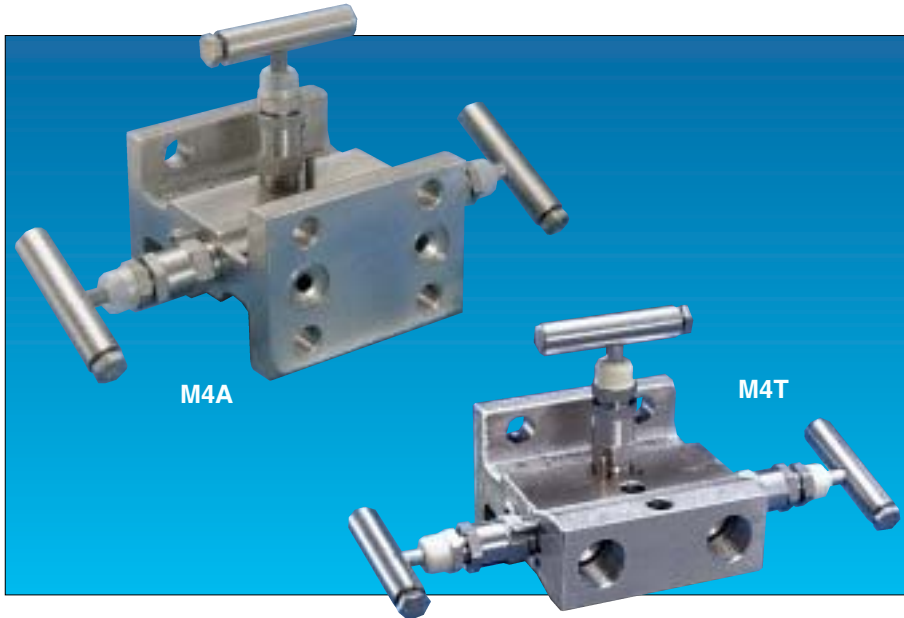


Differential Pressure Manifolds - M4A and M4T 3-Valve Manifolds



Product Overview

Our M4 Manifold is a three-valve unit designed for mounting on differential pressure transmitters having 2¹/₈-inch [54 mm] center-to-center connections.

For direct or remote mounting, the M4A permits the transmitter's flange to connect the process signal lines to the manifold directly, with either 1/2-inch pipe or tubing connections. It contains two main block valves and an equalizing valve.

For close or remote mounting, the M4T Manifold is used in applications where direct coupling to orifice flanges is not desired. On the instrument side, the M4T bolts directly to the transmitter. On the process side, two 1/2-inch NPT or AGCO-Tube connections are provided for piping or tubing into the flange taps.

General Mounting Techniques

The M4A mounts either directly at the orifice flange union or to a 2-inch pipestand using the AGCO Mount kit.

The M4T is designed for remote mounting on a 2-inch pipestand and using the AGCO Mount kit.

