



Note:
1. Discharging times of pulse generator depeds on the pressure of pressured air. Please set pressure of the pressure of pressured air with decompression valve.
2. At the scale of pulse oscillator, don't use it between part of 1 and 2.

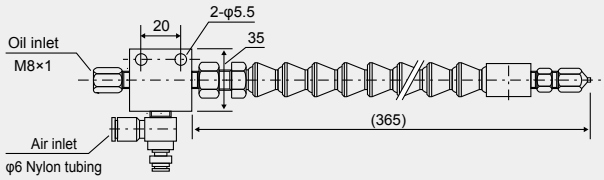
■ Parts for VBP pump

Flexible Spray nozzle

Model

Model	Part Number
VOA-365	112786

Dimensional drawing

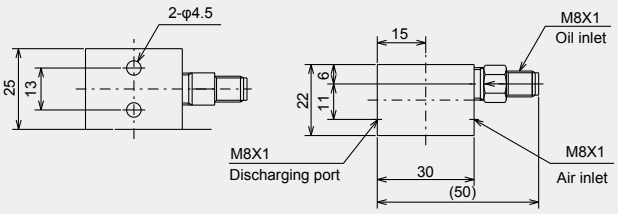


Mixing block

Model

Model	Part Number
MIB	559271

Dimensional drawing



■ Accessories for PM pump

[FDM]

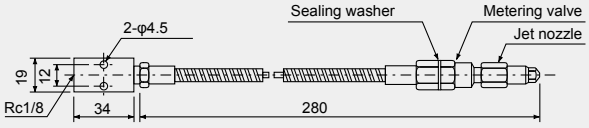
Flexible pipe nozzle with metering valve

Model

Model	Part Number	Discharge volume (ml/shot)
FDM-3	225022	0.03
FDM-5	225023	0.05
FDM-10	225024	0.1
FDM-20	225025	0.2
FDM-30	225026	0.3
FDM-50	225027	0.5

*JO8 (225006) is used for the jet nozzle normally. If JO5 (225007) or JO2 (225008) is needed, contact LUBE.

Dimensional drawing



Related parts

VBP Pump
: P.193

PM Pump
: P.105

Spray cooling system

MH-20D-A

Low cost spray cooling system

[MH-20D-A]

Model

Model	Part Number	Oil level switch
MH-20D-A	222138	Without
MH-20D-A-L	222195	With

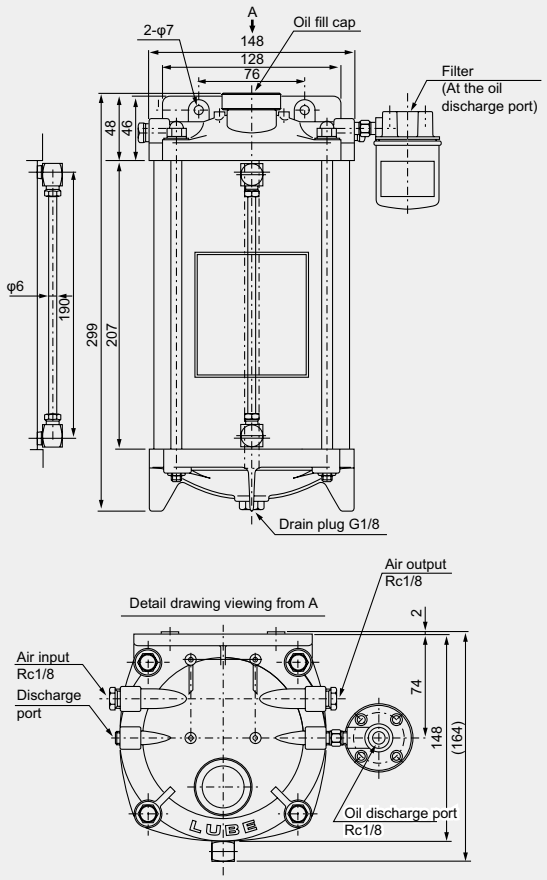
Directions for use

- System components may be deteriorated by certain types of oil. Contact LUBE to confirm compatibility.
- Contact LUBE if vanishing or biodegradable oil is to be used.

Warning

- Do not open the oil fill cap while system is under pressure. Serious injury can occur.

Dimensional drawing

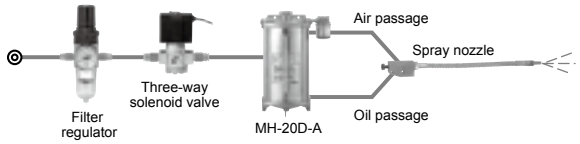


Specifications

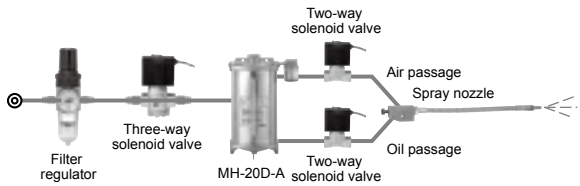
Air input pressure			0.7MPa (Maximum)
Normal working air pressure			0.1 - 0.3MPa
Working viscosity range			2 - 100mm²/s
Reservoir capacity			2ℓ
Filter (At the oil discharge port)			Filtration accuracy: 40μ
Number of available spray nozzle			1 to 4 pieces
Material of the reservoirs			A5052TD-H34
Weight			3.3kg
Optional	Oil level switch	Contact capacity	AC · DC200V 0.5A 30W
		Contact type	NO
	Solenoid		Two-way/Three-way AC100V / AC200V DC24V

System example

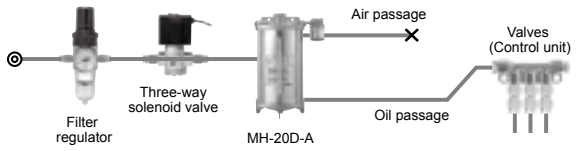
1. In order to stop the oil flow, use a three-way solenoid valve on the air supply. By stopping air flow quickly, oil flow will be stopped well.



2-A. By using each pieces of two-way solenoid valve for air hose and oil hose, switching oil fog On and OFF can be done quickly. By switching the solenoid valve for air hose OFF, only oil can be discharge from the spray nozzle.
2-B. If the oil fog is not used, plug the air hose instead of using the two-way solenoid valve.



3. Instead of spray nozzle, control units can be used, so this system becomes oil pump run by air.



Air-driven System delivers small volume of vanishing or biodegradable oil

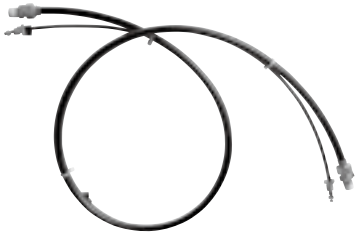
Accessories for MH-20D-A pump

[SJ-265]

[SB-N]

[SB-R]

[DB-3]



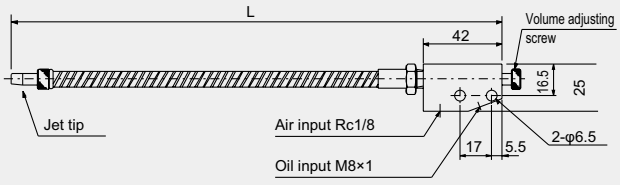
[Dual hose]

Flexible spray nozzle

Model

Model	Part Number	L
SJ-265	225011	265
SJ-410	225012	410
SJ-500	225013	500
SJ-600	225016	600

Dimensional drawing

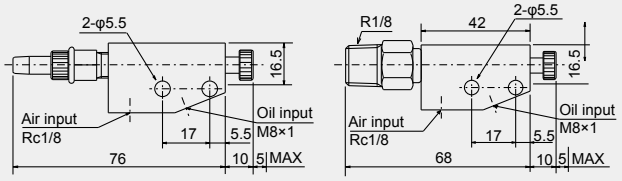


Block type spray nozzle

Model

Model	Part Number	Top
SB-N	225001	Nozzle shape
SB-R	225002	R1/8

Dimensional drawing



[SB-N] [SB-R]

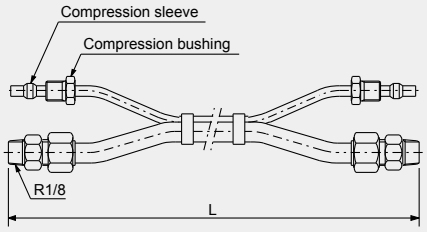
Dual hose

Model

Model	Part Number	L
DH-500	226710	500
DH-1000	226711	1000
DH-1500	226712	1500
DH-2000	226713	2000
DH-2500	226714	2500

*Additional lengths available by special order.

Dimensional drawing

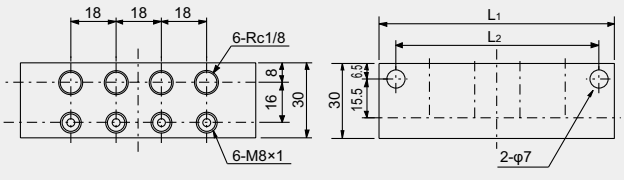


Dual block

Model

Model	Part Number	L_1	L_2	Number of nozzle installation
DB-3	226403	38	25	3 way
DB-5	226405	76	63	5 way
DB-6	226406	94	81	6 way

Dimensional drawing



LUBFIT

Quick-dry processing oil Series LF-53 · 55 · 60

Pressing oil Series LF-65

No need for degreasing after processing
Free from toxic components.
Excellent corrosion resistance for many kinds of material.

LF-53 . 55 . 60

Quick-dry processing oil. No need for degreasing after processing.

LF-65

Keeps excellent abrasion resistance property without chlorinated components.

[LF-53-20] [LF-53-5]

[LF-55-20] [LF-55-5]

[LF-60-20] [LF-60-5]

[LF-65-20] [LF-65-5]

Specifications

	LF-53	LF-55	LF-60	LF-65
Color	Colorless and transparent liquid	Colorless and transparent liquid	Colorless and transparent liquid	colorless and transparent liquid
Density (g/cm³)	0.76	0.79	0.79	0.90
Viscosity (mm²/s, 40°C)	1.5	2.2	2.2	27
Flash point (°C)	> 70°	> 80°	> 80°	> 150°
Copper Corrosion (100°C/h)	No change of color	No change of color	No change of color	No change of color

*Numeric value is a measured one. It is not the standard one.

Model

Model	Capacity
LF-53-5	5ℓ
LF-55-5	
LF-60-5	
LF-65-5	
LF-53-20	20ℓ
LF-55-20	
LF-60-20	
LF-65-20	

Directions for use

- Read Safety Data Sheet before use.
- Store in a cool, dark place.

Air-driven System delivers small volume of vanishing or biodegradable oil

LUBFIT

LF-15 · 15B · 20

Environmentally friendly processing oil that offers good biodegradability based on synthetic lubricant
Suitable for MQL (Minimum Quantity Lubrication)

- Vegetable oil base for reduced impact on human body and environment.
- Free from chlorine and sulfur components.
- Low consumption of oil due to high lubricating performance.
- Less human hour by small consumption.
- Less damage of tooling due to reduction in heat buildup during processing.
- LF-15, LF-15B, and LF-20 are suitable for standard processing.

[LF-15-20]

[LF-15-4]

[LF-15B-20]

[LF-15B-4]

Specifications

	LF-15	LF-15B	LF-20
Color	Light green and transparent liquid	Light yellow and transparent liquid	Pale green and transparent liquid
Density (g/cm^3)	0.87	0.9	0.9
Viscosity (mm^2/s, 40°C)	8	20	36
Flash point (°C)	222	230	320
Copper Corrosion (100°C/h)	Inert	Inert	Inert
Pour point (°C)	–37.5	–20	–20
Biodegradation rate (%)	~ 86%	~ 95%	~ 99%
Components			
Fat	—	> 50wt%	> 90wt%
Synthetic lubricant	> 90wt%	> 50wt%	—
Chlorine content	0	0	0
Sulfur content	0	0	0

Model

Model	Capacity
LF-15-4	4ℓ
LF-15B-4	
LF-20-4	
LF-15-20	20ℓ
LF-15B-20	
LF-20-20	

[LF-20-20]

[LF-20-4]

Directions for use

- Read the Safety Data Sheet bfore use the oil.
- Please store it in a cool, dark place.

Tubing Parts

Compression parts

Flexible hose

Adapters

Connectors

Tubing Parts

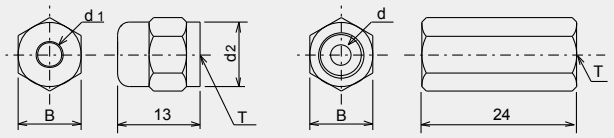
Compression parts

Used for connecting tubing to junctions, adapters and metering valves.

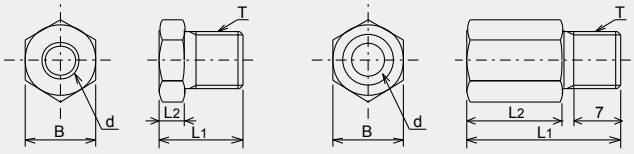
RoHS compliant products are also available.
Please contact LUBE for details.

Some parts are available with standard threads.
Contact us LUBE.

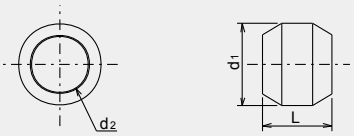
Dimensional drawing

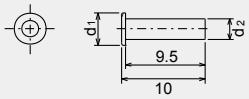


[CN-4-B]



[CB-4-B, CB-6-B]





Model

Compression nut

Model	Part Number	Tubing O.D. (φ)	T	d1 (φ)	d2 (φ)	B
CN-4	106251	4	M8×1	4.2	10	10
CN4-B	166268				—	
CN-6	206251	6	M10×1	6.2	12	12

Material: C3604

CN-4-B is special parts for braided tubing.

Compression bushing

Model	Part Number	Tubing O.D. (φ)	T	d1 (φ)	L1	L2	B
CB-4-10	106252	4	M8×1	4.2	11.6	4	10
CB-4-8	106253						8
CB-4-B	166253				20	12	
CB-6	206252	6	M10×1	6.2	12.5	4	10
CB-6-B	166255				20	12	
CB-8	207252	8	M14×1.5	8.2	18.5	4.5	14

Material: C3604

CB-4B and CB-6-B are special parts for Braided tubing.

Compression sleeve

Model	Part Number	Tubing O.D. (φ)	d1 (φ)	d2 (φ)	L
CS-4	106254	4	6	4.1	5
CS-6	206254	6	8	6.1	6
CS-8	207254	8	10	8.1	6.5

Material: C3604

Tube insert (For nylon tubing)

Model	Part Number	Tubing O.D. (φ)	d1 (φ)	d2 (φ)
TI-4	106271	4	3.8	2.5
TI-6	206271	6	5.8	4
TI-8	207271	8	7.8	6

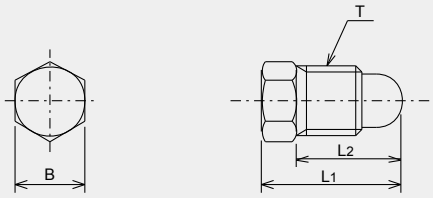
Material: C3604

Closure plugs/ Sealing washers

Closure plugs, Blanking plugs

RoHS compliant products are also available.
Please contact LUBE for details.

Dimensional drawing

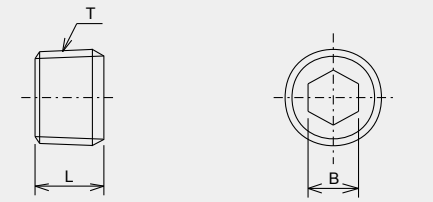


Model

Closure plug

Model	Part Number	L_1	L_2	T	B
CP-4	106255	16	12	M8×1	8
CP-6	206255	20	15	M10×1	10
CP-8	207255	28	20	M14×1.5	14

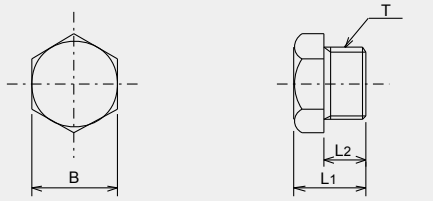
Material: C3604



Blanking plug

Model	Part Number	L	T	B
BP-1	540170	7	R1/8	5
BP-2	290038	9	R1/4	6

Material: Steel

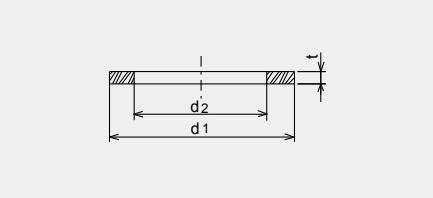


Blanking plug

Model	Part Number	L_1	L_2	T	B
BP-8	206274	10	6	M8×1	11
BP-10	206275			M10×1	12
BP-12	206276			M12×1	14
BP-14	207276	13	8	M14×1.5	17

Material: C3604

Use with sealing washer.



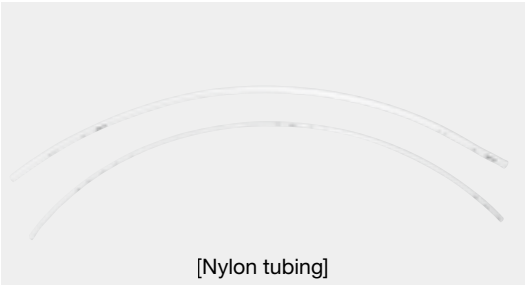
Sealing washer

Model	Part Number	d_1 (φ)	d_2 (φ)	T
SW-8	207610	12	8	1
SW-10	207611	14	10.1	
SW-12	207612	16	12.1	1.5
SW-14	207613	18	14.1	

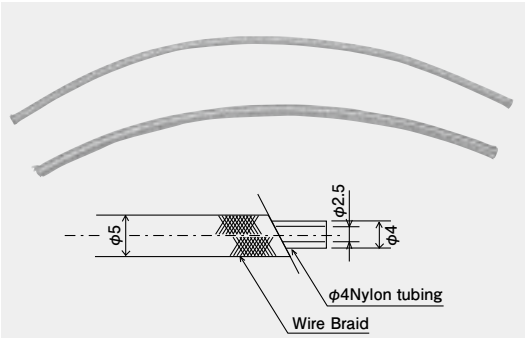
Material: C2600

Tubing

RoHS compliant products are also available.
Please contact LUBE for details.



