

Trabon Divider Valves

312497Y

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For series progressive, oil and grease lubrication. For Professional Use Only.



Important Safety Instructions
Read all warnings and instructions in this manual. Keep these instructions.

Models/Maximum Pressure

Table 1: Maximum Pressure Lube Points

| Divider Type | Maximum Operating Pressure kPSI (MPa, bar) | Maximum Sections |
|------------------|--|------------------|
| MD | 3.0 (20.7, 207) | 2 |
| MJ | 2.0 (13.8, 138) | 8 |
| MSP/MSPSS | 3.5 (24.1, 241) | 11/8 |
| MHH | 7.5 (51.7, 517) | 8 |
| MX | 3.0 (20.7, 207) | 10 |
| MXP | 3.0 (20.7, 207) | 10 |
| MGO | See Table 2 | 11 |

Table 2: MGO Series-Flo Divider Maximum Operating Pressures

| Maximum Operating Pressure kPSI (MPa, bar) | Number of Sections |
|--|--------------------|
| 6.0 (41.4, 414) | 3 to 7 |
| 5.5 (37.9, 379) | 8 |
| 4.0 (27.6, 276) | 9 |
| 4.5 (31.0, 310) | 10 |
| 4.0 (27.6, 276) | 11 |

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| Parts | 23 | | |
| MHH Series | 25 | | |
| Technical Specifications | 25 | | |
| Dimensions (inches / mm) | 26 | | |
| Parts | 27 | | |

Warnings

The following Warnings are for the setup, use, grounding, maintenance and repair of this equipment. The exclamation point symbol alerts you to a general warning and hazard symbols refer to procedure-specific risks. Refer back to these Warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

|  WARNING | |
|--|---|
|  | <p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Specifications in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Specifications in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS forms from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. • Use equipment only for its intended purpose. Call your distributor for information. • Keep children and animals away from work area. • Comply with all applicable safety regulations. |
|   | <p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispense valve, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point dispense valve at anyone or at any part of the body. • Do not put your hand over the end of the dispense nozzle. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow Pressure Relief Procedure in this manual, when you stop spraying and before cleaning, checking, or servicing equipment. |
| | <p>CALIFORNIA PROPOSITION 65</p> <p>This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.</p> |

Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Verify pump feeding valve is stopped and disconnected from, or locked out of it's driver.
2. Using a wrench, slowly loosen inlet nut.
3. Then, using a wrench, slowly loosen each port nut.

Setup

The divider valve is shipped ready to install in your system. It has been factory-tested and should not require any additional modification.

For MJ and MX series valves only: Gaskets (a) must be installed between every valve section (b) of the block assembly to prevent leaking.

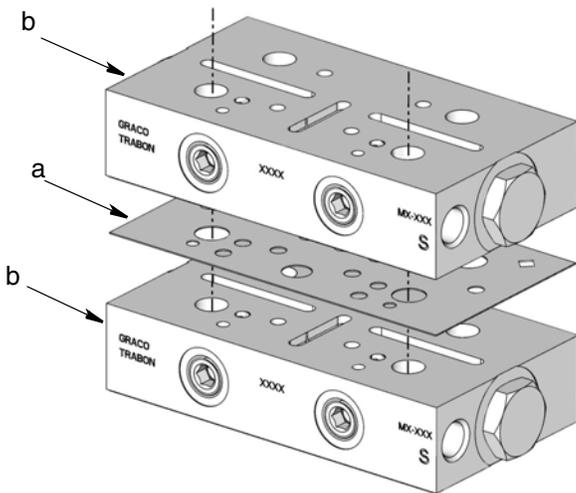


FIG. 1

NOTICE

Do not install a divider valve into a system rated for more than the valve's maximum operating pressure. This type of installation could result in o-ring damage and cause the divider valve to leak.

To install the divider valve in your system:

1. Determine an appropriate, remote mounting location.
2. Install a rupture to atmosphere fitting with a blow-out disk that is rated for 7,500 psi (52 MPa, 517 bar) or less between the force feed lubricator pump and master divider valve inlet.
3. Install an analog pressure gauge at the inlet to the divider valve.
4. Install a slow or no cycle shutdown in one of the piston enclosure plugs. Program it to shut down after no more than 180 seconds without a complete cycle.
5. Torque. See Table 4 on page 16.

As long as lubricant is supplied under pressure to the inlet section of the divider assembly, valves sections will continue to operate in a progressive manner. Divider assemblies always follow a constant discharge pattern. Whenever lubricant flow ceases, the valving pistons will stop. When flow resumes, it will start again at the same point in the discharge cycle.

Component Identification

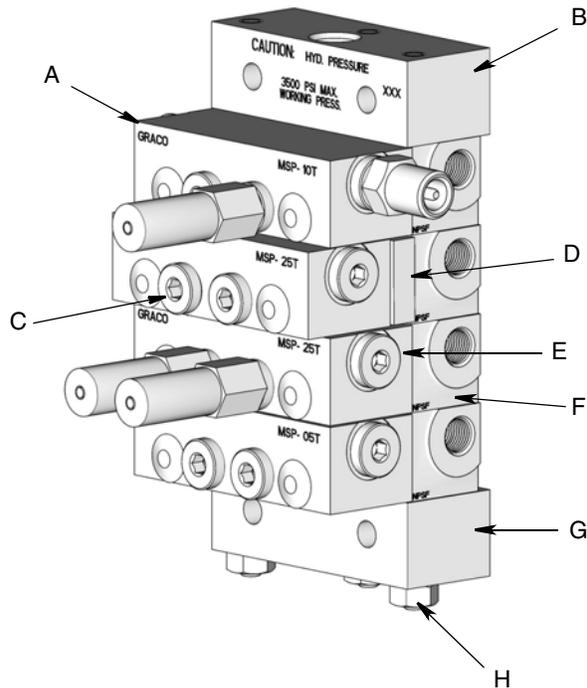


FIG. 2

Key:

- A Valve Section
- B Inlet Section
- C Indicator / Port Plug
- D Crossport Plate
- E End Plug
- F Subplates with Outlet Ports
- G End Section
- H Tie Rod Nut

Table 3: Typical Divider Valve Combinations

| MASTER | SECONDARY | TYPE OF APPLICATION |
|---------|--------------|---|
| MJ | MD | Machine tools, Printing, Wire Forging & Packaging Machinery |
| MSP | MJ, MSP | Machine tools, Textile, Glass & Can Machinery, Mobile Equipment |
| MX, MXP | MX, MXP, MSP | Cranes, Presses, Steel Mills, etc. |
| MGO | MX | Levellers, Shears, Conveyors, etc. |

Divider Valves

A Series-Flo type divider valve is a manifold proportioning device consisting of an inlet and end section plus a minimum of three valve sections. The divider valve is manifolded together with tie rods and nuts. A master divider valve is the first divider valve downstream from the lube pump. A secondary divider valve is any divider valve receiving lubricant from the master divider valve.

Valve Sections (MSP, MHH and MXP modular-type, divider valves, only)

Valve sections (three or more required per manifold) contain a piston specially fitted to that section, built in outlet check valves and various passageways that, working with the piston, meters and valves the flow of lubricant (FIG. 3).

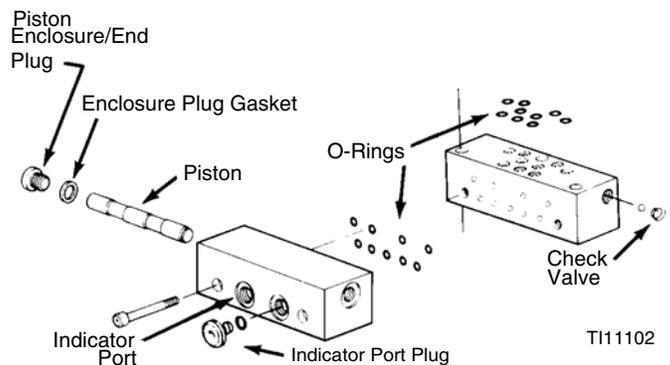


FIG. 3

Valve sections may be manufactured to require one or two lube outlets. Stamping located on the face of each section indicates:

- the style of divider valve section, i.e., MSP, MX, etc.,
- the discharge per piston stroke expressed in thousandths of cubic inches ($35 = .035 \text{ in}^3$) and,
- the number of lube outlets required (S = single, one outlet only; T = twin, two lube outlets required).

Prefilling Lubricant Distributor Lines

Follow the following procedure **exactly** as written, in the order written.

NOTICE

- The initial startup and operation is the most critical operating period for a newly installed machine in terms of potential for being damaged by unre-moved/unfiltered lubricant contaminants and lack of adequate lubrication. Proper prefilling of lubrication system ensures that lubricant is immediately available to every lube point during machine startup, protecting them from damage.
- Use only clean oil filtered to the SAE -recommended cleanliness level of ISO 18/14 (ISO Standard 4406) when prefilling a system. The manufacturers of the machine tool and its component bearings should be consulted to ensure that the ISO 18/14 cleanliness level is adequate.

Filling Secondary-to-Lube Point Lines

Refer to FIG. 4. when performing this procedure

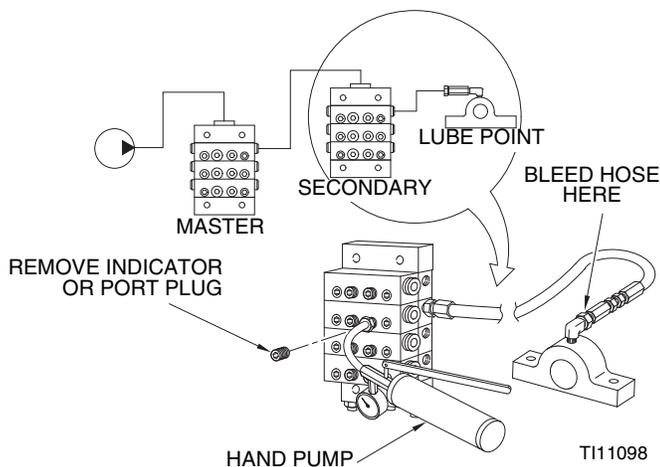


FIG. 4

- Remove port plugs or performance indicators from all of the indicator ports on front of secondary divider valves.
- Connect a hand pump filled with clean, filtered lubricant to the indicator port closest to the first line to be filled that corresponds to the output port that is feeding the line to be filled.

- In order to verify when lubricant is flowing and has reached the end of the lube line, loosen the connector at the lube point of the line that is to be filled.
- Stroke the hand pump until air-free lubricant is observed flowing from the end of the lube line.
- Tighten the lube line connector at the lube point, but do not replace the port plugs or performance indicators into the ports on the front of the working section.
- Repeat steps 1-5 for each of the other lube lines connected to the other outlet ports in the secondary divider valve assembly and for any other secondary divider assemblies in the system.

NOTE: Do not replace any of the performance indicators or port plugs removed in Step 1 until the line-filling procedure described in Section 2 (Filling Master -to-Secondary Lube Lines) has been completed.

Filling Master-to-Secondary Lube Lines

Refer to FIG. 5. when performing this procedure.

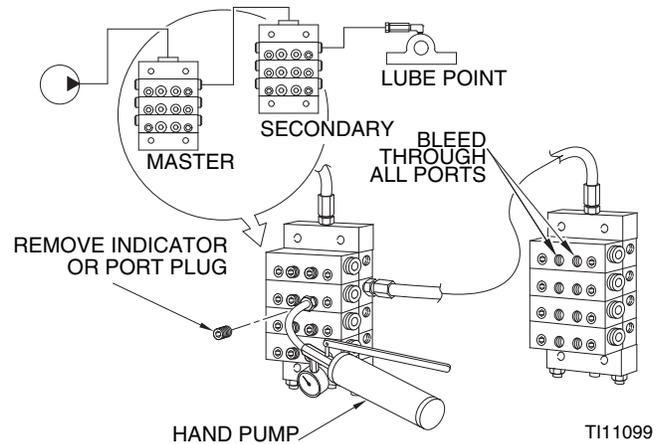


FIG. 5

- Remove the port plugs or performance indicators from all the indicator ports on the front of the master divider valve.
- Connect a hand pump filled with clean, filtered lubricant to the indicator port closest to the lube output port that is feeding the line to the secondary divider valve.
- Stroke the hand pump to fill the line between the master divider valve and secondary divider valve.

4. Continue to stroke the pump until the lubricant purges all the air out of the internal passages of the secondary divider valve and lubricant flows freely from all indicator ports with no evidence of included air.
5. Reinstall the port plugs or performance indicators in their respective positions in the secondary divider valve. Do not replace the port plugs or performance indicators in the master divider valve yet.
6. Repeat Steps 1-5 for each of the other lube lines between the master divider valve and all other secondary divider valves.

NOTE: Do not replace any of the performance indicators or port plugs removed in Step 1 from the master divider valve assembly until the air-purging procedure described in Section 3 (Filling Master Divider Valve) has been completed.

Filling Master Divider Valve

Refer to FIG. 6. when performing this procedure.

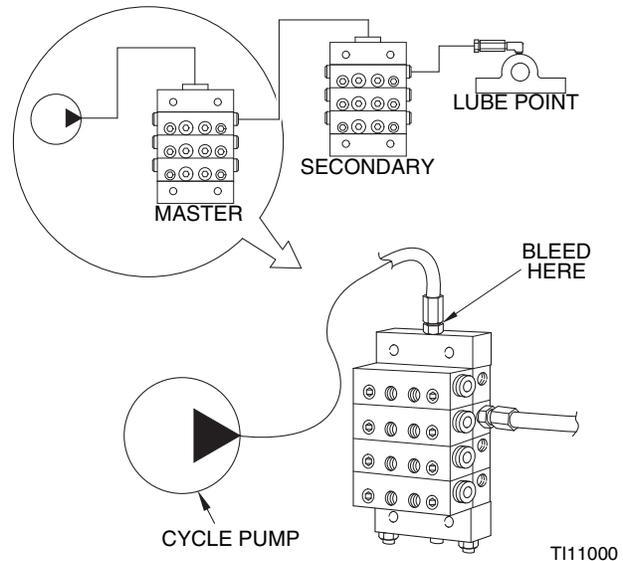


FIG. 6

1. Verify that all port plugs or performance indicators have been removed from all indicator ports in the master divider valve.
2. Verify that the system pump is properly connected to the inlet port of the master divider valve.
3. Cycle the system pump sufficiently to fill the main feeder line between the pump and the master divider valve and the lubricant is observed being discharged from all of the indicator ports on the front of the master divider valve with no evidence of included air.
4. Reinstall the master divider valve port plugs or performance indicators into their respective positions.

Repair

General Repair Instructions



- Before performing any repair procedures, **relieve pressure**, page 2.
- Pressure test distribution blocks yearly or every 8000 hours. Replace seals and divider valves as necessary.

Purging Air From the System

Before machine operation is resumed following maintenance or repair, manual system air purging must be performed.

There are several air purging procedures available depending upon the maintenance or repair procedure.

NOTE: Use only clean oil filtered to the SAE -recommended cleanliness level of ISO 18/14 (ISO Standard 4406) when prefilling a system. The manufacturers of the machine tool and its component bearings should be consulted to ensure that the ISO 18/14 cleanliness level is adequate.

| Page | Section | Air purging after: |
|------|---------|--|
| 9 | 1 | Replacing line between a secondary divider valve and lube point. |
| 10 | 2 | Replacing a line between the master divider valve and a secondary divider valve. |
| 11 | 3 | Replacing a line between pump and master divider valve. |
| 12 | 4 | Adding or replacing any component in a master divider valve assembly. |
| 13 | 5 | Adding or replacing any component in module in a secondary divider valve assembly. |

Section 1: Purging Air from Secondary Divider Valve Lube-to-Lube Point Lines

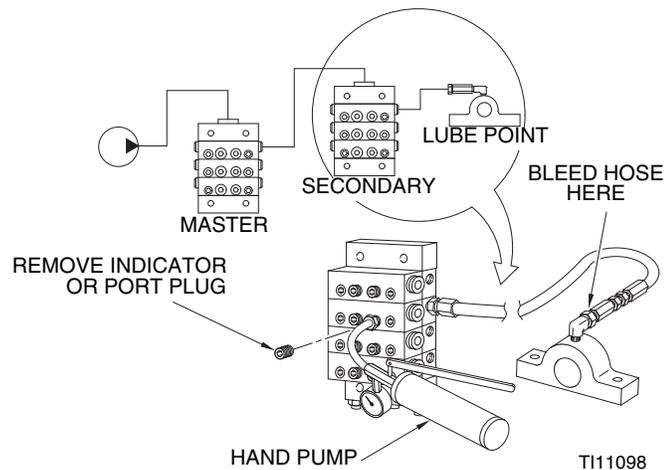


FIG. 7

Steps 1-6, refer to FIG. 7.

