



# Lubrication Equipment

Series	Application	Port Size	Bowl capacity (cm <sup>3</sup> )	Applicable oil viscosity (cSt <sup>(3)</sup> (40°C))	Option	Page
<b>Lubricator</b> <b>AL1000-6000</b>	Individual lubrication	M5 to 1	<sup>(1)</sup> 130 1,000	32	Bracket 1,000cm <sup>3</sup> Tank Float switch	1.17-2
<b>Large flow lubricator</b> <b>AL800, 900</b>	Individual lubrication	1 1/4 to 2	500 1,000	32	1,000cm <sup>3</sup> Tank Float switch	1.17-8
<b>Auto Feed Lube</b> <b>ALF400-900</b>	With auto lubrication function	1/4 to 2	<sup>(2)</sup> 5,000 9,000	32	Bracket Auto feed tank Float switch	1.17-11
<b>DP Lube</b> <b>ALD600, 900</b> <b>DP Lube unit</b> <b>ALDU600, 900</b>	Centralized multiple lubrication	3/4 to 2	2,000 5,000	32	Bracket Bracket panel (ALDU) Float switch	1.17-16
<b>Booster Lube</b> <b>ALB900</b>	Centralized multiple lubrication No pressure differential style	1, 2, 3	5,000	32	Float switch	1.17-20

Note 1) AL1000 = 7cm<sup>3</sup>, AL2000 = 25cm<sup>3</sup>, AL3000 = 50cm<sup>3</sup>

Note 2) Bowl capacity of auto feed tank

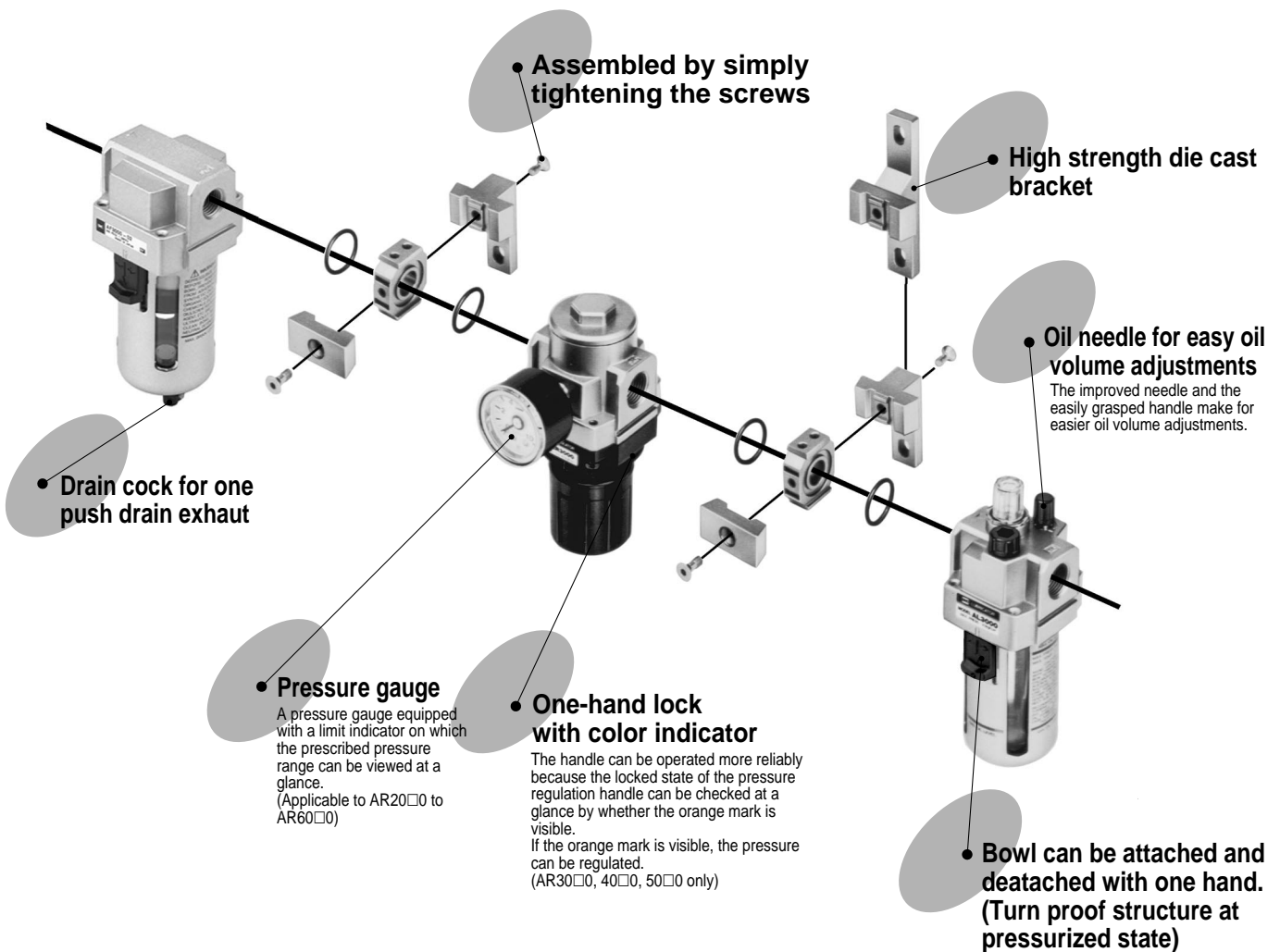
Note 3) cSt = Centistoke

## Lubricator/Modular style

# AL1000 to 6000

Possible to combine with a modular style air filter or regulator

Individual lubrication



AC

AV

AU

AF

AR

IR

VEX

AW

AMR

AWM

AWD

ITV

VBA

VE

VY

G

AL

# AL1000 to 6000

## Standard Specifications

Model	AL1000	AL2000	AL3000	AL4000	AL4000-06	AL5000	AL6000
Port Size	M5 X 0.8	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1
Fluid	Air						
Proof pressure	1.5MPa						
Max. operating pressure	1.0MPa						
Min. operating flow (ℓ/min (ANR)) <sup>(1)</sup>	4	15	1/4: 30 3/8: 40	1/4: 30 3/8: 40 1/2: 50	50	190	220
Bowl capacity (cm <sup>3</sup> )	7	25	50	130	130	130	130
Recommended oil	Turbine oil class 1 (ISO VG32)						
Ambient and fluid temperature	-5 to 60°C (No freezing)						
Bowl material	Polycarbonate						
Weight (kg)	0.07	0.22	0.28	0.52	0.58	1.08	1.19
Accessory (Standard)	Bowl guard	—	—	●	●	●	●


Note 1) Conditions: Primary pressure = 0.5MPa, Number of drops = 5/min, Turbine oil class 1 (ISO CG32), Needle stud fully open.  
● Refer to air consumption for min. operating flow.

## Accessory (Options) Part No.

Description	Model	Part No.						
		AL1000	AL2000	AL3000	AL4000	AL4000-06	AL5000	AL6000
Bracket assembly <sup>(1)</sup>		—	B240A	B340A	B440A	B540A	B640A	B640A

Note 1) With bracket mounting screw (2 pcs.) \*B640A for 1000cm<sup>3</sup> tank (AL3000 to AL6000)

## How to Order



AL3000  
AL2000

**AL 30 00** — **03** — **23**

• **Lubricator**

Body size	Thread
10 M5	— Rc(PT)
20 1/8	N NPT
30 3/8	F G(PF)
40 1/2	
50 3/4	
60 1	

• **Accessory**

Symbol	Description	Model
—	—	—
B	With bracket	AL2000 to AL6000

• **Port size**

M5	M5 X 0.8
01	1/8
02	1/4
03	3/8
04	1/2
06	3/4
10	1

• **Options**

1	1000cm <sup>3</sup> tank (AL3000 to AL6000)
10	1000cm <sup>3</sup> tank with switch (Bottom limit ON)
11	1000cm <sup>3</sup> tank with switch (Bottom limit OFF)
2	Metal bowl
3	With drain cock
6	Nylon bowl (Including sight glass)
8	Metal bowl with level gauge (AL3000 to AL6000)
C	With bowl guard (Only AL2000)
R	Flow direction: Right to left
3W	With drain cock and barb fitting (ø6, ø4 for nylon) (AL3000 to AL6000)

When specifying more than one option, please list alphabetically.  
(Example) 23R

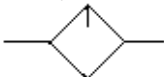
## Option Combinations

◎ Available    ◻ Not available    ○ Depends on model

Accessories, options	Symbol	Options										Applicable lubricator model			
		1	10	11	2	3	6	8	C	R	3W	AL1000	AL2000	AL3000	AL4000 to AL6000
1000cm <sup>3</sup> tank	-1										◎			◎	◎
1000cm <sup>3</sup> tank (With SW) Bottom limit ON	-10										◎			◎	◎
1000cm <sup>3</sup> tank (With SW) Bottom limit OFF	-11										◎			◎	◎
Metal bowl	-2				◎						◎	◎	◎	◎	◎
Lubricator with drain cock	-3				◎		◎	◎	◎	◎	◎	◎	◎	◎	◎
Nylon bowl	-6				◎				◎	◎	◎	◎	◎	◎	◎
Metal bowl with level gauge	-8				◎				◎				◎	◎	◎
With bowl guard	-C				◎				◎				◎		
Flow direction: Right to left	-R	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
One-touch drain cock with barb fitting	-3W					◎			◎				◎	◎	◎

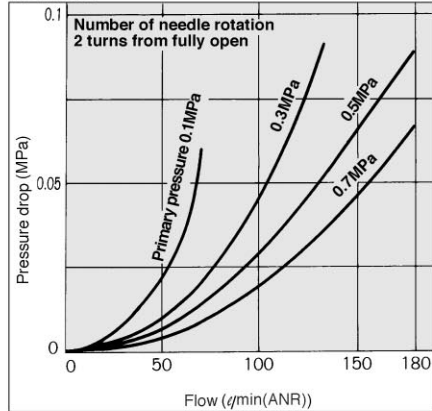
Note) -1, -10 and -11 are with metal bowl with level gauge and with drain cock.

JIS symbol

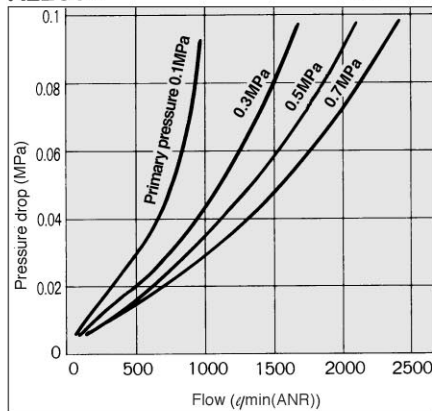


## Flow Characteristics

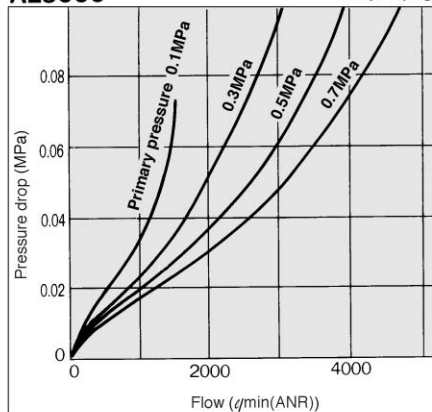
**AL1000** M5



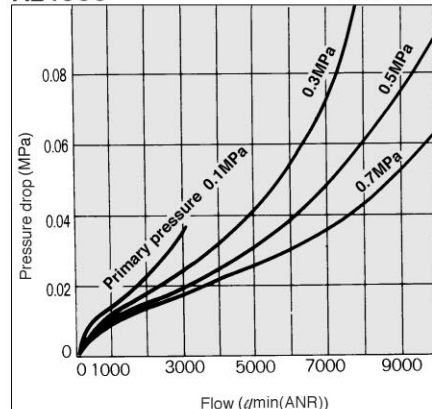
**AL2000** Rc(PT) 1/4



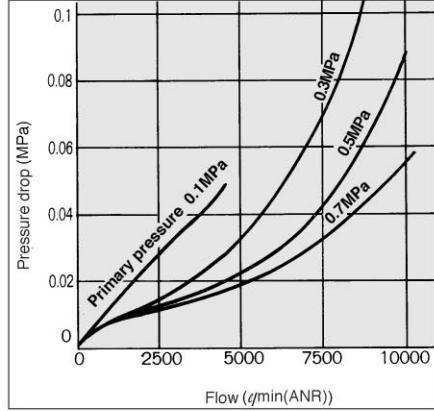
**AL3000** Rc(PT) 3/8



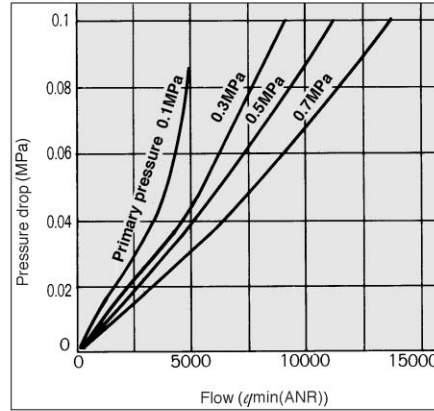
**AL4000** Rc(PT) 1/2



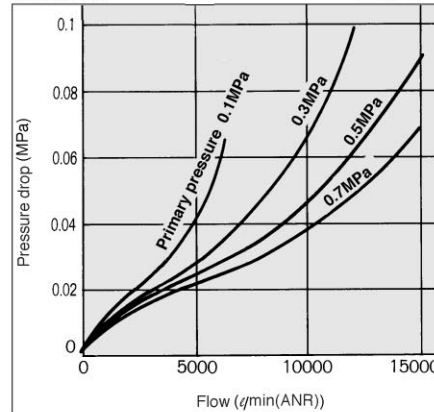
**AL4000-06** Rc(PT) 3/4



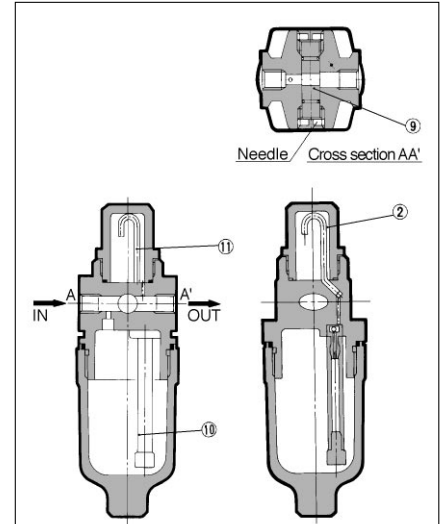
**AL5000** Rc(PT) 3/4



**AL6000** Rc(PT) 1



## Operation principles of AL1000



A portion of the air that is introduced from the IN side pressurizes the oil surface in the bowl. The remainder of the air passes through needle ⑨ and flows to the OUT side. The pressure difference that occurs at this time between the pressure in the bowl and the pressure in the sight dome ② causes the oil to pass through the oil passage pipe ⑩, to drip through siphon tube ⑪, and to the OUT side. The oil volume is adjusted by opening the needle ⑨ in front. Turning the needle clockwise increases the oil volume and turning it counterclockwise to fully open the needle stops the dripping. The needle for the side that will not be used should be kept fully open.

