



An IMCI Company
BIJUR DELIMON
INTERNATIONAL

FARVAL[®] DUALINE[™] SYSTEMS

- + Ideally suited for heavy industry
- + Continuous duty operation
- + Over 80 years of excellence

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INSURES LUBRICATION
OF EVERY BEARING
AND SLIDE • PREVENTS
OVER AND UNDER
LUBRICATION • SAVES
LUBRICATION TIME •
ELIMINATES LUBRICANT
CONTAMINATION •
PREVENTS PERSONAL
INJURY HAZARDS •
PROMOTES CONTINUOUS
HIGH SPEED MACHINE
OPERATION • REDUCES
REPAIRS AND
DOWNTIME • PROLONGS
MACHINE LIFE •
INCREASES
PRODUCTION OUTPUT •
REDUCES
OPERATING COST

Introduction

Dualine lubricating systems are found in virtually every industry in which continuous duty operation is required. From steel production to pulp and paper, from mining equipment to machine tools, automatic application of the lubricant provides significant benefits to the equipment user. There are several components that are used in designing a Dualine system:

- + Valves
- + Lubricators
- + Reversing Valves
- + Central Stations
- + Controllers
- + Spray Systems

Valves

Measuring valves are the heart of Dualine lubrication systems. They are mounted close to the lubrication points and are hydraulically operated by pressure from the first and then the second of the two supply lines. On each pressurization cycle, they indirectly discharge fixed volumes of lubricant to the bearing or lubrication point.

Lubricators

Manual, electric and pneumatic lubricators store and pump lubricant to Dualine valves throughout the system.

Reversing Valves

These valves change the flow and direction of pressure, which causes divider valves in the system to cycle.

Central Stations

Central stations include lubricator, cycle switch and reversing valve. Some versions are mounted on a plate for easier installation.

Controllers

Programmable controllers give you access to key system functions, such as system on and off, and can control what happens when there is a problem in the system.

Spray Systems

Used to lubricate large gears and pinion sets.

Advantages of Dualine Systems

- + They are economical for a system having more than 20 bearing points.
- + Lubrication points can be added easily without redesigning the total system.
- + A blockage between main line and bearing will not shut the system down; remaining bearings will continue to be lubricated.
- + There are positive lubrication indicators for each bearing point.
- + They have the ability to positively displace a broad range of lubricants from light oil to grade 2 grease.
- + Lubrication discharge volume at each bearing is fully adjustable even after start-up.

Dualine Systems

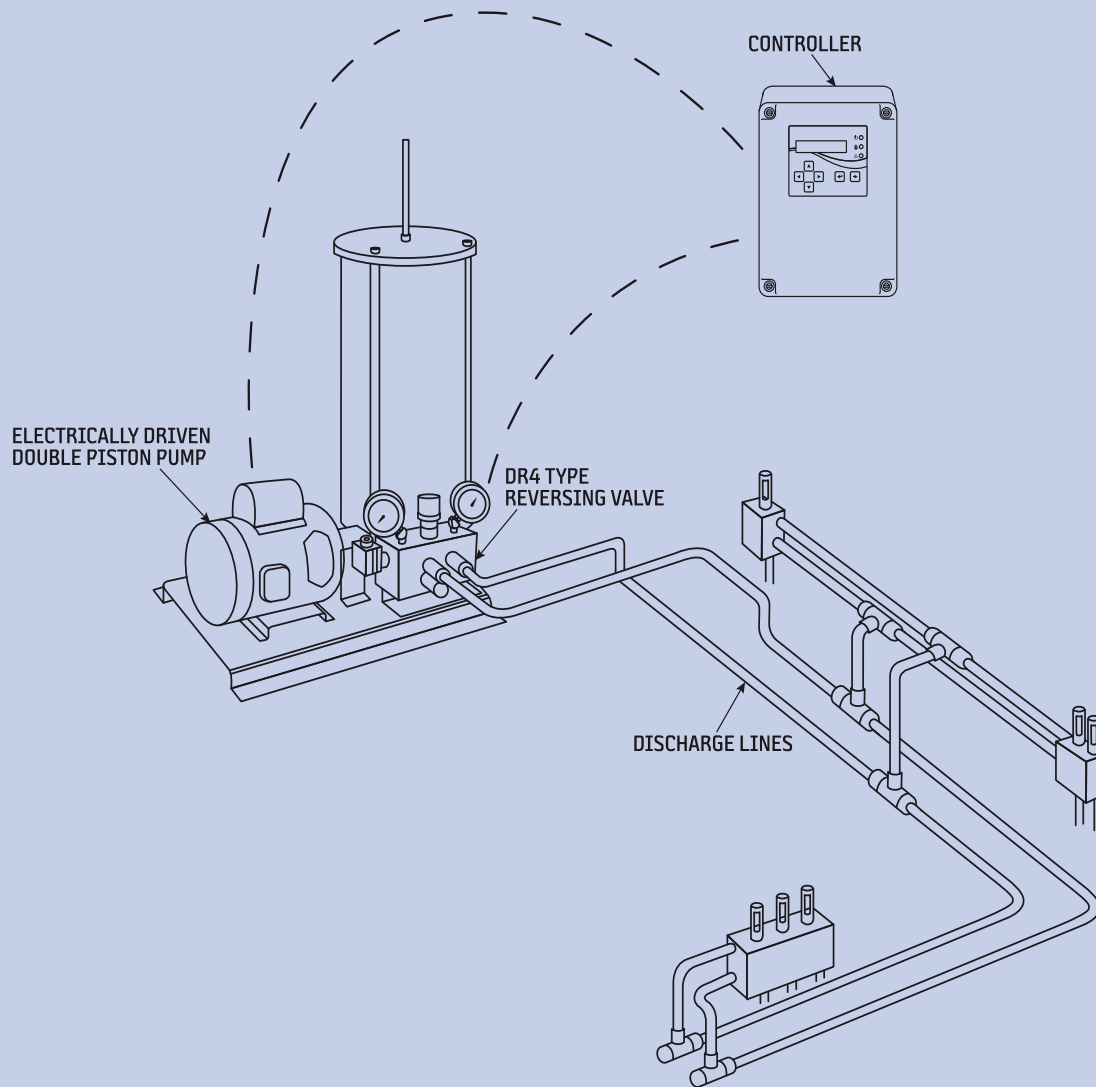
There are several various types of Dualine systems that can be designed using Bijur Delimon components featured in this brochure. Flexibility is a key part of the Bijur Delimon product family. The following represent typical system layouts.

Motor Driven Piston Pump System

One of the most popular Dualine systems features Dualine valves, a central station (pump, cycle switch and reversing valve) and a controller.

Relevant products include:

- + DD Valves, DM Valves or DDM/SDM Modular Valves (pages 6-9)
- + Central Stations (pages 16-19)
- + Controllers (pages 20-21)

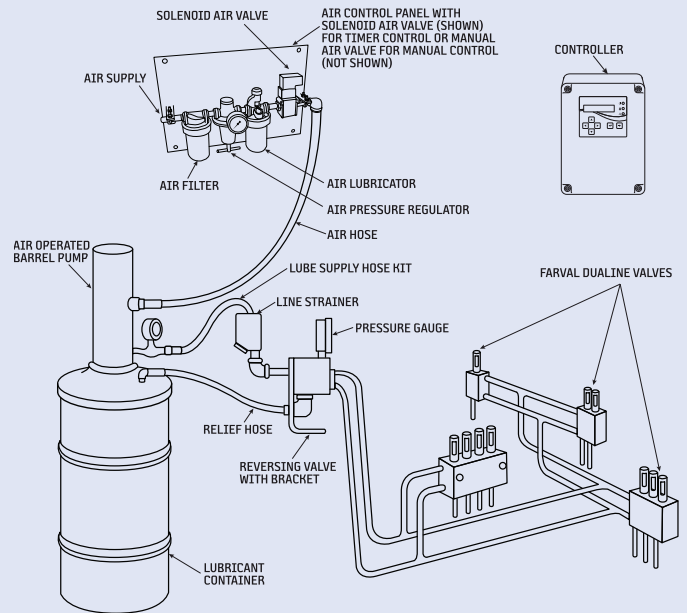


Air Powered System

Another popular Dualine system utilizes an air-operated barrel pump providing lubricant to Dualine valves in the system. A reversing valve with a pressure gauge is utilized to reverse the lubrication flow in the system. A controller is also used to monitor system functionality. (See a variation of this system layout, *Spray Systems*, on pages 22-23.)

