# **ANDERSON GREENWOOD** MB SERIES INTEGRAL MANIFOLDS

A range of 2, 3 or 5-valve integral manifolds for connection to bottom inlet, low-profile pressure transmitters

MB2

MB3

MB5

## GENERAL APPLICATION

The MB series includes 2 valve manifolds for static pressure; 3 and 5 valve models for differential pressure transmitters with specific variants for gas, liquid and power services, including those that meet ASME B31.1 or B31.3 for fossil fuel power plants.

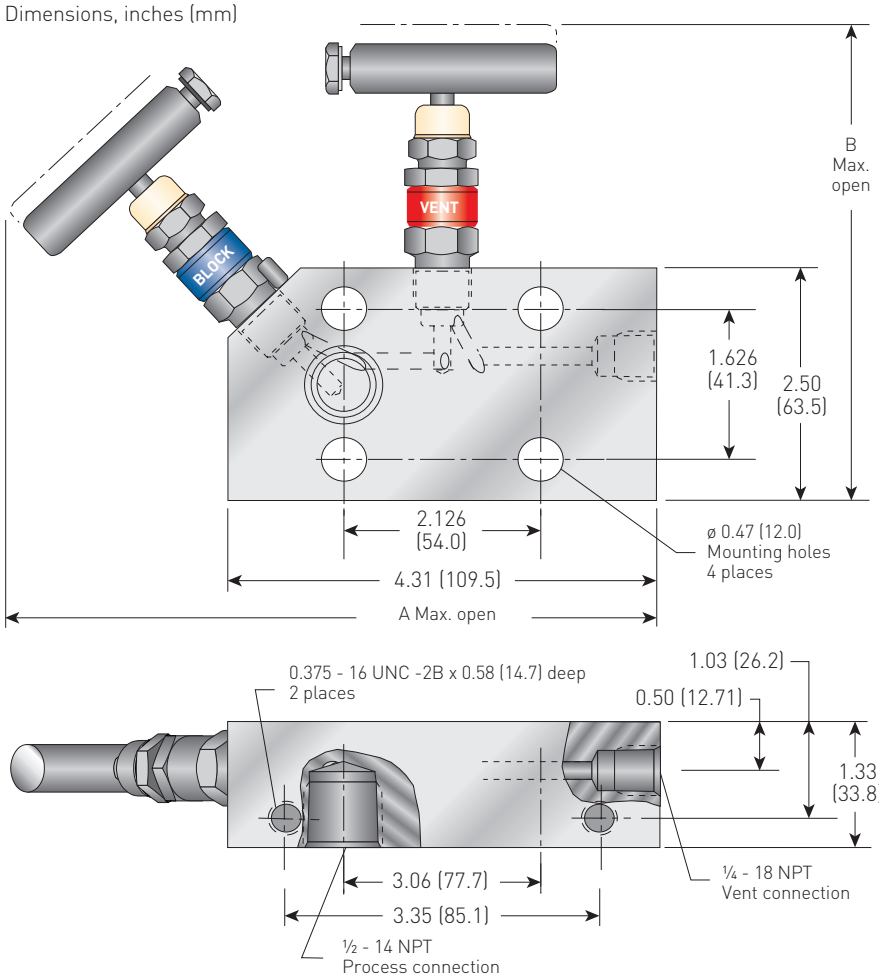
## TECHNICAL DATA

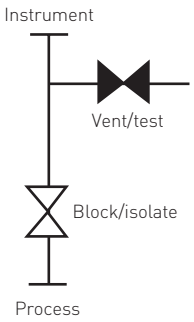
| | |
|---|---|
| Materials: | SS, Hastelloy® |
| Seats: | Metal |
| Connections: | Pipe and flanged |
| Instrument: | Flanged |
| Process: | ½" NPT |
| Orifice size: | 0.156" (4.8 mm) |
| Pressure (max.): | 6000 psig (414 barg) |
| Temperature (max.): | 1000°F (538°C) |

