SHOWA

SHOWA
LUBRICATION SYSTEMS

DIGEST VERSION

SHOWA CORPORATION
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Staying true to our motto "To apply genuine technical skills to produce a product that can be trusted" and utilizing various skills and knowledge which have been accumulated over the many years, SHOWA continues to supply high quality centralized lubrication systems, proven useful in various industries.

Infused within our products are the attention to fine detail and quality, which we continue to deliver, thus enabling SHOWA to be one of the leading manufacturers of lubrication equipment in Japan.

To respond to the needs for diversification and meet customer requirements, we at SHOWA not only performs further research and development to produce effective new products, but we also diligently strive to strengthen the local and International network to help provide a superior service for our customers.

SHOWA's extensive sales and service network includes; the head office located in Tokyo, 13 branch offices within the nation, factory-warehouse and International distributors located around the world.

Omiya Factory

Secondary Tokyo Office

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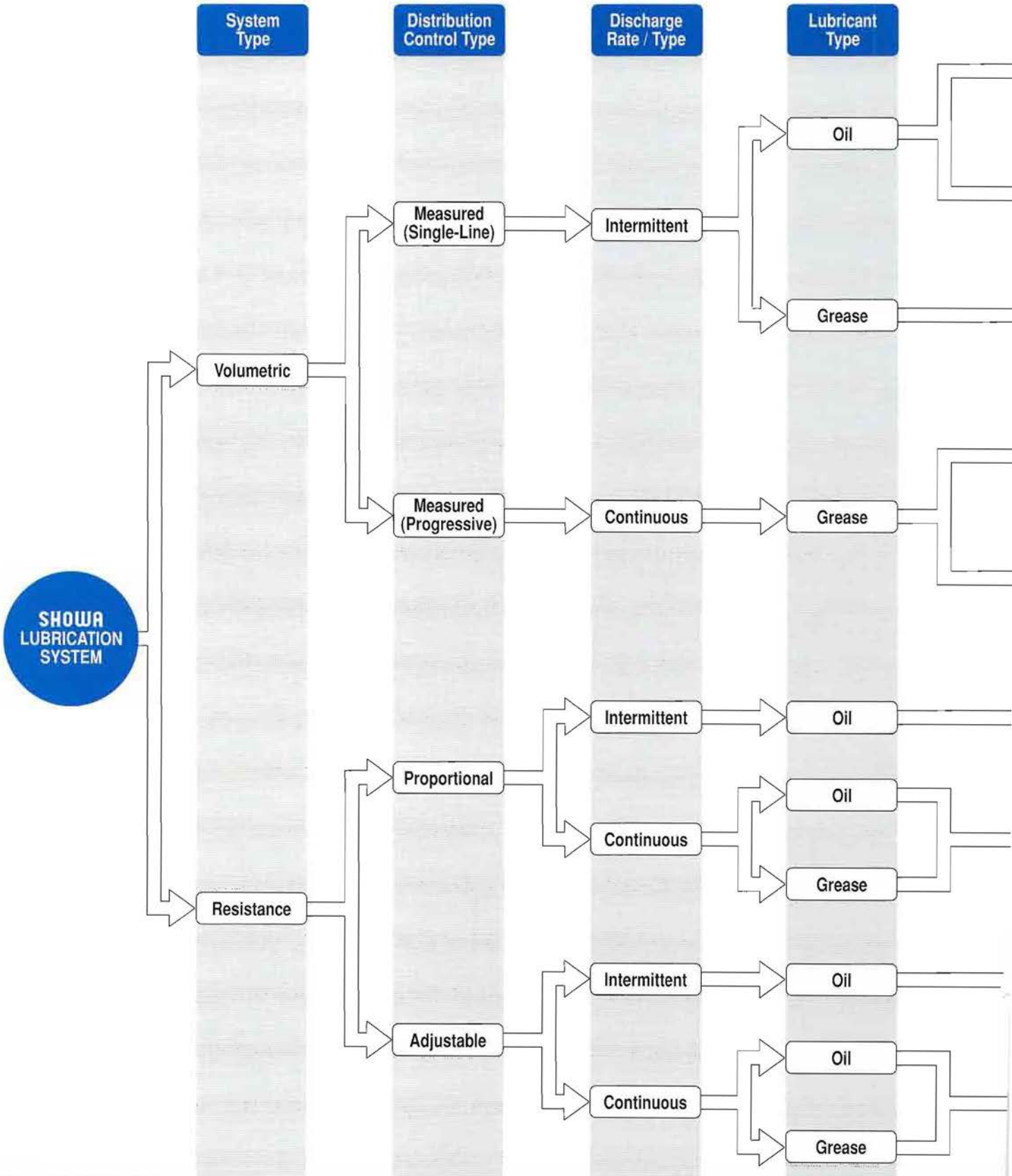
SHOWA

SHOWA Lubrication System Chart

Lubrication System Selection

Depending upon the required lubrication system, a compatible pump and distribution equipment must be selected to enable correct operation to take place. Mixing pumps and distribution equipment from different types of systems may cause faults.
By referring to the chart below, an appropriate lubrication system and components for a specific requirement can be identified. Further information regarding the different types of lubrication systems available can be found on pages 4 & 5.



OIL Lubrication
Lubrication systems for OIL applications.

GREASE Lubrication
Lubrication systems for GREASE applications.

Continuous Discharge
Lubricant is supplied to the target points continuously.

Intermittent Discharge
Lubricant is supplied to the target points intermittently.

Volumetric System
Measured amount of OIL distributed at target points.

Resistance System
Applies varying resistance to distribute OIL proportionally.

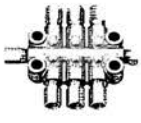
Single-Line System
Measured amount of GREASE distributed simultaneously

Progressive System
Measured amount of GREASE distributed progressively.

Resistance System
Applies resistance to distribute GREASE proportionally.

Manual Operation
Hand operated pumps for OIL or GREASE lubrication systems.

Motorized Operation
Motor driven pumps for OIL or GREASE lubrication systems.

Distribution Equipment	Description	Applicable Pump Units		
DPB 	Measures exact amounts of oil to be distributed, which is not affected by pressure or viscosity. The Dester plunger will discharge its pre-measured volume of oil by utilizing the direct pressure produced by the pump. Pumps will need to possess a pressure displacement mechanism, enabling the Dester plungers to replenish itself with oil.	Motorized	MLA*W, MLB*W Models	Intermittent Type + Pressure Displacement
			LCA3 Model	
			LCA4 Model	
			LCB3 Model	
			LCB3 TMS Model	
			LCB4 Model	
			LCB5 Model	
DSB 	Measures exact amounts of oil to be distributed, which is not affected by pressure or viscosity. The Dester Block will discharge its pre-measured volume of oil by utilizing the pressure produced by the internal spring. The DSBs are suited for lower pressure systems, as discharge is induced by a spring and not by the pump's discharge pressure.	Pneumatic	HP*W* Model (Contact Showa)	
		Manual	LAW* Model	
DG 	The DG piston distributors, will discharge a pre-measured amount of grease, utilizing the pump's discharge pressure. Pumps will require a pressure displacement mechanism to enable the DG to replenish itself with grease. To be used in conjunction with GD distribution blocks to simplify installation.	Motorized	GPMW30 Model	
		Manual	GPHW01 Model	
SG2 	Measures exact amounts of lubricant to be distributed, which is not affected by pressure or viscosity. The Dester G will discharge measured volumes of grease through each port, one after the other in sequence (progressively). Blocks with differing discharge volumes selectable. A visual indicator pin or a limit switch option is available.	Motorized	MHG4 Model	Continuous Type + Progressive discharge
			MHG7 Model	
			GPM101 Model	
			GPM102 Model	
SG6 	Measures exact amounts of lubricant to be distributed, which is not affected by pressure or viscosity. The Dester G will discharge measured volumes of grease through each port, one after the other in sequence (progressively). PSG attachments can be attached to combine ports. A Visual indicator pin or a limit switch option is available.	Manual	SHG Model	
			GPH Model	
Flow Proper Units 	The Flow Proper Unit (Meter Unit) will apply flow resistance according to the number displayed on the unit. Oil from the pump unit can be distributed proportionally by applying various levels of resistance at lubrication points. The unit is best suited with accumulative pressure type pumps (no pressure displacement mechanisms).	Motorized	YMAS Model	Intermittent Accumulative Pressure Type
			SMD Model	
			SSMA Model	
			MY6 Model	
			MV Model	Continuous
		Manual	LD Model	Intermittent Accumulative
			EA & HLA7 Models	
Continuous Units 	The Continuous Unit (Control Unit) will apply flow resistance according to the number displayed on the unit. By applying various levels of resistance at junctions or lubrication points, the lubricant discharged by the pump can be distributed proportionally. Unlike the PSS range, these units possess no internal check valves.	Motorized	MLA, MLC, MLD Models	Continuous Type
			MHG4, MHG7 Models	
			GPM101, GPM102 Models	
		Manual	SHG Model	
			GPH Model	
VA VB (Check Valve) 	Dester Valve distribution junctions possess adjustable flow-rate valves on each port, allowing simple flow adjustments to be performed. The valves on each distribution port enables simple adjustments to the lubricant's flow-rate by changing the amount of resistance applied to the lubricant. No replacement or additional parts are required for basic adjustments and modifications in lubrication output, making system design, installation and modifications simple to perform. VA & VB units are suited for both the intermittent and continuous type resistance systems and can be used in Total Loss or Circulating lubrication systems. (Please enquire for usage conditions when utilizing the Dester Valves in conjunction with SMD, SSMA or grease pumps)	Motorized	YMAS Model	Intermittent Accumulative Pressure Type
			SMD Model	
			SSMA Model	
			MLA, MLC, MLD Models	Continuous Type
		Manual	LA Model	Intermittent Direct Pressure
			HLA7 Model	Intermittent Accumulative Pressure Type
			LD Model	
			EA Model	
		Motorized	MHG4, MHG7 Models	Continuous Type
			GPM101, GPM102 Models	
		Manual	SHG Model	
			GPH Model	

OIL LUBRICATION SYSTEMS

SHOWA oil lubrication systems comprises of 2 main sub-lubrication systems, offering different methods of distribution and discharge. Refer below to identify the lubrication system required for certain lubricating applications.

VOLUMETRIC SYSTEM

The volumetric type lubrication system focuses on applying measured volumes of oil to the multiple lubrication points on equipment or machinery.

The distribution equipment (Dester Plunger or Dester Block) measures a specified amount of oil and then proceeds to forward the lubricant intermittently to the lubrication points.

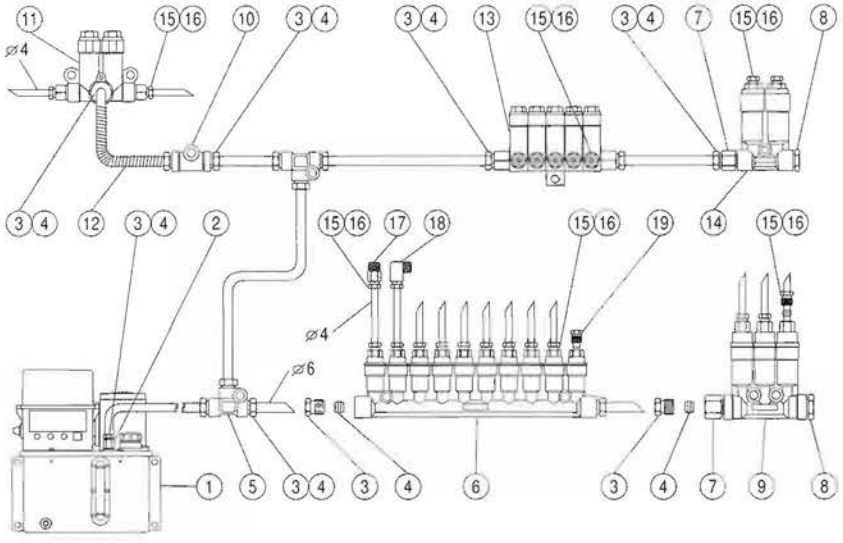
This accurate and intermittent distribution via the distribution equipment is induced by the volumetric type pump.

Motorized lubrication pumps for this system, will run and halt in intermittent cycles through the use of a controlling mechanism (Eg. IC Timers).

Distribution equipment for the volumetric type system can be separated into 2 main categories.

Direct pump pressure or spring pressure induced discharge methods. The first utilizes the pump's discharge pressure to eject the oil from within the pistons. The later method utilizes the pump's pressure to replenish the pistons with oil and relies on the internal spring to displace the oil.

As the displacement of pressure is required for the volumetric type distribution equipment to operate, all volumetric type pumps possess pressure displacement mechanisms.



No.	Code	Description	No.	Code	Description	No.	Code	Description
1	- PUMP -	Volumetric Type	8	PG12	Sealing Plug / Gasket	15	PA4	Bushing
2	PD6	Nipple	9	DPB23	Dester Plunger	16	PB4	Sleeve
3	PA6	Bushing	10	JD2-6	Junction	17	PD4	Nipple
4	PB6	Sleeve	11	DSA2	Dester Block	18	PH4	Elbow
5	PKD6	T Connector	12	FSC605	Flexible Hose	19	PG004	Sealing Plug
6	DPB110	Dester Plunger	13	DSB5	Dester Block	-	-	-
7	PD612	Main Pipe Nipple	14	DPB32	Dester Plunger	-	-	-

RESISTANCE SYSTEM

By applying various levels of resistance at the resistance type distribution junctions or lubrication points, oil from the pump unit can be divided and discharged proportionally.

Through the selection of the pump unit and distribution equipment, oil can be discharged either intermittently or continuously at lubrication points.

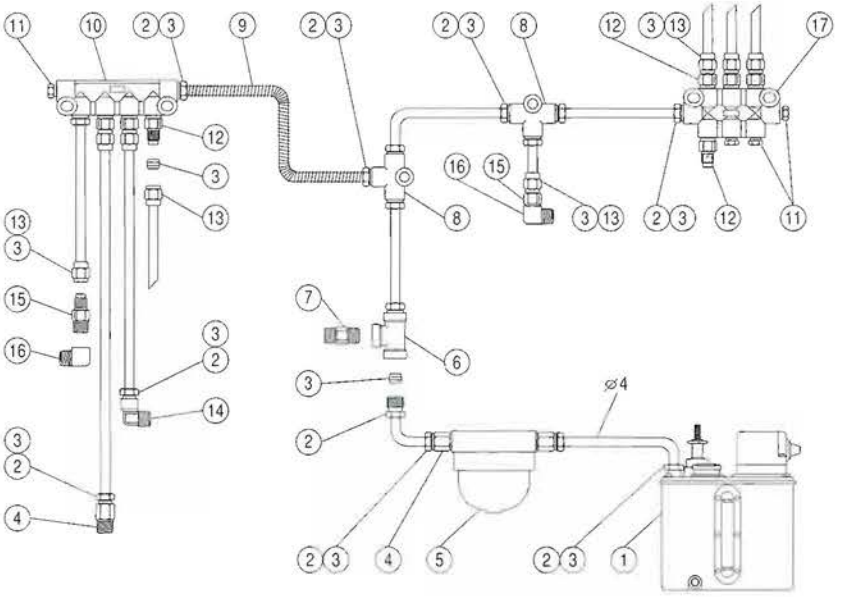
Unlike the volumetric system, which allows specific volumes of oil to be discharged at lubrication points, the resistance type system is unable to measure exact volumes for discharge past the pump unit.

However, the resistance type system enables continuous lubrication, which has an added benefit of a cooling effect, making this system ideal where heat displacement is also a requirement along with general lubrication.

Another differing factor is, the volumetric system will only discharge the set capacity of oil from the pistons and will require the pump unit to halt and displace the internal pressure before any more oil can be discharged at the lubrication points.

In comparison, oil will continuously be discharged from the lubrication points in the resistance system, as long as the pump unit continues to operate.

As such, more emphasis is placed on the output capacity and control of the pump unit, in regards to discharge volumes at certain lubrication points.



No.	Code	Description	No.	Code	Description	No.	Code	Description
1	- PUMP -	Resistance Type	7	PTT	Flow Proper Unit	13	PAN4	Proper Nut (Bushing)
2	PA4	Bushing	8	JD3	Junction	14	PHD4	Elbow
3	PB4	Sleeve	9	FHC420	Flexible Hose	15	PST	Flow Proper Unit
4	PD4	Nipple	10	DB6D	Dester Unit	16	PI1	Elbow
5	LF01N	Line Filter	11	PG004	Sealing Plug	17	DA8D	Dester Unit
6	JHD3	Junction Head	12	PSS	Flow Proper Unit	-	-	-

GREASE LUBRICATION SYSTEMS

The SHOWA grease system comprises of various sub-lubrication systems, offering different methods of distribution and discharge. The 3 main grease lubrication sub-systems, allows a broad range of lubrication requirements to be catered for.

PROGRESSIVE SYSTEM

Pressurized grease is forwarded to individual lubrication points in sequence by utilizing progressive type (volumetric) distribution blocks.

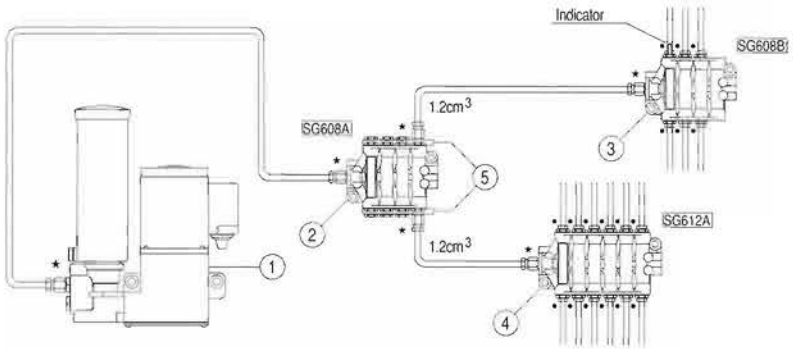
As the pistons in the Dester G block (SG) move in sequence to distribute grease, the Dester G block will not be able to function if a single port is sealed.

This characteristic of the system helps simplify monitoring and lubrication management.

By confirming operation at the Dester G blocks, it is possible to identify lubrication problems from a centralized point.

If a port(s) is not required, attachments (PSG) can be used to combine ports.

Additional Dester G blocks can be attached to upper level (parent) blocks, broadening the lubrication system to meet varying requirements.



No.	Code	Description
1	MHG	Pump
2	SG608A	Distribution Block
3	SG606B	Block With Indicator
4	SG612A	Distribution Block
5	PSG104	Attachment

★ Section Pipe Fittings & Parts

Pipe Size	Fittings Utilized
⌀8	PD801 · PA8 · PB8
⌀6	PD6 · PA6 · PB6

● Section Pipe Fittings & Parts

Pipe Size	Fittings Utilized
⌀6	PA6 · PB6
⌀4	PD604 · PA4 · PB4

SINGLE-LINE SYSTEM

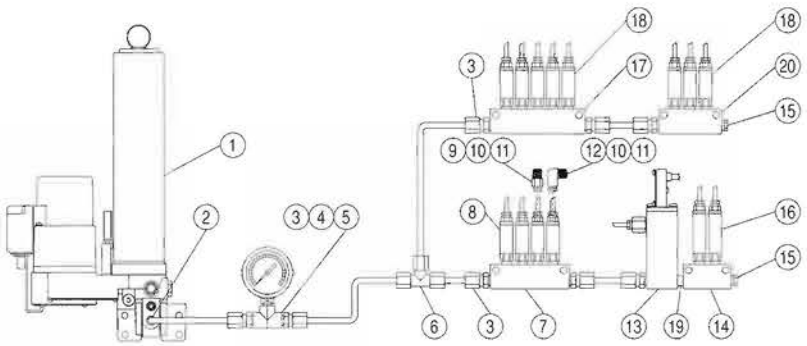
Grease is forwarded to individual lubrication points simultaneously by triggering volumetric distribution equipment with intermittent pressure fluctuations and depressions.

This action can be performed by a pump possessing a pressure displacement mechanism.

Volumetric distribution blocks with differing discharge volumes can be utilized and incorporated into a single lubrication system.

This flexibility with discharge volumes simplifies system layout and planning, enabling the single line system to be ideally suited for a wide variety of lubrication systems and situations.

Monitoring and general lubrication management can be simplified and performed by installing pressure switches and distribution blocks with indicators at required locations.



No.	Code	Description	No.	Code	Description	No.	Code	Description
1	GPMW	Pump	8	DG50	Piston Distributor	15	PG1	Plug
2	01050613	Connector	9	PA4	Bushing	16	DG3	Piston Distributor
3	01050610	Connector	10	PB4	Sleeve	17	GDB7K	Junction Block
4	PGL250	Pressure Gauge	11	PD4	Nipple	18	DG30	Piston Distributor
5	JHD3S	T - Connector	12	PH4	Elbow	19	PQ101	Connector
6	01040600	T - Connector	13	DGE20	Flow Sensor	20	GDB5K	Junction Block
7	GDB6K	Junction Block	14	GDB4K	Junction Block	-	-	-

RESISTANCE SYSTEM

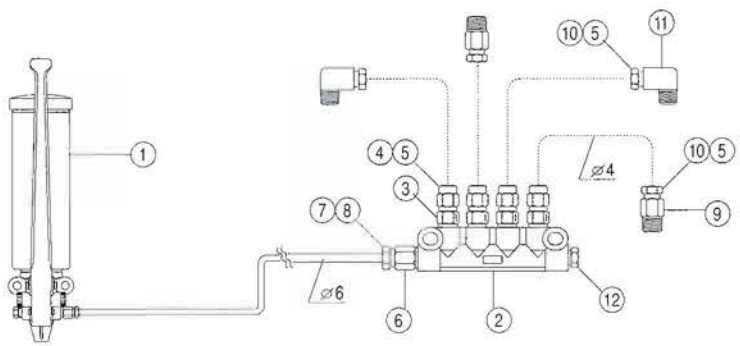
By applying different amounts of resistance at the resistance type distribution junctions or lubrication points, the grease from the pump can be divided and discharged proportionally.

Unlike the progressive or single-line systems, resistance type systems are unable to measure specific volumes for discharge past the pump unit.

Ideal for smaller scale lubrication requirements (Under 10 lubrication points with distribution piping not exceeding 5m in length).

Lubrication systems can be installed and operated at minimal expense due to the simple nature of the components and system.

Fixed and adjustable resistance applying distributors are available to simplify installation.



No.	Code	Description	No.	Code	Description	No.	Code	Description
1	SHG	Pump	5	PB4	Sleeve	9	PD4	Nipple
2	DB	Junction Block	6	PD110	Adapter	10	PA4	Bushing
3	CSS	Continuous Unit	7	PA6	Bushing	11	PH4	Elbow
4	PAN4	Nut	8	PB6	Sleeve	12	PG004	Plug

MAINTENANCE & INSPECTION

Correct usage and handling leads to proper and efficient operation. Prevention of problems should be undertaken seriously, as faults and errors with the lubrication system can lead to a very expensive ordeal.

Prior to use, the pump units and distribution equipment should be checked and maintenance should be performed on a regular basis, as it will assure effective operation of the lubrication system and target machinery.

NOTES ON USAGE

- Ensure appropriate oils and greases are used with the lubrication unit / system.
- Liquids other than the specified lubricating oils and greases, such as lamp oil, gasoline or water, should NOT be used and distributed through the system.
- Use new oil and greases which are pure and free of contaminants. In circulating oil lubrication systems, replace oils periodically to promote effective lubrication to take place.
- Refrain from using a combination of various oils, as it may lead to the formation of sludge, preventing proper operation of the machinery and equipment.
- Refrain from overfilling the oil or grease reservoirs by exceeding the "Full" line.
- Pumps and distribution apparatus are composed of various rubbers and nonferrous metals (Zinc, aluminum and brass) components. Do not use oils or grease that may erode or weaken the structure of the pump and distribution equipment.

NOTES ON PLACEMENT & INSTALLATION

- Install the pumps in a location where it would be free from falling debris (shavings, etc) and cutting fluids.
- Install pumps where vibration is minimal.
- Place pumps where maintenance, inspection and refilling can be performed easily, as these tasks should be performed regularly.
- Install manual pumps in a position easily accessible to the operator, promoting safe and efficient operation.

NOTES ON TEST RUNS & INITIAL OPERATION

- Ensure the motor's electrical cover is in place before connecting power to the unit to help prevent the possibility of electrocution.
- Confirm the motor's rotating direction. Running the motor in the reverse (of the specified direction) will result in substandard performance.
- Expel all air from within the pump and distribution channels, then proceed to check the lubrication points to ensure correct operation.
- Ensure there is no oil or grease leaking from the distribution system, as this may allow air to enter the system.

NOTES ON MAINTENANCE & INSPECTION

- To allow effective operation of the lubrication system and to prevent major problems from occurring, routine maintenance and inspections of the equipment should be performed.
- Ensure the power has been disconnected from the unit prior to maintenance and inspection. In situations where power is required during tests and inspection, ensure the circuit board and IC timer (control board) covers are in place.

PERIODIC INSPECTION POINTS

No.	INSPECTION POINTS	INSPECTION DETAILS
1	Supply Filter (OIL SYSTEMS)	Check for tear and any foreign particles which may be attached or present in the filter. Ensure the filter is correctly in place.
2	Lubricant	Check for degradation, oxidization and impurity levels.
3	Reservoir / Tank	Check for foreign particles, sludge and leakages within the reservoir.
4	Connections / Connectors	Inspect piping connections to ensure there is no leakage and a firm connection is made.
5	Pipes & Tubes (Distribution Channels)	Check that the pipes or tubes have not split or deformed in any way.
6	Lubricant Usage	Ensure the consumption of oil and grease is appropriate and that neither too little nor too much has been used.
7	Pump Unit	Turn on the pump's power and check the pressure gauge to confirm correct pressure levels are achieved.
8	Distribution Equipment (Distributors)	Confirm the distribution of oil and grease through each lubrication point.
9	Inspection & Monitoring Equipment	Inspection and monitoring equipment should be tested to ensure they operate correctly. Recalibrate or replace when necessary.

* Ensure periodic cleansing and replacement of oil and filters are performed.
* To clean the tanks and filters, please use clean petroleum. Do not use gasoline / petrol, thinners or other fluids which are volatile in nature.

REVIEWING THE LUBRICATION SYSTEM

- As various types of machinery and environments in which they operate exists, one ideal lubrication system may not be appropriate for all. As such, it is good practice to monitor and log various internal & external effecting factors in conjunction with the lubrication system and target machine's performance, as this will assist reevaluation and calibration processes at a later stage.
- Consultation with the machine operator, lubrication engineer and maintenance staff, will allow valuable information to be uncovered. Periodic meetings and reviews will assist in guiding the path to the perfect lubrication system.

MANUAL PUMPS - PRECAUTIONARY NOTES & TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSES	SOLUTIONS
Oil is not discharging	Motor's rotating direction is reversed.	Stop the pump immediately and correct the rotating direction, as running the pump in reverse will damage the unit and may catch fire.
	Low oil levels. Supply line, strainer or filter is blocked.	Fill the tank with the same type of oil currently in use, as mixing oils may lead to cavitation. Clean or replace the strainer. In a circulating oil system, flush the whole distribution system and replace with clean new oil. Replace filters if required.
	Air is being drawn into the supply line or supply channel. Air is seeping through the oil seal or O-ring.	Check the oil level in the tank and fill if required. Check the washers and bushings at connection points and replace if required. Ensure a tight connection is achieved. Check the oil seals and O-rings and replace if necessary. For a temporary quick fix in emergency cases, apply grease to the seals, but keep in mind that replacement is a must.
	Viscosity of the oil is too high. Viscosity of the oil is too low.	Adjust the temperature of the oil or change the type of oil used. When changing oils, ensure the whole system is cleaned before the new oil is utilized with the system.
	Internal component of the pump has worn.	Fix or replace the worn parts or replace the pump unit.
Pressure will not rise	Relief valve is not operating properly. 1) Inappropriate pressure settings. 2) Contaminants present or parts have worn.	Check the pressure gauge and adjust the pressure to the correct levels. Incorrect pressure settings may lead to chattering. If the valve is worn or has been damaged, replace the valve. Clean the valve if unclean.
	Suction filter is blocked.	Clean or replace the suction filter.
The pump is emitting irregular noises 1) Oil in the reservoir has become white and bubbles are present.	Water or high levels of moisture has entered the tank. 200 ~ 300p.p.m. can turn the oil cloudy and at 1000p.p.m. the lubricant will start to oxidize.	Eliminate possible entry points for moisture / water and install the unit away from areas where water and high levels of humidity are present. Limit temperature differences to prevent condensation from occurring.
2) Cavitation is occurring.	Filter or strainer is blocked. Oil's temperature is too low or the viscosity is too high.	Inspect the components and clean or replace if necessary. Check the oil's purity. Inspect the oil and change the type of oil used if necessary.
3) Pump's component has broken.	Pump has been misused or used in a way that does not conform to the operational usage guidelines.	Confirm the pump matches the lubrication requirements and the type of system. Review and replace the unit with an appropriate pump. If the pump has been misused and a component has broken, replace with a new part and review operation.
Substantial heat produced. 1) Pump's temperature is excessively hot (Oil temp + 30℃).	Excessive friction is being produced and chafing and wear is occurring within the pump.	Recalibrate moving components or replace parts if required.
2) Lubrication points on target machinery are excessively hot or burnt.	Lubricant is not being discharged or an inadequate amount is being applied.	Check all components to the lubrication point for blockages and malfunctions. If the oil is contaminated, flush the lubrication system and replace with clean new oil. Adjust the oil's discharge volume to an appropriate level (Increase).
3) Excessive heat from bearings / spindles.	Viscosity level is inappropriate. Highly viscous oils applied to points of high speed motion can produce considerable heat from liquid friction.	Try increasing the temperature of the oil to decrease it's viscosity. If the oil is too viscous, replace with a different oil of lower viscosity.

MANUAL PUMPS - PRECAUTIONARY NOTES & TROUBLESHOOTING

* Manual pumps will expel a specified amount of oil with a simple action, regardless of being either a lever type or a handle type pump. There is no need to stop midway or to exert excessive force when using the pump. By releasing the pump lever, it will return to the original position. There is no need to push the lever or handle back with excessive force.
* If a noise can be heard during operation directly after replenishing the unit with oil, it is highly possible that air has entered into the pump's system. Allow the oil to settle so that it is free from bubbles before pulling the lever or handle repetitively until the noise can be heard no more.
* Regardless of the pump type (Complete unit or a separated pump and reservoir type), make sure the intake port (opening located within the reservoir) faces downwards.
* When installing a pump which will utilize oil from an oil tank already in use (on the target machine or installed for other lubrication systems), ensure to use a filter or a strainer to prevent foreign matter and contaminants from entering the pump and the lubrication system.

SYMPTOM	POSSIBLE CAUSES	SOLUTIONS
Oil is not discharging	Low oil Level	Fill the tank with oil up to the "FULL" line. Ensure the same type of oil currently in use is added.
	Air has been drawn into the pump	Remove the main distribution pipe and continue to operate the pump until air is expelled and oil is discharged.
	Incorrect operation of the pump	Do not pull the handle or lever too quickly or apply excessive force when operating. Ensure a complete motion is achieved.
Pump is emitting irregular / abnormal noises	Air has been drawn into the pump	Check to see if there is sufficient oil within the reservoir and replenish if required. Remove the main distribution pipe and continue to operate the pump until air is expelled and oil is discharged.
The handle or lever returns to its original position extremely slow or slower than usual	The filter is blocked	Remove the filter and clean or replace if necessary.
	Is the pump operating properly?	Check to see if the pump itself is the cause of the problem by attaching a pressure gauge to the main distribution pipe and checking the discharge pressure and volumes.
	Piping has been squashed	Inspect piping and replace if necessary.
Leaking oil from joints and connectors	Connections are loose and have not been tightened adequately	Inspect the connector components for damage. Tighten connection properly if loose.
	Connections have been over-tightened and the pipe ends (Nylon, etc) have been squashed	Remove the pipe sleeve (PB), trim the squashed ends and reconnect with a new sleeve.
Oil is leaking from the lubrication points	Excessive pressure from the pump	Check the pump's discharge pressure and ensure correct pressure is being produced. If pressures are to specification, check other lubrication points for possible problems.