1. Install the line from the secondary divider valve to the lube point, but do not completely tighten the connection at the lube point.
2. Remove the performance indicator port plug or the performance indicator from the working valve section on the secondary divider valve assembly corresponding to the outlet port and the line connected to the lube point.
3. Attach a hand pump filled with clean, filtered lubricant to the port on the secondary divider valve that was opened in Step 2.
4. Operate the hand pump until air-free lubricant is observed flowing from the line at the lubrication point.
5. Tighten the fitting at the lubrication point while lubricant is still flowing.
6. Remove the hand pump and reinstall the performance indicator or indicator port plug removed in Step 2.

NOTE: If check valves were not installed at the lubrication point, lubricant may continually drain out of the line when the secondary port is open. Therefore, when check valves are not used, the method for bleeding this line is to tighten the line at both ends and repeatedly cycle the secondary divider valve via hand pump operation until lubricant, free of air, flows from the lubrication point

Section 2: Purging Air from Master to Secondary Divider Valve Lube Lines

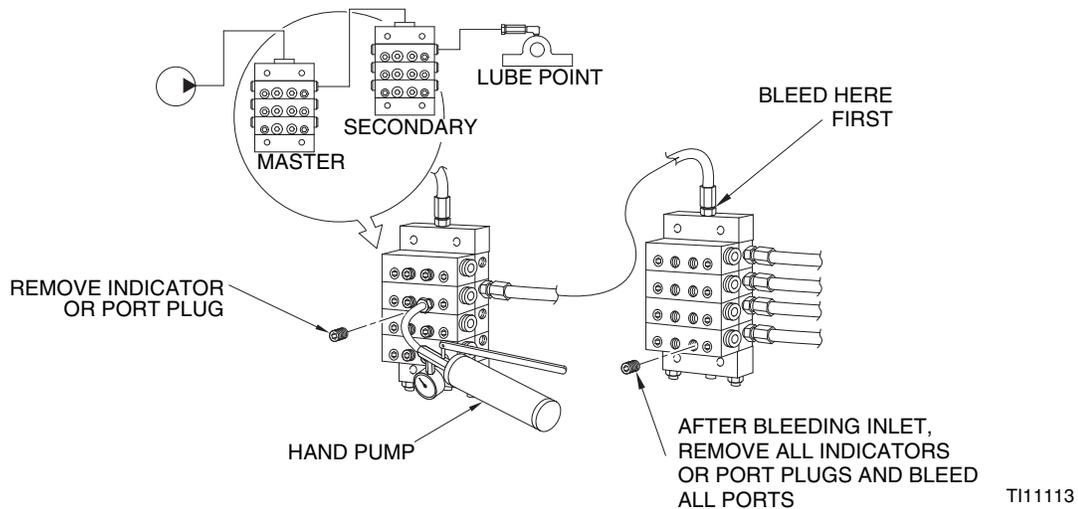


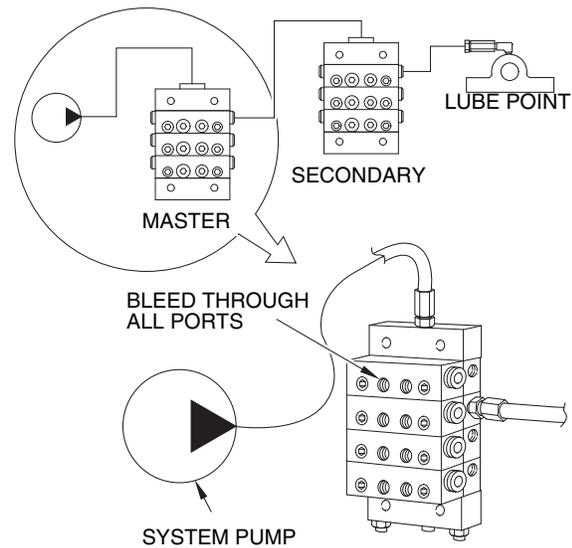
FIG. 8

Steps 1- 9, refer to FIG. 8.

1. Install the lines from the master divider valve to the secondary divider valve, but do not completely tighten the connection at the secondary divider valve's inlet.
2. Remove the performance indicator port plug or the performance indicator from the working valve section on the master divider valve assembly corresponding to the outlet port and the line connected to the secondary valve.
3. Attach a hand pump filled with clean, filtered lubricant on the master divider valve that was opened in Step 2.
4. Operate the hand pump until air-free lubricant is observed flowing freely from the secondary valve's lube inlet connector.
5. Tighten the fitting at the secondary valve's inlet while lubricant is still flowing.
6. Remove all of the indicators or indicator port plugs from the secondary divider valve's working sections.
7. Operate the hand pump again until air-free lubricant is observed flowing out of all the secondary divider valve's indicator ports.
8. Reinstall all of the performance indicators or port plugs in the secondary divider valve while lubricant is still flowing from the ports.
9. Remove the hand pump and reinstall the performance indicator or indicator plug removed in Step 2 into the master divider working valve's open port.

The system is now ready for operation.

Section 3: Purging Air from Pump to Master Divider Valve Lines



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FIG. 9

Steps 1-3, refer to FIG. 9.

1. Install the line from the system pump to the master divider valve, but do not completely tighten the connection at the master valve's lube inlet.
2. Cycle the system pump until air-free lubricant is observed flowing from the line at the master divider valve's lube inlet.
3. Tighten the fitting at the lube inlet port while lubricant is still flowing.

The system is now ready for operation.

Section 4: Purging Air After Adding or Replacing a Master Divider Valve Module

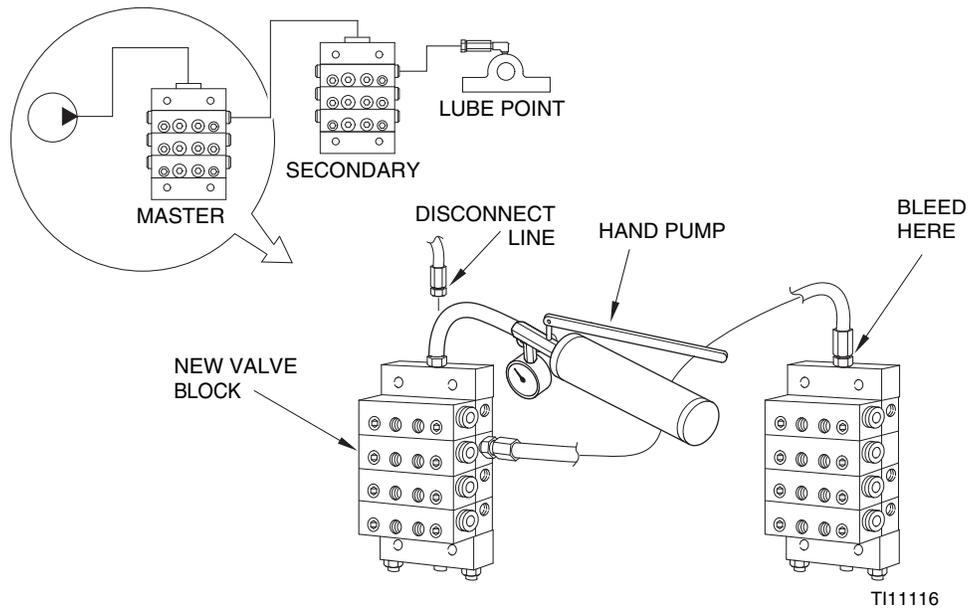


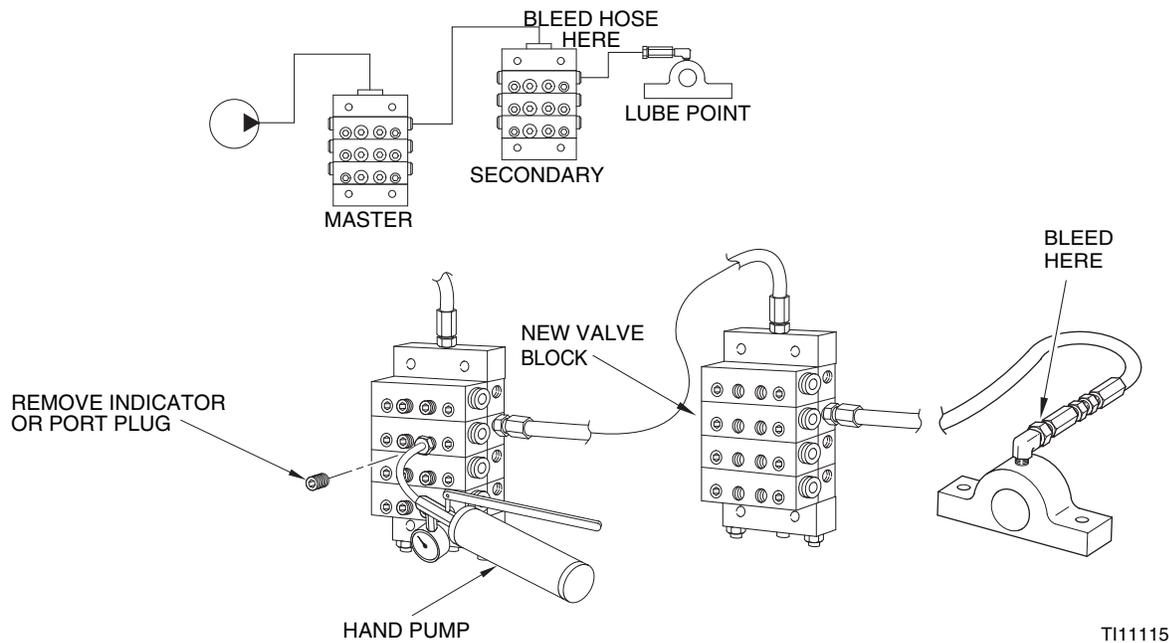
FIG. 10

Steps 1-7, refer to FIG. 10.

1. Install the new or replacement module into the master divider valve assembly. Also connect the tubing or hoses to the appropriate secondary divider valve(s) or lubrication point(s) if the new/replacement module is a base section.
2. Do not completely tighten the connection(s) at the secondary divider valve's inlet or at lubrication points.
3. Disconnect and remove the line from the pump at the inlet of the master divider valve.
4. Attach a hand pump filled with clean, filtered lubricant to the inlet port on the master divider valve.
5. Operate the hand pump until air-free lubricant is observed flowing from each secondary valve's lube inlet connector and/or each lubrication point's connector.
6. Tighten the fitting at the secondary valve inlet or at the lubrication port while lubricant is still flowing.
7. Remove the hand pump and reconnect the system pump to the inlet of the master divider valve.

The system is now ready for operation.

Section 5: Purging Air After Adding or Replacing a Secondary Divider Valve Module



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FIG. 11

Steps 1-8, refer to FIG. 11.

1. Install the new or replacement module to the secondary divider valve assembly. Also connect the tubing or hoses to the appropriate lubrication point if the new/replacement module is a base section.
 2. Do not completely tighten the connection(s) at the lubrication point.
 3. Remove the performance indicator or indicator port plug from the working valve section on the secondary divider valve assembly corresponding to the outlet port and line connected to a particular lube point.
 4. Attach a hand pump filled with clean, filtered lubricant to the port on the secondary divider valve that was opened in Step 3.
 5. Operate the hand pump until air-free lubricant is observed flowing from the loosened connector at the lube point.
 6. Tighten the fitting at the lube point while lubricant is still flowing.
 7. Repeat Steps 3 - 6 for any additional lubrication points connected to the new module.
 8. Remove the hand pump and reinstall the performance indicator or port plug removed in Step 3 into the secondary divider valve's open port.
- The system is now ready for operation.

Locating and Repairing Blockages

Blocks will cause a higher than normal pumping pressure. Depending on the application or system design, this blockage will usually result in a complete loss of lubricant flow into the total system and no bearing will be receiving lubrication.

The loss of flow due to a blockage is first indicated with the higher than normal system pressure that is developed by the pump as it attempts to overcome this blockage. Higher pressure is limited, isolated and signaled through the use of various performance indicators, reset and relief, incorporated into the system design.

Performance Indicators

Performance indicators are pressure-sensitive devices that pinpoint excessive pressure in the lubricating system.

These devices are installed in the indicator ports of divider valves, signal a fault either by causing an indicator pin to protrude or by releasing lubricant into the atmosphere.

NOTE: Never block a lube outlet that is designed to discharge lubricant.

Reset Indicator with Memory

Reset indicators stop lube system operation when a fault occurs. These devices can be used in either master or secondary divider valves.

When a lube line becomes blocked, the resultant high pressure pushes the indicator pin through the opening in the cap. The high pressure prevents the affected divider valve piston from completing its cycle, causing a pressure backup through the divider valve which trips a pressure switch upstream from the valve and shuts off the pump.

The indicator pin remains extended until it is reset manually. This helps locate the lube line that is blocked.

Rupture Indicator

Rupture indicators are used on MSP/MH divider valve applications where lube system pressure exceed 2500 psi (17 MPa, 172 bar). The high pressure from the lube line blockage causes a disc to rupture. The lubricant then forces an indicator to protrude, locating the blockage. The high pressure backs up through the system and trips a switch to shut the system off. When the fault is corrected, the disc must be replaced and the pin reset manually.

Automatic Relief Indicator

An automatic relief indicator pinpoints lube line blockage but allows the lube system to continue supplying lubricant to points that are not blocked. They are used primarily in secondary divider valves. The excessive pressure created by line blockage moves a piston, enabling the lubricant to escape through a vent. When the pressure is relieved, the spring resets the piston. Because these devices permit the lube system to keep operating when a lube point is blocked, a separate pressure switch connected to an audible alarm should be used to warn of high pressure.

Locating and Repairing Blockages

1. Make a visual inspection of the system. Check for crushed lines or improper divider valve installation.
2. Verify that each divider valve outlet required to discharge lubricant can do so and that no pipe plugs have been installed in an outlet designed to serve a bearing or another divider valve.
3. Use a manual pump with a gauge. Fill the pump with clean, filtered lubricant. Connect the manual pump to the inlet of the master divider valve and slowly operate pump. If system will not cycle freely, below 1500 psi, see Master Divider Valve Equipped with Performance Indicator [Step 4a (below)].

NOTE: Use only clean oil filtered to the SAE -recommended cleanliness level of ISO 18/14 (ISO Standard 4406) when prefilling a system. The manufacturers of the machine tool and its component bearings should be consulted to ensure that the ISO 18/14 cleanliness level is adequate.

4a. Master Divider Valve Equipped With Performance Indicator

With manual pump connected to the master divider valve as outlined in Locating Blockages, Step 3, raise pressure to 2000 psi (14 MPa, 138 bar). The indicators in the indicator ports will signal the location of the blockage. An indicator in the up position indicates pressure is in that outgoing line and signals the blockage is in the area being served from this outlet (FIG. 12).

If no indicator pins are protruding, the blockage is in the master divider valve.

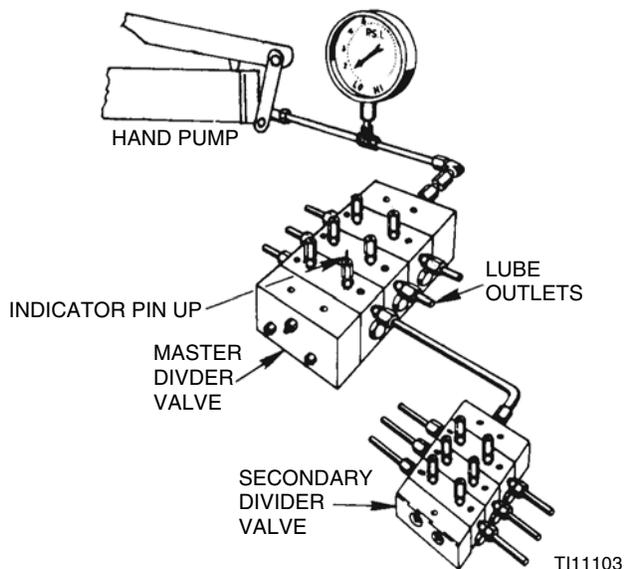


FIG. 12

4b. Master Divider Valve Equipped Without Performance Indicator

- 1) With manual pump connected to the master divider valve as outlined in Locating Blockages, Step 3, raise pressure to 2000 psi (14 MPa, 138 bar).
- 2) Remove, one at a time, each indicator port plug and attempt to operate manual pump after each plug is removed. Do not exceed 2000 psi (14 MPa, 138 bar)
- 3) If pressure drops and the master cycles freely after an indicator port plug is removed, then blockage is downstream in the area that is being served from that outlet. See Locating Blockages, Step 3.