## FEATURES

- Ball end stems eliminate seat galling, provide bubble-tight shutoff and long life. Hardened, non-rotating balls ensure perfectly aligned closure.
- Packing below threads prevents lubricant washout, thread corrosion, process contamination and eliminates galling.
- Easily adjustable PTFE packing decreases replacement downtime and increases valve life.
- Dust covers protect stems from lubricant contamination.
- Safety back seating prevents stem blowout or accidental removal and provides a metal-to-metal secondary stem seal while in the fully open position.
- ENC plated 316 SS stems prevent galling or freezing of stem threads.
- Rolled stem and bonnet threads provide additional strength.
- Mirror stem finish in the packing areas provides smooth operation and extends packing life.
- Metal-to-metal body-to-bonnet seals in constant compression prevent bonnet thread corrosion, eliminate possible tensile breakage and give reliable seal points.
- Bonnet lock pins prevent accidental separation from the body while enabling easy maintenance and repair.
- Manifold transmitter installation envelope same as Coplanar installation.

MB2 2-VALVE MANIFOLD FOR STATIC PRESSURE
Dimensions, inches (mm)




**DIMENSIONS - inches (mm)**

| Valve[1] | PTFE packed | Grafoil® and Low emissions graphite packed |
|---|---|---|
| A | 6.85 (174.0) | 7.49 (190.2) |
| B | 5.10 (129.5) | 5.75 (146.1) |

**PRESSURE AND TEMPERATURE RATINGS**

| Valve | Packing | Ratings |
|---|---|---|
| SS | PTFE | 6000 psig at 200°F (414 barg at 93°C)<br>4000 psig at 500°F (276 barg at 260°C) |
| SS | Grafoil®/<br>Low emissions graphite | 6000 psig at 200°F (414 barg at 93°C)<br>1500 psig at 1000°F (103 barg at 538°C) |
| SG[2] | PTFE | 6000 psig at 200°F (414 barg at 93°C)<br>4000 psig at 500°F (276 barg at 260°C) |
| SG[2] | Grafoil®/<br>Low emissions graphite | 6000 psig at 200°F (414 barg at 93°C)<br>1500 psig at 1000°F (103 barg at 538°C) |
| SG3[3] | PTFE | 6000 psig at 200°F (414 barg at 93°C)<br>4000 psig at 500°F (276 barg at 260°C) |
| SG3[3] | Grafoil®/<br>Low emissions graphite | 6000 psig at 200°F (414 barg at 93°C)<br>1500 psig at 1000°F (103 barg at 538°C) |

| Minimum temperature | |
|---|---|
| 316 SS O-ring seal | -20°F (-29°C) |
| 316 SS, Monel®, Hastelloy®, PTFE packed | -70°F (-57°C) |
| 316 SS, Monel®, Hastelloy®, Grafoil® packed | -70°F (-57°C) |