Features and Benefits

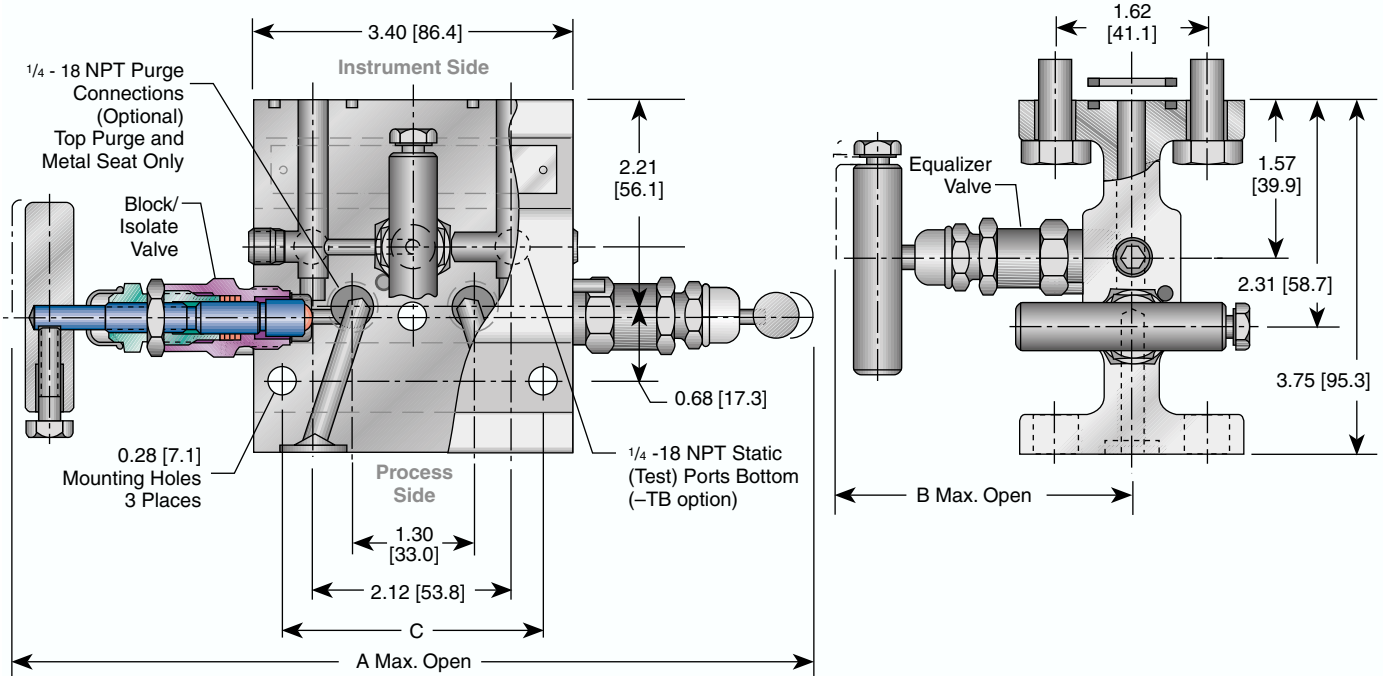
- **Cost savings/less labor** results when unitizing the manifolding. It eliminates numerous parts used in conventional methods of 'piping up.' Results in cost reduction of 20-30 percent.
- **Stem backout prevention** eliminates stem blowout, or accidental removal while in operation.
- **Bonnet-to-body seal** is metal-to-metal in constant compression below the bonnet threads. This prevents bonnet thread process corrosion, eliminates tensile breakage of bonnet, and creates a reliable seal point.
- **Roddability** of soft seated valves means impulse lines can be cleaned without using purge. Simplifies maintenance and helps ensure measurement accuracy.
- **Field-replaceable soft seats** allows replacement of seat insert without removing the valve from the line.
- **Stem finish** is burnished to a 16 RMS mirror finish in the packing area. Enables smooth stem operation and extended packing life.
- **Rolled threads** provide additional thread strength because the stem and bonnet threads are rolled, not cut.

- **Fugitive emissions.** To meet low fugitive emissions requirements, special Graphite sealed bonnets are available.
- **Fewer parts** means fewer leak points which mean fewer fugitive emissions.
- **Manifold mounts directly to the pipestand.** The AGCO Mount supports the transmitter and allows loop installation to be completed without the transmitter. Instrument removal for service or repair does not disturb installation.
- **Teflon®, GRAFOIL®, or Graphite packing** adjusts easily. Decreases downtime and increases valve life.
- **Integral hard back seat** protects against stem blowout and forms a secondary seal.
- **Protective bonnet cap** (Teflon® packed only) increases valve life by protecting against atmospheric contamination; reduces possibility of thread galling by containment of stem lubricant.



Differential Pressure Manifolds – M4A and M4T Specifications

M4A Metal Seat (Soft Seat available) Dimensions, inches [mm]

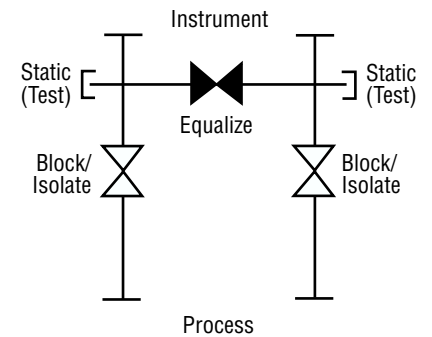


Dimensions, inches [mm]