Relevant products include:

- + DD Valves, DM Valves or DDM/SDM Modular Valves (pages 6-9)
- + Air Operated Barrel Pump (page 12-13)
- + Air Control Panel (see components on page 13)
- + Reversing Valve (pages 14-15)
- + Controllers (pages 20-21)

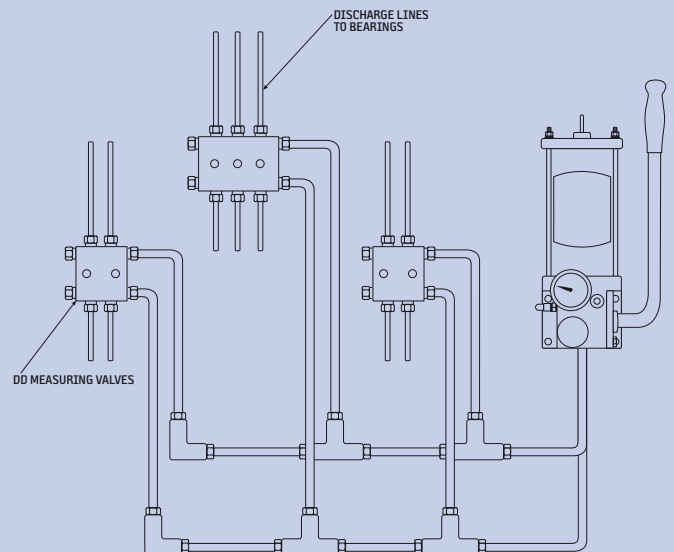


Manual Lubricator System

Bijur Delimon has a complete line of manual lubricators that can be affixed to DD, DM or DDM/SDM Dualine valves. The lubricators have a built-in reversing valve so that pressure can be applied and released on each handle stroke.

Relevant products include:

- + DD Valves, DM Valves or DDM/SDM Modular Valves (pages 6-9)
- + Manual Lubricators (page 11)

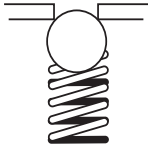
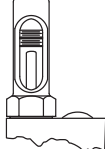
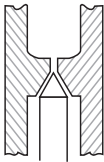
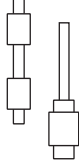
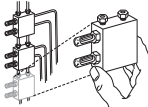



Dualine Valves

DD & DM Valves

Dualine DD and DM lubricating valves are completely hydraulic in operation and will deliver either oil or grease. They are also fully and individually adjustable in regard to discharge quantity and are equipped with operational indicators. Each DD valve serves two bearings; however, by a simple method of cross-porting, it will serve one. Therefore, a four valve block, as an example, can actually serve anywhere between four and eight bearings. DM series valves always have one discharge port per valve section located on the bottom of the valve. DD and DM valves can be supplied in several basic discharge capacities and are available in blocks consisting of one, two, three or four valves.

Benefits

| | |
|--|--|
| <p>No springs or check valves.</p>  | <p>Positive indication at every bearing.</p>  |
| <p>No small ports.</p>  | <p>Has only two moving parts.</p>  |
| <p>No system redesign when adding or subtracting points.</p>  | <p>Individually adjustable.</p>  |



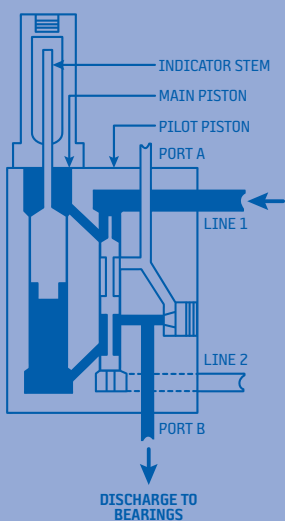
Prox Switch Kits

| Description | Part # |
|-------------|--------|
| DM60 series | 37291 |
| DD50 series | 37290 |

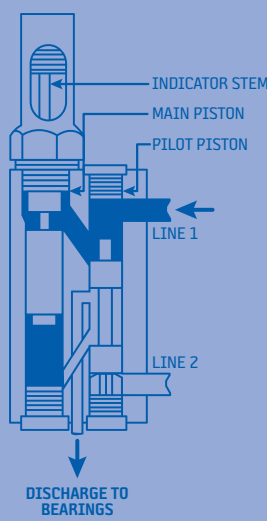
Note: Need one kit for each indicator pin. See datasheet 35965 for additional information.

See Datasheet #35513 for additional information on DD/DM valves.

DD Valves



DM Valves



How it Works

Pressurized lubricant entering the valve forces the pilot piston down, allowing pressure to be applied to top of the main piston. The main piston begins to move down under pressure, forcing lubricant from its chamber, past the lower land of the pilot piston and out the discharge line to the bearing. When pressure in the supply line is reversed, lubricant then enters valve and forces the pilot piston up, allowing pressure to be applied to bottom of main piston, which begins to move up, forcing lubricant from its chamber, past the upper land of the pilot piston and out the second discharge line to the bearing.

Valve Output

| Model | Discharge per piston stroke | | Discharge change per adj. screw revolution | Total adj. range |
|-------|-----------------------------|-------------------------|--|------------------|
| | Minimum | Maximum | | |
| DD-2X | 0.09cc (0.006 cu. in.) | 0.59cc (0.036 cu. in.) | 0.03cc (0.002 cu. in.) | 0.45" (11mm) |
| DD-5X | 0.18cc (0.011 cu. in.) | 4.74cc (0.289 cu. in.) | 0.18cc (0.011 cu. in.) | 1.21" (30mm) |
| DM-3X | 0.19cc (0.012 cu. in.) | 1.18cc (0.072 cu. in.) | 0.08cc (0.005 cu. in.) | 0.56" (14mm) |
| DM-4X | 0.59cc (0.036 cu. in.) | 2.21cc (0.135 cu. in.) | 0.11cc (0.007 cu. in.) | 0.69" (17mm) |
| DM-5X | 1.23cc (0.075 cu. in.) | 5.02cc (0.306 cu. in.) | 0.16cc (0.010 cu. in.) | 1.12" (28mm) |
| DM-6X | 2.95cc (0.180 cu. in.) | 13.11cc (0.800 cu. in.) | 0.64cc (0.039 cu. in.) | 0.97" (24mm) |

Note: All DD & DM valves are rated to 3500 psi (240 bar) max.

How to Order

| Name | Lube points (#) | Basic valve without connectors | Basic valve with U-81-XX connectors | Basic valve without indicator stem | Basic valve without indicator tower for harsh environments |
|----------|-----------------|--------------------------------|-------------------------------------|------------------------------------|--|
| DD Valve | 2 | DD22-250 | DD22-250T ¹ | DD22-251 | --- |
| | 4 | DD24-250 | DD24-250T ¹ | DD24-251 | --- |
| | 6 | DD26-250 | DD26-250T ¹ | DD26-251 | --- |
| | 8 | DD28-250 | DD28-250T ¹ | DD28-251 | --- |
| | 2 | DD52-250 | DD52-250T ² | DD52-251 | DD52250206 ⁴ |
| | 4 | DD54-250 | DD54-250T ² | DD54-251 | DD54250206 ⁴ |
| | 6 | DD56-250 | DD56-250T ² | DD56-251 | DD56250206 ⁴ |
| | 8 | DD58-250 | DD58-250T ² | DD58-251 | DD58250206 ⁴ |
| | 10 | DD510-250 | DD510-250T ² | | --- |
| | 12 | DD512-250 | DD512-250T ² | | --- |
| | 12 | DD512C-250 (BSPP) | --- | | --- |
| | DM Valve | 1 | DM31-100 | DM31-100T ² | |
| 2 | | DM32-100 | DM32-100T ² | | --- |
| 3 | | DM33-100 | DM33-100T ² | | --- |
| 4 | | DM34-100 | DM34-100T ² | | --- |
| 1 | | DM41-100 | DM41-100T ² | | --- |
| 2 | | DM42-100 | DM42-100T ² | | --- |
| 3 | | DM43-100 | DM43-100T ² | | --- |
| 4 | | DM44-100 | DM44-100T ² | | --- |
| 1 | | DM51-100 | DM51-100T ² | | --- |
| 2 | | DM52-100 | DM52-100T ² | | --- |
| 3 | | DM53-100 | DM53-100T ² | | --- |
| 4 | | DM54-100 | DM54-100T ² | | --- |
| 1 | | DM61-100A | DM61-100AT ² | | --- |
| 2 | | DM62-100A | DM62-100AT ² | | --- |
| 1 | | DM62-101A ³ | DM62-101AT ² | | --- |