NOTE:

- If all indicator port plugs are removed, the master will not cycle. Blockage is in this divider valve.
- When indicator port plug of a blocked area is removed, a small shot of trapped lubricant will usually surge out of this outlet as the inlet pressure on the divider valve drops.
- If testing (Step 4) indicates a blockage in the master divider valve, this divider valve must be disassembled and cleaned. See Clean Divider Valve, Step 7, page 16.

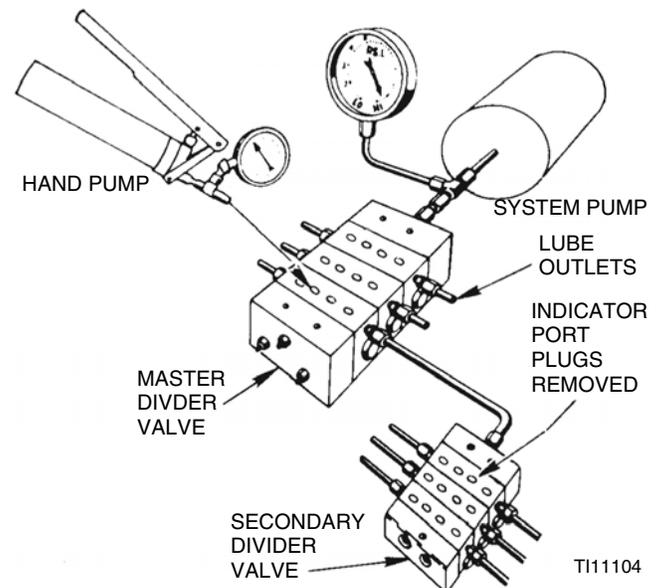


FIG. 13

5. If in Step 4, a blockage has been indicated downstream of the master divider valve, install a manual pump in the indicator port of the master divider valve that is common to the blocked area. (See FIG. 13).
 - a. Proceed to downstream secondary divider valve and remove all indicator port plugs.
 - b. Slowly operate manual pump. If lubricant can be discharged freely through each of the indicator ports of this divider valve, the blockage is not in the supply line or the divider valve. Go to step 6.

If lubricant is not freely discharged through open indicator ports of the second divider valve, the blockage is in this divider valve or its supply line. Disconnect supply line at secondary inlet

fitting and slowly operate manual pump to verify location. If blockage is in this divider valve, go to step 7.

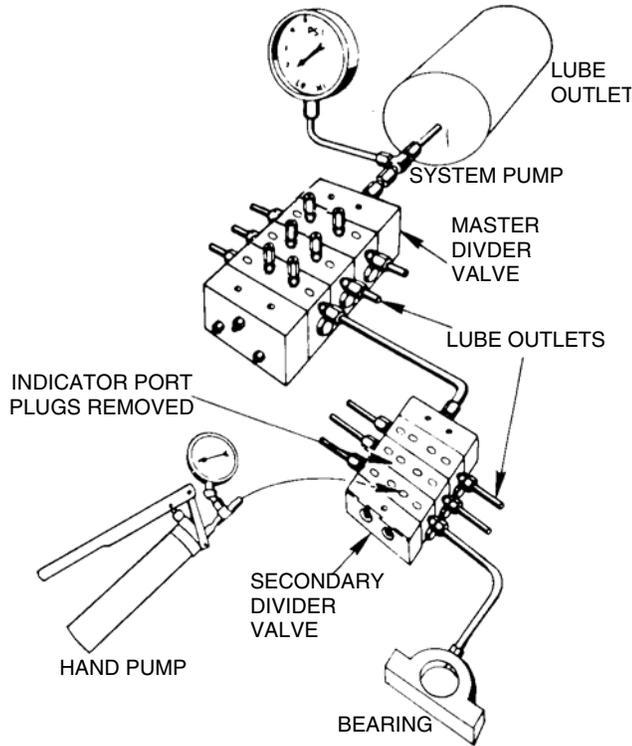


FIG. 14

6. Install manual pump into each indicator port of secondary divider valve in turn and slowly operate pump (FIG. 14). If high pressure exists, blockage has been located. Look for **crushed line, tight bearing, improperly drilled fittings and/or lube inlet port**. Correct as necessary.

7. Clean Divider Valve

NOTE: Dirt and foreign material will damage lubricating equipment. Perform all service and disassembly under the cleanest possible conditions.

- a. Before disassembling any divider valve, make a sketch noting the arrangement of Valve Sections. For example: INLET 10T - 20S - 10T - 30S - END (FIG. 15). Also remove end plugs only and try to move each piston back and forth without removing the piston from the valve section.

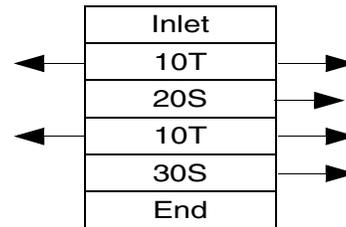


FIG. 15

NOTICE

Do not insert hard metal objects into piston bore (i.e., punches, screwdrivers, etc.). Hard metal objects can damage the surface and cause divider valves to leak fluid. Use a brass rod and hand pressure only.

- b. If all pistons move freely and there is no indication of a more serious problem, replace end plugs.
- c. Using a new gasket, tighten and torque as indicated in Table 4 (below).

Table 4: Torque Values (*see FIG. 2, page 5)

| | Assembly Torque ft-lbs (N.m) | | | | | | |
|------------------------------|------------------------------|-----------|-------------------|-----------|-------------------|----------------|-----------------|
| | MJ | MD | MSP/MHH | MX | MXP | MGO | MSP-SST |
| Tie Rod Nuts | 12 (16.3) | - | 5-8 (6.8-10.9) | 23 (31.2) | 6-9 (8.1-12.2) | 12 (16.3) | 5-8 (6.8-10.9) |
| Indicator Plugs* | 6-7 (8.1-9.5) | 15 (20.3) | 8-9 (10.9-12.2) | 18 (24.4) | 12-15 (16.3-20.3) | 6-8 (8.1-10.9) | 5-7 (6.8-9.5) |
| End Plugs* | 11-13 (14.9-17.6) | - | 12-15 (16.3-20.3) | 46 (62.4) | 46-50 (62.4-67.8) | 15 (20.34) | 6-8 (8.1-10.9) |
| Valve Section Mounting Screw | - | - | 8-9 (10.9-12.2) | - | 12-13 (16.3-17.6) | - | 8-9 (10.9-12.2) |

- d. Clean sections and pistons in suitable clean solvent until all lubricant has been removed.
- e. Use compressed air to dry and blow out all ports thoroughly.

A small metal probe should be used to make sure all passages are clean and open.

Inspect cylinder bore and piston carefully for scratches, score marks or other damage.

NOTE: If either piston or cylinder bore is damaged, a new section must be installed. All pistons are selectively fitted to the bore for proper clearance. Be sure to re-install piston only into the valve section from which it was removed.

- f. If divider valve section and piston both appear in good condition, reassemble section making certain piston slides smoothly but snugly in cylinder bore.
- g. Repeat cleaning and inspection of each section. After all sections have been cleaned, blown out, inspected and found to be in good condition, reassemble divider valve using notes and sketches (Step 7) as a reference.

NOTE:

- Always use new gaskets.
- Test operation of divider valve using manual pump.

Contamination Blockage

If dirt, foreign material or any other form of contamination is found in a divider valve, cleaning that divider valve will only temporarily solve contamination blockage problems. The source of the contamination must be eliminated for satisfactory service.

The system filtering method must be investigated, filter elements should be inspected and cleaned if necessary.

The reservoir filling method should be reviewed to eliminate any chance of foreign material entering the reservoir during filling.

Separation Blockage

If a hard wax or soap-like material is found in the Valve Section, grease separation is occurring. This means that the oil is being squeezed from the grease at normal system operating pressure and the grease thickener is being deposited in the divider valve. Cleaning the divider valve will only temporarily solve the problem. Consult your lubricant supplier for recommendations on alternate lubricants and your local Graco/Trabon distributor to verify compatibility with centralized lubricating systems.

If all indicator port plugs are removed, master will not cycle. Blockage is in this divider valve.(FIG. 12).

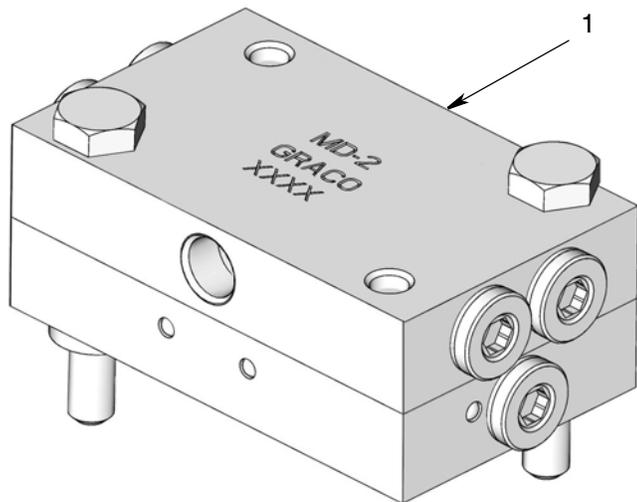
MD Series

Technical Specifications

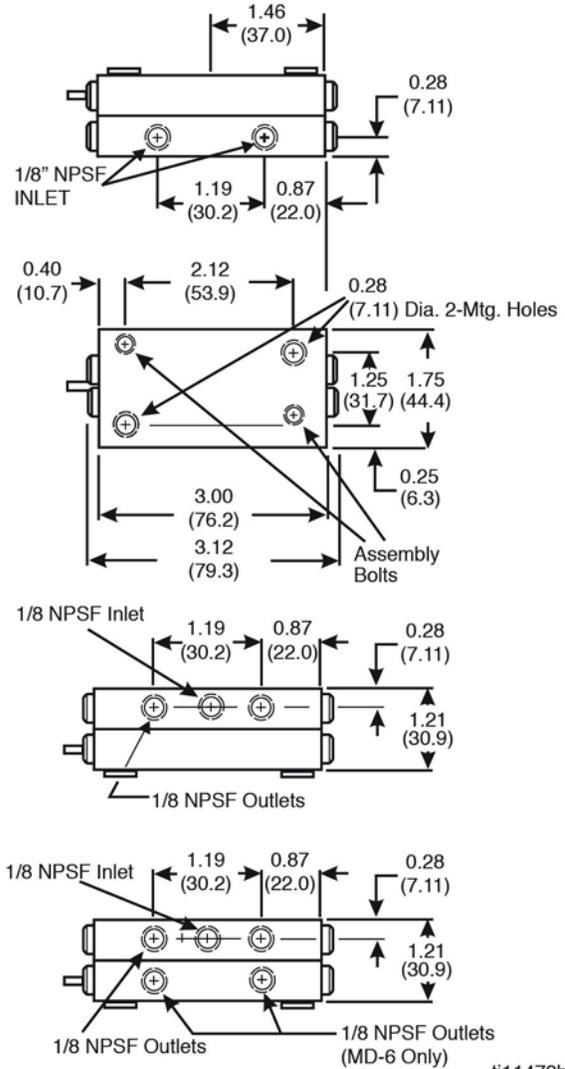
| | |
|--|-----------------------------------|
| Material | Steel |
| Pressure (max) | 3,000 psi (20.7 MPA, 206.8 bar) |
| Lubricant | Oil or grease |
| Net Weight (approx.) | 1-lb. 8 oz (0.68 kg) |
| Volume (Lubricant to cycle divider valve one complete cycle) | |
| MD-2, MD-3, MD-4 | 0.080 in. ³ (1.31 ccm) |
| MD-6 | 0.060 in. ³ (0.98 ccm) |
| Torque Ratings | |
| Assembly Bolts | 8-9 ft. lbs (10.9-12.2 N.m) |
| Enclosure Plugs | 11-13 ft. lbs (14.9-17.6 N.m) |
| Indicator Plug | 15 ft. lbs (20.3 N.m) |
| Outlet Plugs | 6-7 ft. lbs. (8.1-9.5 N.m) |

Parts

| Ref | Part No. | Description |
|-----|----------|---------------------------------|
| 1 | 562656 | VALVE, feeder, MD 2 |
| | 562657 | VALVE, feeder, MD 3 |
| | 562658 | VALVE, feeder, MD 4 |
| | 562659 | VALVE, feeder, MD 6 |
| | 562653 | VALVE, feeder, MD 2, IND |
| | 562654 | VALVE, feeder, MD 3, IND |
| | 562655 | VALVE, feeder, MD 4, IND |
| | 563270 | VALVE, feeder, MD 2, IND/Switch |
| | 563271 | VALVE, feeder, MD 3, IND/Switch |
| | 564356 | VALVE, feeder, MD 4, IND/Switch |



Dimensions (inches / mm)



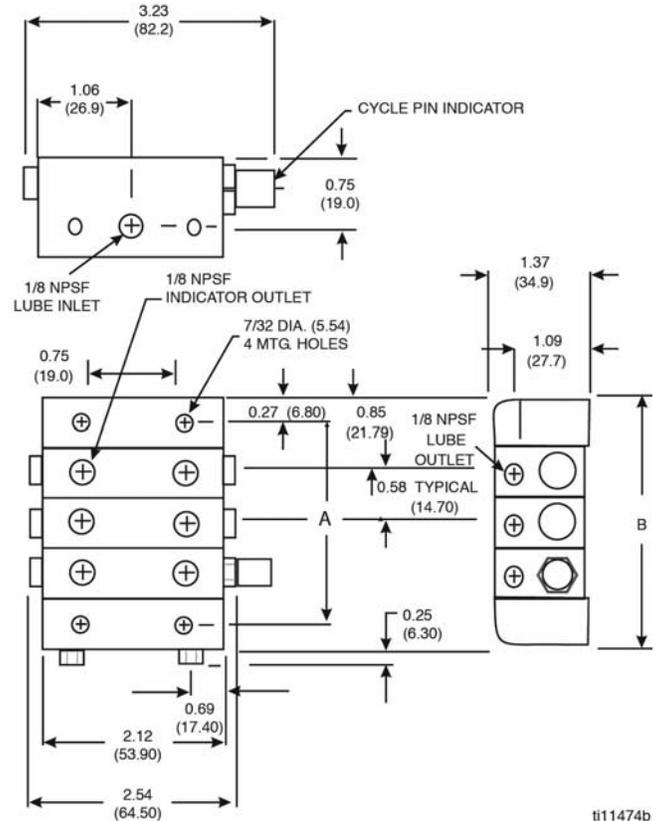
ti11472b

MJ Series

Technical Specifications

| | |
|-------------------------------|----------------------------------|
| Material | Plated |
| Pressure (max) | 2,000 psi (13.8 MPa, 137.9 bar) |
| Lubricant | Oil or grease up to NLGI Grade 1 |
| Max Operating Temperature | 200°F (93°C) |
| Max Cycle Rate With Cycle Pin | 60 CPM |
| Net Weight (approx.) | |
| 3 section divider valve | 1-lb. 15 oz (0.88 kg) |
| 4 section divider valve | 2 lbs. 5 oz (1.04 kg) |
| 5 section divider valve | 2 lbs. 11 oz (1.21 kg) |
| 6 section divider valve | 3 lbs. 1 oz (1.38 kg) |
| 7 section divider valve | 3 lbs. 7 oz (1.55 kg) |
| 8 section divider valve | 3 lbs. 13 oz (1.72 kg) |
| Torque Ratings | |
| Tie Rod Nut | 12 ft. lbs (16.3 N.m) |
| Enclosure Plug | 11-13 ft. lbs (14.9-17.6 N.m) |
| Outlet Port Plugs | 6-7 ft. lbs. (8.1-9.5 N.m) |

Dimensions (inches / mm)

