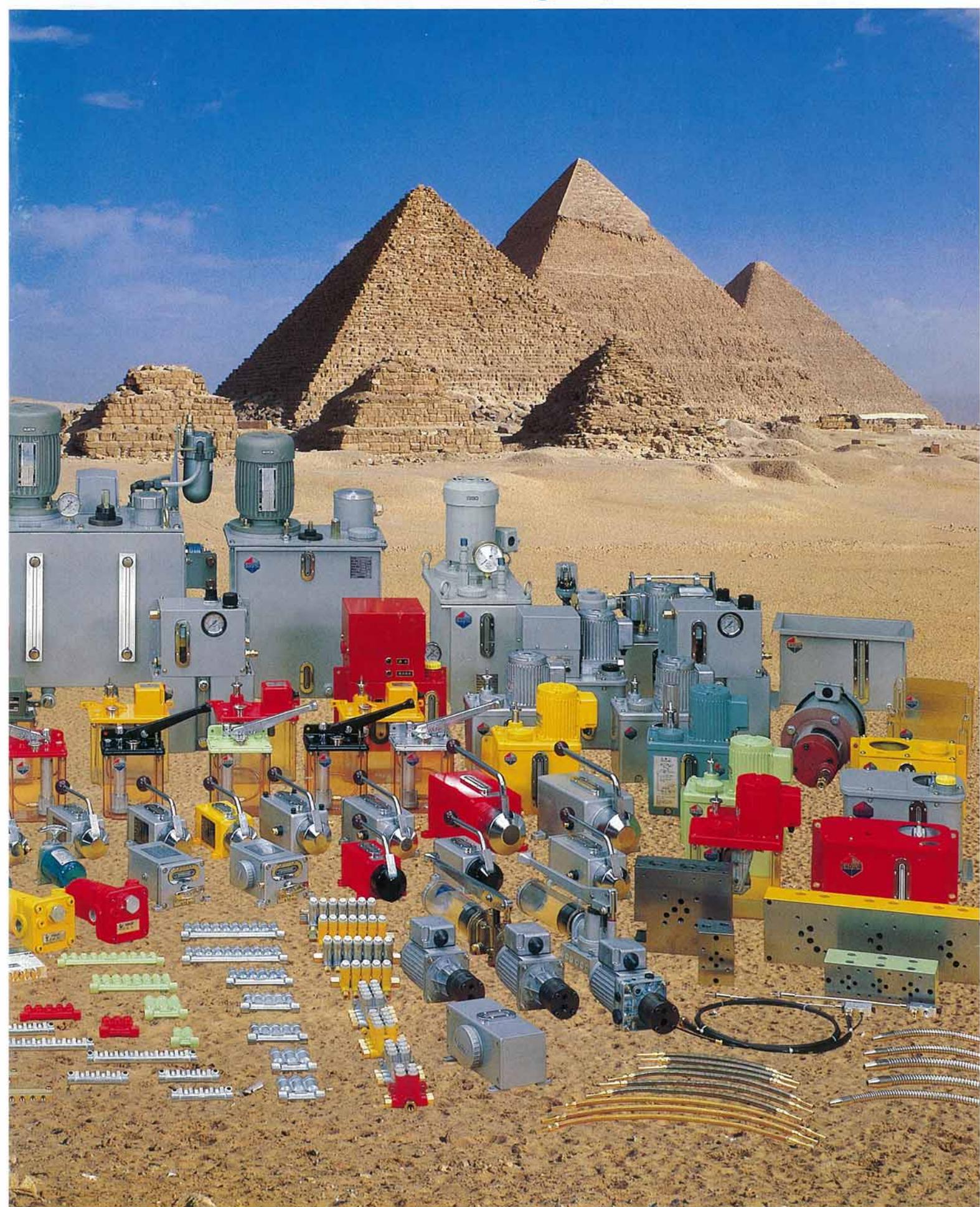


# SHOWA

centralized lubricating systems



SHOWA



# BASE FOR CENTRALIZED LUBRICATING SYSTEMS !!

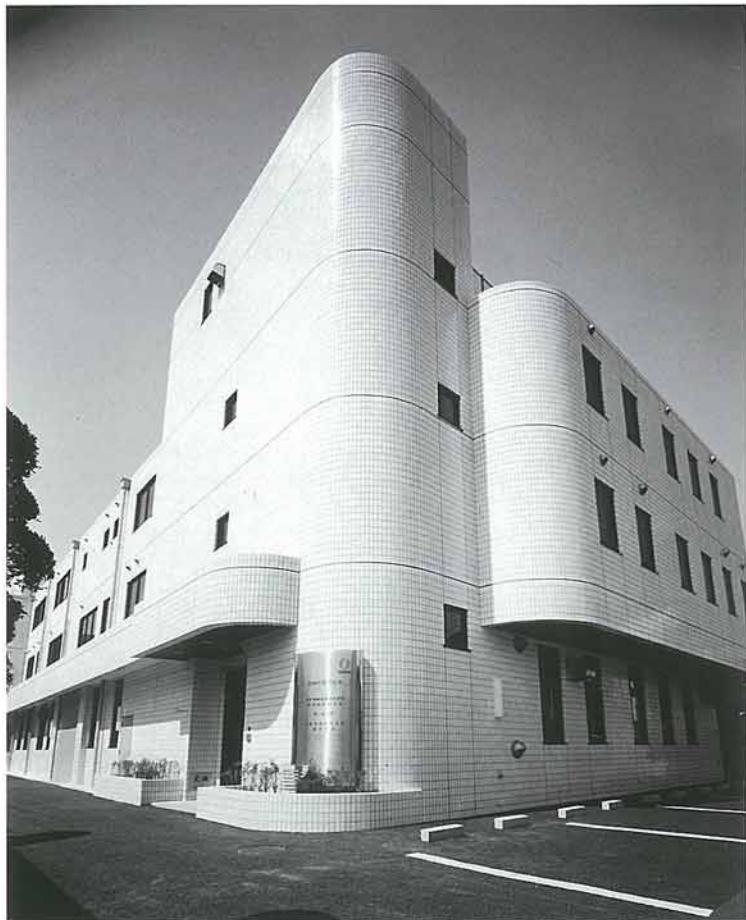
# SHOWA

Among many growing industries in Today's Japan, the machine tool industry growth is very remarkable.

SHOWA is earnestly studying the establishment of centralized lubricating systems, and has newly developed lubrication associated products in respond to the strict requirements of users.

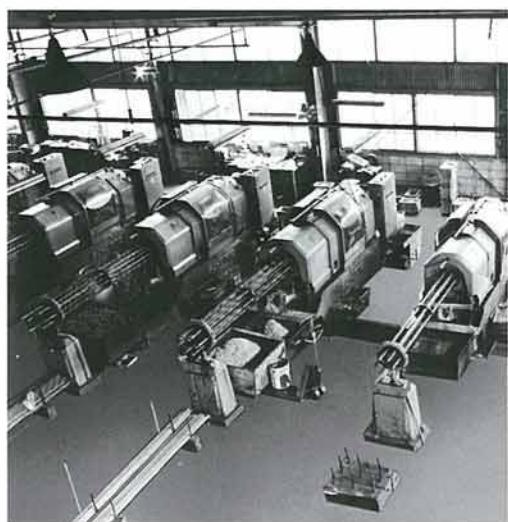
Now, based on high technology and experience on various features of high performance, super precision, energy-saving efficiency and in order to secure high quality level, we are planning energetically to introduce new equipment and capable man power.

SHOWA is paving its way toward an unquestioned fame as a top manufacturers of lubricating equipment in Japan



SHOWA head office building

WE PLEDGE OUR PROMISE FOR MAINTENANCE OF HIGH RELIABILITY QUALITY BACKED UP BY OUR UNIQUE TECHNOLOGY AND LATEST EQUIPMENT & FACILITIES.



# GUIDE FOR SELECTION of LUBRICATING SYSTEMS

The lubrication products introduced in this catalog are designed to satisfy a wide range of machinery requirements and common application in such industries as machine tools, textiles, canning and bottling, plastics, printing, packaging, machinery and many types of special equipment.

For centralized lubricating systems, both volumetric and resistance lubrication components are illustrated. Volumetric system lubricates at fixed capacity of oil (0.03~1.5cc/stroke) intermittently, used distributors are DESTER PLUNGERS and DESTER BLOCKS, and suitable pumps must have depressurizer mechanism. This system is excellent. The other resistance system gives resistance at stop

down flow from pump, used distributors are PROPER UNITS and CONTINUOUS UNITS of proportion type and DESTER VALVES for adjustable type.

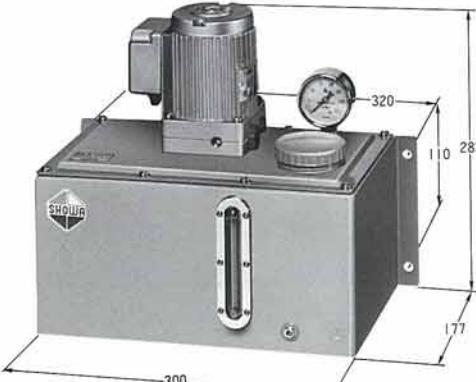
It is important to take note of the different operating characteristics of each so that the components best suited for the particular purpose may be chosen.

Pumps and system components are designed to endure the long life, with little maintenance required. It should be recognized, however, that certain environments and or operating conditions give stress to systems than others and maintenance checks should be provided accordingly.