[Nylon tubing]



[Braid tubing]

[Steel tubing]

*When ordering, refer to each standard length and specify in meters.

Model

Nylon tubing

Model	Part Number	Outer diameter (φ)	Innner diameter (φ)	Standard length (m)	Working pressure (MPa)	Burst Pressure (MPa)	Working tempeature range	Minimum bending radius (R) mm	Color
NT-4	106801	4	2.5	100	2.5	9.8	–20 °C-+70 °C	12	Milky White
NT-4H	106806				4.4	17.6		16	
NT-6	218005	6	4		2.2	8.6		24	
NT-6H	218006				3.7	15.2		27	
NT-8	218003	8	6		1.5	6.2		48	

Material: Nylon PA20

Polyamide pipe

Model	Part Number	Outer diameter (φ)	Innner diameter (φ)	Standard length (m)	Working pressure (MPa)	Burst Pressure (MPa)	Minimum bending radius (R)mm	Color
PT-6H	403011	6.0	3.0	100	7.5	25	50	black

Braided Nylon Tubing

Model	Part Number	Outer diameter (φ)	Standard length (m)	Working pressure (MPa)	Burst Pressure (MPa)	Working tempeature range	Minimum bending radius (R)mm	Surface treatment
BT-4	106803	5	100	2.5	9.8	–20 °C-+70 °C	R16	EP-Fe/Zn
BT-6	218007	7		2.2	8.6		R17	

Aluminium tubing

Model	Part Number	Outer dia-meter (φ)	Innner dia-meter (φ)	Standard length (m)	Working pressure (MPa)	Tensile strength (MPa)	Extension
AT-4	106811	4	3	2	1.3	0.6-1	41%
AT-6	206811	6	4.4		2.0		

Material: JIS H4080A1050Td-0

Copper tubing

Model	Part Number	Outer dia-meter (φ)	Innner dia-meter (φ)	Standard length (m)	Working pressure (MPa)	Tensile strength (MPa)	Extension
CT-4	106821	4	3	5	7	2	40%
CT-6	218015	6	4.4		8	2.1	
CT-8	206823	8	6		6	2.3	

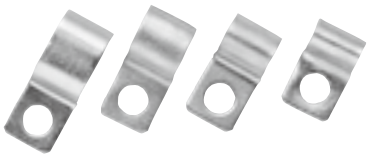
Material: JIS H3300C1220T-OL

Steel tubing

Model	Part Number	Outer dia-meter (φ)	Innner dia-meter (φ)	Standard length (m)	Working pressure (MPa)	Tensile strength (MPa)	Extension	Surface treatment
ST-4Z	218011	4	2.6	2	25	Over 3	25%	Ep-Fe/Zn 8/CM
ST-6Z	218012	6	4.6					
ST-8Z	206836	8	6.6		20			
ST-10Z	206837	10	8.6					

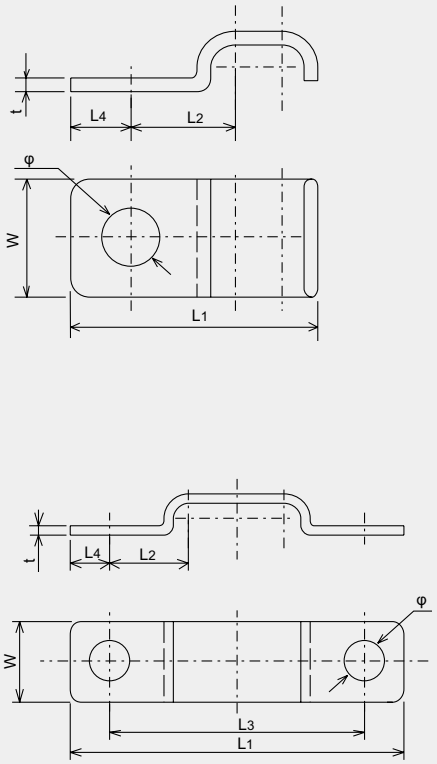
Material: JIS G3141 (Equal to SPCC)

Tube clips



RoHS compliant products are also available.
Please contact LUBE for details.

Dimensional drawing



Model

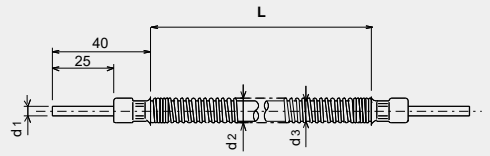
Model	Part Number	Number and O.D. of tubing		L_1	L_2	L_3	L_4	t	W	φ
PC-4-1	106301	4×1	One side fixed	17.2	9	–	5	1.2	10	5.2
PC-4-2	106302	4×2		21.2						
PC-4-3	106303	4×3		25.2						
PC-4-4	106304	4×4	Two side fixed	42	10	32				
PC-4-5	106305	4×5		46		36				
PC-4-6	106306	4×6		50		40				
PC-4-1L	106311	4×1	One side fixed	17.2	9	–				6.2
PC-4-2L	106312	4×2		21.2						
PC-4-3L	106313	4×3		25.2						
PC-4-4L	106314	4×4	Two side fixed	42	10	32				
PC-4-5L	106315	4×5		46		36				
PC-4-6L	106316	4×6		50		40				
PC-4-1LL	106321	4×1	One side fixed	22.2	11	–	8		15	8.5
PC-4-2LL	106322	4×2		26.2						
PC-4-3LL	106323	4×3		30.4	11.2					
PC-4-4LL	106324	4×4	Two side fixed	50	11	34				
PC-4-5LL	106325	4×5	One side fixed	38.4	11.2	–				

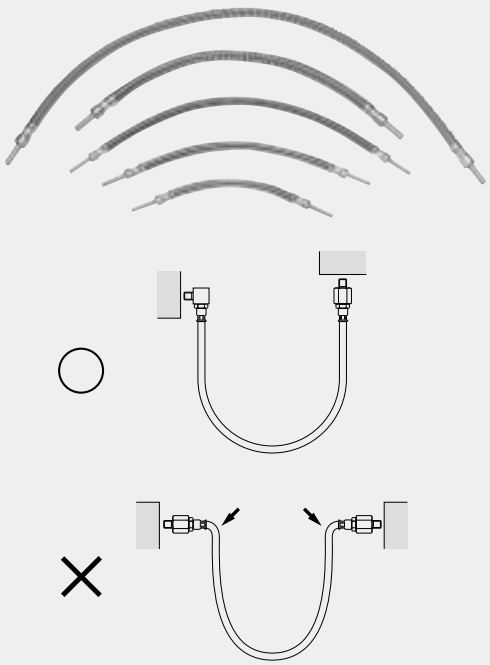
Model	Part Number	Number and O.D. of tubing		L_1	L_2	L_4	t	W	φ
PC-6-1	206301	6×1	One side fixed	20.2	10	5	1.2	10	5.2
PC-6-2	206302	6×2		25.2					
PC-6-3	206303	6×3		31.2					
PC-6-1L	206311	6×1		20.2					6.2
PC-6-2L	206312	6×2		25.2					
PC-6-3L	206313	6×3		31.2					
PC-6-1LL	206321	6×1		24.2	12	8		15	8.5
PC-6-2LL	206322	6×2		30.4					

Model	Part Number	Number and O.D. of tubing		L_1	L_2	L_4	t	W	φ
PC- 8-1	207301	8×1	One side fixed	22.7	12	6	1.6	11.5	6.4
PC- 8-2	207302	8×2		30.7					
PC-10-1	208301	10×1		29.2	14.4	8	1.2	15.4	6.2

Flexible hose (for low pressure)

Dimensional drawing





How to order

FH □-□□□□

Tubing diameter	
4	φ4
6	φ6

Length L (mm)	
175～250	25mm Increments
250～1000	50mm Increments
1000～2000	100mm Increments
2000～5000	500mm Increments

Specifications

Outer diameter (φ)	4	6
Working pressure (MPa)	3	4
Working temperature range	−20°C - +90°C	
Minimum bending radius (R)	40	120
d1(φ)	4	6
d2(φ)	8	10
d3(φ)	10	13.5

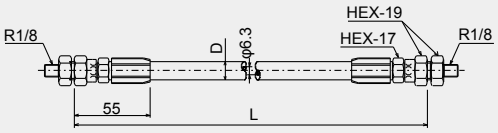
Directions for use

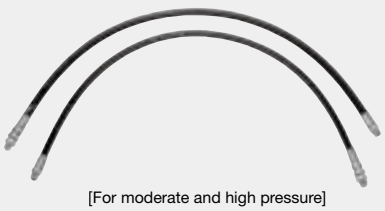
- Please make some allowance for length, bending radius and working pressure.
- Please make sure that tubing is not twisted.
- Please do not bend the tubing at close point to the connectors.

Flexible hose (for moderate and high pressure)

Dimensional drawing

Designated length





[For moderate and high pressure]

Model

For moderate pressure and high pressure (working temperature -40°C - +100°C)

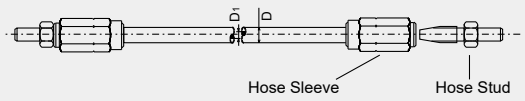
Model	Part Number	Working pressure (MPa)	Minimum bending radius (R)	D (φ)	L (mm)
L1-5	250151	10	85	13.5	500
L1-7	250152				700
L1-10	250153				1000
L1-15	250154				1500
L3-5	250161	35	105	15	500
L3-7	250162				700
L3-10	250163				1000
L3-15	250164				1500

Directions for use

- Please make some allowance for length, bending radius and working pressure.

Flexible hose (for high pressure)

Assembly Diagram



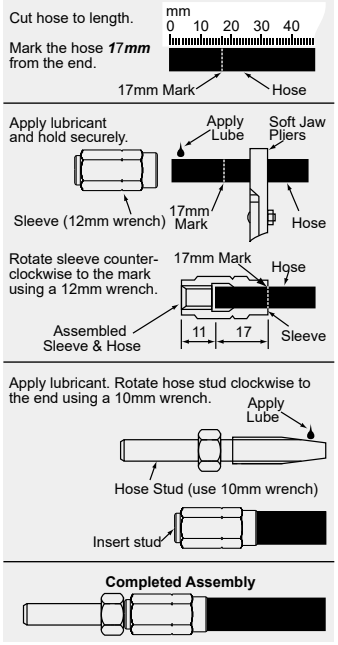
Model

***Please Note: PH hose & associated fittings are not interchangeable with AFH hose & fittings listed below.**

Model	Part Number	D (φ)	D_1 (φ)	Standard length	Working pressure (MPa)	Burst pressure (MPa)	Minimum bending radius (R)	Material	Color
PH-60	403010	8.3	3.6	100	20	72	15	Poly-amide	Black
PH-60B	403020	12.37	6.35				40		

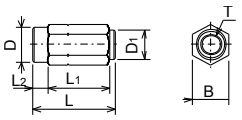
For high pressure (working temperature -30°C - +80°C)

How to assemble PH-60 & AFH-U46 Hose



Dimensional drawing

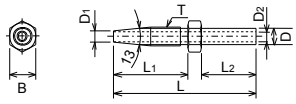
Hose sleeve



Model	Part Number	T	L	L_1	L_2	D	D_1	B
PH-N	403001	M6×0.75	28	21	5	φ11.7	φ10	12
PH-NB	403007	M9×1.0	37	31	4	φ16.5	φ14	17

Material: Steel

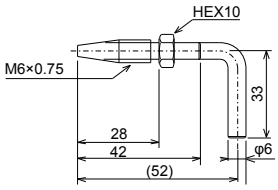
Hose stud straight



Model	Part Number	T	L	L_1	L_2	D	D_1	D2	B
PH-S	403002	M6×0.75	54	28	21	φ6	φ3.9	φ4	10
PH-SB	403008	M9×1.0	69	35.5	27	φ8	φ6.2	φ5	14

Material: Steel

Hose stud elbow

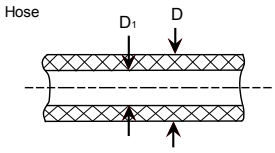


Model	Part Number
PH-SE	403003

Material: Steel

Flexible hose (for special applications)

Dimensional drawing

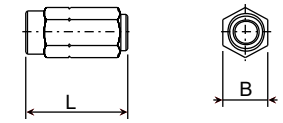


Model

***Please Note: AFH hose & associated fittings are not interchangeable with PH hose & fittings listed above.**

Model	Part Number	D (φ)	D_1 (φ)	Working pressure (MPa)	Burst pressure (MPa)	Minimum bending radius (R)	Material	Color
AFH-U46	F100002	8.6	4.0	21	84	20	Poly-amide	Black

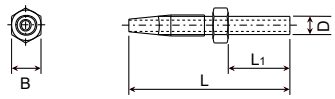
Hose sleeve



Model	Part Number	L	B
AFH-HSU	F100050	28	12

Material: Steel, surface chrome-VI free, galvanized

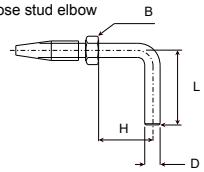
Hose stud straight



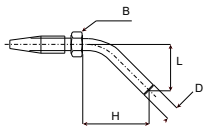
Model	Part Number	L	L_1	D	B
AFH-HS4	F1000544	51	20	φ4	10
AFH-HS6	F100051	61	30	φ6	10

Material: Steel, surface chrome-VI free, galvanized

Hose stud elbow



Hose stud 45°



Model	Part Number	Angle	L	H	D	B
AFH-SE4	F1000594	90°	30	14	φ4	10
AFH-SE6	F100059	90°	33	14	φ6	10
AFH-456	F100058	45°	25	35	φ6	10

Material: Steel, surface chrome-VI free, galvanized

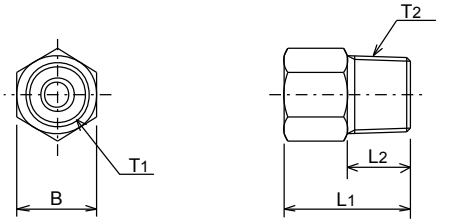
Adapter

SA – Straight Adapters

RoHS compliant products are also available.
Please contact us for details.

Some parts are available with standard threads.
Contact LUBE for details.

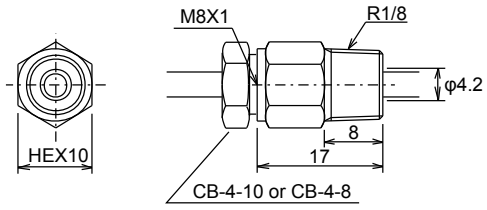
Dimensional drawing



Model

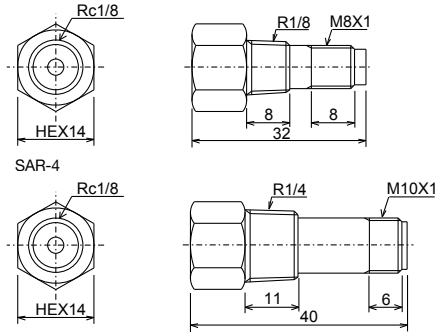
Model	Part Number	Tubing O.D. (φ)	L_1	L_2	T_1	T_2	B
SA4-16	106001	4	16	8	M8×1	R1/8	10
SA4-20	106002		20	12			
SA4-25	106003		25	17			
SA4-30	106004		30	22			
SA4-35	106005		35	27			
SA6-20	206001	6	20	8	M10×1		12
SA8-28	207001	8	28	10	M14×1.5	R1/4	17

Material: C3604



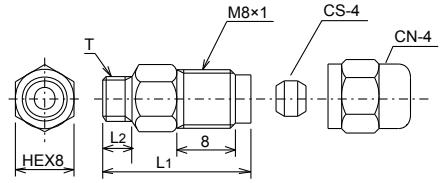
Model	Part Number	Tubing O.D. (φ)
SA-4K	106011	4

Material: C3604



Model	Part Number	Tubing O.D. (φ)
SAR-4	106061	4
SAR-6	206223	6

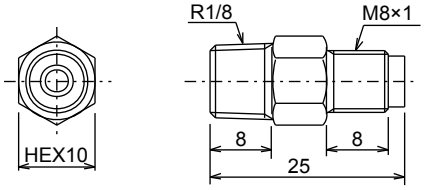
Material: C3604



How to connect tubing

Model	Part Number	Tubing O.D. (φ)	L1s	L2	T
SAT-6A	106062	4	20	4	M6×1
SAT-6B	106065		23	7	M6×0.75

Material: C3604

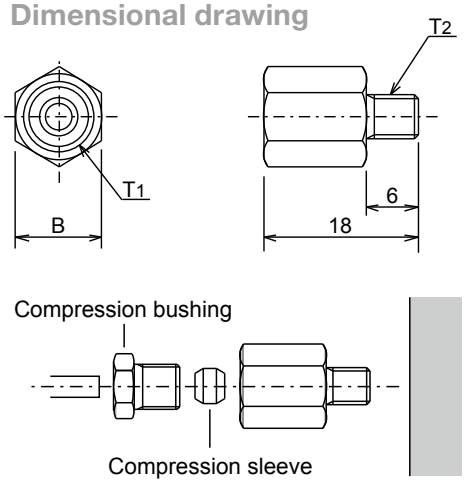


Model	Part Number	Tubing O.D. (φ)
SAT-1R	106081	4

Material: C3604

RoHS compliant products are also available.
Please contact LUBE for details.