LA Hand Pump

LA3

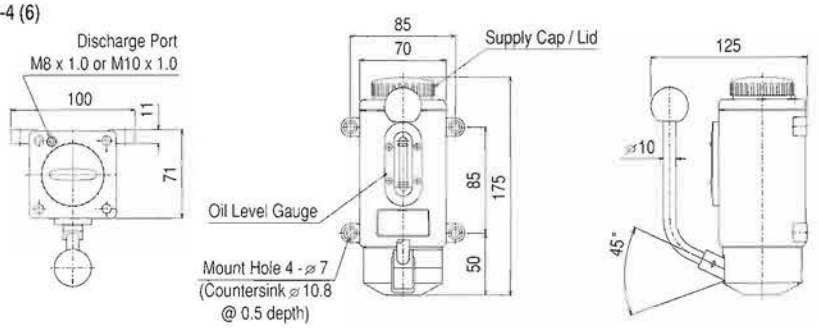
LA8D

- Resistance type manually operated pump
- 3 types available, dispensing either 3cm³ /stroke, 6cm³ /stroke or 8cm³ /stroke
- Direct pressure type lever pump

The LA model is a simple to use hand pump. Distribution of oil is induced by the force created upon pulling the lever.
3 types of LA hand pumps are available, dispensing either 3cm³ /stroke, 6cm³ /stroke or 8cm³ /stroke, and are ideal for use in conjunction with Dester Valves (Resistance type distribution junctions).
2 types of LA8D models are available. The LA8DR and the LA8DL have distribution ports on opposing sides, broadening installation capabilities.

MODEL CODE
LA 3
- Discharge Volume
  - 3 : 3cm³ /st
  - 6 : 6cm³ /st
  - 8D : 8cm³ /st
- Base Code

LA6-4 (6)



SPECIFICATIONS

MODEL CODE	Discharge Vol. (cm³ /st)	Max. Discharge Pressure (MPa)	Discharge Port Size	Tank Capacity (L)	Effective Tank Capacity (L)
LA3	3	1.5	M8 x 1.0	0.21	0.17
LA6-4 (6)	6	1.5	*LA6-4* M8 x 1.0 *LA6-6* M10 x 1.0	0.35	0.25
LA8DR (L)	8	1.5	Rc 1/8	0.6	0.4

* 2 types of LA6 are available. (LA6-4 for ⌀4 piping and LA6-6 for ⌀6 piping)
* 2 types of LA8D are available. (LA8DR with the discharge port on the right and LA8DL with the discharge port on the left)
* The LA3 possesses a plastic tank, while the LA6 and LA8D are equipped with die-cast aluminum tanks

LD Hand Pump

LD8

- Spring pressure induced oil discharging hand pump
- 2 types available, dispensing either 6cm³ /stroke or 8cm³ /stroke

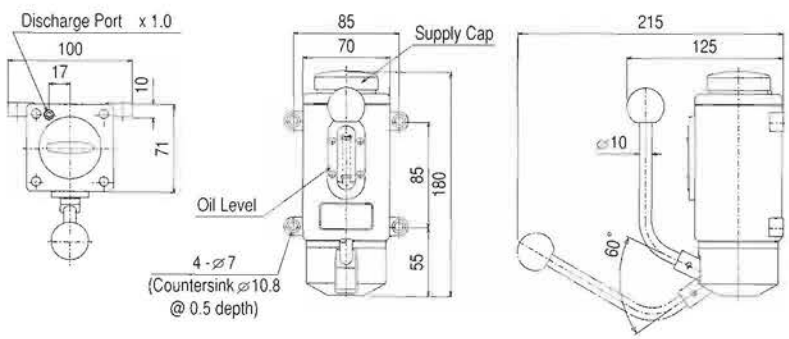
The LD manual pump dispenses oil after the handle has been pulled and released, utilizing the force of the compressed spring inside.
Being a low pressure type hand pump, the LD model is ideal for use in conjunction with SHOWA's Flow Proper Units (PSS, PST, etc).

MODEL CODE
LD 6
- Discharge Volume
  - 6 : 6cm³ /st
  - 8 : 8cm³ /st
- Base Code

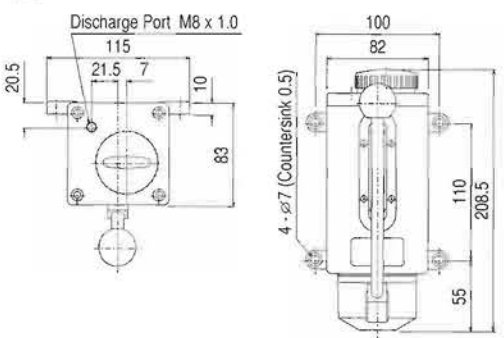
SPECIFICATIONS

MODEL CODE	Discharge Vol. (cm³ /st)	Max. Discharge Pressure (MPa)	Discharge Port Size	Tank Capacity (L)	Effective Tank Capacity (L)
LD6	6	0.35	M8 x 1.0	0.35	0.22
LD8	8	0.35	M8 x 1.0	0.6	0.37

LD6



LD8



EA Hand Pump

- Simply pulling and releasing the handle once, oil is discharged from the pump

EA3

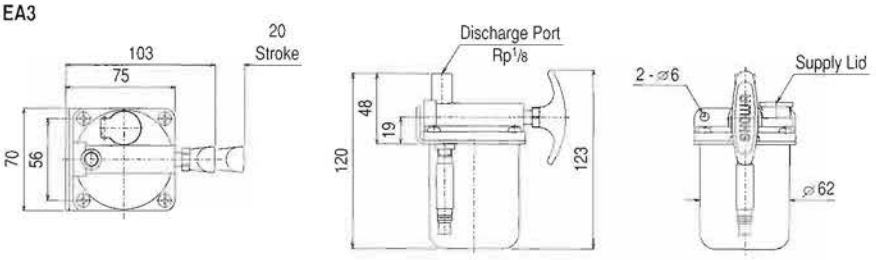
EA8UR

MODEL CODE

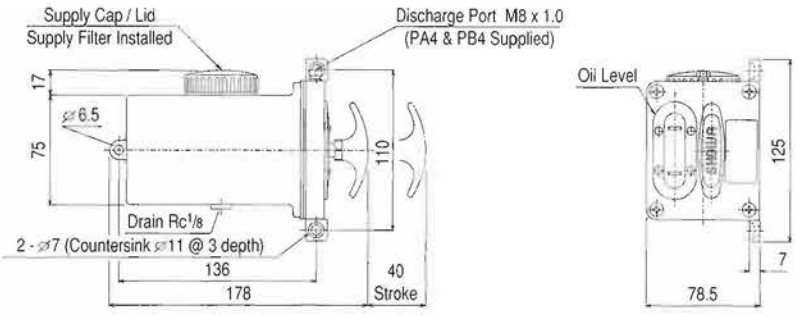
EA 8 U R

- Pump Installation: L : On Left of Machine; R : On Right of Machine
- Discharge Port Position: U : On Top; D : On Bottom
- Discharge Volume: 3 : 3cm³ /st; 8 : 8cm³ /st
- Base Code

EA3



EA8UL



SPECIFICATIONS

MODEL CODE	Discharge Vol. (cm³ /st)	Max. Discharge Pressure (MPa)	Discharge Port Size	Tank Capacity (L)	Effective Tank Capacity (L)
EA3	3	0.3	Rp1/8	0.16	0.14
EA8 U(D) R(L)	8	0.35	M8 x 1.0 (⌀4 tube)	0.6	0.5

* The "L" represented in the Model Code section above (under Pump Installation), indicates the pump will be mounted on the LEFT in relation to the target machine (Viewing from front).

* The ability to select the discharge port's position (top or bottom of the pump) and the attachment face on either side, broadens the installation capabilities of the EA8 pump unit.

* EA3 are only available with discharge ports facing upwards.

* The EA3 and EA8 models are equipped with a plastic and a die-cast aluminum tank, respectively.

HLA7 Hand Pump

- Push lever type manual pump
- Adjustable dispensing volume, ranging from 1cm³ /stroke to 7cm³ /stroke

HLA7R

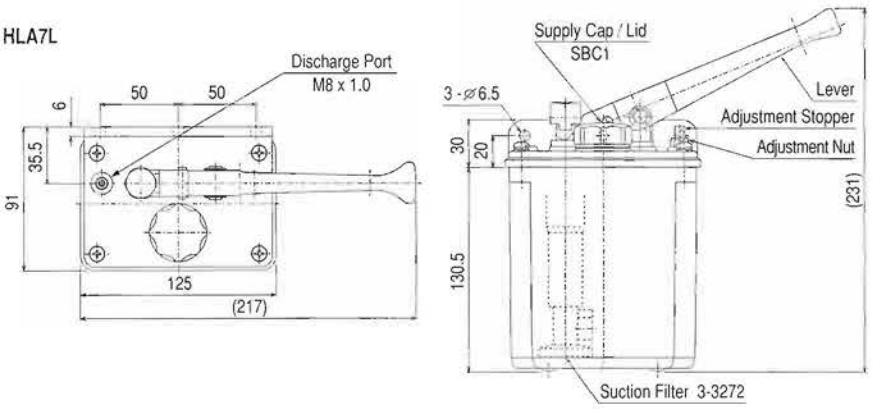
Distribution of oil is induced by simply moving the lever up and down. The HLA7 model has an adjustable dispensing volume of 1cm³ /stroke to 7cm³ /stroke, which can be set by adjusting the adjustment nut and stopper positioned next to the lever.
The pump is supplied with a 1L plastic tank and is available with levers facing either direction to suit installation and operational requirements.

MODEL CODE

HLA 7 R

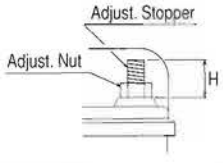
- Pump Installation: L : Left Mounted; R : Right Mounted
- Discharge Volume: 7 : 1 ~ 7cm³ /st
- Base Code

HLA7L



DISCHARGE VOLUME

To adjust the discharge volume, loosen the adjustment nut and alter the protruding height of the adjustment stopper to set the desired volume of discharge.



Discharge Vol. (cm³ /st)	"H" Protrusion (mm)
1	25
2	23
3	21
4	19
5	147
6	15
7	13

SPECIFICATIONS

MODEL CODE	Discharge Vol. (cm³ /st)	Max. Discharge Pressure (MPa)	Discharge Port Size	Tank Capacity (L)	Effective Tank Capacity (L)
HLA7L (R)	1 ~ 7	0.3	M8 x 1.0	1	0.8

* The HLA7 pump's initial discharge volume is set to 7cm³ /st.

* The "R" represented in the "Pump Installation" table indicates the pump is to be mounted on the RIGHT in relation to the machine. (viewing from the front) Therefore, the pump's mounting face is positioned on it's left when the lever is held straight.

MLA Continuous Motor Pump

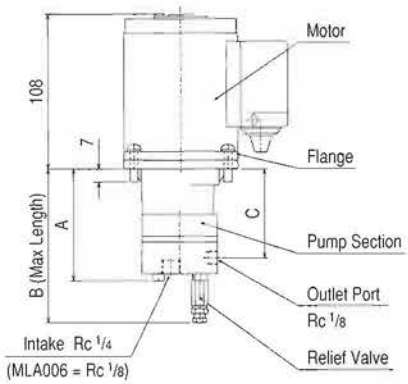
- Gear pump for continuous oil distribution systems
- High levels of performance, safety and durability
- Various types and specifications available to meet a wide variety of needs

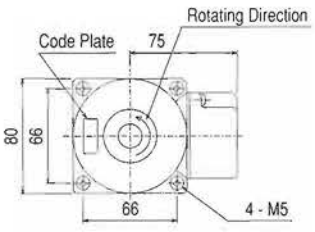
The MLA pumps are designed for continuous / circulating oil distribution in resistance type systems, which have the added benefit of a cooling effect.

The compact automatic gear pump, featuring a relief valve, achieves high levels of performance, durability and safety.

10 flow-rate models (0.06L/min ~ 10L/min) are available, enabling the MLA series to cover a very broad flow-rate spectrum.

MLA006 ~ 05-5



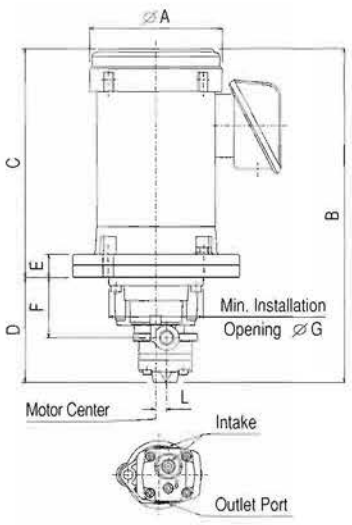


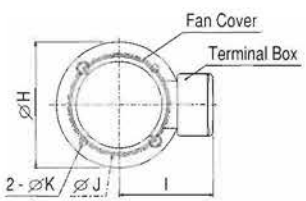
* The motor can be rotated and affixed to the flange in 4 directions (every 90°) to suit installation requirements.
* Contact SHOWA for further details regarding suction pipes and filter details. (Not included)
* Dimensions will differ for pumps utilizing 60W x 2P motors of non-standard voltages.
* Minimum opening diameter for installation: ⌀68 +

DIMENSIONS

MODEL CODE	Outlet Size	A	B	C
MLA006	Rc 1/8	74	95	42.5
MLA015	Rc 1/8	78	114	62
MLA03	Rc 1/8	81	117	65
MLA05	Rc 1/8	81	117	65
MLA05-5	Rc 1/8	86	122	70

MLA10 ~ 100





DIMENSIONS

MODEL CODE	Outlet Port Size	Intake Port Size
MLA10	Rc 1/4	Rc 1/4
MLA15	Rc 1/4	Rc 1/4
MLA30	Rc 3/8	Rc 1/2
MLA50	Rc 3/8	Rc 1/2
MLA70	Rc 3/8	Rc 1/2
MLA100	Rc 3/8	Rc 1/2

⌀A	B	C	D	E	F	⌀G	⌀H	I	⌀J	⌀K	L
127	319	218	101	22	58		160	120	130	10	10.3
127	322	218	104	22	58	Min.	160	120	130	10	10.3
140	378	242	136	22	112.9	110	160	125	130	10	13.5
140	383	242	141	22	117.8		160	125	130	10	13.5
168	428	173	155	25	131.5	Min.	200	131	165	12	13.5
168	435	273	162	25	139	130	200	131	165	12	13.5

MODEL CODE

MLA 03

Nominal Discharge Volume

006 : 0.06L/min	15 : 1.5L/min
015 : 0.15L/min	30 : 3.0L/min
03 : 0.3L/min	50 : 5.0L/min
05 : 0.5L/min	70 : 7.0L/min
10 : 1.0L/min	100 : 10L/min

Base Code

* The 25W motors can operate using 200, 220, 230Volts (50Hz - 0.26A) or 200, 220, 230, 240Volts (60Hz - 0.27A).
* 3 phase 200V 50Hz, 200V 60Hz and 220V 60Hz are the standard. Different power specifications also available.
* Class E insulation
* After wiring, ensure the motor rotates in the correct direction.
* Current (A) values conform to NIDEC (motors above 200W)

SPECIFICATION

MODEL CODE	Discharge Pressure (MPa)	Discharge Volume (L/min) 50Hz	Discharge Volume (L/min) 60Hz	Theoretical Discharge (cm^3/R)	Viscosity Range (mm^2/s)	Motor Output x Pole (W) x (P)	Current (A) 200V (50Hz)	Current (A) 200V (60Hz)	Current (A) 220V (60Hz)
MLA006	0.3 ~ 1	0.05	0.06	0.038	20 ~ 2000	25 x 4	0.26	0.27	0.27
MLA015		0.16	0.19	0.12	20 ~ 2000	25 x 4	0.26	0.27	0.27
MLA03		0.28	0.32	0.2	20 ~ 1000	25 x 4	0.26	0.27	0.27
MLA05	0.3 ~ 1.5	0.5	0.6	0.2	20 ~ 1000	60 x 2	0.4	0.4	0.4
MLA05-5	0.3 ~ 0.5	0.5	0.57	0.36	20 ~ 500	25 x 4	0.26	0.27	0.27
MLA10	0.3 ~ 1.5	0.96	1.16	0.662	20 ~ 1000	200 x 4	1.34	1.12	1.17
MLA15		1.43	1.72	0.984	20 ~ 1000				
MLA30		3.18	3.83	2.19	20 ~ 1000	400 x 4	2.2	1.93	1.95
MLA50		5.28	6.37	3.64	20 ~ 1000				
MLA70		7.29	8.80	5.03	20 ~ 1000	750 x 4	3.6	3.3	3.2
MLA100		10.51	12.69	7.25	20 ~ 1000				

MLC, MLD Continuous Motor Pump


MLC


MLD

- Simplified version of the MLA type gear pump for continuous oil distribution
- Light weight and compact design, with high discharge rates of varying volumes

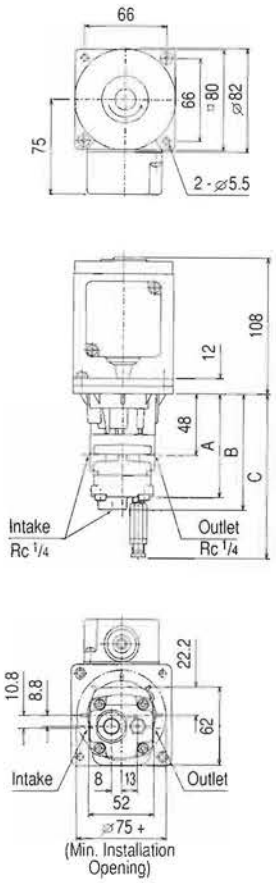
MODEL CODE
MLC 05 1

- Motor Output
  - 1 : 25W
- Discharge Volume
  - 05 : 0.5L/min
  - 10 : 1L/min
- Base Code

MODEL CODE
MLD 05 2

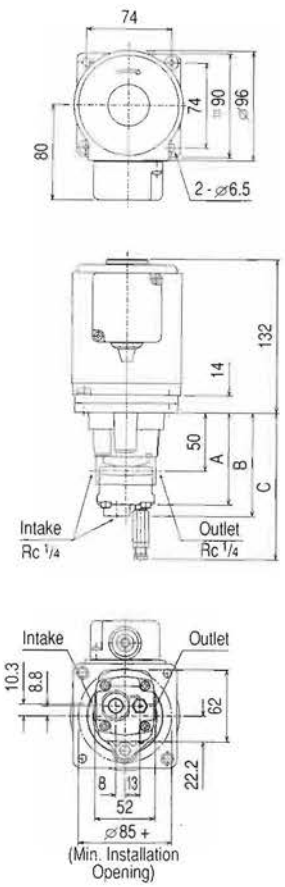
- Motor Output
  - 2 : 70W
  - 3 : 80W
  - 4 : 200W
  - 5 : 400W
- Discharge Volume
  - 05 : 0.5L/min
  - 10 : 1L/min
  - 30 : 3L/min
  - 50 : 5L/min
  - 70 : 7L/min
  - 100 : 10L/min
- Base Code

MLC (25W Motor)



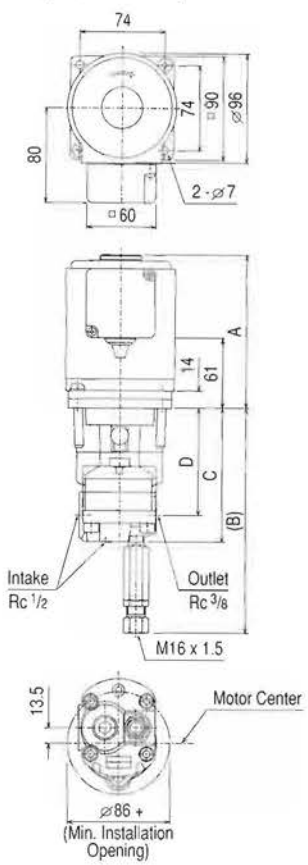
CODE	A	B	C
MLC051	81	91	(119)
MLC101	84	94	(122)

MLD (1.5MPa 70W Motor)



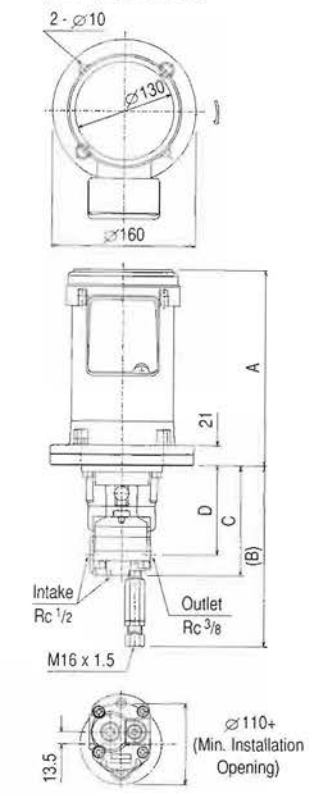
CODE	A	B	C
MLD052	79	89	(124)
MLD102	82	92	(127)

MLD (70W, 80W Motor)



CODE	A	B	C	D
MLD302	132	193.4	115.4	92.4
MLD503	148	198.3	120.3	97.3

MLD (200W, 400W Motor)



CODE	A	B	C	D
MLD304	218	201.4	123.4	100.4
MLD505	243.5	218.8	140.8	117.8
MLD704	221	211	133	110
MLD705	243.5	223.5	145.5	122.5
MLD1004	221	218.5	140.5	117.5
MLD1005	243.5	231	153	130

SF Suction Filters


SFS02 SFM02

Suction filters for the "L" & "LW" type pumps are available to be attached to the Intake ports. Contact SHOWA for further details.

SPECIFICATION

MODEL CODE	Discharge Pressure (MPa)	Discharge Vol. (L/min) 50Hz	Discharge Vol. (L/min) 60Hz	Outlet Size (Rc)	Motor Output x Pole	Current (A) 200V 50Hz	Current (A) 200V 60Hz	Current (A) 220V 60Hz
MLC051	0.5	0.51	0.59	1/4	25W x 4P	0.26	0.27	0.27
MLC101	0.5	0.93	1.06	1/4	25W x 4P	0.26	0.27	0.27
MLD052	1.5	0.51	0.59	1/4	70W x 4P	0.65	0.65	0.65
MLD102	1.5	0.93	1.06	1/4	70W x 4P	0.65	0.65	0.65
MLD302	0.5	3.1	3.5	3/8	70W x 4P	0.65	0.65	0.65
MLD304	1.5	3.2	3.8	3/8	200W x 4P	1.34	1.12	1.17
MLD503	0.5	5.1	5.8	3/8	80W x 4P	0.65	0.6	0.6
MLD505	1.5	5.3	6.4	3/8	400W x 4P	2.2	1.93	1.95
MLD704	0.5	7.3	8.8	3/8	200W x 4P	1.34	1.12	1.17
MLD705	1.5	7.3	8.8	3/8	400W x 4P	2.2	1.93	1.95
MLD1004	0.5	10.5	12.7	3/8	200W x 4P	1.34	1.12	1.17
MLD1005	1.5	10.5	12.7	3/8	400W x 4P	2.2	1.93	1.95

* The 25W motors can operate using 200, 220, 230Volts (50Hz - 0.26A) or 200, 220, 230, 240Volts (60Hz - 0.27A).
* 3 phase 200V 50Hz, 200V 60Hz and 220V 60Hz are the standard. Different power specifications also available.
* Class E insulation
* After wiring, ensure the motor rotates in the correct direction.
* Current (A) values conform to NIDEC (motors above 200W)

LITER UNIT (MLA, MLC, MLD) Continuous Lubrication Unit

Liter Unit

- Continuous distribution pump unit for the resistance type system
- Lubrication unit with a combination of various attachments
- Customizable design constructed to suit various lubrication requirements

Utilizing a high performance L series pump, an option to select the type of tank, float switch and pressure gauge have been provided to meet various lubrication requirements. These units, used for centralized lubrication, also possess an added benefit of a cooling effect by continuously supplying lubricants to the point of application.

As standard, a suction filter has been attached to the L series pump to help prevent foreign objects and impurities from entering the system. A terminal box and a pressure gauge are also standard fittings.

Further options such as an outgoing check valve, line filter, magnet filter and micro-separators, can be attached to the unit.

MODEL CODE

MLA015 — " L " PUMP TYPE

MODEL TYPE	Discharge Volume	
MLA MLC MLD * Motor * Pump *Suction Filter	006	0.06L / min
	015	0.15L / min
	03	0.3L / min
	05	0.5L / min
	10	1L / min
	15	1.5L / min
	30	3L / min
	50	5L / min
	70	7L / min
	100	10L / min

Ref. Page 10

TY6P — TANK TYPE

MODEL TYPE		Capacity		" P "
TB	Bottom Mount	3	3 Liter	Press Molded Steel Tanks TY✲P TD✲P
		4	4 Liter	
		5	5 Liter	
TD	Bottom Mount	6	6 Liter	
		12	12 Liter	
		15	15 Liter	
TY	Side Mount	20	20 Liter	
		30	30 Liter	
		40	40 Liter	
TZ	Bottom Mount	60	60 Liter	
		80	80 Liter	

Ref. Page 30

103N — TERMINAL BOX & FLOAT SWITCH TYPE

MODEL TYPE		" N "
101	SW101	Plastic Terminal Box
102	SW102	
103	SW103	
104	SW104	

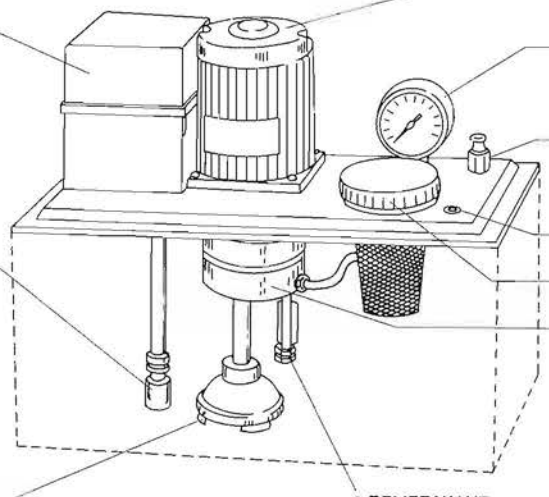
Ref. Page 27

PL35 — PRESSURE GAUGE TYPE

MODEL TYPE		Scale Max.	
PL	PGL Gauge	15	1.5MPa
		35	3.5MPa
PF	PGF Gauge	50	5.0MPa

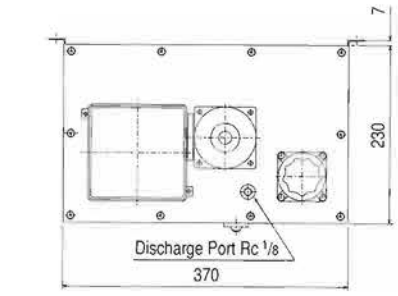
Ref. Page 29

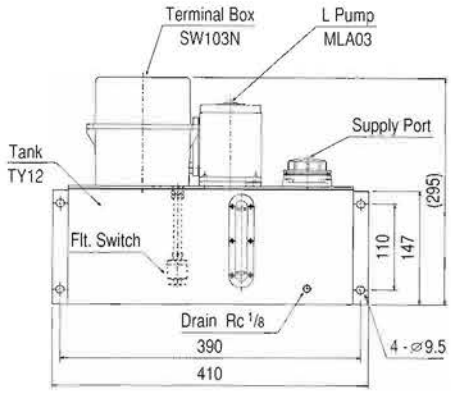
COMPONENTS



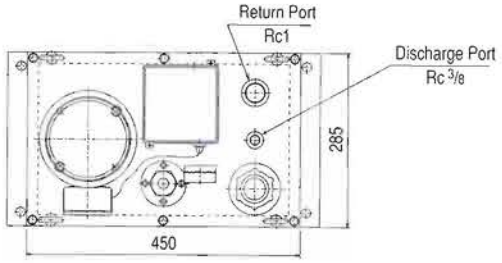
- **TERMINAL BOX**
  Contains a terminal board where the motor and other fittings, such as float switches, can be wired to.
- **FLOAT SWITCH**
  The float switch monitors the oil level within the tank. By converting the oil level's status into an electrical signal, the motor's operation can be controlled or an indicator lamp can be lit, once the oil level has depleted to a certain level.
- **SUCTION FILTER**
  Suction filters are to be attached to the pump's oil intake port to prevent foreign objects and impurities from entering the pump unit and the piping system.
- **MOTOR**
  3 phase induction motor
- **PRESSURE GAUGE**
  Displays the pump's discharging pressure
- **OUTGOING CHECK VALVE**
  Prevents back flow of discharged oil. Smooth and stable operation with minimal affect on discharge.
- **OIL RETURN PORT**
- **OIL SUPPLY**
- **PUMP**
  Utilizing gears composed of special alloys, the pumps have been created for maximum efficiency and performance.
  Focusing on durability, the bearings, gears and shafts have been produced from reinforced steels, allowing the pump to be utilized in hard working conditions.
- **RELIEF VALVE**
  Limiting excessive discharge pressures, the relief valve opens to return excess oil back into the tank reservoir once oil pressures within the distribution pipes have reached a certain level. Smooth discharge of excess oil (back into the tank) is achieved with minimum affect on discharging pressures, helping to prevent chattering from occurring.

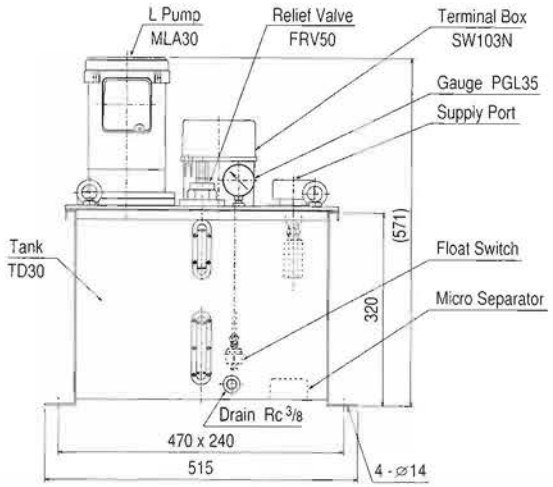
LITER UNIT MLA03 TY12 103N





LITER UNIT MLA30 TD30 103N PL35





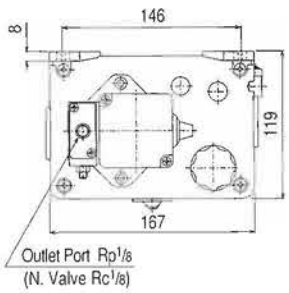
MV Mini Liter Unit

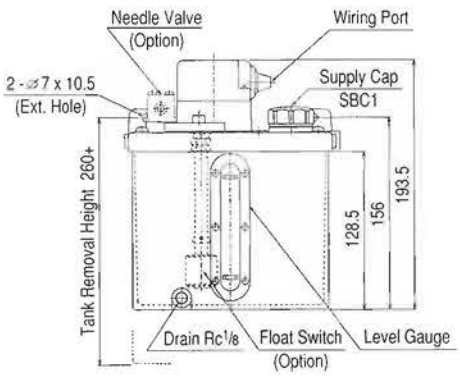
MV10103F

- Delivers small amounts of oil continuously
- 2 discharge volumes available, dispensing either 1.7cm³ /cy or 3.5cm³ /cy
- Can be connected to the target machine's timer system (control board) for extra operational control.

The MV motorized pump units are designed to continuously lubricate within a resistance type system.
Unit can be supplied with a 2 liter aluminum or plastic tank.
Optional attachments are also available, including a needle valve and a float switch.

MV10204F (2L Aluminum Tank Model)





MODEL CODE

MV 1 01 01 F

- Power
  - A : 1Phase 100 / 115V
  - F : 1Phase 200 / 220V
- Optional Attachments
  - 01 : Needle Valve + Float Switch
  - 02 : Needle Valve
  - 03 : Float Switch
  - 04 : None
- Tank Type
  - 01 : 2L Plastic Tank
  - 02 : 2L Aluminum Tank
- Discharge Volume
  - 1 : 1.7cm³ /min
  - 3 : 3.5cm³ /min
- Base Code

SPECIFICATIONS

MODEL CODE	Discharge Vol. (cm³ /min)		Motor Rotation (rpm)	Max. Discharge Pressure (MPa)	Tank Capacity
	50Hz	60Hz			
MV1	1.7	2.0	5	0.5	2L (1.5L effective)
MV3	3.5	4.2	10		

* A needle valve and a float switch can be attached to the unit, slightly altering the specifications.
* Flow-rate can be adjusted on models fitted with the needle valve option.

