M Series

Instrument Manifolds and Gage Valves
Instrumental Manifold

**General**

- **Compact Design & High-Strength Body** is one piece construction
- **Upstream or Downstream ports** are standard
- **Locking Pin** prevents accidental removal in service.
- **Manifold Mounting Holes**
  - All Manifolds are supplied with mounting holes as standard to enable bracket mounting.
- **Clean Smooth Internal Surfaces and Threads**
- **Metal to Metal, Bonnet to Body Seals**

**Features**

- Pressure rating up to 6000 psig (410 bar) @ 100°F (38°C)
- Temperature rating up to 1200°F (648°C) with optional Grafoil packing
- Flange seal grooves meet the design requirements of MSS-SP-99
- Body materials available in 316 stainless steel, carbon steel, alloy 400
- 100% factory tested

**Technical Data**

**Packing and Body Material vs Temperature and Pressure Rating**

<table>
<thead>
<tr>
<th>Packing Material</th>
<th>Body Material</th>
<th>Temperature Range</th>
<th>Pressure Rating @ 100 °F</th>
<th>Pressure Rating @ Max. Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PTFE</strong></td>
<td>Stainless Steel</td>
<td>-65 °F ~ 450 °F (54 °C ~ 232 °C)</td>
<td>6000 psig</td>
<td>4130 psig @ 450 °F (285 bar @ 232 °C)</td>
</tr>
<tr>
<td></td>
<td>Carbon Steel</td>
<td>-20 °F ~ 350 °F (29 °C ~ 176 °C)</td>
<td>6000 psig</td>
<td>5230 psig @ 350 °F (360 bar @ 176 °C)</td>
</tr>
<tr>
<td></td>
<td>Alloy 400</td>
<td>-65 °F ~ 450 °F (54 °C ~ 232 °C)</td>
<td>5000 psig</td>
<td>3970 psig @ 450 °F (274 bar @ 232 °C)</td>
</tr>
<tr>
<td><strong>Grafoil</strong></td>
<td>Stainless Steel</td>
<td>-65 °F ~ 1200 °F (54 °C ~ 648 °C)</td>
<td>6000 psig</td>
<td>1715 psig @ 1200 °F (118 bar @ 648 °C)</td>
</tr>
<tr>
<td></td>
<td>Carbon Steel</td>
<td>-20 °F ~ 350 °F (29 °C ~ 176 °C)</td>
<td>6000 psig</td>
<td>5230 psig @ 350 °F (360 bar @ 176 °C)</td>
</tr>
<tr>
<td></td>
<td>Alloy 400</td>
<td>-65 °F ~ 500 °F (54 °C ~ 260 °C)</td>
<td>5000 psig</td>
<td>3960 psig @ 500 °F (273 bar @ 260 °C)</td>
</tr>
</tbody>
</table>

- a) 1715 psig @ 1200°F (118 bar @ 648°C) for female NPT to female NPT manifold
- b) Not applicable over 500°F (260°C)

**Testing**

- Each instrument manifold is tested with nitrogen @ 1000 psig (69 bar) to max. leak rate of 0.1 SCCM.
- Hydrostatic shell test is performed at 1.5 times the working pressure as an option.
- Other tests are available upon request.

**Sour Gas Service**

Valves are available in materials which comply with standard NACE MR-01-75 latest revision relating to metallic materials offering optimum resistance to sulfide stress cracking

**Notice**

When you operate the valve initially or during operating the valve, you may require tightening the packing bolt. And you re-operate the valve initially after quite a long time, you may feel quite a high operating torque.

- Optional viton® flange seals available, Minimum temperature -20°F (29°C)
Bonnet Features

Variety of Stem Tips
- include non-rotating Vee (standard) and Ball tip (optional)

Stem Threads
- are hard chrome-plated and lubricated for maximum service life

Back Seating
- provides anti-blow out of stem and secondary stem seal

Robust Stainless steel Bar Handle

Packing Bolt
- allows easy packing adjustment for leaktight.