## SYSTEM SELECTION GUIDE

SYSTEM	VOLUMETRIC LUBRICATING SYSTEM		RESISTANCE LUBRICATING SYSTEM																																								
Discharge method	FIXED CAPACITY		PROPORTIONAL		ADJUSTABLE																																						
DISTRIBUTORS	DESTER PLUNGERS 	DESTER BLOCKS 	PROPER UNITS 	CONTINUOUS UNITS 	DESTER VALVES 																																						
FEATURES	DESTER PLUNGERS are used for discharging a fixed quantity of oil to the system. The exchange of the nipple at head makes it possible to select a variety of discharge volume. Only the pump with depressurizer mechanism can be used.	DESTER BLOCKS have been developed for the low pressure volumetric type distribution system. The exchange of the nipple at head makes it possible to select a variety of discharges. Only the pump with depressurizer mechanism can be used.	PROPER UNITS are used with variety cycle pumps, hand pumps. Flow rate stamped on hex (from 00 to 5) indicates resistance. Three letters stamped on hex refer to thread size.	CONTINUOUS UNITS are used with continuous pumps and grease pumps. As with PROPER UNITS, flow rate is stamped on hex (from 1 to 5), as three letter symbol indicating thread size.	DESTER VALVES can be used with most pumps. Flow to each bearing is independently adjusted by adjusting valve at each feeder.																																						
SUITABLE PUMPS	<table border="1"> <tr> <td>Motor driven</td> <td>MLA*W</td> </tr> <tr> <td></td> <td>LCA</td> </tr> <tr> <td></td> <td>LCB</td> </tr> <tr> <td>Hand pump</td> <td>LAW</td> </tr> </table> <small>*With depressurization mechanism type</small>	Motor driven	MLA*W		LCA		LCB	Hand pump	LAW	<table border="1"> <tr> <td rowspan="6">Motor driven</td> <td>YMAS</td> </tr> <tr> <td>SMA</td> </tr> <tr> <td>SMD</td> </tr> <tr> <td>SSMA</td> </tr> <tr> <td>MY</td> </tr> <tr> <td>MV</td> </tr> <tr> <td rowspan="4">Hand pump</td> <td>HLA</td> </tr> <tr> <td>LA</td> </tr> <tr> <td>LD</td> </tr> <tr> <td></td> </tr> </table> <small>*Intermittent accumulator type</small>	Motor driven	YMAS	SMA	SMD	SSMA	MY	MV	Hand pump	HLA	LA	LD		<table border="1"> <tr> <td>Motor driven</td> <td>MLA*T*</td> </tr> </table> <p>*Continuous type</p> <table border="1"> <tr> <td rowspan="2">Grease pump</td> <td>SHG</td> </tr> <tr> <td>MHG</td> </tr> </table> <p>*Intermittent accumulator type</p>	Motor driven	MLA*T*	Grease pump	SHG	MHG	<table border="1"> <tr> <td rowspan="6">Motor driven</td> <td>YMAS</td> </tr> <tr> <td>SMA</td> </tr> <tr> <td>SMD</td> </tr> <tr> <td>SSMA</td> </tr> <tr> <td>MY</td> </tr> <tr> <td>MV</td> </tr> <tr> <td rowspan="4">Hand pump</td> <td>HLA</td> </tr> <tr> <td>LA</td> </tr> <tr> <td>LD</td> </tr> <tr> <td></td> </tr> </table> <small>*Intermittent accumulator type</small> <table border="1"> <tr> <td rowspan="2">Motor driven</td> <td>MLA*T*</td> </tr> </table> <p>*Continuous type</p>	Motor driven	YMAS	SMA	SMD	SSMA	MY	MV	Hand pump	HLA	LA	LD		Motor driven	MLA*T*
Motor driven	MLA*W																																										
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	EXAMPLE APPLICATION	<ul style="list-style-type: none"> <li>Miscellaneous machining center</li> <li>Centralized lubricating system</li> <li>NC lathe</li> </ul>	<ul style="list-style-type: none"> <li>NC lathe</li> <li>NC milling machine</li> <li>Boring machine</li> <li>Grinding machine</li> </ul>	<ul style="list-style-type: none"> <li>Cut-off machine</li> <li>Forming machine</li> <li>Miscellaneous cooling device</li> </ul>	<ul style="list-style-type: none"> <li>Multi-purpose lathe</li> <li>Multi-purpose milling machine</li> <li>Miscellaneous machine device</li> </ul>																																						

# AUTOMATIC·MANUAL PUMP UNITS

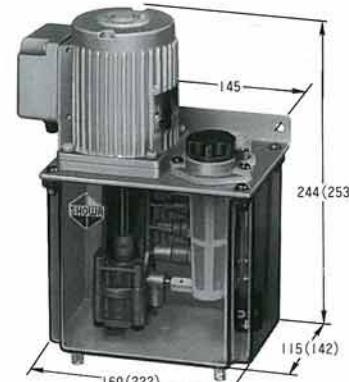
MLA※WT※TYPE(MOTOR DRIVEN)	LCA3 TYPE(MOTOR DRIVEN)
 <p>MLA 015WTY6PL35 Dimension varies according to reservoir type.</p>	

This is composed of the MLA※W pump with builtin de-pressure mechanism and various reservoirs and combination with float switch, pressure switch, and line filter etc. as options. This unit does not include mechanical timer.

Pump	Discharge volume (ℓ/min)	Discharge pressure (kg/cm²)	Reservoir capacity (ℓ)	Viscosity range (cst)
MLA※W	50Hz 0.16~0.5	12~20	4.5~6.12	20~2000
	60Hz 0.2~0.6			

LCA3 is a pump unit provided with the common box for LCA2, with an exception of using a MLB015W pump.

Pump	Discharge volume (ℓ/min)		Discharge pressure (kg/cm²)	Cycle time	Discharge time	
	50Hz	60Hz			YM timer	pressure build up time + 15 sec.
MLB015W	0.16	0.19	15	4~60min. at increment of 4 min.	YD timer	0.5~3.5 min. at increment of 0.5 min.

LCA4 TYPE(MOTOR DRIVEN)	LCB1 TYPE(MOTOR DRIVEN)
	

LCA4 type is composed of MLB015W pump or 03W pump and a 2ℓ or 4ℓ plastic reservoir. This unit does not include a mechanical timer.

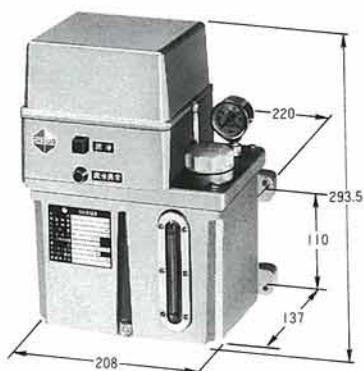
Pump	Discharge volume (ℓ/min)	Discharge pressure (kg/cm²)	Viscosity range (cst)	Motor power (W) × Nos. of pole
MLB015W	50Hz 0.16	15	20~2000	25W × 4P
	60Hz 0.19			
MLB03W	50Hz 0.28	15	20~1000	25W × 4P
	60Hz 0.33			

This unit used pump MLB015W2. Pump and mechanical timer are accommodated in a cover. Where the discharge time is fixed at 60 seconds (60Hz). Variety of cycle times are available.

Pump	Discharge volume (ℓ/min)		Discharge pressure (kg/cm²)	Cycle time	Discharge time		
	50Hz	60Hz			AC timer	50Hz	
MLB015W2	0.16	0.19	15	4~60min. at increment of 4 min.	60Hz	10, 15, 20, 30, 60 min.	60 sec.
					IC timer	4~60min. at increment of 4 min.	pressure build up time + 15 sec.
	0.19	0.19	15				

# (VOLUMETRIC SYSTEM)

## LCB3 TYPE LUBRY UNIT



LUBRY UNIT LCB3 is automatic pump unit for volumetric lubricating systems. It is composed of the WLBO1W1 pump with a built-in depressurization mechanism and with a 3.4ℓ aluminum die-casting reservoir and it has a control circuit for pump such as a timer(Option). And combination with float switch, pressure switch and pressure gauge. MLBO1W1 is consisting of pump, motor, depressurizing flange, relief valve and suction filter.

Pump model	MLBO1W1
Discharge volume	50Hz 100cc/min 60Hz 120cc/min
Discharge pressure	12kgf/cm <sup>2</sup>
Power(W)	17W×2P
Frequency(Hz)	50 60
Voltage (V)	100/200 100/200
Amperage(A)	1.6/0.9 1.3/0.7
Revolution(rpm)	2500 3000
Insulation	E class
Reservoir capacity	3.4 ℓ
Effective capacity	2 ℓ
Oil viscosities range	50~800cSt

\* Amperage specification include timer it.

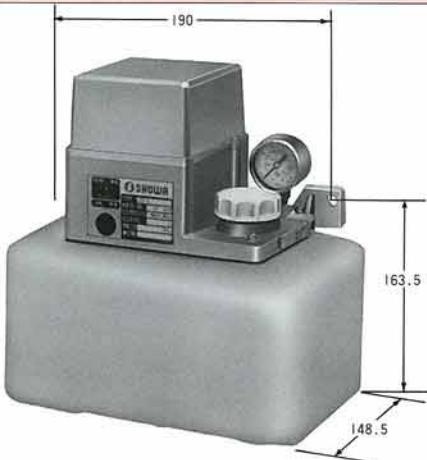
## LCB4 TYPE LUBRYUNIT



LUBRY UNIT LCB4 is automatic pump unit for volumetric lubricating systems. It is composed of the MLBO1W2 pump with a built-in depressurization mechanism and with a 2ℓ plastic reservoir. And combination with float switch, pressure switch and pressure gauge.

Pump model	MLBO1W2
Discharge volume	50Hz 100cc/min 60Hz 120cc/min
Discharge pressure	12kgf/cm <sup>2</sup>
Power(W)	17W×2P
Frequency(Hz)	50 60
Voltage (V)	100 100
Amperage(A)	1.5 1.2
Revolution(rpm)	2500 3000
Insulation	E class
Reservoir capacity	2 ℓ
Effective capacity	1.3 ℓ
Oil viscosities range	50~800cSt

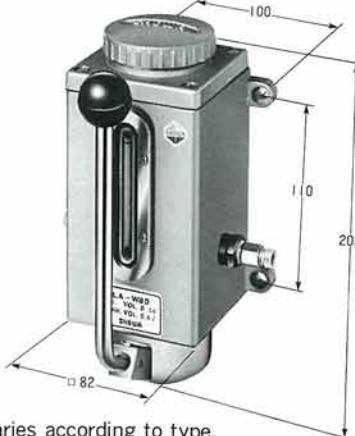
## LCB5 TYPE LUBRYUNIT



This is a volumetric type system pump unit. This is a unit that LCB4 type unit is provided with IC timers (pressure switch, float set). The oil tank comes in such types as 2 lit resin tank, 2 lit aluminum die-cast tank and 4 lit blow tank.

Type of Pump	Discharge 100/120cc/min 50/60Hz Discharge Pressure 12kgf/cm <sup>2</sup> (1.2MPa) Motor output 17W×2P (Shading motor) Consumption current (including consumption current of timer) 100V 200V 50Hz 60Hz 50Hz 60Hz 1.6A 1.3A 0.9A 0.7A
Ic Timer YX-01(for 100v)	Operating time of pump 15 seconds after rise of pressure (Pressure switch ON) Rest time 2, 4, 6, 8, 10, 15, 20, 25, 30, 40, 50, 60, 90, 120, 150, 180 minutes Detection on abnormality Abnormal rise of pressure Abnormal decrease of pressure Decrease in oil level

## LAW TYPE (LEVER PUMP)

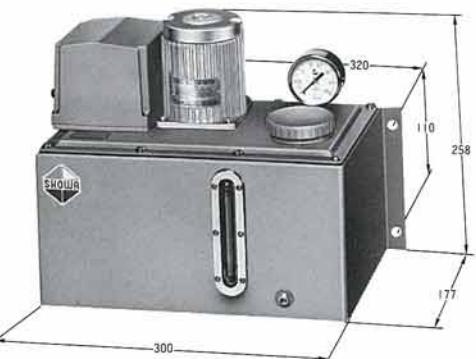
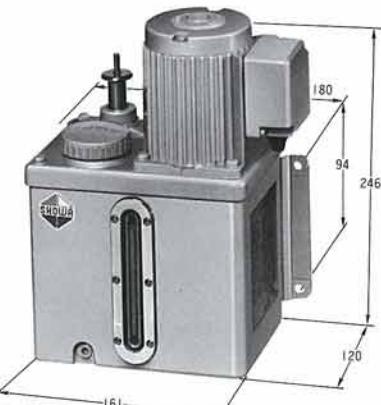
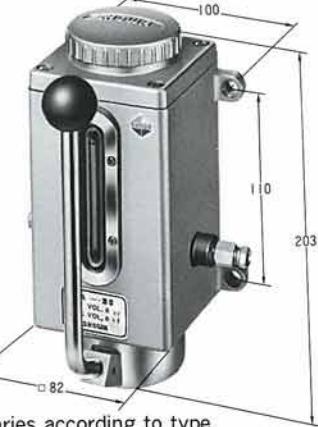


\* Dimension varies according to type.