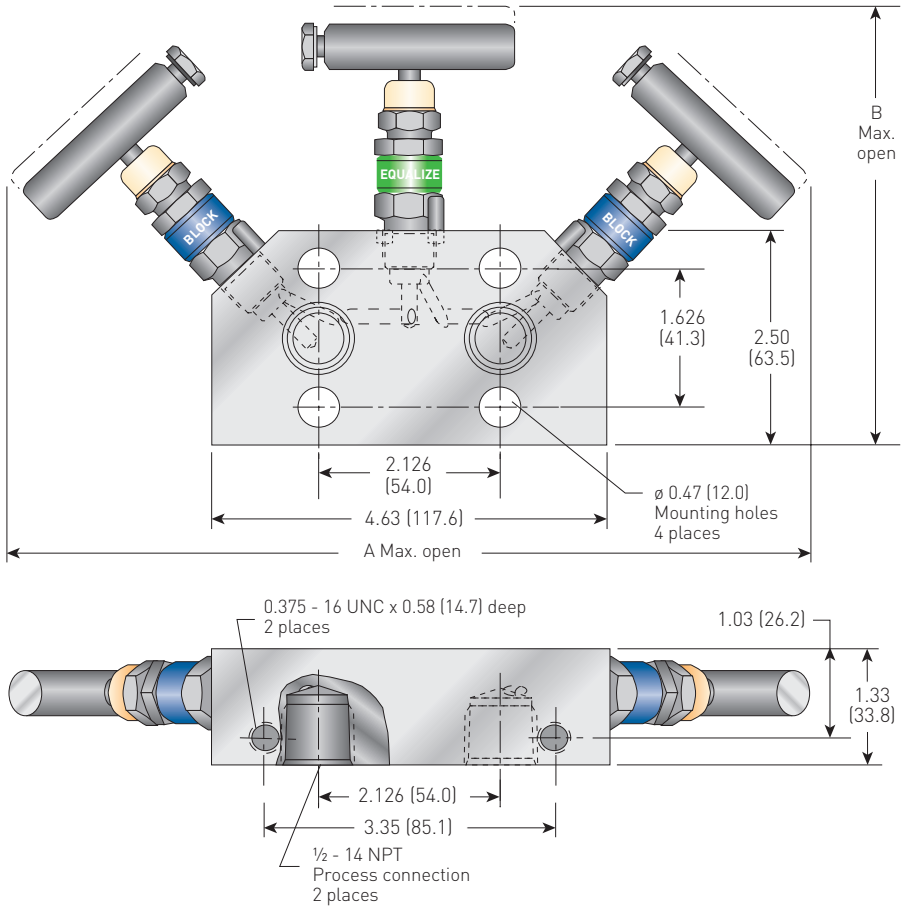
**STANDARD MATERIALS**

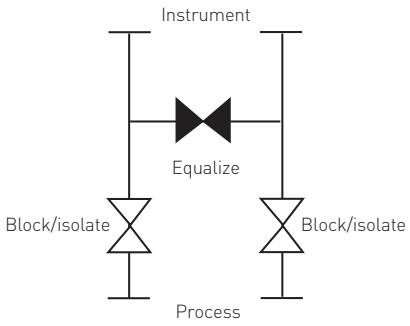
| Valve | Body and bonnet | Stem and ball |
|---|---|---|
| SS | A479-316<br>316 | A276-316<br>316 |
| SG[2] | A479-316<br>316 | Monel® 400<br>Monel® K500 |
| SG3[3] | Hastelloy® C-276 | Hastelloy® C-276<br>Elgiloy® |

**NOTES**

1. Approximate valve weight: 4.1 lb (1.9 kg). 0.156 inch (4.0 mm) diameter orifice. Valve $C_v$ 0.36 maximum.
2. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ⩽ 50 mg/l (ppm)) and NACE MR0103.
3. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)).

MB3 3-VALVE MANIFOLD WITH OPTIONAL EXTERNALLY VALVED TEST PORTS
Dimensions, inches (mm)




**DIMENSIONS - inches (mm)**

| Valve[1] | PTFE packed | Grafoil® and Low emissions graphite packed |
|---|---|---|
| A | 9.60 (243.8) | 10.98 (278.9) |
| B | 5.10 (129.5) | 5.75 (146.1) |

**PRESSURE AND TEMPERATURE RATINGS**

| Valve | Packing | Ratings |
|---|---|---|
| SS | PTFE | 6000 psig at 200°F (414 barg at 93°C)<br>4000 psig at 500°F (276 barg at 260°C) |
| SS | Grafoil®/<br>Low emissions graphite | 6000 psig at 200°F (414 barg at 93°C)<br>1500 psig at 1000°F (103 barg at 538°C) |
| SG[3] | PTFE | 6000 psig at 200°F (414 barg at 93°C)<br>4000 psig at 500°F (276 barg at 260°C) |
| SG[3] | Grafoil®/<br>Low emissions graphite | 6000 psig at 200°F (414 barg at 93°C)<br>1500 psig at 1000°F (103 barg at 538°C) |
| SG3[4] | PTFE | 6000 psig at 200°F (414 barg at 93°C)<br>4000 psig at 500°F (276 barg at 260°C) |
| SG3[4] | Grafoil®/<br>Low emissions graphite | 6000 psig at 200°F (414 barg at 93°C)<br>1500 psig at 1000°F (103 barg at 538°C) |

| Minimum temperature | |
|---|---|
| 316 SS O-ring seal | -20°F (-29°C) |
| 316 SS, Monel®, Hastelloy®, PTFE packed | -70°F (-57°C) |
| 316 SS, Monel®, Hastelloy®, Grafoil® packed | -70°F (-57°C) |