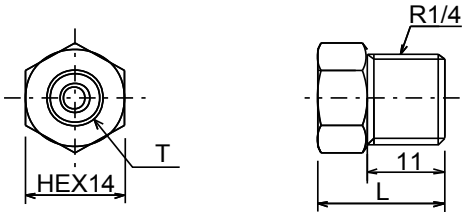
Dimensional drawing



Model

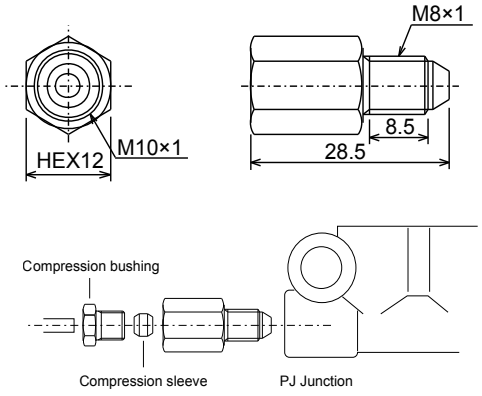
Model	Part Number	Tubing O.D. (φ)	L1	L2	T1	T2	B
SA4-5A	106082	4	18	6	M8×1	M5×0.8	10
SA4-6A	106084					M6×1	
SA4-6B	106085					M6×0.75	
SA4-7A	106087					M7×1	
SA4-8A	106088					M8×1	
SA4-10A	106089					M10×1	12
SA6-6A	106094	6	21	6	M10×1	M6×1	
SA4-U	106099	4	22	8	M 8×1	1/4-28UNF	10
SA6-U	106353	6	21	6	M10×1		12

Material: C3604



Model	Part Number	Tubing O.D. (φ)	T	L
SA4-2R	106091	4	M 8×1	18
SA6-2R	206081	6	M10×1	20

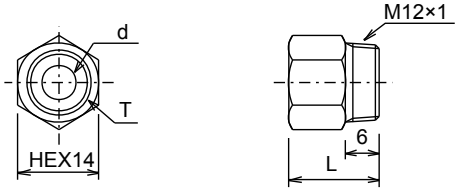
Material: C3604



ø6 tubing can be used instead of ø4 tubing.

Model	Part Number	Tubing O.D. (φ)
SA6-8T	106095	6

Material: C3604



Model	Part Number	Tubing O.D. (φ)	T	d (φ)	L
SA4-12A	206012	4	M 8×1	3	14
SA6-12A	206011	6	M10×1	4	16

Material: C3604
*Use with sealing washer.

Adapter

Elbow adapter/T-adapter

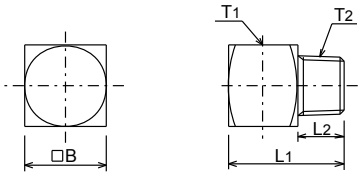
RoHS compliant products are also available.
Please contact LUBE for details.

Some parts are available with standard threads.
Contact LUBE for details.

Dimensional drawing

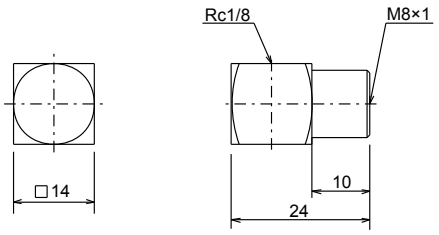
Model

EA



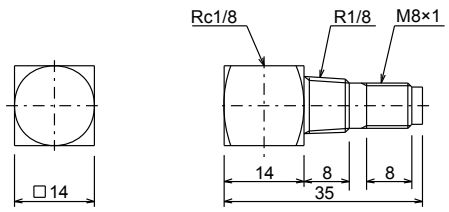
Model	Part Number	Tubing O.D. (φ)	L_1	L_2	T_1	T_2	B
EA4-20	106021	4	20	8	M8×1	R1/8	14
EA4-25	106022		25	13			
EA4-30	106023		30	18			
EA4-40	106024		40	28			
EA4-50	106025		50	38			
EA4-60	106026		60	48			
EA4-2R	206091		25	11		R1/4	
EA6-22	206092	6	22	8	M10×1	R1/8	16

Material: C3604



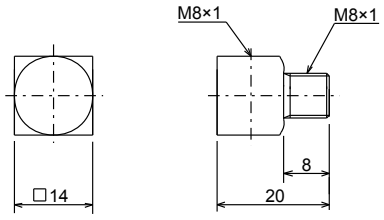
Model	Part Number	Tubing O.D. (φ)
EA4-1F	106031	4

Material: C3604



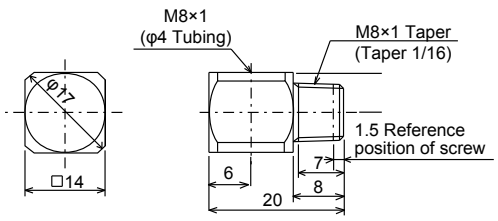
Model	Part Number	Tubing O.D. (φ)
EAR-4	106071	4

Material: C3604



Model	Part Number	Tubing O.D. (φ)
EA4-8A	106029	4

Material: C3604

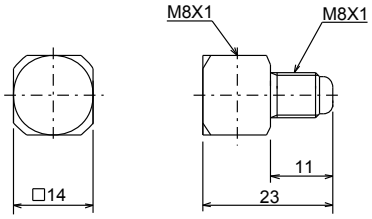


Model	Part Number	Tubing O.D. (φ)
EA4-8Taper	106037	4

Material: C3604

RoHS compliant products are also available.
Please contact LUBE for details.

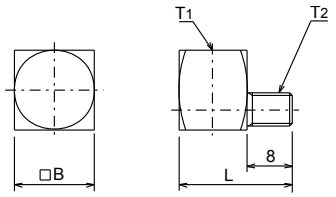
Dimensional drawing



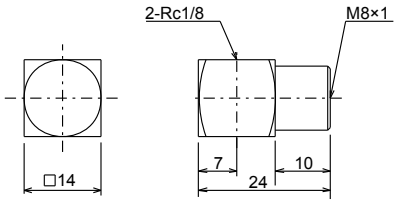
Model

Model	Part Number	Tubing O.D. (φ)
EA4-8T	106028	4

Material: C3604

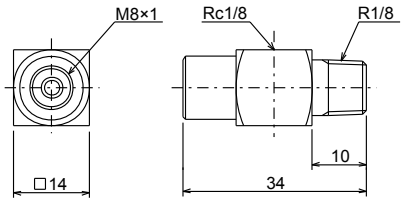


Model	Part Number	Tubing O.D. (φ)	L	T_1	T_2	B	Material
EA4-6A	106076	4	20	M8×1	M6×1	14	C3604
EA4-6AS	106074						SS330B
EA4-6B	106075				M6×0.75		C3604
EA4-US	166036				1/4-28UNF		SUM-21
EA4-8B	166054				M8×1.25Taper		C3604
EA6-6AS	166048	6	22	M10×1	M6×1Taper	16	SUM-21
EA6-U	166040				1/4-28UNF		



Model	Part Number
TA4-1F	106041

Material: C3604



Model	Part Number
TAR-1F	106051

Material: C3604

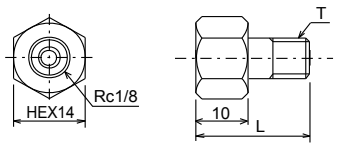
Connectors SC · EC · TC

RoHS compliant products are also available.
Please contact LUBE for details.

Dimensional drawing

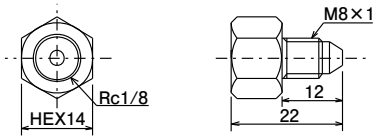
Model

SC



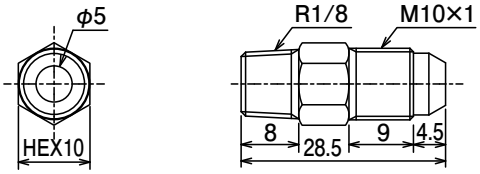
Model	Part Number	L	T
SC1-20	106141	20	R1/8
SC1-25	106142	25	
SC1-30	106143	30	
SC1-40	106144	40	
SC1-50	106145	50	
SC1-60	106146	60	
SC2	206141	20	R1/4

Material: C3604



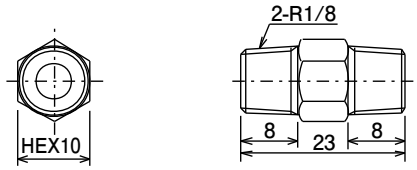
Model	Part Number
SC-8T	106147

Material: C3604

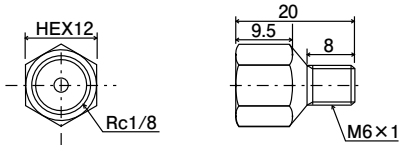


Model	Part Number
S-10T	166152

Material: C3604

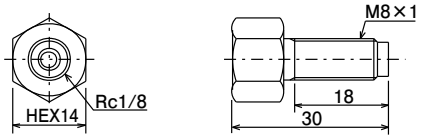


Model	Part Number
SCR	106151



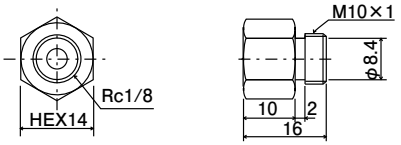
Model	Part Number
SC-6A	106154

Material: C3604



Model	Part Number
SC-4	106174

Material: C3604

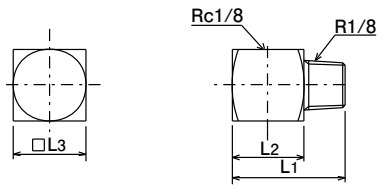


Model	Part Number
SC-10A	106177

Material: C3604

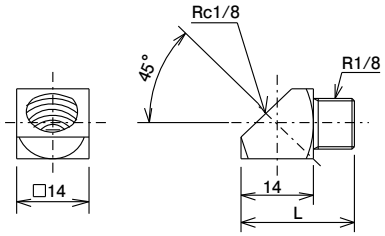
*Use with sealing washer

EC



Model	Part Number	L_1	L_2	L_3
EC1-22	106101	22	14	14
EC1-25	106102	25		
EC1-30	106103	30		
EC1-40	106104	40		
EC1-50	106105	50		
EC1-60	106106	60		
EC1-20	106107	20	12	12

Material: C3604

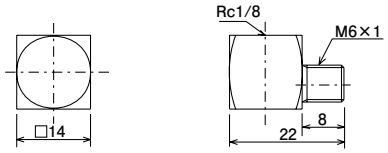


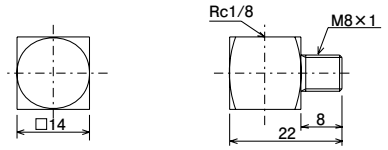
Model	Part Number	L
ECC-22	106121	22
ECC-25	106122	25
ECC-30	106123	30
ECC-40	106124	40
ECC-50	106125	50
ECC-60	106126	60

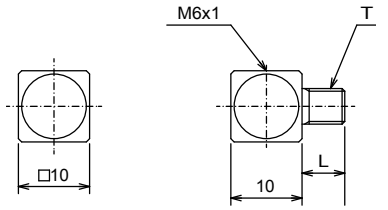
Material: C3604

RoHS compliant products are also available.
Please contact LUBE for details.

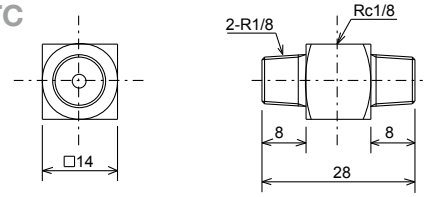
Dimensional drawing

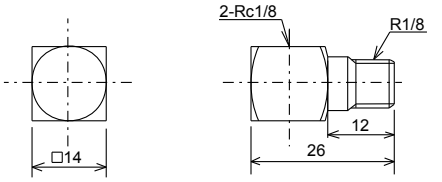


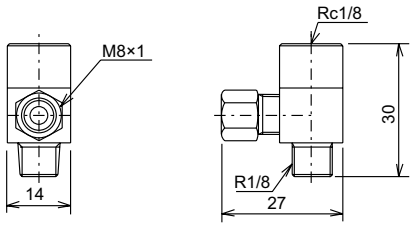


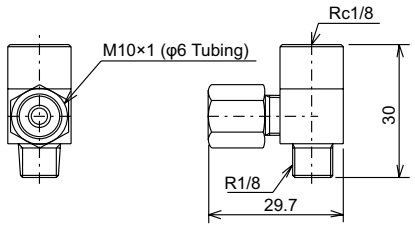


TC









Model

Model	Part Number
EC-6A	106181

Material: C3604

Model	Part Number
EC-8A	106182

Material: C3604

Model	Part Number	L	T
ECM-5A	106183	6	M5×0.8
ECM-6B	106184		M6×0.75
ECM-6A	106185		M6×1
ECM-6BL	106192	8	M6×0.75

Material: C3604

Model	Part Number
TCR	106161

Material: C3604

Model	Part Number
TCF	106171

Material: C3604

Model	Part Number
PGC-4	619322

Material: C3604
This is for pressure gauge.

Model	Part Number
PGC-6	619434

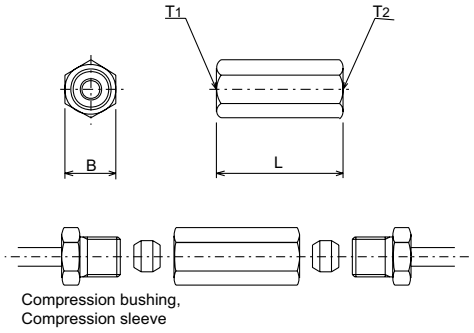
Material: C3604

Couplers/ Unions

RoHS compliant products are also available.
Please contact LUBE for details.

Some parts are available with standard threads.
Contact LUBE for details.

Dimensional drawing

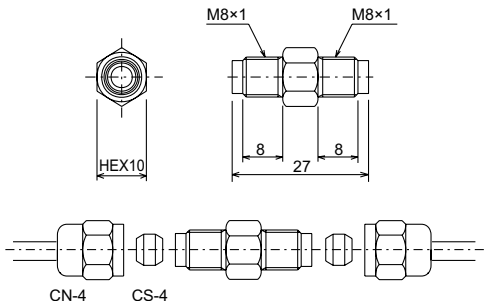


[How to connect]

Model

Model	Part Number	Tubing O.D. (φ)	T_1	T_2	L	B
KP-44	106201	4×4	M8×1.0	M8×1.0	25	10
KP-46	106202	4×6		M10×1.0	27	12
KP-4R	106291	4		Rc1/8	25	14
KP-66	106292	6×6	M10×1.0	M10×1.0	29	
KP-6R	106293	6		Rc1/8	25	
KP-RR	106294	—	Rc1/8			
KP-88	207201	8×8	M14×1.5	M14×1.5	40	17
PSC	207202	—	Rc3/8	Rc1/8	25	21

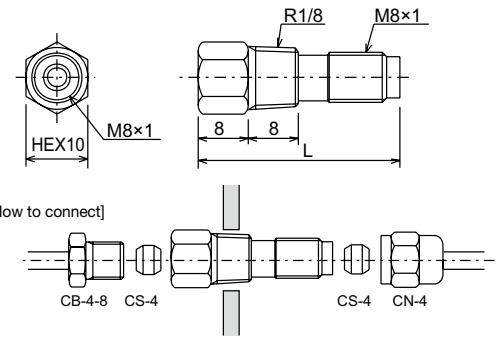
Material: C3604
*Use TI-4 for nylon tubing connection.



[How to connect]

Model	Part Number	Tubing O.D. (φ)
KPW-4	106211	4

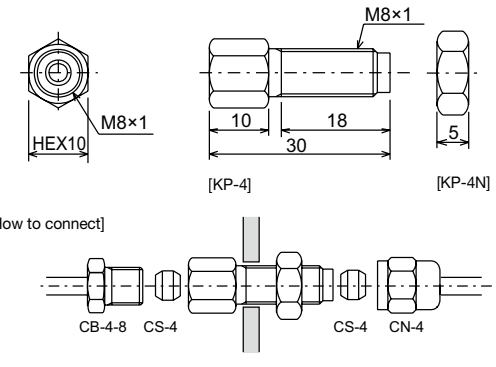
Material: C3604
*Use TI-4 for nylon tubing connection.



[How to connect]

Model	Part Number	Tubing O.D. (φ)	L
KPR-4	106221	4	32

Material: C3604



[How to connect]

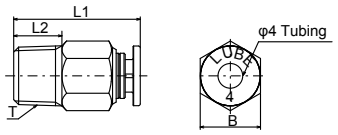
Model	Part Number	Tubing O.D. (φ)	Material
KP-4	106231	4	C3604
KP-4N	106232		SS400

Push-in fitting

Specifications

Operating pressure	Oil: Under 3MPa Grease: Under 4MPa	Oil: Under 3MPa
Life	Oil: Under 1,000,000 times Grease: Under 100,000 times	Oil: 1,000,000 times
Working viscosity range	2	
Ambient temperature range	0 - 60°C	
Vibration resistance	4.5G 10 - 55Hz, 9G 55Hz (Fixed)	

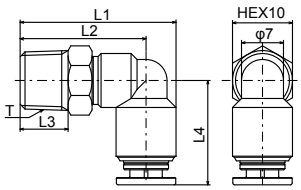
Dimensional drawing



Model

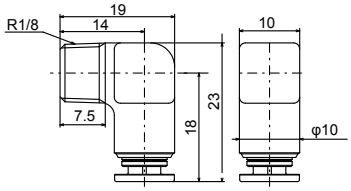
Model	Part Number	Outer diameter of tube (φ)	T	B	L_1	L_2
KBC4-01-F	209503	4	R1/8	HEX10	21	8
KBC4-02-F	209504		R1/4	HEX14		11
KBC4-M6-F	209501		M6×1.0	HEX10		4.5
KBC4-M6P0.75-F	209502		M6×0.75		20	3.5
KBC6-01-F	209513	6	R1/8	HEX12	22.6	8

Material: C3604



Model	Part Number	Outer diameter of tube (φ)	T	L_1	L_2	L_3	L_4
KBL4-01-FN	209508	4	R1/8	26	21	8	17.4
KBL4-M6-FN	209506		M6×1.0	22.5	17.5	4.5	
KBL6-01-F	209518	6	R1/8	27.5	21.5	8	20.2

Material: C3604
*Swivel fitting is designed to set direction easily, not to for use at movable places according to the machine movement.