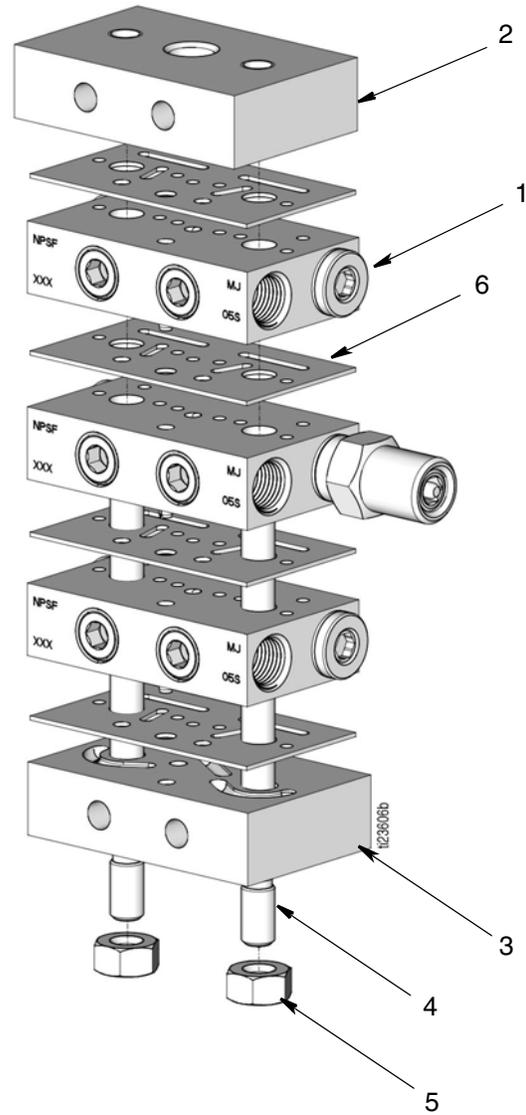


| Divider Valve | Dimension A (approx.) | | Dimension B | |
|---------------|-----------------------|-------|-------------|-------|
| | inch | mm | inch | mm |
| MJ-3 | 2.34 | 59.4 | 2.87 | 73.1 |
| MJ-4 | 2.92 | 74.2 | 3.46 | 78.9 |
| MJ-5 | 3.50 | 89.0 | 4.04 | 102.6 |
| MJ-6 | 4.08 | 103.7 | 4.62 | 117.4 |
| MJ-7 | 4.66 | 118.5 | 5.20 | 132.2 |
| MJ-8 | 5.25 | 133.3 | 5.78 | 147.0 |

Parts

| Ref | Part No. | Description |
|-----|----------|-----------------------------------|
| 1* | 562500 | VALVE, assembly, MJ 5S |
| | 562501 | VALVE, assembly, MJ 10S |
| | 562502 | VALVE, assembly, MJ 15S |
| | 562503 | VALVE, assembly, MJ 5T |
| | 562504 | VALVE, assembly, MJ 10T |
| | 562505 | VALVE, assembly, MJ 15T |
| | 562508 | VALVE, assembly, IND MJ 10S |
| | 562512 | VALVE, assembly, IND MJ 10S Left |
| | 562510 | VALVE, assembly, IND MJ 10 T |
| | 562513 | VALVE, assembly, IND MJ 10T Left |
| | 562509 | VALVE, assembly, IND MJ 15S |
| | 562511 | VALVE, assembly, IND MJ 15T |
| | 564205 | VALVE, assembly, IND MJ 15T Left |
| 2* | 560643 | INLET, CRS, MJ |
| 3* | 560645 | END, CRS, MJ |
| 4 | 557515 | ROD, tie, MJ 3 (3 required) |
| | 557516 | ROD, tie, MJ 4 (3 required) |
| | 557517 | ROD, tie, MJ 5 (3 required) |
| | 557518 | ROD, tie, MJ 6 (3 required) |
| | 557519 | ROD, tie, MJ 7 (3 required) |
| | 557520 | ROD, tie, MJ 8 (3 required) |
| 5 | 556371 | NUT, tie rod, 1/4-28 (3 required) |
| 6 | 557514 | GASKET, feeder, MJ |

*Component is shipped with gasket

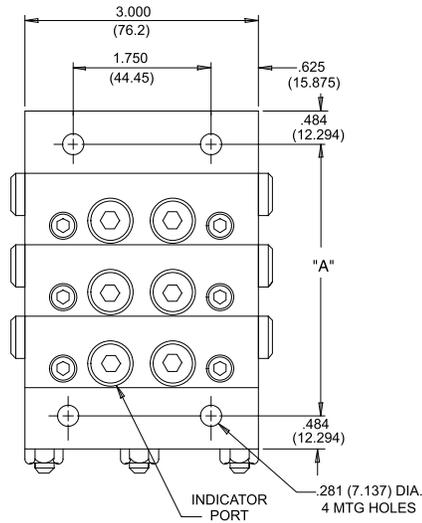
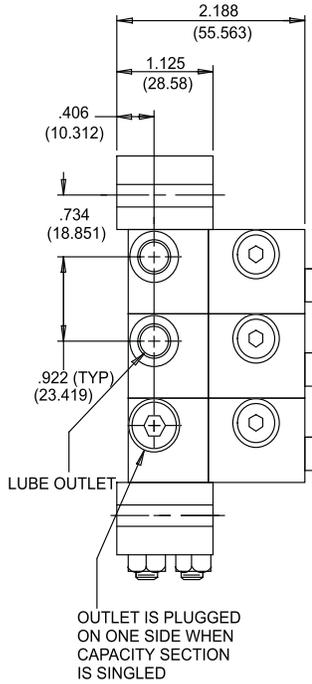


MSP Series/MSP SST Series

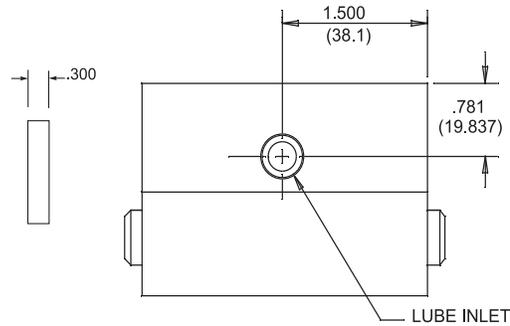
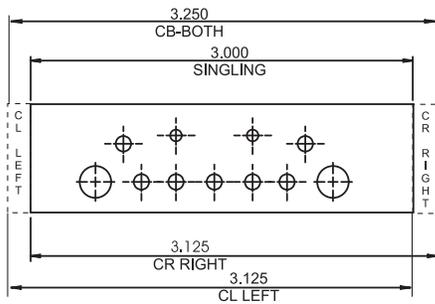
Technical Specifications

| | |
|----------------------------------|--|
| Material | Corrosion Protected Steel (optional: Type 303 Stainless Steel) |
| Pressure (max) | |
| Zero Leak Inlet | 1500 psi (10.3 MPa, 103.4 bar) |
| Shunt/Shutoff Inlet | 3000 psi (20.7 MPa, 206.8 bar) |
| Ambient Temperature (max) | 140°F (60°C) |
| Lubricant | |
| Zero Leak Inlet | Oil Only - up to 5000 SUS, requires 25 micron (min) filtration |
| Shunt/Shutoff Inlet | Oil and fluid grease - filter oil through 25 micron filter and grease through 100 micron mesh strainer |
| New Weight (approx.) | |
| Carbon Steel | |
| 3 section divider valve assembly | 5.9 lbs (2.7 kg) |
| 4 section divider valve assembly | 7.3 lbs (3.3 kg) |
| 5 section divider valve assembly | 8.7 lbs (4.0 kg) |
| 6 section divider valve assembly | 10.2 lbs (4.6 kg) |
| 7 section divider valve assembly | 11.6 lbs (5.6 kg) |
| 8 section divider valve assembly | 13.0 lbs (5.9 kg) |
| Stainless Steel | |
| 3 section divider valve assembly | 8.2 lbs (3.7 kg) |
| 4 section divider valve assembly | 9.9 lbs (4.5 kg) |
| 5 section divider valve assembly | 11.7 lbs (5.3 kg) |
| 6 section divider valve assembly | 13.5 lbs (6.2 kg) |
| 7 section divider valve assembly | 15.2 lbs (6.9 kg) |
| 8 section divider valve assembly | 16.9 lbs (7.7 kg) |
| Torque Ratings | |
| Mounting Screw | 8-9 ft. lbs (10.9-12.2 N.m) |
| Enclosure Plugs | 6-8 ft. lbs (8.1-9.5 N.m) |
| Indicator Port Plug | 5-7 ft. lbs (6.8-9.5 N.m) |
| Bleed Screws | 1-2 ft. lbs. (1.4-2.7 N.m) |
| Tie Rod Nut | 5-8 ft. lbs. (6.8-10.9 N.m) |

Dimensions (inches / mm)



CROSSPORT PLATE (OPTIONAL)



ti11478

| Number of Sections | Dimension A | |
|--------------------|-------------|---------|
| | inch | mm |
| 3 | 3.578 | 90.881 |
| 4 | 4.500 | 114.30 |
| 5 | 5.422 | 137.718 |
| 6 | 6.344 | 161.138 |
| 7 | 7.266 | 184.556 |
| 8 | 8.188 | 207.975 |
| 9 | 9.110 | 231.395 |
| 10 | 10.032 | 254.815 |
| 11 | 10.954 | 278.235 |

| Style | Tab(s) |
|----------|----------------|
| CR Right | Right |
| CL Left | Left |
| CB-Both | Right and Left |
| Singling | None |

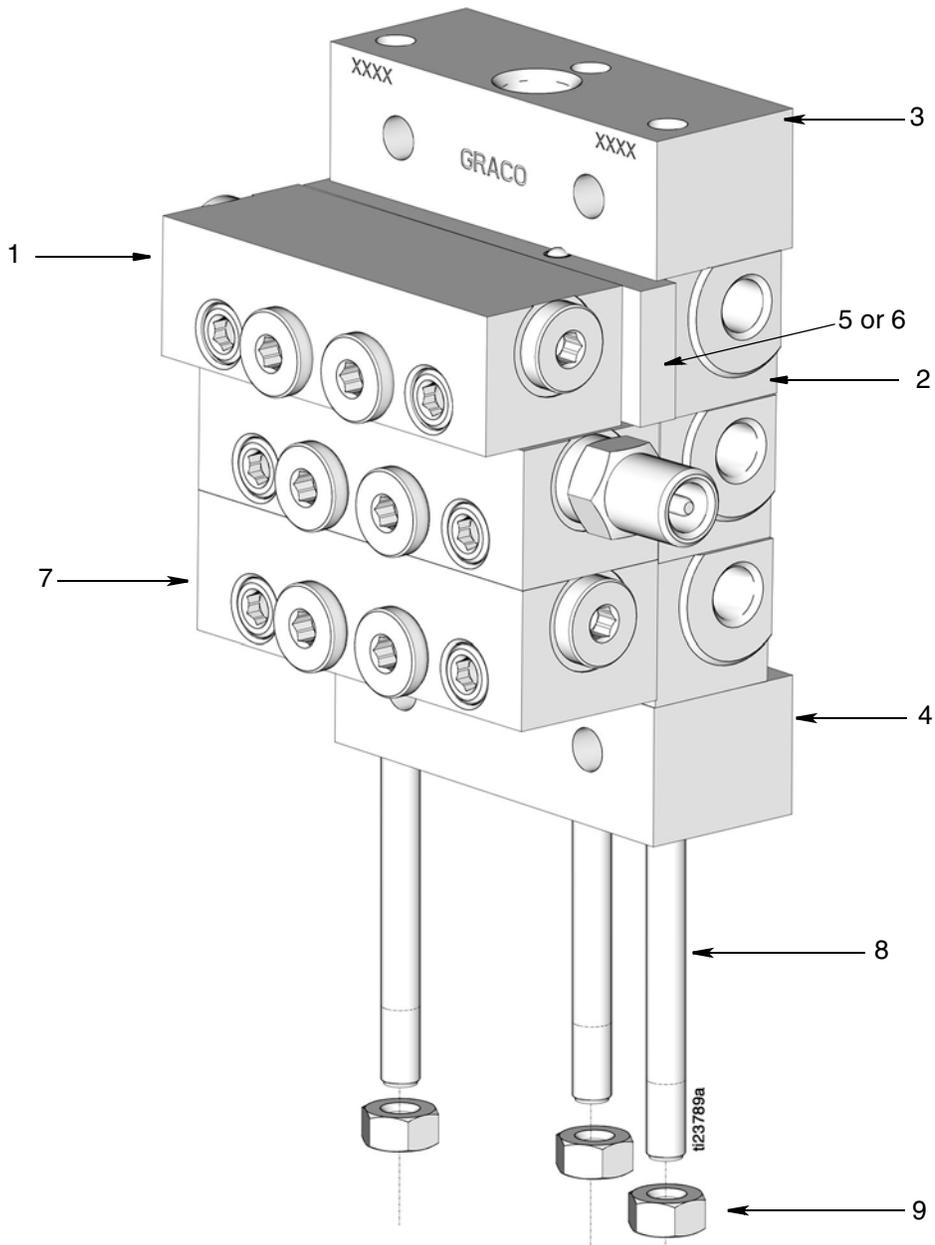
Parts

Ref Part No. Description

| | | |
|---|--------|----------------------------------|
| 1 | 562711 | VALVE, assembly MSP 05S |
| | 562712 | VALVE, assembly MSP 10S |
| | 562713 | VALVE, assembly MSP 15S |
| | 562714 | VALVE, assembly MSP 20S |
| | 562715 | VALVE, assembly MSP 25S |
| | 562716 | VALVE, assembly MSP 30S |
| | 562717 | VALVE, assembly MSP 35S |
| | 562718 | VALVE, assembly MSP 40S |
| | 562720 | VALVE, assembly MSP 05T |
| | 562721 | VALVE, assembly MSP 10T |
| | 562722 | VALVE, assembly MSP 15T |
| | 562723 | VALVE, assembly MSP 20T |
| | 562724 | VALVE, assembly MSP 25T |
| | 562725 | VALVE, assembly MSP 30T |
| | 562726 | VALVE, assembly MSP 35T |
| | 562727 | VALVE, assembly MSP 40T |
| | 562729 | VALVE, assembly IND MSP 20S |
| | 562730 | VALVE, assembly IND MSP 25S |
| | 562731 | VALVE, assembly IND MSP 30S |
| | 562732 | VALVE, assembly IND MSP 35S |
| | 562733 | VALVE, assembly IND MSP 40S |
| | 562734 | VALVE, assembly IND left MSP 20S |
| | 562735 | VALVE, assembly IND left MSP 25S |
| | 562736 | VALVE, assembly IND left MSP 30S |
| | 562737 | VALVE, assembly IND left MSP 35S |
| | 562738 | VALVE, assembly IND left MSP 40S |
| | 562739 | VALVE, assembly IND MSP 20T |
| | 562740 | VALVE, assembly IND MSP 25T |
| | 562741 | VALVE, assembly IND MSP 30T |
| | 562742 | VALVE, assembly IND MSP 35T |
| | 562743 | VALVE, assembly IND MSP 40T |
| | 562744 | VALVE, assembly IND left MSP 20T |
| | 562745 | VALVE, assembly IND left MSP 25T |
| | 562746 | VALVE, assembly IND left MSP 30T |
| | 562747 | VALVE, assembly IND left MSP 35T |
| | 562748 | VALVE, assembly IND left MSP 40T |
| | 24B474 | VALVE, assembly, MSP 05S - SST |
| | 562755 | VALVE, assembly, MSP 10S - SST |
| | 24B475 | VALVE, assembly, MSP 15S - SST |
| | 562756 | VALVE, assembly, MSP 20S - SST |
| | 24B476 | VALVE, assembly, MSP 25S - SST |
| | 24B477 | VALVE, assembly, MSP 30S - SST |
| | 24B478 | VALVE, assembly, MSP 35S - SST |
| | 562757 | VALVE, assembly, MSP 40S -SST |
| | 24B479 | VALVE, assembly, MSP 05T - SST |
| | 562758 | VALVE, assembly, MSP 10T - SST |
| | 24B480 | VALVE, assembly, MSP 15T - SST |
| | 562759 | VALVE, assembly, MSP 20T - SST |
| | 24B481 | VALVE, assembly, MSP 25T - SST |
| | 24B482 | VALVE, assembly, MSP 30T -SST |
| | 24B483 | VALVE, assembly, MSP 35T - SST |
| | 562760 | VALVE, assembly, MSP 40T - SST |
| 2 | 24B497 | BLOCK, base, MSP, NPTF, SST |
| | 563425 | BLOCK, base, MSP NPSF |
| | 563447 | BLOCK, base, MSP, BSPP |
| | 563451 | BLOCK, base, MSP, SAE |
| | 563479 | BLOCK, base, MSP w/No outlets |
| | 24N369 | BLOCK, base, MSP, BSPP, SST |