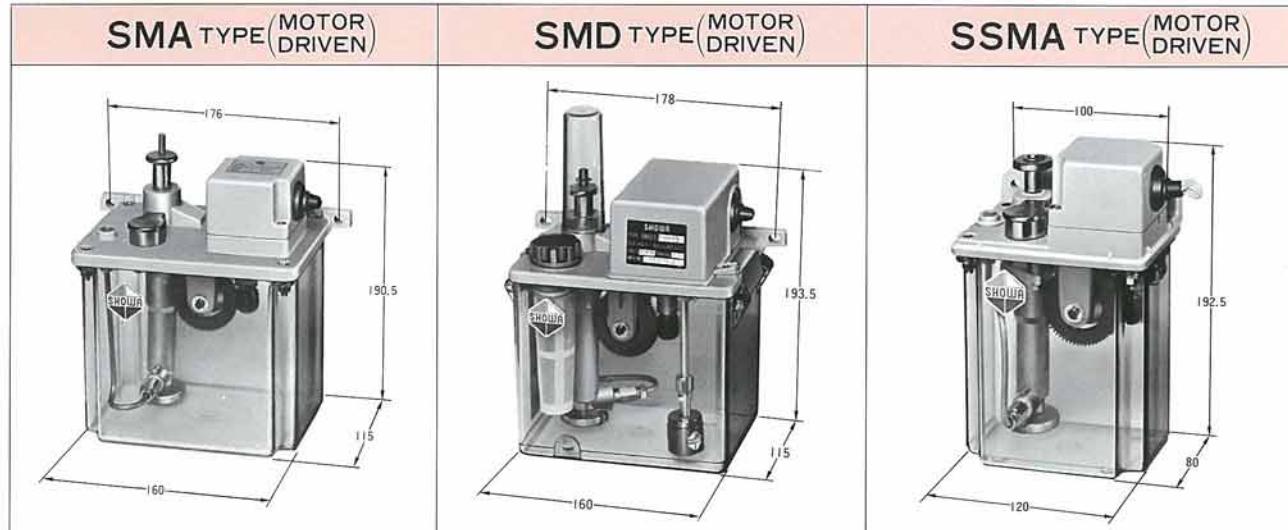
This model is a lever-type pump for volumetric lubricating systems. The operation is very simple. By only pulling the lever and releasing it, the lubrication is performed.

Model	Discharge volume (cc/st)	Max. dis. pressure (kg/cm <sup>2</sup> )	Reservoir capacity (cc)	Effective capacity (cc)
LAW6	6	No relief	350	250
LAW8D	8	40	600	400

# AUTOMATIC·MANUAL PUMP UNITS

MLA*T* TYPE (MOTOR DRIVEN)	YMAS TYPE (MOTOR DRIVEN)																																			
 <p>MLA015TY6103PL35 ※ Dimension varies according to motor and reservoir type.</p>																																				
<p>This pump unit is developed for centralized circulating lubrication system. MLA pump is put on reservoir as standard unit. And float switch, pressure gauge, and line filter etc. can be installed on it.</p> <table border="1"> <thead> <tr> <th>Model</th><th>Disch. volume (ℓ/min)</th><th>Disch. press. (kg/cm²)</th><th>Reservoir capacity (ℓ)</th><th>Viscosity range (cst)</th></tr> </thead> <tbody> <tr> <td>50Hz</td><td>60Hz</td><td></td><td></td><td></td></tr> <tr> <td>0.05~0.5</td><td>0.06~0.6</td><td>3~15</td><td>3~100</td><td>20~2000</td></tr> <tr> <td>MLA*</td><td>0.8~20.1</td><td>1.0~24.1</td><td>5~15</td><td>20~500</td></tr> </tbody> </table>	Model	Disch. volume (ℓ/min)	Disch. press. (kg/cm²)	Reservoir capacity (ℓ)	Viscosity range (cst)	50Hz	60Hz				0.05~0.5	0.06~0.6	3~15	3~100	20~2000	MLA*	0.8~20.1	1.0~24.1	5~15	20~500	<p>YMAS type is an intermittent discharge accumulating pressure by an electric motor. Variety of cycle times can choose. Discharge volume can be adjusted at gauges in instant-feed button.</p> <table border="1"> <thead> <tr> <th>Model</th><th>cycle time (min)</th><th>Discharge volume (cc/cy)</th><th>Max. dis. pressure (kg/cm²)</th><th>Reservoir capacity (ℓ)</th></tr> </thead> <tbody> <tr> <td>YMSA3*</td><td>1, 5, 15</td><td>1~3 Adjustable</td><td>5</td><td>2</td></tr> <tr> <td>YMAS6*</td><td>1, 5, 15, 30, 60, 120</td><td>3~6 Adjustable</td><td>4.5</td><td>2</td></tr> </tbody> </table> <p>※ Motor voltage: 200/220V, Motor power: 10W × 4P</p>	Model	cycle time (min)	Discharge volume (cc/cy)	Max. dis. pressure (kg/cm²)	Reservoir capacity (ℓ)	YMSA3*	1, 5, 15	1~3 Adjustable	5	2	YMAS6*	1, 5, 15, 30, 60, 120	3~6 Adjustable	4.5	2
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LA TYPE (LEVER PUMP)	HLA7 TYPE (LEVER PUMP)																																			
 <p>LA8D ※ Dimension varies according to type.</p>	 <p>HLA7L</p>																																			
<p>This model is for a lever-type pump. The operation is very simple; only by pulling the lever and releasing it, the lubrication is performed. Used distributor is DESTER VALVES.</p> <table border="1"> <thead> <tr> <th>Model</th><th>Discharge volume (cc/st)</th><th>Max. dis. pressure (kg/cm²)</th><th>Reservoir capacity (cc)</th><th>Effective capacity (cc)</th></tr> </thead> <tbody> <tr> <td>LA3</td><td>3</td><td>15</td><td>255</td><td>200</td></tr> <tr> <td>LA6</td><td>6</td><td>15</td><td>350</td><td>250</td></tr> <tr> <td>LA8(D)</td><td>8</td><td>15</td><td>600</td><td>400</td></tr> </tbody> </table>	Model	Discharge volume (cc/st)	Max. dis. pressure (kg/cm²)	Reservoir capacity (cc)	Effective capacity (cc)	LA3	3	15	255	200	LA6	6	15	350	250	LA8(D)	8	15	600	400	<p>This is a piston discharge pump by manual operation. A spring in the piston is compressed by pushing the lever down. By releasing the lever, oil is discharged into system automatically. Discharge volume is adjustable (1~7 c.c. per stroke) by the adjusting screw.</p> <table border="1"> <thead> <tr> <th>Model</th><th>Discharge volume (cc/st)</th><th>Ave. dis. pressure (kg/cm²)</th><th>Reservoir capacity (cc)</th><th>Effective capacity (cc)</th></tr> </thead> <tbody> <tr> <td>HLA7 R L</td><td>1~7 Adjustable</td><td>3</td><td>1000</td><td>800</td></tr> </tbody> </table> <p>※ Right hand type and left hand type are available.</p>	Model	Discharge volume (cc/st)	Ave. dis. pressure (kg/cm²)	Reservoir capacity (cc)	Effective capacity (cc)	HLA7 R L	1~7 Adjustable	3	1000	800					
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HLA7 R L	1~7 Adjustable	3	1000	800																																

# (RESISTANCE SYSTEM)



This is an intermittent discharge accumulating pressure type by an electric motor. Variety of cycle times can choose.  
Option: Float switch

Model	Cycle time (min.)	Disch. volume (cc/cy)	Max.dis. pressure (kg/cm²)	Reser. capac. (ℓ)
SMA3*	5, 10, 15 30, 60, 120	1 ~ 3 Adjustable	2	2
SMA6*	5, 10, 15 30, 60, 120	3 ~ 6 Adjustable	3	2

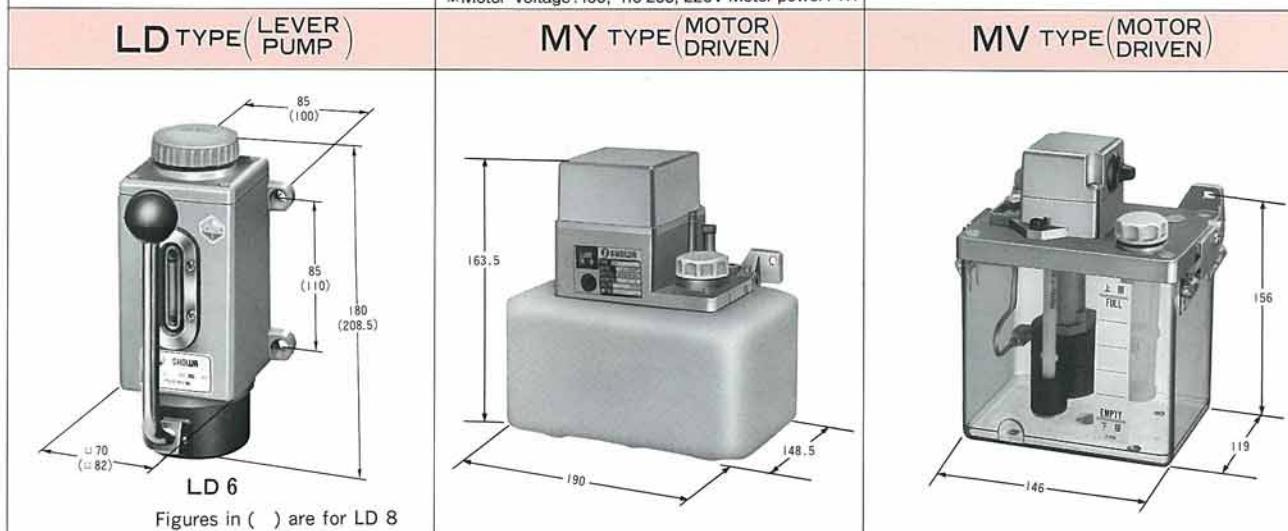
SMD type is similar to SMA type. Motor and pump specifications are the same. The following option can be selected.  
Option: Terminal block, Chain, Float switch, Oil filter, Instant-feed button cover.

Model	Cycle time (min.)	Disch. volume (cc/cy)	Max. dis. pressure (kg/cm²)	Reser. capac. (ℓ)
SMD3*	5, 10, 15 30, 60, 120	1 ~ 3 Adjustable	2	2
SMD6*	5, 10, 15 30, 60, 120	3 ~ 6 Adjustabl	3	2

\*Motor voltage: 100, 110, 200, 220V Motor power: 4W

SSMA pump is a compact version of SM-A. It is suitable for small machines. Discharge volume of oil is fixed as 2c.c. and 3c.c. per cycle

Model	Cycle time (min.)	Disch. volume (cc/cy)	Max. dis. pressure (kg/cm²)	Reser. capac. (ℓ)
SSMA2*	5, 10, 15 30, 60, 120	2 Fixed	2.8	1
SSMA3*	5, 10, 15 30, 60, 120	3 Fixed	3.2	1



Figures in ( ) are for LD 8

This type is operated by pulling the lever, LD type is of an inverse LA type. Discharging the oil is carried out by pulling the lever and releasing it.