¹ Supply 1/4" tube; discharge 3/16" tube ² Supply 3/8" tube; discharge 1/4" tube ³ Discharge supply 2 x DM61

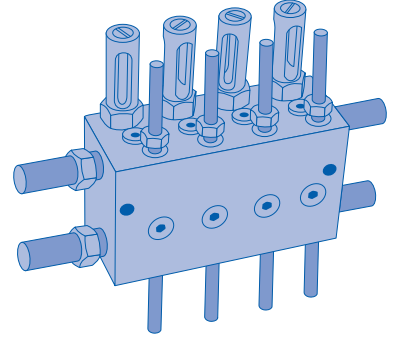
⁴ Output volume is not adjustable and fixed at maximum

When ordering, specify by name, lube points and part number, e.g. DM Valve without connectors, 3 lube points, Part #DM33-100.

Typical Layout

DD Valve

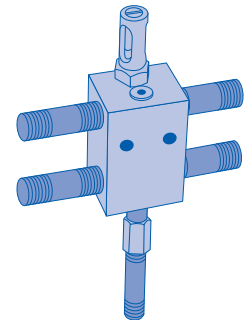
A typical four valve DD block with eight discharge ports. The valves can easily be converted from dual to single discharge by a cross porting kit. Valve can be reconverted later to dual discharge.



1. Brass indicator housing standard
2. Solid copper crush washers for superior sealing
3. Viton seals standard 350°F (163°C)
4. Easy ID if using single or dual outlet plugs
5. Stainless steel indicator pins standard
6. NPT or BSP outlets available will accept all standard fittings and U81 fittings
7. 10,000 psi rated Koenig plugs used to seal machining ports
8. Solid pin connection to main piston
9. Available in 1-12 lubrication outlets

DM Valve

A typical one valve DM block. Valve has a discharge port on the bottom. A four valve block would have four discharge ports.



1. Supply ports from pump
2. Adjustment screw (varies valve output)
3. Indicator stem (shows that valve is operating)
4. Check valve (required in discharge port of some oil systems)

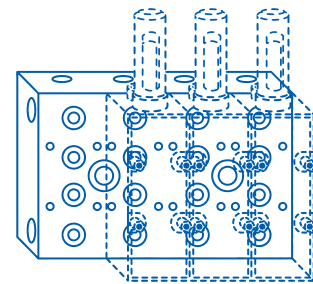
DDM & SDM Modular Valves

Dualine DDM and SDM lubricating valves have many advantages over traditional line mounted models. All working parts are in the module and these modules are fitted to base manifolds which are permanently fitted to the centralized lubrication system. The double discharge module DDM feeds two lubrication points on alternative system cycles while the single discharge module SDM feeds a single lubrication point on each cycle.

A mixture of double and single discharge modules can be fitted to each manifold either for assembly to serve an odd number of bearings or to give a greater lubricant quantity to selected points. Three sizes of modules can be supplied to cover a wide range of metered application volumes.

Benefits

- + Modules can be individually adjusted within its capacity to suit bearing requirements.
- + A malfunctioning module can be changed in seconds, reducing maintenance time and costs.
- + Positive hydraulic operation – Within design limitations, these valve assemblies can be mounted long distances from the central pumping station.
- + Visual indicator showing operation of each module.
- + Body protected by corrosion resistant electrophoretic paint.



Technical Data

| | | | |
|--|----------------------------------|-------------------------------------|-----------------------|
| Maximum Supply Pressure | 5075 psi (350 bar) | | |
| Temperature Range | -5°F to 248°F (-20°C to 120°C) | | |
| | -5°F to 194°F (-20°C to 90°C) | | |
| Lubricant | Oil or grease (NLGI grade 3 max) | | |
| Materials | Body | Steel - Electrophoretically painted | |
| | Pistons | Hardened steel | |
| | Packing gland | DDM1/SDM1, DDM5/SDM5 - Brass | |
| | | DDM15/SDM15 - Steel | |
| | Seals | DDM1/SDM1; DDM5/SDM5 - Viton | |
| | | DDM15/SDM15 - Nitrile | |
| | Indicator stem | Stainless steel | |
| Discharge per Outlet per Double Cycle | Valve size | Maximum | Minimum |
| | DDM1 | 1.0cc (0.06 cu. in.) | 0.1cc (0.006 cu. in.) |
| | SDM1 | 2.0cc (0.12 cu. in.) | 0.2cc (0.012 cu. in.) |
| | DDM5 | 5.0cc (0.31 cu. in.) | 0.5cc (0.031 cu. in.) |
| | SDM5 | 10.0cc (0.61 cu. in.) | 1.0cc (0.061 cu. in.) |
| | DDM15 | 15.0cc (0.92 cu. in.) | 3.0cc (0.183 cu. in.) |
| | SDM15 | 30.0cc (1.83 cu. in.) | 6.0cc (0.366 cu. in.) |

Manifolds

Three ranges of base manifolds suitable for mounting the modular measuring valves, DDM1, SDM1, DDM5, SDM5, DDM15 and SDM15.

Benefits

- + Manifolds can be permanently fixed to the lubrication system pipe work before valves are fitted, reducing possibility of contamination during installation period.
- + O-ring recesses are fitted into the top of the adapter so that the fitter can observe the condition of O-rings when he is fitting the module.
- + Manifolds are available in various sizes for multiple module configurations.

How to Order

DDM/SDM modular valves and manifolds feature a smart part number ordering system, where you can tailor the modular valves and manifold to meet your needs.

For modular valves:

First, choose the module type, valve size and visual indicator you need. Then, put the numbers into the corresponding squares in the easy-to-use grid.

Example: To order a DDM1 modular valve with double indicator and a visual indicator with cover, you would use Part #DDM11A0100.

For manifolds:

First, choose the manifold type and number of outlets. Then, put the numbers into the corresponding squares in the easy-to-use grid.

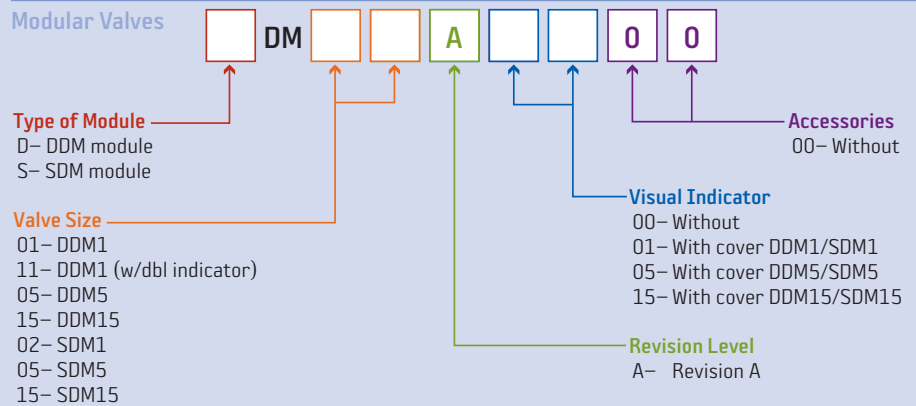
Example: To order a MA1 manifold with 8 outlets, you would use Part #MA108A00.

You now have the customized part numbers for both your modular valve and manifold.