SSMA Mini Semi-Cycle Pump

SSMA

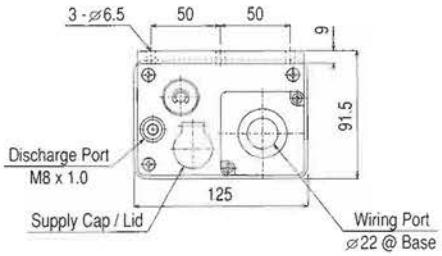
- 2 discharge volume types available, dispensing 2cm³ /cy or 3cm³ /cy (fixed)
- 6 cycle time types are available with cycle times of 5, 10, 15, 30, 60 or 120 mins
- Compact unit with a 1L tank

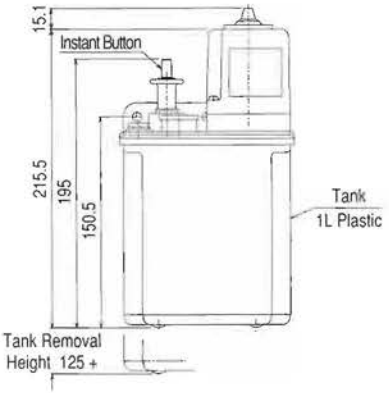
The SSMA model is a cyclic pump based upon the SMD model, possessing the same motor and mechanisms. However, the SSMA is far more compact with a 1L plastic tank, allowing the unit to be installed in areas where space is limited.
2 fixed discharge volume types are available, dispensing either a set volume of 2cm³ or 3cm³.

MODEL CODE
SSMA 3 5 F

- Power
  - A : 1Phase 100 / 115V
  - F : 1Phase 200 / 220V
- Cycle Time / Intermittence
  - 5 : 5min ⋮ 30 : 30min
  - 10 : 10min ⋮ 60 : 60min
  - 15 : 15min ⋮ 120 : 120min
- Discharge Volume
  - 2 : 2cm³ /cycle
  - 3 : 3cm³ /cycle
- Base Code

SSMA330F





MOTOR SPECIFICATION

Voltage (V)	100	100 ~ 115	200	200	220
Frequency (Hz)	50	60	50	60	
Rotation (rpm)	1/2, 1, 2, 4, 5, 10				
Current (mA)	Under 50 (10rpm : Under 60)		Under 25 (10rpm : Under 50)		
Input (W)	Under 4 (10rpm : Under 5)				

SPECIFICATIONS

MODEL CODE	Cycle Time (minutes)	Discharge Vol. (cm³ /cycle)	Max. Discharge Pressure (MPa)	Tank Capacity (L)	Effective Tank Capacity (L)
SSMA2	5, 10, 15, 30, 60 or 120	2	0.3	1	0.8
SSMA3		3	0.3	1	0.8

* Cycle times and discharge volumes are fixed and cannot be adjusted.
* An oil level detecting Float Switch can be attached to the unit.

SMD Semi-Cycle Pump

SMD

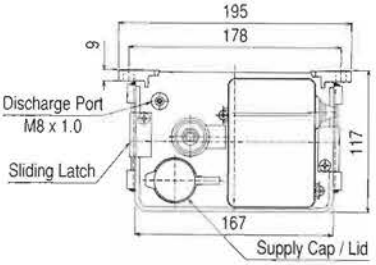
- A new model cyclic pump with a quick attaching / detaching tank
- 2 discharge volume types available, dispensing 1 ~ 3cm³ /cy or 3 ~ 6cm³ /cy
- 6 cycle time types are available with cycle times of 5, 10, 15, 30, 60 or 120 mins

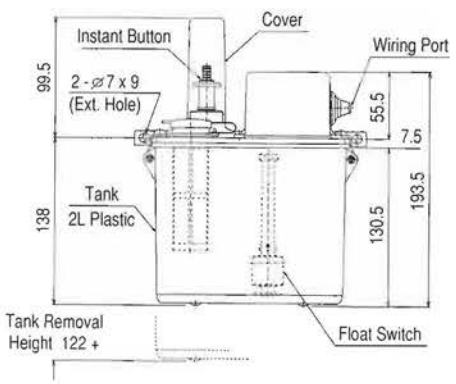
The SMD model is a resistance type cyclic pump possessing a quick attaching / detaching tank, terminal board and a supply strainer as standard options.
Discharge volumes can be adjusted in 0.5cm³ increments to suit lubrication requirements.
Due to the flexibility and its ease of use, the SMD pumps are highly popular in many industries.

MODEL CODE
SMD 3 15 3 A

- Power
  - A : 1Phase 100 / 115V
  - F : 1Phase 200 / 220V
- Optional Attachments
  - 0 : None ⋮ 2 : Cover
  - 1 : Float Switch ⋮ 3 : F. Switch + Cover
- Cycle Time / Intermittence
  - 5 : 5min ⋮ 30 : 30min
  - 10 : 10min ⋮ 60 : 60min
  - 15 : 15min ⋮ 120 : 120min
- Discharge Volume
  - 3 : 1cm³ - 3cm³ /cycle
  - 6 : 3cm³ - 6cm³ /cycle
- Base Code

SMD353F





MOTOR SPECIFICATION

Voltage (V)	100	100 ~ 115	200	200	220
Frequency (Hz)	50	60	50	60	
Rotation (rpm)	1/2, 1, 2, 4, 5, 10				
Current (mA)	Under 50 (10rpm : Under 60)		Under 25 (10rpm : Under 50)		
Input (W)	Under 4 (10rpm : Under 5)				

SPECIFICATIONS

MODEL CODE	Cycle Time (minutes)	Discharge Vol. (cm³ /cycle)	Max. Discharge Pressure (MPa)	Tank Capacity (L)	Effective Tank Capacity (L)
SMD3	5, 10, 15, 30, 60 or 120	1 ~ 3 (Adjustable)	0.3	2	1.5
SMD6		3 ~ 6 (Adjustable)	0.3	2	1.5

* The discharge volume can be adjusted in 0.5cm³ increments. Initial discharge volume settings are set to maximum output levels.
* A Float Switch and an Instant Button Cover are available as options.

YMAS Cycle Pump

YMAS

- An intermittent / cyclic pump unit for resistance type systems
- 2 discharge volume types available, dispensing 1 ~ 3cm³ /cy or 3 ~ 6cm³ /cy
- 7 cycle time types are available with cycle times of 1, 5, 10, 15, 30, 60 or 120 mins

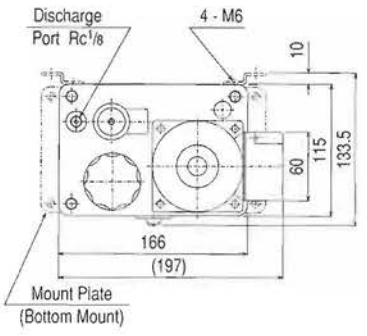
Resistance type motorized pump unit, available in various cycle times with adjustable output volumes. 2 discharge volume types available, dispensing an adjustable discharge amount of either 1cm³ ~ 3cm³ or 3cm³ ~ 6cm³ of oil. The adjustable discharge volume further improves the pump's efficiency.

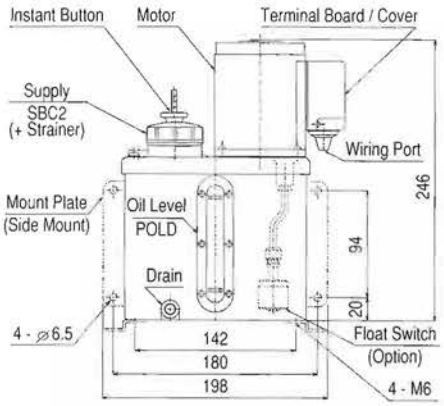
MODEL CODE

YMAS 6 15 T

- Tank Type
  - : 2L Aluminum Tank
  - T : 2L Plastic Tank
- Cycle Time / Intermittence
  - 1 : 1min
  - 5 : 5min
  - 10 : 10min
  - 15 : 15min
  - 30 : 30min
  - 60 : 60min
  - 120 : 120min
- Discharge Volume
  - 3 : 1cm³ ~ 3cm³ /cycle
  - 6 : 3cm³ ~ 6cm³ /cycle
- Base Code

YMAS360





MOTOR SPECIFICATION

Voltage (V)	200, 220, 230	200, 220, 230, 240
Frequency (Hz)	50	60
Current (A)	0.15	0.14
Rotation (rpm)	1400	1700
Output (W)	10	10

* YMAS units with different power specifications are available.

SPECIFICATIONS

MODEL CODE	Cycle Time (minutes)	Discharge Vol. (cm³ /cycle)	Max. Discharge Pressure (MPa)	Tank Capacity (L)	Effective Tank Capacity (L)
YMAS3	1, 5, 10, 15, 30, 60 or 120	1 ~ 3 (Adjustable)	0.5	2	1.5
YMAS6		3 ~ 6 (Adjustable)	0.45	2	1.5

* Discharge volumes can be adjusted. Initial discharge volume settings are 2cm³ for YMAS3 & 5cm³ for YMAS6.
* Apart from standard 2L tanks, a 4L, 5L, 6L and a 12L tank can be fitted to the unit. A Float Switch can also be installed.

MY6 Accumulator Pump

MY6

- Accumulator pump dispensing an adjustable volume of oil up to 6cm³ per cycle
- Possesses an IC timer (control board) for intermittent lubrication (adjustable)
- 3 types of tanks and the inclusion of a float switch is selectable

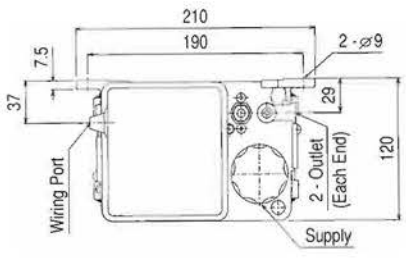
Utilizing an IC timer, the MY6 can be set to discharge oil from a range of selectable interval times. Possessing an "adjustment nut", the discharge volume per cycle can be set between 1 ~ 6cm³. The maximum discharge pressure for any discharge volume setting is 0.5MPa. The MY6 also possesses an "Instant Button", enabling immediate discharge of oil when required.

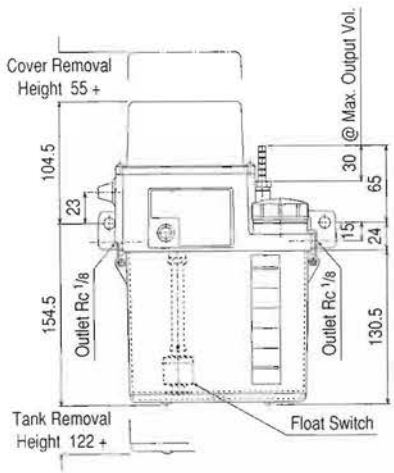
MODEL CODE

MY 6 2 1 1 C

- Power
  - C : 1Phase 100V 50 / 60Hz
  - B : 1Phase 200V 50 / 60Hz
- Float Switch Option
  - 0 : None
  - 1 : Float Switch Installed
- Control
  - 1 : Y11 Timer Control
- Tank Type
  - 0 : 2L Plastic Tank (TP2B2)
  - 1 : 2L Aluminum Tank (TC2D1)
  - 2 : 4L Plastic Tank (TP4B)
- Discharge Volume
  - 6 : 1cm³ ~ 6cm³ /cycle
- Base Code

MY6012 (2L Plastic Tank Model)





POWER SPECIFICATION

Power Code	C		B	
Phase Motor	1		1	
Voltage (V)	100		200	
Frequency (Hz)	50	60	50	60
Consump. (A)	1.6	1.3	0.9	0.7
Output & Poles	17W x 2P			

SPECIFICATION

MODEL CODE	Discharge Pressure (MPa)	Discharge Volume (cm³ /cy)	Intermittence Times Selectable (mins) x 1 Setting	Intermittence Times Selectable (mins) x 10 Setting	Outlet Port Size	Tank Type & Capacity	Effective Tank Cap. (L)	Temp. Range (°C)	Viscosity Range (mm²/s)
MY60	0.5 Max	1 ~ 6 Adjustable	2, 4, 6, 8, 10, 12, 14, 16, 18	20, 40, 60, 80, 100, 120, 140, 160, 180	2 - Rc 1/8 (One on Each Side)	2L Plast.	1.3	-10 ~ +40	50 ~ 800
MY61						2L Alumi.	1.3		
MY62						4L Plast.	2.9		

VA, VB Dester Valve

VA

VB

- Resistance type distribution junctions with flow adjustable valves
- Each port can be adjusted to produce varying flow rates
- VA possess outlets on both sides, VB possess outlets on a single side

Dester Valves are flow adjustable resistance type distribution junctions, compatible with intermittent / cycle or continuous oil distribution systems. The VA type has outlets on each side of the main chamber (total of 4 to 16 ports) and the VB type has outlets on one side (total of 2 to 8 ports).
"BO" Body Only versions available.

MODEL CODE

VA 4 4

Piping & Connection Type
4 : ⌀4 (Inlet PD4, Outlet PC4)
6 : ⌀6 (Inlet PD6, Outlet PC6)
BO : Body Only (Inlet PD4, No Outlet)
BOS : Body Only (No Connectors)

Number of Outlet Ports

VA Series	VB Series
4 : 4 Ports	2 : 2 Ports
6 : 6 Ports	4 : 4 Ports
10 : 10 Ports	6 : 6 Ports
16 : 16 Ports	8 : 8 Ports

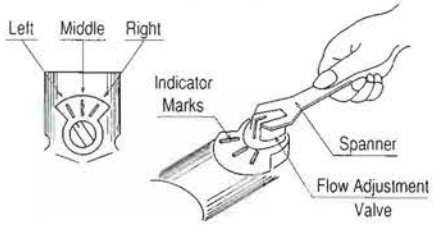
Base Code / Port Positions
VA : Dual Sided | VB : Single Sided

* An equal amount of PA4(6) plugs and PB4(6) sleeves, in relation to the number of outlet ports are supplied. (N.A. for "BO" models)
* Dester Valves with a PD6 on the main supply port and PD4s on the individual distribution ports are also available.
* Dester Valves with a PC check valve on the main supply port and PD nipples on the distribution ports are also available.
PD6 can be attached to the inlet on a "BO" Dester Valve.

DIMENSIONS

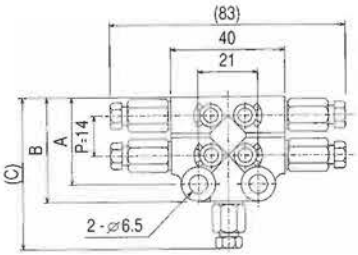
MODEL CODE	Outlets	A	B	C
VA4-4(6)	4	30.5	36.5	53
VA6-4(6)	6	48	60	82.5
VA10-4(6)	10	76	88	110.5
VA16-4(6)	16	118	130	152.5
VA4-BO	4	30.5	36.5	47
VA6-BO	6	48	60	76.5
VA10-BO	10	76	88	104.5
VA16-BO	16	118	130	146.5
MODEL CODE	Outlets	A	B	C
VB2-4(6)	2	34	46	68.5
VB4-4(6)	4	62	74	96.5
VB6-4(6)	6	90	102	124.5
VB8-4(6)	8	118	130	152.5
VB2-BO	2	34	46	62.5
VB4-BO	4	62	74	90.5
VB6-BO	6	90	102	118.5
VB8-BO	8	118	130	146.5

FLOW-RATE ADJUSTMENT

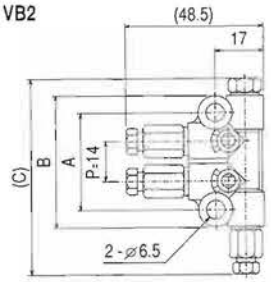


* Maximum flow can be achieved by aligning the valve to the middle indicator mark. Turning the valve to the left or right will reduce the flow of oil.
* Turning the valve past the outer indicators will not stop the oil flow completely. To stop flow, use a sealing plug (PG8, PG004, etc)

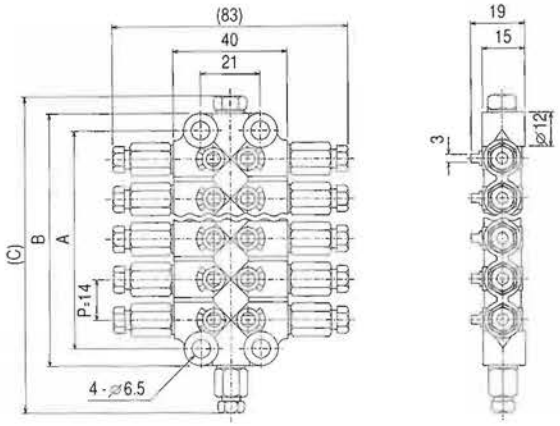
VA4



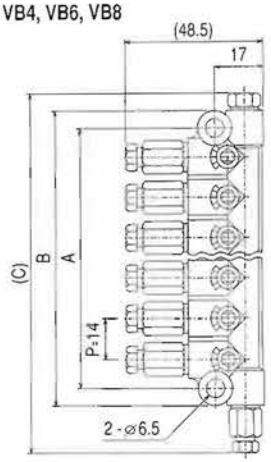
VB2



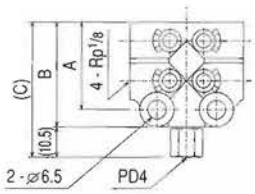
VA6, VA10, VA16



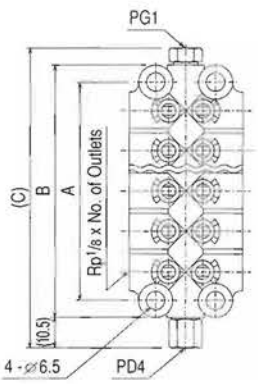
VB4, VB6, VB8



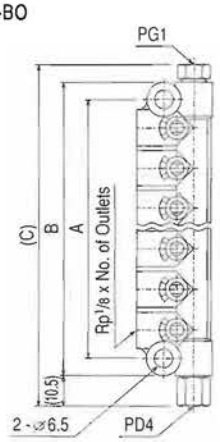
VA4-BO



VA❋-BO



VB❋-BO

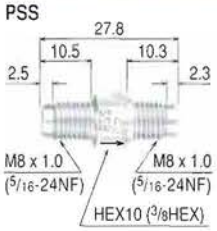


SPECIFICATIONS

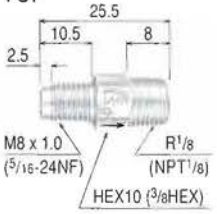
MODEL CODE	Number of Outlet Ports	Distribution Type (Outlet Position)	Operating Pressure (MPa)	Connection Size	
				Inlet Port	Outlet Ports
VA4-4(6)	4	Dual Sided	0.1 ~ 1.5	M8 x 1.0 (M10 x 1.0)	M8 x 1.0 (M10 x 1.0) "BO" Type = Rp1/8
VA6-4(6)	6				
VA10-4(6)	10				
VA16-4(6)	16				
VB2-4(6)	2	Single Sided			
VB4-4(6)	4				
VB6-4(6)	6				
VB8-4(6)	8				

FLOW PROPER UNITS

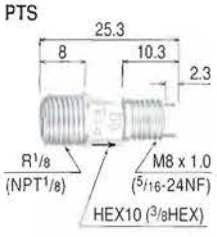
PSS



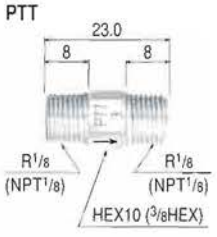
PST



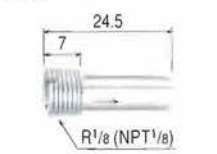
PTS



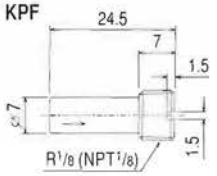
PTT



KPB



KPF



Flow Direction →

- Resistance type distribution equipment for intermittent distribution systems
- Various flow-rates available. Flow-rate determined by flow numbers (00 to 5)
- Various types available to cover a variety of connection possibilities

Flow Proper Units are to be installed within a resistant type system utilizing the intermittent / cyclic distribution method. Flow Proper Units enable delivery of oil at a required flow rate and can be attached to Dester Units (Distribution Block) or individual lubrication points.

6 types of connector combinations are available, each with a selection of 7 oil flow rates. As the classification number increases a step, the flow rate doubles, allowing flow manipulation.

These units are to be used in conjunction with accumulative pressure type pumps (ref. page 3).
Flow Proper Units are not to be utilized with volumetric type pumps, grease pumps or LA type hand pumps.

SPECIFICATIONS

MODEL CODE	Connection Size		Flow Class	Flow Value	Operating Pressure (MPa)	Recommended Viscosity (mm²/s)	Compatible Connectors	
	IN	OUT					IN	OUT
PSS Type	M8 x 1.0 (5/16-24NF)	M8 x 1.0 (5/16-24NF)	00	0.5	0.15 ~ 2	20 ~ 500	PAN4 (PAN4H)	PAN4 (PAN4H)
PST Type	M8 x 1.0 (5/16-24NF)	R1/8 (NPT1/8)	0	2			PAN4 (PAN4H)	#
PTS Type	R1/8 (NPT1/8)	M8 x 1.0 (5/16-24NF)	1	4			#	PAN4 (PAN4H)
PTT Type	R1/8 (NPT1/8)	R1/8 (NPT1/8)	2	8			#	#
KPB Type	R1/8 (NPT1/8)	-----	3	16			-----	-----
KPF Type	-----	R1/8 (NPT1/8)	4	32			-----	-----
			5	64			-----	-----

* Flow-rate doubles every increment in the unit's flow classification number from 0 onwards. (Flow-rate of 00 is a quarter of 0)
* Flow Proper Units are available in inch sizes. Size displayed in ( ), a "H" will be added to the end of the model code.
* The "#" displayed in the "Compatible Connectors / Parts" column indicates that any piping connector that can connect to Rc 1/8 and Rp1/8 connections can be used.
* PSS Flow Proper Units for ⌀3.2 pipe size are available. (PSS*K)

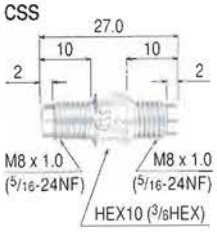
MODEL CODE
PSS 3

Base Code / Connection
PSS : M8 x 1.0 - M8 x 1.0
PST : M8 x 1.0 - R1/8
PTS : R1/8 - M8 x 1.0
PTT : R1/8 - R1/8
KPB : R1/8 - /
KPF : / - R1/8

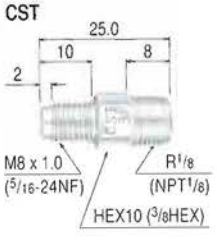
Flow Classification Number
00 : Flow Value [0.5]
0 : Flow Value [2]
1 : Flow Value [4]
2 : Flow Value [8]
3 : Flow Value [16]
4 : Flow Value [32]
5 : Flow Value [64]
(Less ↑ Oil Vol. ↓ More)

CONTINUOUS UNITS (Grease System Compatible)

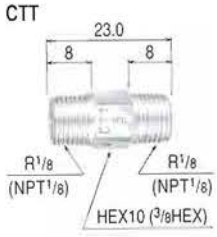
CSS



CST



CTT



Flow Direction →

- Resistance type distribution equipment for continuous distribution systems
- Various flow-rates available. Flow-rate determined by flow numbers (1 to 5)

Continuous Units can be used for either; the resistant type system utilizing the continuous distribution method or in grease distribution systems. The Continuous Units allow a controlled delivery of oil / grease and can be attached to Dester Units (DA / DB distribution blocks) or individual lubrication points.

3 types of connector combinations are available (CSS, CST and CTT), each with a selection of 5 oil / grease flow rates. As the classification number increases a step, the flow rate doubles, enabling flow manipulation to the desired effect.

Continuous Units are not to be utilized in conjunction with volumetric type pumps (pressure displacement mechanisms).

SPECIFICATIONS

MODEL CODE	Connection Size		Flow Class	Flow Value	Operating Pressure (MPa)	Recommended Viscosity (mm²/s)	Compatible Connectors	
	IN	OUT					IN	OUT
CSS Type	M8 x 1.0 (5/16-24NF)	M8 x 1.0 (5/16-24NF)	1	1.2	0.15 ~ 2	20 ~ 500	PAN4 (PAN4H)	PAN4 (PAN4H)
			2	2.5				
CST Type	M8 x 1.0 (5/16-24NF)	R1/8 (NPT1/8)	3	5			PAN4 (PAN4H)	#
CTT Type	R1/8 (NPT1/8)	R1/8 (NPT1/8)	4	10			#	#
			5	20				

* Flow-rate doubles every increment in the unit's flow classification number.
* Continuous Units are available in inch sizes. Size displayed in ( ), a "H" will be added to the end of the model code.
* The "#" displayed in the "Compatible Connectors / Parts" column indicates that any piping connector that can connect to Rc 1/8 and Rp1/8 connections can be used.
* In situations where Continuous Units are to be used for grease lubrication systems, CSS models should be selected.

MODEL CODE
CSS 2

Base Code / Connection
CSS : M8 x 1.0 - M8 x 1.0
CST : M8 x 1.0 - R1/8
CTT : R1/8 - R1/8

Flow Classification Number
1 : Flow Value [1.2]
2 : Flow Value [2.5]
3 : Flow Value [5]
4 : Flow Value [10]
5 : Flow Value [20]
(Less ↑ Oil Vol. ↓ More)

LAW Hand Pump

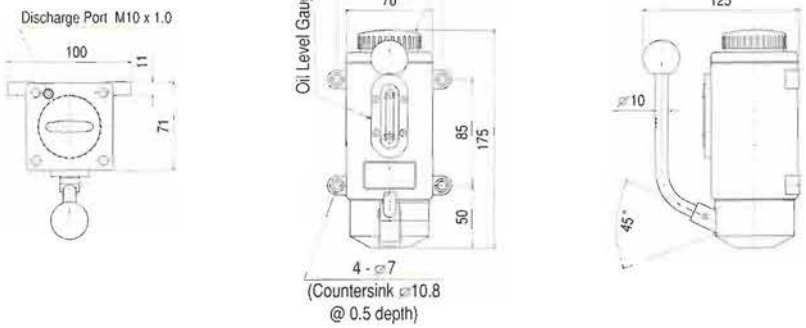
- Manually operated volumetric type pump
- 2 types available, dispensing either 6cm³ /stroke or 8cm³ /stroke
- Minimize wasted oil by dispensing fixed and measured quantities

LAW6

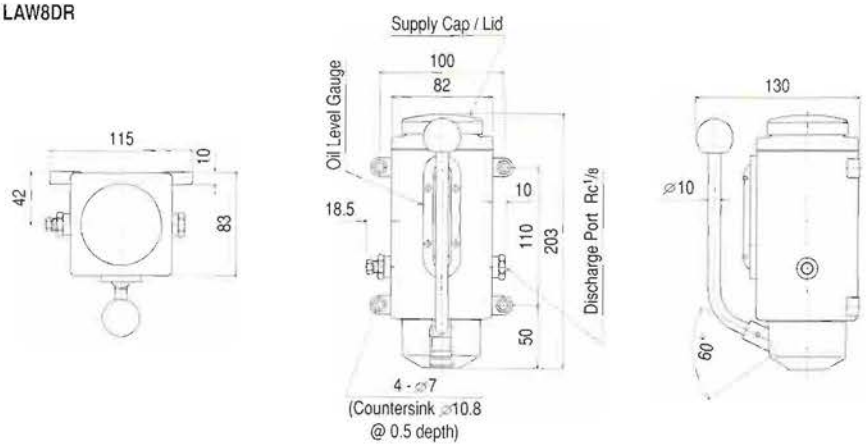
LAW8D

The LAW hand pump is designed for use in a volumetric type system. As oil can be dispensed by pulling upon the lever, installation and operation is simple.
2 sizes of LAW volumetric type hand pumps are available, which can dispense either 6cm³ /stroke or 8cm³ /stroke of oil.

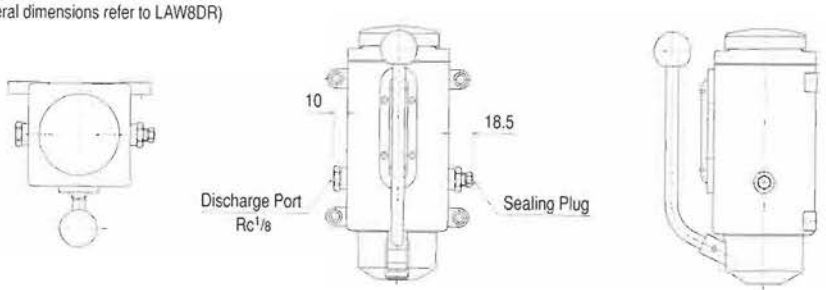
LAW6



LAW8DR



LAW8DL
(General dimensions refer to LAW8DR)



MODEL CODE

LAW 8D R

- Discharge Port Direction (Option only for 8D pumps)
  - R : Port positioned on right
  - L : Port positioned on left
- Discharge Volume
  - 6 : 6cm³ /st
  - 8D : 8cm³ /st
- Base Code

* 2 types of LAW8D are available.
(LAW8DR with the discharge port on the right and LAW8DL with the discharge port on the left)

SPECIFICATIONS

MODEL CODE	Discharge Vol. (cm³ /st)	Max. Discharge Pressure (MPa)	Discharge Port Size	Tank Capacity (L)	Effective Tank Capacity (L)
LAW6	6	-	M10 x 1.0	0.35	0.25
LAW8DR(L)	8	4.0	Rc 1/8	0.6	0.4

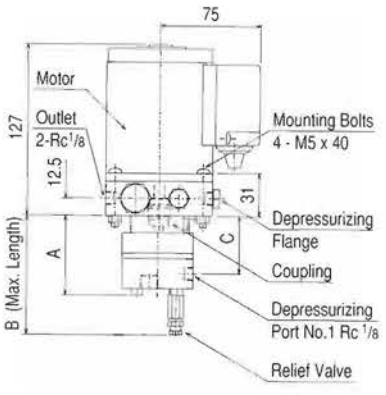
MLA✻W, MLB✻W Pressure Displacing Motor Pump

- Volumetric type gear pump featuring a pressure displacement mechanism
- Highly efficient and durable. Various types / specifications available
- Utilized in various volumetric type lubrication units

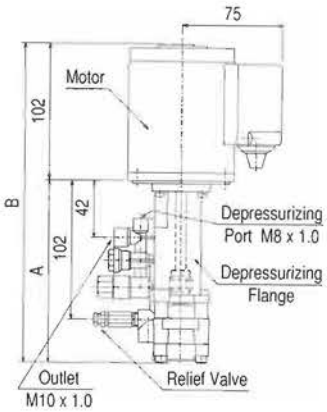
The "LW" pumps, MLA✻W and MLB✻W models, designed for centralized lubrication system units utilizing the volumetric type system, are small gear pumps featuring a pressure displacement mechanism.

The body and casing of the MLB✻W model have been produced from die-cast aluminum and the functioning components have been designed to consume less space, allowing a significant reduction in product weight.

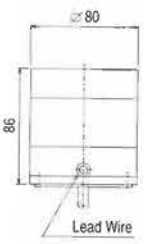
MLA✻W



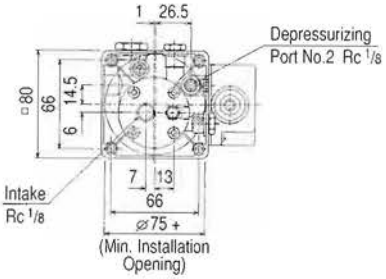
MLB✻W

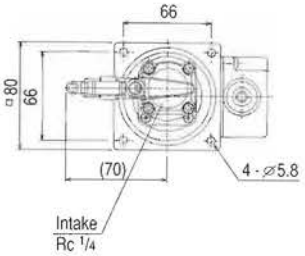


MLB✻W2



MLB✻W2 pump utilizes the same pump and flange components as the MLB✻W.