Model	Disch. volume (cc/cy)	Max. dis. pressure (kg/cm²)	Reser. capac. (cc)	Effec. capac. (cc)
LD6	6	3.5	350	250
LD8	8	3.5	600	400

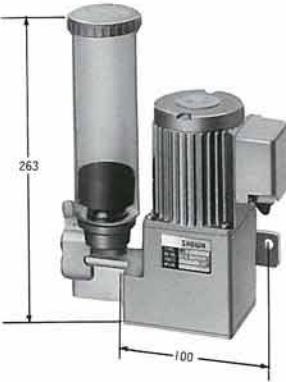
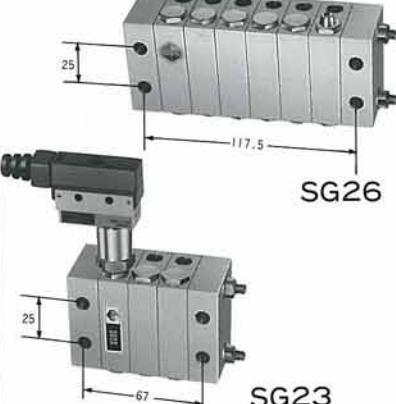
Accumulator pump Model MY6 is a resisting type pump unit which is controlled by an IC timer and fills lubricating oil to the accumulator at the time of operation of pump and discharges it simultaneously with stopping.

DISCHARGE		1-6 cc/st (possible to set optionally)
MAX. DISCHARGE PRESSURE		5 kgf/cm² (0.5 MPa)
INTERMIT-TENT TIME	X1	2, 4, 6, 8, 10, 12, 14, 16, 18 min
(EACH REST TIME)	X10	20, 40, 60, 80, 100, 120, 140, 160, 180 min
OPERATION TIME OF PUMP		12 sec

Model MV automatic continuous lubricator is used for machinery requiring lubrication for resistance lubricating systems.

MODEL	MV1***	MV3***
Max. Discharge pressure	5kgf/cm²	
Discharge volume	50Hz 60Hz	1.7cc/min 3.5cc/min 2.0cc/min 4.2cc/min
Range of viscosities used oil	30~1500cSt	
Output power	About 4 W	
Reservoir capacity		2.0 ℥
Effective capacity		1.5 ℥

# OTHER AUTOMATIC・MANUAL PUMPS

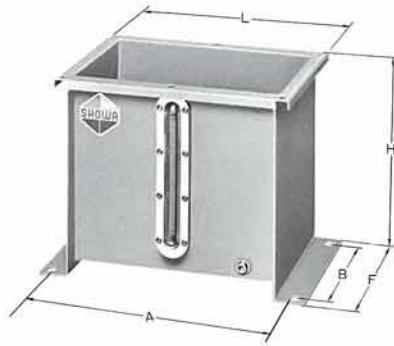
SHG D6/61 TYPE		MHG7																																								
																																										
『GREASE SUPPLY TYPE』      『CARTRIDGE TYPE』																																										
<p>Sign pump SHG is a manual grease lubricator. In consideration of simplicity this is adopted the single piping systems and this has made a return pipe and other complicated piping unnecessary. There are two discharge volume types: One stroke discharge volume is 0.6cc and 1cc type.</p> <p>Sign pump MHG is automatic grease lubricator. In consideration of simplicity this is adopted the single piping systems and this has made a return pipe and other complicated piping unnecessary.</p>																																										
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MHG4 TYPE	SG2 TYPE	SG6 TYPE																																								
																																										
Sign pump MHG is automatic grease lubricator. In consideration of simplicity this is adopted the single piping systems and this has made a return pipe and other complicated piping unnecessary.	Model SG2 is a single tube progression type distributor for grease employing a light alloy. Adopting a building up system, it can discharge up to maximum of 16 ports.	SG6 TYPE is an aluminum die-cast integral type grease distributor of single tube progressing construction.																																								
<table border="1"> <thead> <tr> <th>TYPE</th><th>MHG41※</th><th>MHG42※</th></tr> </thead> <tbody> <tr> <td>Pressure</td><td>120kgf/cm² (11.8Mpa)</td><td></td></tr> <tr> <td>Discharge volume</td><td>4.5cc/min(50Hz), 5.5cc/min(60Hz)</td><td></td></tr> <tr> <td>Use grease viscosity</td><td>NLGI No. 00~1</td><td></td></tr> <tr> <td>Grease supply method</td><td>Cartridge grease(Change type)</td><td>Reservoir(Supply type)</td></tr> <tr> <td>Grease capacity</td><td>400g cartridge</td><td>300cc</td></tr> </tbody> </table>	TYPE	MHG41※	MHG42※	Pressure	120kgf/cm² (11.8Mpa)		Discharge volume	4.5cc/min(50Hz), 5.5cc/min(60Hz)		Use grease viscosity	NLGI No. 00~1		Grease supply method	Cartridge grease(Change type)	Reservoir(Supply type)	Grease capacity	400g cartridge	300cc	<table border="1"> <thead> <tr> <th>Maximum working pressure</th><th>140kgf/cm² (13.7MPa)</th></tr> </thead> <tbody> <tr> <td>APPLICABLE GREASE</td><td>NLGI No.00-1</td></tr> <tr> <td>DISCHARGE</td><td>0.05, 0.1, 0.15, 0.2, 0.3, 0.4, 0.6 cc/st</td></tr> </tbody> </table>	Maximum working pressure	140kgf/cm² (13.7MPa)	APPLICABLE GREASE	NLGI No.00-1	DISCHARGE	0.05, 0.1, 0.15, 0.2, 0.3, 0.4, 0.6 cc/st	<table border="1"> <thead> <tr> <th>Max. operation pressure</th><th>140kgf/cm² (13.7Mpa)</th></tr> </thead> <tbody> <tr> <td>Use grease viscosity</td><td>NLGI No.00~1</td></tr> <tr> <td>Discharge volume (One port, One stroke)</td><td>0.35cc/st (Installation of a special attachment make it possible to increase the discharge).</td></tr> <tr> <td>Number of discharge ports</td><td>4, 6, 8, 12</td></tr> <tr> <td>Main port</td><td>PT1/8</td></tr> <tr> <td>Connection size</td><td>M10×1.0</td></tr> <tr> <td>Body material</td><td>Aluminum die-cast</td></tr> <tr> <td>Grease send out method</td><td>Single tube progressing construction</td></tr> </tbody> </table>	Max. operation pressure	140kgf/cm² (13.7Mpa)	Use grease viscosity	NLGI No.00~1	Discharge volume (One port, One stroke)	0.35cc/st (Installation of a special attachment make it possible to increase the discharge).	Number of discharge ports	4, 6, 8, 12	Main port	PT1/8	Connection size	M10×1.0	Body material	Aluminum die-cast	Grease send out method	Single tube progressing construction
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# RESERVOIRS

## WELDING TYPE



**TY TYPE** Wall mounting type



**TD TYPE** Bottom mounting type

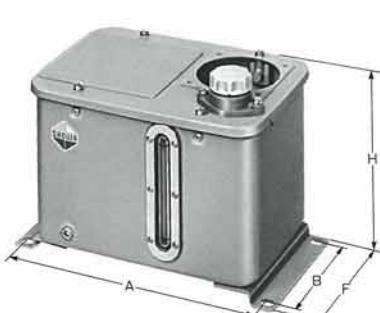


**TZ TYPE** Bottom mounting type

## WRING TYPE



**TY\*P TYPE**



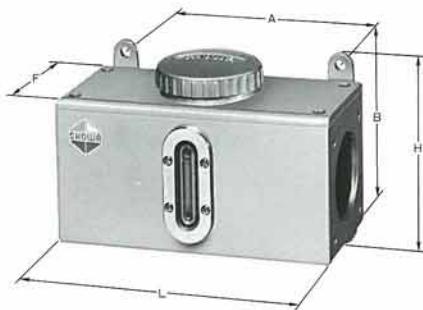
**TD\*P TYPE**



**TP TYPE**

## PLASTIC TYPE

### CAST TYPE (Usable hand pumps A type)



**LT 1 D(Die cast)**

## MEASURE

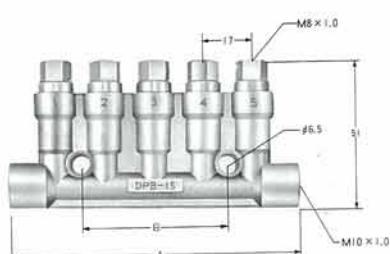
Type	L	F	A	B	H	Capacity(l.)	Type	L	F	A	B	H	Capacity(l.)
T Y 3	180	137	200	110	147	3	T Z 5	220	160	145	110	143	4.7
	4	220	147			4	6	300	170				6.8
	5	220	167			4.7	12	370	230				11.5
	6	300	177			6.8	T Y 4 P	220	163				4.2
	12	370	237			11.5	T Y 6 P	300	183				6.5
T D 4	220	140	230	120	180	3.6	T D 4 P	163	240	156	110	130	4.2
	5	220	160			4.3	T D 6 P	183	320				6.5
	6	300	170			6.0	T P 2	160	115				2
	12	370	230			11.0	T P 4	222	142				4
	15	350	210			14.3	L T 1 D	170	80				1
20	350	210	360	190	350	19.5							
30	450	285	470	240	320	30.7							
40	450	285	470	240	430	41.0							
60	600	375	610	330	350	61.3							
80	600	375	610	330	460	81.9							

# DISTRIBUTOR (VOLUMETRIC・RESISTANCE)

## Usable volumetric system

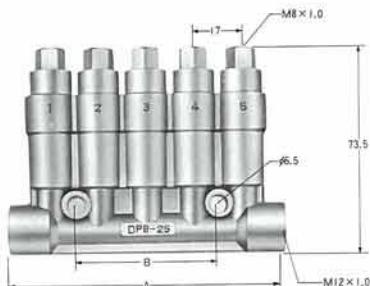
### DESTER PLUNGERS DPB TYPE

DPB 10 TYPE



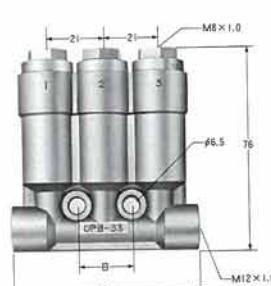
DPB 15

DPB20 TYPE



DPB 25

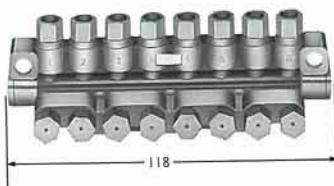
DPB30 TYPE



DPB33

Type	D P B 10 Type					D P B 20 Type					D P B 30 Type						
Number of discharge port	1	2	3	5	6	8	10	1	2	3	5	6	8	10	1	2	3
Discharge volume (cc)	0.03, 0.06, 0.10, 0.16					0.1, 0.2, 0.4, 0.6					0.2, 0.4, 0.6, 1.0, 1.5						
Normal operation press.	5					8					8						
B measure (mm)	—	—	17	51	68	102	136	—	—	17	51	68	102	136	—	—	21
A measure (mm)	40	48	65	99	116	150	184	40	46	63	97	114	148	182	45	50	71

### DESTER BLOCKS DS TYPE



DS8Z

DESTER BLOCKS have been developed the low pressure volumetric type distribution system, and are pressure accumulating type distributors.