Ref Part No. Description

| | | |
|---|--------|--|
| 3 | 560919 | BLOCK, inlet, MSP, NPSF |
| | 560936 | BLOCK, inlet, MSP, BSPP |
| | 560943 | BLOCK, inlet, MSP, SAE |
| | 560976 | BLOCK, inlet, MSP, ISO 6149 |
| | 563421 | BLOCK, inlet, MSP, NPSF, w/bleed |
| | 563422 | BLOCK, inlet, MSP SAE w/bleed |
| | 15Y070 | BLOCK, inlet, MSP, NPTF, SST |
| | 16P368 | BLOCK, inlet, MSP, BSPP, SST |
| 4 | 563279 | BLOCK, MSP end w/alt inlet |
| | 563424 | BLOCK, end, MSP |
| | 24B498 | BLOCK, end, MSP, SST |
| 5 | 563469 | KIT, crossport bar, right |
| | 563470 | KIT, crossport bar, left |
| | 563471 | KIT, crossport bar, both |
| | 24R631 | KIT, crossport, MSP, LH/RH, sst |
| | 24R632 | KIT, crossport, MSP, RH, sst |
| | 24R633 | KIT, crossport, MSP, LH, sst |
| 6 | 563472 | KIT, singling bar |
| 7 | 562660 | VALVE, assembly bypass, standard MSP |
| 8 | 557731 | ROD, tie, 3 section, MSP (3 required) |
| | 557732 | ROD, tie, 4 section, MSP (3 required) |
| | 557733 | ROD, tie, 5 section, MSP (3 required) |
| | 557734 | ROD, tie, 6 section, MSP (3 required) |
| | 557735 | ROD, tie, 7 section, MSP (3 required) |
| | 557736 | ROD, tie, 8 section, MSP (3 required) |
| | 557738 | ROD, tie, 9 section, MSP (3 required) |
| | 557739 | ROD, tie, 10 section, MSP (3 required) |
| | 557740 | ROD, tie, 11 section, MSP (3 required) |
| | 126247 | ROD, tie, 3 section, MSP, SST (3 required) |
| | 126248 | ROD, tie, 4 section, MSP, SST (3 required) |
| | 126249 | ROD, tie, 5 section, MSP, SST (3 required) |
| | 126250 | ROD, tie, 6 section, MSP, SST (3 required) |
| | 126251 | ROD, tie, 7 section, MSP, SST (3 required) |
| | 126252 | ROD, tie, 8 section, MSP, SST (3 required) |
| 9 | 556371 | NUT, 1/4 - 28 (3 required) |
| | 558633 | NUT, SST 1/4 - 28 light hex (3 required) |

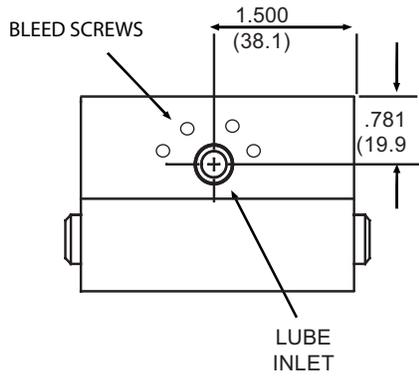
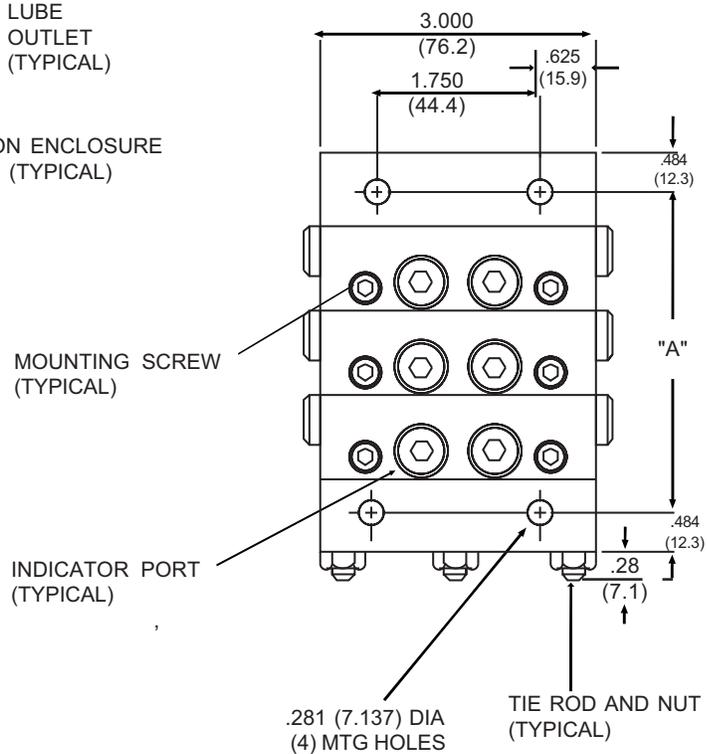
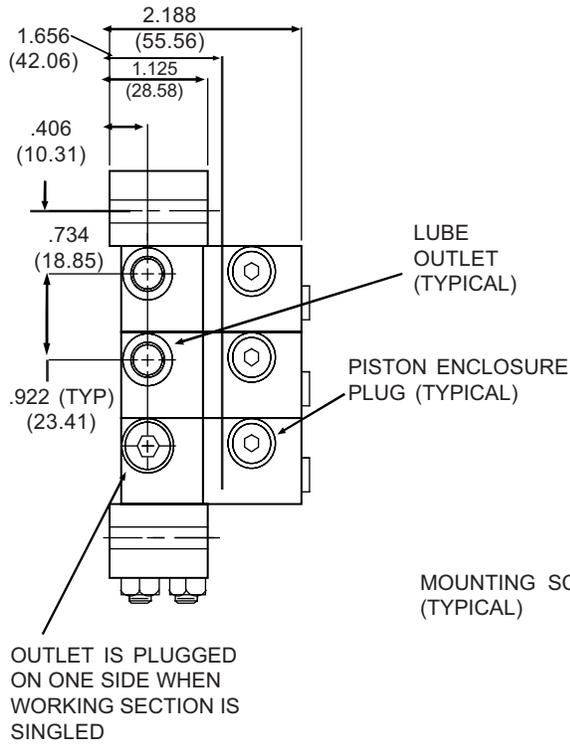


MHH Series

Technical Specifications

| | |
|--------------------------------------|--|
| Material | Steel Body (corrosion protected) Steel Piston (honed fit) |
| Pressure (max) | 7,500 psi (52 MPa, 517 bar) for Petroleum or Synthetic Oil - fluoroelastomer O-rings |
| Lubricant | Petroleum or synthetic oil only |
| Maximum Operating Temperature | |
| Fluoroelastomer O-rings (557722) | 350°F (163°C) |
| Maximum Cycle Rate Without Cycle Pin | 200 CPM |
| Net Weight (approx.) | |
| 3 section divider valve assembly | 5.9 lbs (2.7 kg) |
| 4 section divider valve assembly | 7.3 lbs (3.3 kg) |
| 5 section divider valve assembly | 8.7 lbs (4.0 kg) |
| 6 section divider valve assembly | 10.2 lbs (4.6 kg) |
| 7 section divider valve assembly | 11.6 lbs (5.6 kg) |
| 8 section divider valve assembly | 13.0 lbs (5.9 kg) |
| Torque Ratings | |
| Mounting Screw | 8-9 ft. lbs (10.9-12.2 N.m) |
| Enclosure Plugs | 6-8 ft. lbs (8.1-9.5 N.m) |
| Indicator Port Plug | 5-7 ft. lbs (6.8-9.5 N.m) |
| Bleed Screws | 1-2 ft. lbs. (1.4-2.7 N.m) |
| Tie Rod Nut | 5-8 ft. lbs. (6.8-10.9 N.m) |

Dimensions (inches / mm)



| Number of Sections | Dimension A | |
|--------------------|-------------|---------|
| | inch | mm |
| 3 | 3.578 | 90.881 |
| 4 | 4.500 | 114.30 |
| 5 | 5.422 | 137.718 |
| 6 | 6.344 | 161.138 |
| 7 | 7.266 | 184.556 |
| 8 | 8.188 | 207.975 |

| Port Sizes | |
|-------------------|--------------------|
| Inlet | Outlet |
| 1/4 - 18 (F) NPSF | 1/8 - 27 (F); NPSF |
| 7/16 - 20 (F) SAE | 7/16 - 20 (F) SAE |

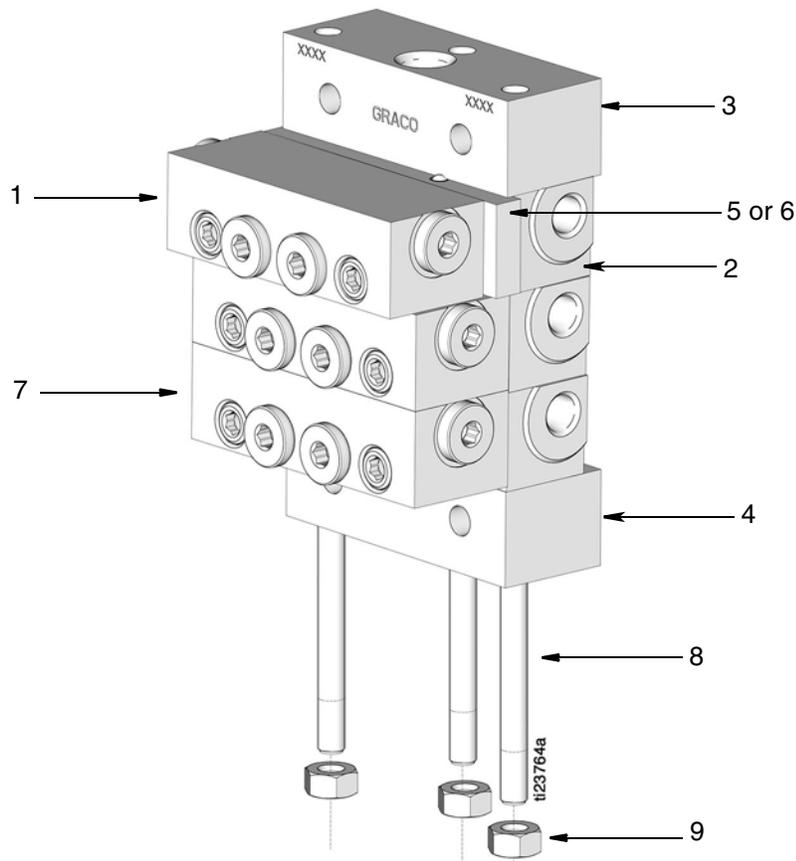
Parts

Ref Part No. Description

| | | |
|---|--------|-------------------------------|
| 1 | 562679 | VALVE, assembly MHH 06S |
| | 562680 | VALVE, assembly MHH 09S |
| | 562681 | VALVE, assembly MHH 12S |
| | 24X029 | VALVE, assembly MHH 15S |
| | 562682 | VALVE, assembly MHH 18S |
| | 24X030 | VALVE, assembly MHH 21S |
| | 562683 | VALVE, assembly MHH 24S |
| | 562684 | VALVE, assembly MHH 30S |
| | 562685 | VALVE, assembly MHH 06T |
| | 562686 | VALVE, assembly MHH 09T |
| | 562687 | VALVE, assembly MHH 12T |
| | 24X027 | VALVE, assembly MHH 15T |
| | 562688 | VALVE, assembly MHH 18T |
| | 24X028 | VALVE, assembly MHH 21T |
| | 562689 | VALVE, assembly MHH 24T |
| | 562690 | VALVE, assembly MHH 30T |
| 2 | 563425 | BLOCK, base, MHH, NPSF |
| | 563447 | BLOCK, base, MHH, BSPP |
| | 563451 | BLOCK, base, MHH, SAE |
| | 563479 | BLOCK, base, MHH w/no outlets |
| 3 | 560919 | BLOCK, inlet, MHH, NPSF |
| | 560936 | BLOCK, inlet, MHH, BSPP |

Ref Part No. Description

| | | |
|---|--------|-----------------------------------|
| | 560943 | BLOCK, inlet, MHH, SAE |
| | 560976 | BLOCK, inlet, MHH, ISO 6149 |
| | 563421 | BLOCK, inlet, MHH, NPSF, w/bleed |
| | 563422 | BLOCK, inlet, MHH SAE w/bleed |
| 4 | 563279 | BLOCK, MHH end w/alt inlet |
| | 563424 | BLOCK, end, MHH |
| 5 | 563469 | KIT, crossport bar, right |
| | 563470 | KIT, crossport bar, left |
| | 563471 | KIT, crossport bar, both |
| 6 | 563472 | KIT, singling bar |
| 7 | 562660 | VALVE, assembly bypass |
| 8 | 557731 | ROD, tie, 3 section (3 required) |
| | 557732 | ROD, tie, 4 section (3 required) |
| | 557733 | ROD, tie, 5 section (3 required) |
| | 557734 | ROD, tie, 6 section (3 required) |
| | 557735 | ROD, tie, 7 section (3 required) |
| | 557736 | ROD, tie, 8 section (3 required) |
| | 557738 | ROD, tie, 9 section (3 required) |
| | 557739 | ROD, tie, 10 section (3 required) |
| | 557740 | ROD, tie, 11 section (3 required) |
| 9 | 556371 | NUT, 1/4 - 28 (3 required) |



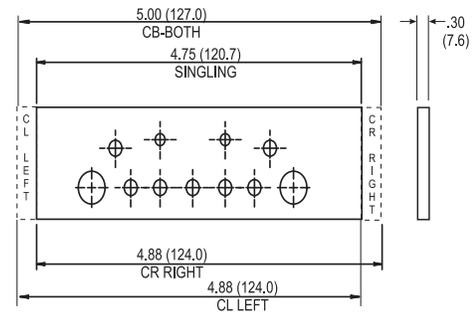
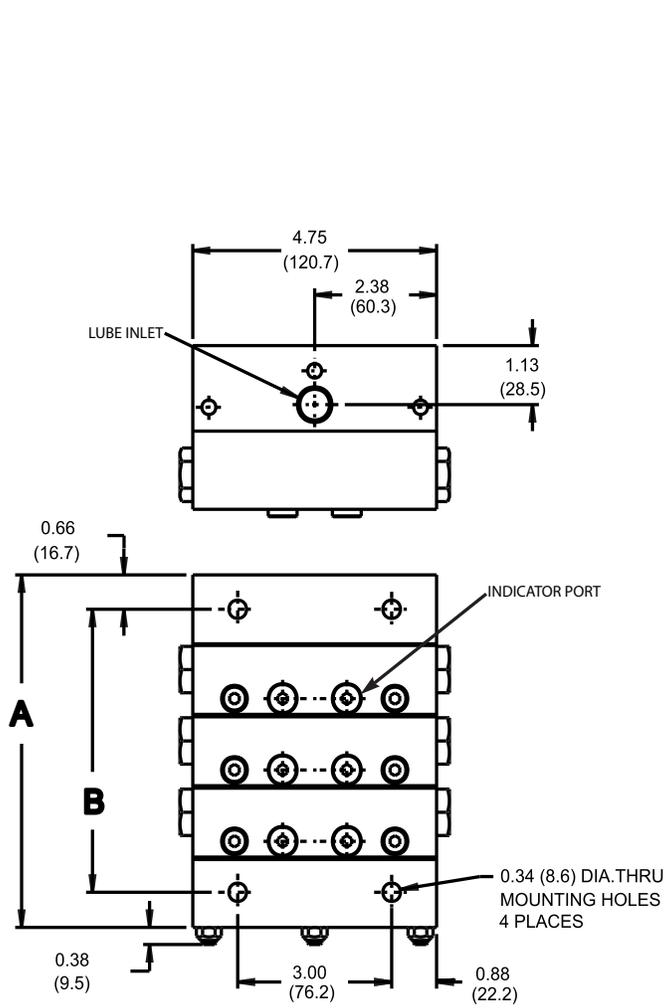
MXP Series

Technical Specifications

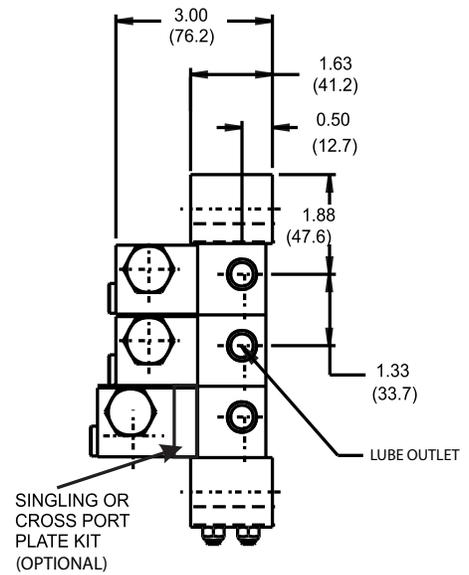
| | |
|--|---------------------------------|
| Material | Zinc Plated Steel |
| Pressure (max) | 3,000 psi (20.7 MPa, 206.8 bar) |
| Lubricant | Oil or grease |
| Maximum Operating Temperature | 350°F (177°C) |
| Maximum Cycle Rate With Cycle Pin | 60 CPM |
| Maximum Cycle Rate Without Cycle Pin or With Prox Cycle Switch | 110-200 CPM* |
| Net Weight (approx.) | |
| 3 section divider valve assembly | 18-lb. 2 oz (8.3 kg) |
| 4 section divider valve assembly | 22 lbs. 6 oz (10.2 kg) |
| 5 section divider valve assembly | 26 lbs. 9 oz (12.2 kg) |
| 6 section divider valve assembly | 31 lbs. 3 oz (14.2 kg) |
| 7 section divider valve assembly | 35 lbs. 6 oz (16.2 kg) |
| 8 section divider valve assembly | 39 lbs. 9 oz (18.1 kg) |
| 9 section divider valve assembly | 44 lbs. 3 oz (20.1 kg) |
| 10 section divider valve assembly | 48 lbs. 6 oz (22.1 kg) |
| Torque Ratings | |
| Tie Rod Nut | 6-9 ft. lbs (8.1-12.2 N.m) |
| Enclosure Plugs | 48 +/- 2 ft. lbs (65 N.m) |
| Indicator Plug | 12 -15 ft. lbs (16.3-20.3 N.m) |
| Valve Section Mounting Screw | 12-13 ft. lbs. (16.3-17.6 N.m) |

* See Cycle Rate and Flow Guidelines Table, page 44.