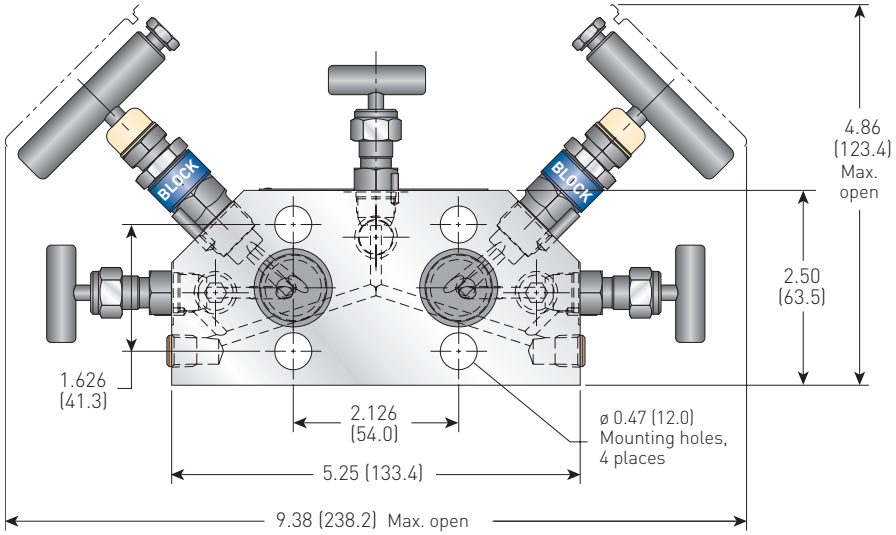
**STANDARD MATERIALS**

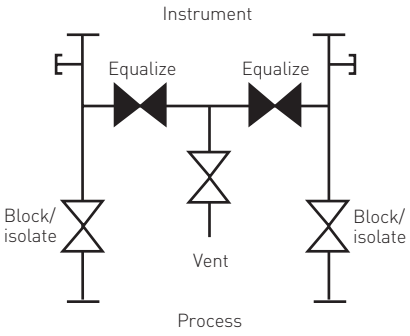
| Valve[2] | Body and bonnet | Stem and ball |
|---|---|---|
| SS | A479-316<br>316 | A276-316<br>316 |
| SG[3] | A479-316<br>316 | Monel® 400<br>Monel® K500 |
| SG3[4] | Hastelloy® C-276 | Hastelloy® C-276<br>Elgiloy® |

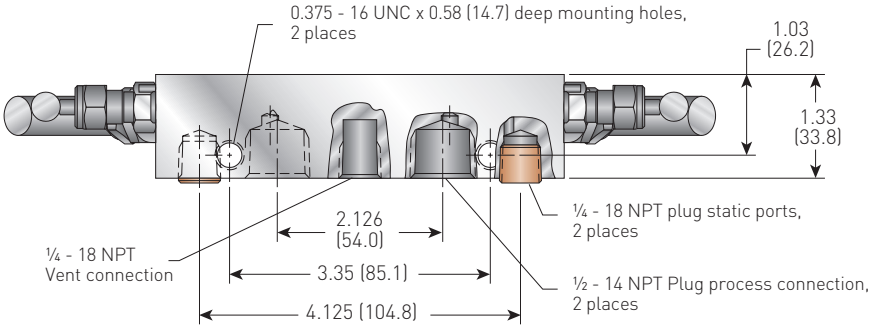
**NOTES**

1. Approximate valve weight:
   5.0 lb (2.3 kg) for MC3VI ( )-4-H5,
   4.4 lb (2.0 kg) for MC3VI ( )-4
   0.156 inch (4.0 mm) diameter orifice.
   Valve $C_v$ 0.36 maximum.
2. Optional test port valves are H5VDS-22, soft seat only.
3. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103.
4. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)).