Model	DS
Number of discharge ports	2, 3, 5, 8
Discharge volume (cc/st)	0.03, 0.05, 0.08, 0.1
Normal operation pressure(kgf/cm <sup>2</sup> )	10~30
Connection size	Main pipe M10×1.0 Branch pipe M8×1.0

### DESTER PLUNGER DPB20L TYPE (VISUAL DETECTION)



DPB25L

DESTER PLUNGER DPB 20L type.  
Discharge is confirmed visually. The head pin is projected when discharge operation is on. Specifications are same as the DPB 20 type.

Dis ope. press.	8kg/cm <sup>2</sup> or more
Nor.work. press.	8~30kg/cm <sup>2</sup>
Recom. vis.	20~500St
Pin projection length	1.9~9.4mm

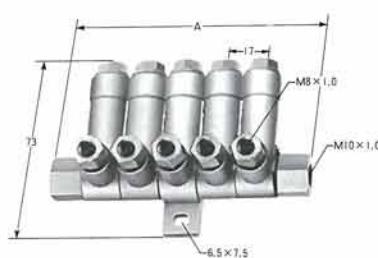
### DESTER BLOCKS DSA・DSB TYPE

DSA TYPE



DSA6

DSB TYPE

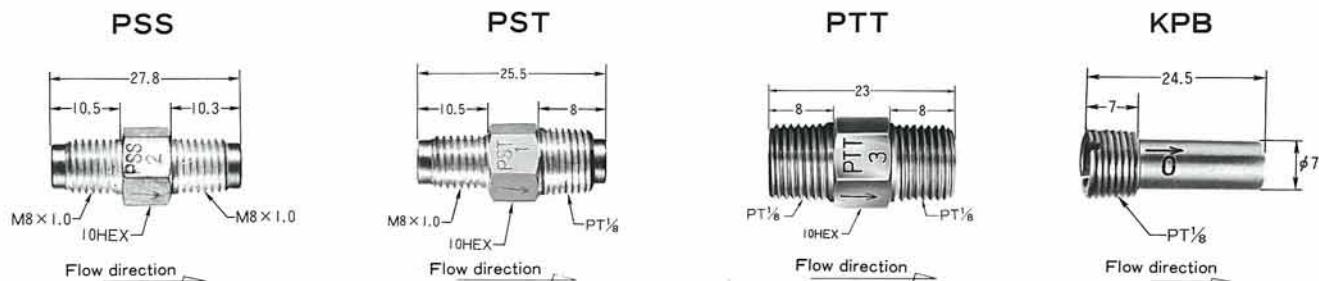


DSB5

Type	DSA Type				DSB Type		
Num. of dis. port	2	4	6	8	3	5	7
Disch. volume	0.1, 0.2, 0.5, 1.0						
Normal operation pressure (kgf/cm <sup>2</sup> )					5~30		
A measure	35	52	69	86	80	114	148

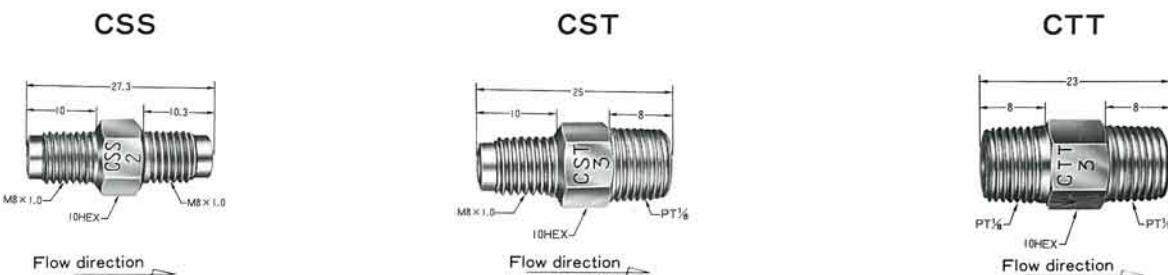
# Usable resistance system

## PROPER UNITS P※※・K※※TYPE



Type	P S S	P S T	P T S	P T T	K P B	K P F
Valve NO.	00	0	1	2	3	4
Flow rate	0.5	2	4	8	16	32
Connection port	I N M 8 × 1.0	M 8 × 1.0	PT 1/8	PT 1/8	PT 1/8	—
	O U T M 8 × 1.0	PT 1/8	M 8 × 1.0	PT 1/8	—	PT 1/8
Normal working pressure	1.5 ~ 20 kg/cm <sup>2</sup>					
Recommended viscosity	20 ~ 500 cSt					

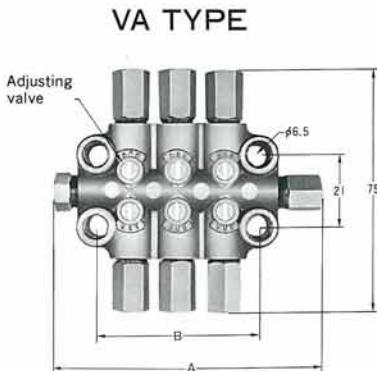
# CONTINUOUS UNITS C※※TYPE



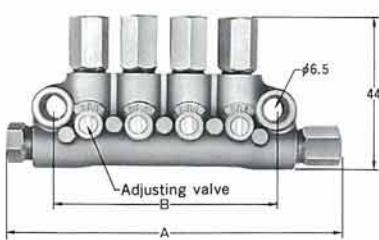
Type	C S S	C S T	C T T
Valve NO.	1	2	3
Flow rate	1.2	2.5	5.0
Connection port	I N M 8 × 1.0	M 8 × 1.0	PT 1/8
	O U T M 8 × 1.0	PT 1/8	PT 1/8
Normal working pressure	1.5 ~ 20 kg/cm <sup>2</sup>		
Recommended viscosity	20 ~ 500 cSt		

\*Please use CSS type for grease pumps.

# DESTER VALVES VA・VB TYPE



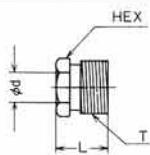
## VB TYPE



Type	VA Type	VB Type
Num. of Dis. port	4	6
	10	16
	2	4
Connection port	M 8 × 1.0 (PC4) or M 10 × 1.0 (PC6)	
	M 8 × 1.0 (PD4) or M 10 × 1.0 (PD6)	
Nor. work. press	1 ~ 15 kg/cm <sup>2</sup>	
Reco. visco.	10 ~ 500 cSt	
B measure (mm)	48	76
	118	118
A measure (mm)	47	76.5
	104.5	146.5
	62	90.5
	118.5	146.5

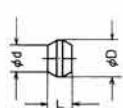
# DISTRIBUTION SYSTEM-FITTINGS

## Bushing



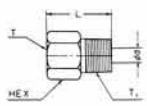
Part NO.	Tube size	$\phi d$	L	T	HEX
PA 4	$\phi 4$	4.1	12	M 8 × 1.0	8
PA 6	$\phi 6$	6.1	12.5	M 10 × 1.0	10
PA 8	$\phi 8$	8.2	14	M 14 × 1.5	14
PA 10	$\phi 10$	10.2	15	M 16 × 1.5	17
PA 12	$\phi 12$	12.2	16	M 18 × 1.5	19

## Sleeve



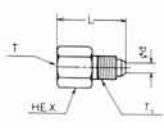
Part NO.	Tube size	$\phi d$	$\phi D$	L
PB 4	$\phi 4$	4.1	6	4.5
PB 6	$\phi 6$	6.1	8	4.5
PB 8	$\phi 8$	8.1	10	7
PB 10	$\phi 10$	10.1	12	8
PB 12	$\phi 12$	12.1	14	9

## Adapter



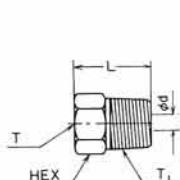
Part NO.	Tube size	$\phi d$	L	T	$T_1$	HEX
PD 4	$\phi 4$	3	18	M 8 × 1.0	PT $1\frac{1}{8}$	10
PD 6	$\phi 6$	4	18	M 10 × 1.0	PT $1\frac{1}{8}$	12
PD54	$\phi 4$	4.2	18	M 8 × 1.0	PT $1\frac{1}{8}$	10
PD56	$\phi 6$	6.2	18	M 10 × 1.0	PT $1\frac{1}{8}$	12
PD 8	$\phi 8$	6	26	M 14 × 1.5	PT $1\frac{1}{4}$	17
PD801	$\phi 8$	6	26	M 14 × 1.5	PT $1\frac{1}{8}$	17
PD10	$\phi 10$	8	29	M 16 × 1.5	PT $1\frac{1}{4}$	19
PD12	$\phi 12$	10	32	M 18 × 1.5	PT $3\frac{3}{8}$	21

## Adapter



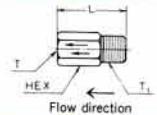
Part NO.	Tube size	$\phi d$	L	T	$T_1$	HEX
PDI01	$\phi 4$	3	23	PS $1\frac{1}{8}$	M 8 × 1.0	12
PDI10	$\phi 6$	3	23	M 10 × 1.0	M 8 × 1.0	12

## Adapter



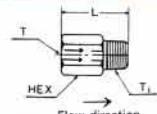
Part NO.	Tube size	$\phi d$	L	T	$T_1$	HEX
KH 1	$\phi 4$	3.5	20	M 8 × 1.0	PT $1\frac{1}{4}$	14
KH 2	$\phi 6$	5	20.5	M 10 × 1.0	PT $1\frac{1}{4}$	14
KH 4	—	4	21	PT $1\frac{1}{8}$	M 10 × 1.0	14
KH 5	—	6	26	PT $1\frac{1}{4}$	M 12 × 1.0	17
KH 6	—	5	24	PT $1\frac{1}{4}$	PT $1\frac{1}{8}$	17
KH 7	—	6	24	PT $1\frac{1}{8}$	M 12 × 1.0	17
KH 8	$\phi 6$	4	19	M 10 × 1.0	M 10 × 1.0	14
KH 9	$\phi 6$	4	20	M 10 × 1.0	テーバー M 12 × 1.0	17
KH10	$\phi 8$	6	28	M 14 × 1.5	テーバー M 12 × 1.0	17

## Check valve



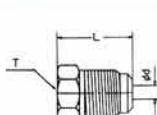
Part NO.	Tube size	L	T	$T_1$	HEX
PC 4	$\phi 4$	22.5	M 8 × 1.0	PT $1\frac{1}{8}$	10
PC 6	$\phi 6$	22.5	M 10 × 1.0	PT $1\frac{1}{8}$	12