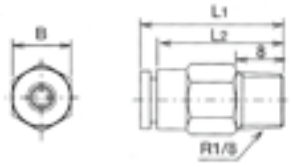


Model	Part Number
KBE4-01-F	209523

Material: C3604
*Swivel fitting is designed to set direction easily, not to for use at movable places according to the machine movement.

Specifications

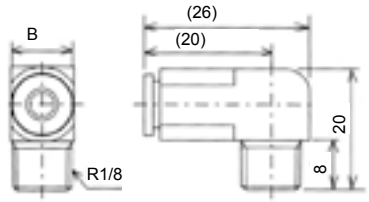
Used liquid	Lubrication oil
Maximum working pressure	6MPa
Working viscosity range	10mm²/s
Vibration resistance	9G



Push-in fitting (Straight)

Model	Part Number	Outer diameter of tube (φ)	L_1	L_2	B
OTS-4	106369	4	25	22	10
OTS-6	206152	6	27	24	12

For use with nylon tube only.



Push-in fitting (Elbow)

Model	Part Number	Outer diameter of tube (φ)	B
OTE-4	106373	4	10
OTE-6	206155	6	12

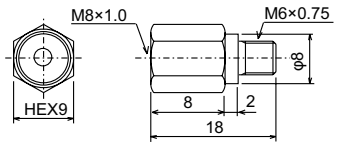
For use with nylon tube only.

Fittings for limited space

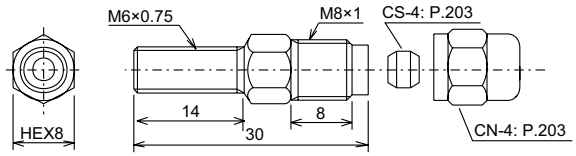
Handy for tubing connection in limited spaces such as at linear guide or ball screw.

RoHS compliant products are also available.
Please contact LUBE for details.

Dimensional drawing



SAG4-6B



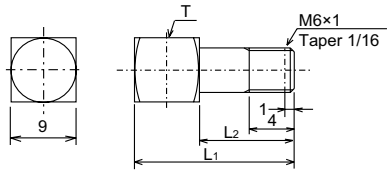
SATG-6B

[How to connect]

Model

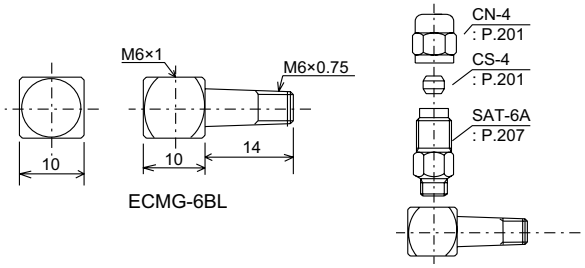
Model	Part Number	Tubing O.D. (φ)
SAG4-6B	106366	4
SATG-6B	106064	

Material: C3604



ECMG-6AL, ECMG-6ALL

Model	Part Number	L_1	L_2	T
ECMG-6ALL	106382	23	14	M6×1
ECMG-6AL	106383	20	11	M6x1



ECMG-6BL

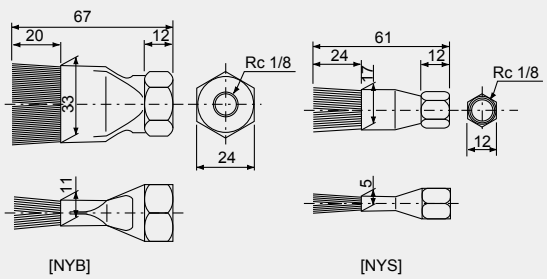
Model	Part Number
ECMG-6BL	166039

Brush

Intended for use when lubricant is applied to chains, etc.

Nylon Brush

Dimensional drawing



[NYB] [NYS]

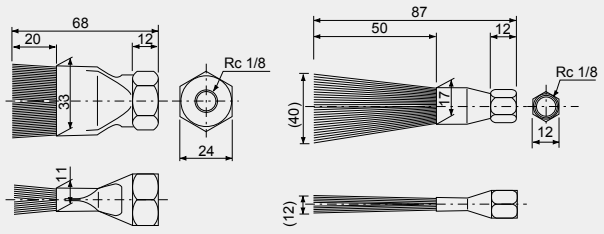
Model

Model	Part Number
NYB	109405
NYS	109406

Wire Brush

RoHS compliant products are also available.
Please contact LUBE for details.

Dimensional drawing



[SYB] [SYS]

Model

Model	Part Number
SYB	109417
SYS	109418

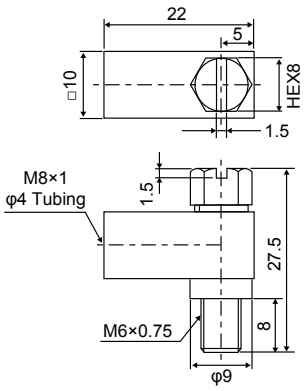
Banjo elbow

Specialized fitting. Use with sealing washer.

[ZE-6B]

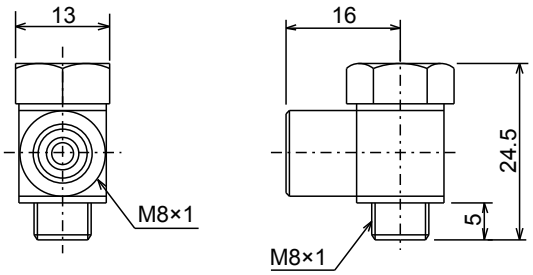
[ZE-8A]

Dimensional drawing



Model

Model	Part Number	Tubing O.D. (φ)
ZE-6B	166045	4

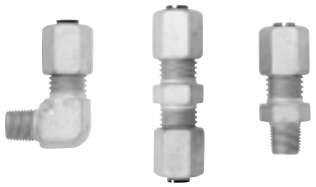


Model	Part Number
ZE-8A	106027

Use with sealing washer.

Adapter assemblies [Fittings for Steel tubing]

High pressure adapters for grease system

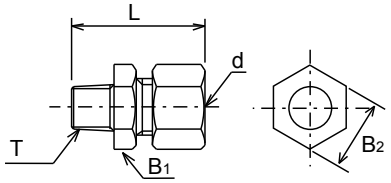


Dimensional drawing

Model

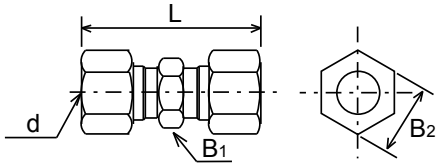
Material: S25C

■ Straight nipple



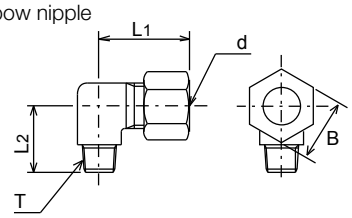
Model	Part Number	Outer diameter d	T	L	B1	B2
S61-SC	250111	φ6	R1/8	34.5	14.0	14.0
S62-SC	290191		R1/4	37.5		
S81-SC	250131	φ8	R1/8	35.5	17.0	17.0
S82-SC	290190		R1/4	37.5		

■ Union



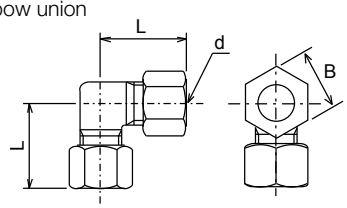
Model	Part Number	Outer diameter d	L	B1	B2
U6-SC	250112	φ6	43.0	14.0	14.0
U8-SC	250132	φ8	52.0	17.0	17.0

■ Elbow nipple



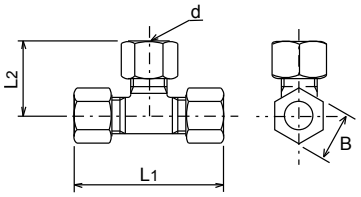
Model	Part Number	Outer diameter d	T	L1	L2	B
E61-SC	250113	φ6	R1/8	30.5	14.0	14.0
E62-SC	290184		R1/4		17.0	
E81-SC	250133	φ8	R1/8	33.5	16.0	17.0
E82-SC	290043		R1/4		18.0	

■ Elbow union



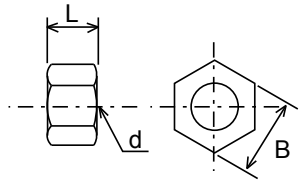
Model	Part Number	Outer diameter d	L	B
EU6-SC	250114	φ6	26.5	14.0
EU8-SC	250134	φ8	33.5	17.0

■ Tee



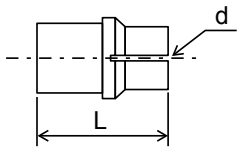
Model	Part Number	Outer diameter d	L1	L2	B
T6-SC	250115	φ6	53.0	26.5	14.0
T8-SC	250135	φ8	67.0	33.5	17.0

■ Nut



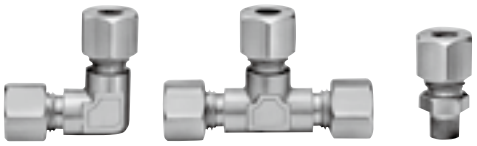
Model	Part Number	Outer diameter d	L	B
N6-SC	250119	φ6	13.0	14.0
N8-SC	250139	φ8	15.0	17.0

■ Sleeve



Model	Part Number	Outer diameter d	L
F6-SC	250118	φ6	14
F8-SC	250138	φ8	

Adapter assemblies [For Soft Metal & Nylon tubing]

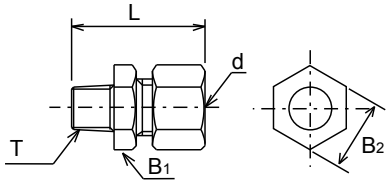


Dimensional drawing

Model

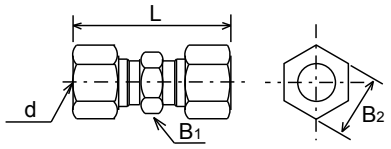
1) Material: Steel, surface chrome-VI free, galvanized
2) Material: C3604BD

■ Straight nipple



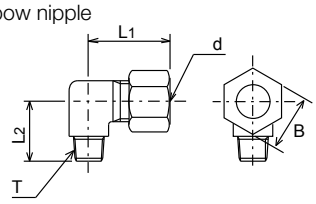
Model	Part Number	Outer diameter d	T	L	B1	B2
FAA-S4[1]	F104004	φ4	R1/8	27.5	11.0	10.0
S61-BD[2]	250101	φ6	R1/8	27.0	12.0	12.0
S62-BD[2]	290219		R1/4	34.0	14.0	17.0
S81-BD[2]	250121	φ8	R1/8	31.0		
S82-BD[2]	290245		R1/4	35.0		

■ Union



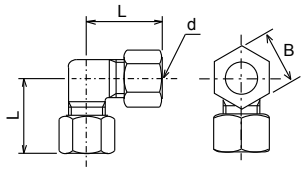
Model	Part Number	Outer diameter d	L	B1	B2
U6-BD[2]	250102	φ6	32.0	12.0	12.0
U8-BD[2]	250122	φ8	40.0	14.0	17.0

■ Elbow nipple



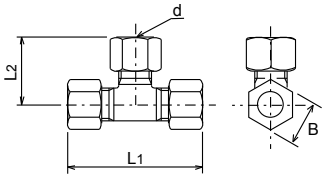
Model	Part Number	Outer diameter d	T	L1	L2	B
FAA-E4[1]	F104104	φ4	R1/8	22.0	15.0	10.0
E61-BD[2]	250103	φ6	R1/8	20.0	17.0	12.0
E62-BD[2]	290277		R1/4	25.0	22.0	17.0
E81-BD[2]	250123	φ8	R1/8	26.0	19.0	
E82-BD[2]	290246		R1/4		22.0	

■ Elbow union



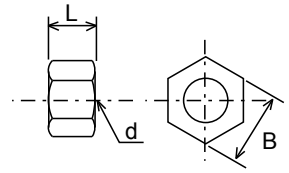
Model	Part Number	Outer diameter d	L	B
EU6-BD[2]	250104	φ6	20.0	14.0
EU8-BD[2]	250124	φ8	29.0	17.0

■ Tee



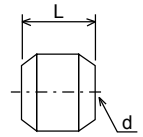
Model	Part Number	Outer diameter d	L1	L2	B
T6-BD[2]	250105	φ6	40.0	20.0	14.0
T8-BD[2]	250125	φ8	58.0	29.0	17.0

■ Nut



Model	Part Number	Outer diameter d	L	B
F4-RN[1]	F104200	φ4	11.5	10
N6-BD[2]	250109	φ6	11.0	14.0
N8-BD[2]	250129	φ8	13.0	17.0

■ Sleeve



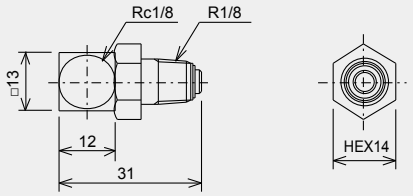
Model	Part Number	Outer diameter d	L
F4-RS[1]	F104215	φ4	5.5
F6-BD[2]	250108	φ6	6.5
F8-BD[2]	250128	φ8	8.0

Note: If nylon or other soft tubing is used, a tube insert is required (see pg. 201)

For oil system

Swivel elbow

Dimensional drawing



Model

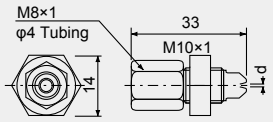
Model	Part Number		Specifications
SVL	109412	0.8MPa	100 rpm/MAX

Directions for use

Be sure to use at speeds below maximum RPM.
Use as a joint for rotary or rocking part.

Jet nozzle

Dimensional drawing

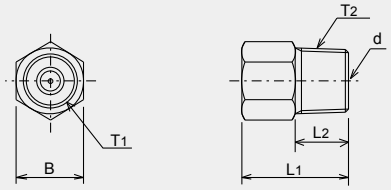


Model

Model	Part Number	d (φ)
J02	225008	0.2
J05	225007	0.5
J08	225006	0.8

Nozzle adapter

Dimensional drawing



Model

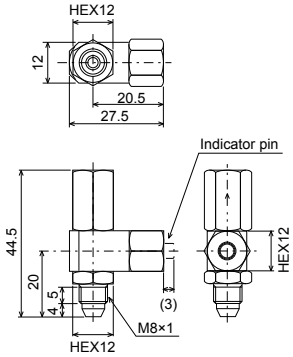
Model	Part Number	Tubing (φ)	L_2	L_2	T_1	T_2	B	d (φ)
NA-05	106974	4	16	8	M8×1	R1/8	10	0.5
NA-08	106975							0.8

Indicator pin

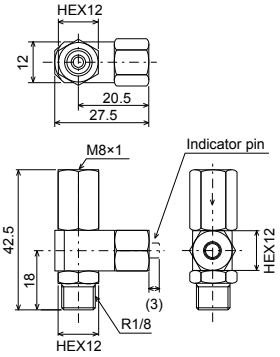
[KEN-T]

[KEN-M]

Dimensional drawing



[KEN-T]



[KEN-M]

Model

Model	Part Number	Specifications
KEN-T	106672	Installs at valves
KEN-M	106673	Installs at lubrication point

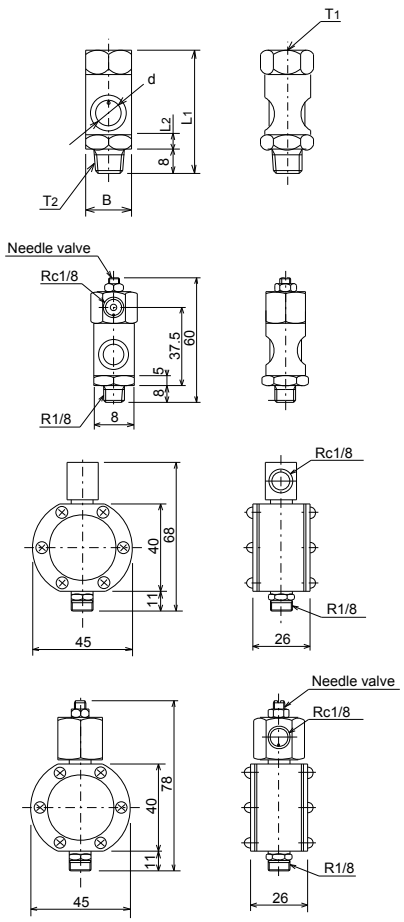
Sight feed

Visual performance indicators.

Directions for use

- Provides visual verification of lubricant flow at termination point.
- Operational temperature range: 0 - 70°C.

Dimensional drawing



Model

Model	Part Number	T_1	T_2	B	L_1	L_2	d	Specifications
SFB-4	106501	M8×1	Rc1/8	15	41	6	9	Gravity Feed
SFB-R	106502	Rc1/8						
SFB-RA	106503		M8×1					
SFB-RL	106504		Rc1/8	19	44	5	12	
SF-R	106505			15	41	6	9	Pressure Feed
SF-RA	106506		M8×1					

Model	Part Number	Specifications
SFB-N	106510	Gravity Feed with Needle
SF-N	106511	Pressure Feed with Needle

Model	Part Number	Specifications
SF-D	106520	Pressure Feed

Model	Part Number	Specifications
SFB-DN	106521	Gravity Feed with Needle

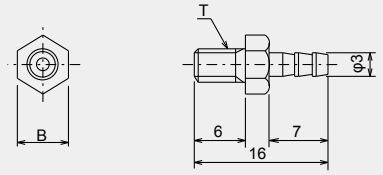
Drive bushing/Barb fitting

Used with nylon tubing with 4mm O.D. and 2.5mm I.D.

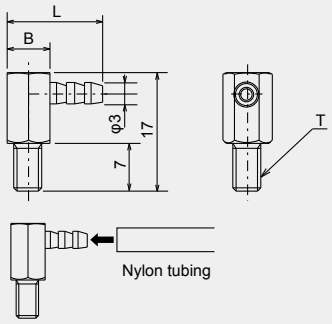
RoHS compliant products are also available. Please contact LUBE for details.