MODEL CODE

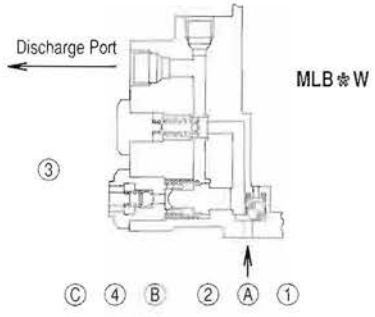
MLA 05 W T

- Motor Output
  - : 25W x 4Pole
  T : 60W x 2Pole
- Pressure Displacement
  W : Mechanism Featured
- Discharge Volume
  015 : 0.15L/min
  03 : 0.3L/min
  05 : 0.5L/min
- Base Code

MLB 03 W 2

- Motor Specification
  - : 25W x 4Pole Enclosed Type
  2 : 25W x 4Pole Exposed Type
  3 : 20W x 4Pole Exposed Type
- Pressure Displacement
  W : Mechanism Featured
- Discharge Volume
  015 : 0.15L/min
  03 : 0.3L/min
- Base Code

OPERATION (Internal Mechanism)



Oil is drawn from port Ⓐ and any air present is expelled passing the outer-side of the steel ball ①, back into the oil supply tank. When oil enters, the steel ball ① blocks the air expulsion port, increasing internal pressure causing the main valve ② to move and block off port Ⓑ.

Next, The resistance valve ③ opens, allowing oil to pass through the main chamber and be discharged for distribution.

When the pump stops, the resistance valve ③ closes and the main valve returns to it's original position with the help of a spring, opening port Ⓑ. The internal pressure pushes the valve ④ open and the pressurized oil returns to the tank via port Ⓒ, depressurizing the main chamber.

DIMENSIONS

MODEL CODE	A	B	C
MLA015W	59	95	43
MLA03W	62	98	46
MLA03WT	59	95	43
MLA05W	62	98	46

MODEL CODE	A	B
MLB015W	135	237
MLB03W	138	240

SPECIFICATION

MODEL CODE	Discharge Pressure (MPa)	Discharge Volume (L/min) 50Hz	Discharge Volume (L/min) 60Hz	Theoretical Discharge (cm^3/R)	Viscosity Range (mm^2/s)	Motor Output x Pole (W) x (P)	Current (A) 200V (50Hz)	Current (A) 200V (60Hz)	Current (A) 220V (60Hz)
MLA015W	1.5	0.16	0.19	0.12	20 ~ 2000	25 x 4	0.26	0.27	0.27
MLA03W		0.28	0.33	0.2	20 ~ 1000	25 x 4	0.26	0.27	0.27
MLA03WT	2.0	0.3	0.36	0.12	20 ~ 2000	60 x 2	0.4	0.4	0.4
MLA05W		0.5	0.6	0.2	20 ~ 1000	60 x 2	0.4	0.4	0.4
MLB015W	2.0	0.16	0.19	0.12	20 ~ 2000	25 x 4	0.26	0.27	0.27
MLB015W2		0.16	0.19	0.12	20 ~ 2000	25 x 4	*0.35	*0.35	-----
MLB015W3		0.16	0.19	0.12	20 ~ 2000	20 x 4	*0.25	*0.25	-----
MLB03W		0.28	0.33	0.2	20 ~ 1000	25 x 4	0.26	0.27	0.27
MLB03W2		0.28	0.33	0.2	20 ~ 1000	25 x 4	*0.35	*0.35	-----

* 25W motor's rating are 200, 220, 230Volts (50Hz - 0.26A) or 200, 220, 230, 240Volts (60Hz - 0.27A)
* Three phase 200 / 220V is standard, however, models can be made available to meet different power specifications.
* The MLB015W2, MLB015W3 and MLB03W2 are limited to single phase 100 / 200V power supplies.
* The " * " in the Specification table above, indicates a current level (A) utilizing a 200V single phase power supply.
* Class E insulation
* Pressure: 1kgf/cm^2 = 0.1MPa
* Discharge Volume: 1cc/min = 1cm^3/min
* Viscosity: 1cSt = 1mm^2/S

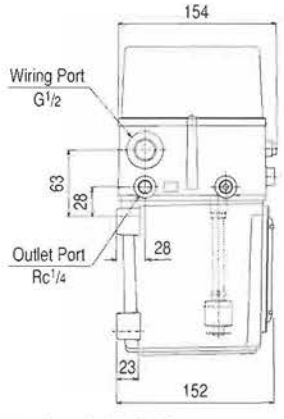
LCB3 Lubrication Unit

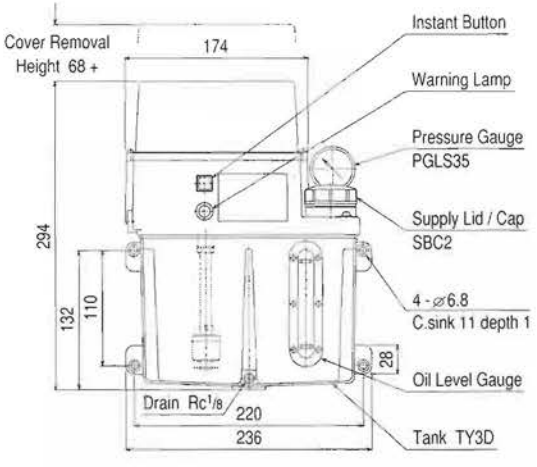
LCB3

- Motorized pump unit for the volumetric type system
- Discharge timer option available (10 settings between 2 to 192 minutes)
- General purpose pump unit

The LCB3 units are fitted with a die-cast aluminum 3.4L tank, cover, and flange. IC timer (control board) fitted units can be adjusted to operate between 2 to 192 minutes, These units are also fitted with indicator lamps, enabling verification of operational status and errors.
Immediate oil distribution can be initiated manually, by pressing the "Instant Button".

LCB311C





MODEL CODE
LCB3 1 1 C

- Power
  - C : 1Phase AC100V 50 / 60Hz
  - B : 1Phase AC200V 50 / 60Hz
- Pressure Gauge Option
  - 0 : None
  - 1 : Pressure Gauge Fitted
- Optional Attachments
  - 1 : YT Timer, Float & Pressure Switch
  - 2 : Float & Pressure Switch
  - 3 : Float Switch
  - 4 : Pressure Switch
  - 5 : None
- Base Code

MOTOR SPECIFICATION

Voltage & Freq.	100V 50Hz	100V 60Hz	200V 50Hz	200V 60Hz
Current (A)	1.5A	1.2A	0.8A	0.6A
Output & Poles	17W x 2P			
Operation	Max. 5mins with resting time of operation x 2			

* E - type insulation

SPECIFICATIONS

MODEL CODE	Pump Utilized	Intermittence (YT Timer Option)	Discharge Vol. (cm^3/cycle)	Discharge Pressure	Tank Capacity (L)	Effective Tank Capacity (L)	Viscosity Range
LCB3	MLB01W1	2, 4, 6, 8, 16, 24, 32, 48, 64, 128, 192 mins	0.1L 50Hz 0.12L 60Hz	1.2MPa	3.4	2	50 ~ 800 mm^2/s

* Lubricant can be discharged by pressing the "Instant button". The pump will continue to operate until the button is released.

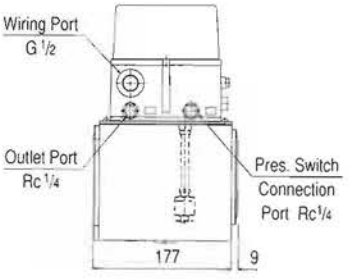
LCB3 (TMS) Lubrication Unit

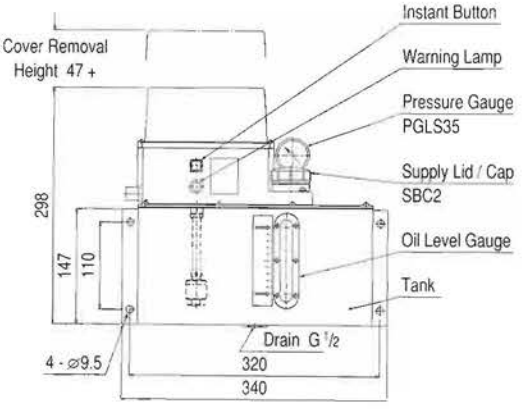
LCB3 TMS

- TMS compliant - volumetric type automatic pump unit
- Discharge frequency can be controlled by timer or impulse
- Array of functions and features to suit various lubrication system requirements

The LCB3 TMS model lubrication unit possesses a controller which complies to the TMS standards. The unit's operation (discharge frequency or intermittence) can be controlled by either an intermittence timer or an impulse count timer and can also be controlled from an external source. Possessing a pressure & float switch, effective lubrication management can be undertaken with ease.

LCB30205B -04





MODEL CODE
LCB3 01 05 C - 04

- Drain Port Size
  - - : Rc 1/8
  - 04 : G 1/2
- Power
  - C : 1Phase 100V 50 / 60Hz
  - B : 1Phase 200V 50 /60Hz
- Timer
  - 05 : YU1 Timer
- Tank Type (Effective Capacity)
  - 01 : 2L Aluminum Tank
  - 02 : 4.4L Steel Tank
  - 03 : 10.9L Steel Tank
- Base Code

MOTOR SPECIFICATION

Voltage & Freq.	100V 50Hz	100V 60Hz	200V 50Hz	200V 60Hz
Current (A)	1.6A	1.3A	0.9A	0.7A
Output & Poles	17W x 2P			
Operation	Max. 5mins with resting time of operation x 2			

* E - type insulation
* Specified intermittence can be increased by 2x, 3x or 4x

SPECIFICATIONS

MODEL CODE	Intermittence (Impulse or mins)	Discharge Vol. (L / minute)	Discharge Pressure	Tank Capacity (L)	Effective Tank Capacity (L)	Viscosity Range	Warning Triggers
LCB301	2, 4, 6, 8, 16, 24, 32, 48, 64, 128 (Can be modified)	0.1L / 0.12L 50Hz / 60Hz	1.5MPa	3.4	2	50 ~ 800 mm^2/s	Pressure surge, pressure loss, low oil levels
LCB302				5.5	4.4		
LCB303				14.4	10.9		

* Lubricant can be discharged by pressing the "Instant button". The pump will continue to operate until the button is released.

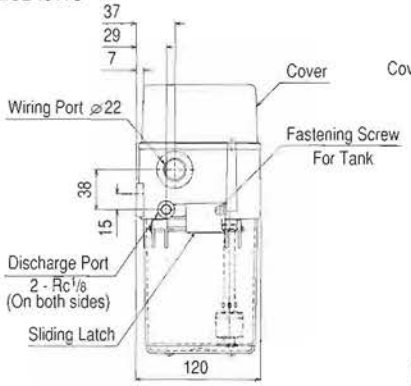
LCB4 Lubrication Unit

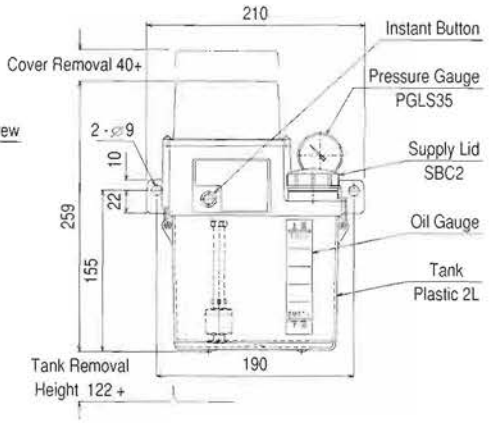
LCB4

- Motorized pump unit for the volumetric type system
- Combines a MLB01W2 pump with a 2L tank
- Lubrication unit without an IC timer (control board)

The LCB4 is a compact centralized lubrication unit supplied without an IC timer (control board). LCB4 available with varying combinations of a pressure switch, pressure gauge or a float switch. Requires connection to a timer system to enable intermittent operation.

LCB4011C





MODEL CODE

LCB4 0 1 1 C

- Power
  - C : 1Phase AC100V 50 / 60Hz
  - B : 1Phase AC200V 50 / 60Hz
- Pressure Gauge Option
  - 0 : None
  - 1 : Pressure Gauge Fitted
- Optional Attachments
  - 1 : Float & Pressure Switch
  - 2 : Float Switch
  - 3 : Pressure Switch
  - 4 : None
- Tank Type
  - 0 : 2L Plastic Tank
  - 1 : 2L Aluminum Tank
- Base Code

MOTOR SPECIFICATION

Voltage & Freq.	100V 50Hz	100V 60Hz	200V 50Hz	200V 60Hz
Current (A)	1.5A	1.2A	0.8A	0.6A
Output & Poles	17W x 2P			
Operation	Max. 5mins with resting time of operation x 2			

* E - type insulation * Minimum 2 mins resting time required

SPECIFICATIONS

MODEL CODE	Pump Utilized	Discharge Vol. (cm³/cycle)	Discharge Pressure	Tank Capacity (L)	Effective Tank Capacity (L)	Viscosity Range
LCB4	MLB01W2	0.1L / 0.12L 50Hz / 60Hz	1.2MPa	2	1.3	50 ~ 800 mm²/s

* Lubricant can be discharged by pressing the "Instant button". The pump will continue to operate until the button is released.

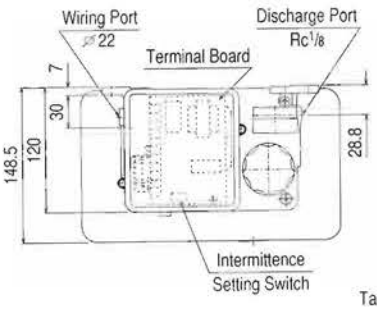
LCB5 Lubrication Unit

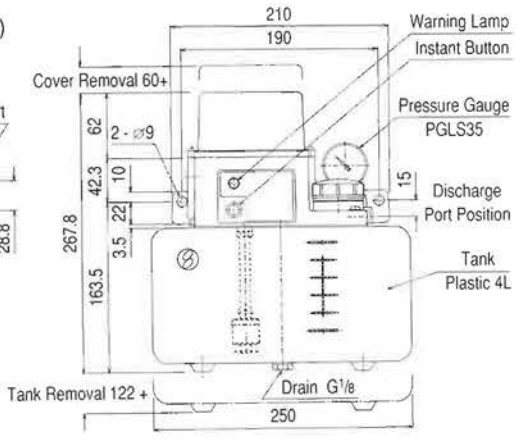
LCB5

- Motorized pump unit for the volumetric type system
- Combines the LCB4 unit with an IC timer, pressure gauge and float switch
- A 2L plastic or die-cast aluminum tank and a 4L extended plastic tank are available

Based upon the LCB4 lubrication unit, the LCB5 are equipped standard with an IC timer (control board), a pressure switch, a float switch, an Instant discharge button and an option to select a 4L extended plastic tank and / or a pressure gauge. The intermittence time between discharges can be adjusted from a range of 2 ~ 180 minutes by simply altering the dip switch settings on the timer.

LCB521C (4L Extended Plastic Tank Model)



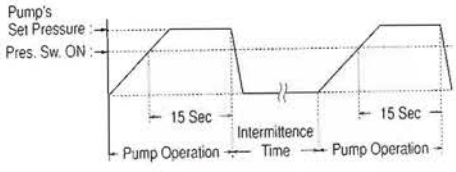


MODEL CODE

LCB5 2 1 C

- Power
  - C : AC100V 50 / 60Hz
  - B : 1Phase 200V 50 /60Hz
- Pressure Gauge Option
  - 0 : None
  - 1 : Pressure Gauge (PGLS35)
- Tank Type
  - 0 : 2L Plastic Tank
  - 1 : 2L Aluminum Tank
  - 2 : 4L Extended Plastic Tank
- Base Code

OPERATION TIME LINE



SPECIFICATIONS

MODEL CODE	Intermittence (Rest time in mins.)	Discharge Vol. (L / minute)	Discharge Pressure	Tank Capacity (L)	Effective Tank Capacity (L)	Viscosity Range	Warning Triggers
LCB50	2, 4, 6, 8, 10, 15, 20, 25, 30, 40, 50, 60, 90, 120, 150, 180	0.1L / 0.12L 50Hz / 60Hz	1.2MPa	2	1.3	50 ~ 800 mm²/s	Pressure surge, pressure loss, low oil levels
LCB51				2	1.3		
LCB52				4	2.9		

* Lubricant can be discharged by pressing the "Instant button". The pump will continue to operate until the button is released.

DPB Dester Plunger

DPB15

DPB25

- Piston distributors for the volumetric type system
- Distributes pre-measured volume of oil utilizing the pump's direct pressure

Utilizing the pump's pressure, the DPB model Dester Plunger distributes a pre-measured amount of oil from each port.
According to the Dester Plunger's body size, model numbers of 0, 10, 20 and 30 are allocated.
Each model / size are available with various number of ports and discharge volumes.

MODEL CODE

DPB 1 5 - 6

Discharge Volume Per Port

FOR 0 TYPE	FOR 20 TYPE
1.5 : 0.015cm³/st	0.1 : 0.1cm³/st
3 : 0.03cm³/st	0.2 : 0.2cm³/st
5 : 0.05cm³/st	0.4 : 0.4cm³/st
8 : 0.08cm³/st	0.6 : 0.6cm³/st
FOR 10 TYPE	**FOR 30 TYPE**
3 : 0.03cm³/st	0.2 : 0.2cm³/st
6 : 0.06cm³/st	0.4 : 0.4cm³/st
10 : 0.1cm³/st	0.6 : 0.6cm³/st
16 : 0.16cm³/st	1.0 : 1.0cm³/st
	1.5 : 1.5cm³/st

Number of Outlet Ports

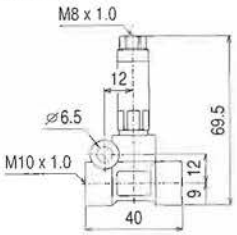
1 : 1 Ports	6 : 6 Ports
2 : 2 Ports	8 : 8 Ports
3 : 3 Ports	10 : 10 Ports
5 : 5 Ports	

Model Type
0 : 0 Type
1 : 10 Type
2 : 20 Type
3 : 30 Type

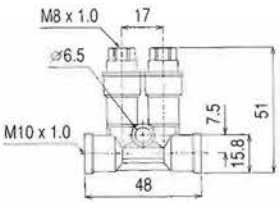
Base Code

* According to the model number (body size), the available number of ports and discharge volumes will differ.
* Having similar specifications as the DPB20, DPF20 Dester Plungers are available with different mounting hole positions.
* It is possible to set different discharge volumes for each individual port on a Dester Plunger.
* By changing the outlet metering nipples, discharge volumes can be altered to suit requirements. (Must be a volume specified in the model type's discharge volume list above.)

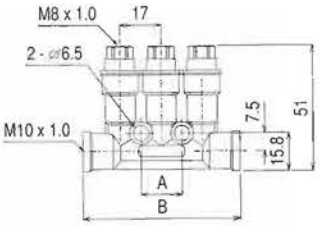
DPB11



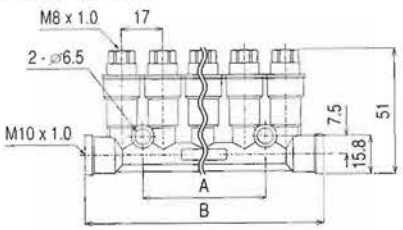
DPB12

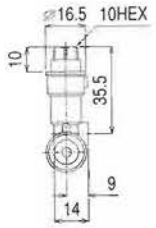


DPB13

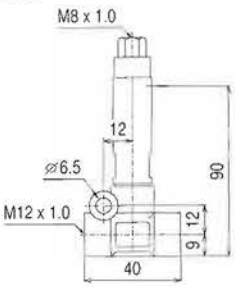


DPB15, 16, 18, 110

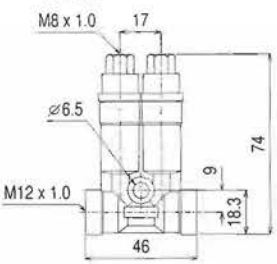




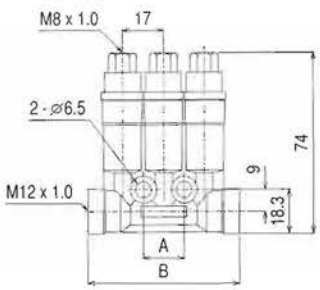
DPB21



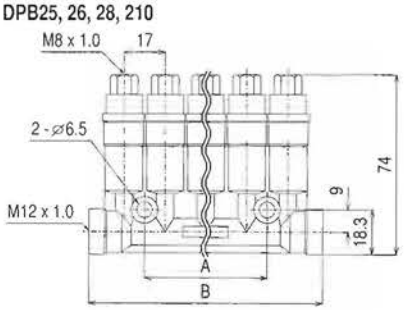
DPB22

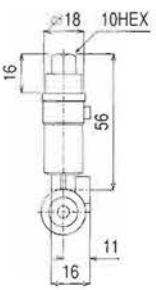


DPB23



DPB25, 26, 28, 210

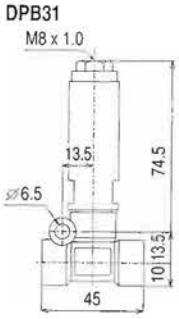




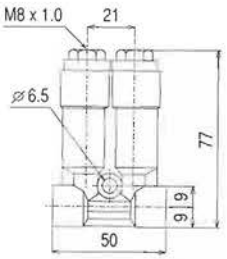
DIMENSIONS (Mounting Holes)

MODEL CODE	Outlet Ports	A	B
DPB11	1	-	40
DPB12	2	-	48
DPB13	3	17	65
DPB15	5	51	99
DPB16	6	68	116
DPB18	8	102	150
DPB110	10	136	184
MODEL CODE	Outlet Ports	A	B
DPB21	1	-	40
DPB22	2	-	46
DPB23	3	17	63
DPB25	5	51	97
DPB26	6	68	114
DPB28	8	102	148
DPB210	10	136	182
MODEL CODE	Outlet Ports	A	B
DPB31	1	-	45
DPB32	2	-	50
DPB33	3	21	71
DPB0 Range	2, 3, 5	-	-
DPF20 Range	2, 3, 5	-	-

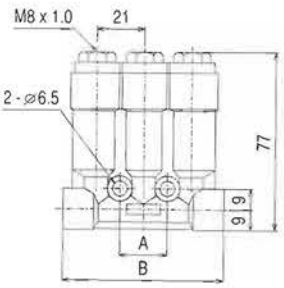
DPB31

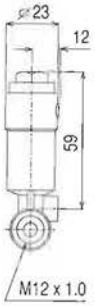


DPB32



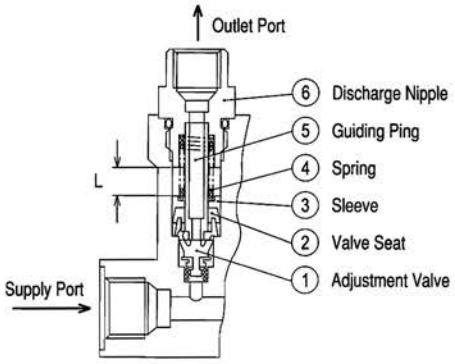
DPB33





OPERATION (Internal Mechanism)

DPB 0 Type & 10 Type



(1) The oil pressure from below compresses the outer section of the valve, allowing oil to pass. The valve also (check valve) prevents oil to pass back through.

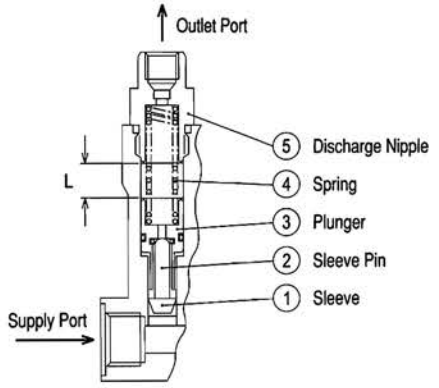
(2) The valve seat and sleeve are pushed upwards by the oil (3) pressure below, forcing the pre-measured and stored oil in the cylinder to be distributed through the outlet port.

(4) Once the pump has stopped and the pressure displacement mechanism activates to relieve pressure in the main supply pipe, the spring forces the valve seat and sleeve back to their original positions.

(5) Oil situated below the cylinder, passes through the pin's hole to fill the storage area in the cylinder, ready to be discharge at the next cycle.

(6) The discharge volume is set by the stroke length " L " between the nipple and sleeve. By changing the discharge nipple, the discharge volume can be altered.

DPB 20 Type & 30 Type



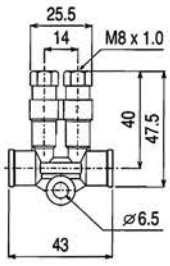
(1) Utilizing oil pressure from the main supply pipe, the sleeve (2) component forces the plunger upwards. The sleeve also acts as a check valve upon de-pressurization, preventing oil from flowing back.

(3) As the plunger is forced upwards by the sleeve component, oil which had been pre-measured and stored above the plunger is forced out through the outlet port.

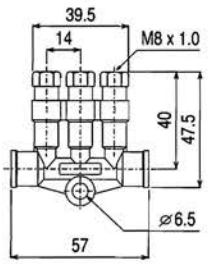
(4) Once the pump has stopped and the pressure displacement mechanism activates to relieve pressure in the main supply pipe, the spring forces the plunger back down to its original position. During this process, the oil situated below the plunger is forced through the plunger hole and passed above to be stored and discharged at the next cycle.

(5) The discharge volume is set by the stroke length " L " between the nipple and plunger.

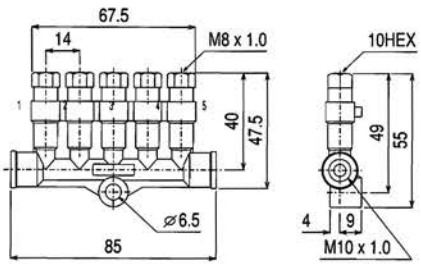
DPB02



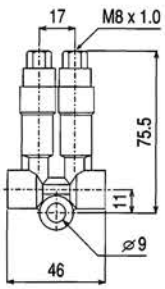
DPB03



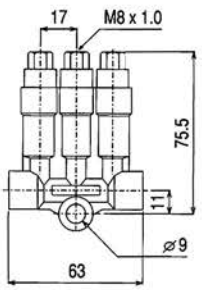
DPB05



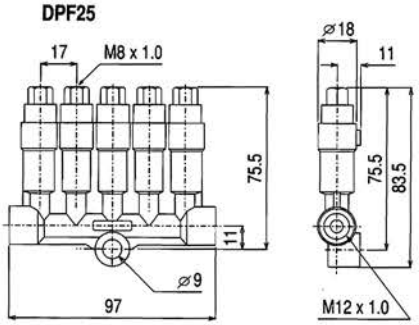
DPF22



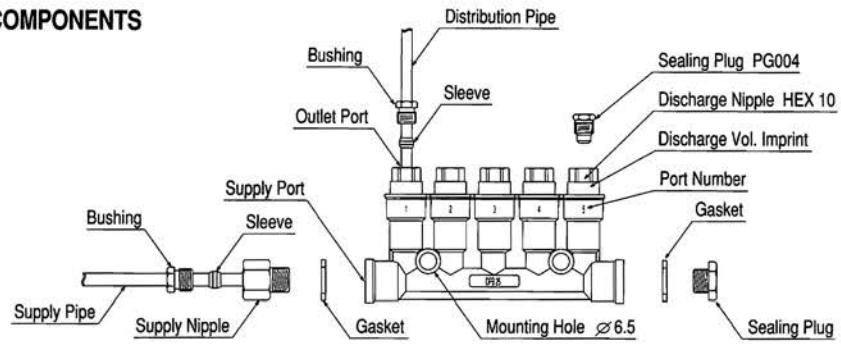
DPF23



DPF25



COMPONENTS



MODEL CODE	Supply Connection							Outlet Connection		
	Supply Nipple		Copper Gasket	Rubber Packing	Bushing	Sleeve	Sealing Plugs	Bushing	Sleeve	Sealing Plugs
DPB 0Type	-		-	-	PA6	PB6	PG10C, PG10N or PG006	⌀3.2 PA3.2	⌀3.2 PB3.2	PG8C
DPB 10Type	-		-	-	PA6	PB6	PG10C, PG10N or PG006	PA4	PB4	PG8C, PG004 or PG104
DPB 20Type	⌀6	PD612	311-0394	3-5885	PA6	PB6	PG12C or PG12N	PA4	PB4	PG8C, PG004 or PG104
	⌀8	PD812	311-0394	3-5885	PA8	PB8				
DPB 30Type	⌀6	PD612	311-0394	3-5885	PA6	PB6	PG12C or PG12N	PA4	PB4	PG8C, PG004 or PG104
	⌀8	PD812	311-0394	3-5885	PA8	PB8				

SPECIFICATIONS

MODEL CODE	Number of Outlet Ports	Discharge Vol. (cm^3/st)	Discharge Nipple Code	Operating Pressure	Connection Size	
					Inlet Port	Outlet Ports
DPB0	2, 3, 5	0.015	3-5460	0.9 ~ 3MPa	M10 x 1.0	M8 x 1.0
		0.03	3-5461			
		0.05	3-5462			
		0.08	3-5463			
DPB10	1, 2, 3, 5, 6, 8, 10	0.03	3-6819	0.8 ~ 3MPa	M10 x 1.0	M8 x 1.0
		0.06	3-6820			
		0.1	3-6821			
		0.16	3-6822			
DPB20 (DPF20)	1, 2, 3, 5, 6, 8, 10 (2, 3, 5)	0.1	3-1456	0.8 ~ 3MPa	M12 x 1.0	M8 x 1.0
		0.2	3-1457			
		0.4	3-1458			
		0.6	3-1459			
DPB30	1, 2, 3	0.2	3-1443	0.8 ~ 3MPa	M12 x 1.0	M8 x 1.0
		0.4	3-1444			
		0.6	3-1445			
		1.0	3-1446			
		1.5	3-1447			

* Recommended Viscosity: 20 to 500mm^2/S

DSA, DSB Dester Block

DSA

DSB

- Piston distributors for the volumetric type system
- Distributes pre-measured volume of oil utilizing the piston's spring pressure

Utilizing the internal spring's decompressing force, the DSA & DSB model Dester Blocks distributes a pre-measured amount of oil from each port.

Dester Blocks with outlets on both sides of the supply chamber (DSA) and Dester Blocks with outlet ports only on one side (DSB) are available to accommodate various installation requirements.

Various number of ports, discharge volumes and an optional indicator pin to confirm oil discharge, are available with these distributors.

MODEL CODE
DSA 6 L - 0.1

- Discharge Volume Per Port
  - 0.1 : 0.1cm³/st
  - 0.2 : 0.2cm³/st
  - 0.5 : 0.5cm³/st
  - 1.0 : 1.0cm³/st
- Visual Indicator Pin
  - - : No Indicator Pin
  - L : Indicator Pin
- Number of Outlet Ports
  - 2 : 2 Ports
  - 4 : 4 Ports
  - 6 : 6 Ports
  - 8 : 8 Ports
- Base Code

MODEL CODE
DSB 5 C L - 0.1

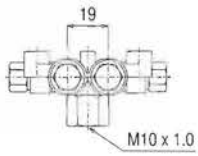
- Discharge Volume Per Port
  - 0.1 : 0.1cm³/st
  - 0.2 : 0.2cm³/st
  - 0.5 : 0.5cm³/st
  - 1.0 : 1.0cm³/st
- Visual Indicator Pin
  - - : No Indicator Pin
  - L : Indicator Pin
- Outlet Port Direction
  - - : 90 Degree Angle From Mount
  - C : Parallel With Mount Surface
- Number of Outlet Ports
  - 2 : 2 Ports
  - 4 : 4 Ports
  - 6 : 6 Ports
  - 8 : 8 Ports
- Base Code

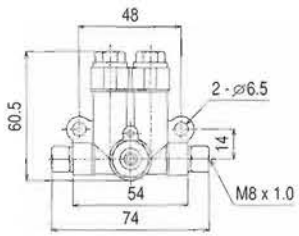
* A DSB - C model, possesses outlet ports aligned parallel with the mounting face while standard DSB models have their outlet ports on a 90 degree angle to the mounting face. Refer Pic. below.

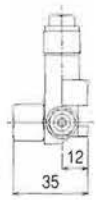
* It is possible to set different discharge volumes for each individual port on a Dester Plunger.