## Check valve



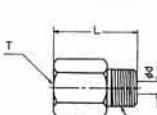
Part NO.	Tube size	L	T	$T_1$	HEX
PV 4	$\phi 4$	23.5	M 8 × 1.0	PT $1\frac{1}{8}$	10
PV 6	$\phi 6$	23.5	M 10 × 1.0	PT $1\frac{1}{8}$	12

## Reducer



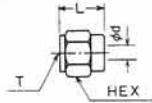
Part NO.	Tube size	$\phi d$	L	T	$T_1$	HEX
PD604	$\phi 4$	3	20	M 8 × 1.0	M 10 × 1.0	12
PD804	$\phi 4$	3	20	M 8 × 1.0	M 14 × 1.5	14
PD806	$\phi 6$	4	23	M 10 × 1.0	M 14 × 1.5	14
PDI004	$\phi 4$	3	24	M 8 × 1.0	M 16 × 1.5	17
PDI006	$\phi 6$	4	24	M 10 × 1.0	M 16 × 1.5	17
PDI008	$\phi 8$	6	30	M 14 × 1.5	M 16 × 1.5	19

## Adapter



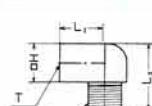
Part NO.	Tube size	$\phi d$	L	T	$T_1$	HEX
PD610	$\phi 6$	4	17.5	M 10 × 1.0	M 10 × 1.0	14
PD612	$\phi 6$	4	20	M 10 × 1.0	M 12 × 1.0	17
PD812	$\phi 8$	6	28	M 14 × 1.5	M 12 × 1.0	17

## Nut



Part NO.	Tube size	$\phi d$	L	T	HEX
PAN 4	$\phi 4$	4.2	12	M 8 × 1.0	10

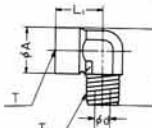
## Elbow adapter



Part NO.	Tube size	$\phi d$	$L_1$	$L_2$	T	$T_1$	OH
PH 4	$\phi 4$	3	13	18	M 8 × 1.0	PT $1\frac{1}{8}$	10
PH 6	$\phi 6$	4	14	20	M 10 × 1.0	PT $1\frac{1}{8}$	12

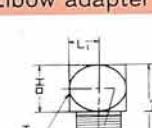
\*In pH4,  $T_1$  size M 6 × 1.0 and M 8 × 1.0 are available.

## Elbow adapter



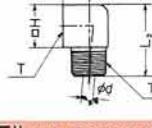
Part NO.	Tube size	$\phi d$	$\phi A$	$L$	$L_2$	T	$T_1$
PHF 8	$\phi 8$	6	18	19	30	M 14 × 1.5	PT $1\frac{1}{4}$
PHF801	$\phi 8$	4	18	19	30	M 14 × 1.5	PT $1\frac{1}{8}$
PHF10	$\phi 10$	8	20	22	32	M 16 × 1.5	PT $1\frac{1}{4}$
PHF12	$\phi 12$	10	22	24.5	35	M 18 × 1.5	PT $3\frac{3}{8}$

## Elbow adapter 90°



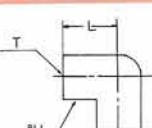
Part NO.	Tube size	$\phi d$	L	T	$T_1$	OH
PH6-2	$\phi 6$	4	8.5	26	M 10 × 1.0	PT $1\frac{1}{4}$

## Elbow connector

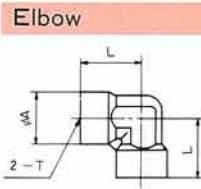


Part NO.	Tube size	$\phi d$	$\phi A$	$L_1$	$L_2$	T	$T_1$
PIC1	—	3	7	20	PT $1\frac{1}{8}$	PT $1\frac{1}{8}$	12

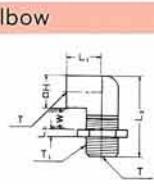
## Elbow connector



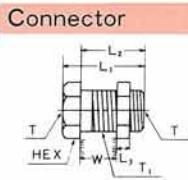
Part NO.	Tube size	L	T	OH
PL 4	$\phi 4$	14	M 8 × 1.0	10
PL 6	$\phi 6$	15	M 10 × 1.0	12



Part NO.	Tube size	$\phi A$	T	L
PLF 8	$\phi 8$	18	M14×1.5	20
PLF 10	$\phi 10$	20	M16×1.5	22.5
PLF 12	$\phi 12$	22	M18×1.5	25

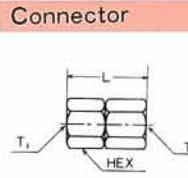


Part NO.	Tube size	$\phi A$	$L_1$	$L_2$	$L_3$	T
PKF 8	$\phi 8$	18	(40)	(29)	20	M14×1.5
PKF 10	$\phi 10$	20	45	(32.5)	22.5	M16×1.5
PKF 12	$\phi 12$	22	50	(36)	25	M18×1.5

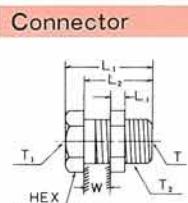


Part NO.	Tube size	$L$	$L_1$	$L_2$	T	$T_1$	HEX	W
PM 104	$\phi 4$	23	18	5	M8×1.0	M12×1.0	14	3 or more
PM 106	$\phi 6$	23	18	5	M10×1.0	M14×1.0	17	
PM 108	$\phi 8$	33	26	7	M14×1.5	M18×1.5	21	
PM 110	$\phi 10$	36	28	8	M16×1.5	M20×1.5	23	
PM 112	$\phi 12$	39	29	10	M18×1.5	M24×1.5	27	

※With Nut

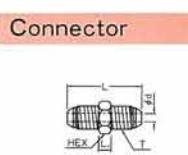


Part NO.	Tube size	$L$	T	$T_1$	HEX
PN 4	$\phi 4$	23	M8×1.0	PS 1/8	12
PN 6	$\phi 6$	23	M10×1.0	PS 1/8	12
PN 8	$\phi 8$	33	M14×1.5	PS 1/4	17
PN 10	$\phi 10$	36	M16×1.5	PS 1/4	19
PN 12	$\phi 12$	39	M18×1.5	PS 3/8	21

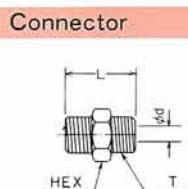


Part NO.	Tube size	$L$	$L_1$	$L_2$	T	$T_1$	$T_2$	HEX	W
PN 104	$\phi 4$	23	18	5	M8×1.0	PS 1/8	M14×1.0	17	3 or more
PN 106	$\phi 6$	23	18	5	M10×1.0	PS 1/8	M14×1.0	17	
PN 108	$\phi 8$	33	26	7	M14×1.5	PS 1/4	M18×1.5	21	
PN 110	$\phi 10$	36	28	8	M16×1.5	PS 1/4	M20×1.5	23	
PN 112	$\phi 12$	39	29	10	M18×1.5	PS 3/8	M24×1.5	27	

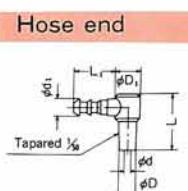
※With Nut



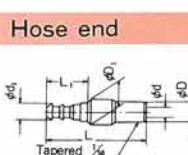
Part NO.	Tube size	$\phi d$	$L$	$L_1$	T	HEX	
PQ 8	—	—	3	26	4	M8×1.0	10
PQ 10	—	—	4	26	4	M10×1.0	12



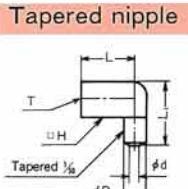
Part NO.	Tube size	$\phi d$	$L$	T	HEX	
PQ 8 T	—	—	3	19	Tapered M8×1.0	10
PQ 10 T	—	—	4	19	Tapered M10×1.0	12
PQ 12 T	—	—	6	24	Tapered M12×1.0	14
PQ 10 I	—	—	6	20	PT 3/8	10



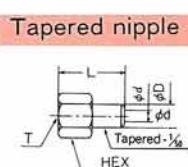
Part NO.	Tube size	$\phi d$	$\phi d_1$	$\phi D$	$\phi D_1$	$L$	$L_1$	Dia. of Drill
PEB 4	$\phi 4$	3	3.6	6	7	16	12.5	$\phi 6$
PEB 6	$\phi 6$	5	5.2	7	10	25	18.5	$\phi 7$



Part NO.	Tube size	$\phi d$	$\phi d_1$	$\phi D$	$\phi D_1$	$L$	$L_1$	Dia. of Drill
PFB 4	$\phi 4$	3	3.6	6	7	27	11	$\phi 6$
PFB 6	$\phi 6$	5	5.2	7	10	42	17	$\phi 7$



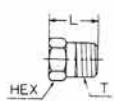
Part NO.	Tube size	$\phi d$	$\phi D$	$L$	$L_1$	T	□H
PEF 4	$\phi 4$	3	6	14.5	18	M8×1.0	10
PEF 6	$\phi 6$	5	7	14.5	24	M10×1.0	12



Part NO.	Tube size	$\phi d$	$\phi D$	$L$	T	HEX
PFF 4	$\phi 4$	3	6	18	M8×1.0	10
PFF 6	$\phi 6$	5	7	24	M10×1.0	12

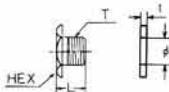
# DISTRIBUTION SYSTEM-FITTINGS

## Seal plug



Part NO.	Tube size	L	T	HEX
PG 1	—	13	PT 1/8	10

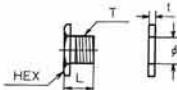
## Seal plug



Part NO.	Packing size	L	T	HEX
PG 8	φ 8 × 1.5t	8	M 8 × 1.0	12
PG 10	φ 10 × 1.5t	10	M 10 × 1.0	14
PG 12	φ 12 × 1.5t	12	M 12 × 1.0	17

※ With fiber packing

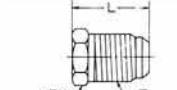
## Seal plug



Part NO.	Gasket size	L	T	HEX
PG 8C	φ 12 × 1t	8	M 8 × 1.0	12
PG10C	φ 14 × 1t	10	M 10 × 1.0	14
PG12C	φ 16 × 1t	12	M 12 × 1.0	17

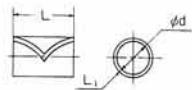
※ With copper gasket

## Seal plug



Part NO.	Tube size	L	T	HEX
PG 004	—	14.5	M 8 × 1.0	8
PG 006	—	15	M 10 × 1.0	10
PG 008	—	23	M 14 × 1.5	14
PG 010	—	26	M 16 × 1.5	17

## Tubing clip



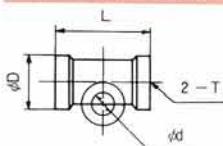
Part NO.	Tube size,	φd	L	L1
PZ 4	φ 4	4.5	8	0.4
PZ 6	φ 6	6.8	8	0.4

## Tubing insert



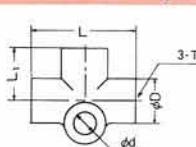
Part NO.	Tube size	L	φd	φD
AL 4	φ 4	10	2	2.5
AL 6	φ 6	10	3	4
AL 8	φ 8	16	4.4	6
AL 10	φ 10	16	6.4	8
AL 12	φ 12	16	8.4	10