Valve ¹	A	B	C
Soft Seat – Teflon® Packed	8.60 [218]	3.20 [81]	1.06 [27]
Metal Seat – Teflon® Packed	8.60 [218]	3.20 [81]	2.80 [71]
Metal Seat – Graphite Packed	9.90 [251]	3.85 [98]	2.80 [71]
Metal Seat – GRAFOIL® Packed	9.90 [251]	3.85 [98]	2.80 [71]

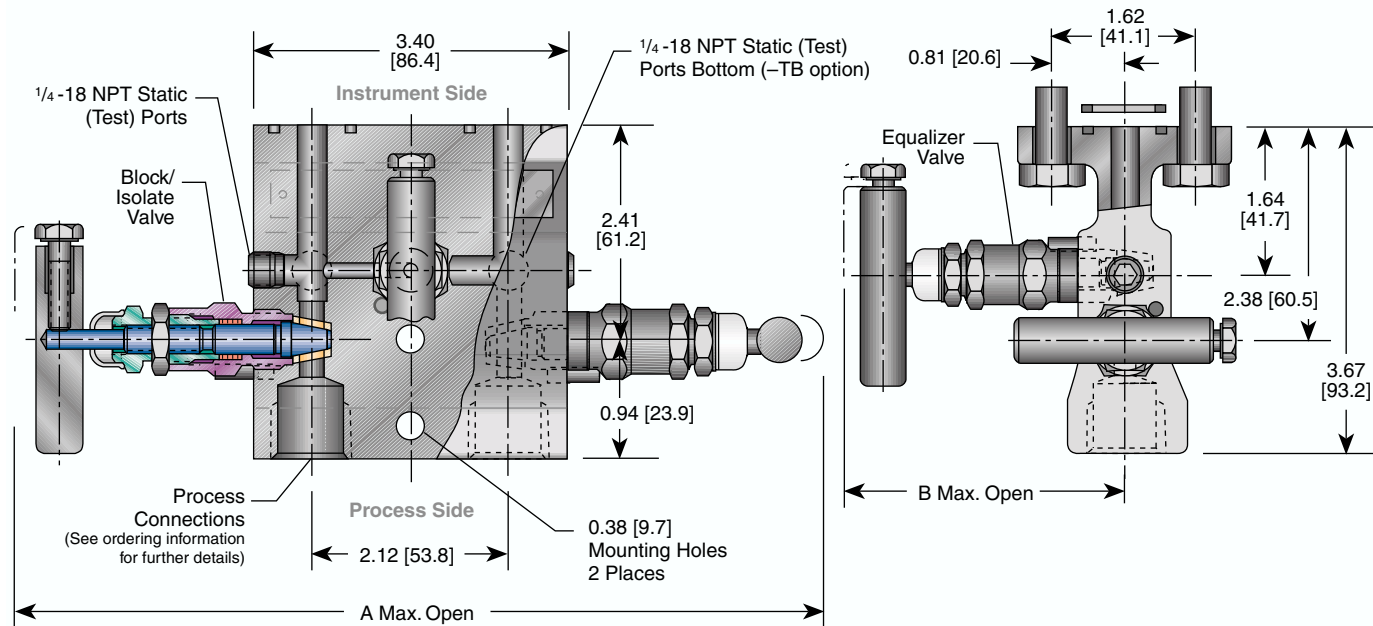
Note

- Approximate valve weight: 4.7 lb [2.1 kg].
Metal Seat:
0.156-inch [4.0 mm] diameter orifice.
Valve C_v 0.36 maximum.
Soft Seat:
0.187-inch [4.8 mm] diameter orifice.
Valve C_v 0.83 maximum.



Differential Pressure Manifolds – M4A and M4T Specifications

M4T Soft Seat (Metal Seat available) Dimensions, inches [mm]

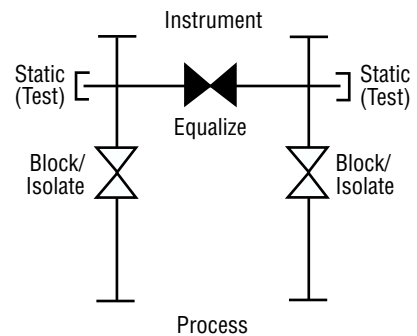


Dimensions, inches [mm]

Valve ¹	A	B
Soft Seat – Teflon® Packed	8.60 [218]	3.20 [81]
Metal Seat – Teflon® Packed	8.60 [218]	3.20 [81]
Metal Seat – Graphite Packed	9.90 [251]	3.85 [98]
Metal Seat – GRAFOIL® Packed	9.90 [251]	3.85 [98]

Note

- Approximate valve weight: 4.5 lb [2.0 kg].
Metal Seat:
0.156-inch [4.0 mm] diameter orifice.
Valve C_v 0.36 maximum.
Soft Seat:
0.187-inch [4.8 mm] diameter orifice.
Valve C_v 0.83 maximum.