Packing
- is below stem threads construction.
- isolate stem thread from process.
- prevents stem lubricant washout.
- is PTFE standard with reinforced packing washer and Grafoil available upon request

Metal Seal Construction
- ensures safety

Materials of Construction

<table>
<thead>
<tr>
<th>Description</th>
<th>Material / ASTM Specification</th>
<th>Body Material*</th>
<th>C. Steel</th>
<th>Alloy 400/B164/B564</th>
</tr>
</thead>
<tbody>
<tr>
<td>2A* Vee tip</td>
<td>TP630 / A564</td>
<td>C. Steel</td>
<td></td>
<td>N05500 / B865</td>
</tr>
<tr>
<td>2B* Ball tip</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3* Stem</td>
<td>TP316 / A479</td>
<td>N04400 / B564</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4* Bonnet</td>
<td>TP316 / A479</td>
<td>C. Steel</td>
<td>N04400 / B564</td>
<td></td>
</tr>
<tr>
<td>5A* Stem Packing</td>
<td>PTFE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5B* Stem Packing</td>
<td>Graphite</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6* Packing Washer</td>
<td>Reinforced PTFE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Lock nut</td>
<td>TP316 / A479</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Packing bolt</td>
<td>TP316 / A479</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Handle</td>
<td>Stainless Steel</td>
<td>Stain scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Set screw</td>
<td>Stainless Steel</td>
<td>Aluminum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Locking Pin</td>
<td>Stainless Steel</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Bonnet selection by color after this page

*Note: * marked are wetted parts.
General Seite 2, 3

Remote Mounting

Direct Mounting

Gage / Root Valve

Accessories & Maintenance Kits

Ordering Information Seite 13
Remote Mounting

2-Valves Block
M2V ** 8N
0.8 kg (1.8 lb)

3-Valves Block
M3V ** 8N
2.0 kg (4.4 lb)

2-Valves Vertical
M2VV ** 8N
0.9 kg (2.0 lb)
Direct Mounting

2-Valves Single Flange
M2V1F ** 8N
1.0 kg (2.2 lb)

2-Valves Single Block Flange
M2VDM ** 8N
1.6 kg (3.5 lb)

All dimensions are in millimeters(inches) reference only, subject to change.
M Series

3-Valves Single Flange
M3V1F ** 8N
2.2 kg (4.9 lb)

3-Valves Dual Flange
M3V2F **
2.5 kg (5.5 lb)

All dimensions are in millimeters (inches) reference only, subject to change.
3-Valves Single Block Flange
**M3VDM**
1.7 kg (3.8 lb)

3-Valves Dual Block Flange
**M3V2DM**
1.8 kg (4.0 lb)

All dimensions are in millimeters(inches) reference only, subject to change.
HY-LOK CORPORATION

5-Valves Single Flange
M5V1F ** 8N
2.7 kg (6.0 lb)

5-Valves Dual Flange
M5V2F **
2.7 kg (6.0 lb)

All dimensions are in millimeters (inches) reference only, subject to change.
Instrumental Manifold

5-Valves Single Block Flange
M5VDM ** 8N
3.3 kg (7.3 lb)

5-Valves Single Block Flange „A“ style
M5VDMA ** 8N
2.7 kg (6.0 lb)

All dimensions are in millimeters(inches) reference only, subject to change.
Gage / Root Valve

Gage Valves
GV

<table>
<thead>
<tr>
<th>Part No.</th>
<th>End Connection</th>
<th>Dimensions</th>
<th>Weight (kg/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GV** MF8N</td>
<td>Male NPT 1/2&quot; Female NPT 1/2&quot;</td>
<td>L: 90 (3.54) L2: 87.0 (3.43) H: 50 (1.97) S: 32 (1.26)</td>
<td>0.6/1.3</td>
</tr>
<tr>
<td>GV** MF12N8N</td>
<td>Male NPT 3/4&quot; Female NPT 1/2&quot;</td>
<td>L: 87.0 (3.43) L2: 50 (1.97) H: 35 (1.38) S: 32 (1.26)</td>
<td>0.7/1.5</td>
</tr>
<tr>
<td>GV** MF8N12N</td>
<td>Male NPT 1/2&quot; Female NPT 3/4&quot;</td>
<td>L: 104.5 (4.11) L2: 87.0 (3.43) H: 35 (1.38) S: 32 (1.26)</td>
<td>0.7/1.5</td>
</tr>
</tbody>
</table>