Dimensional drawing

Drive bushing / Barb fittings
(Threaded type)



Elbow drive bushing / Barb fittings
(Threaded type)



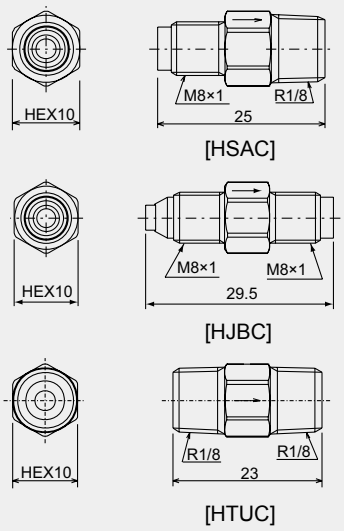
Model

Model	Part Number	Specification	T	B
STE-4A	106931	Threaded type	M4×0.7	6
STE-5A	106933		M5×0.8	
STE-6B	106935		M6×0.75	8
STE-6A	106936		M6×1	
STE-8B	106937		M8×1.25	9

Model	Part Number	Specification	T	L	B
ETE-4A	106911	Threaded type	M4×0.7	13.5	6
ETE-5A	106913		M5×0.8	15	8
ETE-6B	106915		M6×0.75		
ETE-6A	106916		M6×1		
ETE-8B	106917		M8×1.25	16	9

Check valves

Dimensional drawing



Model

Model	Part Number	Operation Pressure (MPa)
HSAC	109407	0.034
HJBC	109415	0.034
HTUC	109416	0.016

Directions for use

- Check and confirm flow direction and thread size.

■ Oil pump replacement parts

(Oil fill cap, Strainer, Suction filter, Inlet check valve, Outlet check valve, Relief valve)

	Model	Part Number	Applicable pump
Oil fill cap	OC-1	549006	L3, L8
	OC-2	549005	EX, L20, ACM-II, AM, ADM
	OC-3	529432	MLZ, L5
	OC-4	529409	AMZ-III, AMZ100S, AMO-150S-III, AMO-II-150S, MMXL-III, MMX-II, AMR-III-150
Strainer	OS-1	521037	AMZ-III, AMZ100S, AMO-150S-III, AMO-II-150S, MMXL-III, MMX-II
Suction filter	SF-01	489001	AM, ADM
	SF-05	489005	L20, EX
	SF-07	489007	MLZ
	SF-08	489008	AMI-300S, AMI-1000S, AMI-300, AMI-1000
	SF-10	489010	MMXL-III
	SF-11	489011	AMZ-III, AMZ100S, AMO-150S-III, AMO-II-150S, AMR-III-150
	SF-12	489012	ACM-II
	SF-13	489013	MMX-II, L8
	SF-A	500324	AMS
	SF-L3	540727	L3
	SF-L5	540562	L5 · LK
Inlet check valve	IC-2.5	529008	MMX-II (2.5mℓ)
	IC-5.5	529009	MMX-II (5.5mℓ), L-8, L-20
	IC-EX	539001	MLZ, LK
Outlet check valve	OC-1	509001	MMX-II, EX, L-8, L-20
	OC-2	549070	MLZ, LK
Relief valve	RV-0.5	519003	AMI-300 <0.5MPa>
	RV-0.8	509002	AM, ACM, ADM, AMS <0.8MPa>
	RV-2.5	519002	AMI-100S, 200S, 300S, 1000S <2.5MPa>

Services Provided by LUBE

Seminar information on basic lubrication systems Understanding preventive maintenance techniques

A sound introduction to lubrication techniques at worksites secures reliability and maintainability of machinery and equipment. This yields significant economic effects, including not only effective operation of equipment but also quality assurance of finished products. Through this seminar on preventive technology using lubrication, we would like to help you improve your lubrication and preventative maintenance techniques.

Contents of the seminar

1 Importance of machine lubrication and maintenance 10 min.

1. Types of lubrication trouble in machinery and equipment
2. Importance of lubrication control in regards to failure rates.
3. Difference between manual oiling and automatic lubrication
4. Difference between oil and grease
5. Why should designated lubricants be used?

2 Outline of LUBE's centralized grease systems 20 min.

1. Centralized grease systems
   - Types of centralized grease systems
   - Outline of LUBE's positive displacement injector system
   - Outline of LUBE's series progressive system
2. Principles of operation
3. Comparison of centralized grease systems
4. How to select systems and cautions

3 Maintenance of centralized lubrication systems 30 min.

1. Safe use of systems
2. Precautions for maintenance
3. Why LUBE special greases are approved for use by many machine manufacturers

Questions and answers 20 min.

LRA Analysis (LUBE Real oil film Analysis)

What is LRA?

LUBE offers LRA to find the best suited lubrication film state for your machines. Based on this analysis, we propose the a minimal quantity lubrication (MQL) program specifically for your manufacturing environment.

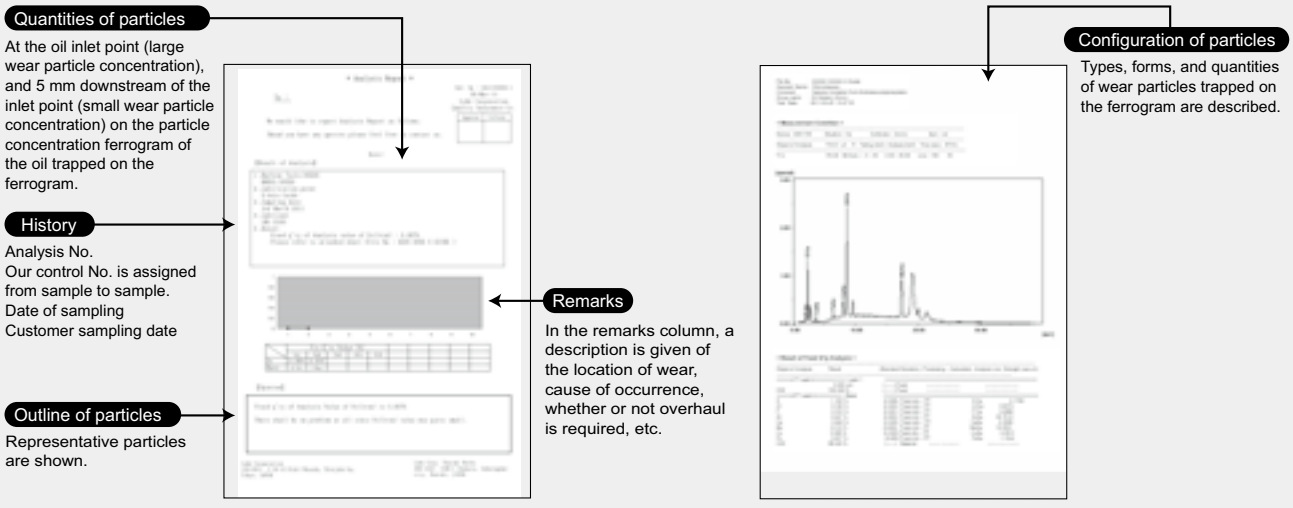
Diagnosis of lubrication status with LRA analysis (Lube Real lubrication film Analysis)

(1) Reduces runnning costs

(2) Maintains accuracy and performance of your machines and their essential parts

(3) Reduces Co2 Emissions

Example report of LRA Analysis



SYSTEM PLANNING MANUAL

Centralized lubrication system planning

(1) System planning sequence

Objective of lubrication: Decrease friction, cooling and extend bearing life.

- **Locate all wear surfaces that need to be lubricated**: bearings, slides, cams, gears, chains etc. Take into consideration RPM, load, ambient temperature and nearby hazards.
- **Selecting lubricant**: Determine frequency required (min. -hrs. -days). Select lubricant oil or grease, and note viscosity
- **Selecting Desired Delivery Method**: Automatic or manual, Intermittent or continuous, Single Line Resistance, Positive Displacement Injector or Series Progressive.
- **Calculate Lubricant Requirements**: For each lubrication point, calculate the necessary lubricant volume in cubic centimeters per hour. Then multiply or divide by desired frequency to determine necessary requirement per interval cycle. Add all the requirements together to get the total system requirement.
- **Select Distributor**: Based on the desired delivery method, choose the correct distributor for that method that will deliver the amount of lubricant required per interval period.
- **Select Pump and Reservoirs**: Based on the desired delivery method and the system total requirements, choose a pump that meets those requirements. Take into consideration it is not recommended to use more than 80% of the pump output. Choose a reservoirs that will meet the desired refilling interval.
- **Select any Protection and Monitoring Device**: Based on the type of system there are different monitoring devices that could be used if desired (flow sensor, pressure switch, cycle switch, low level switch or visual indication).
- **Select Controlling Method**: Determine if an external system controller will be required and select controls that will not only meet the system requirements, but also the chosen monitoring device if necessary.
- **System Layout**: Arrange nearby lubrication points into groups if desired. Based on the particular distributor chosen, arrange the distributors into same groups. Based on the system delivery method and necessary main and branch tubing, engineer the tubing layout and distributor locations.
- **Select Necessary Tubing Parts**: After system layout is complete, choose the correct amount of desired fittings, adapters, compression hardware, tubing etc. that will be required to plumb the system.

(2) Calculating oil requirements

The amount of oil that is required for lubrication point is calculated by the following formulas and are based on experience and actual testing.

The necessary requirement is calculated in cubic centimeters per hour. These formulas are based on an average of 120 RPM. In general, the requirement should be doubled for every ten fold speed increase. There have been many calculating formulas published before that use surface smoothness, different operating conditions, RPM, load, ambient temperature, oil type, hazardous conditions, sealing conditions etc. Thus, the formulas below for calculating the oil requirements are not absolute. They are rather a benchmark, and should be adjusted based on actual operating conditions.

Oil requirements calculation formulas

AF. Anti-friction bearing (Ball bearing, roller bearing, needle bearing)
Oil volume Q(cc/h) =0.04×diameter×rows

BW. Ball bearing way
Oil volume Q(cc/h)=0.012×length×rows

P. Plain bearing
Oil volume Q(cc/h)=0.023×shaft diameter×bearing length

CA. Cam
Oil volume Q(cc/h)=0.0017× Contacting circumference ×width

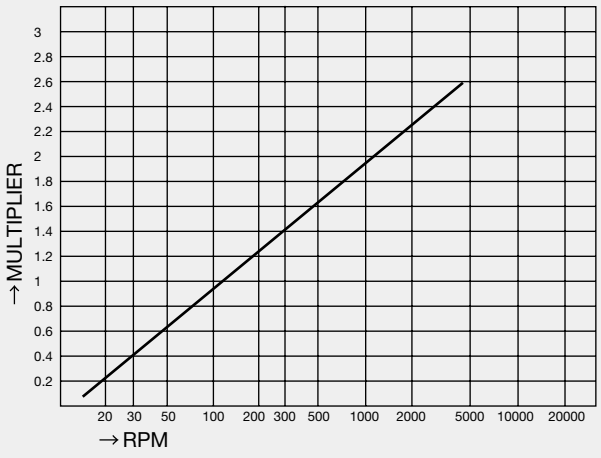
FW. Flat slide
a. Oil volume Q(cc/h)=0.0017×length×width(horizontal slide)
b. Oil volume Q(cc/h)=0.006×length×width(vertical slide)

G. Gear
Oil volume Q(cc/h)=0.013×pitch circle diameter×width of gear

CW. Cylinder slide
Oil volume Q(cc/h)=0.023×diameter×length

CH. Chain
Oil volume Q(cc/h)=0.008×length×widt

The relationship between rpm and multiplier



Oil system

Positive Displacement Injector (PDI) – (AMO-System)

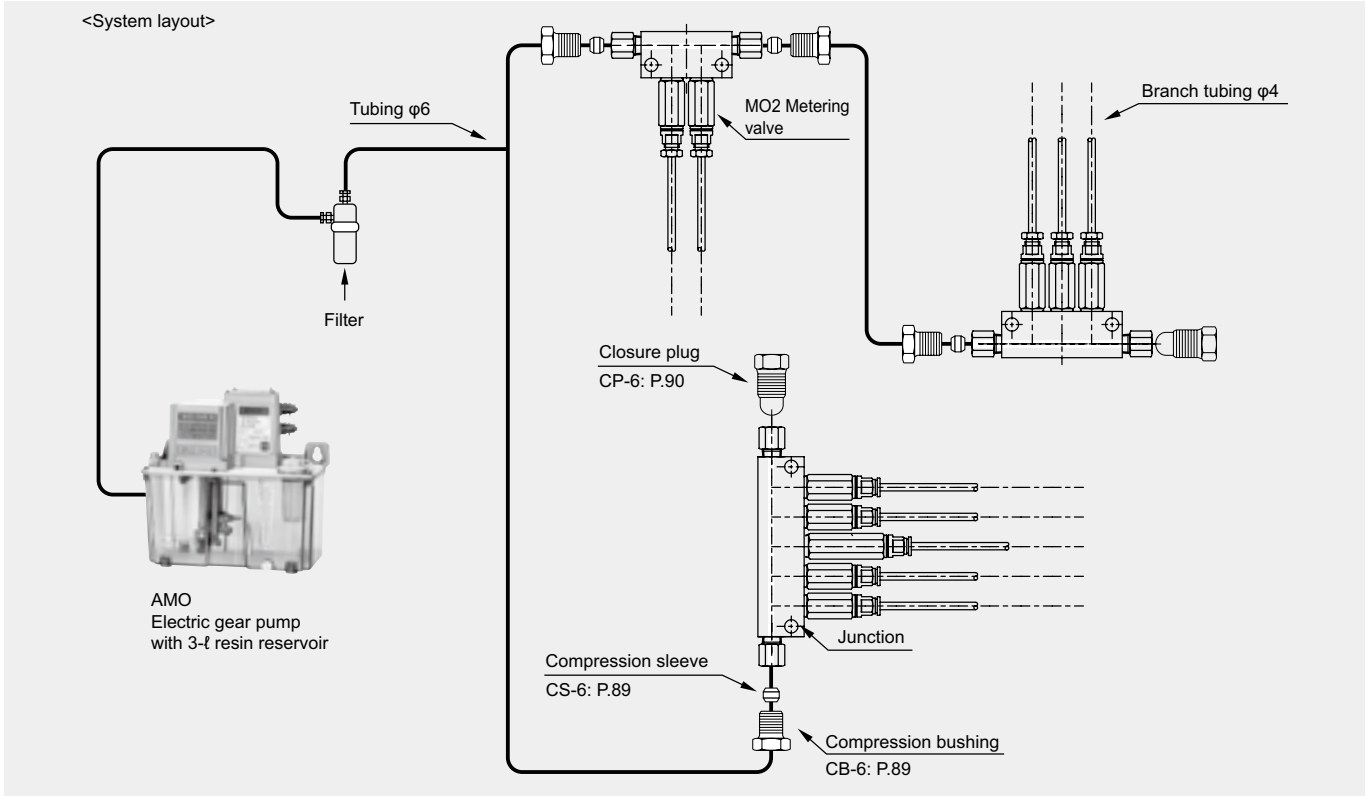
(1) System Overview

The AMO-series centralized lubrication system will deliver precise quantities of oil to all of your lubrication points, and have the flexibility to be adapted to just about any applications imaginable. The AMO-series pumps are electrically operated gear pumps, and offer many choices for controller options. The integrity of these system stems from the metering device the MO2 (C)-Valve injector. The MO2 (C)-Valve injector is a precisely calibrated piston distributor that will deliver an exact amount of oil upon main line pressure rise from the AMO-series pump. The MO2 (C)-Valve re-set and re-load when main line pressure returns to zero. The AMO-series pumps come standard with an internal pressure relief valve and a low lubricant switch. Normally they also have an internal pressure switch that will monitor the main line for breakage. AMO-series pumps also have an option for a precision gear assembly that will allow the use of lubricants light as 22 Cst.

Lubrication system		Positive displacement injector system
Tubing		Single line (main tubing 6mm, tail tubing 4 mm)
Lubricant		Oil (68 - 1800 cSt)
Pump	Type	Motor driven gear pump AMO-Ⅱ-150S
	Discharge volume	150/180cc/min (50/60Hz)
Reservoir		1.8ℓ, 3ℓ: Resin / 3ℓ, 4ℓ, 8ℓ: Metal
Controller		Built-in (discharge time/interval timer), with indication lamps
Valve		MO valve

Characteristics:

1. The AMO-series pumps can be used with or without controller whitch allows the flexibility of just about any time or count interval required.
2. The AMO-series pumps are motor driven gear pumps that are preset to deliver 150 to 180 cc/min. and create 285 psi of main line pressure.
3. The AMO-series pumps have a 180 micron suction filter, but LUBE recommends an additional in line filter for added security against contamination.
4. The MO2-Valve injectors are junction mounted distributors that can be arranged in just about any configurations imaginable.
5. The MO2-Valves have 6 different discharge volumes to select from to meet the lubrication points actual cycle requirement.
6. AMO-series systems have great flexibility of design due to individual distributor junction assemblies One main line tube and an optional pressure switch makes the engineering of the system layout and the installation of the system as easy as possible, as well as monitoring much of the system for main line breakage.



(2) System planning sequence

To be considered

1. **Total length of main tubing (L) …**m
   The total length of the steel tubing and flexible hose in the main tubing.
2. **The distance to the furthest valve (l) …**m
   The length of the main tubing to the furthest valve from the pump.
3. **Total output of all valves (V) …cc**
   The total oil output of all valves.
4. **Maximum operating viscosity (v)…cSt**
   The oil viscosity at the lowest temperature of the working environment. (Not to exceed 1800 cst.)