\*Operation principle of AL2000 to 6000 is different from AL1000.

## ⚠ Precautions

Be sure to read before handling. Refer to p.0-26 and 0-27 for Safety Instructions and common precautions on the products mentioned in this catalog, and refer to p.1.0-1 and 1.0-2 for precautions of every series.

### Selection

#### ⚠ Warning

① Air should not flow from secondary side. It damages the damper.

#### ⚠ Caution

① Use check valve (AKM series) to prevent back flow of oil at branch before lubricator.

### Maintenance

#### ⚠ Warning

① Lubrication of AL1000 and 2000 cannot be done under pressure. Lubricate after primary pressure is removed.

#### ⚠ Caution

① Check minimum operating flow once a day. If a malfunction in minimum operating flow occurs, it causes trouble with the lubrication.

AC

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AF

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VEX

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AWM

AWD

ITV

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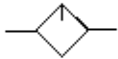
G

AL

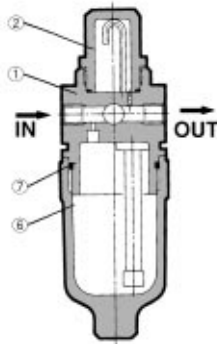
# AL1000 to 6000

## Construction

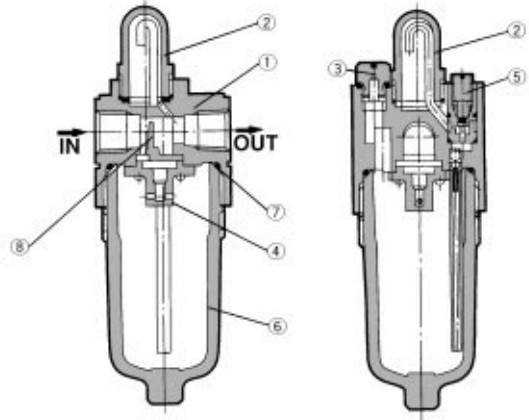
JIS Symbol



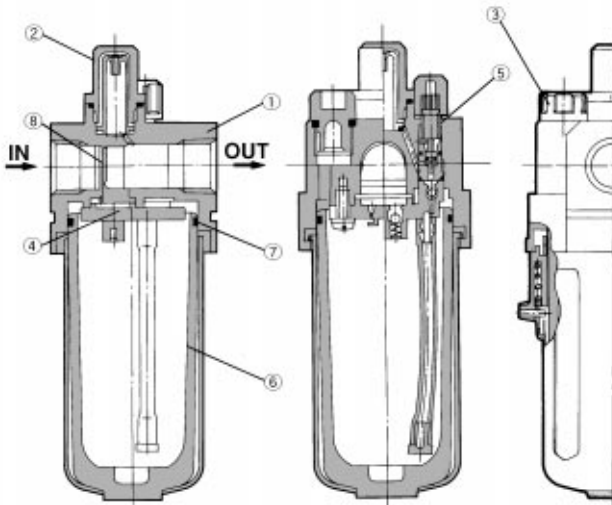
AL1000



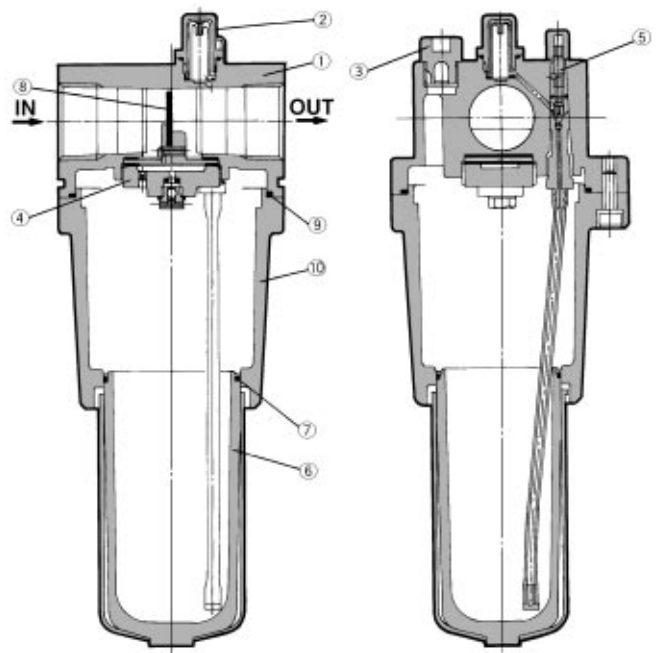
AL2000



AL3000/4000



AL5000/6000



### Component parts

No.	Description	Material			Note
		AL1000/2000	AL3000/4000/4000-06	AL5000/6000	
①	Body	Zinc die cast	Aluminum die cast		Painted silver
⑩	Housing	—	—	Aluminum die cast	Painted silver

### Replacement parts

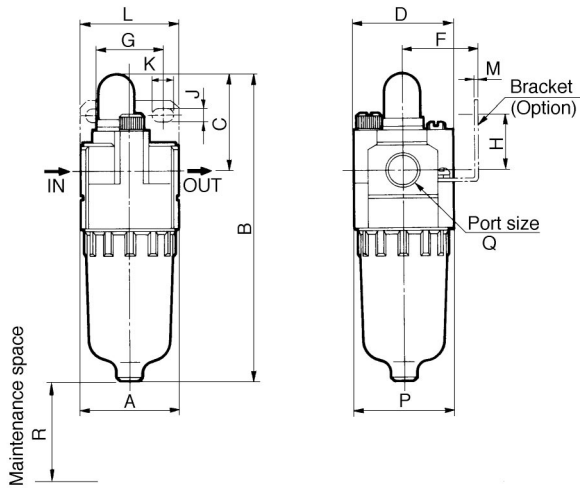
No.	Description	Material	Part No.						
			AL1000	AL2000	AL3000	AL4000	AL4000-06	AL5000	AL6000
②	Sight dome assembly	Polycarbonate	12132	12316	12155A	12155A	12155A	12155A	12155A
③	Lubrication plug assembly	—	—	122962A	12159A	12164A	12164A	12164A	12164A
④	Damper retainer assembly	—	—	122953	121521A	121611A	121611A	12325A	12335A
⑤	Needle stud assembly	—	—	12297PA	121522A	121522A	121616A	121616A	121616A
⑥	Bowl assembly <sup>(1)</sup>	—	C100L	C200L	C300L	C400L	C400L	C400L	C400L
⑦	Bowl O ring	NBR	111325	11297	111512	111636	111636	111636	111636
⑧	Damper assembly	Synthetic resin	—	122933 -2 <sup>(1/4)</sup> -1 <sup>(1/8)</sup>	12158 -2 <sup>(3/8)</sup> -1 <sup>(1/4)</sup>	12165 -2 <sup>(1/2)</sup> -1 <sup>(3/8)</sup> 121623 <sup>(1/4)</sup>	12165-2	123210A	123310A
⑨	Housing O ring	NBR	—	—	—	—	—	111710	11189

Note 1) Bowl assembly of AL3000 to AL6000 includes bowl guard (material: SPCE).

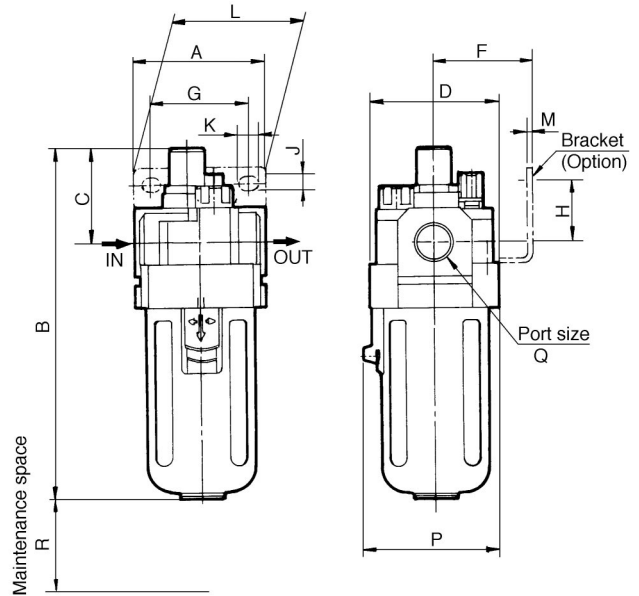
# Lubricator/Modular style *AL1000 to 6000*



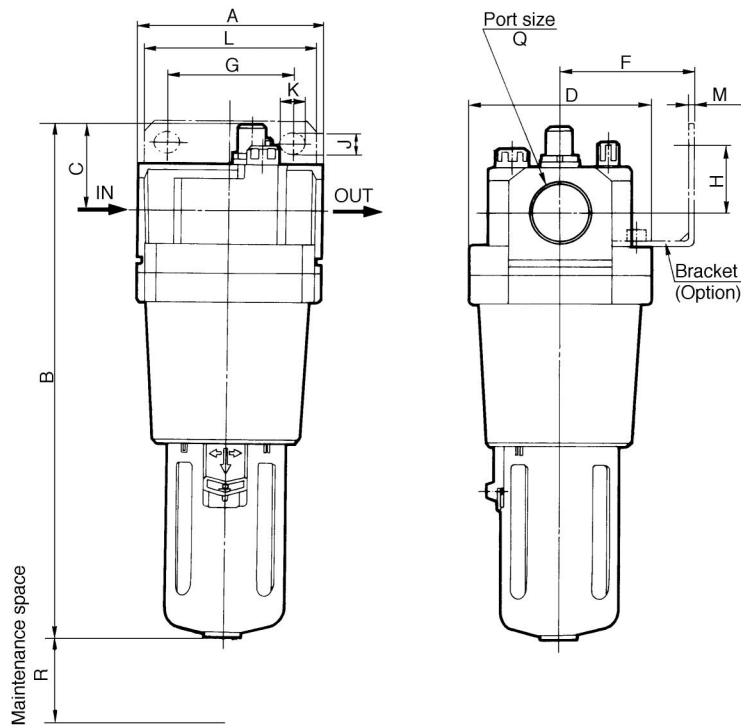
## AL1000/2000



## AL3000/4000



## AL5000/6000



- AC
- AV
- AU
- AF
- AR
- IR
- VEX
- AW
- AMR
- AWM
- AWD
- ITV
- VBA
- VE
- VY
- G
- AL**

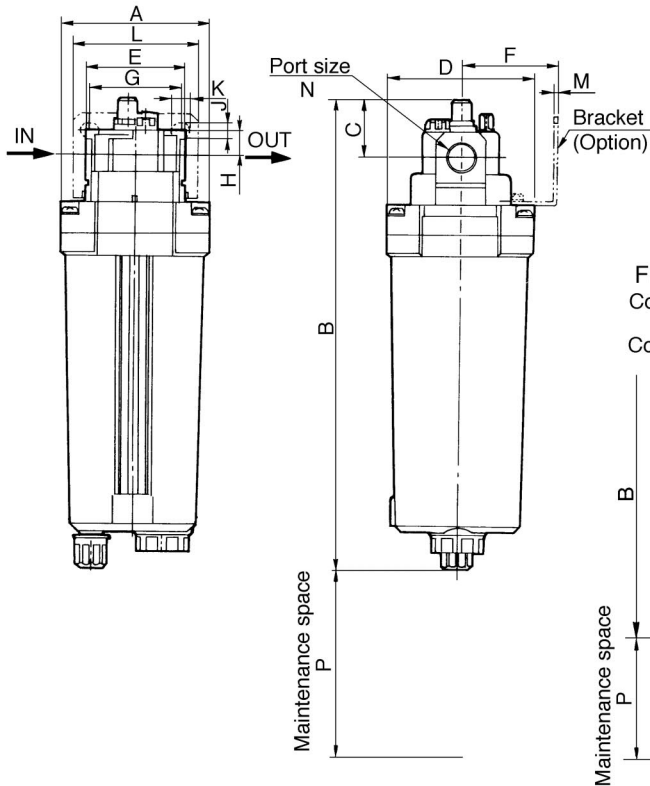
Model	Port size Q	A	B	C	D	Bracket mounting dimensions							P	R
						F	G	H	J	K	L	M		
AL1000	M5 X 0.8	25	81.5	25.5	25	—	—	—	—	—	—	—	27	50
AL2000	1/8, 1/4	40	122	38	40	30	27	22	5.4	8.4	40	2.3	40	80
AL3000	1/4, 3/8	53	142	38	53	41	40	23	6.5	8	53	2.3	56	95
AL4000	1/4, 3/8, 1/2	70	177	41	70	50	54	26	8.5	10.5	70	2.3	73	120
AL4000-06	3/4	75	177	39	70	50	54	25	8.5	10.5	70	2.3	73	120
AL5000	3/4, 1	90	254	45	90	70	66	35	11	13	90	3.2	—	120
AL6000	1	95	268	45	95	70	66	35	11	13	90	3.2	—	120