* By changing the outlet metering nipples, discharge volumes can be altered to suit requirements.

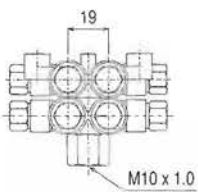
DSA2

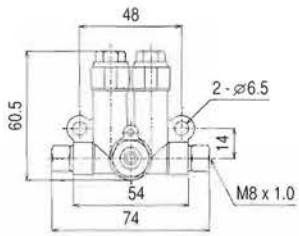


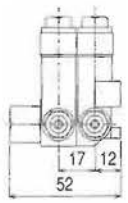




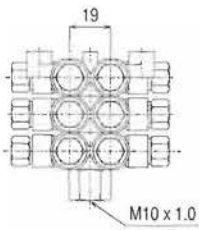
DSA4

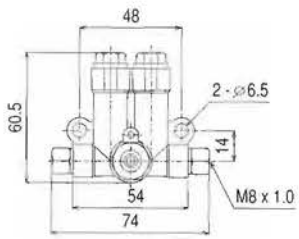


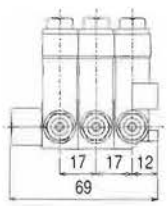




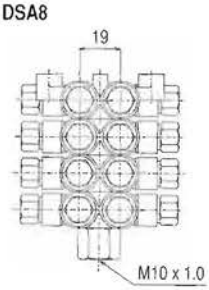
DSA6

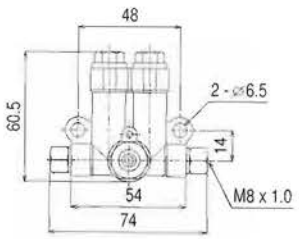


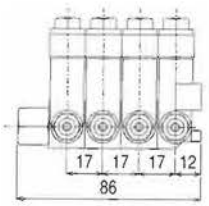




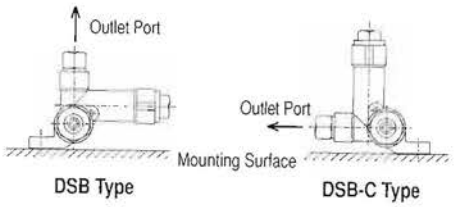
DSA8



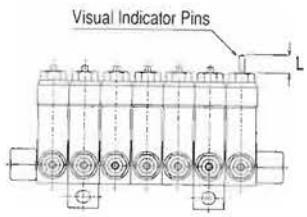




OUTLET DIRECTION



DSA(B) L Dester Blocks with visual indicator pins to confirm operation

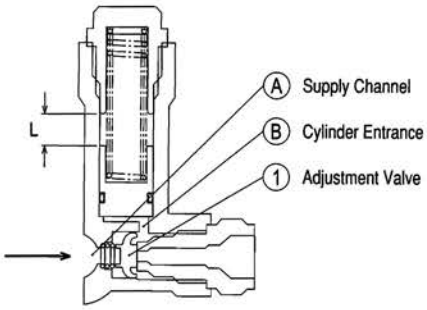


* Indicator pins protrude when oil is being stored and will return to their original positions when oil has been discharged.

* Specifications and general dimensions for the L type Desters are the same as standard DSA and DSB models.

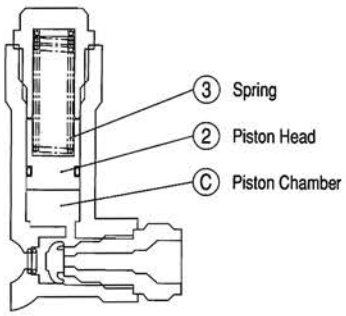
Discharge Volumes	Indicator Pin Dimen. (L)
0.1cm³/st	1.5mm
0.2cm³/st	2.3mm
0.5cm³/st	5.0mm
1.0m³/st	9.5mm

OPERATION (Internal Mechanism)



(A) Oil which has been discharged from the lubrication pump unit, travels through the main supply pipes and enters the supply chamber of the Dester Plungers. Within the supply chamber, a small hole is located for each piston to take in oil.

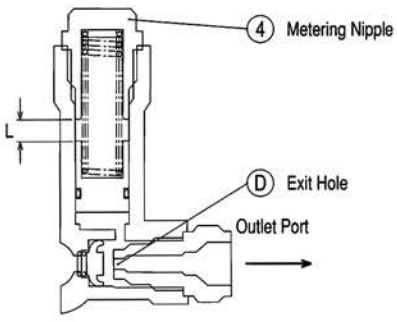
(1) (B) The pressurized oil from the pump unit, forces the valve to open back, enabling oil to be passed through to the piston cylinder's entrance.



(2) The pressurized oil enters the piston chamber and forces the piston upwards.

(3) During this process, the spring above the piston head is compressed.

(C) (4) The piston will continue to rise and take in oil until the top of the piston comes in contact with the bottom of the metering nipple. A measured amount of oil has now been stored within the piston chamber, ready to be discharged in the next step.

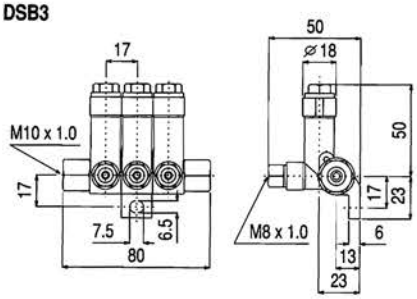


Once the pump has stopped discharging oil, the pressure displacement mechanism within the pump unit activates.
This reduction in pressure from within the main supply pipe and the Dester Plunger's supply chamber, enables the valves to move back to its original position.

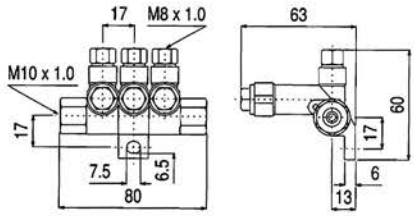
(D) The valve's shift in position allows the stored oil to be discharged out of the outlet port, utilizing the power of the compressed spring. Once the spring has returned the piston head to it's primary position, the discharge cycle has been completed.

"L" The discharge volume is set by the stroke length between the metering nipple and piston head.

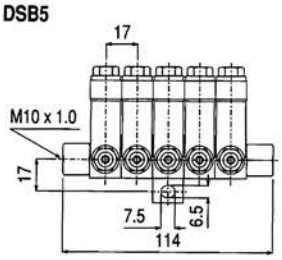
DSB3



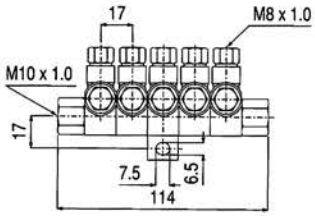
DSB3C



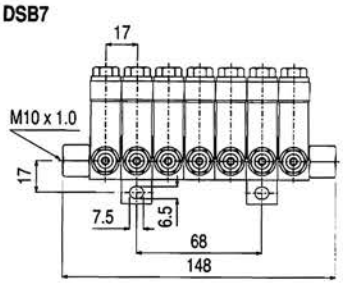
DSB5



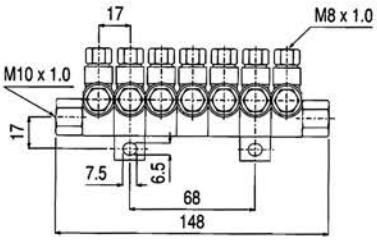
DSB5C



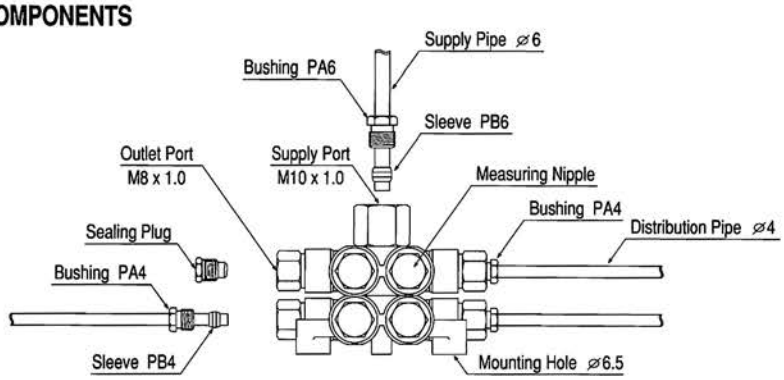
DSB7



DSB7C



COMPONENTS



MODEL CODE	Supply Connection ⌀6			Outlet Connection ⌀4		
	Bushing	Sleeve	Sealing Plugs	Bushing	Sleeve	Sealing Plugs
DSA Type	PA6	PB6	-	PA4	PB4	PG8 or PG004
DSB Type	PA6	PB6	PG10 or PG006	PA4	PB4	PG8 or PG004

* Where ever possible, install the Dester Plunger with the outlet ports facing upwards, as this will help remove air during installation.
* Minimize piping structures and equipment in the distribution system which would apply substantial flow resistance.
* Ensure all plugs and connectors are tightly affixed and secured to prevent oil and pressure loss.

SPECIFICATIONS

MODEL CODE	Number of Outlet Ports	Discharge Vol. (cm^3/st)	Discharge Nipple Code	Operating Pressure	Connection Size	
					Inlet Port	Outlet Ports
DSA Type	2, 4, 6, 8	0.1	3-4309	0.5 ~ 3MPa	M10 x 1.0	M8 x 1.0
		0.2	3-4310			
		0.5	3-4311			
		1.0	3-4312			
DSB Type (DPB C Type)	3, 5, 7	0.1	3-4309	0.5 ~ 3MPa	M10 x 1.0	M8 x 1.0
		0.2	3-4310			
		0.5	3-4311			
		1.0	3-4312			

* Recommended Viscosity: 20 to 500mm^2/S

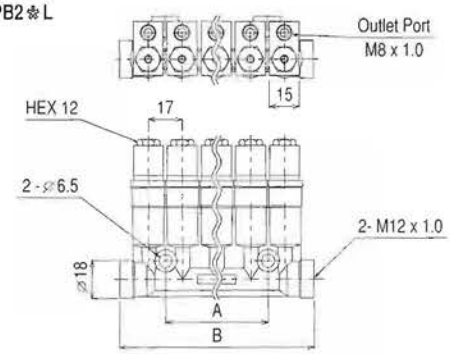
DPB20L Dester Plunger (Visual Indicator)

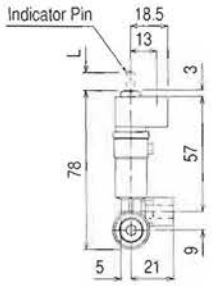
- Dester Plunger with visual indicators to confirm operation
- Discharge volumes of 0.1cm³, 0.2cm³, 0.4cm³ and 0.6cm³ per stroke are available

DPB25L

The DPB20L is a volumetric type piston distributor, utilizing the pump's direct pressure to distribute a pre-measured amount of oil from each port.
This model possesses visual indicators to confirm operation. As the pistons are pushed upwards by the stored oil within the cylinders, indicator pins protrude from atop of the Plunger.

DPB2❋L





MODEL CODE

DPB 2 5 L - 6

- Discharge Volume Per Port
  - 1 : 0.1cm³/st
  - 2 : 0.2cm³/st
  - 4 : 0.4cm³/st
  - 6 : 0.6cm³/st
- Visual Indicator
  - L : Top Protruding Pin
- Number of Outlet Ports
  - 2 : 2 Ports
  - 3 : 3 Ports
  - 5 : 5 Ports
  - 6 : 6 Ports
  - 8 : 8 Ports
  - 10 : 10 Ports
- Type
  - 2 : 20 Type
- Base Code

SPECIFICATIONS

MODEL CODE	Number of Outlet Ports	Dimension A	Dimension B	Operating Pressure	Viscosity Range	Connection Size Inlet Port	Connection Size Outlet Port
DPB22L	2	-	46	0.8 ~ 3MPa	20 ~ 500 mm²/S	M12 x 1.0	M8 x 1.0
DPB23L	3	17	63				
DPB25L	5	51	97				
DPB26L	6	68	114				
DPB28L	8	102	148				
DPB210L	10	136	182				

Discharge Volumes	Indicator Pin Dimen. (L)
0.1cm³/st	1.9
0.2cm³/st	3.3
0.4cm³/st	6.4
0.6cm³/st	9.4

* Recommended Viscosity: 20 to 500mm²/S

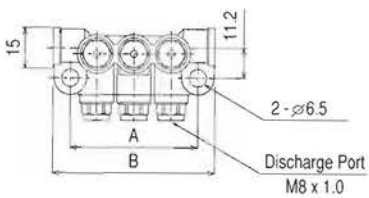
DS Dester Block (Compact + Indicator)

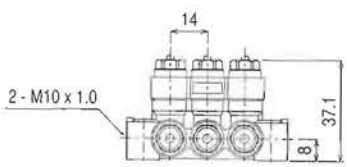
- Dester Block with visual indicators to confirm operation
- Discharge volumes of 0.03cm³, 0.05cm³, 0.08cm³ and 0.1cm³ per stroke available

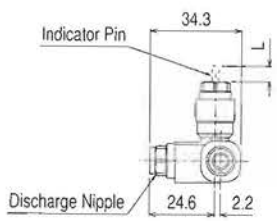
DS5Z

The DS models are a volumetric type piston distributor, utilizing the piston's internal spring pressure to distribute a pre-measured amount of oil from each port.
Although the DS are based upon the DSB & DSA Dester Blocks, the DS are far more compact and are able to distribute smaller quantities of oil at higher levels of precision.

DS3Z







MODEL CODE

DS 5 Z 8

- Discharge Volume Per Port
  - 3 : 0.03cm³/st
  - 5 : 0.05cm³/st
  - 8 : 0.08cm³/st
  - 10 : 0.1cm³/st
- Applicable Piping (Out)
  - Z : ⌀4
- Number of Outlet Ports
  - 2 : 2 Ports
  - 3 : 3 Ports
  - 5 : 5 Ports
  - 8 : 8 Ports
- Base Code

SPECIFICATIONS

MODEL CODE	Number of Outlet Ports	Dimension A	Dimension B	Operating Pressure	Applicable Piping (Out)	Connection Size Inlet Port	Connection Size Outlet Port
DS2Z	2	34	47	1 ~ 3MPa	⌀4	M10 x 1.0	M8 x 1.0
DS3Z	3	48	61				
DS5Z	5	76	89				
DS8Z	8	118	131				

Discharge Volumes	Indicator Pin Dimen. (L)
0.03cm³/st	1.5
0.05cm³/st	2.5
0.08cm³/st	4.0
0.1cm³/st	5.0

* Recommended Viscosity: 30 to 500mm²/S

OLV Float Switch

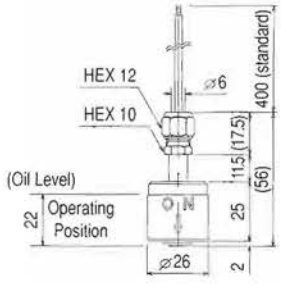
OLV2B2

OLV01
OLV02

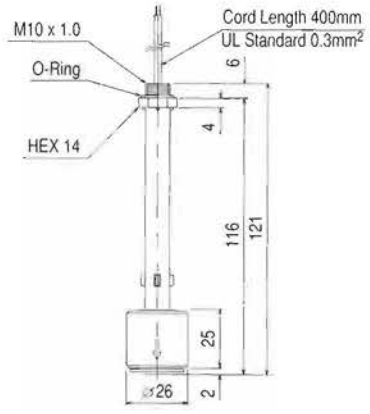
- Oil level detection unit
- Level adjustable float switch OLV2B2
- Fixed type polymer base float switch OLV01 and OLV02

The OLV type Float Switches enables an electrical ON or OFF signal to be sent according to the fluid level inside the tank. This function can enable, through a relay; turning off the unit or machinery; switch on indicator lamps or set off buzzers to inform of the pump's fluid level situation.
Possessing stoppers at both ends, the apparatus can be utilized in deep or shallow fluid levels.
Ensure the Float Switches are connected to a relay. (Low capacitance)

OLV2B2



OLV01
OLV02



MODEL CODE
OLV 01

- Float Switch Type & Action
  - 2B2 : Cord Type
  - 01 : Plastic Body Low = ON
  - 02 : Plastic Body Low = OFF
- Base Code

* Standard cord length is 400mm, however, lengths can be altered upon request.

* Ensure connection to a relay
* Do not perform insulation resistance tests using a megohmmeter
* Do not pull upon the cables with excessive force (Max. 2Kg)
* Temperature range : -20°C to +80°C

SPECIFICATIONS

MODEL CODE	Max. Opening & Closing Capacity	Max. Opening & Closing Current	Max. Opening & Closing Voltage	Contact Point Contact Resistance	Withstanding Resistance	Insulating Resistance	Appropriate Viscosity
OLV2B2	AC 30VA DC50W	AC 0.33A DC 1.0A	AC 250V DC 200V	Under 0.1Ω	AC 1000V 1 Minute	Under 100MΩ (DC 500V Mega)	Oils above 0.8 specific gravity, kinematic viscosity 2000mm²/s
OLV01							
OLV02							

SW❄N Terminal Box

SW103N

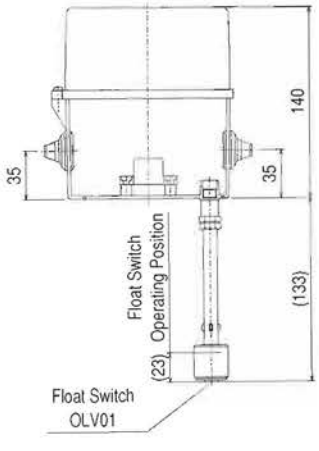
- Terminal board with Float Switch set. Various wiring options available
- SW103N & SW104N are supplied with a box (casing), protecting the terminal board & wiring

The product code indicates a specific terminal board and Float Switch combination.
The SW103N and SW104N are supplied with a box casing fitted with a terminal board to simplify wiring and installation.

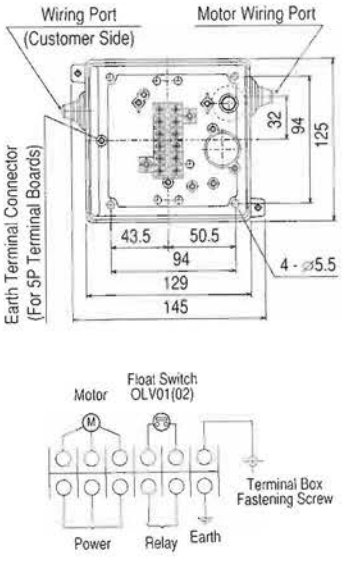
MODEL CODE
SW 103 N

- Box Material
  - N : Plastic
- Components
  - 101 : Float Switch Set, Wiring None, Box None,
  - 102 : Float Switch Set, Wiring Motor, Box None,
  - 103 : Float Switch Set, Wiring Motor & F. Sw, Box Included
  - 104 : Float Switch Set, Wiring Motor & F. Sw, Box Included, Relay (LY4) Set
- Base Code

SW103N

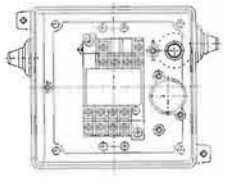


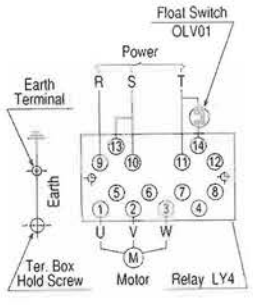
* An OLV01(02) is fitted on the diagram above. An OLV2B2 can also be attached.
* Compatible tanks with the OLV01(02) set are : TY3, TY4, TY5, TY6, TY12, TZ5, TZ6, TZ12, TY4P, TY6P, TD4P, TD6P, TP4



* Standard terminal board is 6P.
5P and 10P terminal boards can also be installed.

SW104N





* Connect the motor's U, V and W to terminals 5, 6 and 7 respectively when using OLV02.
* LY4 : By connecting the Float Switch to the relay, the motor can be shut off when oil levels are low.

LF01 Line Filter

LF01

LF0101

- Line filters for resistance and volumetric type lubrication systems
- Line filters with a bypass chamber for the volumetric type systems
- Easy maintenance

A small capacity line filter for the resistance system and volumetric system (with a bypass chamber) are available.

2 flow directional types are available (L to R or R to L in relation to the mounting face), providing an opportunity to select a model to suit installation requirements.

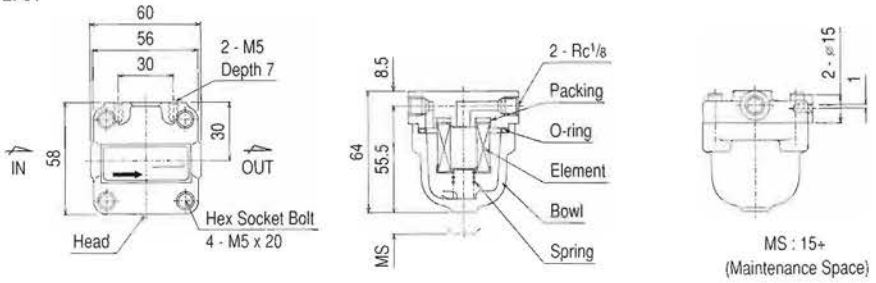
By simply unscrewing the top bolts, maintenance or filter (element) replacement can be performed with ease.

MODEL CODE

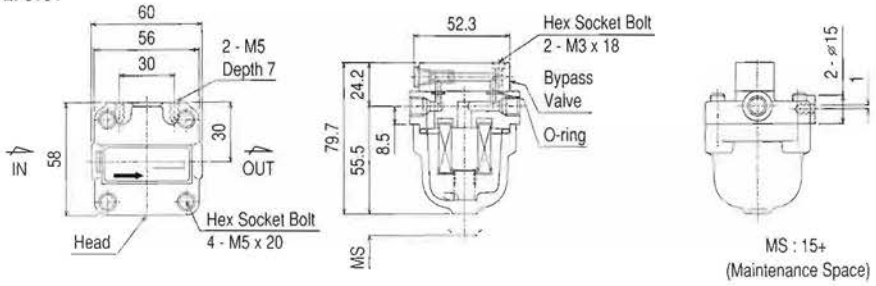
LF 01 01 N

- Element
  - - : Regular 3-3615
  - B : Long Type 3-4193
  - N : N Element 311-0105
- Flow Direction
  - - : IN (Left) → OUT (Right)
  - 01 : IN (Left) → OUT (Right) With Bypass
  - 50 : OUT (Left) ← IN (Right)
  - 51 : OUT (Left) ← IN (Right) With Bypass
- Connection Port Size
  - 01 : Rc1/8
- Base Code

LF01



LF0101



FILTER SPECIFICATION

Type of Element	Filter Material	Filtering Surface	Filter Grade	Product Number
Regular Element	SUS Mesh	38cm²	30μm	3-3615
Long Type Element	SUS Mesh	98cm²		3-4193
N Element	PVF	17cm²		311-0105

* Please use N elements when utilizing hand pumps, YMAS, SMA and SMD models.
* In general, clean or replace the filter element every six months, when utilized under standard conditions.

SPECIFICATIONS

MODEL CODE	Bypass Chamber Attached	Applicable Lubrication System	Operating Pressure (MPa)	Withstanding Pressure (MPa)	Max Flow Rate (L/min) - 70mm²/s			Connection Port Size
					Regular	Long Type	N Element	
LF01 LF0150	None	Resistance Type System	3	4.5	1	1.5	(0.2)	Rc1/8
LF0101 LF0151	Attached	Volumetric Type System						

* As the N element is to be utilized with intermittent type "Cycle" pumps, the Max Flow Rate indicated is purely for reference.

LFY Line Filter

LFY

- LFY Model, compact line filter

The LFY line filters are designed to be utilized with resistance type cycle pumps, semi-cycle pumps and hand pumps.

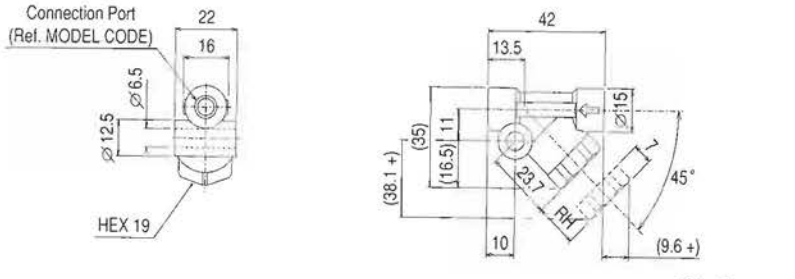
The filter element can be cleaned or replaced without removing the filter from the piping system.

MODEL CODE

LFY 01 L

- Element
  - - : Regular 3-4239
  - L : Long Type 3-4433
- Connection Port Size
  - 01 : Rc1/8
  - 4 : M8 x 1.0
  - 6 : M10 x 1.0
- Base Code

LFY01



SPECIFICATION

Max. Operating Pressure	3MPa {30kgf/cm²}
Filter Grade	20μm (Long Type 40μm)

PGL, SPS, ACB Pressure Gauges & Switches

- Apparatus for monitoring and controlling pressure
- Pressure gauge displays pressure in MPa & kgf/cm²
- Pressure switches to suit various system requirements

PRESSURE GAUGE

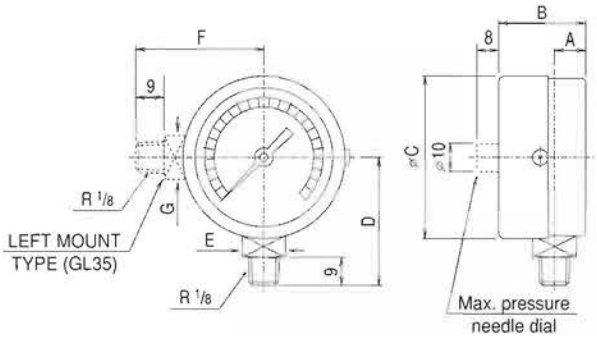
PGL35

PRESSURE SWITCH

SPS-8T

ACB-MA08

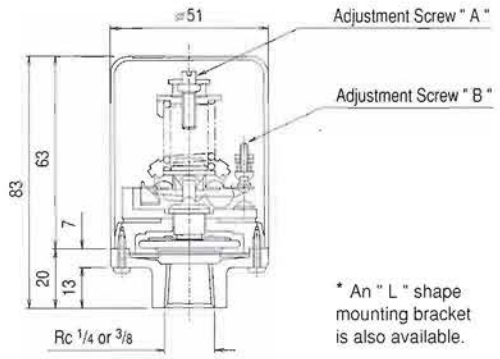
PRESSURE GAUGE PGL



Monitoring system pressure is made easy with the gauge displaying 2 pressure formats of MPa and kgf/cm².
PGF models possess an extra indicator to identify max. pressures achieved.
GL35 pressure gauges possesses it's connector on the left of the face.

MODEL CODE	Displayed Pressure Range	Dimensions						
		A	B	C	D	E	F	G
PGL15	0 ~ 1.5Mpa {15kgf/cm²}	10	28	52	41	14	-	-
PGF15	0 ~ 1.5Mpa {15kgf/cm²}	10	28	52	41	14	-	-
PGL35	0 ~ 3.5Mpa {35kgf/cm²}	10	28	52	41	14	-	-
PGF35	0 ~ 3.5Mpa {35kgf/cm²}	10	28	52	41	14	-	-
PGLS35	0 ~ 3.5Mpa {35kgf/cm²}	8	25	43	39.5	12	-	-
GL35	0 ~ 3.5Mpa {35kgf/cm²}	8	25	43	-	-	39.5	12

PRESSURE SWITCH SPS-8T

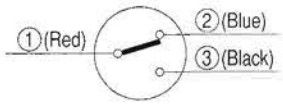


Possessing a Single Pole Double Throw (SPDT) contact point, the SPS-8T can indicate 2 status signals (ON or OFF) at a time. The upper and lower reacting pressures can be adjusted to suit the system requirements.

POWER RATING

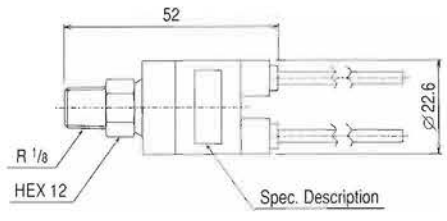
AC250V 5A	DC100V 1A
AC125V 10A	DC24V 5A

CONTACT POINT



- Terminal 1 (Red) - 2 (Blue)
  Increase pressure : OFF
  Decrease pressure : ON
- Terminal 1 (Red) - 3 (Black)
  Increase pressure : ON
  Decrease pressure : OFF

PRESSURE SWITCH ACB-MA08



The ACB-MA08 pressure switch can be utilized in either an AC or DC circuit environment.

MODEL CODE		ACB-MA08
Closing Pressure		1.0MPa
Opening Pressure		0.65MPa
Power Rating	AC125V	0.02 ~ 2A
	AC125V	0.02 ~ 1A
	DC12/24V	0.01 ~ 0.05A
Lead Wire Length		300mm

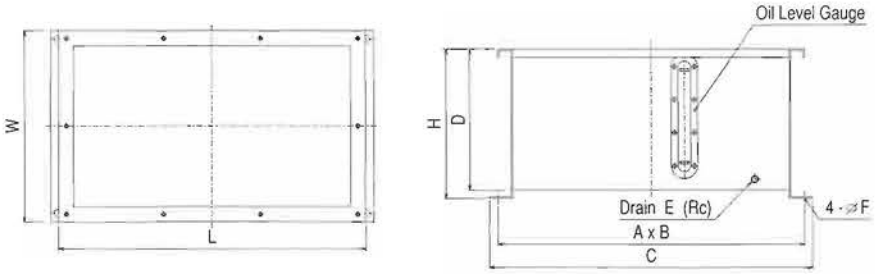
★ WARNING : The ACB-MA08 pressure switch can not be used in a DC circuit once it has been used in an AC environment.

TD Bottom Mount Welded Steel Tanks

- Floor / bottom mounting type welded steel tanks available in various sizes
- Oil gauges and drains are fitted to promote and simplify effective maintenance

TD

TD12



MODEL CODE

TD 12

Tank Capacity
4 : 3.6L ⋮ 12 : 10.9L
5 : 4.3L ⋮ 15 : 14.3L
6 : 6.0L ⋮ 20 : 19.5L

Base Code / Mounting Type
TD : Bottom Mount, Welded Steel Tank

SPECIFICATIONS

MODEL CODE	L	W	H	D	A	B	C	E	F	Capacity (L)
TD4	220	140	180	170	230	120	250	1/8	9.5 x 11	3.6
TD5	220	160	180	170	230	120	250	1/8		4.3
TD6	300	170	180	170	310	140	330	1/8		6.0
TD12	370	230	180	170	370	210	390	1/8		10.9
TD15	350	210	260	250	360	190	380	1/4		14.3
TD20	350	210	350	340	360	190	380	1/4		19.5

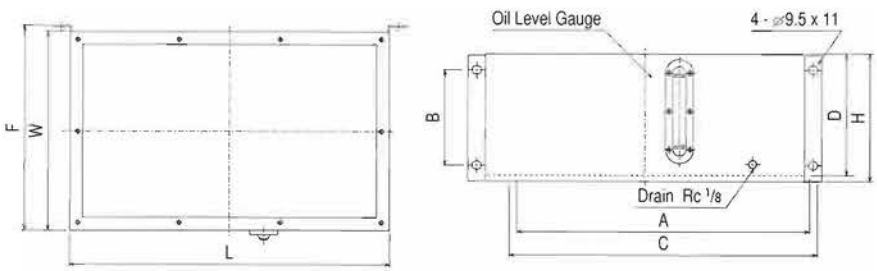
* Oil capacity displayed, is the amount of oil which can be held from the bottom to the top of the tank.
* Tanks with over 15L capacities have 2 oil level gauges.
* Various lids for different applications available for each tank.