Designing the system
(How to complete Data Sheet)

1. Fill in the column 18 - 21.
2. Calculate required Oil Volume using the formula provided. Put the results in column 22.
3. Choose the smallest oil requirement from column 22, using it as the divisor, calculate the relative ratios to all other oil requirements. Put the results in column 23.
4. Select valves with the least amount of output as possible and assign the valve to each point. Valve output should be in accordance with the ratios in column 23. Put the results in column 24. Calculate the total and put the result in section 7.
5. Using the valve output in column 24 as the divider, divide the oil requirements in column 22 and put the results in column 25.
6. Select the largest value from column 25, using the following formula, calculate the inteval time for 1 cycle. Put the result in column 26.

$$T=\frac{V\times 60}{Q}$$

T=1 interval time of cycle (min)
V=Discharge volume of valve (cc/shot)
Q=Oil requirement (cc/h)

7. Pick the largest value in column 25 and multiply by the values in column 24 to get the actual oil output per hour. Put the results in column 27.
8. Select System Specifications
   Put the customer information in column 1 – 8 in the System Specification Section.
9. Select Lubrication Pump
   Fill in specifications of the Lubrication Pump in section 17.
10. Based on the working viscosity in section 2 and the main line tubing length in section 6, use the table 1 to figure out pump discharge volume and put the result in section 9.
11. Use the following formula to calculate the valve operation time based on the data of total discharge volume of valve in section 7 and Pump Discharge Volume When the Valve in Operation in section 9 and put the result in section 10.

$$T=\frac{V\times 78}{Q'}$$

T'=Operating time of valve (sec)
V =Total discharge volume of valve (cc)
Q'=Pump discharge volume when the valve in operation (cc/min)

12. Use table 2 to establish the time to reach the maximum pressure.
13. Use the Valve Operation Time in section 10 and the Pressure Rise Time in section 11 to get the Minimum Discharge Time of the pump and put the result in section 12.
14. Establish the pressure relief time by using the table 3 and put the result in section 13.
15. Set the Valve Reset time as 1.5 second according to the valve specification.
16. Calculate the pump minimum interval time from the Pressure Relief Time in section 13 and the Valve Reset Time in section 14. Put the result in section 15
17. Calculate the Minimum Lubrication Cycle from the Pump Minimum Discharge Time in section 12 and the Minimum Interval Time in section 15. Put the result in section 16.
18. If the Minimum Lubrication Cycle in section 16 is longer than the lubrication cycle, the system would lose its integrity. Then the number of lubrication points should be reduced or adjust the Total Oil Discharge Volume of Valves in section 7.

LUBRICATION SYSTEM DATA SHEET

(AMO-ⅢDS-SYSTEM)

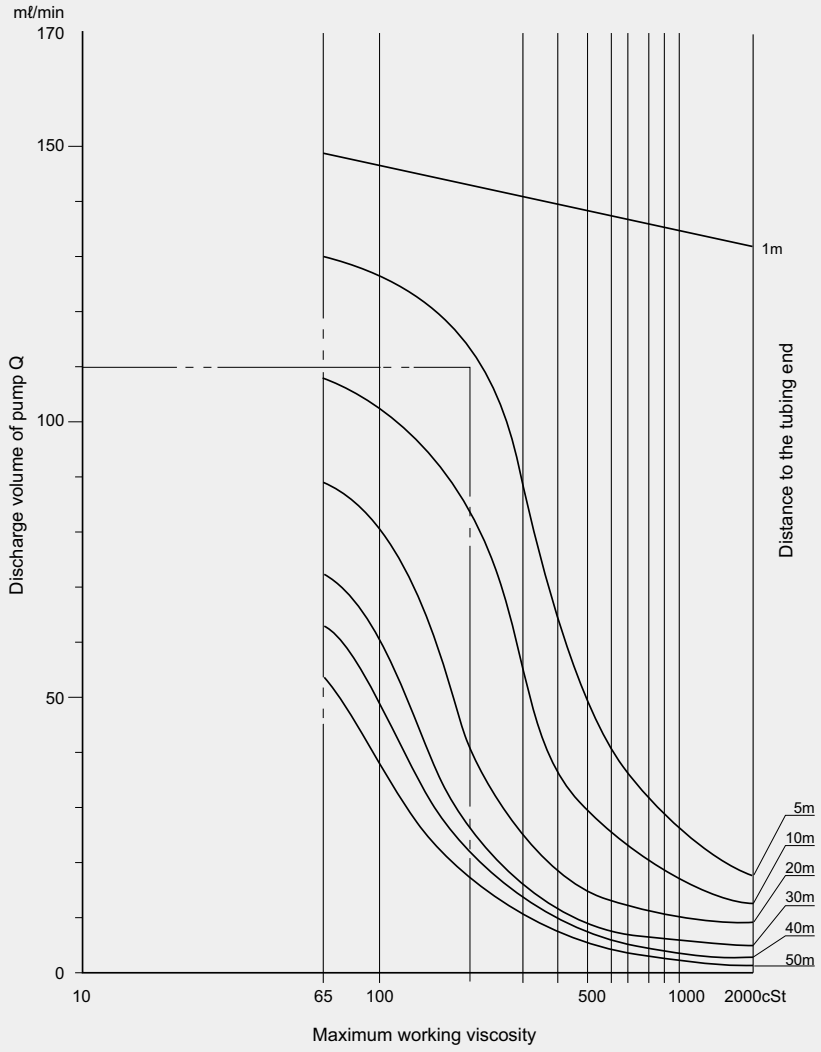
Name of Company		Name of sales office
Add.	Machine names	Date
Section in charge	Machine model	Quote No.
Person in charge		

Item	System specifications			Item	System planning			Item		
1	Working oil		℃～ ℃	9	Pump discharge volume when valve operating		① mℓ/min	14	Reset time of valve	⑩ 1.5 sec
2	Maximum working viscosity	ν	cSt	10	Valve operating time		② sec	15	Minimum interval time of pump	⑪=⑨+⑩ sec
3	Total length of tubing	L	m	11	Pressure rise time	Steel(copper) tubing	③ sec	16	Minimum lubrication cycle time	⑫=⑥+⑪ sec
4	Total length of steel(copper) tubing	L′	m			Flexible hose	④ sec	17	Lubricating pump	AMO- Ⅲ DS
5	Total length of flexible hose	L″	m			System	⑤=③+④ sec		Motor	φ VAC Hz
6	Distance to the furthest	ℓ	m	12	Minimum discharge time of pump		⑥=②+⑤ sec		Condenser	μF
7	Total oil discharge volume of valves	V	mℓ	13	Pressure relief time	Steel (copper) tubing	⑦ sec		Reservoir	: 1.8ℓ, 3ℓ
8	Maximum discharge volume of valve	V′	mℓ			Flexible hose	⑧ sec			: 4ℓ, 6ℓ, 8ℓ
						System	⑨=⑦+⑧ sec		Controller	Yes/No

Calculation of required oil volume

Lubrication points	Abbreviated name	Coefficient	Dimension		Width	Calculating value					
Antifriction(ball,roller,needle)bearing	A F	0.04	Bearing diameter	Row number	RPM or stroke(stroke/min)	Oil requirement(mℓ/h)	Ratio	Valve discharge volume (cc/shot)	Number of discharge	Lubricating cycle time(min)	Actual oil volume
Plain bearing(metal)	P	0.023	Diameter	Length							
Flat slide way	F W	0.0017 / 0.006	Width	Length							
Cylinder slide way	C W	0.023	Diameter	Length							
Ball roller bearing slide way	B W	0.012	Slide direction length	Row number							
Gear	G	0.046	Pitch diameter	Gear							
Cam	C A	0.013	Contacting circumference	Width							
Chain	C H	0.008	Length	Width							
Item	Name of lubricating parts	18	19	20	21	22	23	24	25	26	27
						Total	cc	Total			cc/h

Pump discharge volume when valve in operation (Table 1)



Pressure rise time (Table 2) (0 - relief pressure…sec)

Pump / Main tubing / Total length (m)	AMO-ⅢDS-150S	
	Steel tubing	Flexible hose
2	3.5	6
5	4.5	7.5
10	6	10.5
15	7.5	13.5
20	9	16.5
25	10.5	
30	12	
35	13.5	
40	15	
45	16.5	
50	18	

Pressure rise time (Table 3) (0 - relief pressure…sec)

Each pump common		
Total length (m)	Steel tubing	Flexible hose
2	5.5	5.5
5	5.5	6
10	6	7
15	6.5	7.5
20	7	8.5
25	7.5	9
30	8	10
35	8.5	
40	9	
45	9.5	
50	10	

Single Line Resistance (SLR)

(1) System Overview

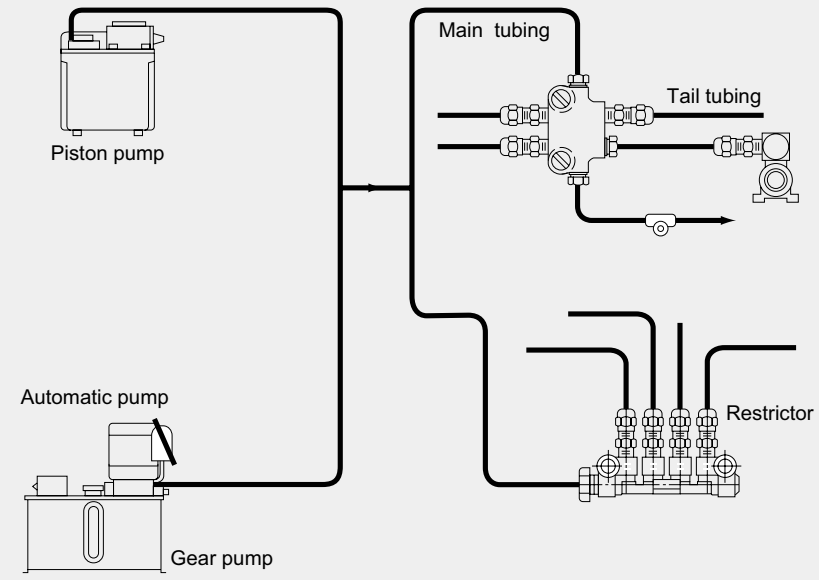
The basic principle of centralized lubrication systems is that oil will travel to the path of least resistance. These systems can be engineered to be either intermittent or continuous depending on the particular requirements. For intermittent systems the metering restrictors are called Flow Units and have 8 restriction sizes to choose from. For continuous systems the metering restrictors are called Control Units and have 10 restriction sizes to choose from. In either case for every size increase or decrease the amount of restriction will be either half or doubled from the previous size. Flow and Control units will deliver oil in a low pressure and small volume either intermittently or continuously depending on the chosen system, and have a wide range of working viscosities. LUBE SLR Systems can be used from small high precision machine to large casting machinery.

Characteristics:

1. Because it is a single main line system, the layout engineering and installation are simple, and visual inspection is easy.
2. There are numerous LUBE SLR electric piston pumps with various outputs, sizes and voltages to fit and lubricate just about any automatic intermittent application.
3. There are numerous LUBE SLR electric gear pumps with various outputs, sizes and voltages to fit and lubricate just about any automatic continuous application.
4. All pumps have a suction filter to help prevent blockage, but recommend an in line filter to help ensure proper oil delivery.
5. Be sure to choose the right size Flow or Control Unit to deliver the correct amount of oil to your lubrication surfaces.

Type of Lubrication system	Intermittant or continuous resistance	
Tubing	Single line (main tubing 4 mm, tail tubing 4 mm)	
Lubricant	Oil	
Pump	Automatic	
	Motor driven piston pump	Motor driven gear pump
Reservoir	0.8ℓ, 1.8ℓ, 3ℓ, 4ℓ, 8ℓ	2ℓ, 3ℓ, 4ℓ, 8ℓ
Metering restrictor	Flow unit - 8 sizes (03, 02, 0, 1, 2, 3, 4, 5) Control unit - 10 sizes (05, 04,03, 02, 0, 1, 2, 3, 4, 5)	

<System layout>

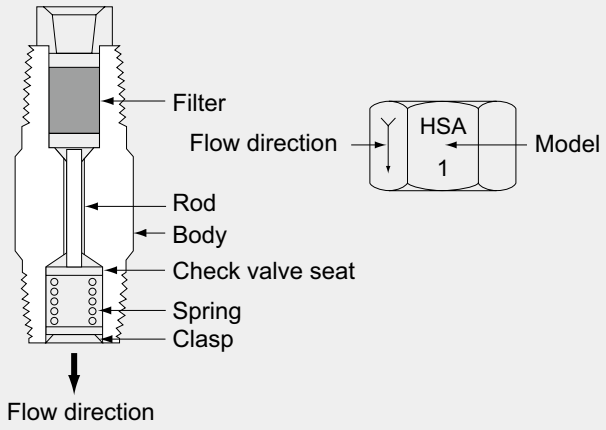


(2) System planning sequence

Designing an Intermittent System

Selection of Flow Unit

After calculation of required oil volume for each lubrication point, selection of Flow Unit determines whether or not the calculated oil volume will be discharged to each point. A random selection of Flow Unit will not produce any good results. In addition, it is not a perfect lubrication system if Flow Units with the same number provide different oil output depending on the places they are installed. (ie : being close v.s. far away from pump, or high v.s. low position) In LUBE-SLR centralized lubrication system, each Flow Unit is assigned the Flow Constant (φ value) and, by selecting the pump to be used according to the total of φ value of each Flow Unit in the system, the discharge volume from the Flow Units becomes perfectly balanced.



How to make Data Sheet (Table 5)

(1) Put lubrication data in Column 1-4.

(2) Calculate the required oil volume to each lubrication point using the previous calculation formulas and put the results in Column 5.

(3) Choose the smallest value in Column 5 as the divider and divide the other values in Column 5 to get relative oil volume ratio. Put the results in Column 6. Now the relative oil volume ratio for the smallest value is 1. Therefore let's decide its multiplier as 1 as well and put it in Column 8. As shown in Table 4, Flow Unit number for the multiplier 1 is 02. Put 02 in Column 7.

(4) Compare Table 4 and the relative oil volume ratios calculated in Column 6. Pick multipliers from Table 4 that are closest to each relative oil volume ratio in Column 6 and put them in Column 8. (ie : If a relative oil volume ratio in Column 6 is 7.5, put 8 in Column 8. If 13.2, put 16 in Column 8.)

(5) After completion of the above, select Flow Unit number and Flow Constant, using Table 4, that correspond to each multiplier in Column 8 and put them in Column 7 and 9 respectively

(6) Multiply the smallest value in Column 5 by the multipliers in Column 8 to obtain Actual Oil Volume (cc/h) and put them in Column 10.
(ie : If the smallest value in Column 5 is 0.5 cc/h and the multipliers in Column 8 are 4, 16, 2 and 1, put the products 2, 8, 1 and 0.5 in Column 10.)

(7) Calculate the total of each Column 9 and 10 and put them in the total sections in Table 5. (φT and FT)

Flow constant of Flow Unit (φ value) and multiplier (Table 4)

Flow unit number	Flow constant	Multiplier
03	1.2	0.5
02	2.5	1
0	5	2
1	10	4
2	20	8
3	40	16
4	80	32
5	160	64

Note: The oil viscosity should be 32 - 1300 cSt under operation temperature.

Data sheet (Table 5)

LUBRICATION SYSTEM DATA SHEET

Name of Company
Add.
Section in charge
Person in charge

Mechanical name
Name of machine model

Name of sales office
Date
Quote No.

System specifications			Pump unit specification				
Type of system		☐ Cyclic ☐ Continuous	Model			Discharge volume	mℓ/h
			Part Number				mℓ/shot
		☐ Manual ☐ Automatic	Motor	Voltage	V	Discharge pressure	kgf/cm²
				Output	W		kgf/cm²
Oil	Oil name			Phase	φ	Interval	Min
	Working viscosity	cSt (40°C/104°F)		Frequency	Hz		(Cam setting No.)
		cSt (100°C/212°F)		Condenser	μF	Resrvoir capacity	ℓ
						Oil level switch	With/without
							Model

Calculation of required oil volume											
Lubrication points	Abbreviated name	Dimension	Width		Condition	Calculating value		Flow unit/Control unit			
Antifriction (ball,roller,needle) bearing	A F	0.04	Bearing diameter	Row number	RPM or stroke(stroke/min)	Required oil volume (ml/h)	Oil volume ratio	Flow unit or Control unit Number	Multiplier	Capacity constant (φvalue)	Actual oil volume (cc/h)
Plain bearing(metal)	P	0.023	Diameter	Length							
Flat slide way	F W	0.0017 / 0.006	Width	Length							
Cylinder slide way	C W	0.023	Diameter	Length							
Ball roller bearing slide way	B W	0.012	Length	Row number							
Gear	G	0.046	Pitch diameter	Gear							
Cam	C A	0.013	Contacting circumference	Width							
Chain	C H	0.008	Length	Width							
Item	Name of lubricating parts	1	2	3	4	5	6	7	8	9	10
									Total	φT	F T

Selection of Lubrication Pump

(1) The total required oil volume has been calculated in Table 5. Now, let's select a pump with the most appropriate output.

(2) Count the actual total number of Flow Unit in the system and pick the closet number of the Flow Unit from the first column in Table 6. Then choose the φT value, for the number of Flow Unit selected above, from Table 6 that is closest to the φT value calculated in Table 5. φT calculated needs to be smaller than φT selected from Table 6.

(3) The selected φT value indicates the minimum required output of the pump (cc/shot)- See the top row of Table 6. It is recommended to choose the pump with the output

Designing Continuous System

that is a little larger than the minimum required output.

Select Control Unit for continuous system by completing the Data Sheet as is done for selection of Flow Unit for intermittent system. Refer to Table 9 for the relation between Control Unit selected, pump output and pump output pressure.

(1) Mark the viscosity (cSt) of the given oil on V-axis.

(2) Divide the total of Column 10 (FT) on the Data Sheet by 60 and mark the result on f-axis.

(3) Join the above two (2) marks with a straight line and extend the line until it intersects with X-axis.

(4) Mark the maximum and minimum pump discharge pressure on P-axis, (Generally, a well-balanced relation between pump pressure and discharge volume is attained when the pump is used at the pressure 2-6kgf/cm^2.)