AL1000	—————	SAC1000, #3	AL4000-06	—————	SAC4006, #3
AL2000	—————	SAC2000, #3	AL5000	—————	SAC5000, #3
AL3000	—————	SAC2503, #3	AL6000	—————	SAC6000, #3
AL4000	—————	SAC4000, #3			

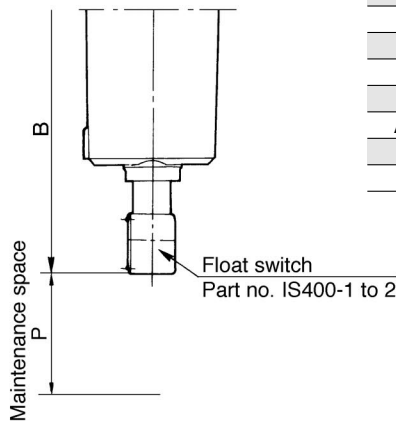
# AL1000 to 6000

## Dimensions

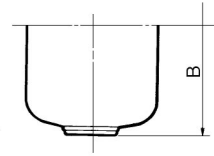
### Option specifications/1000cm<sup>3</sup> tank



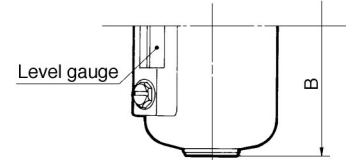
Float switch  
 Contact point capacity: AC: 15VA  
 DC: 15W  
 Contact point construction: 1a, 1b



### Metal bowl



### Metal bowl with level gauge



Model	Metal bowl	Metal bowl with level gauge
	B	B
AL1000	81.5	—
AL2000	122	—
AL3000	142	162
AL4000	177	197
AL4000-06	177	197
AL5000	254	274
AL6000	268	288

Model	Port size N	A	B*	C	D	E	Bracket mounting dimensions							P
							F	G	H	J	K	LL	M	
AL3000-□02 to 03-1	1/4, 3/8	106	324(374)	38	106	53	70	66	25	11	13	90	3.2	210
AL4000-□02 to 04-1	1/4, 3/8, 1/2	106	334(384)	41	106	70	70	66	18	11	13	90	3.2	210
AL4000-□06-1	3/4	106	334(384)	39	106	75	70	66	16	11	13	90	3.2	210
AL5000-□06 to 10-1	3/4, 1	106	336(386)	45	106	90	70	66	35	11	13	90	3.2	210
AL6000-□10-1	1	106	336(386)	45	106	95	70	66	35	11	13	90	3.2	210

\*( ): With float switch

# Large Flow Lubricator

# Series AL800/900

Individual lubrication  
Large flow style



AL800

AL900

JIS Symbol



## Standard Specifications

Model	AL800	AL900
Port size	1 1/4 1 1/2	2
Fluid	Air	
Proof pressure	1.5MPa	
Max. operating pressure	1.0MPa	
Min. operating flow (ℓ/min (ANR)) <sup>(1)</sup>	1 1/4: 460 1 1/2: 650	1800
Bowl capacity (cm <sup>3</sup> )	440	
Recommended oil	Turbine oil class 1 (ISO VG32)	
Ambient and fluid temperature	-5 to 60°C (No freezing)	
Bowl material	Polycarbonate	
Weight (kg)	1.62	1.67
Accessory (Standard)	Bowl guard	●



Note 1) •Conditions: Primary pressure = 0.5Mpa, Number of drop = 5 drops/min, Turbine oil class 1 (ISO VG32), Temperature=20°C, Needle fully open  
•Use consumption air flow for operating minimum flow.

## How to Order

**AL 80 0** — **12** — **23** — **R**

• **Lubricator**

• **Body size**

80	1 1/2
90	2

• **Port size**

12	1 1/4
14	1 1/2
20	2

• **Thread**

-	Rc(PT)
N	NPT
F	G(PF)

• **Options**

1	1000cm <sup>3</sup> tank
1S-1	1000cm <sup>3</sup> tank with switch (Bottom limit ON)
1S-2	1000cm <sup>3</sup> tank with switch (Bottom limit OFF)
2	Metal bowl
3	With drain cock
6	Nylon bowl (Including sight glass)
8	Metal bowl with level gauge

• **Optional specification**

R	Flow direction: Right to left
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• When specifying more than one option, please list alphabetically.  
(Example) 23-R

## Option Combinations

◎ Available □ Not available

Accessory, options	Symbol	Options								
		1	1S-1	1S-2	2	3	6	8	R	
1000cm <sup>3</sup> tank	-1									◎
1000cm <sup>3</sup> (With switch) Bottom limit ON	-1S-1									◎
1000cm <sup>3</sup> (With switch) Bottom limit OFF	-1S-2									◎
Metal bowl	-2					◎				◎
Lubricator with drain cock	-3				◎			◎	◎	◎
Nylon bowl	-6					◎				◎
Metal bowl with level gauge	-8					◎				◎
Flow direction: Right to left	-R	◎	◎	◎	◎	◎	◎	◎	◎	◎



Note) -1, -1S-1 and -1S-2 are with metal bowl with level gauge and with drain cock.

AC

AV

AU

AF

AR

IR

VEX

AW

AMR

AWM

AWD

ITV

VBA

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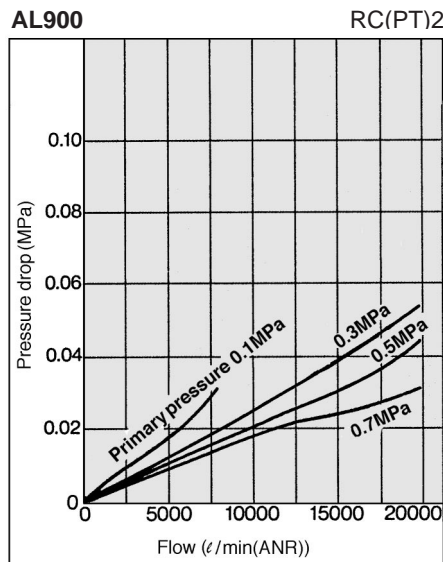
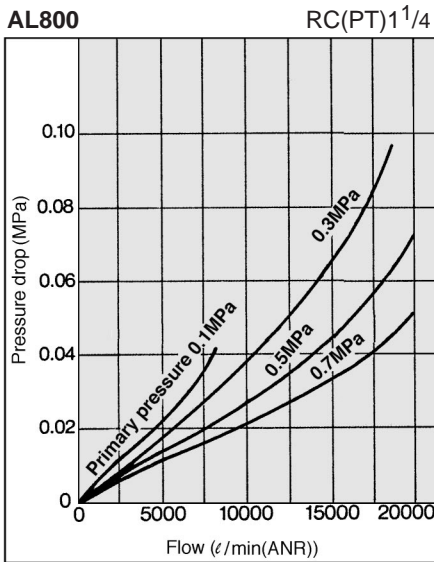
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AL



# AL800/900

## Flow Characteristics



## ⚠ Precautions

Be sure to read before handling. Refer to p.0-26 and 0-27 for Safety Instructions and common precautions on the products mentioned in this catalog, and refer to p.1.0-1 and 1.0-2 for precautions on every series.

### Selection

### ⚠ Warning

① Air should not flow from secondary side. It damages the damper.

### Maintenance

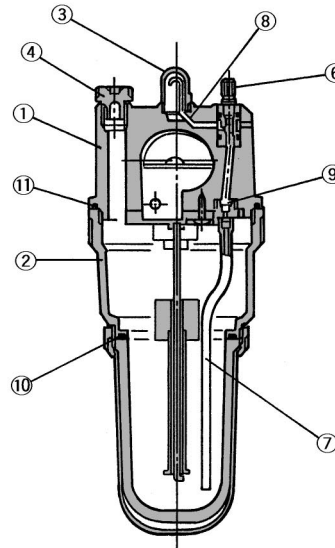
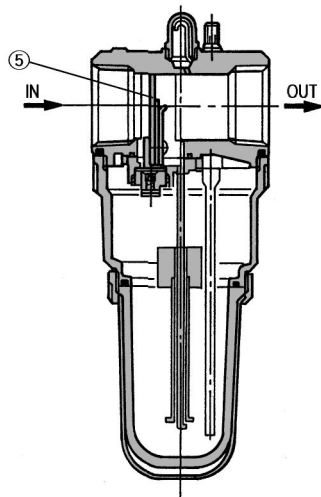
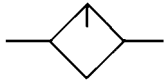
### ⚠ Caution

① Check minimum operating flow once in a day. If malfunction in minimum operating flow occurs, it causes trouble with lubrication.

## Construction

JIS Symbol

AL800/900



### Component parts

No.	Description	Material		Note
		AL800	AL900	
①	Body	Aluminum die cast	Aluminum cast	Painted silver
②	Housing	Aluminum die cast		Painted silver

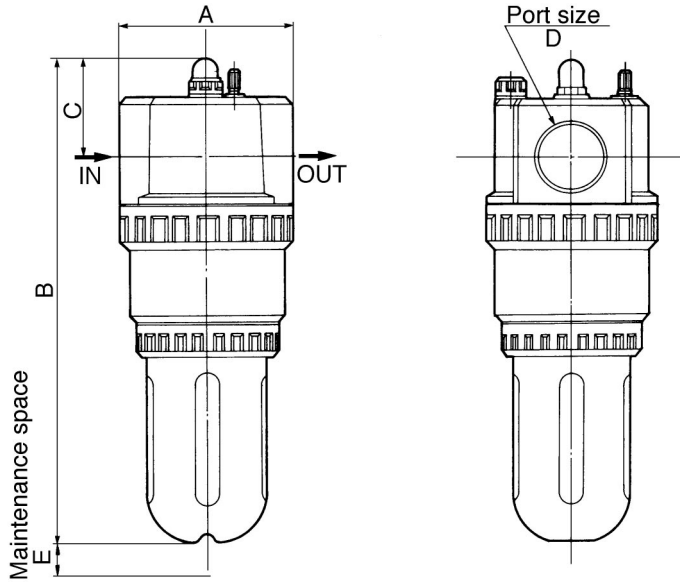
### Replacement parts

No.	Description	Material	Part No.	
			AL800	AL900
③	Sight dome	—	12316	12316
④	Lubrication plug assembly	—	12314AP	12314AP
⑤	Damper assembly	—	123417A (1 <sup>1</sup> / <sub>4</sub> ) 123416A (1 <sup>1</sup> / <sub>2</sub> )	12356A
⑥	Needle stud assembly	—	123128PA	123128PA
⑦	Siphon tube assembly	—	123321A	123321A
⑧	Sight dome assembly	Urethane resin	12318	12318
⑨	Siphon tube nut seal	Urethane resin	123111	123111
⑩	Bowl O ring	NBR	113136	113136
⑪	Housing O ring	NBR	JIS B2401G90	JIS B2401G90

# Large Flow Style Lubricator **AL800/900**

## Dimensions

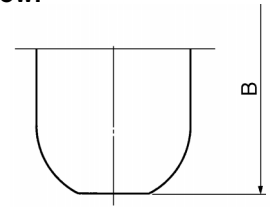
### AL800/900



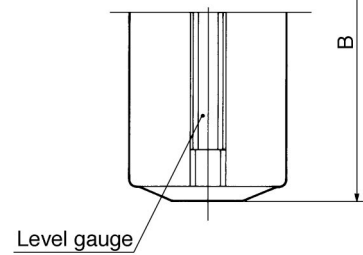
Model	Port size D	A	B	C	E
AL800	1 1/4 / 1 1/2	100	283	59	125
AL900	2	100	288	63	125

## Option Specifications

### Metal bowl

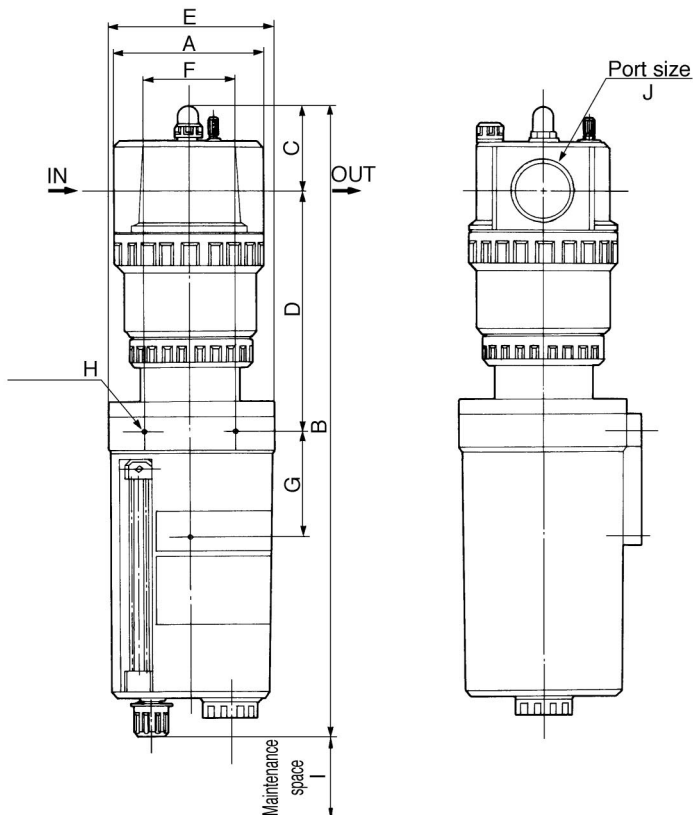


### Metal bowl with level gauge



Model	Metal bowl	Metal bowl with level gauge
	B	B
AL800	275	307
AL900	280	312

## Option Specifications/1000cm<sup>3</sup> Tank

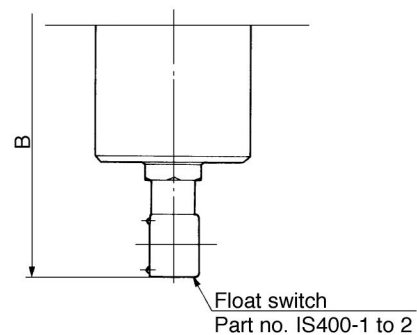


Model	Port size J	A	B*	C	D	E	F	G	H	I
AL800-12 to 14-1	1 1/4 / 1 1/2	100	431(481)	59	166	ø117	60	73	3-M5 X 0.8 X 6	230
AL900-20-1	2	100	437(487)	63	162	ø117	60	73	3-M5 X 0.8 X 6	230