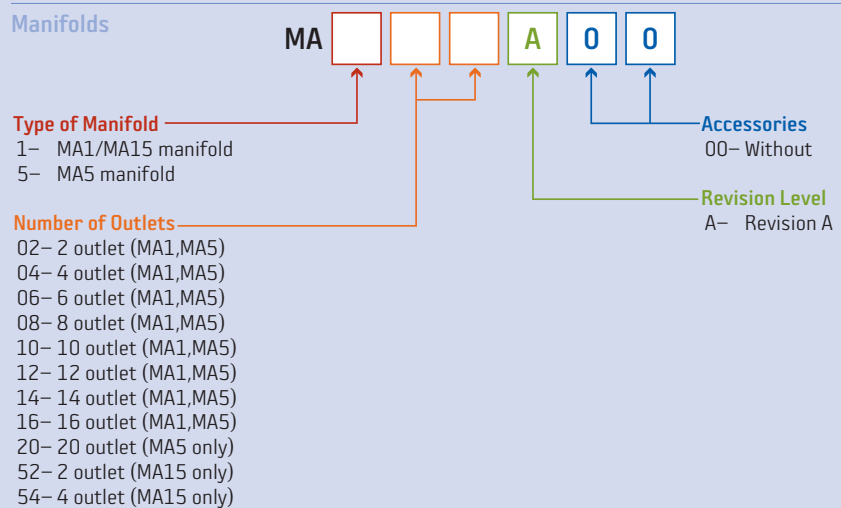
For mounting kits:

When ordering mounting kits, specify by description, name and part number listed in the table, e.g. DDM1 Mounting Kit, Part #DDM500001E.

Modular Valves



Manifolds



Mounting Kits

| Name | Type | Description | Part # |
|---------------|-----------------------|-------------|--------------|
| Mounting Kits | Valve ¹ | DDM1/SDM1 | DDM100050 |
| | | DDM5/SDM5 | DDM500050 |
| | | DDM15/SDM15 | DDM150050 |
| | Manifold ² | MA1 | MA1022204E |
| | | MA5/MA15 | MA515022003E |

¹ One kit is required per valve. Each kit includes 4 screws and 4 O-rings.

² One kit is required per manifold. Each kit includes 2 screws and plugs.

Lube Point Monitor

General

The 55105 Lube Point Monitor is an accurate oval gear mechanism that incorporates two magnets into one of the nylon oval gears. The body incorporates a reed switch which senses the magnet passing. Lubricant entering the 55105 causes the gears to rotate. Each pulse equates to an approximate displacement of 0.040 cu. in. (.65cc). The monitoring of the 55105 is done with any PLC. The feedback from the 55105 will assure that lubricant has reached the inlet of critical lubrication points.

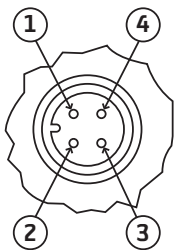
Application

The 55105 Lube Point Monitor is intended to be mounted at or near the lubrication point inlet. It can be used with any type of grease or oil system (Dualine/Progressive/PDI). Due to the nature of the internals, proper filtration is required to keep contaminants out of the monitor body.

Technical Data

| | | |
|---------------------|--------------------------------------|----------|
| Flow | 0-2500cc/min. | |
| Maximum Pressure | 10153 psi (700 bar) | |
| Accuracy | ±3% | |
| Vibrations | 20 g (10-20000 Hz) | |
| Life Time | 10 ⁹ pulses | |
| Temperature | -4°F to 158°F (-20°C to 70°C) | |
| Connections | 1/8" NPT | |
| Material | Aluminum | |
| Weight | 0.186 kg | |
| Lubricant | ISO VG 32 Oil to NLGI Grade 2 Grease | |
| IP Enclosure Rating | IP-67 | |
| Connection | 4-pole M12 x 1 (male) | |
| Switch Rating | Maximum Voltage | 0-24 VDC |
| | Maximum Current | 0.20 amp |

Wiring



| PIN # | Description | Wire Color |
|-------|-------------|------------|
| 1 | Common | Brown |
| 4 | Signal | Black |



See Datasheet #35978 for additional information.

Lubricators

DA Series Manual Lubricators

To support the successful operation of Dualine measuring valves and to ensure their performance, Bijur Delimon has designed equally rugged pumping units which provide a dependable high-pressure source of lubricant supply.

For bearings that require an application of lubricant once or twice per shift, a manually-operated central pumping unit is used. These units consist of a double-acting piston pump, reciprocated by a hand lever through a rack-and-gear segment. A quick-fill connection provides a convenient means of filling the reservoir, and an inlet filter screen gives added protection against the entry of dirt. They may be located on the machine being lubricated or at any convenient point nearby. When the lubricant is oil, a float with oil level rod replaces the grease follower plate. Three sizes of reservoirs provide a supply of lubricant adequate for the number of bearings being lubricated.

Technical Data

| | | |
|---------------------------|--------|---|
| Reservoir Capacity | Grease | 2 kg (4.5 lb), 4 kg (8.25 lb), 6 kg (12.5 lb) |
| | Oil | 2.4 liter (2.5 qt) |
| Discharge | | 7.4cc (0.45 cu. in.) |
| Viscosity Range | Grease | NLGI grade 000-2 |
| | Oil | ISO-32 and greater |
| Internal Filter | | Available on all models |
| Pressure Gauge | | Available on all models |
| Cycle Indicator | | Available on some models |
| Max Pressure | | 3500 psi (241 bar) |



See Datasheet #35495 for additional information.

How To Order

When ordering, specify by name, lubricant, reservoir capacity and part number, e.g. DA manual lubricator, grease, 12.5 lb reservoir, **Part #DA6101AC**.

| Name | Lubricant | Reservoir Capacity | Part # |
|----------------------|-----------|--------------------|----------|
| DA Manual Lubricator | Grease | 2 kg (4.5 lb) | DA4101AC |
| | | 4 kg (8.25 lb) | DA5101AC |
| | | 6 kg (12.5 lb) | DA6101AC |
| | Oil | 2.4 liter (2.5 qt) | DA4101BC |

Air-operated Barrel Pumps

Air-operated barrel pumps are used where medium to heavy duty service conditions exist and rapid build-up of lubricating system pressure is desired in air-operated central stations.

Notes

- + Built-in air exhaust muffler is standard on all pumps.
- + Grease pumps incorporate an inlet strainer.
- + Bung adapter is included with all pumps.
- + Part #9035, #9120 and #9400 all include return tube (hose on #9035) to bottom of drum.
- + Part #9035 includes a drum cover and follower plate.
- + Part #9120 includes a drum cover.
- + See *Catalog #27539: Industrial Lubrication* for complete pump offering.



Technical Data

| | 9035 | 9120 | 9400 |
|-----------------------|-----------------------|-----------------------|-----------------------|
| Max. Delivery* | 650cc (40 cu. in.) | 650cc (40 cu. in.) | 650cc (40 cu. in.) |
| Air Inlet | 1/4" NPT | 1/4" NPT | 1/4" NPT |
| Lube Outlet | 3/8" NPT | 3/8" NPT | 3/8" NPT |
| Height | 24" (610mm) | 36.5" (925mm) | 44" (1120mm) |
| Weight | 24 lb | 27 lb | 21 lb |

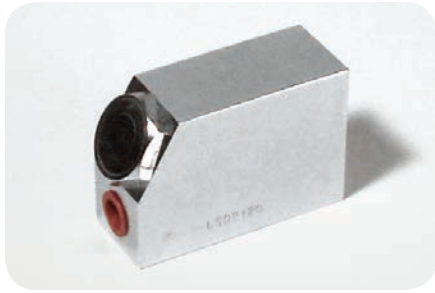
* Maximum delivery for grease pumps, free delivery with NLGI grade 2 grease @ 70°F (20°C) with 100 psi (7bar) air pressure.

How to Order

When ordering, specify name, type, ratio, drum size and part number, e.g.

Air-operated Barrel Pump, Grease, 55:1 Ratio, 35lb Drum, Part #9035.

| Name | Pump Type | Ratio | Drum Size | Part # |
|--------------------------|-----------|-------|-----------|--------|
| Air-operated Barrel Pump | Grease | 55:1 | 35 lb | 9035 |
| | | | 120 lb | 9120 |
| | | | 400 lb | 9400 |



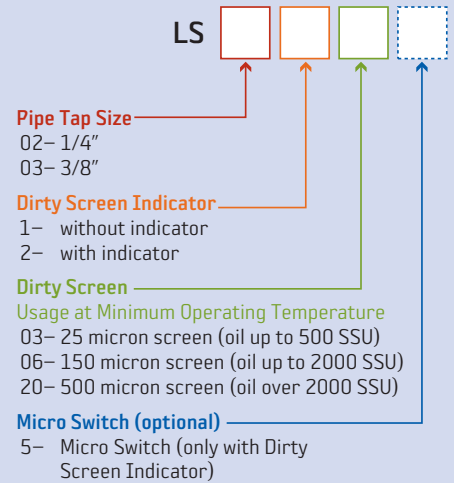
Line Strainers

Line Strainers remove foreign particles from grease and oil lines in lubricating systems.