Root Valves
GRV

<table>
<thead>
<tr>
<th>Part No.</th>
<th>End Connection</th>
<th>Dimensions</th>
<th>Weight (kg/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRV** MF8N</td>
<td>Male NPT 1/2&quot; Female NPT 1/2&quot;</td>
<td>L: 136 (5.35) L2: 87.0 (3.43) H: 50 (1.97) S: 32 (1.26)</td>
<td>0.9/2.0</td>
</tr>
<tr>
<td>GRV** MF12N8N</td>
<td>Male NPT 3/4&quot; Female NPT 1/2&quot;</td>
<td>L: 104.5 (4.11) L2: 87.0 (3.43) H: 35 (1.38) S: 32 (1.26)</td>
<td>1.0/2.2</td>
</tr>
<tr>
<td>GRV** MF8N12N</td>
<td>Male NPT 1/2&quot; Female NPT 3/4&quot;</td>
<td>L: 102 (4.02) L2: 87.0 (3.43) H: 35 (1.38) S: 32 (1.26)</td>
<td>1.0/2.2</td>
</tr>
<tr>
<td>GRV** F8N</td>
<td>Female NPT 1/2&quot; Female NPT 1/2&quot;</td>
<td>L: 102 (4.02) L2: 87.0 (3.43) H: 35 (1.38) S: 32 (1.26)</td>
<td>0.8/1.8</td>
</tr>
</tbody>
</table>

Gage 2-Valves
GV2 ** - MF8N
1.2 kg (2.6 lb)

Note: Available in other size upon request.

All dimensions are in millimeters/inches reference only, subject to change.
Instrumental Manifold

Accessories

Seals Kit

contains flange seal and stainless steel bolts

Oval Flange kits

(Concentric / Eccentric)

contains oval flanges, seals & bolts

Kit Ordering Number

<table>
<thead>
<tr>
<th>Basic Ordering No.</th>
<th>Seal Material</th>
<th>Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIT- * -V</td>
<td>FKM</td>
<td>-20 °F ~ 250 °F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-28 °C ~ 121 °C)</td>
</tr>
<tr>
<td>KIT- * -G</td>
<td>Graphite</td>
<td>-65 °F ~ 1000 °F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(65 °C ~ 537 °C)</td>
</tr>
<tr>
<td>KIT- * -P</td>
<td>PTFE</td>
<td>-65 °F ~ 450 °F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(53 °C ~ 232 °C)</td>
</tr>
</tbody>
</table>

* For a complete ordering number, add the desired valve and body shape designator to the basic ordering number. (See index and ordering information) e.g KIT-M3V1F-V (3-Valve, Single flange, FKM seals)

Concentric and Eccentric pipe nipples have 1/2" male NPT and 76mm(3") length. The ends of eccentric pipe nipples are offset 1.6mm(1/16") from centerline. They are available in 316 stainless steel and carbon steel.

Basic Ordering Number

H-SCNL-8N / S316 - Concentric pipe nipple male NPT 1/2", Stainless Steel
H-SENL-8N / STEL - Eccentric pipe nipple male NPT 1/2", Carbon Steel
## Accessories

### Calibration Fittings

Calibration fittings connect directly to the bleed port of differential pressure transmitter. They are available in 316 stainless steel only.

**Basic Ordering Number**
- CCF4-1U / S316 - Hy-Lok 1/4" - 1/4-28UNF thread
- CCF4-2U / S316 - Hy-Lok 1/4" - 5/16-24UNF thread

### Gage Adapter

Gage adapters connect to gage for calibration. They are available in 316 stainless steel and carbon steel.