\*( ) With float switch

### Float switch

Contact point capacity: AC: 15VA, DC: 15W  
Contact point construction: 1a, 1b



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AL

# Auto Feed Lube

# ALF400 to 900

## Standard Specifications

Model	Auto Feed Lube						Auto Feed Tank			
	ALF400	ALF400-06	ALF500	ALF600	ALF800	ALF900	ALT-5	ALT-5-IS- <sup>1</sup> / <sub>2</sub>	ALT-9	ALT-9-IS- <sup>1</sup> / <sub>2</sub>
Port size	<sup>1</sup> / <sub>4</sub> <sup>3</sup> / <sub>8</sub> <sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>4</sub>	<sup>3</sup> / <sub>4</sub> 1	1	<sup>1</sup> / <sub>4</sub> <sup>1</sup> / <sub>2</sub>	2	AIR: <sup>1</sup> / <sub>4</sub> OIL: <sup>3</sup> / <sub>8</sub>			
Fluid	Air									
Proof pressure	1.5MPa									
Max. operating pressure	0.7MPa						1.0MPa			
Operating pressure <sup>(1)</sup> differential range	0.1 to 0.6MPa						—			
Vibration resistance {Differential pressure 0.3MPa }	1G(9.81m/sec <sup>2</sup> ) or less						—			
Min. operating flow ( $\ell$ /min (ANR)) <sup>(2)</sup>	<sup>1</sup> / <sub>4</sub> : 65 <sup>3</sup> / <sub>8</sub> : 100 <sup>1</sup> / <sub>2</sub> : 120	120	190	220	<sup>1</sup> / <sub>4</sub> : 460 <sup>1</sup> / <sub>2</sub> : 650	1800	—			
Bowl capacity (cm <sup>3</sup> ) (Capacity between levels) <sup>(3)</sup>	—						5000 (4400)	5000 (3400)	9000 (7800)	9000 (6000)
Recommended oil	Turbine oil class 1 (ISOVG32)									
Ambient and fluid temperature	-5 to 60°C (No freezing)									
Bowl material	Polycarbonate						Metal (Steel tubing for machine construction)			
Weight (kg)	0.85	0.88	1	1.15	1.85	1.9	12.6	13.2	26.0	26.6
Accessory (Standard) Bowl guard	●	●	●	●	●	●	—			



Note 1) Tank pressure is the pressure of Auto Feed Tank and line pressure is the pressure of Auto Feed Lube

Note 2) Conditions: Primary pressure 0.5MPa, 5 drops/min, Turbine oil class 1 (ISO VG32), Temperature 20°C, Needle fully open.

Use air consumption rate for minimum operating flow.

Note 3) Capacity between levels; in case of float switch equipped model, the capacity is measured in levels between the level gauge upper limit and the lower limit of the float switch detective range.

The problem of running out of oil is prevented because the oil is fed automatically. This system makes lubrication work unnecessary, thus significantly reducing the amount of maintenance labor.



ALF400



ALT-9

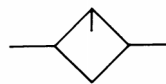
## Accessories (Options) Part No.

Description	Part No.					
	ALF400	ALF400-06	ALF500	ALF600	ALF800	ALF900
Bracket	B44P	B44-1P	<sup>1</sup> / <sub>4</sub> : B45-1P <sup>1</sup> / <sub>2</sub> : B45-2P	B46P	—	—



Note) A float switch can not be mounted on "ALT-5" or "ALT-9" afterwards.

JIS Symbol  
Auto Feed Lube



Auto Feed Tank



## How to Order

〈Auto Feed Lube〉

**ALF 40 0 - 02**

Auto Feed Lube

Body size

40	1/2
50	3/4
60	1
80	1 1/2
90	2

Port size

02	1/4
03	3/8
04	1/2
06	3/4
10	1
12	1 1/4
14	1 1/2
20	2

Thread

-	Rc (PT)
N	NPT
F	G (PF)

Option

Symbol	Description	Applicable model
-	-	-
B	W/ bracket	ALF400 to 600

〈Auto Feed Tank〉

**ALT 5 IS-1**

Auto Feed Tank

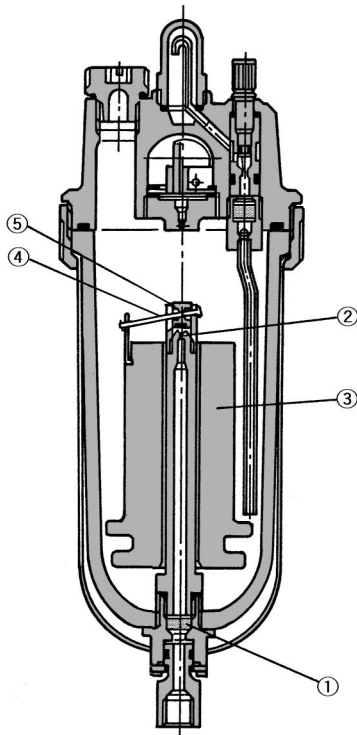
Tank capacity

5	5000cm <sup>3</sup>
9	9000cm <sup>3</sup>

Optional specification

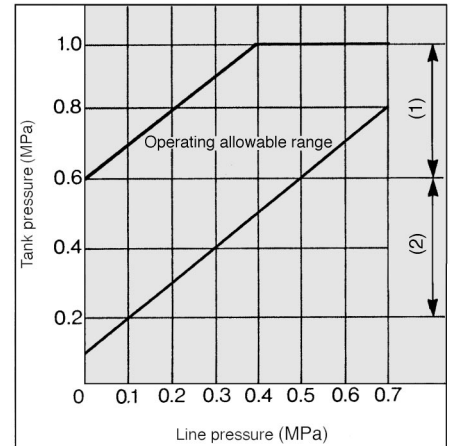
IS-1	W/ float switch (Bottom limit ON)
IS-2	W/ float switch (Bottom limit OFF)

## Operation principles/Auto feed lube



The oil that has been pumped from the tank passes through felt ① where it is filtered, and is fed into the case through nozzle ②. When the volume of oil in the case reaches a certain level, float ③ ascends, valve ⑤ descends via lever ④, nozzle ② closes, and the feeding of oil stops, thus completing the oil feeding process. When the oil in the case is consumed, float ③ descends, valve ⑤ ascends via lever ④, allowing oil to be fed from nozzle ②.

## Operating pressure range Tank and line pressure



Note 1) Tank pressure is removed when line pressure is stopped

Note 2) Tank pressure is kept same when line pressure is stopped possible to use

## ⚠ Precautions

Be sure to read before handling. Refer to p.0-26 and 0-27 for Safety Instructions and common precautions on the products mentioned in this catalog, and refer to p.1.0-1 and 1.0-2 for precautions on every series.

## Design

### ⚠ Warning

- ① The bowl and the sight dome material is polycarbonate. Therefore, this product cannot be used in an environment or location that is exposed to synthetic oils, organic solvents, chemicals, or a threadlock agent, etc., which affect the strength of polycarbonate and could cause damage to the product. Do not use in a press machine. It causes damage and malfunction.

## Selection

### ⚠ Warning

- ① Air should not flow from the secondary side. It damages the damper.
- ② Make sure that the amount of air that is necessary for the oil to drip is available because the oil might not drip if the operating air volume is insufficient.

## Mounting

### ⚠ Warning

If the line pressure is discharged, the oil could flow back if the operating pressure differential range (the difference between the tank and line pressures) exceeds 0.6MPa. Therefore, make sure to also discharge the tank pressure.

### ⚠ Caution

Install the float vertically inside the bowl so that it will not come into contact with the siphon tube to prevent the oil from dripping poorly.

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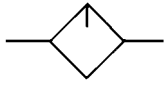
G

AL

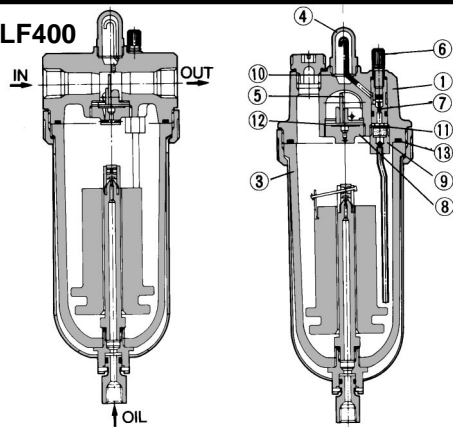
# ALF400 to 900

## Construction: Auto Feed Lube

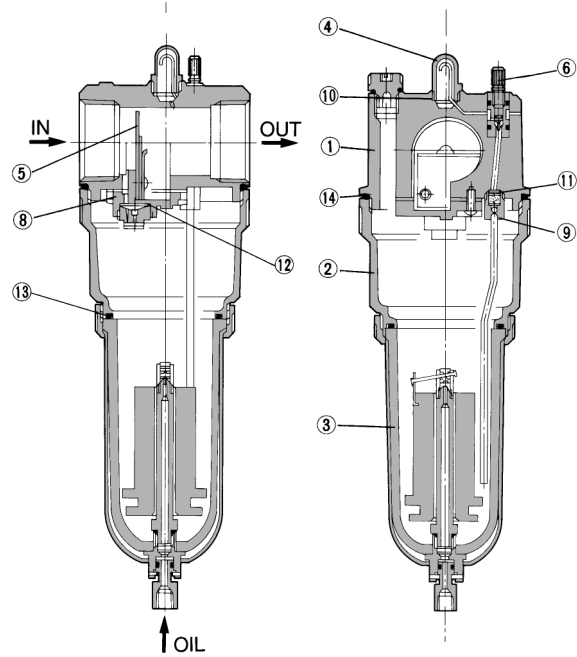
JIS Symbol



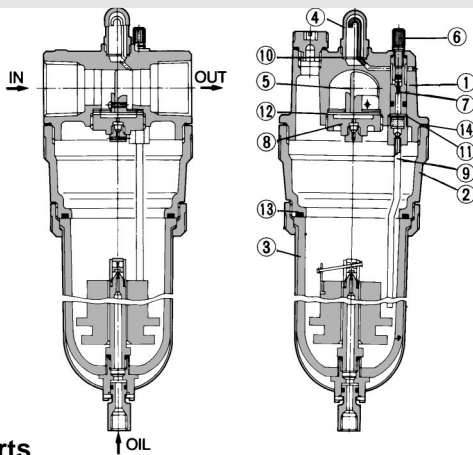
ALF400



ALF800/900



ALF500/600



### Component parts

No.	Description	Material			Note
		ALF400, 400-06	ALF500, 600	ALF800, 900	
①	Body	Aluminum die cast		Aluminum cast	Painted silver
②	Housing	—	Aluminum die cast		Painted silver

### Replacement parts

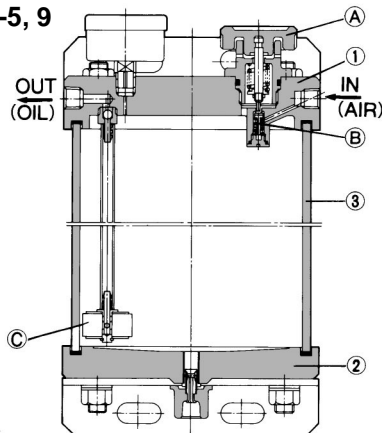
No.	Description	Material	Part No.					
			ALF400	ALF400-06	ALF500	ALF600	ALF800	ALF900
③	Auto feed	—	ALF-3	ALF-3	ALF-3	ALF-3	ALF-3	ALF-3
④	Sight dome	Polycarbonate	12316	12316	12316	12316	12316	12316
⑤	Damper assembly	—	123122-3A (1/2) 123122-2A (3/8) 123122-1A (1/4)	123122-3A	123210A	123310A	123417A (1/4) 123416A (1/2)	12356A
⑥	Needle stud assembly	—	123128PA	123128PA	123128PA	123128PA	123128PA	123128PA
⑦	Needle guide assembly	—	123129A	123221A	123292A	123314A	—	—
⑧	Retainer assembly	—	123182	123182	12325A	12335A	123032	—
⑨	Siphon tube assembly	—	124230	124230	124231	124232	124232	124232
⑩	Sight dome seal	Urethane resin	12318	12318	12318	12318	12318	12318
⑪	Siphon nut seal	Urethane resin	123111	123111	123111	123111	123111	123111
⑫	Damper retainer seal	NBR	123126	123126	123213	123313	123011	—
⑬	Bowl O ring	NBR	113136	113136	113136	113136	113136	113136
⑭	Housing O ring	NBR	—	—	JISB2401G80	JISB2401G90	JISB2401G90	JISB2401G90

## Construction: Auto Feed Tank

JIS Symbol



ALT-5, 9



### Operation the principle/Auto feed tank

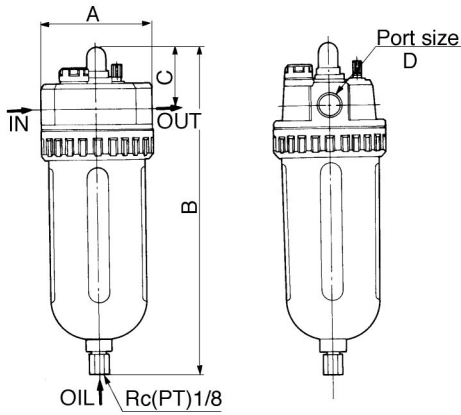
By turning cam handle A 90° clockwise, valve B opens, allowing the air that has entered from the IN side to be introduced into the tank. Due to the air pressure, the oil in the tank passes through felt C and exits from the OUT side. Turning cam handle A 90° counterclockwise stops the air from the IN side, thus stopping the feeding of the oil.