How to Order

Line strainers feature a smart part number ordering system. First, choose the pipe tap size, dirty screen indicator, usage and micro switch option. Then, put the numbers into the corresponding squares in the easy-to-use grid. You now have the customized part numbers for your line strainer.

Example: To order a Line Strainer with 1/4" NPT, with dirty screen indicator and 25 micron screen, you would use Part #LS02203.



Accessories

| Name | Description | Part # |
|---|---|-----------|
| Steel follower plates | Follower for 35 lb pail | F962 |
| | Follower for 120 lb drum | F964 |
| | Follower for 400 lb drum | F966 |
| Drum covers | Heavy duty cover for 35 lb pail | F1934 |
| | Heavy duty cover for 120 lb drum | F1936 |
| | Heavy duty cover for 400 lb drum | F1938 |
| Low level switch kit* | Low level switch for 120 lb drum | LC10243 |
| | Low level switch for 400 lb drum | LC11036 |
| Air regulators and gauges | 1/2" regulator (0-250 psi range) 2" (0-160 psi) pressure gauge | F976 |
| | 3/8" regulator (0-250 psi range) 2" (0-160 psi) pressure gauge | F973 |
| Filters | 1/2" filter | F978 |
| | 3/8" filter | F975 |
| Lubricators | 1/2" lubricator | F977 |
| | 3/8" lubricator | F974 |
| Quick coupler and nipples | 1/4" NPT(F) coupler | F930 |
| | 1/4" NPT(M) nipple | F931 |
| | 3/8" NPT(M) nipple | F941 |
| | 1/2" NPT(F) coupler | F940 |
| Filter/Regulator/Lubricator Combination | 1/2" filter, 1/2" regulator (0-250 psi), 2" gauge (0-160 psi) and lubricator | F985 |
| | 3/8" filter, 3/8" regulator (0-250 psi), 2" gauge (0-160 psi) and lubricator | F984 |
| Line strainers screens | 25 micron screen (Oil only up to 500 SSU) | LS0205103 |
| | 150 micron screen (Oil only up to 2000 SSU) | LS0205106 |
| | 500 micron screen (Oil over 2000 SSU & all grease) | LS0205120 |
| Drum Heater Insulated Blankets | Fits 120 lb. drum (15 gal/57 liter) | 37506 |
| | Fits 400 lb. drum (55 gal/208 liter) | 55286 |

* Requires cover and follower plate, customer/user to provide 15/16" hole in cover, can be used with any style pump.



Drum Cover



Follower



Filter/Regulator/Lubricator Combination

Reversing Valves

In a Dualine lubricating system, the reversing valve directs pump flow to one of the two main supply lines while the second supply line is in relief to the pump reservoir. At the completion of each half lubrication cycle, the reversing valve redirects the pump and relief flow. Thus, on each succeeding half lubrication cycle, pressure and relief flow are alternated in the two main supply lines. This action causes the measuring valves to stroke and discharge lubricant to their respective bearings. In an automatic system, the reversing valve also controls maximum system pressure and pump shut down.

FR20

These reversing valves operate in conjunction with pressure switches. They control end-of-line systems (DC41 central stations and air powered systems).

Technical Data

| | | |
|---|-----------------------------------|----------|
| Maximum Flow Rate | 12 gpm (Oil) | |
| Maximum Allowable Pressure (Non-Shock) | 5000 psi (3000 psi @ relief port) | |
| Spool Configuration | 2 position, 4 way | |
| Solenoid | Push type epoxy covered coil | |
| Inrush / Holding Current | 115VAC | 0.49 amp |
| | 230VAC | 0.24 amp |
| | 24VDC | 1.5 amp |
| Seals | Buna "N" rubber | |



FR20

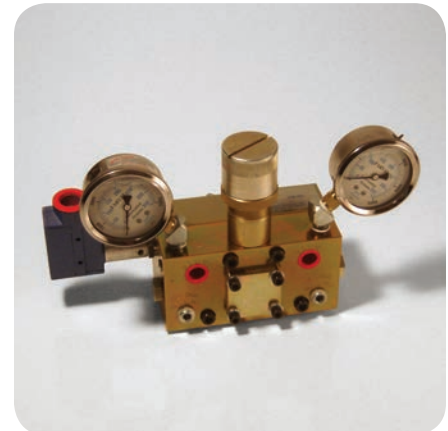
See Datasheet #35585 for additional information.

DR4-5

These reversing valves are activated by system pressure and are adjustable between 500 and 3500 psi. They control non-return and return systems using CS2000, DC36 and DC42 central stations. They are also used with air barrel pumps for spray and medium and large dualine systems.

Technical Data

| | | |
|-----------------------|-----------------------------------|---------------------------|
| Lubricant | SAE 10 oil to NLGI grade 2 grease | |
| Materials | Housing | Zinc with yellow chromate |
| | Piston | Low carbon steel |
| Pressure Range | 500-3500 psi | |
| Seals | Buna "N" rubber | |



DR4-5

See Datasheet #DL1200 for additional information.

SA-V

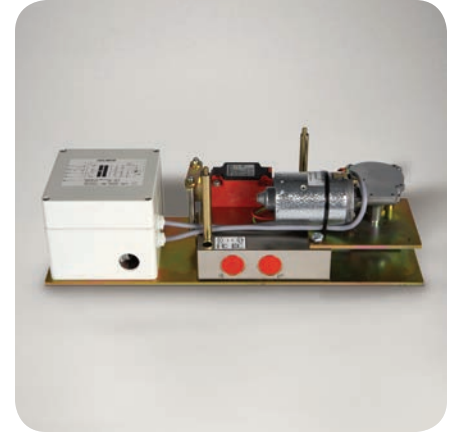
This reversing valve is designed for use in hydraulic Dualine systems. It can be used as a 4/2 or a 3/2 valve and is driven by a direct current geared motor.

Technical Data

| | |
|----------------------------|-------------------------------|
| Maximum Operating Pressure | 5800 psi (400 bar) |
| Temperature Range | -4°F to 176°F (-20°C to 80°C) |
| Maximum Power Consumption | 42 W |
| IP Enclosure Rating | IP-65 |

SG-A Switching Device

The switching device SG-A must be used in conjunction with the SA-V reversing valve. It is used as a differential pressure switch. When the differential pressure is 50 bar and/or 100 bar, the SA-V releases a pulse for the reversion of the directional control valve or for the monitoring of the system.



SA-V



SG-A Switching Device

How to Order

When ordering, specify name, description and part number, e.g. DR4-5 Reversing Valve with limit switch, pressure gauges and mounting bracket, **Part #DR459**.

| Name | Description | Part # |
|-------------------------|--|---------------------|
| FR20 ^{1&5} | 115 VAC (50-60 Hz), Not supplied with mounting kit. | 37149115N1 |
| | 115 VAC (50-60 Hz), Supplied on DC41 w/ mounting brackets and hardware. | 37149115N2 |
| | 230 VAC (50-60 Hz), Not supplied with mounting kit. | 37149230N1 |
| | 24 VDC, Not supplied with mounting kit. | 3714924N1 |
| DR4-5 | Basic valve. | DR45 |
| | Valve with limit switch, pressure gauges and mounting bracket. | DR459 |
| | Valve with limit switch, pressure gauges and line connecting hardware. | DR45K |
| | Valve with limit switch, pressure gauges, mounting brackets and line strainer. | DR460A ³ |
| | Valve with limit switch, pressure gauges, mounting brackets and line strainer. | DR460B ⁴ |
| SA-V ² | 110-127 VAC and 200-240 VAC | SAV11A00 |
| | 24 VDC | SAV24A00 |
| SG-A | 50 Bar | SGA05A00 |
| | 100 Bar | SGA10A00 |

¹ Refer to Datasheet #35585: FR20 Reversing Valve, for all available versions.

² SGA-A switching device is required for SA-V.

³ Grease only

⁴ Oil only

⁵ Operates in conjunction with pressure switches(2), p.n. U620D1

Central Stations

Central stations store, control and supply the lubricant to Dualine systems. The major components are a motor, pump, reservoir and reversing valve.