Dimensions (inches / mm)



CROSS PORT PLATE OPTIONAL



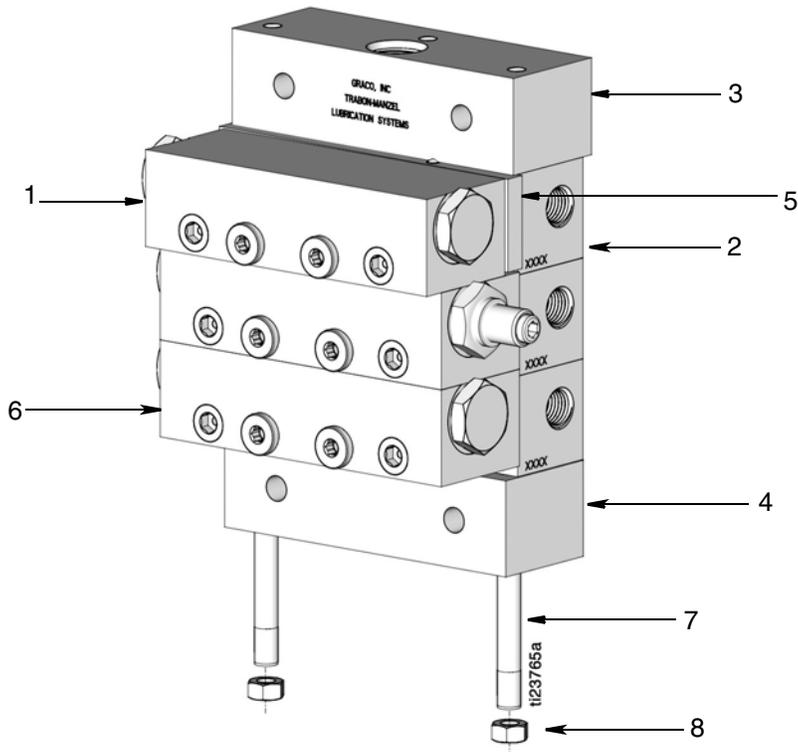
| Number of Sections | Dimension A | | Dimension B | | Weight | |
|--------------------|-------------|--------|-------------|--------|--------|------|
| | inch | mm | inch | mm | pound | kg |
| 3 | 6.66 | 169.21 | 5.35 | 135.89 | 18.2 | 8.3 |
| 4 | 8.01 | 203.45 | 6.70 | 170.13 | 22.6 | 10.2 |
| 5 | 9.36 | 237.69 | 8.05 | 204.37 | 26.9 | 12.2 |
| 6 | 10.71 | 271.93 | 9.39 | 238.61 | 31.3 | 14.2 |
| 7 | 12.05 | 306.17 | 10.74 | 272.85 | 35.6 | 16.2 |
| 8 | 13.40 | 340.41 | 12.09 | 307.09 | 39.9 | 18.1 |
| 9 | 14.75 | 374.65 | 13.44 | 341.33 | 44.3 | 20.1 |
| 10 | 16.10 | 408.89 | 14.79 | 375.57 | 48.6 | 22.1 |

| Style | Tab(s) |
|----------|----------------|
| CR Right | Right |
| CL Left | Left |
| CB-Both | Right and Left |
| Singling | None |

Parts

| Ref | Part No. | Description |
|-----|----------|-------------------------------------|
| 1 | 562813 | VALVE, twin, .025 MXP |
| | 562814 | VALVE, twin, .050 MXP |
| | 562815 | VALVE, twin, .075 MXP |
| | 562816 | VALVE, twin, .100 MXP |
| | 562817 | VALVE, twin, .125 MXP |
| | 562818 | VALVE, twin, .150 MXP |
| | 562819 | VALVE, single, .025 MXP |
| | 562820 | VALVE, single, .050 MXP |
| | 562821 | VALVE, single, .075 MXP |
| | 562822 | VALVE, single, .100 MXP |
| | 562823 | VALVE, single, .125 MXP |
| | 562824 | VALVE, single, .150 MXP |
| | 562825 | VALVE, twin, .050 MXP w/indicator |
| | 562826 | VALVE, twin, .075 MXP w/indicator |
| | 562827 | VALVE, twin, .100 MXP w/indicator |
| | 562828 | VALVE, twin, .125 MXP w/indicator |
| | 562829 | VALVE, twin, .150 MXP w/indicator |
| | 562830 | VALVE, single, .050 MXP w/indicator |
| | 562831 | VALVE, single, .075 MXP w/indicator |
| | 562832 | VALVE, single, .100 MXP w/indicator |
| | 562833 | VALVE, single, .125 MXP w/indicator |
| | 562834 | VALVE, single, .150 MXP w/indicator |

| Ref | Part No. | Description |
|-----|----------|--|
| 2 | 563519 | BLOCK, BSPLT interm MXP 1/4 NPSF |
| | 563521 | BLOCK, BSPLT interm MXP SAE |
| | 563522 | BLOCK, BSPLT interm MXP 1/4 BSPP |
| | 563479 | BLOCK, base, MSP/MHH w/no outlets |
| 3 | 15R994 | BLOCK, inlet, MXP |
| | 15R993 | BODY, inlet, MXP |
| | 561029 | BLOCK, sect MXP inlet BSPP thread |
| 4 | 563518 | BLOCK, end, machine MX |
| 5 | 563524 | KIT, MXP, crossport bar, left |
| | 563525 | KIT, MXP, crossport bar, right |
| | 563526 | KIT, MXP, crossport bar, both |
| 6 | 15R997 | BLOCK, bypass, MXP |
| 7 | 557766 | ROD, tie, 3 section, MXP (3 required) |
| | 557767 | ROD, tie, 4 section, MXP (3 required) |
| | 557768 | ROD, tie, 5 section, MXP (3 required) |
| | 557769 | ROD, tie, 6 section, MXP (3 required) |
| | 557770 | ROD, tie, 7 section, MXP (3 required) |
| | 557771 | ROD, tie, 8 section, MXP (3 required) |
| | 557772 | ROD, tie, 9 section, MXP (3 required) |
| | 563520 | ROD, tie, 10 section, MXP (3 required) |
| 8 | 555406 | NUT, 5/16 - 24 light hex (3 required) |



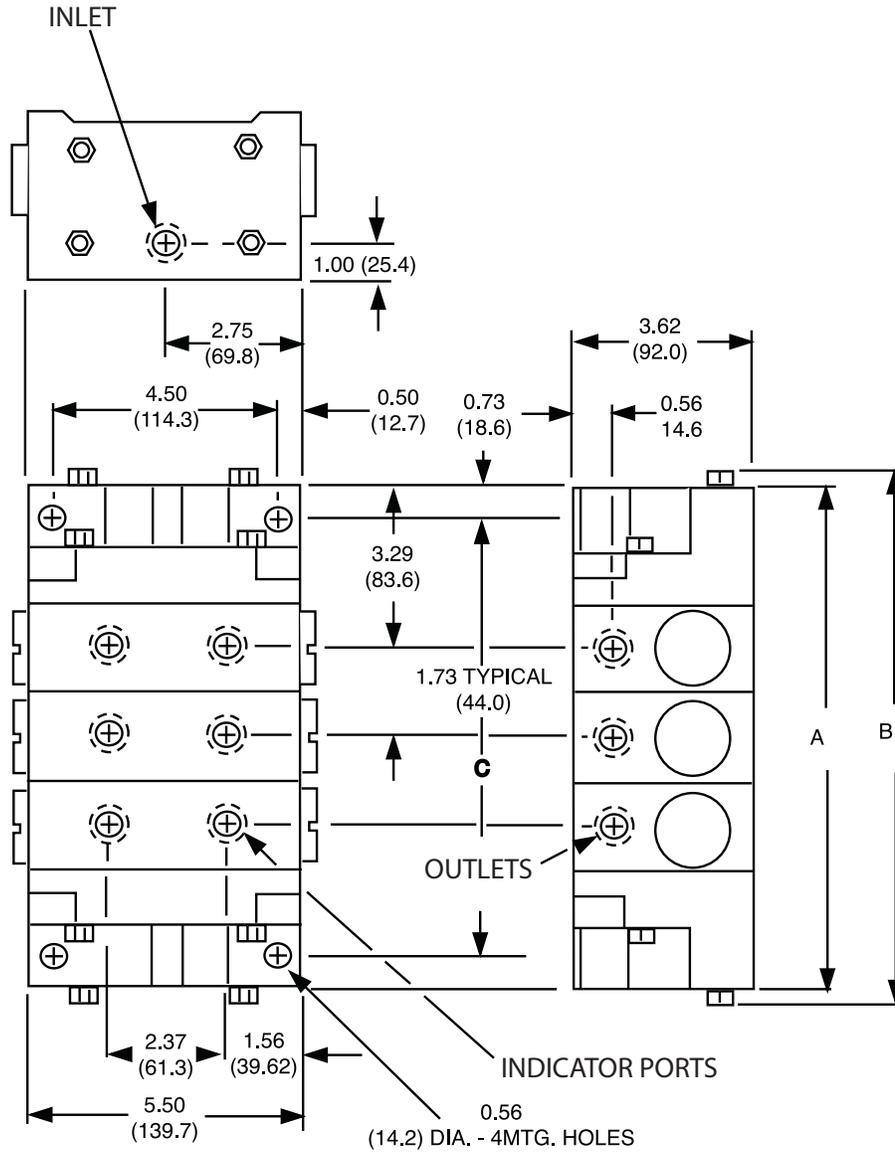
MGO Series

Technical Specifications

| | |
|--|--|
| Material | Zinc Plated Steel and Phosphate Coated Cast Iron |
| Pressure (max) | |
| 3-7 section divider valve assembly | 6000 psi (41 MPa, 414 bar) |
| 8 section divider valve assembly | 5500 psi (38 MPa, 379 bar) |
| 9 section divider valve assembly | 5000 psi (34 MPa, 345 bar) |
| 10 section divider valve assembly | 4500 psi (31 MPa, 310.3 bar) |
| 11 section divider valve assembly | 4000 psi (27 MPa, 27.6 bar) |
| Lubricant | Oil or grease |
| Maximum Operating Temperature | 200°F (93°C) |
| Maximum Cycle Rate With Cycle Pin | 60 CPM |
| Maximum Cycle Rate Without Cycle Pin or With Prox Cycle Switch | 240-185 CPM* |
| Net Weight (approx.) | |
| 3 section divider valve assembly | 45-lb. (20.41 kg) |
| 4 section divider valve assembly | 53 lbs. 5 oz (24.18 kg) |
| 5 section divider valve assembly | 61 lbs. 10 oz (27.95 kg) |
| 6 section divider valve assembly | 70 lbs. 15 oz (32.17 kg) |
| 7 section divider valve assembly | 80 lbs. 4 oz (36.40 kg) |
| 8 section divider valve assembly | 89 lbs. 9 oz (40.62 kg) |
| 9 section divider valve assembly | 98 lbs. 14 oz (44.84 kg) |
| 10 section divider valve assembly | 108 lbs. 3 oz (49.07 kg) |
| 11 section divider valve assembly | 117 lbs. 8 oz (53.40 kg) |
| Torque Ratings | |
| Tie Rod Nut | 12 ft. lbs (16.3 N.m) |
| Enclosure Plug | 15 ft. lbs (20.3 N.m) |
| Outlet Port Plug | 6-8 ft. lbs (8.1-10.9 N.m) |
| Valve Section Mounting Screw | 12-13 ft. lbs. (16.3-17.6 N.m) |

*See Cycle Rate and Flow Guidelines Table, page 44.

Dimensions (inches / mm)

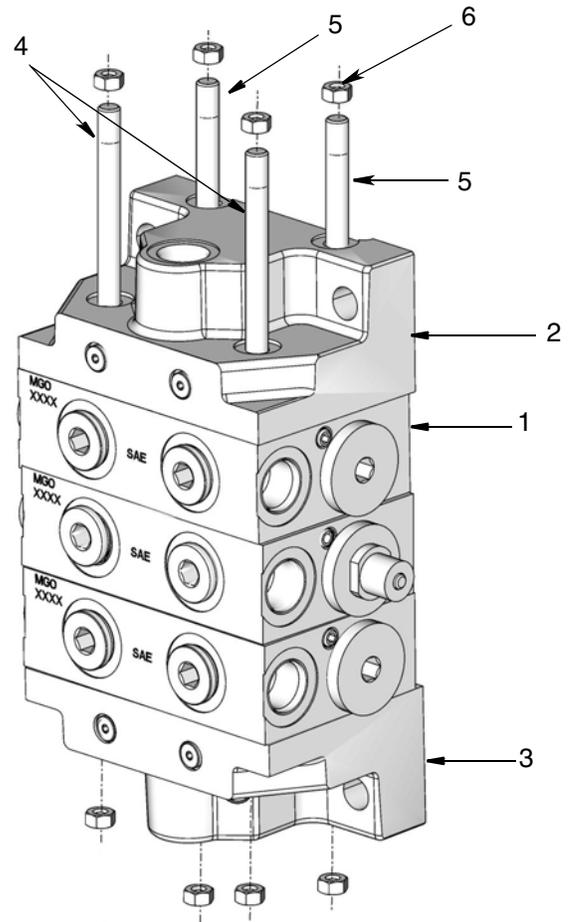


| Divider Valve | Dimension A | | Dimension B | | Dimension C | |
|---------------|-------------|-------|-------------|-------|-------------|-------|
| | inch | mm | inch | mm | inch | mm |
| MGO - 3 | 10.04 | 255.1 | 11.00 | 279.4 | 8.58 | 217.8 |
| MGO - 4 | 11.78 | 299.1 | 12.75 | 323.8 | 10.31 | 261.9 |
| MGO - 5 | 13.51 | 343.2 | 14.50 | 368.3 | 12.05 | 305.9 |
| MGO - 6 | 15.25 | 387.3 | 16.25 | 412.7 | 13.78 | 350.4 |
| MGO - 7 | 16.98 | 431.2 | 18.00 | 467.2 | 15.51 | 394.0 |
| MGO - 8 | 18.71 | 467.8 | 19.75 | 501.6 | 17.25 | 438.0 |
| MGO - 9 | 20.45 | 519.3 | 21.50 | 546.1 | 18.98 | 482.1 |
| MGO - 10 | 22.18 | 563.4 | 23.25 | 590.5 | 20.72 | 526.1 |
| MGO - 11 | 23.91 | 607.3 | 25.00 | 635.0 | 22.4 | 570.2 |