### Component parts

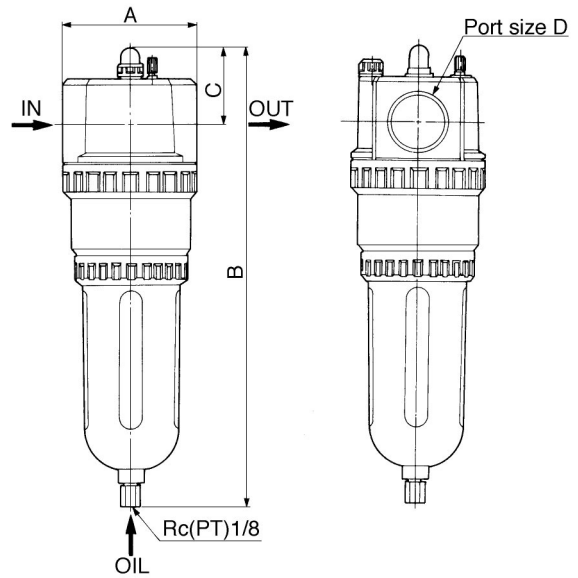
No.	Description	Material	Note
①	Top cover	Aluminum cast	Painted silver
②	Bottom cover	Aluminum cast	Painted silver
③	Bowl	STKM	Painted silver

## Dimensions: Auto Feed Lube

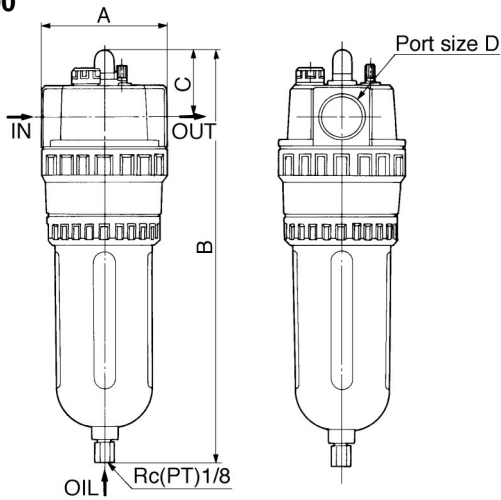
### ALF400



### ALF800/900

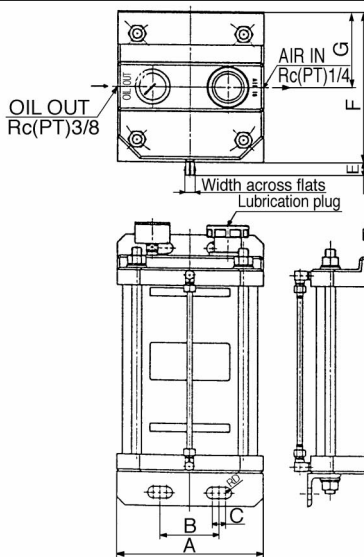


### ALF500/600



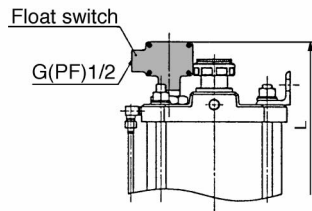
Model	Port size D	A	B	C
<b>ALF400</b>	1/4 / 3/8 / 1/2	80	238.5	44
<b>ALF400-06</b>	3/4	85	246.5	46
<b>ALF500</b>	3/4 / 1	90	295.5	48
<b>ALF600</b>	1	100	319.5	51
<b>ALF800</b>	1 1/4 / 1 1/2	100	338.5	59
<b>ALF900</b>	2	100	344.5	63

## Dimensions: Auto Feed Tank



### Float switch

Contact point capacity: AC: 15VA, DC: 15W  
Contact point construction: 1a, 1b



Model	A	B	C	D	E	F	G	H	I	J	K	L
<b>ALT-5</b>	174	70	16	7	91	106	197	24	382	414	428	—
<b>ALT-5-IS</b>	174	70	16	7	91	106	197	24	382	414	428	449
<b>ALT-9</b>	234	108	30	7	121	137	258	40	422	472	—	—
<b>ALT-9-IS</b>	234	108	30	7	121	137	258	40	422	472	—	482

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AL

# Oil Distributor VA, VB/Nylon Tubing Related Products

## Oil Distributor Series VA, VB

### How to Order



**V** **A** **4** - **6**

Oil Distributor

Applicable tube O.D.

6	ø6
---	----

Number of distribution ports

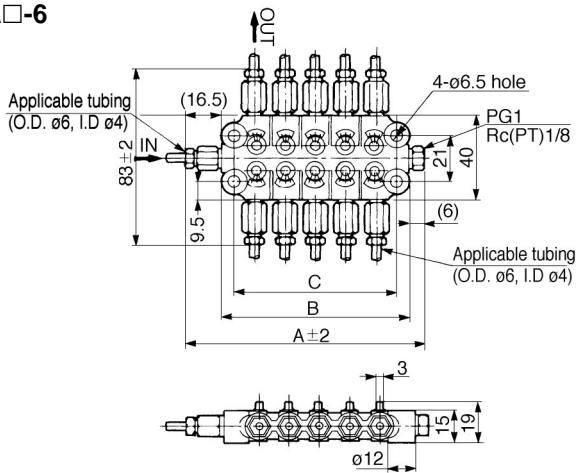
	(VA)	(VB)
4	4 ports	4 ports
6	6 ports	6 ports
10	10 ports	8 ports
16	16 ports	8 ports

Distribution

A	Both sides exhaust
B	One side exhaust

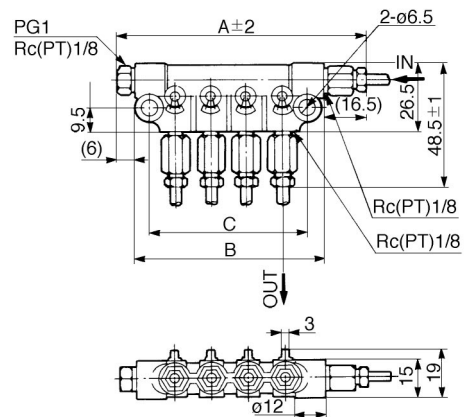
### Dimensions

#### VA□-6



Model	# Ports	A	B	C	Applicable tubing
VA4-6	4	—	36.5	—	ø6
VA6-6	6	82.5	60	48	
VA10-6	10	110.5	88	76	
VA16-6	16	152.5	130	118	

#### VB□-6



Model	# Ports	A	B	C	Applicable tubing
VB4-6	4	96.5	74	62	ø6
VB6-6	6	124.5	102	90	
VB8-6	8	152.5	130	118	

Note) Insert seal plug (PG1) into the distribution port which is not used.

## Nylon Tubing

### Specifications

Model	T0604
Max. operating pressure	1.0MPa
Burst pressure	Refer to burst pressure characteristics curve.
Min. bending radius (mm) <sup>(1)</sup>	25
Operating temperature	-20°C to 60°C
Material	Nylon 12

Note 1) The value at temp. of 20°C and with O.D. variable rate 10% max.

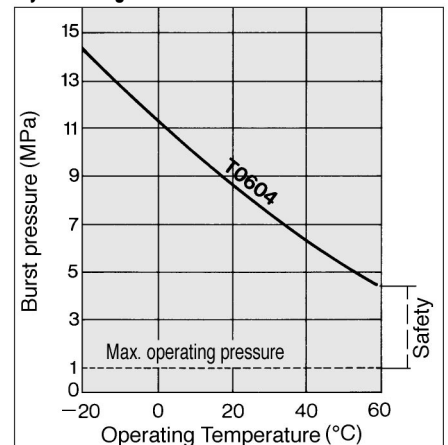
### How to Order

**T** **0604** **B** - **20**

Nylon tubing  
Tubing size  
O.D. ø6, I.D. ø4

Color	Length per roll
Symbol Color	20 20m
B Black	100 100m roll
W White	
R Red	
BU Blue	
Y Yellow	
G Green	

### Nylon tubing Burst Pressure Characteristics Curve



Max. operating pressure is 1.3 max of burst pressure at 60°C, considering the safety ratio.

D.P. Lube

# Series ALD600/900

Centralized control of multi-point lubrication

Low oil consumption volume

Simplified oil feeding volume setting in which only the pressure differential is adjusted

Oil can be replenished by merely opening and closing the oil filler plug without stopping the air line

The condition of the generation of micromist can be checked from the oil filler port



ALD600



ALDU600 (With panel)

### Float switch specifications

Voltage	200V AC, 200V DC
Max. cut off capacity	10W DC, 12V AC
Max. cut off current	0.6A AC, 0.5A DC
Contact point construction	1a, 1b
Level indication	Bottom limit indication

### Standard Specifications

Model name	D.P. Lube		D.P. Lube Unit <sup>(1)</sup>	
	Model	ALD600	ALD900	ALDU600
Port size Rc(PT) <sup>(2)</sup>	$\frac{3}{4}$ 1	$1\frac{1}{4}$ $1\frac{1}{2}$ 2	$\frac{3}{4}$ 1	$1\frac{1}{4}$ $1\frac{1}{2}$ 2
Fluid	Air			
Proof pressure	1.5MPa			
Operating pressure range	0.1 to 1.0MPa		0.15 to 1.0MPa	
Operating press. differential range	0.03 to 0.1MPa			
Recommended press. differential	0.05MPa			
Press. differential setting min. flow <sup>(3)</sup>	102 $\ell$ /min (ANR)			
Bowl capacity between levels	2000	5000	2000	5000
Recommended oil	Turbine oil class 1 (ISO VG32)			
Ambient and fluid temperature	5 to 60°C			
Bowl material	Epoxy resin with glass fiber, Polycarbonate			
Weight (kg)	8.9	21.3	11.1(18.6) <sup>(4)</sup>	31.6(48.1) <sup>(4)</sup>



Note 1) D.P. Lube unit has an attached filter at primary side of D.P. Lube.

Note 2) Port of D.P. Lube unit is union.

Note 3) Condition: Primary pressure = 0.5MPa, Pressure differential = 0.05MPa

Note 4) ( ) is weight with panel.

### Accessory (Options) Part No.

Description	Model	Part No.			
		ALD600	ALD900	ALDU600	ALDU900
Bracket		126130P	126044P	126130P	126044P 113449 <sup>(1)</sup> 113543 <sup>(2)</sup>
Panel		—	—	12661P	12651-1P
Flow switch		IS430-1 to 2	IS420-1 to 2	IS430-1 to 2	IS420-1 to 2



Note 1) Bracket for filter mounting: For Rc(PT) $1\frac{1}{4}$ ,  $1\frac{1}{2}$  } Thread machining on filter body is needed.

Note 2) Bracket for filter mounting: For Rc(PT)2

### How to Order

**ALD 9 00 — [ ] 20 B — S1**

- Style**

ALD	D.P. Lube (Single unit)
ALDU	D.P. Lube unit
- Body size**

6	1B
9	2B
- Thread**

—	Rc(PT)
N	NPT
F	G(PF)
- Port size**

06	$\frac{3}{4}$
10	1
12	$1\frac{1}{4}$
14	$1\frac{1}{2}$
20	2
- Option**

—	—
B	Bracket
P	Panel
- Float switch**

—	None
S1	1b (Without oil ON)
S2	1a (Without oil OFF)

AC

AV

AU

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VEX

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AMR

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AWD

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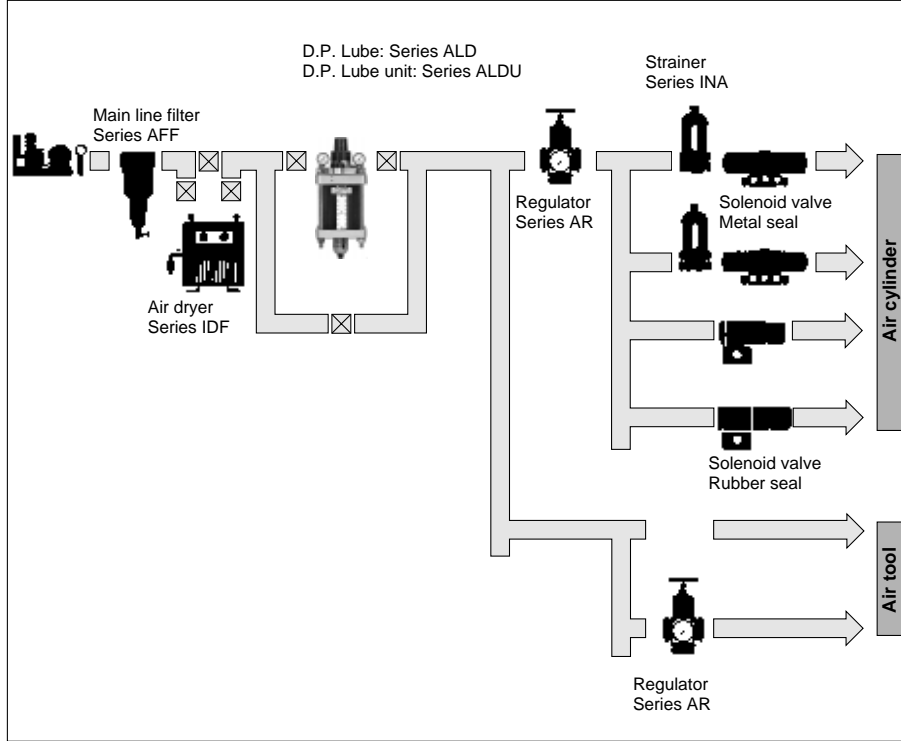
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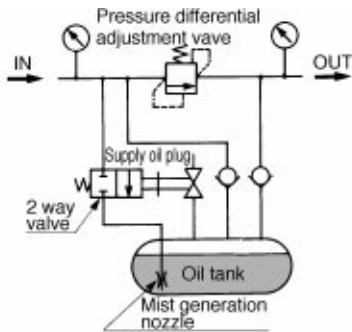
# ALD600/900