Central stations are available in 7 series: DPG, CS2000, DC36, DC41, DC42, BM-B and BS-B. Each series offers a different capability in terms of type and quantity of lubricant which can be handled and type of system that can be served. Each is available with motor and reservoir options and optional high or low level switches as indicated.

DPG

The DPG Pneumatic Lubricator is an air-operated reciprocating lubricator that discharges a fixed amount of lubricant into systems during a lubrication cycle. It includes a transparent reservoir with low level and spring loaded follower, reversing valve, grease strainer, FRL, air solenoid valve and a filler fitting for refilling of reservoir.



DPG Lubricator

CS2000

CS2000 stations store, control, and supply the lubricant to systems. Depending on reservoir size, they can be used in systems that service anything from small machine tools to large machinery in steel mills, or from small to large off road machinery such as power drills, power shovel, and drag lines.

Standard items on these stations include a switch arrangement for automatic level warning systems, visual level indication, an adjustable relief valve and an electrically driven pump. A variety of reservoir types and sizes and a high level warning switch are offered. Kits are also available for mounting controls and NEMA 4 applications.



CS2000 Station

DC36

DC36 stations store, control, and supply lubricant to systems. The lubricant must be oil with a viscosity of not greater than 1900 SSU at 100°F. DC36 stations can be used in systems that service equipment requiring oil lubrication such as machine tools and transfer equipment.

Standard items on these stations include a low level warning switch for connection to lights or horns, oil level sight gauge, a 30 mesh oil filter and an air breather cap in the oil filler port.



DC36 Station

DC41 & DC42

DC41 and DC42 stations can supply either oil or grease to such installations as bar mills, billet mills, blast furnaces, and sintering machines. The two systems differ in the way they alternately pressurize and relieve (reverse) the two supply lines as well as in the way they control maximum system pressure and end the lubrication cycle. On DC41 systems, pressure is controlled by a pressure switch (one is installed in each line) that actuates the reversing valve (FR20) and stops the pump motor when system pressure rises to its setting. On DC42 systems, pressure is controlled by the reversing valve (DR45). The valve opens a micro switch, which stops the pump motor when system pressure rises to its setting. Timer controls for each type tailored to meet its specific requirements are available.



DC41 Station

Technical Data

| | DPG | CS2000 | DC36 | DC41 | DC42 |
|----------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|
| Pump Output | 6.0 in ³ /min | 6.0 in ³ /min | 69.0 in ³ /min | 33.6 in ³ /min | 33.6 in ³ /min |
| Pump Type | Air-reciprocating | Double Piston | Gear | Double Piston | Double Piston |
| Max. Work Pressure | 3000 psi | 3500 psi | 1500 psi | 3000 psi | 3000 psi |
| Relief Pressure | N.A. | 3000 psi | 1000 psi | 2500 psi | 2500 psi |
| Gear Ratio-Std. | 30:1 (air) | 10:1 | N.A. | 10:1 | 10:1 |
| Pump # | 33457 | DJ-2000 | U-985-9W | DJ4-5 | DJ4-5 |
| Reversing Valve | DR45 | DR4-5 | DR4-5 | FR20 (SOL type) | DR4-5 |
| Rev. Press-Factory Setting | 1500 psi | 1500 psi | 700 psi | N.A. ² | 1500 psi |
| Rev. Press-Range | 1200-1500 psi | 500-3500 psi | 500-1000 psi | N.A. ² | 500-3500 psi |
| Motor | N.A. | Optional | Optional | Optional | Optional |
| Motor HP | N.A. | 1/3 | 1/3 | 1 | 1 |
| Motor Enclosure | N.A. | TEFC | TEFC | TEFC | TEFC |
| Motor Frame Size | N.A. | 48 | 56 | 143/145T | 143/145T |
| Low Level Switch | Yes | Yes | Yes | Optional | Optional |
| High Level Switch | No | Optional | Optional | Optional | Optional |
| Rev. Valve Limit Switch | Yes | Yes | Yes | No | Yes |
| Lubricant | Oil/Grease | Oil/Grease | Oil | Oil/Grease | Oil/Grease |
| System Type | Non-Return ¹ | Non-Return ¹ | Loop | EOL | Non-Return ¹ |

¹ Field Conversion for Loop Operation ² Controlled by end of line pressure switches (see Catalog #1800G: Fittings, Accessories, Regulators and Lubricators)

How to Order

When ordering, specify by model, voltage, reservoir and part number, e.g. Central Station CS2000, 230/460 VAC (50/60 Hz), 10 lb steel reservoir, **Part #CS2212**.

For other available voltages consult Bijur Delimon customer service.

| Model | Voltage | Reservoir | Level Switches | | Part # | |
|--------|---------------------------------------|------------------------|----------------|------|------------|---------------|
| | | | Low | High | With Motor | Without Motor |
| DPG | 120 VAC (50/60 Hz) | 10 lb Plastic (Grease) | X | | 39948 | --- |
| | | 5 Liter Plastic (Oil) | X | | 37629 | |
| CS2000 | Three Phase 230/460 VAC (50/60 Hz) | 6 gallon steel | X | | CS2206 | --- |
| | | | X | X | CS2207 | --- |
| | | 10 lb plastic | X | | CS2210 | CS2410* |
| | | | X | X | CS2211 | --- |
| | | 10 lb steel | X | | CS2212 | --- |
| | | 24 lb steel | X | | CS2224 | CS2424* |
| | | | X | X | CS2225 | CS2425* |
| | | 100 lb steel | X | X | CS22101 | CS24101* |
| DC36 | Three Phase 230/460 VAC (50/60 Hz) | 30 gallon steel | X | | DC36M-30B | DC36-30B |
| DC41 | Three Phase 230/460 VAC (50/60 Hz) | 100 lb steel | X | X | DC41M-31C | --- |
| | | 200 lb steel | | | --- | DC41-32A |
| | | | X | X | DC41M-32C | DC41-32C |
| DC42 | Three Phase 230/460 VAC (50/60 Hz) | 30 gallon steel | X | X | DC42M-33D | DC42-33D |
| | | 100 lb steel | X | X | DC42M-31C | --- |
| | | 200 lb steel | | | DC42M-32A | --- |
| | | | X | X | DC42M-32C | DC42-32C |

* Motor Mounting Kit is required for CS2000 without motor: 48 FR use Part #LC10705, 56 FR use Part #LC10706.

BM-B & BS-B

In applications where electricity is available to power the lubricator, our BM-B and BS-B models are ideally suited to be the heart of a lubrication system. These pumps are robust for harsh and severe applications and their compact construction of high-grade steel gives them a long service life. They are ideally suited to service medium- and large-sized machinery. They can also be used for refilling and mobile greasing systems.

BM-B and BS-B lubricators do not ship with a reversing valve. See pages 14-15 for a selection of Bijur Delimon reversing valves. The lubricators are valveless, positive displacement pumps consisting of a series of pistons actuated in a controlled sequence by an eccentric cam. The motion develops a controlled suction and discharge action, producing a rugged, trouble-free lubricator.

A pressure relief valve is standard on both versions. This device can be adjusted to control operating pressure to the rest of the lubrication system. A grease agitator and wedge plate assembly are also standard on the BM-B and BS-B, working the reservoir grease and assisting in lubricator performance. An ultrasonic level switch and pressure gauge are available as optional accessories.