MB5G 5-VALVE MANIFOLD FOR GAS SERVICE (PATENT PROTECTED)
Dimensions, inches (mm)




## PRESSURE AND TEMPERATURE RATINGS

| Valve | Ratings |
|---|---|
| SS, SG[2], SG3[3] | 6000 psig at 200°F (414 barg at 93°C)<br>4000 psig at 500°F (276 barg at 260°C) |

| Minimum temperature | |
|---|---|
| 316 SS O-ring seal | -20°F (-29°C) |
| 316 SS, Monel®, Hastelloy®, PTFE packed | -70°F (-57°C) |
| 316 SS, Monel®, Hastelloy®, Grafoil® packed | -70°F (-57°C) |

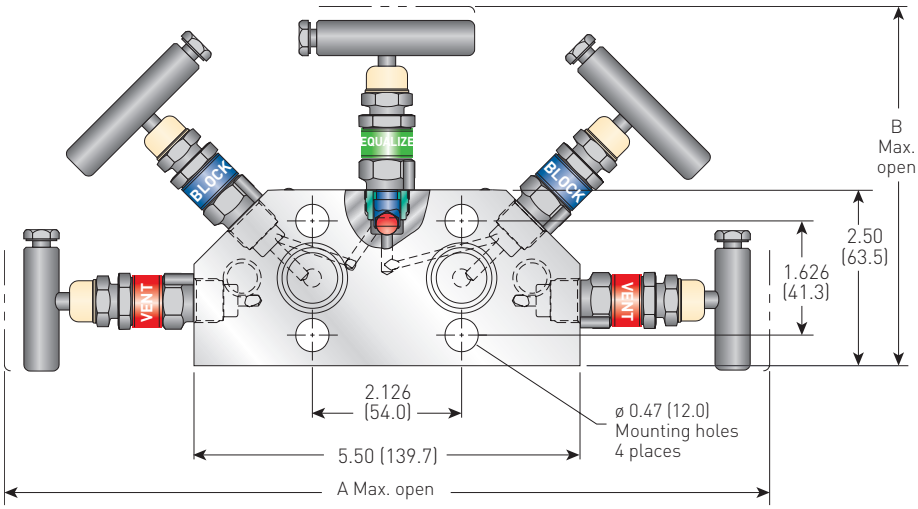
## STANDARD MATERIALS

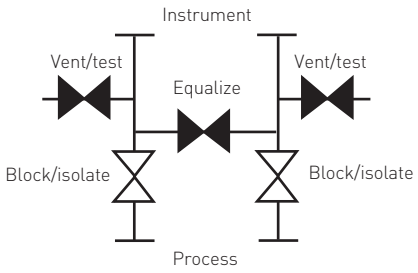
| Valve[1] | Body and bonnet | Stem and ball | Packing |
|---|---|---|---|
| SS | A479-316<br>316 | A276-316<br>316 | PTFE |
| SG[2] | A479-316<br>316 | Monel® 400<br>Monel® K500 | PTFE |
| SG3[3] | Hastelloy® C-276 | Hastelloy® C-276<br>Elgiloy® | PTFE |

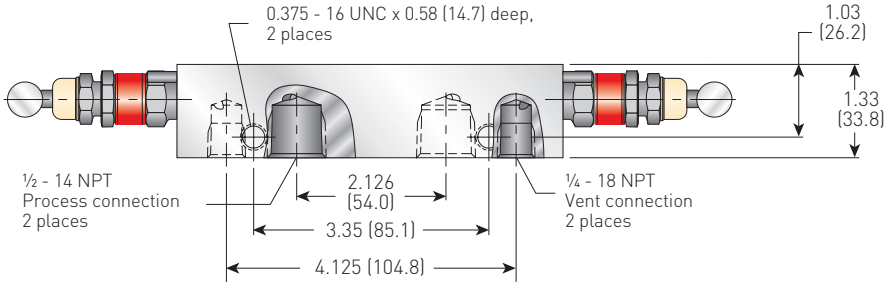
**NOTES**

1. Approximate valve weight: 5.3 lb (2.4 kg).
   0.156 inch (4.0 mm) diameter orifice.
   Valve $C_v$ 0.36 maximum.
2. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ⩽ 50 mg/l (ppm)) and NACE MR0103.
3. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)).