(5) Join the point on X-axis and two (2) points on P-axis above (Max. & Min. discharge pressure) with straight lines and extend them until they intersect with φT-axis. These two (2) points on φT-axis indicate the maximum and minimum value for the φT value for the system being designed now. Therefore, the calculated φT value needs to fall in this range.

(6) To increase φT value, increase the size of Control Unit selected by one size and calculate new φT value. Repeat the same procedure until φT value falls into the range.

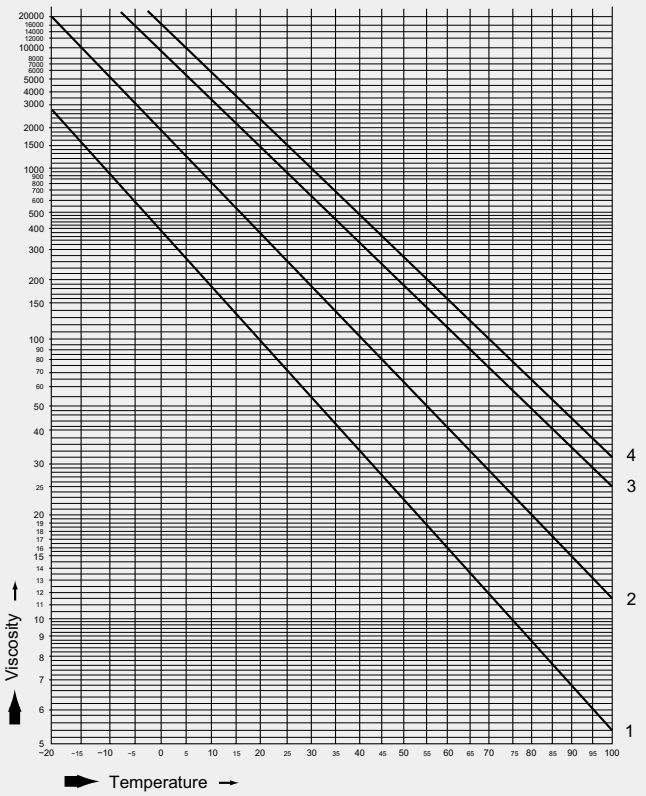
(7) To decrease φT value, decrease the size of Control Unit selected by one size and calculate new φT value. Repeat the same procedure until φT value falls into the range.

(8) Mark the final φT value on φT-axis and join it with the point on X-axis. The point on P-axis, where the line from φT-axis to X-axis crosses, indicates the pump discharge pressure.

The maximum øT value for intermittent system (Table 6)

Pump / Number of flow unit	Discharge volume of pump cc/shot					
	0.5	1	2	3	4	5
5	150	250	450	700	800	
10	115	180	320	560	680	750
15	96	150	255	450	570	640
20	82	128	225	360	480	550
25	68	108	180	320	400	470
30	58	90	155	280	330	400
40	48	65	120	215	250	290
50		60	94	155	185	215
60			72	115	135	160
70				84	84	125
80						96
90						

Viscosity Temperature graph (Table 7)

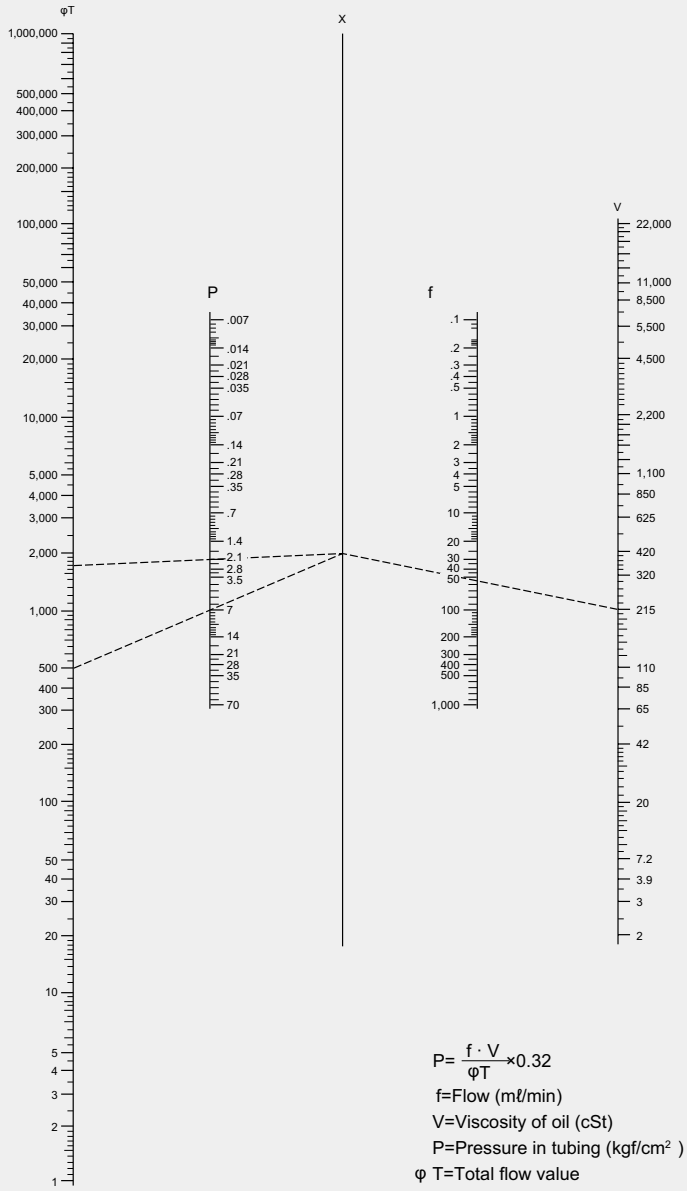


	40°C/104°F	100°C/212°F
1: Oil #32	32.7cSt	5.6cSt
2: Oil #100	101.0cSt	11.9cSt
3: Oil #320	319.0cSt	26.0cSt
4: Oil #460	454.3cSt	32.3cSt

Flow constant of flow unit (φvalue) and multiplier (Table 8)

Control unit Number	Flow constant	Multiplier
5	0.3	0.13
4	0.6	0.25
3	1.2	0.5
2	2.5	1
0	5	2
1	10	4
2	20	8
3	40	16
4	80	32
5	160	64

Relation between oil discharge pressure and oil discharge volume of pump (Table 9)



$$P=\frac{f \cdot V}{\varphi T}\times 0.32$$

f=Flow (mℓ/min)

V=Viscosity of oil (cSt)

P=Pressure in tubing (kgf/cm^2)

φ T=Total flow value

Grease system

Positive Displacement Injector (PDI)

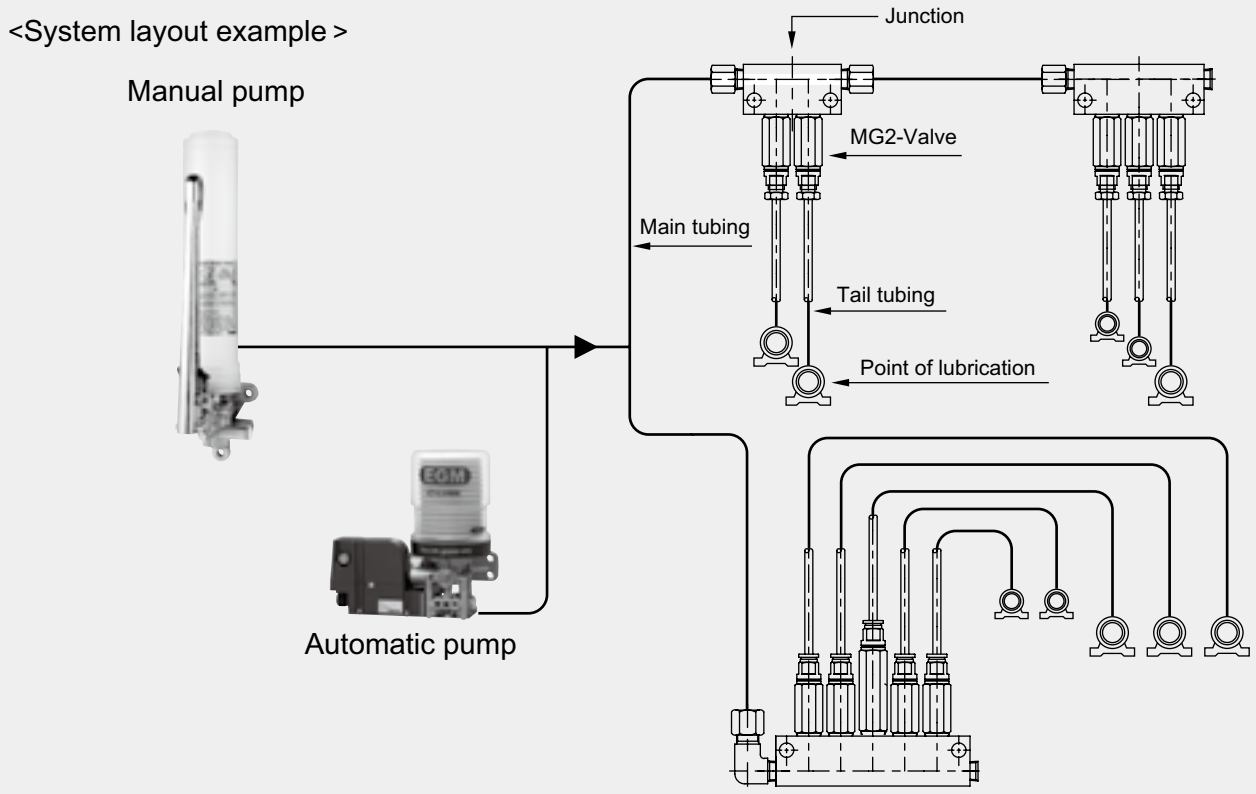
(1) System Overview

The Grease centralized lubrication systems will deliver precise amounts of grease to all of your lubrication points, and have the flexibility to be adapted to just about any application imaginable. The Grease systems have a wide assortment of manual, pneumatic and electric pumps to satisfy any lubrication requirement. The integrity of these systems stems from its metering device the MG2(C)-Valve injector. There is also the option of an MGI-Valve which incorporates the use of a visual indicator pin at the valve which will pop out in the event of a clogged tail tube. MG2(C)Valve injectors are precisely calibrated piston distributors that will deliver an exact amount of grease upon main line pressure rise from the pump you choose. The MG2(C) and MGI-Valve injectors will re-set and re-load when main line pressure returns to zero. These systems have been designed and proven to work effectively with grease ranging from NLGI-000 to NLGI-1.

General view of specifications of major types of pump

Lubrication system		Positive displacement injector system	
Tubing		Single line (main tubing φ8,tail tubing φ4)	
Pump		Manual	Motor driven
Model		EGH-4C	EGM-10S-4-7C
Discharge volume		1cc/stroke	10cc/min
Discharge pressure		10MPa (100kgf/cm^2)	10MPa (100kgf/cm^2)
Reservoir		0.4ℓ	0.4, 0.7ℓ
Controller		—	—
Distributor MG2 valve	Model	Positive displacement injector	
	Operating pressure	2.5Mpa (25kgf/cm^2)	
	Operating pressure	1.4Mpa (14kgf/cm^2)	
	Discharge volume	0.03, 0.05, 0.1, 0.2, 0.3, 0.5, 1.0, 1.5cc stroke	
Working lubricant		NLGI No.000, 00, 0, 1	
Working environment temperature		+10°C/+50°F for NLGI No.1 and above 0°C/+32°F for NLGI No.000, 00 and 0	

<System layout example>



Characteristics:

1. There are numerous manual, pneumatic and electric pump with ranging output delivery per cycle and per minute, to satisfy not only your chosen delivery method, but more importantly to satisfy your bearing requirements.
2. MG2 (C)-Valve injectors have 8 different discharge volumes to select from to meet the lubrication points actual cycle requirement.
3. MGI-Valve injectors have 6 different discharge volumes to select from to meet the lubrication points actual cycle requirement, as well as having a visual indication pin for clogged tail tubes.
4. Both MG2 (C) and MGI-Valves are junction mounted distributors that can be arranged in just about any configuration imaginable.
5. Because the Grease Systems have the flexibility of individual distributor junction assemblies using one main line tube, makes the engineering of the system layout and installation of the system as easy as possible.

Initial Grease Volume Required

There is a tendency that people oversupply grease due to a concern that grease supply may not be enough : Excessive grease will increase power consumption and heat produced by excessive load of the grease and it may also cause grease leakage. So everything should be taken into consideration when deciding the grease volume. There is a large gap between the least amount grease given to bearing without damaging the bearing and the largest amount of grease given to the bearing without grease leaking out of the bearing. But what is the best grease volume? This ideal grease volume can be described in several ways. In general,

(1) 1/2 - 3/4 of the space between the bearing and its housing.
(2) 2/3 - 3/4 of the space between the bearing and bearing cover, when the bearing is installed horizontally;
(3) 1/2 of the space between the bearing and its top cover and 3/4 of the space between the bearing and its bottom cover, when the bearing is installed vertically;
(4) Fill grease in the bearing and bearing cover for the low and midium speed bearing if in dusty atmosphere;
(5) When replacing the grease in bearing, the grease volume should be calculated by the following formular

Q = D2.5/K……(1)
D: Bearing diameter (mm)
K: Constant Ball bearing K=900
Roller bearing K=350

These formulas are just basics. Actual grease volume need to be adjusted by rpm, load, and the bearing housing size in actual use

(2) System planning sequence

Variables to be considered

1. **Total tubing length… m**
   Total tubing length is the combined length of steel tubing (copper tubing) and flexible hose of the main tubing.
2. **Total grease output metering valve …cc**
   Total grease output of metering valve is the total discharge volume of the valves.
3. **Pressure relief time:**
   The time required for the pressure relief mechanism to relieve the pressure at the end of the main tubing down to valve reset pressure (1.4 MPa (14 kgf/cm^2) after all valves have discharged. It is determined by the total length of tubing and the grade of the grease.
4. **Interval time:**
   The time between one discharge and the next discharge. The interval time should be longer than the time required for pressure relief and valve reset time combined.
5. **Pump pressure rise time**
   The time required for the pump to raise the pressure at the end of the main tubing up to 5 MPa (50 kgf/cm^2).
6. **Operating environment temperature**
   The operating environment temperature for NLGI No.1 is over +10 °C/+50 °F and above 0 °C/+32 °F for 000, 00 and 0 grade grease.
7. **Grease specifications**
   Use lithium based grease with NLGI No. 000 - 1 grade.

Note: When the base oil viscosity is too low, it may not be used. Please consult us.

Designing EGH-4C Pump System

Selection of valve

1. Select the valves based on the grease volume required to each lubrication point.
2. The total valve grease discharge volume is restricted by the number of handle operation. Also the total length of main line tubing needs to be considered along with the viscosity of the grease for pressure relief time required.

Interval lubrication time

Interval time should be longer than the time required for presure relief and valve reset time (3 sec) combined.

Pressure Relief time (Table 13)

Grease / Temperature	No.000			No.00			No.0			No.1	
Total length of tubing	0°C/+32°F	+10°C/+50°F	+20°C/+68°F	0°C/+32°F	+10°C/+50°F	+20°C/+68°F	0°C/+32°F	+10°C/+50°F	+20°C/+68°F	+10°C/+50°F	+20°C/+68°F
2 m/6.5 F	25″	15″	2″	1′00″	45″	25″	11′00″	6′00″	1′00″	11′00″	6′00″
4 m/13.1 F	45″	25″	2″	2′00″	1′20″	45″	22′00″	12′00″	2′00″	22′00″	12′00″
6 m/19.7 F	1′00″	30″	2″	3′00″	2′15″	1′00″	36′30″	20′00″	3′00″	36′30″	20′00″
8 m/26.2 F	1′30″	45″	2″	5′30″	3′30″	1′30″	50′30″	28′00″	5′30″	50′30″	28′00″
10 m/32.8 F	2′00″	1′00″	2″	8′00″	5′00″	2′00″	1°04′00″	36′00″	8′00″	1°04′00″	36′00″

Note: [◦] = Hours, [′] = Minutes, [″] = Seconds

Disigning EGME II-8S Pump System

Selection of valve

1. Select the valves based on the grease volume required to each lubrication point.
2. The total length of main line tubing needs to be considered to determine the running time required to build pressure to cycle the MG2 valves.

Pump operating time (T)

Calculate the operation time (T) by adding the pressure rising time (T′) and valve action time (T″).

T=T′+T″

1. Pressure rising time

Steel tubing (φ8) (Table 19)

Total length of tubing	Pressure rising time
10 m (32.8 feet)	15 sec

*If using flexible hose, because the pressure rising time for flexible hose (350 K/77 lbs) is 4 seconds for 1M (3.2 feet), it should be added into the pressure rising time.

2. Valve operating time (T″)

Calculate the valve operating time from the valve total output.

$$T''=\frac{V\times 72}{Q'}\fallingdotseq 5\,V$$

V: Valve total output (cc).

Q: Pump discharge volume when valve in operation (15 cc/minute)

The time between one discharge and the next discharge. The interval time should be longer than the time required for oressure relief and valve reset time (3 sec.) combined.

Pressure relief time (Table 20)

1. Steel tubing

Total length of tubing \ Grease	No.000	No.00	No.0	No.1
10 m/32.8 F	15″	15″	30″	60″

2. When using flexible hose

The pressure relief time for the steel tubing, plus it for the flexible hose.