Technical Data

| | | |
|--|-------------------------------|--|
| Maximum Working Pressure | 5800 psi (400 bar) | |
| Grease | NLGI grade 000-2 | |
| Other Greases and Oils (Includes synthetic types) | Consult Bijur Delimon | |
| Reservoir Capacity | BM-B | 8 liter (16.5 lb), 15 liter (31.5 lb) and 30 liter (63 lb) |
| | BS-B | 60 liter (126 lb), 100 liter (210 lb) |
| Discharge | BM-B | 2 & 4 liter/h, dependant upon driving speed |
| | BS-B | 7, 4 & 22 liter/h, dependant upon driving speed |
| Maximum Outputs, Nominal (Ref. motor sizes) | BM-B | 63 rpm 40cc/min. (2.44 cu. in./min.) |
| | | 125 rpm 80cc/min. (4.88 cu. in./min.) |
| | BS-B | 80 rpm 120cc/min. (7.3 cu. in./min.) |
| | | 160 rpm 235cc/min. (14.3 cu. in./min.) |
| | | 250 rpm 365cc/min. (22.2 cu. in./min.) |
| Temperature Range (Ambient) | -5°F to 176°F (-20°C to 80°C) | |
| Built-in Pressure Relief Value | 0 to 5800 psi (0 to 40 bar) | |



BM-B

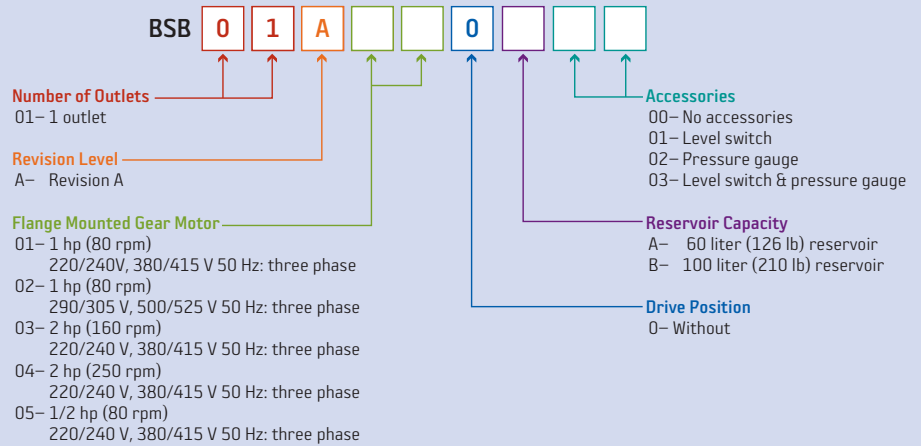
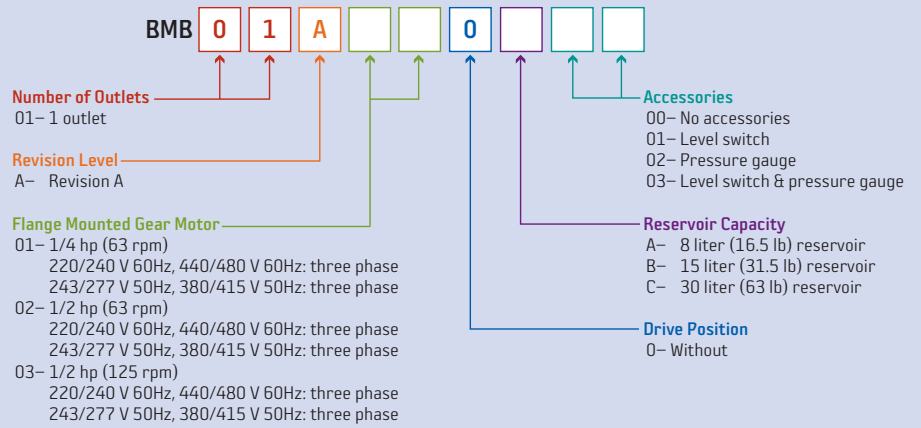


BS-B

How to Order

BM-B and BS-B Lubricators feature a smart part number ordering system, where you can tailor the lubricator to meet your needs. First, choose the gear motor, reservoir capacity and accessories you need. Then, put the numbers into the corresponding squares in the easy-to-use grid. You now have the customized part numbers for your lubricator.

Example: To order a BS-B Lubricator with a 2 hp (160 rpm) three phase flange mounted gear motor, 60 liter reservoir and a level switch, you would use Part #BSB01A030A01.



Controllers

SC400

The SC400 Multi-Function Controller/Monitor is designed to operate, control and monitor all types of Dualine systems, including those having an electric or hydraulic reversing valve. The unit is easily programmed by the customer via the controller's set up mode.

The SC400 also allows customers to operate a two zone system with a single control. The SC400 has the ability to operate a pump and two zone valves. Each zone operates independently. "Two zone" feature is not available for Dualine electric reversing valve systems or for systems that require "air purge" (afterblow).

The SC400 also incorporates an automatic fill feature. The SC400 activates a fill pump (as needed) to maintain proper fluid levels.

Features

- + IP-56 Enclosure Rating, constructed of molded polyester fiberglass.
- + Chemical and temperature resistant and water tight to dripping and sprayed fluid.
- + Manual lubrication button.
- + Easy-to-use push button program review feature.
- + Automatic Fill Control: Capable of monitoring and controlling reservoir fluid level.
- + Four supported languages (English, French, Spanish, German).
- + Machine watchdog and cycle monitoring.
- + Pause (standby), jog (manual operation).
- + Critical Inputs accept PNP, NPN, or mechanical switches.
- + Accepts all BDI electric reversing valves and cycle/pressure/"end-of-line" switches.
- + CE Approved



See Datasheet #35979 for additional information.

SS2200

The SS2200 is a microprocessor-based programmable controller designed to operate single line and Dualine central lubrication systems. The SS2200 is housed in a NEMA 4X polycarbonate enclosure with a transparent cover. Visible through the cover are LED indicators for Idle, Lube and Fault modes, and a three-digit numerical display used for programming and monitoring lubrication system operation.

Features

- + Simple three key programming.
- + Controls both single line and dual line lubrication systems.
- + Operates electric or air driven pumps.
- + Time or machine cycle based operation.
- + Programmable for remote fault indication and emergency machine shutdown.
- + LED indicators and numerical displays monitor system operation.
- + EEPROM permanently stores programming without battery backup.



See Datasheet #24735 for additional information.

Technical Data

| | SC400 | SS2200 |
|-------------------------|--|--|
| Input Voltage | 85 to 265 VAC, 50/60 Hz | 115 VAC, 50/60 Hz |
| Current Consumption | 80 mA at 115 VAC (less load) 40 mA at 230 VAC (less load) | --- |
| Pump Output Rating | 8 amp (85 to 265 VAC) | Pulsed or continuous, Form A, 115 VAC, 5 amp inrush, 2 amp continuous |
| Line A Output Rating | 8 amp (90 to 250 VAC) | --- |
| Line B Output Rating | 8 amp (90 to 250 VAC) | --- |
| Enclosure Rating | IP-56 | NEMA 4X, polycarbonate |
| Ambient Temp. Range | 14°F to 131°F (-10°C to 55°C) | 20°F to 120°F (-7°C to 49°C) |
| Storage Temp. Range | -40°F to 185°F (-40°C to 85°C) | --- |
| Vibration | 2 g at resonant (3 axis) | 1.5 g |
| Idle Time Range | 1 second to 100 days | 1-999 min, 1-999 hour, 1-999 or 10-9990 machine counts |
| Machine Cycle Counts | 1 to 999,999 Counts (30 counts/second at 50% duty cycle) | --- |
| Watchdog Timer | 1 second to 60 minutes | --- |
| Monitor Time | 1 second to 24 hours | --- |
| Timing Accuracy | 0.01% (crystal controlled) | --- |
| Cycle Counts On | 1 to 999 counts | 1 to 99 counts |
| Over Counts | 0 to 9 | --- |
| Net Weight | 5 lb | --- |
| Length x Width x Height | 12.3" x 9.2" x 5" | --- |
| Permanent Memory | FLASH | EEPROM (no battery) |
| Fault Relay Contacts | 5 amp | 2 amp, 125 VAC |

How to Order

When ordering, specify by name, voltage and part number, e.g. SC400 Controller, 85-265 VAC, Part #SC400.

| Name | Voltage | Part # |
|-------------------|------------|--------|
| SC400 Controller | 85-265 VAC | SC400 |
| SS2200 Controller | 115 VAC | SS2200 |