## Piping example

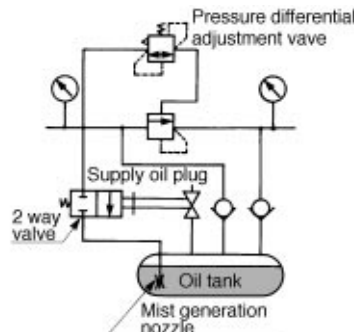


## Circuit

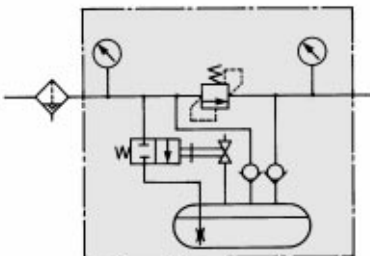
ALD600



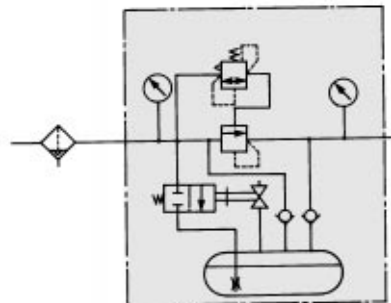
ALD900



ALDU600



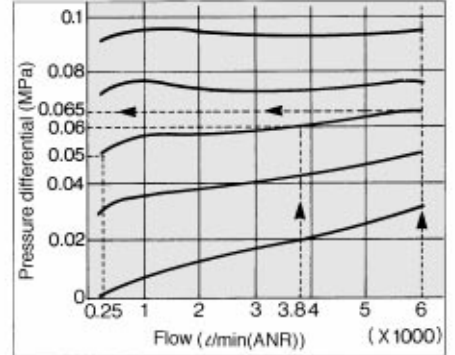
ALDU900



## Flow Characteristics

Condition: Primary pressure 0.5MPa,  
Pressure differential setting flow 250 $\ell$ /min(ANR)

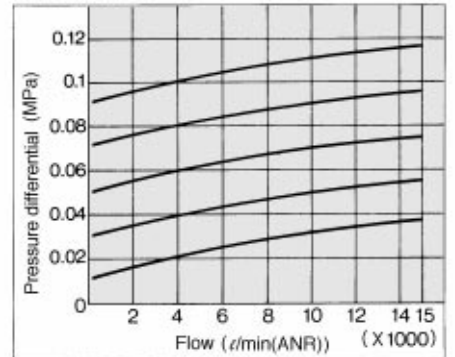
ALD600-10



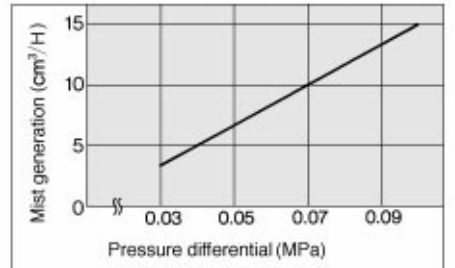
### How to read graph

With the flow rate set to 250  $\ell$ /min(ANR) and the pressure differential set to 0.05MPa, by changing the flow rate to 3800  $\ell$ /min(ANR) and 6000  $\ell$ /min(ANR), the pressure differential will change from the initial 0.05MPa to 0.06MPa, and to 0.065MPa.

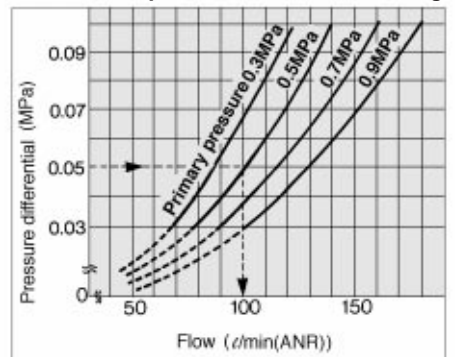
ALD900-20



## Pressure differential and mist generation



## Min. flow for pressure differential setting

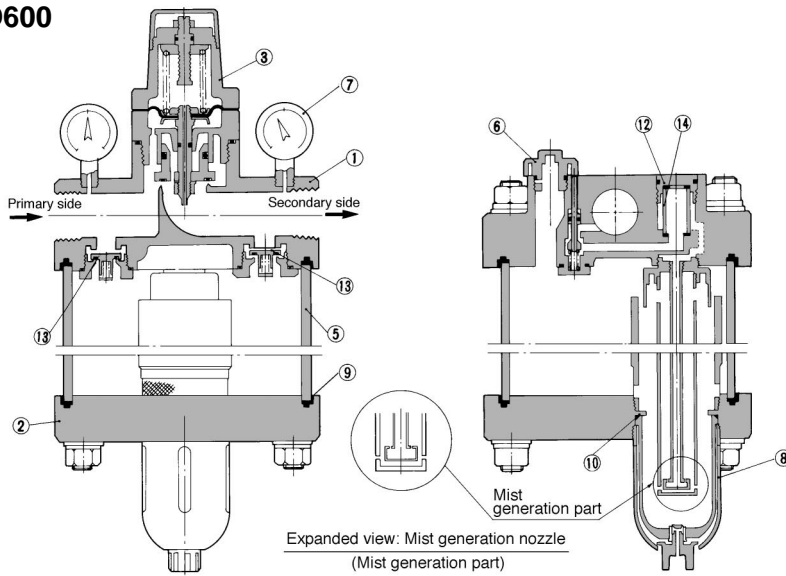


### How to read graph

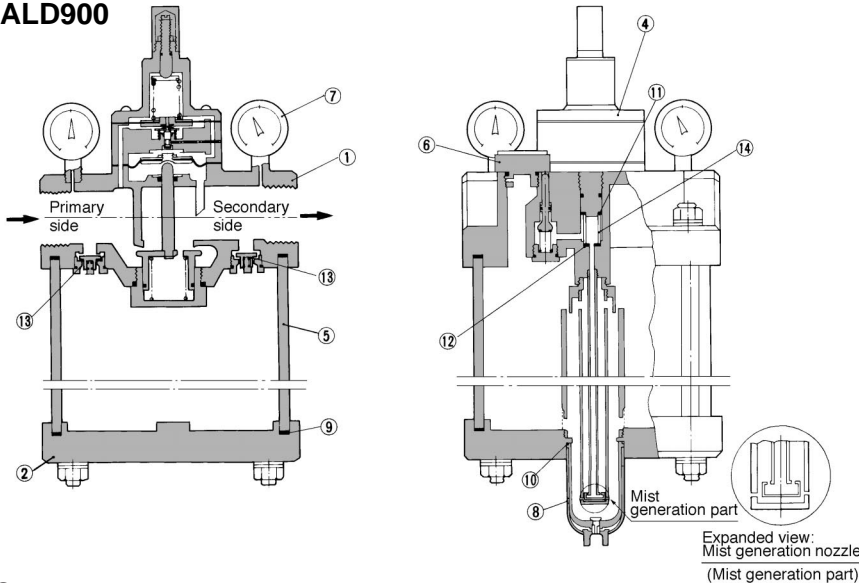
When the primary pressure is 0.5MPa, a flow rate that is greater than 102  $\ell$ /min(ANR) will be necessary to set the pressure differential to 0.05MPa. Below this flow rate, the pressure differential cannot be set to 0.05MPa.

**Construction**

**ALD600**



**ALD900**



**Component parts**

No.	Description	Material	
		ALD600	ALD900
①	Body	Aluminum die cast	Aluminum die cast
②	Bottom cover	Aluminum die cast	Aluminum die cast

**Replacement parts**

No.	Description	Material	Part No.	
			ALD600	ALD900
③	Valve guide assembly	—	12612AP	—
④	Pilot body assembly	—	—	12609AP
⑤	Bowl assembly	Epoxy resin with glass fibre	126139-1A	126059-1A
⑥	Lubrication plug assembly	Zinc die cast, NBR	126115AP	126115AP
⑦	Pressure gauge (2 pcs.)	—	GA46-10-01	GA46-10-02
⑧	Bowl assembly	—	AF11-2	AF11-2
⑨	Sealing (2 pcs.)	NBR	126140	126060
⑩	O ring	NBR	11307	11307
⑪	Seal	NBR	—	126046
⑫	Seal	NBR	126047(2)	126047
⑬	Check valve assembly (2 pcs.)	—	126127A	126022A
⑭	Filter element	Bronze	11294-70B	11294-70B

**⚠ Precautions**

Be sure to read before handling.  
Refer to p.0-26 and 0-27 for Safety Instructions and common precautions on the products in this catalog, and refer to p.1.0-1 and 1.0-2 for precautions on every series.

**Design**

**⚠ Warning**

① Epoxy resin containing glass fiber and polycarbonate is used in some parts of the D.P. Lube and the D.P. Lube Unit. These units cannot be used in an environment or in a location that is exposed to synthetic oil, thinner, acetone, alcohol, organic solvents such as ethylene chloride, chemicals such as sulfuric acid or nitric acid, cutting oil, kerosene, gasoline, or a threadlock agent, etc., because they will be damaged.

**Mounting/Adjustment**

**⚠ Caution**

① Provide about 30cm of space above and below the D.P. Lube or the D.P. Lube Unit to facilitate their maintenance inspection.  
② When the line is stopped, do not adjust or set the differential pressure, as it could cause the differential adjustment valve to break.  
③ When setting the pressure differential, if there is a fluctuation in the operating flow rate, set the pressure differential at the lower flow rate range.

**Piping**

**⚠ Warning**

① The drain pipe for the air filter in the D.P. Lube Unit must have a minimum pipe bore of  $\phi 10$ , and a maximum length of 5m. Avoid using a riser pipe because it could cause the auto drain to malfunction.  
② If installing an air tank, install it on the IN side of the D.P. Lube Unit. If it is installed on the OUT side, the micromist could be arrested by the air tank, which could lead to insufficient feeding of oil.

**Maintenance**

**⚠ Warning**

① Before removing the oil filler plug, loosen it two and half turns to completely release the pressure inside the case. This will prevent the oil filler plug from flying out.

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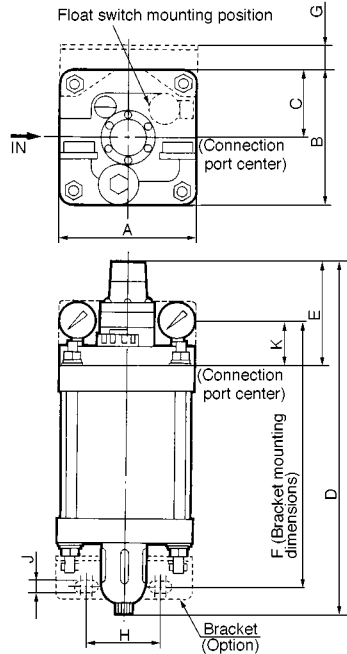
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# ALD600/900

## Dimensions

### D.P. Lube ALD600-□06 to 10, ALD900-□12 to 20

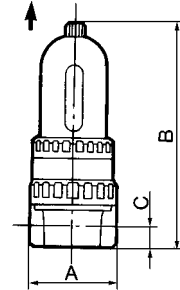


Model	Port size	A	B	C	D	E	Bracket dimensions				
							F	G	H	J	K
ALD600-□06 to 10	3/4, 1	175	175	87.5	460	135	345	32.5	95	14	57
ALD900-□12 to 20	1 1/4, 1 1/2, 2	250	250	125	613	209	419.2	0	120	14	49.6

## Related equipment/Strainer

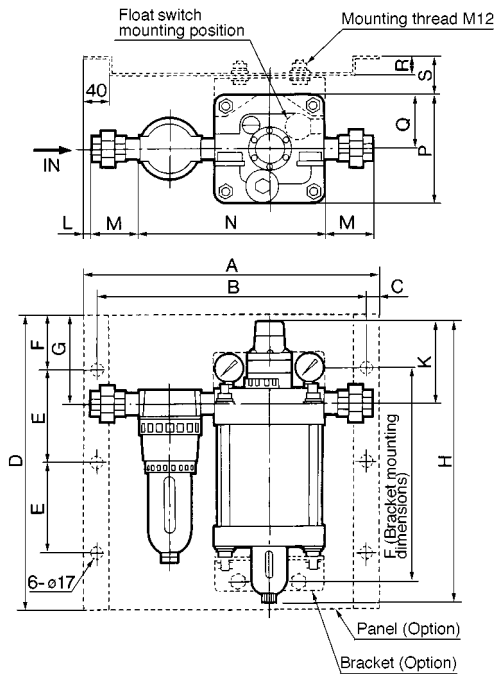
At the terminal of an air pressure line in which a D.P. Lube is used, install a strainer (filtration rate of 5μm) upstream with a metal seal solenoid valve, which is susceptible to dust.