Total length of tubing \ Grease	No.000	No.00	No.0	No.1
1 m/3.28 F	3″	7.5′	15′	30′
2 m/6.56 F	6″	15′	30′	60′
4 m/13.1 F	12″	30′	60′	120′
6 m/19.6 F	18″	45′	90′	180′
8 m/26.2 F	24″	60′	120′	240′
10 m/32.8 F	30″	75′	150′	300′

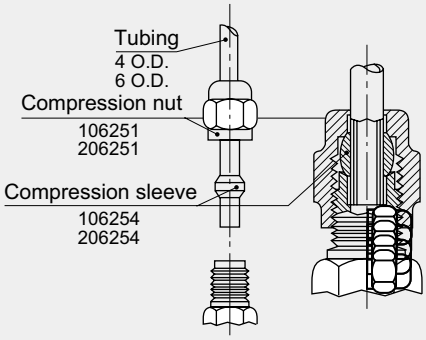
Note: [◦]=Hours, [′]=Minutes, [″]=Seconds

■ Tubing connection method

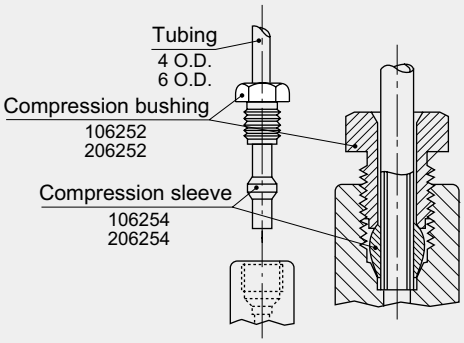
1. In general, the main size tubing used is, 4mmO.D., 6mmO.D, or 8mmO.D. In most cases the secondary tubing is 4mm.
2. The tubing is made of copper, steel, or nylon.
3. When cutting the tubing always use a tubing cutter and cut at a 90 degree angle. After cutting, remove all burs. Be sure not to flatten or damage the tubing.
4. When installing the tubing, always use compression fittings as described in the drawings below.
5. For type HSA/CSA, type HJB/CJB see the illustrations on the right for making tubing connections.
6. For making junction connections, see the illustrations.

Standard compression connections

■Compression nut used example

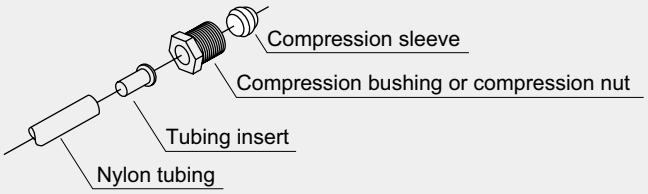


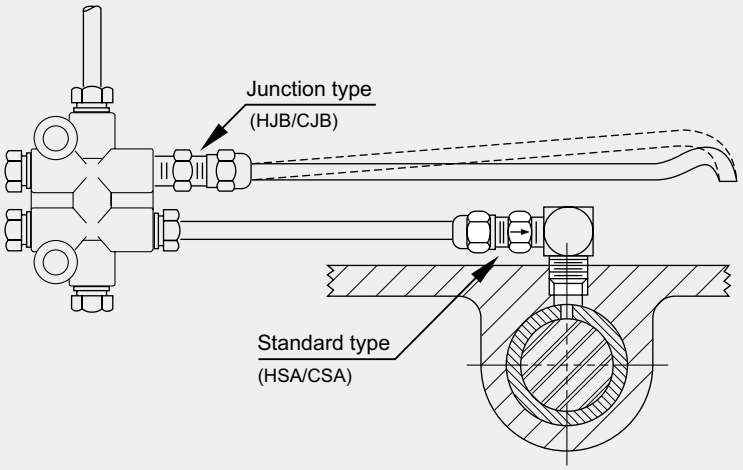
■Compression bushing used example



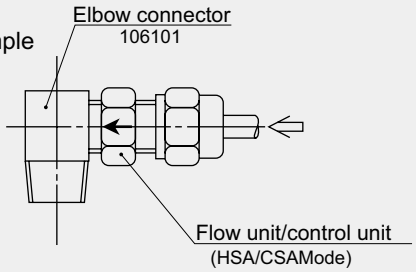
■Nylon tube used example

Install the tube insert into the end of the nylon tube. Install the compression bushing or nut, followed by the compression sleeve and insert assembly into or onto the the appropriate compression connection. Tighten the compression bushing or nut so that the compression sleeve tightens onto the tubing wall.

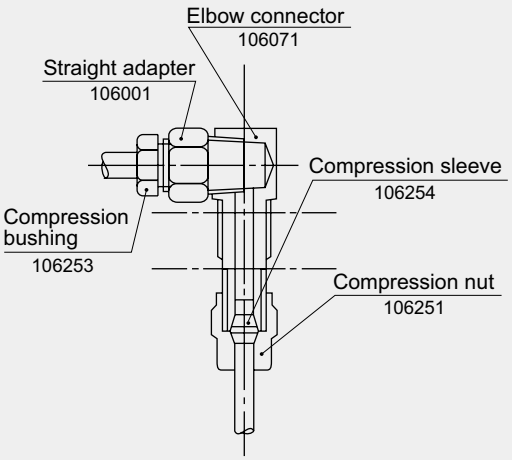




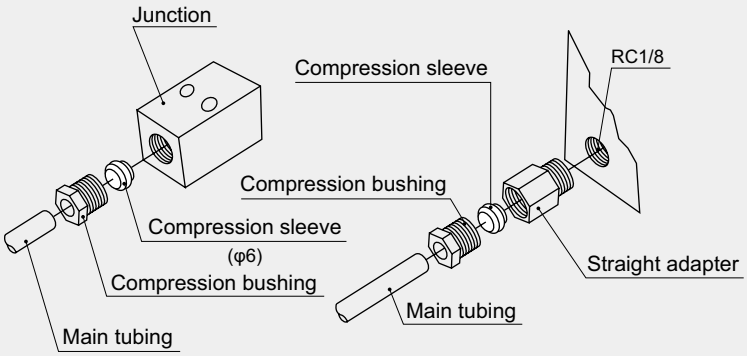
■Connector used example



■Adapter used example



■Main piping connecting example



Reference for lubricant

Grease types (classified by JIS standard)

Grease types (classified by JIS standard)

Type			Temperature range of application	Reference				
				Propriety to working condition				
				Load			Contact with water	Example of application
Application	Type	Grade number		Low	High	Im-pact		
General grease	1	No.1, No.2, No.3, No.4	–10 °C/+14 °F - +60 °C/+140 °F	Yes	No	No	Yes	For general low load
	2	No.2, No.3	–10 °C/+14 °F - +100 °C/+212 °F	Yes	No	No	No	For intermediate load
Roller bearing grease	1	No.1, No.2, No.3	–20 °C/–4 °F - +100 °C/+212 °F	Yes	No	No	Yes	General
	2	No.0, No.1, No.2	–40 °C/–40 °F - +80 °C/+176 °F	Yes	No	No	Yes	For low temperature
	3	No.1, No.2, No.3	–30 °C/–22 °F - +130 °C/+266 °F	Yes	No	No	Yes	For wide range of temperature
Centralized lubricating grease	1	No.00, No.0, No.1	–10 °C/+14 °F - +60 °C/+140 °F	Yes	No	No	Yes	For centralized lubrication (Medium load)
	2	No.0, No.1, No.2	–10 °C/+14 °F - +100 °C/+212 °F	Yes	No	No	Yes	For centralized lubrication (Medium load)
	3	No.0, No.1, No.2	–10 °C/+14 °F - +60 °C/+140 °F	Yes	Yes	Yes	Yes	For centralized lubrication (High load)
	4	No.0, No.1, No.2	–10 °C/+14 °F - +100 °C/+212 °F	Yes	Yes	Yes	Yes	For centralized lubrication (High load)
High load grease	1	No.0, No.1, No.2, No.3	–10 °C/+14 °F - +100 °C/+212 °F	Yes	Yes	Yes	Yes	For high impact load
Gear compound	1	No.1, No.2, No.3	–10 °C/+14 °F - +100 °C/+212 °F	Yes	Yes	Yes	Yes	Open gear and wire rope

Oil viscosity

ISO viscosity classification (JIS • K2001-1983)

ISO viscosity grade	Dynamic viscosity range	Central value	ISO viscosity grade	Dynamic viscosity range	Central value
	cSt (mm/sec) +40 °C/+104 °F			cSt (mm/sec) +40 °C/+104 °F	
ISO VG1500	1350 - 1650	1500	ISO VG46	41.4 - 50.6	46
VG1000	900 - 1100	1000	VG32	28.8 - 35.2	32
VG 680	612 - 748	680	VG22	19.8 - 24.2	22
VG 460	414 - 506	460	VG15	13.5 - 16.5	15
VG 320	288 - 352	320	VG10	9.0 - 11.0	10
VG 220	198 - 242	220	VG 7	6.12 - 7.48	7
VG 150	135 - 165	150	VG 5	4.14 - 5.06	5
VG 100	90 - 110	100	VG 3	2.88 - 3.52	3
VG 68	61.2 - 74.8	68	VG 2	1.98 - 2.42	2

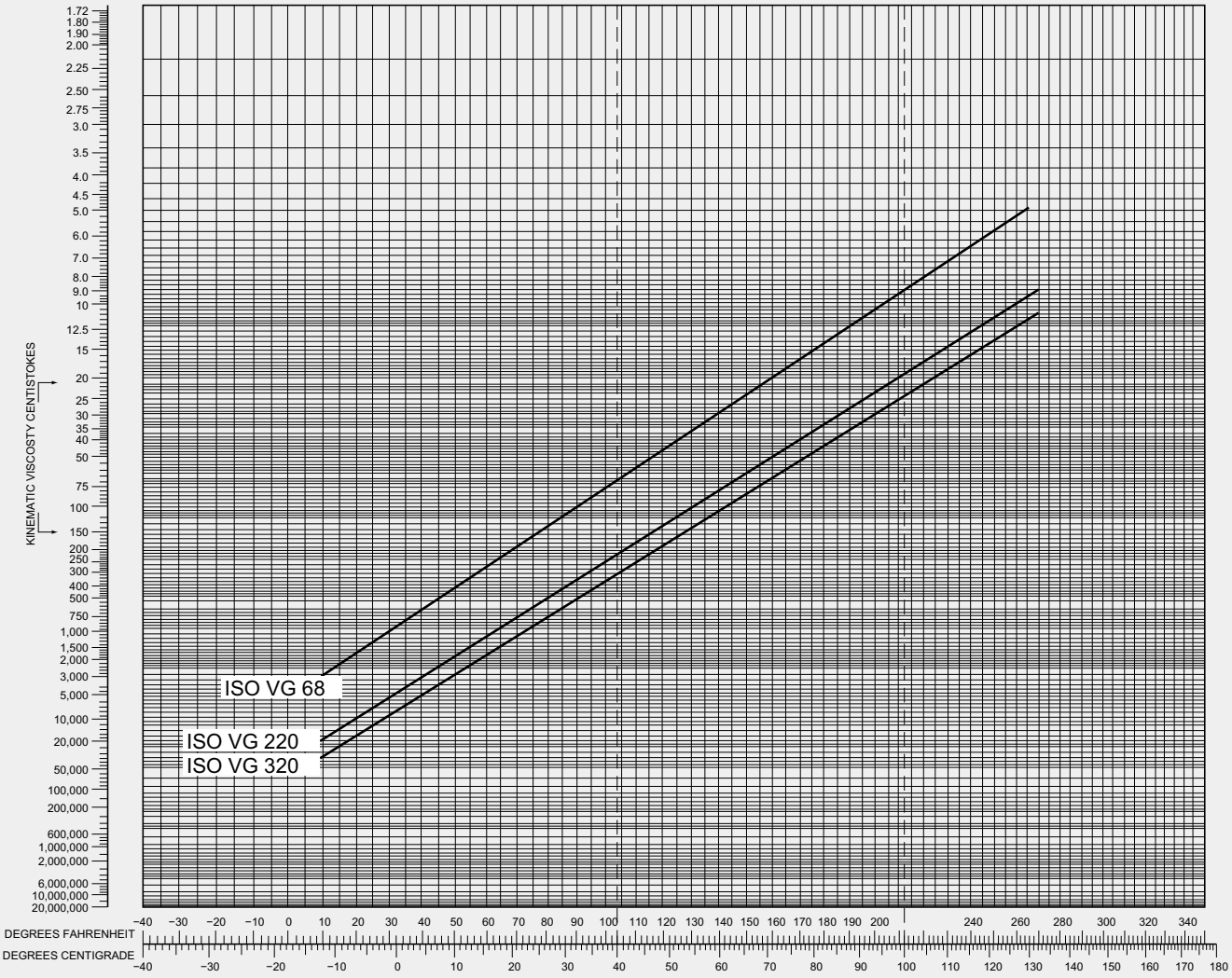
ISO = International Organization for Standardization

Grade of grease classification (JIS • K2220-1980)

Grade number (NLGI NO)	Worked penetration	Appearance
000	445 - 475	Fluid state
00	400 - 430	Semifluid state
0	355 - 385	Semifluid state
1	310 - 340	Soft
2	265 - 295	Soft
3	220 - 250	Semi hard
4	175 - 205	Semi hard
5	130 - 160	Hard
6	85 - 115	Solid

NLGI = National Lubricating Grease Institute

Viscosity-temperature Chart



SAFETY AND TROUBLE SHOOTING

Safety and trouble shooting

For oil

Pump not discharging oil

- Low oil level in reservoir — add currently used oil
- Clogged suction filter — clean or change oil filter and clean reservoir
- Check for incorrect oil — if not correct, purge complete system, clean reservoir and fill with correct oil
- Motor turns in wrong direction — check motor wiring
- Damaged tubing within the pump — fix or replace
- By-pass valve out of adjustment — adjust by-pass valve
- Check inlet and outlet check valve — disassemble and clean
- Note: Never add a check valve to a pump that was not originally intended.

No pressure increase in the main line

- Check for broken Tubing or leaking fittings — Replace as needed.
- Ball seat of relief valve is clogged — clean relief valve
- Air in tubing — check for leaks, open system at furthest point and run pump to remove air
- Improper selection of control unit or flow unit — check manufacturers recommendation and replace with correct unit
- Improper pressure setting (gear pump) — adjust by-pass setting
- Damaged “O”ring on the piston (piston pump) — replace
- Oil leaking from junction — tighten fitting properly or replace tube fitting

Air in system

- Oil level in the reservoir is too low — fill with correct oil and follow above procedure for removing air
- Damaged tubing — replace damaged tubing

No oil passing thru flow or control unit

- Check flow direction on hex of flow or control unit — if incorrect, replace with correct unit
- Check for clogged unit — replace unit

The pump is not running, but light is on (if equipped)

- Motor is wired wrong — check motor wiring
- Circuit protector is in off position — press reset button

Trouble indication light is on (if equipped)

- Discharge time is set too short, pump is not reaching proper pressure — check time setting
- The oil level switched because of low oil level — fill reservoir with correct oil

Reservoir has proper oil level, but oil level warning is on

- Mistake on A, B contacts of oil level switch — consult with us

Cannot turn off trouble light (if equipped)

- Reset button has not been pressed — press the reset button
- Oil has not been added to reservoir — fill reservoir with correct oil
- Pump did not reach the specified pressure — consult with us

For grease

No grease coming out of the pump

- Low grease level — change grease cartridge
- Change in grease consistency, too thick to pump — check grease grade and temperature
- Only sucks air — Crack air bleeding plug to purge air from pump
- Motor turns in wrong direction — check motor wiring connections
- Solenoid (if equipped) not actuating — Replace solenoid and confirm wiring polarity is correct.

No pressure rise in the main line

- Relief valve is dirty — clean relief valve
- Air in tubing — loosen closure plug at the furthest point and run the pump to expel the air
- Check for incorrect connections in the system — repair any problems
- Tubing damage — repair or replace damaged tubing

No grease coming out of the valves

- Pressure relief valve is not working — for EGH model (manual relief) check valve position, for automatic relief model — check valve
- Valve is clogged — repalce the valve
- The secondary line (from valve to bearing) has no grease in it — fill with grease at initial installation

Air in main line

- Air coming from suction side — low grease level in the reservoir, fill reservoir with correct grade of grease
- Tubing damage — repair or replace tubing

Pump is not running, but indication light is on

- Wrong wiring connections — check motor wiring
- Circuit protector is in off position — press the reset button

Trouble indication light is on

- Pump on time is not set correctly — check discharge setting
- Grease level is too low — change cartridge grease

Can not turn off the trouble indication light

- Reset button has not been pressed — press the reset button

Tightening torque table

Table 21

	Mark	Product combination	Number of rotations after "hand tightening"	Tourque N·m	Number of rotations after hitting a sheet side
4mm Compression Bushing for piping	A	Nylon tubing (with tube insert.) Aluminum-pipe	2/3	3.4	1/6 - 1/4
	B	Copper pipe, Steel Pipe	2/3	3.9	1/6 - 1/4
6mm Compression Bushing for piping	C	Nylon tubing (with tube insert.)	2/3	3.4	1/6 - 1/4
	D	Copper pipe, Steel Pipe	2/3	3.9	1/6 - 1/4
8mm Compression Bushing for piping	E	Nylon tubing (with tube insert.)	2/3	6.9	1/6 - 1/4
	F	Copper pipe	2/3	11.8	1/6 - 1/4
	G	Steel pipe	2/3	13.7	1/6 - 1/4
4mm Compression Nut for piping	H	Nylon tubing (with tube insert.)	2/3	2.5	1/6 - 1/4
	I	Copper pipe	2/3	2.9	1/6 - 1/4
	J	Steel pipe	2/3	3.9	1/6 - 1/4
6mm Compression Nut for piping	K	Nylon tubing (Tube Insert is entered.)	2/3	4.9	1/6 - 1/4
	L	Copper tubing, Steel tubing	2/3	5.9	1/6 - 1/4
Flow unit	Q	Junctions	1/2	5.9 - 7.8	1/6 - 1/4
SP valve	R	Sealing washer SW iron and aluminium (Plug)	1/6	9.8	—
	S	Outlet check, straight adapter (dischagre port); With compression sleeves	2/3	9.8	—
Others	T	Tubing parts (Rc 1/8); zinc, aluminium, brass and iron, brass	2.5 - 3	6.9	—
	U	Tubing parts (Rc 1/8); iron and iron	1	8.8	—
	V	φ6 high pressure fitting, fitting body and nut sleeve, steel tubing	1.25	19.6	—
	W	φ8 high pressure fitting, fitting body and nut sleeve, steel tubing	1.25	29.4	—

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