**Basic Ordering Number**
- H-MFAH8N-6G-G / S316 - Male NPT 1/2" - Female ISO 228/1 3/8", Stainless steel
- H-MFAH-4NG-G / STEL - Male NPT 1/4" - Female ISO 228/1 1/4", Carbon steel

### Vent plugs, Bleed & Purge Valves

Bleed & Purge valves used to vent to atmosphere and to assist in calibration. They are available in 316 stainless steel only.

**Basic Ordering Number**
- VPM - * / S316 - Vent plug Male NPT Pipe Thread
- BLV - * BT / S316 - Bleed valve Male NPT Pipe_Thread
- PVM - * / S316 - Purge valve Male NPT Pipe Thread

* For a complete ordering number, add the desired size designator BN(1/2”NPT) or 4N(1/4”NPT)
e.g VPM - 4N/S316 Vent plug Male 1/4”NPT
Mounting Kit

Mounting kit consist of Brackets, U-bolts, Bolt, Nut & Washer. Mounting bracket can be vertically or horizontally mounted. Kit material is available stainless steel and zinc plated carbon steel.

Kit Ordering Number
KIT-MMB / 5304 (in case of carbon steel, KIT-MMB/ STEL)

Maintenance Kits (See page 3)

<table>
<thead>
<tr>
<th>Basic Ordering No.</th>
<th>Bonnet Type</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIT-MAV-SET- **</td>
<td>MAV</td>
<td>Bonnet, Stem tip, Stem, Packing, Packing Washer, Packing bolt, Handle, Lock nut, Set screw, Locking plate (pin)</td>
</tr>
<tr>
<td>KIT-MBV-SET- **</td>
<td>MBV</td>
<td>MAV</td>
</tr>
<tr>
<td>KIT-MCV-SET- **</td>
<td>MCV</td>
<td>MAV</td>
</tr>
</tbody>
</table>

* For a complete ordering number, add the desired stem tip shape & packing material designator as a suffix to the maintenance kit basic ordering number
  e.g.: KIT-MBV-SET-VT (Vee tip, PTFE stem packing)

Mounting Kit & Accessories Application

<table>
<thead>
<tr>
<th>Stem Tip Shape</th>
<th>Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vee</td>
<td>V</td>
</tr>
<tr>
<td>Ball</td>
<td>B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Packing Mat’l</th>
<th>Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTFE</td>
<td>T</td>
</tr>
<tr>
<td>Graphite</td>
<td>G</td>
</tr>
</tbody>
</table>
Ordering Information

Valve Designator
- M2V - 2 Valves Block
- M2V1F - 2 Valves Single Flange
- M2VM - 2 Valves Single Block Flange
- M3V - 3 Valves Block
- M3V1F - 3 Valves Single Flange
- M3VM - 3 Valves Single Block Flange
- M3VM2M - 3 Valves Dual Block Flange
- M5V - 5 Valves Block
- M5V1F - 5 Valves Single Flange
- M5V2F - 5 Valves Dual Flange
- M5VM - 5 Valves Single Block Flange
- M5VM2M - 5 Valves Single Block Flange "A" style
- GV - Gage Valves
- GRV - Root Valves
- GV2 - Gage 2 Valves

Stem Tip Designator
- V - Vee tip (Standard)
- B - Ball tip

Packing Designator
- T - PTFE (Standard)
- G - Graphite

Connection Size Designator
- Nil - Both flanged
- 8N - NPT 1/2"
- 8T - Hy-Lok 1/2"

Body Material Designator
- S316 - Stainless Steel Type 316
- 316L - Stainless Steel Type 316L
- MONE - Alloy 400
- STEL - Carbon Steel

End Connection Designator
Application only for gage valve (See page 11)
- MF - Male to Female
- F - Female to Female
- FM - Female to Male

Option Designator
- SOG - NACE MR-01-75
- P - with Plug

Note: * *: No designator is required for standard items, e.g. M5V1FGB8N-S316

SAFETY in VALVE SELECTION

Proper installation, materials compatibility, operation and maintenance of these valves are the responsibility of the user. The total system design must be taken into consideration to ensure optimal performance and safety.