Mounting orientation is Upper direction



Model	Port size Rc(PT)	A	B	C
INA-11-402	1/4	63	141	15
INA-11-403	3/8	63	164.5	15
INA-11-404	1/4, 3/8, 1/2	80	170	15
INA-11-405	3/4	85	180	20
INA-11-406	3/4, 1	90	230	22
INA-11-407	1	100	251	22

### D.P. Lube Unit ALDU600-□06 to 10, ALDU900-□12 to 20



Model	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
ALDU600-□06	3/4	470	430	20	480	150	90	145	460	345	135	43	67	283	175	87.5	30	62.5
ALDU600-□10	1											10	77	296				
ALDU900-□12	1 1/4											57	85	424				
ALDU900-□14	1 1/2	710	670	20	700	230	120	222	615	419.2	209	51	90	424	250	125	33.2	33.2
ALDU900-□20	1											16	100	476				

# Booster Lube Series ALB900

Centralized control of multi-point lubrication

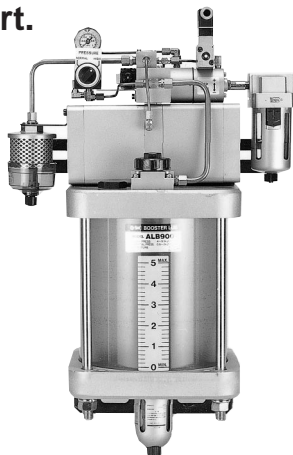
Stable oil feeding with a micromist

Through the use of a booster, a pressure that is higher than that of the main air passage can be supplied. This difference is used as the mist generating pressure differential. Thus, the pressure drop in the main air passage is minimized.

Micromist can be constantly supplied by merely adjusting the mist generating pressure differential.

Oil can be replenished by merely opening and closing the oil filler plug without stopping the air line.

The condition of the generation of micromist can be checked from the oil filler port.



ALB900-00-11

## Standard Specification

Model	ALB900-10	ALB900-20	ALB900-30
Port (Bypass lubrication adapter)	Rc(PT)1	Rc(PT)2	3 inch flange
Port size (Body)	IN: Rc(PT) 1/4 OUT: Rc(PT) 1/2		
Fluid	Air		
Proof pressure	1.5MPa		
Operating pressure range	0.4 to 1.0MPa		
Operating pressure differential range	0.05 to 0.2MPa		
Bowl capacity between levels (cm <sup>3</sup> )	5000		
Recommended oil	Turbine oil class 1 ISO VG32		
Ambient and fluid temperature	5 to 50°C		
Bowl material	Epoxy resin with glass fiber, Polycarbonate		
Weight (kg)	28		

## Accessories (Options) Part No.

Type	Description	Model	Part No.		
			ALB900-10	ALB900-20	ALB900-30
Standard attachment	Bypass lubrication adapter		ALBA90-10	ALBA90-20	ALBA90-30
	Ball valve		1/4 B		
	Ball valve		1/2 B		
Option	Float switch <sup>(1)</sup>		IS440-1 to 2		

Note 1) Float switch specification  
 Voltage ————— 200V AC, 200V DC      Contact point construction ——— 1a, 1b  
 Max. cut off capacity — 12VA AC, 10W DC      Level indication ————— Bottom limit indication  
 Max. cut off current — 0.6A AC, 0.5A DC

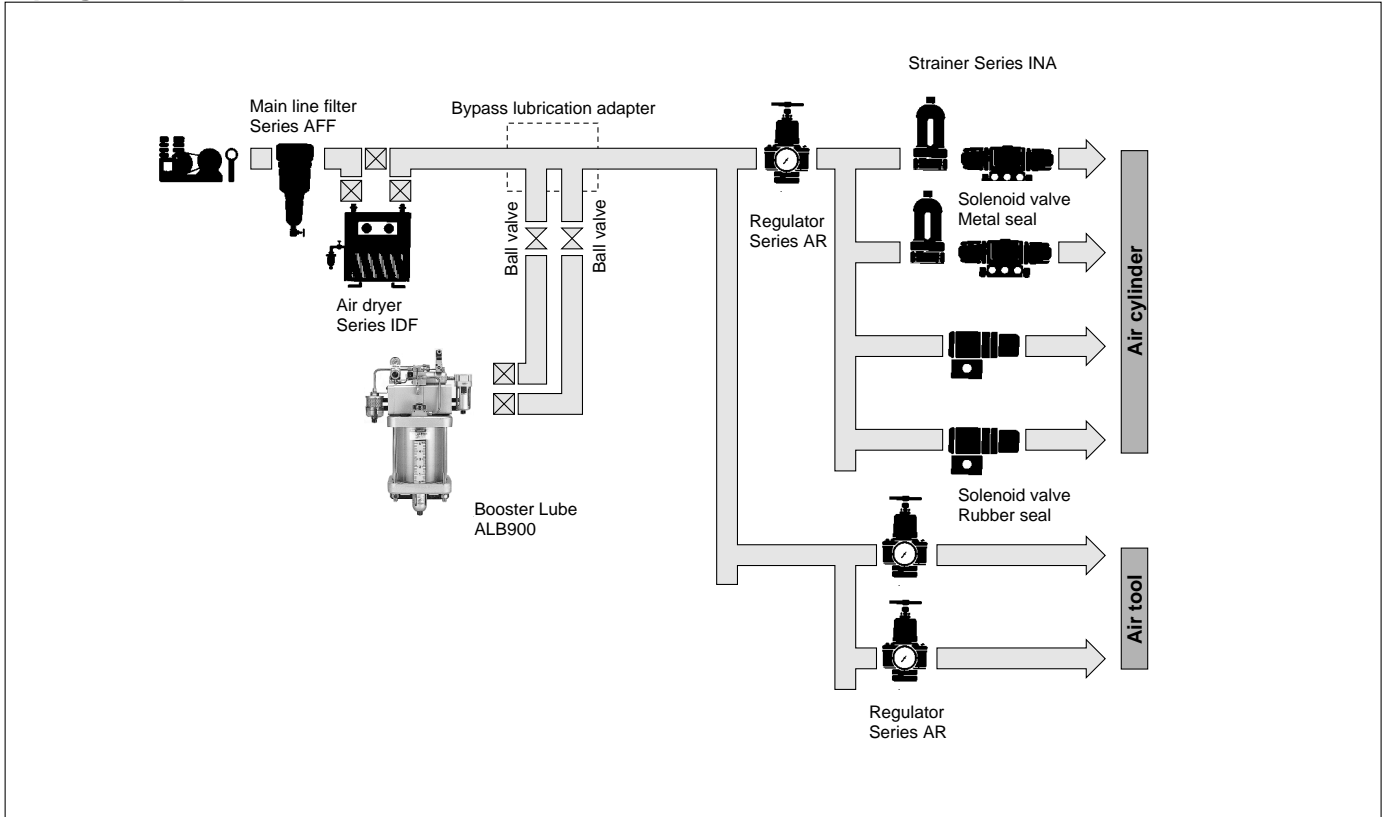
## How to Order

**ALB 900 - 10 - 0 0 - S1**

- Booster Lube**
- Body size**  
900 2 inch standard
- Port size (Bypass lubrication adapter)**  
00 None  
10 Rc(PT)1  
20 Rc(PT)2  
30 3 inch flange
- Operation control signal**  
0 Air pilot  
1 100V AC  
2 200V AC  
4 220V AC  
5 24V DC  
9 Other
- Operation control**  
0 Air pilot  
1 Solenoid
- Float switch (option)**  
- None  
S1 1b (Without oil ON)  
S2 1a (Without oil OFF)

# ALB900

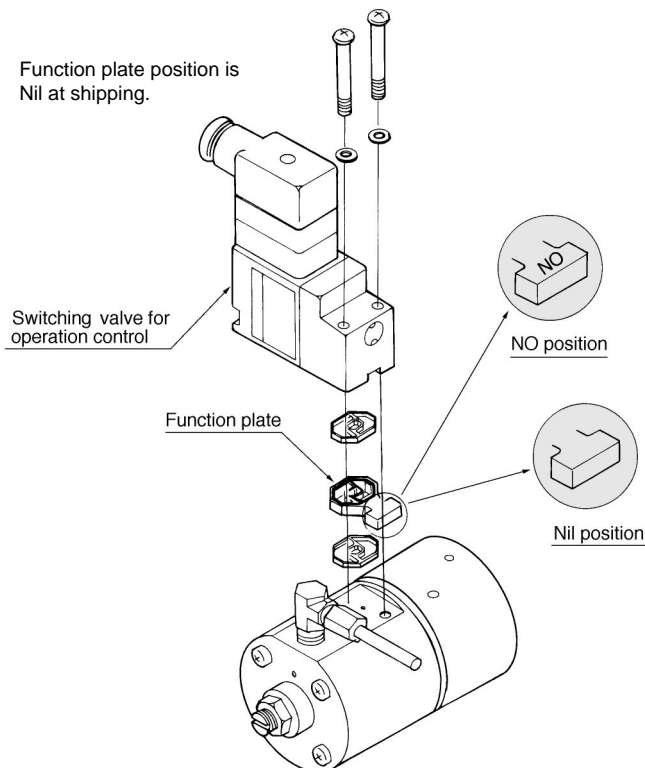
## Piping example



## Operation Control Method

As shown in the diagram below, reverse the position of the function plate of the switching valve for operation control, and place it in the NO position or in the unmarked position. When the control signal is input, select the state of the operation or the stopping of the Booster Lube.

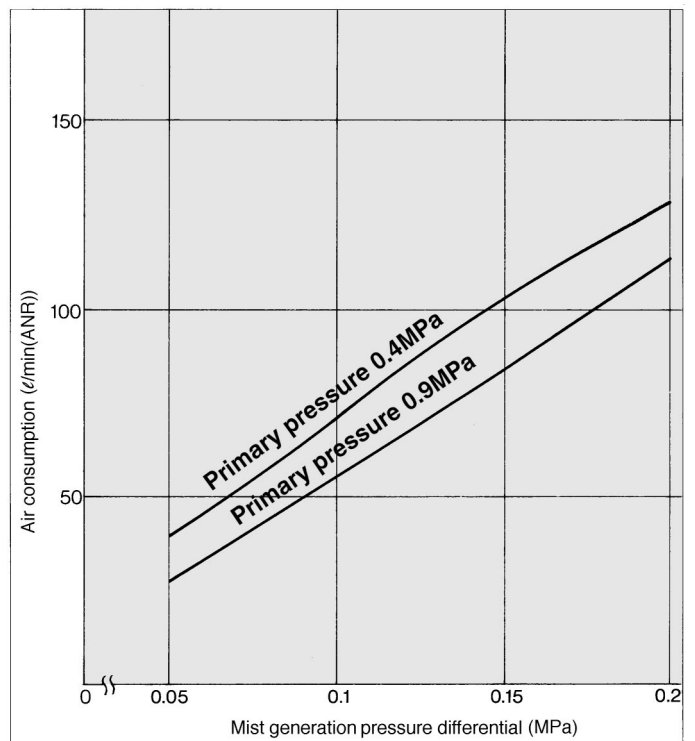
NO position Operation at control signal input  
 Nil position Stop at control signal input  
 The 100V AC, 200V AC, 220V AC, 24V DC, or air pilot type specification can be applied to the control signal.



## Air Consumption

This unit uses a booster to generate a mist generating pressure differential. Therefore, the booster consumes and discharges the air. Data A indicates the relationship between this air consumption rate, the set pressure differential, and the pressure of the main air passage (primary pressure).

### Data A Air consumption

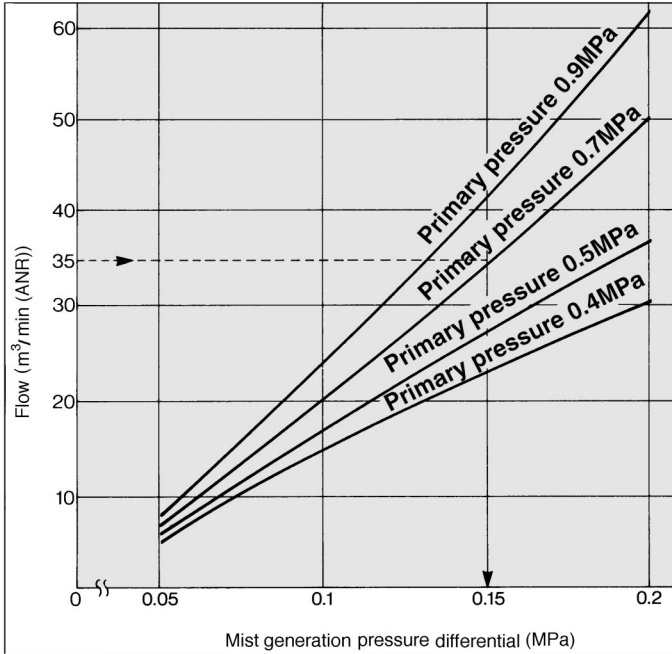


## Setting of Mist Generation Pressure Differential

### Procedure

- ① Obtain the air consumption flow rate downstream of the Booster Lube.
- ② Obtain the necessary mist generating pressure differential from data B

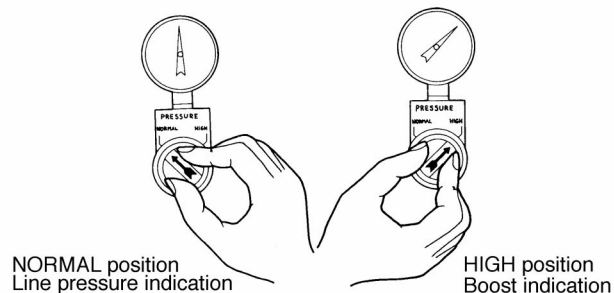
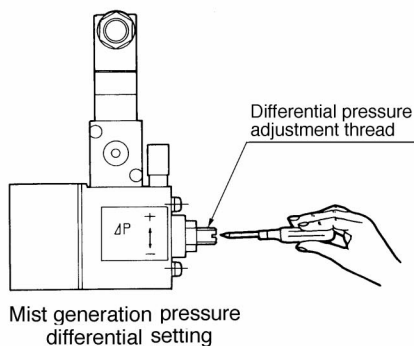
### Data B Flow — Mist generation differential pressure



EX: How to obtain the mist generating pressure differential if the flow rate obtained in ① above is 35m<sup>3</sup>/min and the line pressure (primary pressure P1) is 0.7MPa :

—Extend horizontally from the point at which the flow rate is 35m<sup>3</sup>/min to obtain the point that intersects with P1 = 0.7MPa. Furthermore, extend vertically downward from that point to the point that intersects with the graduation line of the mist generating differential pressure. The value of that intersecting point, which is 0.15MPa, is the mist generating pressure differential that is sought.