MB5P 5-VALVE MANIFOLD WITH TWO INTEGRAL TEST VALVES (PATENT PROTECTED)
Dimensions, inches (mm)




## PRESSURE AND TEMPERATURE RATINGS

| Valve | Ratings |
|---|---|
| SS, SG[2], SG3[3] | 6000 psig at 200°F (414 barg at 93°C)<br>4000 psig at 500°F (276 barg at 260°C) |

## DIMENSIONS - inches (mm)

| Valve[1] | PTFE packed | Grafoil® and Low emissions graphite packed |
|---|---|---|
| A | 10.95 (278.1) | 12.40 (315.0) |
| B | 5.10 (129.5) | 5.75 (146.1) |

## STANDARD MATERIALS

| Valve | Body and bonnet | Stem and ball | Packing |
|---|---|---|---|
| SS | A479-316<br>316 | A276-316<br>316 | PTFE |
| SG[2] | A479-316<br>316 | Monel® 400<br>Monel® K500 | PTFE |
| SG3[3] | Hastelloy® C-276 | Hastelloy® C-276<br>Elgiloy® | PTFE |

| Minimum temperature | |
|---|---|
| Carbon steel | -20°F (-29°C) |
| 316 SS O-ring seal | -20°F (-29°C) |
| 316 SS, Monel®, Hastelloy®, PTFE packed | -70°F (-57°C) |
| 316 SS, Monel®, Hastelloy®, Grafoil® packed | -70°F (-57°C) |

**NOTES**

1. Approximate valve weight: 5.3 lb (2.4 kg).
   0.156 inch (4.0 mm) diameter orifice.
   Valve $C_v$ 0.36 maximum.
2. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ⩽ 50 mg/l (ppm)) and NACE MR0103.
3. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)).
4. Valve bonnet labels not supplied on Grafoil® packed bonnets due to temperature limitations.

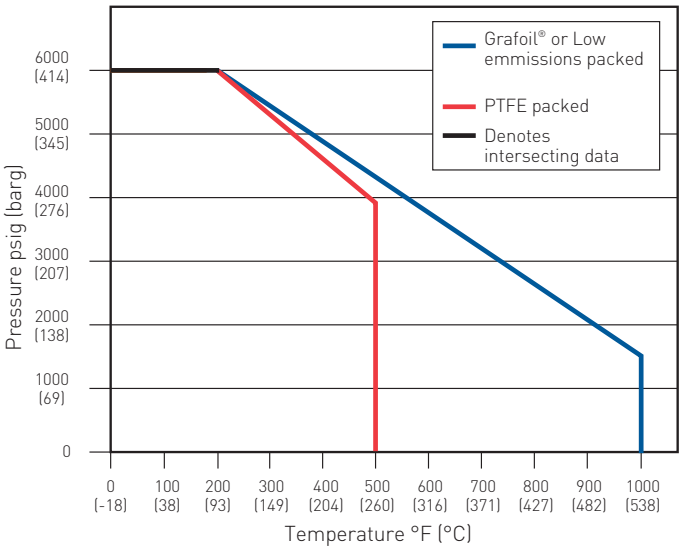
## BONNET ASSEMBLIES

The metal-seated bonnet assemblies have rotating stems with free swivel ball-type seats for long service life. The specially hardened ball seat is ideal for both gas and liquid service.

All stem threads are rolled and lubricated to prevent galling and reduce operating torque. The PTFE stem seal is a patented packing which is adjustable in service. All bonnets are assembled with a bonnet locking pin to prevent accidental removal while in service and PTFE bonnets have a protective dust cap fitted to contain stem lubricant and prevent the influx of contaminants.

The high-temperature bonnet assemblies use stems and bonnets incorporating adjustable graphite rings and back-up pressure rings to ensure a leak-free stem seal and are fitted with larger size T-bar handles.

PRESSURE VS. TEMPERATURE



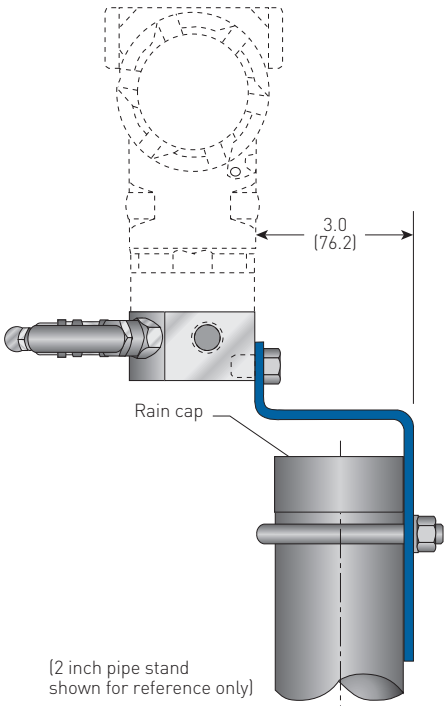

| Minimum temperature | |
|---|---|
| 316 SS O-ring seal | -20°F (-29°C) |
| 316 SS, Monel®, Hastelloy®, PTFE packed | -70°F (-57°C) |
| 316 SS, Monel®, Hastelloy®, Grafoil® packed | -70°F (-57°C) |