## Junction-2way



Part NO.	Tube size	φd	φD	L	T
JD 2	φ 4	6.5	15	30	M 8 × 1.0
JD 2-6	φ 6	6.5	15	30	M 10 × 1.0

## Junction-3way



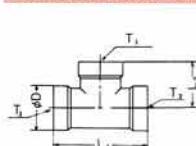
Part NO.	Tube size	φd	φD	L	L1	T	Thickness
JD 3	φ 4	6.5	13	30	15	M 8 × 1.0	16

## Junction-4way



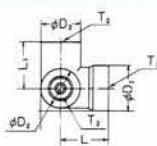
Part NO.	Tube size	φd	φD	L	T	Thickness
JD 4	φ 4	6.5	13	30	M 8 × 1.0	16

## Junction Header-3way



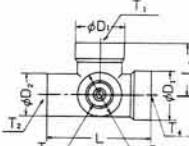
Part NO.	Tube size	φD	L1	L2	T1	T2	T3
JHD 3	φ 4	15	30	15	PT 1/8	M 8 × 1.0	M 8 × 1.0
JHD301	φ 4	15	30	15	M 8 × 1.0	M 8 × 1.0	PT 1/8
JHD304	φ 4	15	30	15	PT 1/8	PT 1/8	M 8 × 1.0
JHD306	φ 6	15	30	15	PT 1/8	M 10 × 1.0	M 10 × 1.0

## Junction Header-3way



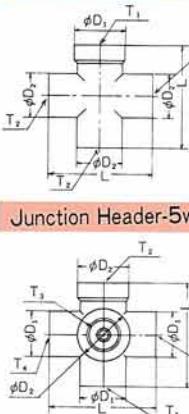
Part NO.	Tube size	φD <sub>1</sub>	φD <sub>2</sub>	L	L <sub>1</sub>	T <sub>1</sub>	T <sub>2</sub>
JHD 302	φ 4	15	13	15	15	PT 1/8	M 8 × 1.0

## Junction Header-4way



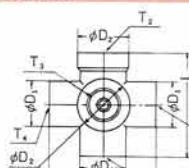
Part NO.	Tube size	φD <sub>1</sub>	φD <sub>2</sub>	L	L <sub>1</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
JHD 4	φ 4	15	13	30	15	PT 1/8	M 8 × 1.0	M 8 × 1.0
JHD401	φ 4	15	13	30	15	M 8 × 1.0	M 8 × 1.0	PT 1/8

## Junction Header-4way



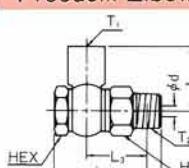
Part NO.	Tube size	φD <sub>1</sub>	φD <sub>2</sub>	L	L <sub>1</sub>	T <sub>1</sub>	T <sub>2</sub>
JHD 402	φ 4	15	13	30	PT 1/8	M 8 × 1.0	

## Junction Header-5way



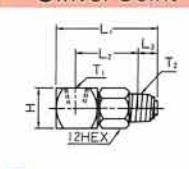
Part NO.	Tube size	φD <sub>1</sub>	φD <sub>2</sub>	L	L <sub>1</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
JHD 5	φ 4	13	15	30	M 8 × 1.0	M 8 × 1.0	PT 1/8	M 8 × 1.0
JHD501	φ 4	13	15	30	M 8 × 1.0	PT 1/8	M 8 × 1.0	M 8 × 1.0

## Freedom Elbow



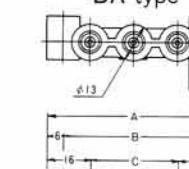
Part NO.	Tube size	φd	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	HEX	T <sub>1</sub>	T <sub>2</sub>
S4	φ 4	3	29	25	16.5	18	I 2	M 8 × 1	PT 1/8

## Swivel Joint



Part NO.	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	T <sub>1</sub>	T <sub>2</sub>	H
SJ0101	35	21.5	7	PT 1/8	PT 1/8	□ 14

## Junction Bars



(for φ4 fitting)

Fig. DA8



(for φ4 fitting)

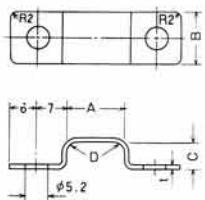
Fig. DB5

Part NO.	Connection port	A	B	C
DA 4 D	4	48	36	16
DA 5 D	5	64	52	32
DA 6 D	6	80	68	48
DA 7 D	7	96	84	64
DA 8 D	8	112	100	80
DA 9 D	9	128	116	96
DA 10 D	10	144	132	112
DA 12 D	12	176	164	144

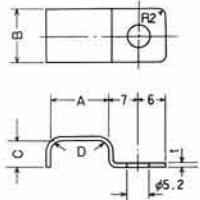
Recommend use together  
PROPER UNITS and CON-  
TINUOUS UNITS.

# TUBING CLIPS

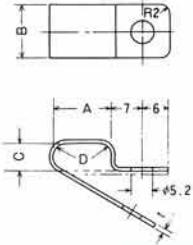
Double mounting type



Single mounting type

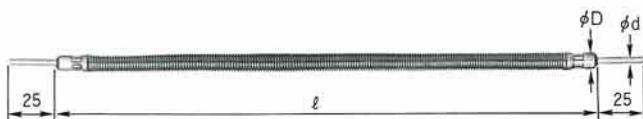


Lift up type

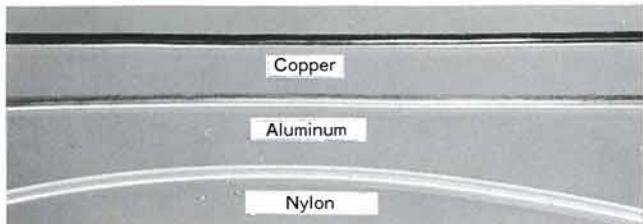


Double mounting type							Single mounting type							Lift up type									
Part NO.	Tube size	Tube Q'ty	A	B	C	D(R)	t	Part NO.	Tube size	Tube Q'ty	A	B	C	D(R)	t	Part NO.	Tube size	Tube Q'ty	A	B	C	D(R)	t
PZ 144	φ 4	4	16.8	10	4	2	0.8	PZ 14	φ 4	1	4.0	10	4	2	0.8	PZ 514	φ 4	1	4.0	10	4	2	0.8
PZ 146	φ 6	4	24.8	12	6	3	1.0	PZ 16	φ 6	1	6.0	12	6	3	1.0	PZ 516	φ 6	1	6.0	12	6	3	1.0
PZ 1108	φ 8	1	8.0	12	7.7	4	1.2	PZ 0108	φ 8	1	8.0	12	7.7	4	1.2	PZ 524	φ 4	2	8.4	10	4	2	0.8
PZ 1110	φ 10	1	10.0	14	9.7	5	1.4	PZ 0110	φ 10	1	10.0	14	9.7	5	1.4	PZ 526	φ 6	2	12.4	12	6	3	1.0
PZ 1112	φ 12	1	12.0	16	11.7	6	0.8	PZ 0112	φ 12	1	12.0	16	11.7	6	1.4	PZ 534	φ 4	3	12.6	10	4	2	0.8
PZ 154	φ 4	5	21.0	10	4	2	1.0	PZ 24	φ 4	2	8.4	10	4	2	0.8	PZ 536	φ 6	3	18.6	12	6	3	1.0
PZ 156	φ 6	5	31.0	12	6	3	1.2	PZ 26	φ 6	2	12.4	12	6	3	1.0	PZ 544	φ 4	4	16.8	10	4	2	0.8
PZ 1208	φ 8	2	16.4	12	7.7	4	1.4	PZ 0208	φ 8	2	16.4	12	7.7	4	1.2	PZ 546	φ 6	4	24.8	12	6	3	1.0
PZ 1210	φ 10	2	20.4	14	9.7	5	1.4	PZ 0210	φ 10	2	20.4	14	9.7	5	1.4	PZ 554	φ 4	5	21.0	10	4	2	0.8
PZ 1212	φ 12	2	24.4	16	11.7	6	0.8	PZ 0212	φ 12	2	24.4	16	11.7	6	1.4	PZ 556	φ 6	5	31.0	12	6	3	1.0
PZ 164	φ 4	6	25.2	10	4	2	1.0	PZ 34	φ 4	3	12.6	10	4	2	0.8								
PZ 166	φ 6	6	37.2	12	6	3	1.2	PZ 36	φ 6	3	18.6	12	6	3	1.0								
PZ 1308	φ 8	3	24.6	12	7.7	4	1.4	PZ 0308	φ 8	3	24.6	12	7.7	4	1.2								
PZ 1310	φ 10	3	30.6	14	9.7	5	1.4	PZ 0310	φ 10	3	30.6	14	9.7	5	1.4								
PZ 1312	φ 12	3	36.6	16	11.7	6	1.4	PZ 0312	φ 12	3	36.6	16	11.7	6	1.4								
PZ 174	φ 4	7	29.4	10	4	2	0.8																
PZ 176	φ 6	7	43.4	12	6	3	1.0																
PZ 184	φ 4	8	33.6	10	4	2	0.8																
PZ 186	φ 6	8	49.6	12	6	3	1.0																

## FLEXIBLE HOSES FHS・FHC・FSC



## TUBINGS



Type	F H S	F H C	F S C	
Appearance	Outside braid	Glass fiber	Vinylon	
	Color	Yellow	Black	
Hose configuration	Rubber inner	N B R		
	Reinforcement layer 1B	Vinylon		
	Reinforcement layer 2B	Fiber glass	Vinylon	
Outside protection	Protection spring (Plated)			
Operating pressure (kg/cm²)	30	25		
Max. operation pressure (kg/cm²)	60	30		
Hose burst pressure (kg/cm²)	240 or more		120 or more	
Temperature range (°C)	-20 ~ +100			
Transient surface temperature (°C)	500	200		
Hose size	Connecting pipe O.D. (φd)	4, 6	6	
	Out diameter (φD)	10	14	
	Length (l)	100mm~200mm at 100mm increment		

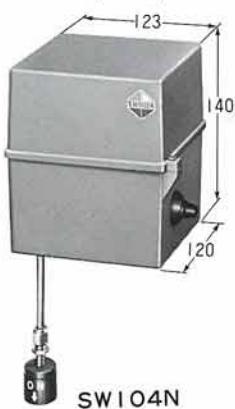
Material	Part NO.	Out Dia. size (φ)
Copper(Aannealed)	CUT	4, 6, 8, 10, 12
Aluminum(Aannealed)	ALP	4, 6, 8, 10, 12
Steel	DWT	4, 6, 8,
Nylon	Nylon	4, 6, 8, 10, 12
Hizex	Hizx	4, 6, 8, 10, 12
Surlyn	Surlyn	4, 6, 8, 10, 12
Vinyl	Vinyl	4, 6, 8,