TY Side Mount Welded Steel Tanks

- Wall / side mounting type welded steel tanks available in various sizes
- Oil gauges and drains are fitted to promote and simplify effective maintenance
- Robust design and structure

TY

TY12



MODEL CODE

TY 12

Tank Capacity
3 : 3.1L ⋮ 15 : 15.2L
12 : 11.5L ⋮ 20 : 20.0L

Base Code / Mounting Type
TY : Side Mount, Welded Steel Tank

SPECIFICATIONS

MODEL CODE	L	W	H	D	A	B	C	F	Capacity (L)
TY3	180	130	147	140	200	110	220	137	3.1
TY12	370	230			390		410	237	11.5
TY15	350	210	220	213	370	180	390	217	15.2
TY20			290	283		250			20.0

* Oil capacity displayed, is the amount of oil which can be held from the bottom to the top of the tank.
* Tanks with over 15L capacities have 2 oil level gauges.
* Various lids for different applications available for each tank.

SHG Manual Sign Pump

- Manually operated progressive type grease pumps
- 2 grease container / supply methods available
- 2 discharge volume types available, dispensing 0.6cm³ /stroke or 1.0cm³ /stroke

The SHG manually operated grease pumps are designed to be used in either a progressive type system, incorporating SG distribution blocks, or in resistance type lubrication systems.

Being an extremely simple unit to install and operate, the SHG is capable of dispensing greases with an NLGI of 00, 0, or 1 in volumes of either 0.6cm³ or 1.0cm³ per stroke.

SHGD6

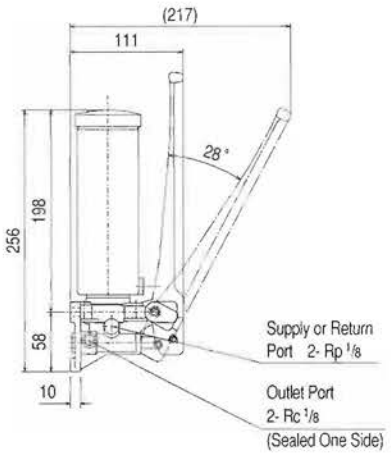
SHG121

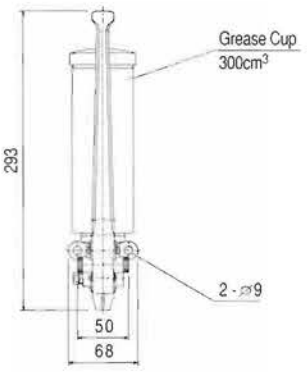
MODEL CODE

SHG ❖ ❖

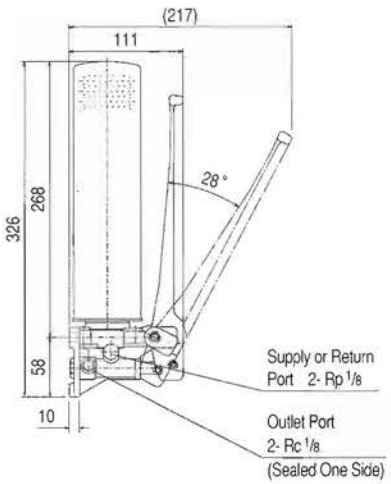
- Grease Capacity & Container Type
  - : 300cm³ Grease Cup
  - 1 : 400cm³ Cartridge
- Discharge Volume
  - D6 : 0.6cm³ / st
  - 12 : 1.0cm³ / st
- Base Code

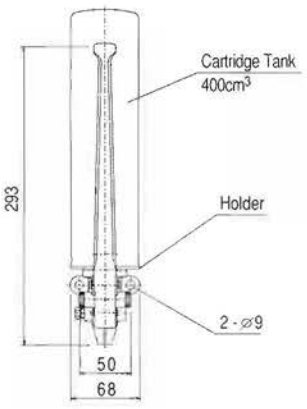
SHGD6





SHG121

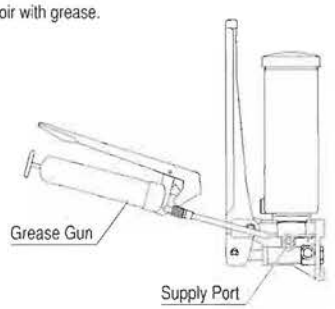




REPLENISHMENT METHODS

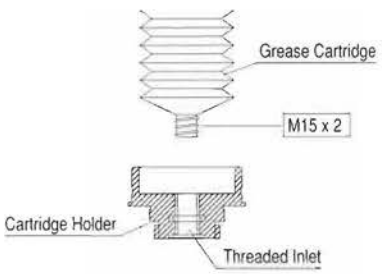
GREASE CUP

To replenish the unit, a grease gun should be used to replenish the reservoir with grease.



CARTRIDGE

To replenish the unit, remove the expended grease cartridge from the cartridge holder and replace with a new cartridge.



SPECIFICATION

MODEL CODE	Discharge Volume (cm³/stroke)	Maximum Discharge (MPa)	Outlet Port Size	Supply Port Size	Grease Capacity (cm³)	Grease Container Type	Applicable Grease Grade
SHGD6	0.6	10	Rc 1/8	Rp 1/8	300	Grease Cup	NLGI No.000 ~ 1
SHGD61					400	Cartridge	
SHG12	1.0				300	Grease Cup	
SHG121					400	Cartridge	

* Ensure high quality lithium greases with a NLGI grade of 00, 0 or 1 are utilized with the pump unit.
* Avoid using different types of greases together. Do not mix greases.
* Though the SHG pumps have 2 discharge ports on either side of the handle, the left port is sealed with a plug.
* The SHG pumps have 2 return / supply ports, which can be connected to unused ports on a distribution block, allowing excess grease to return to the pump for later distribution.
* By pulling upon the lever, grease is discharged. Ensure a full motion is achieved before returning it to its original position.

GPH Manual Grease Pump

- Manually operated progressive type grease pumps
- Simple to install and operate
- Discharges 1.0cm³ /stroke at up to 14MPa

The GPH manually operated grease pumps are designed to be used in either the progressive type system, incorporating SG distribution blocks, or in a resistance type lubrication system.

The pump will continually discharge 1.0cm³ of grease per stroke until operation is halted. Unlike the GPHW pumps with a pressure displacement mechanism, the GPH range of pumps do not possess such mechanism and will not be able to operate with the DG grease pistons.

5 grease reservoir types are available to cater for user and lubrication system requirements.

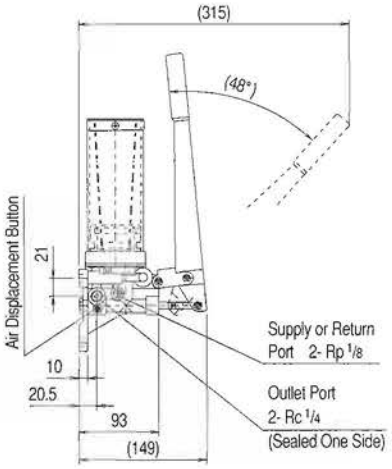
GPH017S

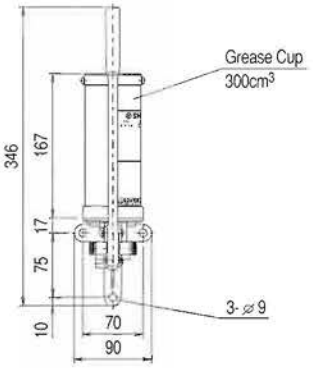
GPH010S

GPH014S

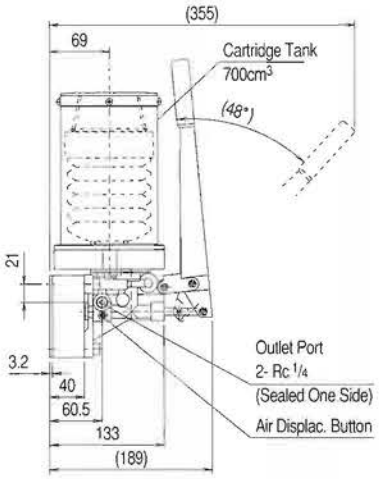
GPH013S

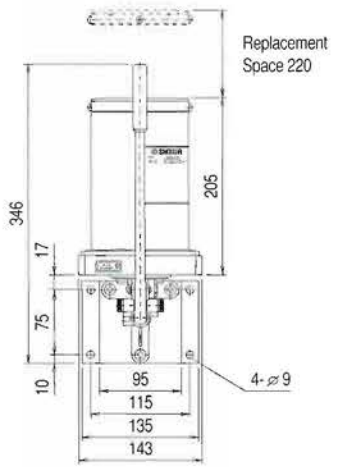
GPH013S





GPH017S





MODEL CODE

GPH 01 (R) 0S

1000cm³ Cartridge + Spring

MODEL CODE

GPH 01 ❋ ❋ ❋

- Supply Assisting Spring (*a)
  - : No Spring (Standard)
  - S : Supply Assisting Spring
- Grease Capacity & Container Type
  - 3 : 300cm³ Grease Cup
  - 4 : 400cm³ Cartridge
  - 7 : 700cm³ Cartridge
    1000cm³ No Spring Spec.
  - 8 : 800cm³ Grease Cup
- Relief Valve
  - R : Relief Valve Installed (14MPa)
  - - : No Relief Valve
- Discharge Volume
  - 01 : 1.0cm³ / st
- Base Code

(*a) Select the spring option when using NLGI 2 grease. When using NLGI 000 ~ 1, select the spring-less option

SPECIFICATION

MODEL CODE	Discharge Volume (cm³ /stroke)	Maximum Discharge (MPa)	Outlet Port Size	Pressure Displacement Method	Grease Capacity (cm³)	Grease Container Type	Applicable Grease Grade
GPH01 ❋ 3	1.0	14 (GPH01R Relief Valve Installed)	2 - Rc 1/4 (Select 1 Port)	Manually (Lever)	300	Grease Cup	NLGI No.000 ~ 2
GPH01 ❋ 8					800		
GPH01 ❋ 4					400	Cartridge	
GPH01 ❋ 7					700		
GPH01 ❋ 0S					1000		

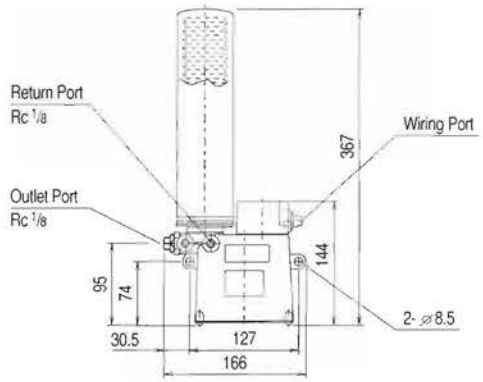
* Contact SHOWA if NLGI #2 grease is to be utilized.
* Please use our recommended greases or one of SHOWA's system specific greases.
* Avoid using different types of greases together. Do not mix greases.
* 1000cm³ cartridge can be used in the GPH01 ❋ 7, as long as no supply assisting spring is installed.

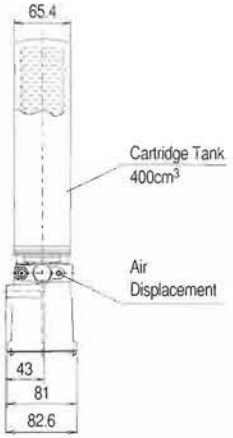
MHG4 Motorized Sign Pump

- Compact electronically operated grease pump for smaller applications
- Discharges 4.5cm³ /min or 5.5cm³ /min depending upon power option selected

MHG4

MHG41C





MODEL CODE
MHG 4 ✻ ✻ ✻

- Motor Power Code
  - C : 1 Phase 100V 50/60Hz
  - B : 1 Phase 200V 50/60Hz
  - D : DC24V
- Level Switch
  - - : No Level Detecting
  - D1 : DC 3 Line Type NPN NO
  - D2 : DC 3 Line Type NPN NC
  - A1 : AC 2 Line Type NO
  - A2 : AC 2 Line Type NC
- Grease Container Type
  - 1 : Cartridge
  - 2 : Grease Cup
- Discharge Volume
  - 4 : 4.5cm³ / min (50Hz) 5.5cm³ / min (60Hz)
- Base Code

* Please use our recommended greases or one of SHOWA's system specific greases.

* Avoid using different types of greases together. (Do not mix)

SPECIFICATION

MODEL CODE	Discharge Vol. (cm³/min)	Max. Discharge Pressure (MPa)	Outlet Port Size	Container & Capacity (cm³)	Operating Temp. Range	Applicable Grease
MHG41	4.5 @ 50Hz 5.5 @ 60Hz 4.5 @ DC24V	12	2 - Rc 1/8 (Select 1 Port)	Cartridge 400	-5 ~ 40 °C	NLGI No.000 ~ 1
MHG42				Grease Cup 300		

POWER SPECIFICATION

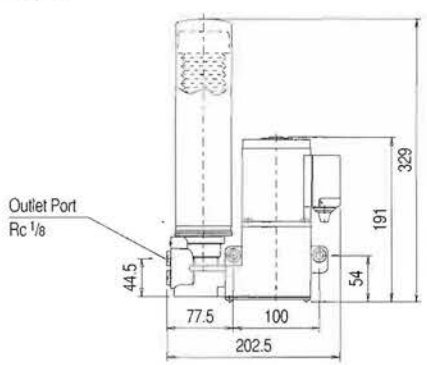
Power Code	C		B		D
Voltage (V)	1Phase 100		1Phase 200		DC24
Frequency (Hz)	50	60	50	60	-
Current (A)	1.2	0.8	0.7	0.5	0.38
Rating	10 mins		5 mins		10 mins

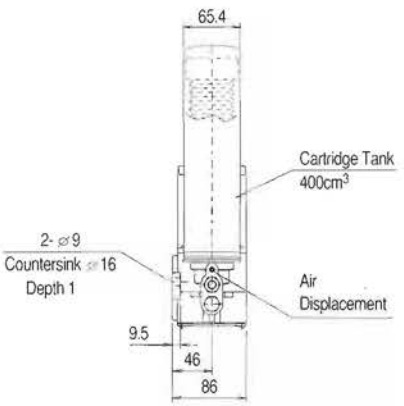
MHG7 Motorized Sign Pump

- Compact electronically operated grease pump for mid-range applications
- Discharges 7.5cm³ /min or 9.0cm³ /min depending upon power option selected

MHG7

MHG71C





MODEL CODE
MHG 7 ✻ ✻ ✻

- Motor Power Code
  - E : 3 Phase AC 200/200 · 220V 50/60Hz
  - C : 1 Phase AC 100V 50/60Hz
  - M : 1 Phase AC 110V 60Hz
  - F : 1 Phase AC 200/200 · 220V 50/60Hz
- Level Switch
  - - : No Level Detecting
  - D1 : DC 3 Line Type NPN NO
  - D2 : DC 3 Line Type NPN NC
  - A1 : AC 2 Line Type NO
  - A2 : AC 2 Line Type NC
- Grease Container Type
  - 1 : Cartridge
  - 2 : Grease Cup
- Discharge Volume
  - 7 : 7.5cm³ / min (50Hz) 9.0cm³ / min (60Hz)
- Base Code

* Please use our recommended greases or one of SHOWA's system specific greases.

* Avoid using different types of greases together. (Do not mix)

SPECIFICATION

MODEL CODE	Discharge Vol. (cm³/min)	Max. Discharge Pressure (MPa)	Outlet Port Size	Container & Capacity (cm³)	Operating Temp. Range	Applicable Grease
MHG71	7.5 @ 50Hz 9.0 @ 60Hz	14	2 - Rc 1/8 (Select 1 Port)	Cartridge 400	-5 ~ 40 °C	NLGI No.000 ~ 1
MHG72				Grease Cup 300		

POWER SPECIFICATION

Power Code	E			C		M	F		
Voltage (V)	3 Phase 200	3 Phase 200	3 Phase 220	1Phase 100		1Phase 110	1 Phase 200	1 Phase 200	1 Phase 220
Frequency (Hz)	50	60	60	50	60	60	50	60	60
Current (A)	0.29	0.25	0.27	0.7		0.6	0.35	0.35	0.35
Rating	Continuous								
Output & Poles	25W x 4P								

GPM Motorized Grease Pump

- Electronically operated progressive type grease pumps
- Simple to install and operate
- High performance unit discharging 10cm³ /min to 12cm³ /min

GPM1010E

GPM1023D

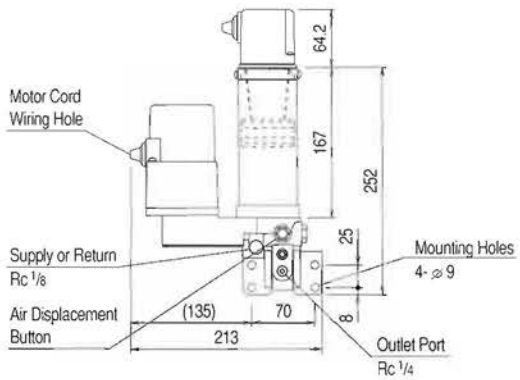
GPM1014C

The GPM electronically operated progressive type grease pumps, are designed for larger scale lubrication requirements.

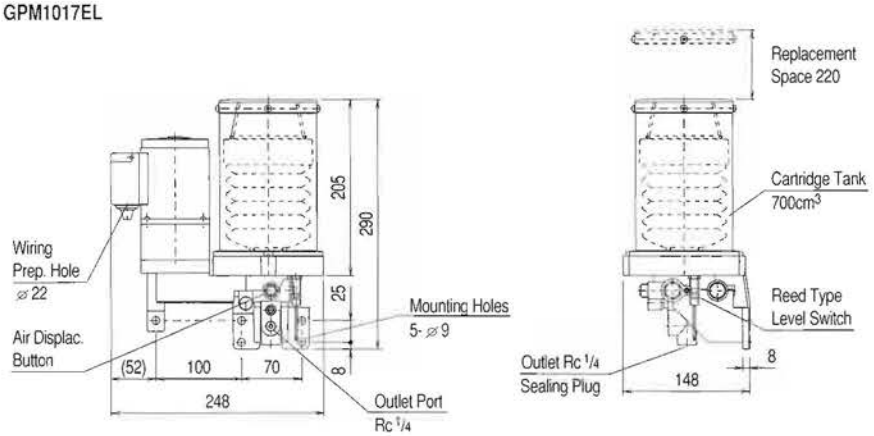
Depending upon the power specification chosen, the GPM pump unit possesses a discharge rate of either 10cm³/min or 12cm³/min.

An array of lubrication requirements can be covered by this unit with the ability to select; reservoir type, capacity size, discharging pressure of 14MPa or 21MPa, various power options, and the option of a level switch to enable lubrication management from a distant location.

GPM1013DL



GPM1017EL



MODEL CODE

GPM 10 ✻ ✻ ✻ ✻ ✻

Level Switch
- : No Level Detecting
L : Level Switch Option

Terminal Board
- : DC Motor No Terminal Board
T : DC Motor with Terminal Board

Motor Power Code
C : 1 Phase AC 100V 50/60Hz
M : 1 Phase AC 110V 50/60Hz
E : 3 Phase AC 200/200 • 220V 50/60Hz
F : 1 Phase AC 200/200 • 220V 50/60Hz
D : DC24V

Grease Capacity & Container Type
3 : 300cm³ Grease Cup
4 : 400cm³ Cartridge
7 : 700cm³ Cartridge
8 : 800cm³ Grease Cup
0 : 1000cm³ Cartridge

Discharge Pressure
1 : 14MPa
2 : 21MPa

Discharge Volume
10 : 10cm³ /min - 12cm³ /min (50 - 60Hz)

Base Code

POWER SPECIFICATION

Power Code	C	M	E	F	D
Phase Motor	1	1	3	1	-
Voltage (V)	100	110	200 / 200•220	200 / 200•220	DC24
Frequency (Hz)	50 / 60	50 / 60	50 / 60	50 / 60	-
Current (A)	0.7	0.6	0.26 / 0.27	0.35	0.6
Output & Poles	25W x 4P				15W x 2P
Rating	Continuous				

LEVEL SWITCH (OPTION) SPECIFICATION

LIMIT SWITCH TYPE	
Operation	LOW ON or OFF C Contact Point
Contact Rating	AC125V 3A • AC250V 2A (Resist. Load) DC30V 3A (Resist. Load)
Minimum Load	DC5V 160mA
Applicable Pumps	Grease Cup Units
REED SWITCH TYPE	
Operation	LOW ON
Max. O/C Capacity	AC30VA DC50W
Max. O/C Current	AC0.33A DC1.0A
Applicable Pump	Cartridge Type Units

SPECIFICATION

MODEL CODE	Discharge Volume (cm³ /min)	Maximum Discharge (MPa)	Outlet Port Size	Grease Capacity Nominal (cm³)	Grease Capacity Effective (cm³)	Grease Container Type	Operating Temp. Range	Applicable Grease Grade
GPM1013	10 @ 50Hz 12 @ 60Hz 10 @ DC24V	14	2 - Rc 1/4 (Select 1 Port)	300	300	Grease Cup	0 ~ 40 °C	NLGI No.000 ~ 2
GPM1018				800	800			
GPM1014				400	400 (368g)	Cartridge		
GPM1017				700	700 (644g)			
GPM1010				1000	1087 (1000g)			
GPM1023	10 @ 50Hz 12 @ 60Hz 10 @ DC24V	21	2 - Rc 1/4 (Select 1 Port)	300	300	Grease Cup	0 ~ 40 °C	NLGI No.000 ~ 2
GPM1028				800	800			
GPM1024				400	400 (368g)	Cartridge		
GPM1027				700	700 (644g)			
GPM1020				1000	1087 (1000g)			

★ Contact SHOWA if NLGI #2 grease is to be utilized.
★ Please use our recommended greases or one of SHOWA's system specific greases.
★ Avoid using different types of greases together. Do not mix greases.
★ An optional terminal board is available for the DC motor units. AC motor units are supplied with terminal boards installed.

SG2 Dester G

- Progressive build up type grease distribution block
- Individual blocks can discharge differing volumes of grease
- Discharge volume range of 0.1cm³ /st to 0.6cm³ /st

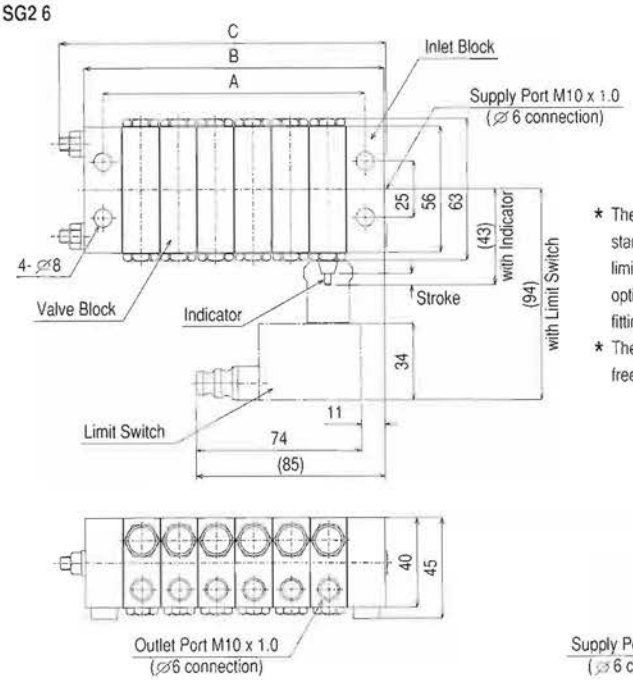
SG2 6

Utilizing a light alloy, the SG2 is a progressive type grease distribution block. Adopting the build up method, the SG2 is available with up to 12 distributing ports, each delivering a different discharge volume if desired.

Models with indicators and limit switches are also available, enabling the user to confirm operation.

SG2 3 (Limit Switch)

SG2 6



* The diagram on the left displays the standard position for an Indicator and a limit switch (Distribution blocks with the options). It is possible to attach the fittings on the opposing side.
* The limit switch's wiring port can be freely rotated to point in any direction.

MODEL CODE

SG2 5 10A

- Valve Block Code (Refer to bottom right table)
- No. of Valve Blocks Connected
  - 3 : 3 Valve Block Unit
  - 4 : 4 Valve Block Unit
  - 5 : 5 Valve Block Unit
  - 6 : 6 Valve Block Unit
- Base Code

SPECIFICATION

Max. Operating Pressure	14MPa {140kgf/cm²}
Applicable Grease	NLGI No.00 ~ 1
Discharge Volume	0.1, 0.15, 0.2, 0.3, 0.4, 0.6cm³ /st
Min. Number of Outlets	3 (Point 1)
Max. Number of Outlets	12 (Point 2)
Min. Valve Blocks	3
Max. Valve Blocks	6

(Point 1) When all outlets discharge 0.1 or 0.15, the "Minimum Number of Outlets" is 6 ports.

(Point 2) When all outlets discharge 0.4 or 0.6, the "Maximum Number of Outlets" is 6 ports.

* Take note that the unit cannot operate if a single port is blocked or sealed as the unit utilizes a progressive system.

LIMIT SWITCH SPECIFICATION

Rated Voltage (V)	Non-inductive Load (A)		Inductive Load (A)	
	Resistance Load	Lamp Load	Inductive Load	Motor Load
AC125	10	1.5	3	2.5
AC250	10	1.5	2	1.5
DC8	10	2	5	2
DC14	10	2	5	2
DC30	5	1.5	1.5	1.5
DC125	0.4	0.4	0.05	0.05

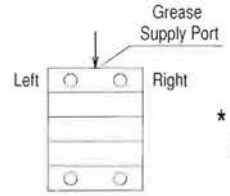
DIMENSIONS

MODEL CODE	Number of Valve Blocks	Number of Outlets	A	B	C
SG23	3	3 ~ 6	67	84	96
SG24	4	4 ~ 8	84	101	111
SG25	5	5 ~ 10	100.5	118	131
SG26	6	6 ~ 12	117.5	134	146

VALVE BLOCK CODES

Number of Outlets per Valve Block	Discharge Volume per Outlet (cm3 /st)	Valve Block Codes				
		Standard Outlet Type	Indicator Attached		Limit Switch Attached	
			On Right	On Left	On Right	On Left
2	0.1	10A	-----	-----	-----	-----
	0.15	15A	15A1	15A2	15A3	15A4
	0.2	20A	20A1	20A2	20A3	20A4
	0.3	30A	30A1	30A2	30A3	30A4
1	0.2	10B	-----	-----	-----	-----
	0.3	15B	15B1	15B2	15B3	15B4
	0.4	20B	20B1	20B2	20B3	20B4
	0.6	30B	30B1	30B2	30B3	30B4

* Ensure to specify valve block codes when a combination of differing discharge volumes are required for a SG2 unit.
* An indicator or a limit switch cannot be attached to a 10A or a 10B model valve block.



* The Left or Right-hand side of a Dester G Block can be determined by positioning the supply port upwards. Refer to the illustration on the left.

SG6 Dester G

- **Progressive type distribution block, dispensing measured volumes of grease**
- **Can be used as a parent (primary) or child (secondary) distribution block**
- **Easy to install, space efficient design**

SG6

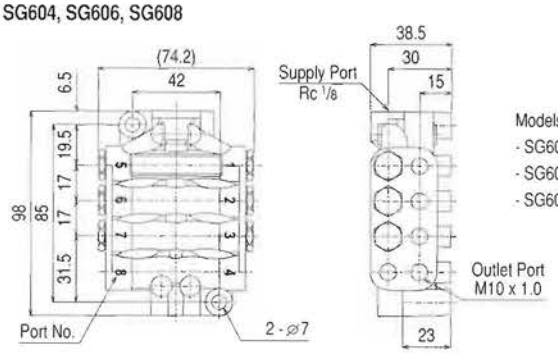
The SG6 models are a progressive type distribution block, possessing an all die-cast aluminum body. The fixed discharge volume for each port is 0.3cm³ /st, however this can be altered by placing PSG attachments onto the SG6 distribution block to combine multiple ports into a single port, allowing the SG6 to be used as primary (parent) distribution block.
The linear and compact design of the SG6 models allow for easy installation without consuming excessive space.

MODEL CODE

SG6 04 B

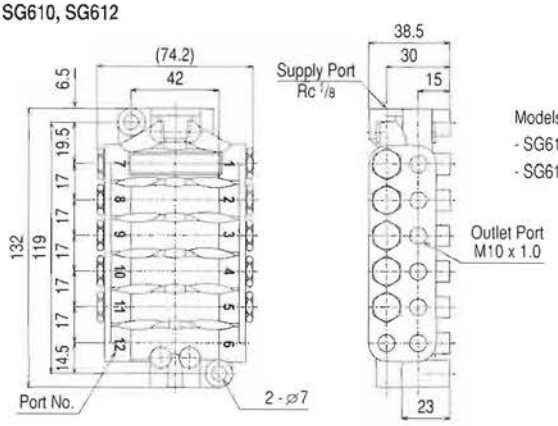
- Attachments
  - A : None Attached
  - B : Indicator (Pin)
  - C : Limit Switch
- No. of Outlet Ports
  - 04 : 4 Ports
  - 06 : 6 Ports
  - 08 : 8 Ports
  - 10 : 10 Ports
  - 12 : 12 Ports
- Base Code

SG604, SG606, SG608



Models possess same external dimensions
- SG604 uses ports 2, 3, 6 & 7 for distribution
- SG606 uses ports 1, 2, 3, 5, 6 & 7 for distribution
- SG608 uses all ports from 1 to 8 for distribution

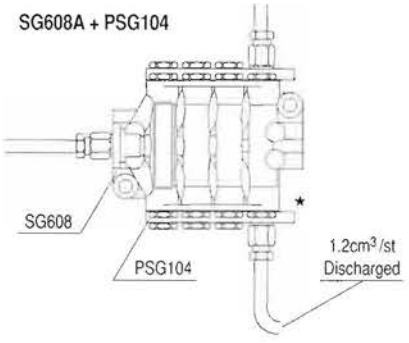
SG610, SG612

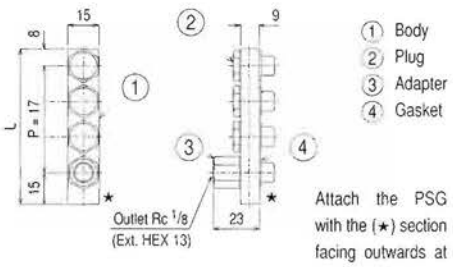


Models possess same external dimensions
- SG610 uses ports 1 to 5 and 7 to 11 for distribution
- SG612 uses all ports from 1 to 12 for distribution

PSG ATTACHMENT (Combines multiple outlets)

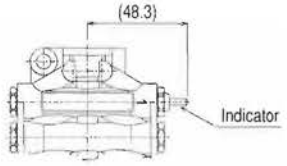
SG608A + PSG104



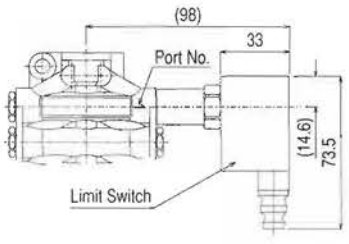


Attach the PSG with the (★) section facing outwards at the end of the SG6.

INDICATOR OPTION
(Confirm operation visually)



LIMIT SWITCH OPTION
(Detect operation electronically)



PSG DIMENSION / DETAILS

MODEL CODE	No. of Ports Combined	Length (L)	Quantity of Components ①	②	③	④
PSG102	2	40	1	1	1	4
PSG103	3	57	1	2	1	6
PSG104	4	74	1	3	1	8

SPECIFICATION

MODEL CODE	Number of Outlets	Discharge Volume Per Port	Connection Sizes	Max. Operating Pressure (MPa)	Applicable Grease
SG604	4	0.3cm³ /st Can be increased using a PSG attachment	Supply Port Rc1/8 Outlet M10 x 1.0	14	NLGI No.00 ~ 1
SG606	6				
SG608	8				
SG610	10				
SG612	12				

★ The SG unit will not operate if any distribution port (outlet) is sealed. Use a PSG or install a return line to the grease pump.

★ A single port will discharge 0.3cm³ /st. A PSG attachment can be used to combine multiple discharge ports into a single outlet.
E.g. A PSG102 will combine 2 ports enabling 0.6cm³ /st of grease to be delivered to a single point, while using a PSG104 to combine 4 ports will allow 1.2cm³ /st of grease to be delivered to a single lubrication point.

GPHW Manual Grease Pump

- Manual volumetric type grease pumps with pressure displacement lever
- Simple to install and operate,
- Discharges 1.0cm³ /stroke at up to 10MPa

Possessing a pressure displacement mechanism, the GPHW manually operated volumetric type grease pumps, are designed for the single-line lubrication systems.