Differential Pressure Manifolds – M4A and M4T Specifications

Notes

1. Instrument mounting kit furnished with the M4 includes (4) A193-B7 bolts and (2) Teflon® or GRAFOIL® flange gaskets to match bonnet packing.
2. CS parts are zinc cobalt to prevent corrosion.
3. SG (Sour Gas) meets the of NACE MR0175-latest revision.

Standard Materials

Metal Seat

Valve	Body ¹	Bonnet	Stem	Ball
CS ²	A576-10L18	A108 CS	A581-303	17-4 PH
CS ²	A576-10L18	A105 CS	A581-303	17-4 PH
SS	A479-316	A479-316	A276-316	316 SS
SG ³	A479-316	A479-316	Monel® 400	Monel® K500
Monel®	Monel® 400	Monel® R405	Monel® 400	Monel® K500
Hastelloy®	Hastelloy® A494-CW2M	Hastelloy® C276	Hastelloy® C276	Ceramic

Soft Seat

Valve	Body	Bonnet	Stem	Seat ⁴
CS ²	A576-10L18	A108 CS	A581-303	Delrin®
SS	A479-316	A479-316	A276-316	Delrin®
SG ³	A479-316	A479-316	Monel® 400	Delrin®

Pressure and Temperature Ratings

Metal Seat

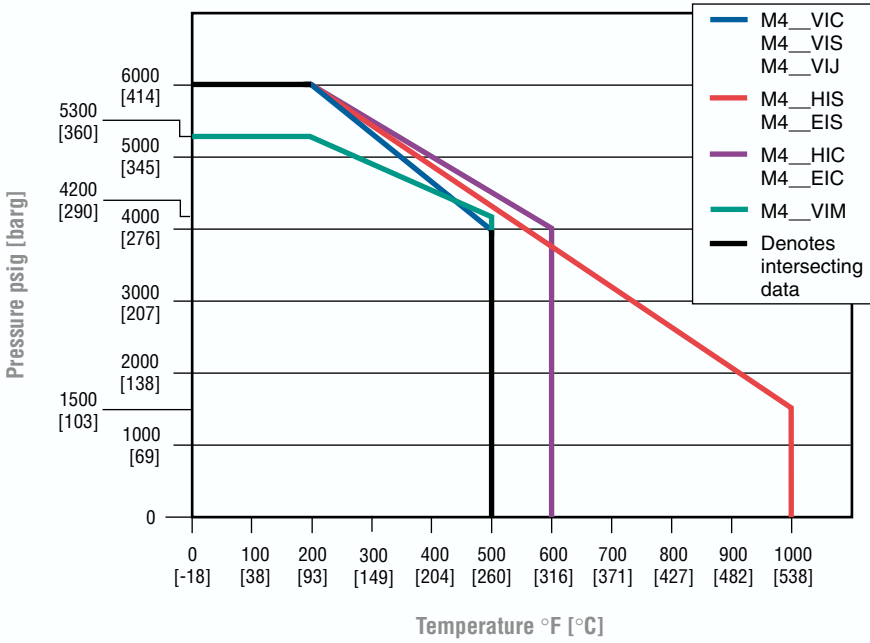
Valve	Packing	Ratings	
CS ²	Teflon®	6000 psig @ 200°F	[414 barg @ 93°C]
		4000 psig @ 500°F	[276 barg @ 260°C]
CS ²	GRAFOIL® Graphite	6000 psig @ 200°F	[414 barg @ 93°C]
		4000 psig @ 600°F	[276 barg @ 316°C]
SS	Teflon®	6000 psig @ 200°F	[414 barg @ 93°C]
		4000 psig @ 500°F	[276 barg @ 260°C]
SS	Graphite GRAFOIL®	6000 psig @ 200°F	[414 barg @ 93°C]
		1500 psig @ 1000°F	[103 barg @ 538°C]
SG ³	Teflon®	6000 psig @ 200°F	[414 barg @ 93°C]
		4000 psig @ 500°F	[276 barg @ 260°C]
SG ³	GRAFOIL®	6000 psig @ 200°F	[414 barg @ 93°C]
		1500 psig @ 1000°F	[103 barg @ 538°C]
Monel®	Teflon®	5300 psig @ 200°F	[360 barg @ 93°C]
		4200 psig @ 500°F	[290 barg @ 260°C]
Hastelloy®	Teflon®	6000 psig @ 200°F	[414 barg @ 93°C]
		4000 psig @ 500°F	[276 barg @ 260°C]