Parts

Ref Part No. Description

| | | |
|---|--------|---|
| 1 | 562570 | VALVE, MGO, assembly 150S SAE |
| | 562571 | VALVE, MGO, assembly 300S SAE |
| | 562572 | VALVE, MGO, assembly 450S SAE |
| | 562573 | VALVE, MGO, assembly 600S SAE |
| | 562574 | VALVE, MGO, assembly 150T SAE |
| | 562575 | VALVE, MGO, assembly 300TS SAE |
| | 562576 | VALVE, MGO, assembly 450T SAE |
| | 562577 | VALVE, MGO, assembly 600T SAE |
| | 562578 | VALVE, MGO, assembly 150S SAE IND |
| | 562579 | VALVE, MGO, assembly 300S SAE IND |
| | 562580 | VALVE, MGO, assembly 450S SAE IND |
| | 562581 | VALVE, MGO, assembly 6000S SAE IND |
| | 562582 | VALVE, MGO, assembly 150T SAE IND |
| | 562583 | VALVE, MGO, assembly 300T SAE IND |
| | 562584 | VALVE, MGO, assembly 450T SAE IND |
| | 562585 | VALVE, MGO, assembly 600T SAE IND |
| 2 | 563277 | INLET, |
| 3 | 563278 | END |
| 4 | 560591 | ROD, tie, short MGO 3 (2 required) |
| | 560592 | ROD, tie, short MGO 4 (2 required) |
| | 560593 | ROD, tie, short MGO 5 (2 required) |
| | 560594 | ROD, tie, short MGO 6 (2 required) |
| | 560595 | ROD, tie, short MGO 7 (2 required) |
| | 560596 | ROD, tie, short MGO 8 (2 required) |
| | 560597 | ROD, tie, short MGO 9 (2 required) |
| | 560598 | ROD, tie, short MGO 10 (2 required) |
| 5 | 560600 | ROD, tie, long MGO 3 (2 required) |
| | 560601 | ROD, tie, long MGO 4 (2 required) |
| | 560602 | ROD, tie, long MGO 5 (2 required) |
| | 560603 | ROD, tie, long MGO 6 (2 required) |
| | 15U857 | ROD, tie, long MGO 7 (2 required) |
| | 560604 | ROD, tie, long MGO 8 (2 required) |
| | 560605 | ROD, tie, long MGO 9 (2 required) |
| | 560606 | ROD, tie, long MGO 10 (2 required) |
| 6 | 555406 | NUT, tie rod 3/8 - 24 lock (8 required) |

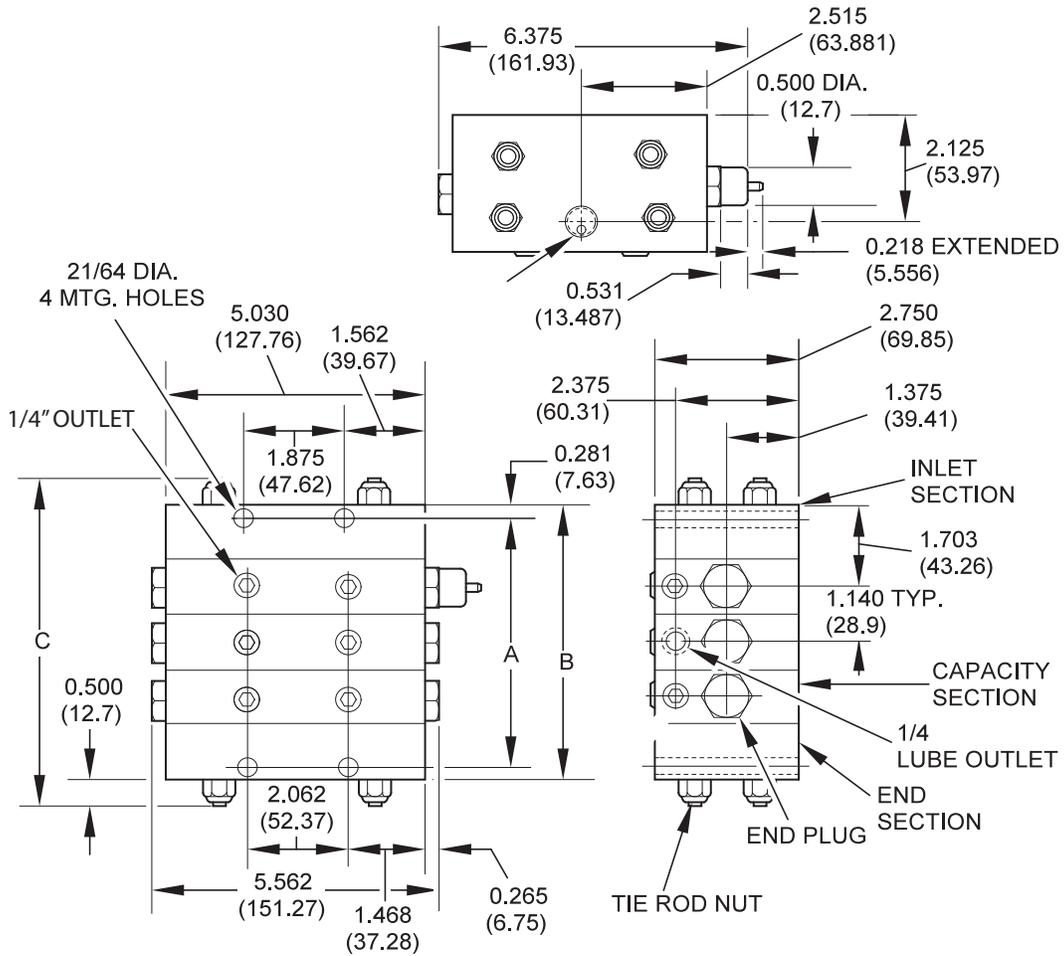


MX Series

Technical Specifications

| | |
|--------------------------------------|-------------------------------|
| Material | Plated Steel |
| Pressure (max) | 3,000 psi (21 MPa, 206.8 bar) |
| Lubricant | Oil or grease |
| Maximum Operating Temperature | 200°F (93°C) |
| Maximum Cycle Rate With Cycle Pin | 60 CPM |
| Maximum Cycle Rate Without Cycle Pin | 200 CPM |
| Net Weight (approx.) | |
| 3 section divider valve assembly | 21-lb. 6 oz (9.69 kg) |
| 4 section divider valve assembly | 25 lbs. 10 oz (11.62 kg) |
| 5 section divider valve assembly | 29 lbs. 14 oz (13.55 kg) |
| 6 section divider valve assembly | 34 lbs. 2 oz (15.47 kg) |
| 7 section divider valve assembly | 38 lbs. 6 oz (17.40 kg) |
| 8 section divider valve assembly | 42 lbs. 12 oz (19.39 kg) |
| 9 section divider valve assembly | 47 lbs. 2 oz (21.37 kg) |
| 10 section divider valve assembly | 51 lbs. 8 oz (23.26 kg) |
| Torque Ratings | |
| Tie Rod Nut | 30 ft. lbs (40.7 N.m) |
| Enclosure Plug | 48 ft. lbs (65.1 N.m) |
| Outlet Port Plugs | 18 ft. lbs. (24.4 N.m) |

Dimensions (inches / mm)

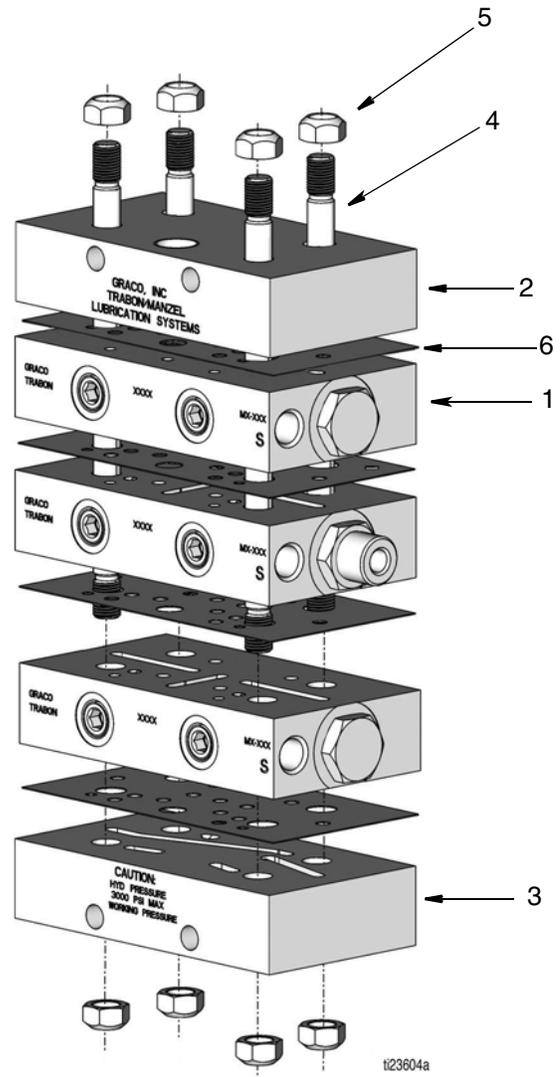


| Number of Sections | Dimension A | | Dimension B | | Dimension C | |
|--------------------|-------------|--------|-------------|--------|-------------|--------|
| | inch | mm | inch | mm | inch | mm |
| 3 | 5.062 | 128.57 | 5.625 | 142.87 | 6.25 | 168.27 |
| 4 | 6.187 | 157.14 | 6.750 | 171.45 | 7.750 | 196.85 |
| 5 | 7.312 | 185.72 | 7.875 | 200.02 | 8.875 | 225.42 |
| 6 | 8.437 | 214.29 | 9.000 | 228.60 | 10.000 | 254.00 |
| 7 | 9.562 | 242.87 | 10.125 | 257.17 | 11.125 | 282.57 |
| 8 | 10.687 | 271.44 | 11.250 | 285.75 | 12.250 | 311.15 |
| 9 | 11.812 | 300.02 | 12.375 | 314.90 | 13.375 | 339.72 |
| 10 | 13.937 | 328.59 | 13.500 | 342.90 | 14.500 | 368.30 |

Parts

Ref Part No. Description

| | | |
|----|--------|---|
| 1* | 562514 | VALVE, MX assembly 25S |
| | 562515 | VALVE, MX assembly 25T |
| | 562516 | VALVE, MX assembly 50S |
| | 562517 | VALVE, MX assembly 50T |
| | 562538 | VALVE, MX assembly 75S |
| | 562539 | VALVE, MX assembly 75T |
| | 562540 | VALVE, MX assembly 100S |
| | 562541 | VALVE, MX assembly 100T |
| | 562542 | VALVE, MX assembly 125S |
| | 562543 | VALVE, MX assembly 125T |
| | 562545 | VALVE, MX assembly 150S |
| | 562546 | VALVE, MX assembly 150T |
| | 562528 | VALVE, MX assembly 50S IND LH |
| | 562518 | VALVE, MX assembly 50S IND RH |
| | 562533 | VALVE, MX assembly 50T IND LH |
| | 562523 | VALVE, MX assembly 50T IND RH |
| | 562529 | VALVE, MX assembly 75S IND LH |
| | 562519 | VALVE, MX assembly 75S IND RH |
| | 562534 | VALVE, MX assembly 75T IND LH |
| | 562524 | VALVE, MX assembly 75T IND RH |
| | 562530 | VALVE, MX assembly 100S IND LH |
| | 562520 | VALVE, MX assembly 100S IND RH |
| | 562569 | VALVE, MX assembly 100T IND LH |
| | 562525 | VALVE, MX assembly 100T IND RH |
| | 562531 | VALVE, MX assembly 125S IND LH |
| | 562521 | VALVE, MX assembly 125S IND RH |
| | 562535 | VALVE, MX assembly 125T IND LH |
| | 562526 | VALVE, MX assembly 125T IND RH |
| | 562532 | VALVE, MX assembly 150S IND LH |
| | 562522 | VALVE, MX assembly 150S IND RH |
| | 562536 | VALVE, MX assembly 150T IND LH |
| | 562527 | VALVE, MX assembly 150T IND RH |
| 2* | 560620 | BLOCK, inlet |
| 3* | 563287 | BLOCK, end |
| 4 | 557488 | ROD, tie, MX 3 (4 required) |
| | 557489 | ROD, tie, MX 4 (4 required) |
| | 557490 | ROD, tie, MX 5 (4 required) |
| | 557491 | ROD, tie, MX 6 (4 required) |
| | 557492 | ROD, tie, MX 7 (4 required) |
| | 557493 | ROD, tie, MX 8 (4 required) |
| | 560576 | ROD, tie, MX 9 (4 required) |
| | 560577 | ROD, tie, MX 10 (4 required) |
| 5 | 557494 | NUT, tie rod 3/8 - 24 lock (8 required) |
| 6 | 557509 | GASKET feeder, MX |



*Component shipped with gasket

Accessories

Tube Clips

Clips are plated and provided with 17/64" (6.75 mm) mounting holes.

| Part No. | Description |
|----------|----------------------------------|
| 557324 | Holds 1 - 1/4" (6.35 mm) OD tube |
| 558711 | Holds 1 - 3/8" (9.52 mm) OD tube |
| 558710 | Holds 3 - 1/4" (6.35 mm) OD tube |

Mounting Bars

| Part No. | Description |
|----------|---|
| 560920 | MSP, 1/2" (12.7 mm) thick, 1/4-20 thread |
| 561101 | MJ, 1/2" (12.7 mm) thick, 10-24 thread |
| 561102 | MX and MXP, 1/2" (12.7 mm) thick, 5/16-18 threads, two sets of mounting holes |
| 563465 | KIT, mounting bar, includes 2 mounting bars, 4 screws, washers and lock washers |

Mounting Brackets

All mounting brackets include screws, lock washers and nuts.

| Part No. | Description |
|----------|--|
| 563435 | MSP and MH, M-3 and M-4, 1/8" (3.175 mm) thick, top mounting. |
| 563436 | MSP and MH, M5 and M-6, 1/8" (3.175 mm) thick, top mounting |
| 563437 | MSP and MH, M7 and M-8, 1/8" (3.175 mm) thick, top mounting |
| 563438 | MSP and MH, M-3 and M-4, 1/8" (3.175 mm) thick, side mounting. |
| 563439 | MSP and MH, M5 and M-6, 1/8" (3.175 mm) thick, side mounting |
| 563440 | MSP and MH, M7 and M-8, 1/8" (3.175 mm) thick, side mounting |

Performance Indicators

Performance indicators are pressure sensitive devices that signals a fault when there is excessive build up of pressure in a series progressive lubricating system. A fault is identified by either causing a pin to protrude or by releasing lubricant to the atmosphere.

Reset Indicator with Memory

Reset Indicators stop lube system operation when a fault occurs. They can be used in either master or secondary divider valves. Fault is indicated when a pin protrudes through the opening in the cap and is manually reset.

| Pressure PSI (MPa, bar) | Description | | | | | |
|----------------------------|------------------------------|--------------------------------------|---|----------------------|-----------------------------|----------------------------------|
| | 1/8" NPTF MJ, MH, MS, MXP | 1/8" NPSF w/O-Ring MH, MS, MXP | Nickel Plated 1/8" NPTF MJ, MH, MS, MXP | 1/4" NPTF MX Only | 7/8" SAE w/O-Ring MGO | 1/8" NPSF w/O-Ring MSP SST |
| 250 (2, 17) | 563231 | 563252 | NA | 563239 | NA | NA |
| 500 (3, 34) | 563232 | 563253 | 563246 | 563240 | NA | NA |
| 750 (5, 51) | 563233 | 563254 | NA | 563241 | NA | NA |
| 1000 (7, 69) | 563234 | 563255 | 563247 | 563242 | NA | 24B495 |
| 1500 (10, 103) | 563235 | 563256 | 563248 | 563243 | 564200 | 24B496 |
| 2000 (14, 138) | 563236 | 563257 | NA | 563244 | NA | 24N373 |
| 2500 (17, 172) | 563237 | 563258 | 563249 | 563245 | NA | NA |
| 3000 (21, 207) | NA | 563261 | NA | NA | NA | NA |
| 5000 (34, 344) | NA | 563262 | NA | NA | NA | NA |

Automatic Relief Indicator

Automatic Relief Indicators pinpoint lube line blockage but allow the lube system to continue to supply lubrication to points that are not blocked. They are used primarily in secondary divider valves. When needed, pressure is relieved through a vent. When pressure is relieved the spring resets the piston. Because these indicators permit the lube system to continue operating when a lube point is blocked, a separate pressure switch connected to an audible or visual alarm should be used to warn of high pressure.

| Pressure PSI (MPa, bar) | Color* | Description | | | |
|-------------------------|----------|-------------------------------|---------------------------------------|----------------------|-----------------------------|
| | | 1/8" NPTF MJ, MH, MSP, MXP | 1/8" NPSF w/O-Ring MH, MSP, MXP | 1/4" NPTF MX Only | 1/8 NPT w/O-Ring MSP SST |
| 750 (5, 51) ± 20% | Blue | 563163 | 563170 | 563156 | 24N945 |
| 1000 (7, 69) ± 20% | Green | 563164 | 563171 | 563157 | NA |
| 1250 (9, 86) ± 20% | Yellow | 563165 | 563172 | NA | NA |
| 1500 (10, 103) ± 20% | Red | 563166 | 563173 | 563158 | 24N948 |
| 2000 (14, 138) ± 20% | Orange | 563167 | 563174 | 563159 | 24N949 |
| 2500 (17, 172) ± 20% | Aluminum | 563168 | 563175 | 563160 | 24N951 |
| 3000 (34, 344) ± 24% | Purple | 563169 | 563176 | 563161 | 24N952 |

* Color provided for reference only to aid in selection of replacement indicator. Indicators used to be identified by the color of the spring retainer located in the end of the indicator.