By simply flicking the pressure displacement lever after the single line piston distributors have discharged their pre-measured amount of grease, pressure is displaced, allowing GD piston distributors to replenish for the next discharge.

5 grease reservoir types are available to cater for user and lubrication system requirements.

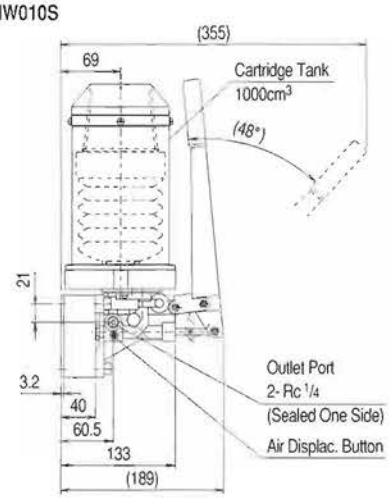
GPHW010S

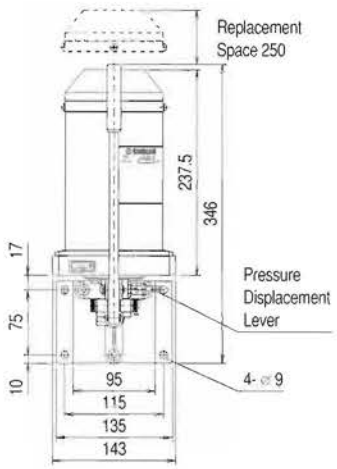
GPHW017S

GPHW013S

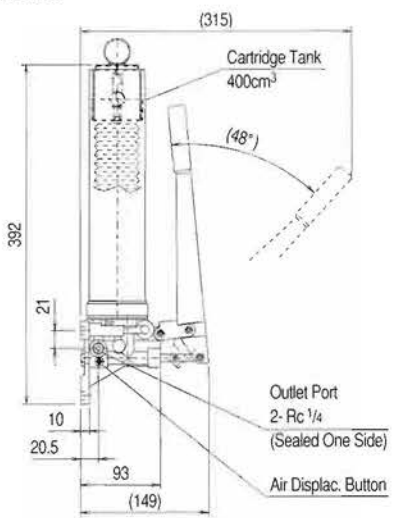
GPHW014S

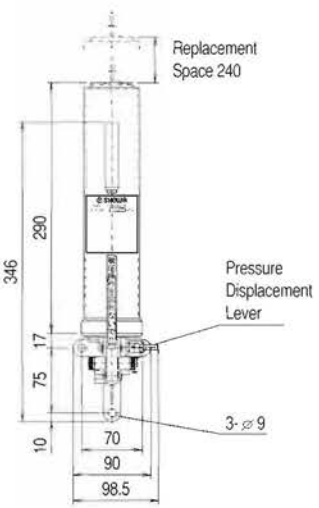
GPHW010S





GPHW014S





MODEL CODE
GPHW 01 0S

1000cm³ Cartridge + Spring

MODEL CODE
GPHW 01 ✻ ✻

- Supply Assisting Spring (*a)
  - : No Spring (Standard)
  - S : Supply Assisting Spring
- Grease Capacity & Container Type
  - 3 : 300cm³ Grease Cup
  - 4 : 400cm³ Cartridge
  - 7 : 700cm³ Cartridge
    1000cm³ No Spring Spec.
  - 8 : 800cm³ Grease Cup
- Discharge Volume
  - 01 : 1.0cm³/ st
- Base Code

Select the spring option when using NLGI 2 grease. When using NLGI 000 ~ 1, select the spring-less option

SPECIFICATION

MODEL CODE	Discharge Volume (cm³ /stroke)	Maximum Discharge (MPa)	Outlet Port Size	Pressure Displacement Method	Grease Capacity (cm³)	Grease Container Type	Applicable Grease Grade
GPHW013	1.0	10	2 - Rc 1/4 (Select 1 Port)	Manually (Lever)	300	Grease Cup	NLGI No.000 ~ 2
GPHW018					800		
GPHW014					400	Cartridge	
GPHW017					700		
GPHW010S					1000		

* Contact SHOWA if NLGI #2 grease is to be utilized.
* Please use our recommended greases or one of SHOWA's system specific greases. Do not mix different types of grease
* 1000cm³ cartridge can be used with the GPHW017, as long as no supply assisting spring is installed.

GPMW Motorized Grease Pump

- Motorized volumetric type grease pumps with pressure displacement mechanism
- Simple to install and operate
- High performance unit discharging 10cm³ /min to 12cm³ /min

GPMW307C

GPMW300D

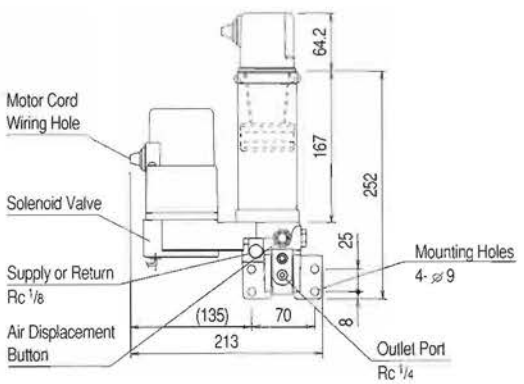
GPMW304D

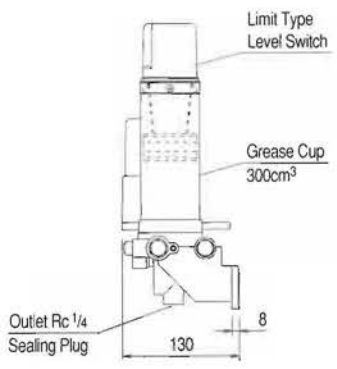
Possessing a pressure displacement mechanism, the GPMW electronically operated volumetric type grease pumps, are designed for the single-line lubrication systems.

Depending upon the power specification chosen, the GPMW pump unit possesses a discharge rate of either 30cm³/min or 36cm³/min.

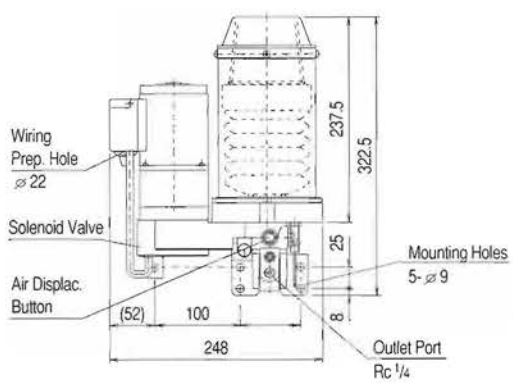
Various lubrication requirements can be covered by this unit with the ability to select; reservoir type, capacity size, various power options, and the option of a level switch to enable lubrication management from a distant location.

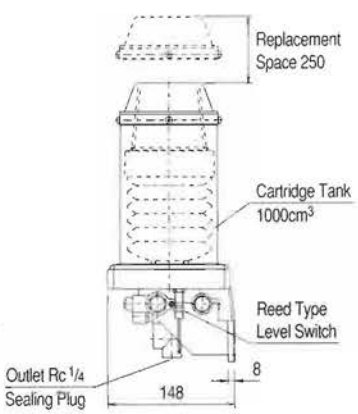
GPMW303DL





GPMW300EL





MODEL CODE

GPMW 30 ❋ ❋ ❋ ❋

- **Level Switch**
  - : No Level Detecting
  - L : Level Switch Option
- **Terminal Board**
  - : DC Motor No Terminal Board
  - T : DC Motor with Terminal Board
- **Motor Power Code**
  - C : 1 Phase AC 100V 50/60Hz
  - M : 1 Phase AC 110V 50/60Hz
  - E : 3 Phase AC 200/200 · 220V 50/60Hz
  - F : 1 Phase AC 200/200 · 220V 50/60Hz
  - D : DC24V
- **Grease Capacity & Container Type**
  - 3 : 300cm³ Grease Cup
  - 4 : 400cm³ Cartridge
  - 7 : 700cm³ Cartridge
  - 8 : 800cm³ Grease Cup
  - 0 : 1000cm³ Cartridge
- **Nominal Discharge Volume**
  - 30 : 30cm³ /min - 36cm³ /min (50 - 60Hz)
- **Base Code**

POWER SPECIFICATION

Power Code	C	M	E	F	D
Phase Motor	1	1	3	1	-
Voltage (V)	100	110	200 / 200·220	200 / 200·220	DC24
Frequency (Hz)	50 / 60	50 / 60	50 / 60	50 / 60	-
* Tot. Current (A)	0.97	0.87	0.41 / 0.42	0.5	1.8
* Tot. Output (W)	52		55		42.2
Operation	Max. 3mins with resting time of 45mins +				

* Tot. Current & Tot. Output in the above table, shows the total values for the motor and solenoid valve.

LEVEL SWITCH (OPTION) SPECIFICATION

LIMIT SWITCH TYPE	
Operation	LOW ON or OFF C Contact Point
Contact Rating	AC125V 3A · AC250V 2A (Resist. Load) DC30V 3A (Resist. Load)
Minimum Load	DC5V 160mA
Applicable Pumps	Grease Cup Units
REED SWITCH TYPE	
Operation	LOW ON
Max. O/C Capacity	AC30VA DC50W
Max. O/C Current	AC0.33A DC1.0A
Applicable Pump	Cartridge Type Units

SPECIFICATION

MODEL CODE	Discharge Volume (cm³/min)	Maximum Discharge (MPa)	Outlet Port Size	Pressure Displacement Method	Grease Capacity (cm³)	Grease Container Type	Operating Temp. Range	Applicable Grease Grade
GPMW303	30 @ 50Hz 36 @ 60Hz 30 @ DC24V	8	2 - Rc 1/4 (Select 1 Port)	Solenoid Valve (2 Way)	300	Grease Cup	0 ~ 40 °C	NLGI No.000 ~ 2
GPMW308					800			
GPMW304					400	Cartridge		
GPMW307					700			
GPMW300					1000			

* Contact SHOWA if NLGI #2 grease is to be utilized.
* Please use our recommended greases or one of SHOWA's system specific greases.
* Avoid using different types of greases together. Do not mix greases.
* An optional terminal board is available for the DC motor units. AC motor units are supplied with terminal boards installed.

DG, GD Piston Distributor & Junction Block

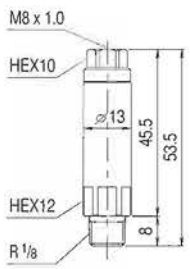
- Volumetric type single-line piston distributors, dispensing measured volumes of grease
- Variety of discharge volumes available to simplify planning and installation
- GD distribution blocks for DG piston distributors

The DG piston distributors, discharge a pre-measured amount of grease utilizing the force of the grease pump's discharge pressure. 8 discharge volumes are available ranging between 0.03cm³ /st to 1.5cm³ /st.

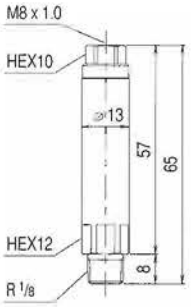
The GD distribution blocks are to be used in conjunction with the DG piston distributors. Single or dual sided distribution port GD blocks are available, with connection port numbers ranging from 4 to 14 ports.

DG Pistons & GDB

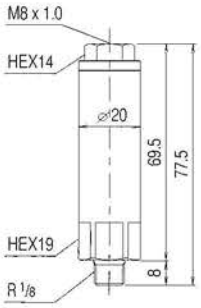
DG PISTONS



Diag. 1



Diag. 2



Diag. 3

SPECIFICATION

MODEL CODE	Discharge Volume (cm³ /st)	Activating Pressure (MPa)	Return Pressure (MPa)	Connection Size (GD Blocks)	Connection Size (Outlet Port)	Recommended Piping Size		Size Reference (Diagram)	Applicable Grease Grade
						Main	Branch		
DG3	0.03	Min. 2.5	1.2	R 1/8	M8 x 1.0	⌀6+ Interior	⌀4 Exterior	Diag. 1	NLGI No.000 ~ 2
DG5	0.05								
DG10	0.1								
DG20	0.2								
DG30	0.3							Diag. 2	
DG50	0.5	Max. Usage 10 (*a)							
DG100	1.0							Diag. 3	
DG150	1.5								

★ (*a) The GPMW grease pump 's default discharge pressure is set at 8MPa, while the GPHW hand pumps are set at 10MPa.

★ "Return Pressure" refers to the internal pressure of the distribution pipes, which it must drop below to enable the pistons to replenish themselves between discharges. Failing to drop the distribution system's pressure below 1.2MPa, prior to the succeeding discharge, will lead to irregular volumes of grease to be discharged.

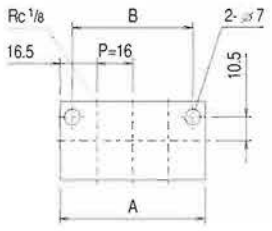
MODEL CODE

DG 20

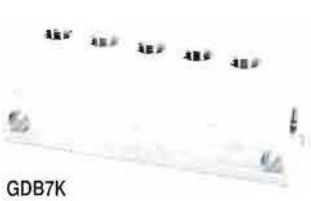
- Discharge Volume
  - 3 : 0.03cm³
  - 5 : 0.05cm³
  - 10 : 0.1cm³
  - 20 : 0.2cm³
  - 30 : 0.3cm³
  - 50 : 0.5cm³
  - 100 : 1.0cm³
  - 150 : 1.5cm³
- Base Code

GDA8K

GDA ✻ K (Dual Sided Outlet Block)

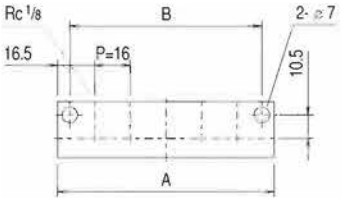


MODEL CODE	Number of Connections	A	B
GDA4K	4	33	-
GDA6K	6	49	38
GDA8K	8	65	54
GDA10K	10	81	70
GDA12K	12	97	86
GDA14K	14	113	102



GDB7K

GDB ✻ K (Single Sided Outlet Block)



MODEL CODE	Number of Connections	A	B
GDB4K	4	49	38
GDB5K	5	65	54
GDB6K	6	81	70
GDB7K	7	97	86
GDB8K	8	113	102
GDB9K	9	129	118
GDB10K	10	145	134

UT30PS, DGE, PGL250, DL20 Monitoring Accessories

- Apparatus for monitoring and controlling pressure
- Gauge displays pressure in MPa & kgf/cm²
- Pressure switches to suit various system requirements

PRESSURE SWITCH

UT30PS

DISCHARGE SENSOR

DGE

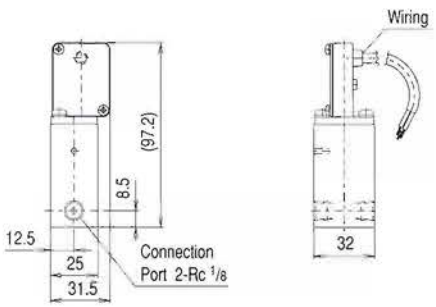
INDICATOR NIPPLE

DL20

PRESSURE GAUGE

PGL250

UT30PS PRESSURE SWITCH

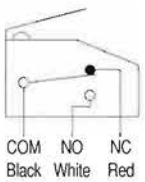


The UT30PS pressure switches are specifically designed for the use in grease lubrication systems. Install the switch on the primary lubrication channel to detect pressure fluctuations. (Not to be used on branch channels / pipes)

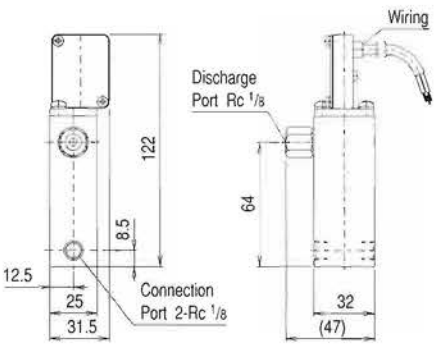
SPECIFICATIONS

MODEL CODE	UT30PS
Operating Pressure	3.3MPa 20%
Returning Pressure	2.8MPa 20%
Maximum Operating Pressure	10MPa
Contact Capacity	AC125V 2A AC250V 2A DC30V 2A
Connection Port Size	2 - Rc 1/8

CIRCUIT DIAGRAM



DGE DISCHARGE SENSOR



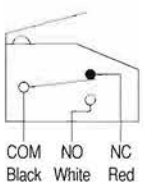
DGE L (Discharge Port on Left)

The DGE sensor detects grease discharge and sends an electronic signal to relay the information. By installing the DGE sensor at vital lubrication points, monitoring and lubrication management can take place more effectively.

SPECIFICATIONS

MODEL CODE	DGE10R	DGE10L	DGE20R	DGE20L
Discharge Volume	0.1cm³/ st	0.1cm³/ st	0.2cm³/ st	0.2cm³/ st
Operating Pressure	2.5MPa			
Returning Pressure	1.2MPa			
Contact Capacity	AC125V 2A AC250V 2A DC30V 2A			
Discharge Port Direction	Right	Left	Right	Left
Connection Port Size	2 - Rc 1/8			

CIRCUIT DIAGRAM



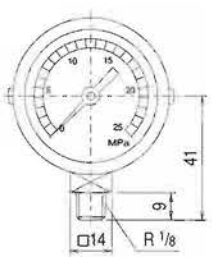
DL20 INDICATOR NIPPLE

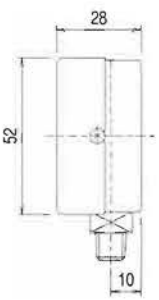
MODEL CODE
DL 20
- Operating Pressure 20 : 2.5MPa
- Base Code

By installing a DL20 indicator nipple on DG type piston distributors, blockages can be detected in the distribution channels.
Blockage will cause the indicator pin to protrude.

PGL250 PRESSURE GAUGE

MODEL CODE
PGL 250
- Pressure Range 250 : 0 ~ 25MPa
- Base Code





Easily viewable pressure gauge to monitor grease pressures within the lubrication system.

SLC-1 Special Lithium Complex Grease

- SLC-1 is a lithium complex high performance grease, able to perform in various environments and harsh conditions
- Available in 2 cartridge sizes of either 400cm³ or 700cm³ to suit Showa's grease lubrication system chosen

Superior pump-ability & flow

Compared to general-purpose grease, the lithium complex SLC-1 possesses a lower level of apparent viscosity, assisting in the reduction of flow lost within the distribution system.

With the addition of special additives, the SLC-1's viscosity grade at temperatures of 0 °C to 5 °C, is around half that of general-purpose grease in the same conditions.

As such, the SLC-1 can be safely utilized in extreme temperatures and outdoor applications.

High structural stability

Structural instability, where oil separates from the grease itself, is a very serious problem.

Solidified grease from separation, can lead to defective operation of distribution devices, which in turn may lead to the malfunction or damage of expensive machinery.

The SLC-1 has minimal oil separation and retains high structural stability, suppressing problems caused by the solidification of grease.

High load tolerance

Compared to general EP greases, the SLC-1 possesses around twice the load/pressure resistance and burn prevention characteristics, making it an ideal grease in extreme conditions.

Heat & low temperature compatibility

The SLC-1 can be effectively utilized in a very broad temperature range.

The SLC-1 shows no sign of becoming liquefied at high temperatures of 200 °C and remains in a gelatinous form without solidifying at temperatures as low as -40 °C.

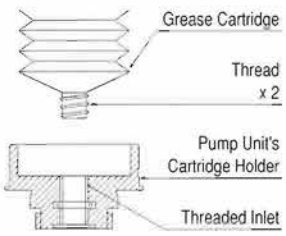
SPECIFICATIONS

CODE	Size	NLGI	Grease Type	Characteristics
SLC14	400cm³	1	Special Lithium Complex	High heat, pressure, water, wear resistance. Durable grease possessing high shear and structural stability.
SLC17	700cm³	1		

SLC-1 TEST COMPARISON

			Unit	SHOWA IN GREASE SLC-1	General Lithium EP #1
Thickener			-	Lithium Complex	Lithium Soap
Base Oil			-	Highly Refined Mineral Oil	Mineral Oil
Additives			-	Liquid Organic Molybdenum	-
Consistency (Unworked / Worked Penetration)			-	346 / 343	320 / 322
Drip Temperature			°C	280<	180<
Recommended Temp. Range			°C	-40°C ~ 200°C	-20°C ~ 110°C
Oil Separation 100 °C x 24H			mass%	2.9	4.9
Pressurized Oil Separation 0.025kgf/cm2 x 50 °C x 24H			mass%	6.0	-
Copper Corrosion 100 °C x 24H			-	Pass	Pass
Apparent Viscosity	20 °C	1S⁻¹	Pa·s	244.9	-
		10S⁻¹		62.5	-
		100S⁻¹		16.0	-
	5 °C	1S⁻¹		189.9	-
		10S⁻¹		51.5	-
		100S⁻¹		14.0	-
	0 °C	1S⁻¹		172.8	-
		10S⁻¹		36.0	-
		100S⁻¹		7.5	-
High-Speed Four Ball Load Test 1770rpm x 10sec		Last Non Seizure Load	N	1240	981
		Welding Load		3920	1961
		Load Wear Index		603	424
High-Speed Four Ball Wear Test 1200rpm x 40kgf x 20 °C x 1h			mm	0.32	-
SRV Test 300N x 40 °C x 50HZ x 40min.		Friction Factor	-	0.081	-
		Max. Wear Depth	μm	42	-
CRC Bearing Life Test 150 °C			h	361.0	-

SLI Multi-Purpose Lithium Grease



- The SLI is a multi-purpose lithium grease for general use, able to perform in various environments and conditions
- Contained in a 400cm³ size grease cartridge, the SLI lithium grease are available in two NLGI grades of either No.0 or No.1

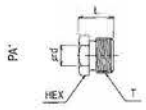
SPECIFICATIONS

CODE	Size	NLGI	Grease Type	Characteristics
SLI04	400cm³	0	Lithium	Heat resistant, pressure resistant, water resistant and durable lithium grease for use in multiple applications
SLI14	400cm³	1		

PIPING COMPONENTS Connectors & Fittings

- SHOWA's connectors and fittings for the creation of lubrication channel infrastructures.
- Components have been tested and are recommended for use with SHOWA pump units and distributors.

BUSHING

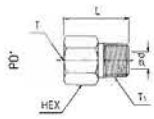


MODEL	Pipe	⌀d	L	T	HEX
PA3.2	⌀3.2	3.3	12	M8x1.0	8
PA4	⌀4	4.1	12	M8x1.0	8
PA6	⌀6	6.1	12.5	M10x1.0	10
PA8	⌀8	8.2	14	M14x1.5	14
PA10	⌀10	10.2	15	M16x1.5	17
PA12	⌀12	12.2	16	M18x1.5	19

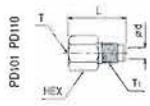
SLEEVE

MODEL	Pipe	⌀d	⌀D	L
PB3.2	⌀3.2	3.3	5	4.5
PB4	⌀4	4.1	6	4.5
PB6	⌀6	6.1	8	4.5
PB8	⌀8	8.1	10	7
PB10	⌀10	10.1	12	8
PB12	⌀12	12.1	14	9

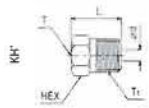
NIPPLE



MODEL	Pipe	⌀d	L	T	T_1	HEX
PD3.2	⌀3.2	2	18	M8x1.0	R 1/8	10
PD4	⌀4	3	18	M8x1.0	R 1/8	10
PD4-M5	⌀4	2	18	M8x1.0	M5x0.8	10
PD4-M6P075	⌀4	2	18	M8x1.0	M6x0.75	10
PD4-M6P1	⌀4	2	18	M8x1.0	M6x1.0	10
PD4-M8P1	⌀4	3	18	M8x1.0	M8x1.0	10
PD4-M8T	⌀4	3	18	M8x1.0	M8x1.0Taper	10
PD4-M10P1	⌀4	3	18	M8x1.0	M10x1.0	10
PD54	⌀4	4.2	18	M8x1.0	R 1/8	10
PD6	⌀6	4	18	M10x1.0	R 1/8	12
PD6-M10T	⌀6	4	18	M10x1.0	M10x1.0Taper	12
PD56	⌀6	6.2	18	M10x1.0	R 1/8	12
PD8	⌀8	6	26	M14x1.5	R 1/4	17
PD801	⌀8	6	26	M14x1.5	R 1/8	17
PD10	⌀10	8	29	M16x1.5	R 1/4	19
PD12	⌀12	10	32	M18x1.5	R 3/8	21

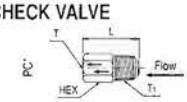


PD101	⌀4	3	23	Rp 1/8	M8x1.0	12
PD110	⌀6	3	23	M10x1.0	M8x1.0	12

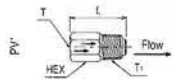


KH1	⌀4	3	20	M8x1.0	R 1/4	14
KH2	⌀6	4	20.5	M10x1.0	R 1/4	14
KH4	-	4	21	Rc 1/8	M10x1.0	14
KH5	-	6	26	Rc 1/4	M12x1.0	17
KH6	-	5	24	Rc 1/4	R 1/8	17
KH7	-	6	24	Rc 1/8	M12x1.0	17
KH8	⌀6	4	19	M10x1.0	M10x1.0Taper	14
KH9	⌀6	4	20	M10x1.0	M12x1.0Taper	17
KH10	⌀8	6	28	M14x1.5	M12x1.0Taper	17

CHECK VALVE

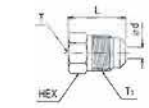


MODEL	Pipe	L	T	T_1	HEX
PC3.2	⌀3.2	22.5	M8x1.0	R 1/8	10
PC4	⌀4	22.5	M8x1.0	R 1/8	10
PC6	⌀6	22.5	M10x1.0	R 1/8	12



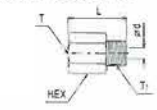
PV4	⌀4	23.2	M8x1.0	R 1/8	10
PV6	⌀6	23.2	M10x1.0	R 1/8	12

REDUCER



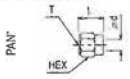
MODEL	Pipe	⌀d	L	T	T_1	HEX
PD604	⌀4	3	20	M8x1.0	M10x1.0	12
PD804	⌀4	3	23	M8x1.0	M14x1.5	14
PD806	⌀6	4	23	M10x1.0	M14x1.5	14
PD1004	⌀4	3	26	M8x1.0	M16x1.5	17
PD1006	⌀6	4	26	M10x1.0	M16x1.5	17
PD1008	⌀8	6	30	M14x1.5	M16x1.5	19
PD608	⌀8	4	29	M14x1.5	M10x1.0	17

MAIN PIPE NIPPLE



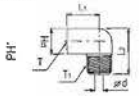
MODEL	Pipe	⌀d	L	T	T_1	HEX
PD610	⌀6	4	17.5	M10x1.0	M10x1.0	14
PD612	⌀6	4	20	M10x1.0	M12x1.0	17
PD812	⌀8	6	28	M14x1.5	M12x1.0	17

PROPER NUT



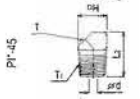
MODEL	Pipe	⌀d	L	T	HEX
PAN3.2	⌀3.2	3.3	12	M8 x 1.0	10
PAN4	⌀4	4.1	12	M8 x 1.0	10

ELBOW

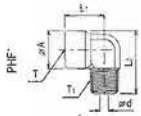


MODEL	Pipe	⌀d	L_1	L_2	T	T_1	□H
PH3.2	⌀3.2	2	13	18	M8 x 1.0	R 1/8	10
PH4	⌀4	3	13	18	M8 x 1.0	R 1/8	10
PH4-M6P075	⌀4	2.5	13	18	M8 x 1.0	M6x0.75	10
PH4-M6P1	⌀4	2.5	13	18	M8 x 1.0	M6 x 1.0	10
PH4-UNF	⌀4	3	13	18	M8 x 1.0	1/4unf28	10
PH4-M8P1	⌀4	3	13	18	M8 x 1.0	M8 x 1.0	10
PH4-M8T	⌀4	3	13	18	M8 x 1.0	M8x1.0Tp.	10
PD4-M10P1	⌀4	3	13	18	M8 x 1.0	M10 x 1.0	10
PH6	⌀6	4	14	20	M10 x 1.0	R 1/8	12

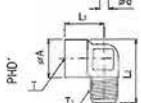
PH4A	⌀4	2.5	7	20.5	M8 x 1.0	R 1/8	12.5
PH6-2	⌀6	4	8.5	26	M10 x 1.0	R 1/4	14



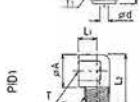
PI1	-	3	7	20	Rc 1/8	R 1/8	12
PI2	-	6	13	29	Rc 1/4	R 1/4	17



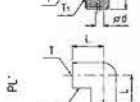
PI1-45	-	3	-	19	Rc 1/8	R 1/8	13
PI2-45	-	4	-	21	Rc 1/8	R 1/4	14



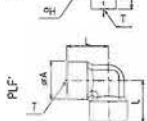
MODEL	Pipe	⌀d	L_1	L_2	T	T_1	⌀A
PHF8	⌀8	6	19	30	M14 x 1.5	R 1/4	18
PHF801	⌀8	4	19	30	M14 x 1.5	R 1/8	18
PHF10	⌀10	8	22	32	M16 x 1.5	R 1/4	20
PHF12	⌀12	10	24.5	35	M18 x 1.5	R 3/8	22



PHD4	⌀4	3	13.5	19.5	M8 x 1.0	R 1/8	11
PHD6	⌀6	4	14	22	M10 x 1.0	R 1/8	14
PHD8	⌀8	6	19	30	M14 x 1.5	R 1/4	18
PHD10	⌀10	8	22	32	M16 x 1.5	R 1/4	20



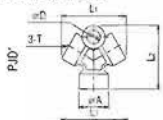
PID1	-	3.5	7	21	Rc 1/8	R 1/8	13



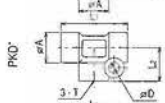
MODEL	Pipe	L	T	⌀A, □H
PL4	⌀4	14	M8x1.0	10
PL6	⌀6	15	M10x1.0	12

PLF8	⌀8	20	M14x1.5	18
PLF10	⌀10	22.5	M16x1.5	20
PLF12	⌀12	25	M18x1.5	22

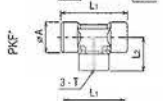
T CONNECTOR



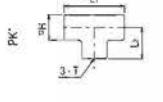
MODEL	Pipe	L_1	L_2	T	⌀A	⌀D
PJD304	⌀4	28	28.5	M8x1.0	11	6.5
PJD306	⌀6	31	30	M10x1.0	14	6.5



PKD4	⌀4	28	14	M8x1.0	11	6.5
PKD6	⌀6	30	15	M10x1.0	14	6.5
PKD8	⌀8	40	20	M14x1.5	18	6.5
PKD10	⌀10	45	22.5	M16x1.5	20	6.5

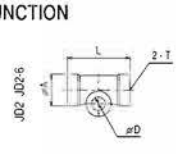


PKF8	⌀8	40	20	M14x1.5	18	-
PKF10	⌀10	45	22.5	M16x1.5	20	-
PKF12	⌀12	50	25	M18x1.5	22	-

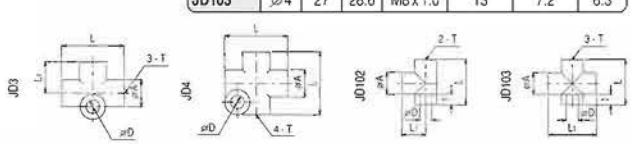


MODEL	Pipe	L_1	L_2	T	□H
PK4	⌀4	25	15	M8x1.0	10
PK6	⌀6	29	15	M10x1.0	12

JUNCTION



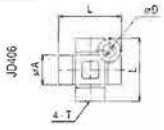
MODEL	Pipe	L	L_1	T	⌀A	⌀D	I & Mount Thickness
JD2	⌀4	30	-	M8x1.0	15	6.5	16.5
JD2-6	⌀6	30	-	M10x1.0	15	6.5	16.5
JD3	⌀4	30	15	M8x1.0	13	6.5	16
JD4	⌀4	30	-	M8x1.0	13	6.5	16
JD102	⌀4	27	14.3	M8x1.0	13	7.2	6.3
JD103	⌀4	27	28.6	M8x1.0	13	7.2	6.3



PIPING COMPONENTS Connectors & Fittings

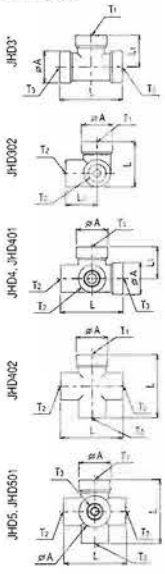
- SHOWA's connectors and fittings for the creation of lubrication channel infrastructures.
- Components have been tested and are recommended for use with SHOWA pump units and distributors.