## AGCO MOUNT KITS

| Manifold style | Kit part no. | Material |
|---|---|---|
| MB | 06.1662.502 | CS[1] |
| MB | 06.1662.501 | SS |

**NOTE**

1. Zinc chromate plated.



## SELECTION GUIDE

| Example: | | MB | 3 | V | I | S | -4 | -AM |
|---|---|---|---|---|---|---|---|---|
| **Style** | | | | | | | | |
| **MB** | | | | | | | | |
| **Type** | | | | | | | | |
| **2** | 2 valve (static pressure) | | | | | | | |
| **3** | 3 valve (ΔP) | | | | | | | |
| **5G** | 5 valve (gas) (ΔP) | | | | | | | |
| **5P** | 5 valve (power) (ΔP) | | | | | | | |
| **Packing** | | | | | | | | |
| **V** | PTFE | | | | | | | |
| **H** | Grafoil® (not available for MB5G) | | | | | | | |
| **E** | Low emissions graphite (not available for MB5G) | | | | | | | |
| **Seat** | | | | | | | | |
| **I** | Integral (body material) | | | | | | | |
| **Material** | | | | | | | | |
| **S** | 316 SS | | | | | | | |
| **J** | Hastelloy® | | | | | | | |
| **End connection** | | | | | | | | |
| **4** | ½ inch FNPT | | | | | | | |

| | |
|---|---|
| **Options** | |
| **-AM** | AGCO Mount kit for 2-inch pipe stand mounting of manifold |
| **-BL** | Bonnet lock device (standard on power plant manifolds) Grafoil® only |
| **-CB** | Ceramic ball ended stem |
| **-CL00** | Cleaned for chlorine service |
| **-H5** | H5VDS-22 vent valve (2) (MB3 only) |
| **-1H5** | H5VDS-22 vent valve (1) (MB2, MB3 only) |
| **-HD** | Hydrostatic testing (100 percent) (MSS SP-61) |
| **-OC00** | Cleaned for oxygen service |
| **-SSA**[1] | SS flange bolt (grade 18-8) - maximum pressure rating 4500 psi (310 barg) |
| **-SSB** | 316 SS flange bolt (B8M Class 2) - will provide full pressure rating |
| **-SSC**[1] | 316 flange bolt (B8M) - maximum pressure rating 4500 psi (310 barg) |
| **-SG** | (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for C-chloride conditions ⩽ 50 mg/l (ppm)) and NACE MR0103 (SS valves only) |
| **-SG3** | (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)) |

**NOTES**

1. 316 SS bolts lower pressure ratings to a maximum of 4500 psi (310 barg). Consult factory for full rating with 316 SS bolts.
2. Bolts, plugs, bleed plugs and gaskets are not included; contact factory if bolts, plugs or gaskets are required.

### SELECTION GUIDE - MB ASME B31.1 - POWER INDUSTRY APPLICATIONS[1]

| Example: | | MB | 3HP | S | -4 -XP | -AM |
|---|---|---|---|---|---|---|
| **Style** | | | | | | |
| **MB** | | | | | | |
| **Type** | | | | | | |
| **2HP** | 2 valve (static pressure) | | | | | |
| **3HP** | 3 valve (ΔP) | | | | | |
| **5HP** | 5 valve (power) (ΔP) | | | | | |
| **Material** | | | | | | |
| **S** | 316 SS | | | | | |
| **End connection** | | | | | | |
| **4** | ½-inch FNPT | | | | | |
| **Options** | | | | | | |
| **-AM** | AGCO Mount kit for 2-inch pipe stand mounting of manifold | | | | | |

**NOTES**

1. All Manifolds come standard with GRAFOIL® packing, integral seats, bonnet locks, and are subjected to hydrostatic testing.
2. To ASME B31.1 or B31.3 specifications, meets MSS SP-105.



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