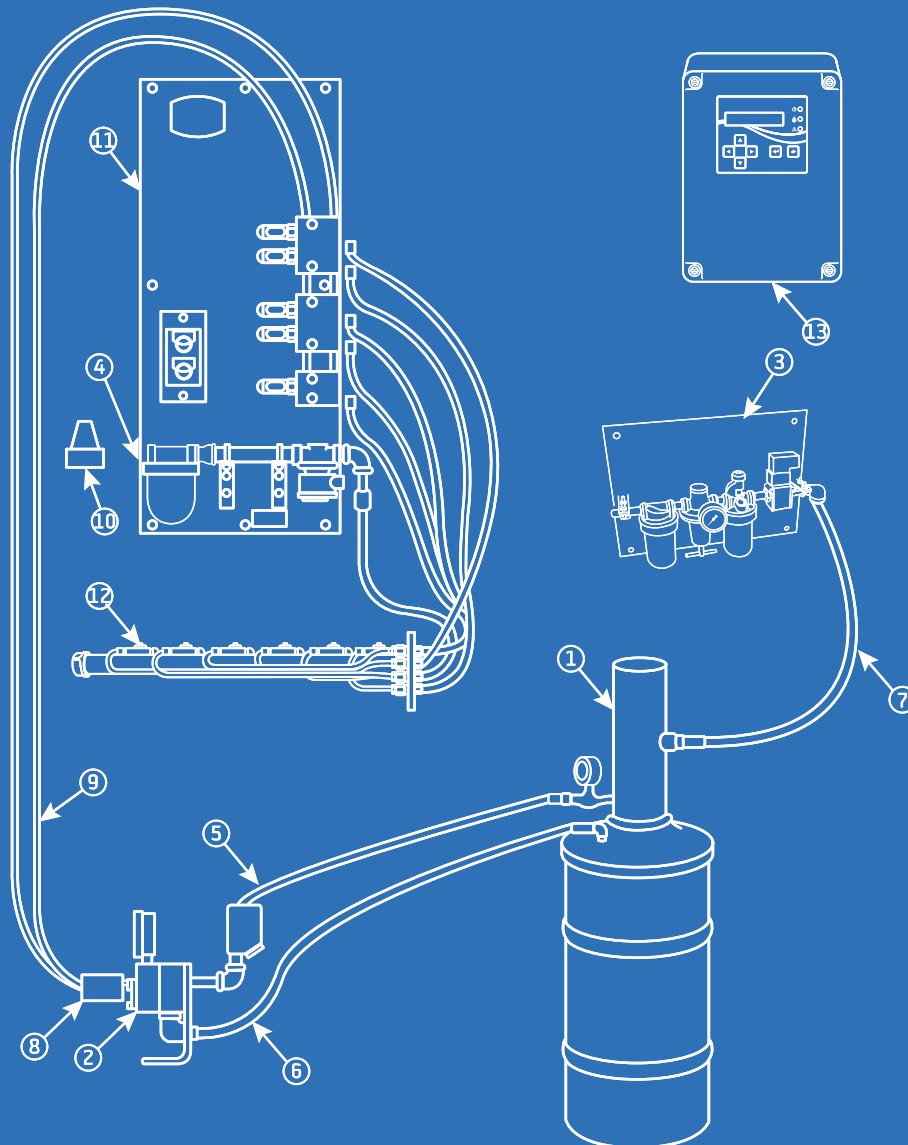
Spray Systems

Spray systems are used to lubricate large gears and pinion sets such as those found on ball mills, rod mills, kilns, etc. Each system includes an air operated pumping station (items 1 through 10 below), a measuring valve panel (item 11), a spray nozzle lance (item 12) and electrical controls (item 13).

Gear face widths of 2" to 42" can be lubricated by nozzles with appropriate spacing on the spray lance. Since gear spray systems operate intermittently, they can be thought of as film maintaining devices. The electrical controls provide broad cycling flexibility as well as fault monitoring and afterblow to purge the nozzles.

Thirteen items are required to complete a Dualine spray system. Items 1 through 10 are listed below. The Spray Lance (item 12) should be selected based on gear face width. The Valve Panel (item 11) should be selected based on the number of spray nozzles required. The SC400 controller is described in detail on pages 20-21.

Typical Layout



| Item | Description | Part # |
|------|-----------------------------------|---------------|
| 1 | 120 lb Air-operated barrel pump | 9120 |
| 2 | Reversing valve | DR4-60A |
| 3 | Air control panel | LD-7767C-A1 |
| 4 | Air pressure switch (not shown) | U-623 |
| 5 | Lube supply hose kit (72") | 200275 |
| 6 | Relief hose kit (72") | 200324 |
| 7 | Air hose kit (72") | 200325 |
| 8 | 2 way line checks | U-1929D |
| 9 | Supply line pipe or hose to panel | BY USER |
| 10 | Air regulator | F119-4G |
| 11 | Valve panel | LD-12361-VX |
| 12 | Spray lance | LD-9327-XXXXX |
| 13 | Timer control | SC400 |

The 9120 pump for 120 pound drums is recommended where solvent cut-back lubricants are used. This will intentionally require frequent drum changes to prevent drying and hardening of the lubricant. The 9400 pump for 400 pound drums is available if drying and hardening of the lubricant is not a problem.

A U-623 pressure switch (item 4) is used to give warning of low pressure and is an optional feature.

All Central Pumping Stations are for 120 Volts, 60 Cycle, but other voltages and frequencies are available.

The U-1929D two way checks are needed only if the lubricants have fluid characteristics.

How to Order

Spray Panels

| Spray Nozzles | Part # |
|---------------|-------------|
| 1 | LD-12361-V1 |
| 2 | LD-12361-V2 |
| 3 | LD-12361-V3 |
| 4 | LD-12361-V4 |
| 5 | LD-12361-V5 |
| 6 | LD-12361-V6 |
| 7 | LD-12361-V7 |

Spray Lance

| Gear Face Width | Guard Width | Spray Nozzles | Part # |
|-----------------|-------------|---------------|---------------|
| 2" | 4.5" | 1 | LD-9327-1020S |
| 3" | 5.5" | 1 | LD-9327-1030S |
| 4" | 6.5" | 1 | LD-9327-1040S |
| 5" | 7.5" | 1 | LD-9327-1050S |
| 6" | 8.5" | 1 | LD-9327-1060S |
| 7" | 9.5" | 2 | LD-9327-2070S |
| 8" | 10.5" | 2 | LD-9327-2080S |
| 9" | 11.5" | 2 | LD-9327-2090S |
| 10" | 12.5" | 2 | LD-9327-2100S |
| 11" | 13.5" | 2 | LD-9327-2110S |
| 12" | 14.5" | 3 | LD-9327-3120S |
| 13" | 15.5" | 3 | LD-9327-3130S |
| 14" | 16.5" | 3 | LD-9327-3140S |
| 15" | 17.5" | 3 | LD-9327-3150S |
| 16" | 18.5" | 3 | LD-9327-3160S |
| 17" | 19.5" | 4 | LD-9327-4170S |
| 18" | 20.5" | 4 | LD-9327-4180S |
| 19" | 21.5" | 4 | LD-9327-4190S |
| 20" | 22.5" | 4 | LD-9327-4200S |
| 21" | 23.5" | 4 | LD-9327-4210S |
| 22" | 24.5" | 5 | LD-9327-5220S |
| 23" | 25.5" | 5 | LD-9327-5230S |
| 24" | 26.6" | 5 | LD-9327-5240S |
| 25" | 27.5" | 5 | LD-9327-5250S |
| 26" | 28.5" | 6 | LD-9327-6260S |
| 27" | 29.5" | 6 | LD-9327-6270S |
| 28" | 30.5" | 6 | LD-9327-6280S |
| 29" | 31.5" | 6 | LD-9327-6290S |

| Gear Face Width | Guard Width | Spray Nozzles | Part # |
|-----------------|-------------|---------------|---------------|
| 30" | 32.5" | 6 | LD-9327-6300S |
| 31" | 33.5" | 6 | LD-9327-6310S |
| 32" | 34.5" | 7 | LD-9327-7320S |
| 33" | 35.5" | 7 | LD-9327-7330S |
| 34" | 36.5" | 7 | LD-9327-7340S |
| 35" | 37.5" | 7 | LD-9327-7350S |
| 36" | 38.5" | 7 | LD-9327-7360S |
| 37" | 39.5" | 7 | LD-9327-7370S |
| 38" | 40.5" | 8 | LD-9327-8380S |
| 39" | 41.5" | 8 | LD-9327-8390S |
| 40" | 42.5" | 8 | LD-9327-8400S |
| 41" | 43.5" | 8 | LD-9327-8410S |
| 42" | 44.5" | 8 | LD-9327-8420S |

When ordering Spray Panels, specify by name, number of spray nozzles and part number, e.g. Spray Panel, 3 Spray Nozzles, **Part #LD-12361-V3**.

When ordering Spray Lance, specify by name, gear face width and part number, e.g. Spray Lance, 8" Gear Face Width, **Part #LD-9327-2080S**.

See Operators Manual #DL3100 for additional information.



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Innovators of engineered lubrication technology **since 1923**

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