## PLASTIC TUBES

Material	Nylon						Hizex						Suylyn						
	Tube size(φ)	4	6	8	10	12	4	6	8	10	12	4	6	8	10	12			
Nomal pressure kg/cm²	at20°C	22	20	15	—	—	12.5	10	7.5	6.5	4.5	7	6	4.5	3	2.5			
	at40°C	16	15	11	—	—	8	7	5	4.5	3	3	2	2	1.5	1			
Operating temperature range (°C)		-30~90						-40~40						-40~40					

# ACCESSORIES

● Terminal box(SW※)



● Float switch(OLV2B2)



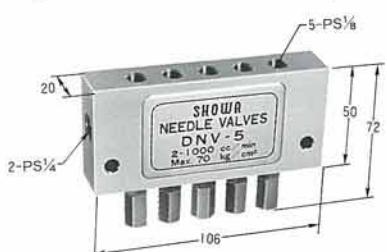
● Pressure switch(2OPS)



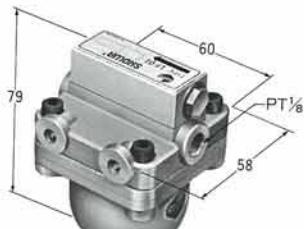
● Flow detector(GD12※)



● Adjustable feeder  
(Dester needle valves DNV5)



● Line filter(LFO101)  
for volumetric system



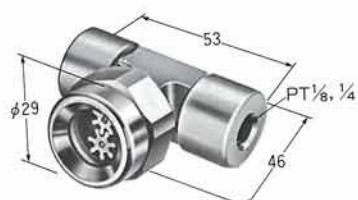
● Pressure switch(SPS-8T)



● Pressure gauge(PG※※)



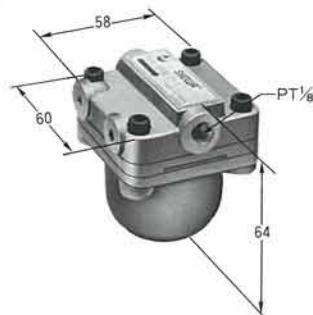
● Flow indicator(FSRO1.02)



LF04



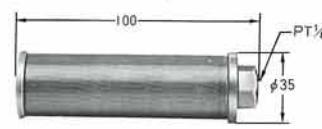
● Line filter(LFO1) for resistance system



● Line filter(LFY※)



● Suction filter(SH※/SF※※)



SH01



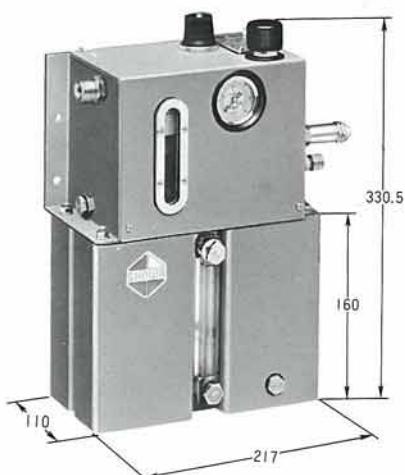
● Micro separator(MS※※)



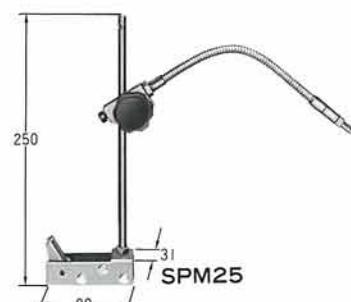
# CUTTING RELATED APPARATUS

## SHOWA MIST : FP2

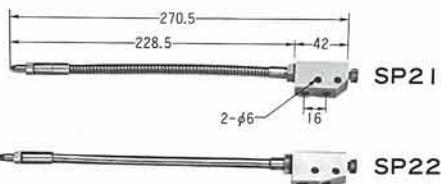
SHOWA MIST is a spray mist coolant system that's more durable and convenient than any other. SHOWA MIST will cut down on tool sharpening and wheel redressing time. The finished work will have a better finish and tools will last longer.



### ■ STAND



### ■ SPRAY NOZZLE



\*4 kinds of nozzle tip available.

### ■ DESTER-UNI



### Type | Connection port | L measure

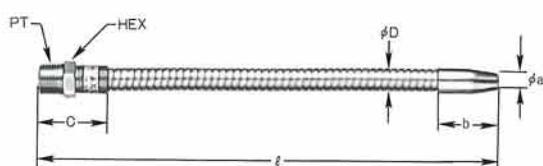
Type	Connection port	L measure
DBW3H	3	39.4
DBW5H	5	77.5
DBW6H	6	96.5
DBW8H	8	134.7
DBW10H	10	172.7

### ■ SPRAY HOSE



Type	Length	Speci
SP1H	305	Normal pressure 4kg/cm <sup>2</sup>
SP2H	610	withstanding
SP3H	914	pressure 6kg/cm <sup>2</sup>
SP4H	1220	
SP6H	1828	
SP8H	2438	
SP10H	3048	

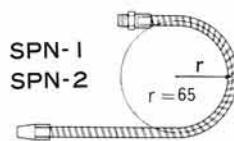
## SUPER NOZLE : SPN



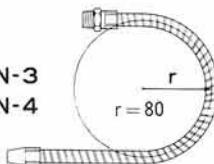
Super nozzle SPN is flexible tube for pouring cutting oil  
No dripping, spouting and dislocation.

Minimum radius of curvature: r

SPN-1  
SPN-2



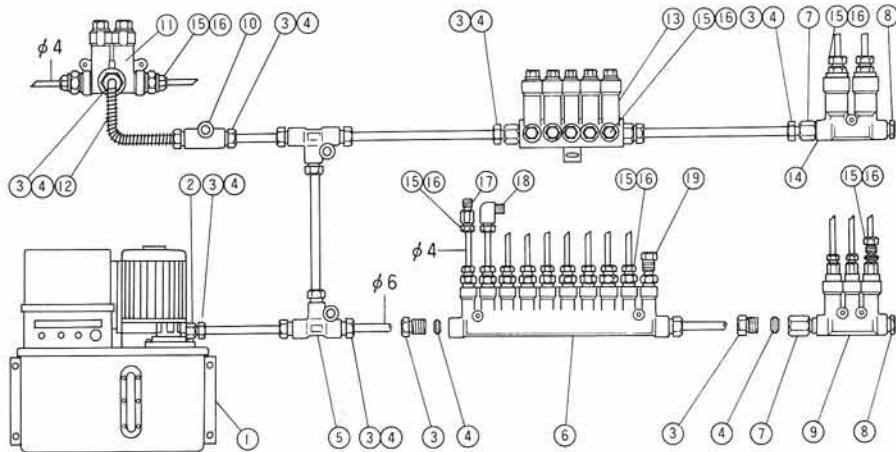
SPN-3  
SPN-4



Type	l	Length	Screw PT	$\phi$ a	b	c	$\phi$ D	HEX	r
SPN-1-150L	150	800L	$\frac{1}{4}$	6	39	38	13	17	65
		800L				39			
SPN-2-150L	150	800L	$\frac{3}{8}$	8	39	40	16	22	80
		800L				39			
SPN-3-150L	150	800L	$\frac{1}{2}$	10	40	38	16	22	80
		800L				39			

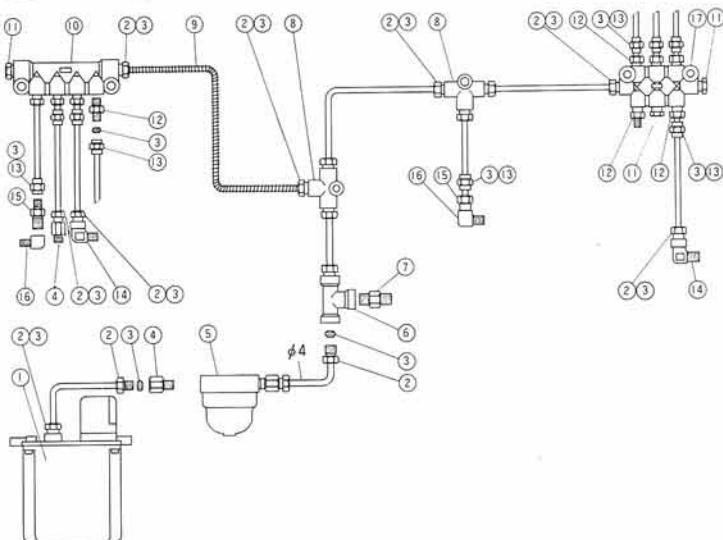
\*Length available 150~800mm at 50mm increment.

# EXAMPLE OF VOLUMETRIC LUBRICATION SYSTEM



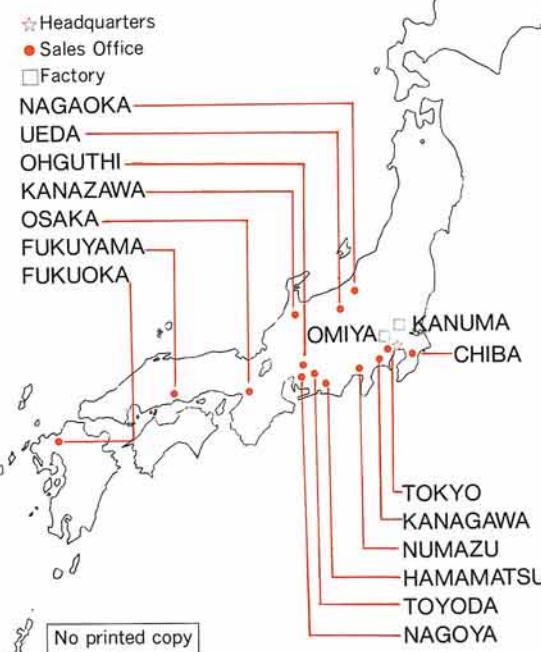
Item NO.	Symbol	Name of part
1	LCA 2 type	Pump unit
2	PD 6	Adapter
3	PA 6	Bushing
4	PB 6	Sleeve
5	PKD 6	Junction
6	DPB 110	Dester plunger DPB 10 type
7	PD 612	Adapter
8	PG 12	Seal plug
9	DPB 23	Dester plunger DPB 20 type
10	JD2-6	Junction
11	DSA 2	Dester Block DSA type
12	FSC 605	Flexible hose
13	DSB 5	Dester Block DSB type
14	DPB 32	Dester plunger DPB 30 type
15	PA 4	Bushing
16	PB 4	Sleeve
17	PD 4	Adapter
18	PH 4	Elbow
19	PG 004	Seal plug

# EXAMPLE OF RESISTANCE LUBRICATION SYSTEM



Item NO.	Symbol	Name of part
1	SMA type	Semi cycle pump
2	PA 4	Bushing
3	PB 4	Sleeve
4	PD 4	Adapter
5	LF01N	Line filter
6	JHD 3	Junction Header
7	PTT	Proper unit
8	JD 3	Junction
9	FHC 420	Flexible hose
10	DB 6 D	Junction Bar DB type
11	PG 004	Seal plug
12	PSS	Proper unit
13	PAN 4	Nut
14	PHD 4	Elbow
15	PST	Proper unit
16	Pi 1	Elbow adapter 90°
17	DA 8 D	Junction Bar DA type

## —SHOWA SERVICE NETWORK—



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