- ③ The mist generating pressure differential setting is performed by adjusting the adjustment screw. The pressure differential (the difference between the boost pressure and the line pressure) is increased by turning the adjustment screw clockwise, and decreased it counterclockwise. To check the pressure differential, switch and operate the manual switching valve to read the difference between the boost pressure (high position) and the line pressure (normal position) as shown below (the pressure gauge that is connected to the manual switching valve). After completing the setting, set the manual switching valve to the position of the line pressure indication. Do not set the mist generating pressure differential to exceed 0.2MPa.



## ⚠ Precautions

**Be sure to read before handling.**  
Refer to p.0-26 and 0-27 for Safety Instructions and common precautions on the products mentioned in this catalog, and refer to p.1.0-1 and 1.0-2 for precautions of every series.

### Design

#### ⚠ Warning

- ① Epoxy resin containing glass fiber and polycarbonate is used in some parts of the Booster Lube. The Booster Lube cannot be used in an environment or in a location that is exposed to synthetic oil, thinner, acetone, alcohol, organic solvents such as ethylene chloride, chemicals such as sulfuric acid or nitric acid, cutting oil, kerosene, gasoline, or a threadlock agent, etc., because they will be damaged.

### Piping

#### ⚠ Warning

- ① If installing an air tank, install it upstream of the bypass oil feed adapter. If it is installed downstream, the micromist could be arrested by the air tank, which could lead to insufficient feeding of oil.

### Mounting/Adjustment

#### ⚠ Caution

- ① When setting the pressure differential, if there is a fluctuation in the operating flow rate, set the pressure differential at the higher flow rate range. If it is set in the lower flow rate range, the mist density could become thinner, leading to poor lubrication.
- ② To prevent mist from being generated unnecessarily, if there is no air consumption in the main air passage, operate the switching valve for operation control to stop the operation of the booster.

### Maintenance

#### ⚠ Warning

- ① Before removing the oil filler plug, loosen it two and half turns to completely release the pressure in the bowl. This will prevent the oil filler plug from flying out.

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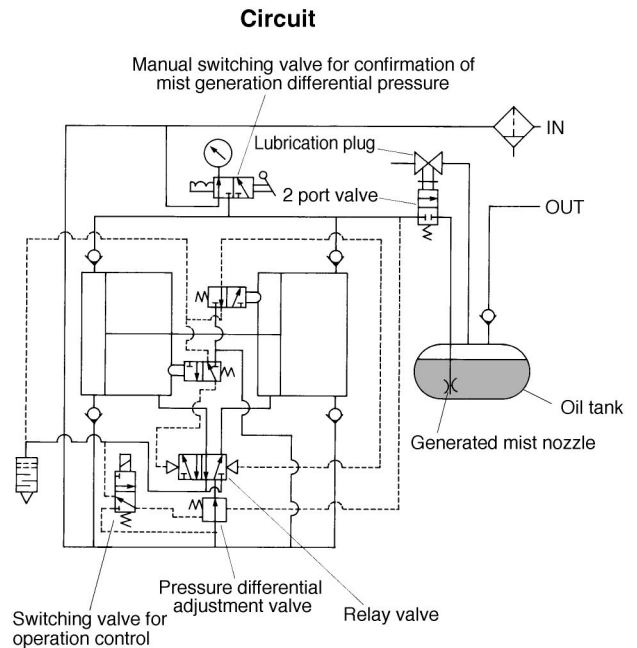
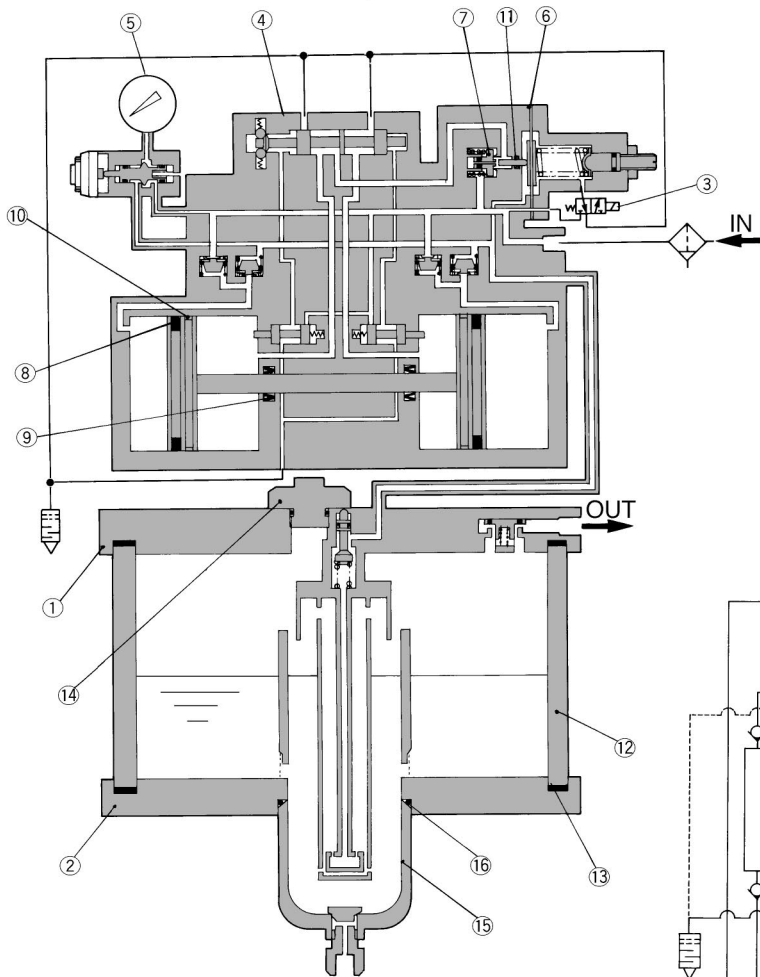
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# ALB900

## Construction



### Component parts

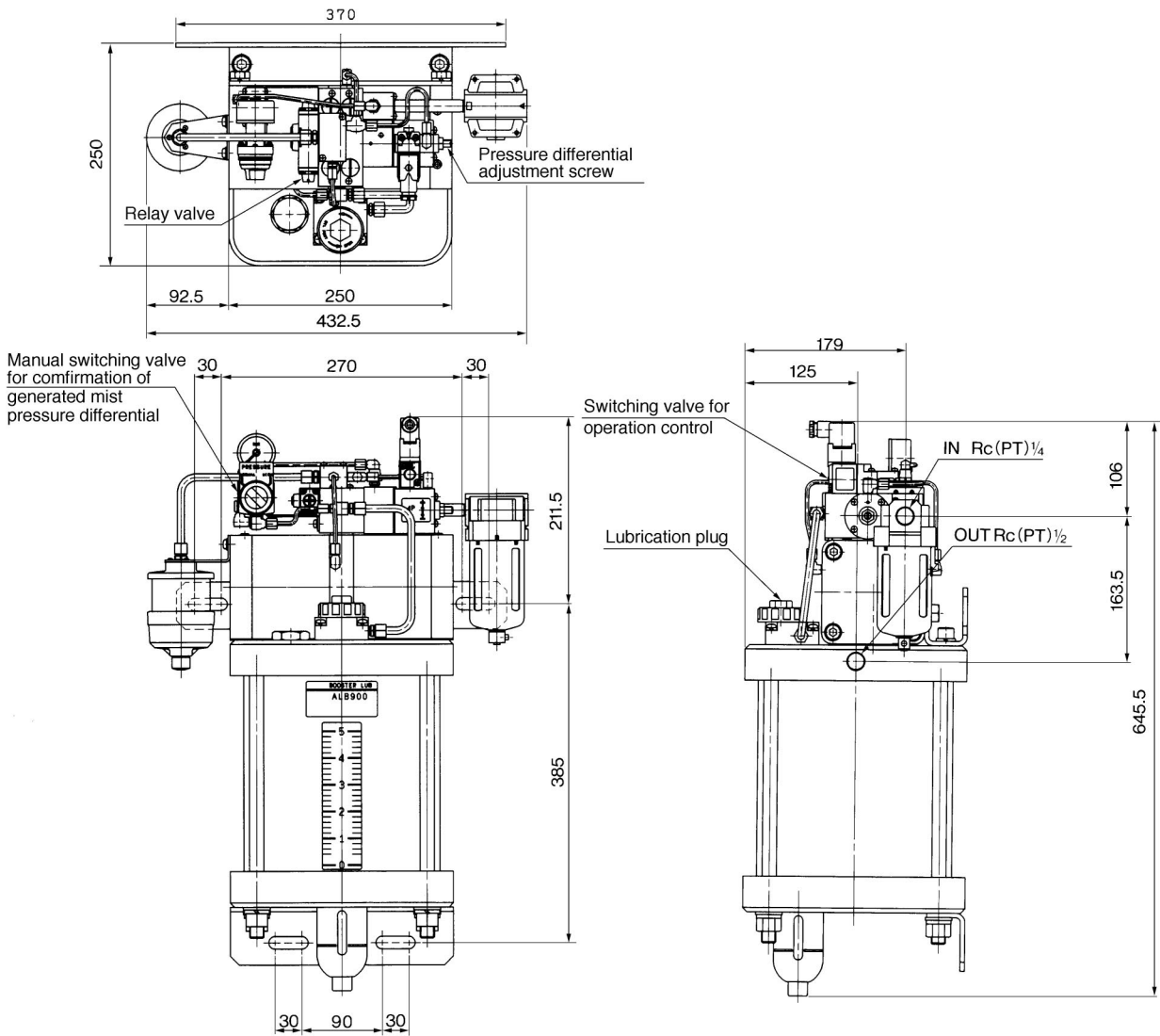
No.	Description	Material
①	Top cover	Aluminum die cast
②	Bottom cover	Aluminum die cast

### Replacement parts

No.	Description	Material	Part No.	# pieces
③	3 port switching valve (For operation control)	—	VOA301-M VO307E, D-X56*	1
④	Relay valve	—	VR4152-00-0	1
⑤	Pressure gauge	—	GA46-10-01	1
⑥	Diaphragm assembly	—	12702A	1
⑦	Valve assembly	—	12705A	1
⑧	NLP seal	NBR	NLP-100A	2
⑨	PNY seal	NBR	PNY-25	2
⑩	Wear ring	Cloth-inserted phenol aldehyde resin	SW-100 X 6 X 2	2
⑪	O ring	NBR	JIS B2401P3	1
⑫	Bowl assembly	Glass fiber-inserted epoxy resin	126059-4A	1
⑬	Seal	NBR	126060	2
⑭	Lubrication plug assembly	Zinc die cast NBR	126115AP	1
⑮	Bowl assembly	—	AF11-2	1
⑯	O ring	NBR	11307	1

\*1: 100V AC, 2: 200V AC, 4: 220V AC, 5: 24V DC, 9: Others

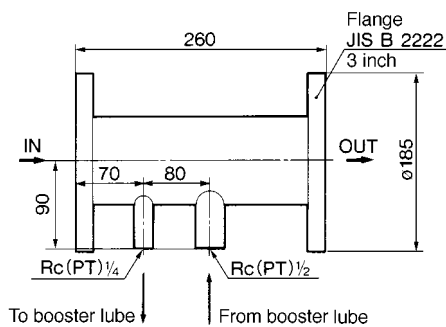
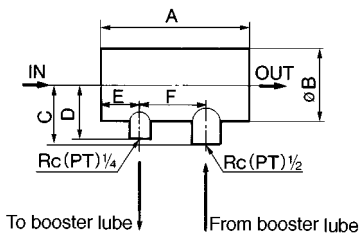
## Dimensions



## By-pass Lubrication Adapter

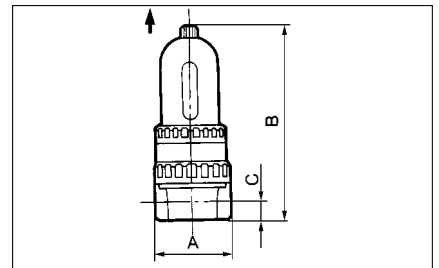
ALBA90-10, -20

ALBA90-30



## Related equipment/Strainer

At the terminal of an air pressure line in which a D.P. Lube is used, install a strainer (filtration rate of 5 $\mu$ m) upstream from a metal seal solenoid valve, which is susceptible to dust.



Model No.	Port size Rc(PT)	A	B	C
INA-11-402	1/4	63	141	15
INA-11-403	3/8	63	164.5	15
INA-11-404	1/4, 3/8, 1/2	80	170	15
INA-11-405	3/4	85	180	20
INA-11-406	3/4, 1	90	230	22
INA-11-407	1	100	251	22

Model No.	Port size Rc(PT)	A	B	C	D	E	F
ALBA90-10	1	150	42.7	45	40	35	80
ALBA90-20	2	165	76.3	65	60	40	80

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