Soft Seat

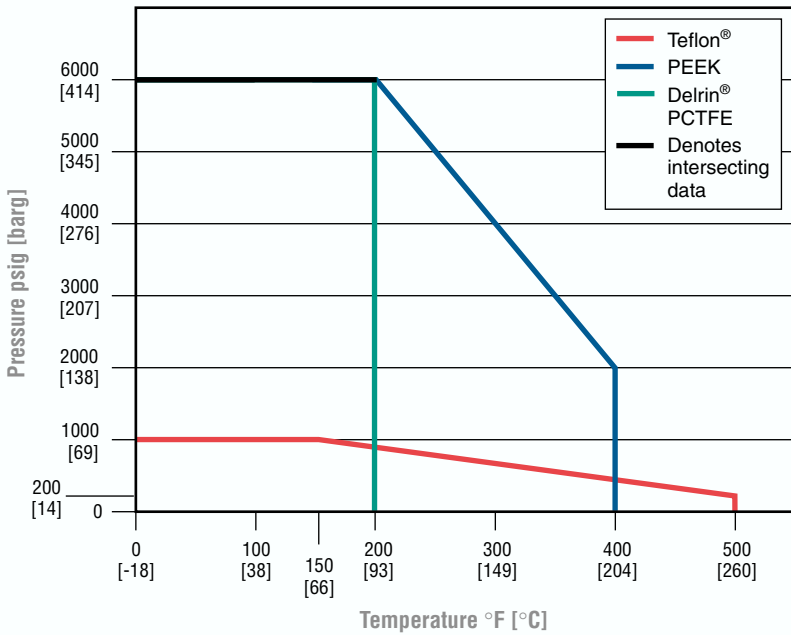
Valve	Packing	Ratings	
CS ² SS	Teflon® Viton® O-ring with Teflon® back up ring	6000 psig @ 200°F	[414 barg @ 93°C]
SG ³	Teflon®	6000 psig @ 200°F	[414 barg @ 93°C]

Differential Pressure Manifolds – M4A and M4T Specifications

Pressure vs. Temperature – Metal Seat



Pressure vs. Temperature – Soft Seat



Differential Pressure Manifolds – M4A and M4T Specifications

Notes

1. If SS flange bolts are requested, manifold ratings are downrated.
2. Integral tube fitting design, refer to page 79.
3. CS parts are zinc cobalt plated to prevent corrosion.

Ordering Information – Soft Seat

M4T V D S - 4 - SG

Valve Type

M4A – 3-Valve Manifold, Flange x Flange
M4T – 3-Valve Manifold, FNPT x Flange

Bonnet Packing

V – Teflon® R – O-ring (Viton®)

Seat

D – Delrin® K – PCTFE
E – PEEK V – Teflon®

Body Material

C – CS³, A576-10L18 W – SS, A479-316L
S – SS, A479-316

Process Connections (M4T only)

4 – 1/2-inch FNPT
AT² – Integral Single Ferrule Tube Fittings
- 3AT 3/8-inch, 316 SS
- 4AT 1/2-inch, 316 SS
ATD² – Integral Dual Ferrule Tube Fittings
- 3ATD 3/8-inch, 316 SS
- 4ATD 1/2-inch, 316 SS