CROSS



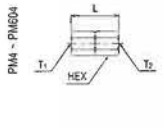
MODEL	Pipe	L	T	ØA	ØD
JD406	Ø6	30	M10x1.0	14	6.5

JUNCTIONS

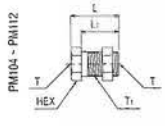


MODEL	Pipe	L	L1	T1	T2	T3	ØA
JHD3	Ø4	30	15	Rc 1/8	M8x1.0	M8x1.0	15
JHD301	Ø4	30	15	M8x1.0	M8x1.0	Rc 1/8	15
JHD304	Ø4	30	15	Rc 1/8	Rc 1/8	M8x1.0	15
JHD306	Ø6	30	15	Rc 1/8	M10x1.0	M10x1.0	15
JHD302	Ø4	21.5	15	Rc 1/8	M8x1.0	-	15
JHD4	Ø4	30	15	Rc 1/8	M8x1.0	M8x1.0	15
JHD401	Ø4	30	15	M8x1.0	M8x1.0	Rc 1/8	15
JHD402	Ø4	30	-	Rc 1/8	M8x1.0	-	15
JHD5	Ø4	30	-	M8x1.0	M8x1.0	Rc 1/8	15
JHD501	Ø4	30	-	Rc 1/8	M8x1.0	M8x1.0	15

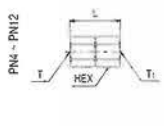
CONNECTORS



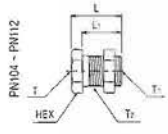
MODEL	Pipe	L	L1	T	T1	HEX
PM4	Ø4	23	-	M8x1.0	M8x1.0	10
PM6	Ø6	23	-	M10x1.0	M10x1.0	12
PM8	Ø8	33	-	M14x1.5	M14x1.5	17
PM10	Ø10	36	-	M16x1.5	M16x1.5	19
PM12	Ø12	39	-	M18x1.5	M18x1.5	21
PM604	Ø4 Ø6	23	-	M8x1.0	M10x1.0	12



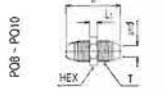
MODEL	Pipe	L	L1	T	T1	HEX
PM104	Ø4	23	18	M8x1.0	M12x1.0	14
PM106	Ø6	23	18	M10x1.0	M14x1.0	17
PM108	Ø8	33	26	M14x1.5	M18x1.5	21
PM110	Ø10	36	28	M16x1.5	M20x1.5	23
PM112	Ø12	39	29	M18x1.5	M24x1.5	27



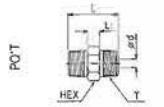
MODEL	Pipe	L	L1	T	T1	HEX
PN4	Ø4	23	-	M8x1.0	Rp 1/8	12
PN6	Ø6	23	-	M10x1.0	Rp 1/8	12
PN8	Ø8	33	-	M14x1.5	Rp 1/4	17
PN10	Ø10	36	-	M16x1.5	Rp 1/4	19
PN12	Ø12	39	-	M18x1.5	Rp 3/8	21



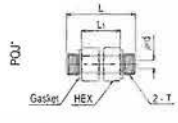
MODEL	Pipe	L	L1	T	T1	T2	HEX
PN104	Ø4	23	18	Rp 1/8	M8x1.0	M14x1.0	17
PN106	Ø6	23	18	Rp 1/8	M10x1.0	M14x1.0	17
PN108	Ø8	33	26	Rp 1/4	M14x1.5	M18x1.5	21
PN110	Ø10	36	28	Rp 1/4	M16x1.5	M20x1.5	23
PN112	Ø12	39	29	Rp 3/8	M18x1.5	M24x1.5	25



MODEL	Pipe	Ød	L	L1	T	HEX
PQ101	-	6	20	4	R 1/8	10
PQ8	-	3	26	4	M8x1.0	10
PQ10	-	4	26	4	M10x1.0	12



PQ8T	-	3	19	5	Taper M8x1.0	10
PQ10T	-	4	19	5	Taper M10x1.0	12
PQ12T	-	6	24	6	Taper M12x1.0	14

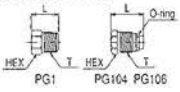


PQJ10	-	3.5	33	19	M10x1.0	14
PQJ12	-	4	34.6	19	M12x1.0	17

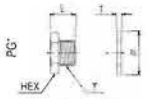
TUBE BANDS

MODEL	Pipe	Ød	L	L1	-
PZ4	Ø4	4.5	8	0.4	-
PZ6	Ø6	6.8	8	0.4	-

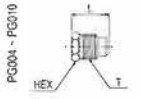
SEALING PLUGS



MODEL	O-Ring	L	T	HEX
PG1	No O-ring	13	R 1/8	10
PG104	S3 O-ring	15.5	M8x1.0	8
PG106	S5 O-ring	15.5	M10x1.0	10

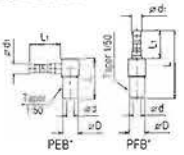


MODEL	Gasket	Gasket Size	L	T	HEX
PG8	FIBER	Ø12.5 x 1.5t	8	M8x1.0	12
PG10		Ø15 x 1.5t	10	M10x1.0	14
PG12		Ø17 x 1.5t	12	M12x1.0	17
PG8C	COPPER	Ø12 x 1.5t	8	M8x1.0	12
PG10C		Ø14 x 1.5t	10	M10x1.0	14
PG12C		Ø16 x 1.5t	12	M12x1.0	17
PG8N	RUBBER	Ø12 x 2t	8	M8x1.0	12
PG10N		Ø14 x 2t	10	M10x1.0	14
PG12N		Ø16 x 2t	12	M12x1.0	17



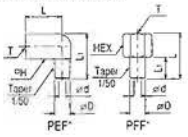
PG004	-	-	14.5	M8x1.0	8
PG006	-	-	15	M10x1.0	10
PG008	-	-	23	M14x1.5	14
PG010	-	-	26	M16x1.5	17

HOSE ENDS



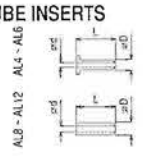
MODEL	Pipe	Ød	Ød1	ØD	L	L1	t & Mount Thickness
PEB4	Ø4	3	3.6	6	16	12.5	Ø6 Drill
PEB6	Ø6	5	5.2	7	25	18.5	Ø7 Drill
PFB4	Ø4	3	3.6	6	27	11	Ø6 Drill
PFB6	Ø6	5	5.2	7	42	17	Ø7 Drill

FEMALE SCREW



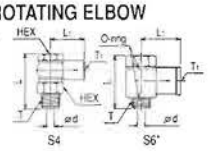
MODEL	Pipe	Ød	ØD	L	L1	T	□H or HEX
PEF4	Ø4	3	6	14.5	18	M8x1.0	10
PEF6	Ø6	4	7	14.5	24	M10x1.0	12
PFF4	Ø4	3	6	18	8.5	M8x1.0	10
PFF6	Ø6	4	7	24	12	M10x1.0	12

TUBE INSERTS



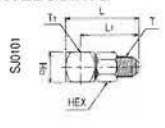
MODEL	Pipe	L	Ød	ØD	-
AL4	Ø4	10	2	2.5	-
AL6	Ø6	12	3.5	4	-
AL8	Ø8	16	4.4	6	-
AL10	Ø10	16	6.1	8	-
AL12	Ø12	16	8.4	10	-

ROTATING ELBOW



MODEL	Pipe	Ød	L	L1	T	T1	HEX
S4	Ø4	3	29	18	R 1/8	M8x1.0	12
S610	Ø6	4.5	28	21	M10x1.0	M10x1.0	14
S612	Ø6	5	31	21	M12x1.0	M10x1.0	17

SWIVEL JOINTS



MODEL	Pipe	L	L1	T	T1	□H	HEX
SJ0101	-	35	28.5	R 1/8	Rc 1/8	14	12

DA, DB Dester Uni

- Multi-port (4 to 12) distribution junctions
- Compatible with Flow Proper Units and Continuous Units
- DA types possess outlets on both sides, where DB types are single sided
- Port connection sizes of either M8 x 1.0 or Rc 1/8 are available

The DA and DB Dester Uni junction bars, possess multiple connection ports to allow lubrication channels to be divided into further segments.

DA

DB

MODEL CODE

DB 6 D

- Connection Port Size
  - D : M8 x 1.0 Connections
  - K : Rc 1/8 Connections
- Number of Connection Ports

DA Series	DB Series	
6 : 6 Ports	4 : 4 Ports	8 : 8 Ports
8 : 8 Ports	5 : 5 Ports	9 : 9 Ports
10 : 10 Ports	6 : 6 Ports	10 : 10 Ports
12 : 12 Ports	7 : 7 Ports	12 : 12 Ports

- Base Code / Port Positions
  - DA : Dual Sided
  - DB : Single Sided

ASSEMBLY EXAMPLE

DB7D & PSS

* When utilizing a PSS in conjunction with the Dester Uni, place a PAN4 Proper Nut and a PB4 Sleeve on the pipe.

* To complete the connection, attach the PAN4 to the PSS unit.

DA DESTER UNI

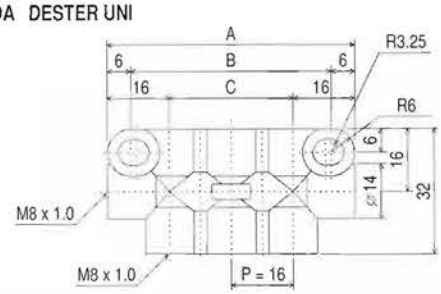
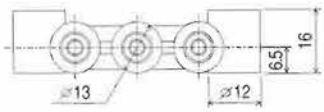


Diagram : DA8D Model



DIMENSIONS

MODEL CODE	Number of Ports	Connection Size	A	B	C
DA6D	6	M8 x 1.0	48	36	16
DA8D	8	M8 x 1.0	64	52	32
DA10D	10	M8 x 1.0	80	68	18
DA12D	12	M8 x 1.0	96	84	68

DB DESTER UNI

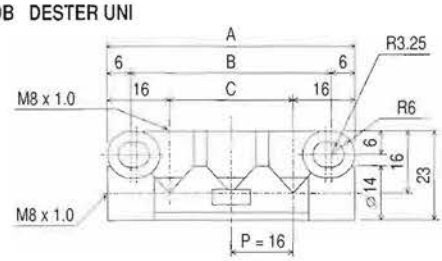
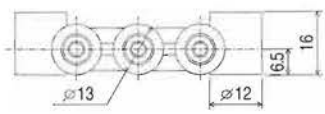


Diagram : DB5D Model



DIMENSIONS

MODEL CODE	Number of Ports	Connection Size	A	B	C
DB4D	4	M8 x 1.0	48	36	16
DB5D	5	M8 x 1.0	64	52	32
DB6D	6	M8 x 1.0	80	68	48
DB7D	7	M8 x 1.0	96	84	64
DB8D	8	M8 x 1.0	112	100	80
DB9D	9	M8 x 1.0	128	116	96
DB10D	10	M8 x 1.0	144	132	112
DB12D	12	M8 x 1.0	176	164	144

DB*K DESTER UNI

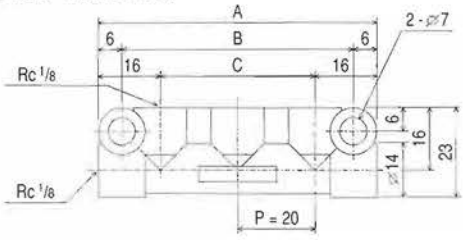
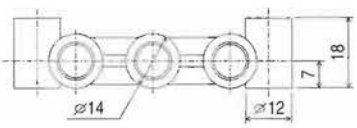


Diagram : DB5K Model



DIMENSIONS

MODEL CODE	Number of Ports	Connection Size	A	B	C
DB4K	4	Rc 1/8	52	40	20
DB5K	5	Rc 1/8	72	60	40
DB6K	6	Rc 1/8	92	80	60

PIPES & TUBES — Metal & Polymer Tubes

- Pipes and tubes for distribution channels
- Various materials and sizes available to meet installation requirements

A wide range of pipes and tubes for distributing lubricants are available.

3 types of metal pipes (Copper, Aluminum and Steel) and 3 polymer based pipes (SHOWA Nylon, Hizex and Surlyn) in various sizes are available to meet various system and installation requirements.

MODEL CODE

CUT 4

Pipe Size (External Diameter)

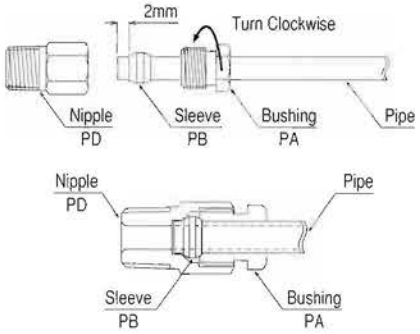
3.2 : ⌀3.2 Piping	8 : ⌀8 Piping
4 : ⌀4 Piping	10 : ⌀10 Piping
6 : ⌀6 Piping	12 : ⌀12 Piping

Base Code / Material

CUT : Copper	SHOWA Nylon : Nylon 12
ALP : Aluminum	HIZEX : Hizex
MWT : Metal	SURLYN : Surlyn

* All pipe sizes listed above will not be available for certain materials. Please refer to "DIMENSIONS" located on the right .

INSTALLATION METHOD



Cut the metal pipe / tube at a clean straight angle with a sharp cutting instrument (special pipe / tube cutters are available). Pipes cut on an angle or deformed will not allow the *PB* sleeve to hold the pipe effectively, leading to possible leakages.

In order, place a *PA* tightening plug (Bushing) on the pipe, then a *PB* sleeve (" Group A " for reference).

Allow the pipe to extrude 2mm from the *PB* sleeve and attach " Group A " to the mounting nipple (*PD, KH,* etc).
Tighten the connection by hand until it can be tightened no more, then with a spanner, tighten the connection a further 1 or 1.5 rotations. Please do not over- tighten.

For polymer based tubes , place an *AL* Insert in the end of the tube, before attaching " Group A " to the nipple.

SHOWA NYLON SPECIFICATION

Pipe Size (Ext.)	⌀4	⌀6
Applicable MPa at 23°C	Under 2.5	Under 2.2
Rupturing MPa at 20°C	10	8.8
Minimum Bend Radius (mm)	12	24
Temp. Range	-40°C ~ +90°C	

DIMENSIONS (External & Internal Diameter)

MATERIAL / SIZE	⌀3.2	⌀4	⌀6	⌀8	⌀10	⌀12
Copper	⌀3.2 x ⌀1.8	⌀4 x ⌀3	⌀6 x ⌀4.4	⌀8 x ⌀6.2	⌀10 x ⌀8	⌀12 x ⌀10
Aluminum	X	⌀4 x ⌀2.5	⌀6 x ⌀4	⌀8 x ⌀6	⌀10 x ⌀8	⌀12 x ⌀10
Steel	⌀3.2 x ⌀1.8	⌀4 x ⌀2.6	⌀6 x ⌀4.6	⌀8 x ⌀6.6	X	X
SHOWA Nylon	X	⌀4 x ⌀2.5	⌀6 x ⌀4	X	X	X
Hizex	X	⌀4 x ⌀2.5	⌀6 x ⌀4	⌀8 x ⌀6	E	E
Surlyn	X	⌀4 x ⌀2.5	⌀6 x ⌀4	⌀8 x ⌀6	E	E

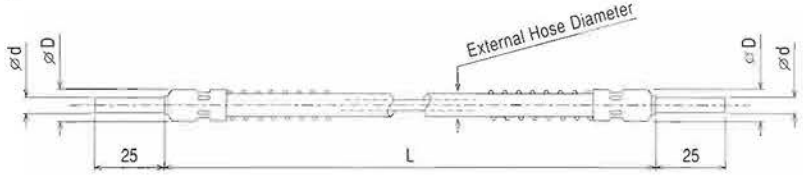
" E " : Please enquire for dimensions. " X " : Not available.

FHS, FHC, FSC — Flexible Hoses

Flexible Hose

- Ideal for use in sliding and rotating environments where flexibility is required
- Possessing a protective spring, the hoses are durable and are also effective in broad temperature ranges
- Variety of lengths available to suit installation requirements

FHS, FHC & FSC



MODEL CODE

FHC 4 01

Hose Length (L)

01 : 100mm	09 : 900
02 : 200mm	10 : 1000
03 : 300mm	12 : 1200
04 : 400mm	14 : 1400
05 : 500mm	16 : 1600
06 : 600mm	18 : 1800
07 : 700mm	20 : 2000
08 : 800mm	

Connector Size (⌀d)
4 : ⌀4 Piping
6 : ⌀6 Piping

Base Code / Material & Ext. ⌀
FHS : Glass Fiber, ⌀10
FHC : Vinylon Fiber, ⌀10
FSC : Vinylon Fiber, ⌀14

SPECIFICATIONS

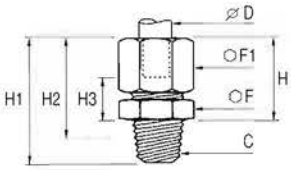
SPECIFICATION / MODEL		FHS	FHC	FSC
Appearance	Outer Braiding	Glass Fiber	Vinylon Fiber	Vinylon Fiber
	Color	Blue	Black	
Hose Structure	Inner Rubber	NBR		
	Reinforcement Layer 1B	Vinylon Fiber		
	Reinforcement Layer 2B	Fiber Glass	Vinylon Fiber	
Exterior Protection		Protective Spring (Plated)		
Standard Operating Pressure (MPa)		3	2.5	
Maximum Operation Pressure (MPa)		6	3	
Hose Rupturing Pressure (MPa)		24+		12+
Temperature Range (°C)		-20 ~ +100		
Surface - Instantaneous Temperature (°C)		500	200	
Hose Dimensions	Connector Size (⌀d)	⌀4, ⌀6		⌀6
	Ext. Hose Diameter	⌀8		⌀10.5
External Diameter (⌀D)		⌀10		⌀14
Length (L)		100mm ~ 2000mm (increments of 100mm)		

* FSC hoses are only available with a connector size of ⌀6.
* Other hose lengths, which are not listed above, are also available. Please enquire for further details.

PIPING COMPONENTS Compression Type Connectors

- High pressure connectors and fittings for lubrication channel infrastructures.
- Compression type connectors, enabling pipes and tubes to be held securely in place.

CONNECTOR



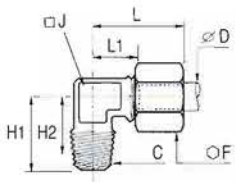
STAINLESS STEEL CONNECTORS (SUS316)

MODEL	CODE	⌀D	C	F	F1	H1 (MAX)	H2 (MAX)	H3	MAXIMUM PRESSURE
CONNECTOR	1805 06 10	6	R 1/8	12	13	27	23	7.5	8MPa
	1805 06 13	6	R 1/4	14	13	30.5	24.5	7.5	8MPa
	1805 08 10	8	R 1/8	13	14	27.5	23.5	7	8MPa
	1805 08 13	8	R 1/4	14	14	32	26	7	8MPa
	1805 10 13	10	R 1/4	17	19	36.5	30.5	9	8MPa

BRASS CONNECTORS (C3604BD)

MODEL	CODE	⌀D	C	F	F1	H (MAX)	H3	MAXIMUM PRESSURE
CONNECTOR	0105 06 10	6	R 1/8	11	13	18	7.5	15MPa
	0105 06 13	6	R 1/4	14	13	18	7.5	15MPa
	0105 08 10	8	R 1/8	13	14	19.5	7	10MPa
	0105 08 13	8	R 1/4	14	14	19.5	7	10MPa
	0105 10 10	10	R 1/8	17	19	24	9	7.5MPa
	0105 10 13	10	R 1/4	17	19	24	9	7.5MPa

ELBOW



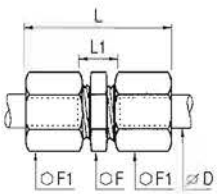
STAINLESS STEEL CONNECTORS (SUS316)

MODEL	CODE	⌀D	C	F	H1	H2	J	L (MAX)	L1	MAXIMUM PRESSURE
ELBOW	1809 06 10	6	R 1/8	13	18	14	8	25.5	13.5	8MPa
	1809 06 13	6	R 1/4	13	23	17	10	25.5	13.5	8MPa
	1809 08 10	8	R 1/8	14	20.5	16.5	10	28.5	14.5	8MPa
	1809 08 13	8	R 1/4	14	23	17	10	28.5	14.5	8MPa
	1809 10 13	10	R 1/4	19	25	19	12	32.5	16	8MPa

BRASS CONNECTORS (C3604BD)

MODEL	CODE	⌀D	C	F	H1	J	L (MAX)	L1	MAXIMUM PRESSURE
ELBOW	0109 06 10	6	R 1/8	13	18	8	22	11	15MPa
	0109 06 13	6	R 1/4	13	21.5	10	22	12	15MPa
	0109 08 10	8	R 1/8	14	18.5	10	28	15	10MPa
	0109 08 13	8	R 1/4	14	22	10	28	15	10MPa
	0109 10 13	10	R 1/4	19	25	12	30	14.5	7.5MPa

UNION



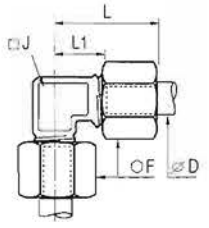
STAINLESS STEEL CONNECTORS (SUS316)

MODEL	CODE	⌀D	F	F1	L (MAX)	L1	MAXIMUM PRESSURE
UNION	1806 06 00	6	12	8	34.5	11	8MPa
	1806 08 00	8	13	10	38.5	10	8MPa
	1806 10 00	10	17	12	46	13	8MPa

BRASS CONNECTORS (C3604BD)

MODEL	CODE	⌀D	F	F1	L (MAX)	L1	MAXIMUM PRESSURE
UNION	0106 06 00	6	11	13	32	11	15MPa
	0106 08 00	8	13	14	36	10	10MPa
	0106 10 00	10	17	19	42	13	7.5MPa

ELBOW UNION



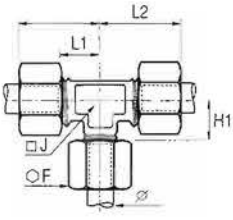
STAINLESS STEEL CONNECTORS (SUS316)

MODEL	CODE	⌀D	F	J	L (MAX)	L1	MAXIMUM PRESSURE
ELBOW UNION	1802 06 00	6	13	8	25.5	13.5	8MPa
	1802 08 00	8	14	10	28.5	14.5	8MPa
	1802 10 00	10	19	12	32.5	16	8MPa

BRASS CONNECTORS (C3604BD)

MODEL	CODE	⌀D	F	J	L (MAX)	MAXIMUM PRESSURE
ELBOW UNION	0102 06 00	6	13	8	22	15MPa
	0102 08 00	8	14	10	28	10MPa
	0102 10 00	10	19	12	30	7.5MPa

T-TYPE UNION



STAINLESS STEEL CONNECTORS (SUS316)

MODEL	CODE	⌀D	F	J	L2	L1	MAXIMUM PRESSURE
T - TYPE UNION	1804 06 00	6	13	8	25.5	13.5	8MPa
	1804 08 00	8	14	10	28.5	14.5	8MPa
	1804 10 00	10	19	12	32.5	16	8MPa

BRASS CONNECTORS (C3604BD)

MODEL	CODE	⌀D	F	J	L2	H1	MAXIMUM PRESSURE
T - TYPE UNION	0104 06 00	6	13	8	22	11	15MPa
	0104 08 00	8	14	10	28	15	10MPa
	0104 10 00	10	19	12	30	14.5	7.5MPa

GHA02, GH02 Hose & Reusable Connectors

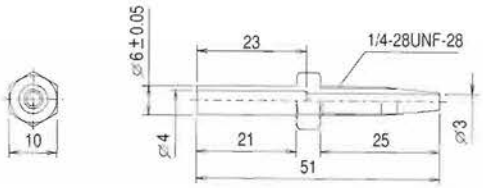
- Hose and connectors for high pressure lubrication systems
- Reusable and simple to install connectors (No special tools required)
- Highly flexible reinforced polyurethane hose, broadens installation capabilities

The GHA02 high pressure hose are specifically designed for Showa's grease lubrication systems. The reusable connectors can be attached with an ordinary set of pliers and a spanner, negating the requirement for special tools. Straight and elbow type connectors are available to suit installation requirements of the lubrication system.

GHA02 HIGH PRESSURE HOSE

Outer Layer : Polyurethane
Inner Layer : Polyamide 12
Reinforcement : Polyester Braid

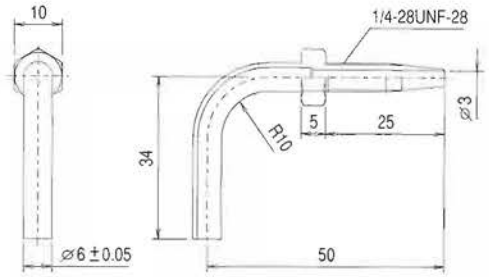
GH02D STRAIGHT CONNECTOR



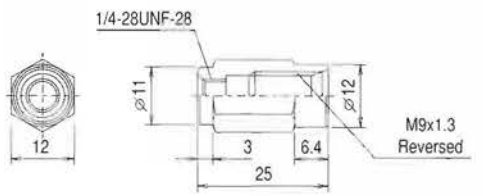
MODEL CODE
GHA02
High Pressure Hose

MODEL CODE
GH02 D
Connector Type
D : Straight Connector
H : Elbow Connector
B : Hose Sleeve
Base Code

GH02H ELBOW CONNECTOR



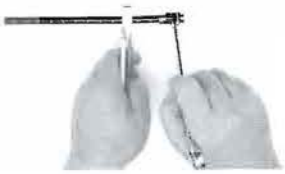
GH02B HOSE SLEEVE



GHA02 HOSE SPECIFICATION

Utilization Pressure	21 MPa
Rupturing Pressure	78 MPa
External Diameter	⌀7.9
Internal Diameter	⌀3.2
Minimum Bending R	12

HOSE & CONNECTOR ASSEMBLY METHOD



1. CUTTING & MARKING THE HOSE

When cutting the GHA02 hose, ensure a clean straight cut is achieved and is not cut at an angle. Mark the hose with a white pen at a position of 13mm from the end of the hose. White dots at 13mm intervals have been stamped on the GHA02 hose to act as a guide. If the hose is cut in the center of a dot, use the next dot in as the marker, eliminating the need to mark the hose.

2. ATTACHING THE HOSE SLEEVE

Ensure the hose is held firmly with a pair of pliers and proceed to apply a small amount of lubricant to the hose end's exterior surface. While ensuring the hose stays straight and does not twist, attach the hose sleeve by rotating it counter-clockwise and proceed until the end of the sleeve is over the center of the marker dot.

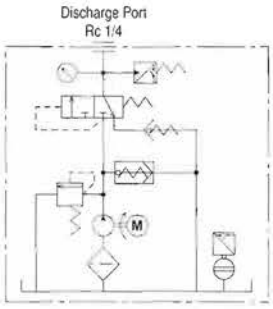
3. ATTACHING THE END CONNECTOR (Straight or Elbow)

Apply a small amount of lubricant to the connector's screw end and insert it into the hose sleeve, which has just been attached in the above step. While holding the hose sleeve in position, turn the connector clockwise until the connector's HEX (nut) comes in contact with the hose sleeve.

Pump Unit Circuit Diagrams

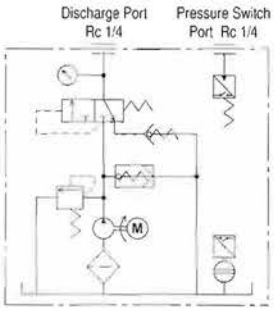
LUBRI UNIT LCB3

Illustrated Circuit : LCB311C
- YT Timer
- Pressure Switch
- Pressure Gauge
- Float Switch



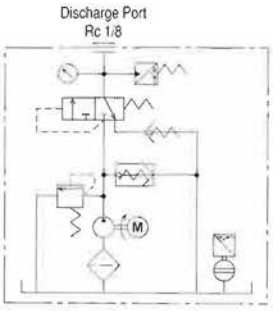
LUBRI UNIT LCB3 TMS

Illustrated Circuit : LCB30105C
- YUI Timer
- Pressure Switch
- Pressure Gauge
- Float Switch



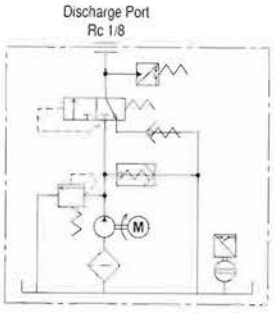
LUBRI UNIT LCB4

Illustrated Circuit : LCB4011C
- Pressure Switch
- Pressure Gauge
- Float Switch



LUBRI UNIT LCB5

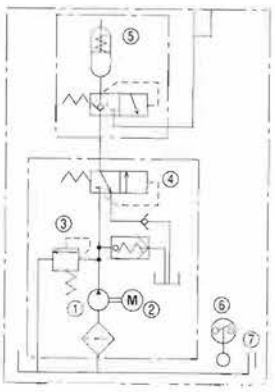
Illustrated Circuit : LCB520C
- Timer
- Pressure Switch
- Float Switch



ACCUMULATOR PUMP MY6

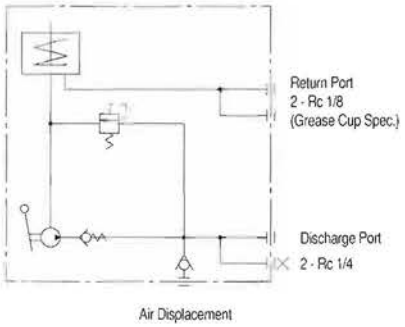
Illustrated Circuit : MY6012
- Y11 Timer
- Float Switch

No.	Component
1	Pump
2	Motor
3	Relief Valve
4	De-pressuring Mechanism
5	Accumulator
6	Float Switch
7	Tank / Reservoir



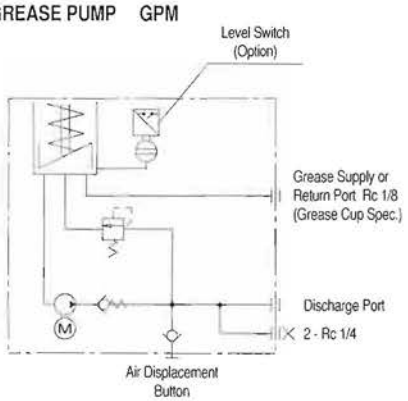
PROGRESSIVE MANUAL GREASE PUMP GPH

Illustrated Circuit : GPH014
- Dual Return Ports



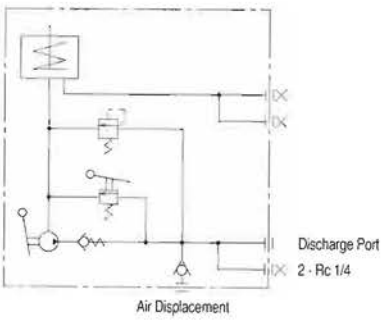
PROGRESSIVE MOTORIZED GREASE PUMP GPM

Illustrated Circuit : GPM1013CL
- Level Switch



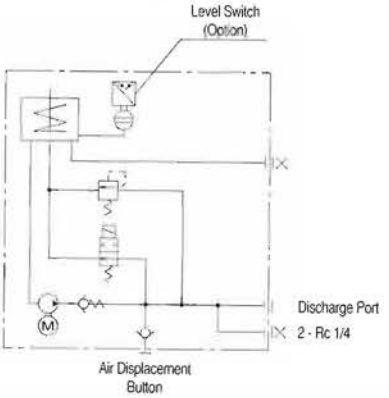
SINGLE-LINE MANUAL GREASE PUMP GPHW

Illustrated Circuit : GPHW017
- Pressure Displacement



SINGLE-LINE MOTORIZED GREASE PUMP GPMW

Illustrated Circuit : GPMW307CL
- Level Switch
- Pressure Displacement



Contact Details

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