Rupture Indicator - MH Divider Valves Only

Rupture Indicators are only used on MH divider valve applications where lube system pressures exceed 2500 psi. The high pressure from a lube line blockage causes a disc to rupture. The lubricant then forces an indicator pin to protrude, locating the blockage. The high pressure backs up through the system and trips a switch to shut the system off. When the fault is corrected, the disc must be replaced the pin reset manually.

| Pressure PSI (MPa, bar) | Description | | | |
|-------------------------|----------------|----------------------------|------------|-----------------------------------|
| | 1/8" - 27 NPTF | 1/8" - 27 NPSF w/O-Ring | Disc Color | Replacement Disc 3/8" Diameter |
| 2800 (19, 193) ± 20% | 563228 | 563229 | Green | 557422 |
| 3700 (26, 255) ± 20% | 563220 | 563221 | Yellow | 557423 |
| 4600 (32, 317) ± 20% | 564355 | 563222 | Red | 557424 |
| 5500 (38, 379) ± 20% | 563223 | 563224 | Orange | 557425 |
| 6400 (44, 441) ± 20% | 563225 | 563226 | Pink | 557427 |
| 7300 (50, 503) ± 20% | 563227 | NA | Blue | 557428 |
| 8200 (57, 565) ± 20% | NA | NA | Purple | 557429 |

Rupture-to-Atmosphere Indicator

Rupture-to-Atmosphere Indicators are standard on all Graco pumps. When the pressure reaches a predetermined pressure setting, the pressure disc ruptures, venting lubricant into the atmosphere and relieving pressure.

| Pressure PSI* (MPa, Bar) | Description | | | |
|--------------------------|---|------------------------|------------|----------------------|
| | Complete Assembly | Replacement | Disc Color | Blowout Disc |
| | 1/4" NPTF Fittings | 11/16" Diameter | | Quantity = 6 |
| 900 (6.2, 62) | NA | 557431 | Black | NA |
| 1450 (10, 100) | 563179 | 557433 | Yellow | 563962 |
| 1750 (12, 121) | 563182 | 557434 | Red | 563963 |
| 2050 (14, 141) | 563183 | 557435 | Orange | 563964 |
| 2350 (16, 162) | 563184 | 557436 | Aluminum | 563965 |
| 2650 (18, 183) | NA | 557437 | Pink | NA |
| 2950 (20, 203) | 563185 | 557438 | Blue | 563966 |
| 3250 (22, 224) | NA | 557439 | Purple | NA |
| | 1/8" NPTF Fittings | 3/8" Diameter | | Quantity = 25 |
| 900 (6.2, 62) | NA | 555788 | Black | 563952 |
| 1450 (10, 100) | NA | 557423 | Yellow | 563954 |
| 1750 (12, 121) | 564059 | 557424 | Red | 563955 |
| 2050 (14, 141) | NA | 557425 | Orange | 563956 |
| 2350 (16, 162) | 563191 | 557426 | Aluminum | 563957 |
| 2650 (18, 183) | NA | 557427 | Pink | 563958 |
| 2950 (20, 203) | 563192 | 557428 | Blue | 563959 |
| 3250 (22, 224) | 563193 | 557429 | Purple | 563960 |
| 5000 (34, 344) | 563194 | 557430 | Brown | 563961 |
| | High Pressure 1/8" NPTF Fittings | 3/8" Diameter | | Quantity = 25 |
| 3700 (26, 255) | 564476 | 557423 | Yellow | 563954 |
| 4600 (32, 317) | 563216 | 557424 | Red | 563955 |
| 5500 (38, 379) | 563217 | 557425 | Orange | 563956 |
| 6400 (44, 441) | 563218 | 557427 | Pink | 563958 |
| 7300 (50, 503) | 563219 | 557428 | Blue | 563959 |
| 8200 (57, 565) | NA | 557429 | Purple | 563960 |
| 9500 (66, 655) | NA | NA | Gray | NA |

Rupture-to-Atmosphere Indicator with Spud Assembly

A Spud Assembly is available to return vented lubricant to the reservoir by way of a tube. A high pressure switch is recommended to provide an audible or visual warning alarm that height system pressure has occurred.

| Pressure PSI* (MPa, bar) | Description | | |
|--------------------------|-------------------|-------------|------------|
| | Complete Assembly | Replacement | Disc Color |
| 1450 (10, 100) | 563186 | 557433 | Yellow |
| 1750 (12,121) | 563187 | 557434 | Red |
| 2350 (16, 162) | 563188 | 557436 | Aluminum |

*All pressures have a tolerance of + 500 psi (3.4 MPa, 34.5 bar)

Rupture Discs

All discs are 11/16" diameter.

| Pressure PSI* (MPa, bar) | Description | | Quantity 6/package |
|-----------------------------|-------------|------------|--------------------|
| | Single Disc | Disc Color | |
| 900 (6.2, 62) | 557431 | Black | NA |
| 1175 (8.1, 81) | 557432 | Green | NA |
| 1450 (10, 100) | 557433 | Yellow | 563962 |
| 1750 (12, 121) | 557434 | Red | 563963 |
| 2050 (14, 141) | 557435 | Orange | 563964 |
| 2350 (16, 162) | 557436 | Aluminum | 563965 |
| 2650 (18, 183) | 557437 | Pink | NA |
| 2950 (20, 203) | 557438 | Blue | 563966 |
| 3250 (22, 224) | 557439 | Purple | NA |

*All pressures have a tolerance of + 500 psi (3.4 MPa, 34.5 bar)

Singling and Crossporting Bar Assemblies

Singling Kits externally convert a "T" (Twin Outlet) section to an "S" (Single Outlet) section.

Crossporting Kits externally combine the output of two (2) adjacent sections.

| Part Numbers | | | | | | | | |
|--------------|------------|------------|-----------|--------|------------------------------------|------------------------------------|--|---------------------------------------|
| Divider | Single Kit | Right Side | Left Side | 4Rside | Gasket Upper Seal (Bar Type) | Gasket Lower Seal (Bar Type) | 90 Duro Fluoroelastomer O-Ring (plate Type) | Valve Block Mounting Screw-Long |
| MJ | 562915 | 562914 | 562914 | NA | 557359 | 557403 | NA | NA |
| MHH | 563469 | 563469 | 563470 | 563471 | NA | NA | 122276 | 556514 |
| MSP | 563469 | 563469 | 563470 | 563471 | NA | NA | 122276 | 556514 |
| MS (Nickel) | NA | NA | NA | NA | NA | NA | NA | NA |
| MX | 562916 | 562917 | 562917 | NA | 557511 | 557512 | NA | NA |
| MXP | NA | 563525 | 563524 | 563526 | NA | NA | 115010 | 555601 |
| MXP (Nickel) | NA | NA | NA | NA | NA | NA | NA | NA |
| MGO | NA | NA | NA | NA | NA | NA | NA | NA |

Cycle Indicators

Cycle Indicators provide a means of visually monitoring lube flow thru the system.

The pin type cycles in and out when lubricant is flowing. Movement of the pin is caused by the piston (the two are attached) so that when the piston moves the indicator pin in and out once, the entire divider valve has cycled.

| Valve Series | O-Ring Sealed |
|--------------|---------------|
| MS/MHH | 563251 |
| MX/MXP | 563260 |
| MGO | NA |

Cycle Counters - Part No.: 563444

The purpose of a cycle counter is to give assurance that the lubricant is flowing thru the system. Every "count" indicates one complete cycle of the divider valve. Visual inspection and/or recording of counts provides a constant check on the performance of your lubricant system and the pump. The Cycle Counter can be used on any MJ, MS, MH, MX and MXP divider valve assembly.

Cycle Switches

The function of a Cycle Switch is to electrically give assurance that the lubricant is flowing through the system. Actuated by a cycle pin, the switch can be wired to various controls.

NOTE: The cycle switch MUST be attached to a section that is equipped with a cycle indicator pin.

| Part Numbers | | | | | | |
|---|---|--------|-------------|--------|--------|--------|
| Series Flo Divider Valves | MJ | MS/MH | MS (Nickel) | MX | MXP | MGO |
| Cycle Switch and Bracket Assembly SPDT | 563272 | 563272 | 563272 | 563272 | 563272 | 563269 |
| Replacement Switch | <i>Electrical Ratings: 15 amps at 125, 250 and 480 VAC; 1/2 amp at 125 VDC, 1/4 amp at 250 VDC, 6.0 amp at 24 VDC Non-Inductive</i> | | | | | |
| Cycle Switch and Bracket Assembly DPDT | 557781 | 557781 | 557781 | 557781 | 557781 | 557781 |
| Replacement Switch | 564357 | 564357 | 564537 | 564357 | 564537 | NA |
| Cycle Switch and Bracket Assembly DPDT | <i>Electrical Ratings: 10 amps at 125 or 250 VAC; 0.3 amp at 125 VDC or 0.15 amp at 250 VDC</i> | | | | | |
| Replacement Switch | NA | NA | NA | NA | NA | NA |
| Replacement Bracket for either SPDT or DPDT Switch Assembly | 557546 | 557546 | 557546 | 557546 | 557546 | 560573 |
| Moisture Resistant Cycle Switch with 6-foot Cable and Bracket Assembly SPDT | 563273 | 563273 | 563273 | 563273 | 563273 | NA |
| Replacement Switch with 6-foot Cable | <i>Electrical Ratings: 5 amps at 125 or 250 VAC; Wire Code for Moisture Resistant Switch: BK (Com), Red (N.C), WH (N.O.), GN (Ground)</i> | | | | | |
| Replacement Switch with 6-foot Cable | 557782 | 557782 | 557782 | 557782 | 557782 | NA |

Proximity Cycle Switches

The Proximity Cycle Switches are magnetically operated single throw switches that sense the movement of the divider valve piston when it is cycling. Each proximity cycle switch provides a signal that is used to monitor the system. There are 3 different types of switches available.

Solid State Proximity Switch: Recommended for all applications including press and other demanding applications. No moving parts. Capable of operation at cycle rates above 200 cycles per minute. Rated for 50 g shock and 20 g vibration.

Reed Type Proximity Switch: Can be used with oil applications only for MS, MH and MGO divider valves at pressures up to 518 bar (7500 psi, 52 MPa) at cycle rates under 60 cycles per minute.

Field Sensitive Magnetic Proximity Switch: Dry contact, ceramic magnet operated switch. Used at pressures that do not exceed 242 bar (3500 psi, 24 MPa) at cycle rates up to 200 cycles per minute. Used in MS/MH, MX/MXP and MGO divider valves. An explosion proof version for MS/MH divider valves is available.

Magnetic Operated Proximity Switch: Not limited to valve size. Miniature snap-action switch is tripped by attraction of internal magnet to the moving divider piston. Can be used at pressures up to 518 bar (7500 psi) at cycle rates that do not exceed 150 cycles per minute.

| Description | No. of Pins | Type Seal | Part Number | | | | | | |
|--|--------------------------------------|-----------|-------------|--------|--------|--------|--------|--------|--------|
| | | | MS | MH | MX | MXP | MGO | MJ/MD | CSP |
| Unattached Reed Type (oil only) 10mA @ 120VAC 24 mA @ 24VDC 10,000,000 Cycle Life | 1/2 NPT with Leads (Explosion Proof) | O-Ring | 563427 | 563427 | NA | NA | NA | NA | NA |
| Field Sensitive Magnetic Type 3-pin and 5-pin (AC only) 2A @ 120/240 VAC 4-pin (DC only) 0.1A @ 28VDC 150,000,000 Cycle Life 50,000,000 in L15600 | 3 | O-Ring | 557741 | 557741 | 563476 | 563476 | 563970 | NA | NA |
| | | Gasket* | NA | NA | NA | NA | NA | NA | NA |
| | 5 | O-Ring | 557746 | 557746 | 564399 | 564399 | NA | NA | NA |
| | | Gasket* | NA | NA | NA | NA | NA | NA | NA |
| | 4 | O-Ring | 557747 | 557747 | 564403 | 564403 | 563495 | NA | NA |
| Magnetic Type with LED's 5A @ 24 VDC 10,000,000 Cycle Life | 3 | O-Ring | 563478 | 563478 | NA | NA | NA | NA | NA |
| | 5 | O-Ring | 563477 | 563477 | NA | NA | NA | NA | NA |
| Magnetic Type 5A @ 24VDC 5A @ 120/240 VAC 10,000,000 Cycle Life | 3 | Gasket* | NA | NA | 563486 | 563486 | NA | NA | NA |
| | 5 | O-Ring | 563484 | 563484 | 564400 | 564400 | NA | NA | NA |
| | Pigtail Lead (Explosion Proof) | O-Ring | 563485 | 563485 | NA | NA | NA | NA | NA |
| Field Sensitive Magnetic Type 25 mA @ 24VDC M12 x 1, 4-pin (DC only) 10,000,000, cycle life | 4 | O-Ring | 563500 | 563501 | NA | NA | NA | NA | NA |
| Solid State Type 500mA @ 32VDC 200,000,000 Cycle Life | 4† | Gasket | NA | NA | NA | NA | NA | 17M380 | NA |
| | 4† | O-Ring | 17L983 | 17L983 | 17L880 | 17L880 | 17L881 | NA | 17L879 |

*Consult your distributor for availability.

† M12 connection. Cable adapters for Brad Harrison® connections. Used for other proximity switches are available for retrofit applications.

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Proximity Switch Connection Cables

| Connection Cables for: | | | | | |
|------------------------|-----------------|----------|------------------------|-----------------|----------|
| 3-Pin Proximity Switch | | | 5-Pin Proximity Switch | | |
| Connector | Length - ft (m) | Part No. | Connector | Length - ft (m) | Part No. |
| Straight | 6 (1.83) | 558021 | Straight | 6 (1.83) | 558023 |
| Straight | 12 (3.66) | 558022 | Straight | 12 (3.66) | 558024 |
| NA | NA | NA | 90° | 6 (1.83) | 558965 |
| 4-Pin Proximity Switch | | | | | |
| Straight | 7 (2.13) | 568738 | NA | NA | NA |

Base Section Sub Assemblies

| Part No. | Description |
|----------|------------------------------------|
| 24N382 | PLATE, base, MSP, NPTF, 3 sect, SS |
| 24N383 | PLATE, base, MSP, NPTF, 4 sect, SS |
| 24N384 | PLATE, base, MSP, NPTF, 5 sect, SS |
| 24N385 | PLATE, base, MSP, NPTF, 6 sect, SS |
| 24N386 | PLATE, base, MSP, NPTF, 7 sect, SS |
| 24N387 | PLATE, base, MSP, NPTF, 8 sect, SS |
| 24N388 | PLATE, base, MSP, BSPP, 3 sect, SS |
| 24N389 | PLATE, base, MSP, BSPP, 4 sect, SS |
| 24N390 | PLATE, base, MSP, BSPP, 5 sect, SS |
| 24N391 | PLATE, base, MSP, BSPP, 6 sect, SS |
| 24N392 | PLATE, base, MSP, BSPP, 7 sect, SS |
| 24N393 | PLATE, base, MSP, BSPP, 8 sect, SS |

Maximum Cycle Rate and Flow Guidelines

MGO

| Smallest Piston Assembly | Number of Sections | | | | | | | | |
|--------------------------|--------------------|-----|-----|----|----|----|----|----|----|
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 600 | 185 | 140 | 110 | 90 | 80 | 70 | 60 | 55 | 50 |
| 450 | 185 | 135 | 110 | 90 | 75 | 65 | 60 | 50 | 50 |
| 300 | 180 | 130 | 100 | 80 | 70 | 60 | 55 | 50 | 45 |
| 150 | 180 | 125 | 100 | 80 | 65 | 55 | 50 | 45 | 40 |

MXP

| Smallest Piston Assembly | Number of Sections | | | | | | | |
|--------------------------|--------------------|-----|-----|-----|-----|-----|-----|-----|
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 150 | 200 | 200 | 200 | 200 | 200 | 200 | 180 | 165 |
| 125 | 200 | 200 | 200 | 200 | 200 | 195 | 175 | 155 |
| 100 | 200 | 200 | 200 | 200 | 200 | 185 | 165 | 150 |
| 75 | 200 | 200 | 200 | 200 | 200 | 175 | 155 | 140 |
| 50 | 200 | 200 | 200 | 200 | 195 | 165 | 145 | 130 |
| 75 | 200 | 200 | 200 | 200 | 165 | 140 | 125 | 120 |

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Original instructions. This manual contains English. MM 312497

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