Options

- | | |
|---|---|
| <ul style="list-style-type: none"> -AL Arctic Lubricant (low temperature service). Not available for CS valves. -AM AGCO Mount Kits (CS) (for pipe-stand mounting of manifold, table page 84) -BC Accessory Bracket – Mount Conduit with -AM -BL Bonnet Lock Device (Accessories, page 146) -BP Accessory Bracket Mount Purge Meters with -AM -CL Cleaned for Chlorine Service. -HD Hydrostatic Testing (100 percent) (MSS-SP-61) -LP Street Elbows and Top Purge Ports -MS Monel® Stem (standard on Monel® valves and SG valves) -OC Cleaned for Oxygen Service. -PB Bottom Purge Ports (1/4-inch FNPT) (not available with -SB option) (Metal Seat only) (option not available for M4A with -AM) -PHB Phenolic Black Handle -PT Top Purge Ports (1/4-inch FNPT) (Metal Seat only) (if elbows are required, specify -LP, not -PT) | <ul style="list-style-type: none"> -R3V Add for use with Rosemount® Model 3051C (SS 18-8 Bolts) -SB Steam Block (CS) -SG Sour Gas meets the requirements of NACE MR0175-latest revision. (SS valves only) (not available for O-ring packed valves) -SSA¹ SS Flange Bolt (grade 18-8) -SSC¹ 316 Flange Bolt (B8M) -ST Stellite Ball Ended Stem -T Taylor Groove Instrument Flange (Metal Seat only) -TB Test Ports – Bottom of Manifold (1/4-inch FNPT) (option not available for M4A with -AM) -TR68 Add for use with Rosemount® models 1151DP6, 7, 8 and 1151HP 6, 7, 8 and any DP transmitter with bolt spacing between 2.125-inch [54 mm] and 2.281-inch [58 mm] (Metal Seat only) -SP Special options or requirements not otherwise noted by descriptive codes. |
|---|---|

Differential Pressure Manifolds – M4A and M4T Specifications

Ordering Information – Metal Seat

M4T V I S - 4 - SG

Valve Type

- M4A – 3-Valve Manifold, Flange x Flange
- M4T – 3-Valve Manifold, FNPT x Flange

Bonnet Packing

- V – Teflon®
- H – GRAFOIL®
- E – Low Emissions Graphite (except M45A)

Seat

- I – Integral (body material)

Body Material

- C – CS, A576-10L18
- S – SS, A479-316
- M – Monel® 400 (M4A and M4T only)
- J – Hastelloy®
- W – SS, A479-316L

Process Connections (M4T only)

- 4 – 1/2-inch FNPT
- AT¹ – Integral Single Ferrule Tube Fittings
 - 3AT 3/8-inch, 316 SS
 - 4AT 1/2-inch, 316 SS
- ATD¹ – Integral Dual Ferrule Tube Fittings
 - 3ATD 3/8-inch, 316 SS
 - 4ATD 1/2-inch, 316 SS

Options

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> -AL Arctic Lubricant (low temperature service). Not available for CS valves. -AM AGCO Mount Kits (CS) (for pipe-tand mounting of manifold, table page 84) -BC Accessory Bracket – Mount Conduit with -AM -BL Bonnet Lock Device (Accessories, page 146) -BP Accessory Bracket Mount Purge Meters with -AM -CL Cleaned for Chlorine Service. -HD Hydrostatic Testing (100 percent) (MSS-SP-61) -LP Street Elbows and Top Purge Ports -MS Monel® Stem (standard on Monel® valves and SG valves) -OC Cleaned for Oxygen Service. | <ul style="list-style-type: none"> -PB Bottom Purge Ports (1/4-inch FNPT) (not available with -SB option) (M4T Metal Seat only) (option not available for M4A with -AM) -PHB Phenolic Black Handle -PT Top Purge Ports (1/4-inch FNPT) (Metal Seat only) (if elbows are required, specify -LP, not -PT) -R3V Add for use with Rosemount® Model 3051C (SS 18-8 Bolts) -SB Steam Block (CS) -SG Sour Gas meets the requirements of NACE MR0175-latest revision. (SS valves only) (not available for O-ring packed valves) -SSA¹ SS Flange Bolt (grade 18-8) -SSC¹ 316 Flange Bolt (B8M) -ST Stellite Ball Ended Stem | <ul style="list-style-type: none"> -T Taylor Groove Instrument Flange (Metal Seat only) -TB Test Ports – Bottom of Manifold (1/4-inch FNPT) (option not available for M4A with -AM) -TR68 Add for use with Rosemount® models 1151DP6, 7, 8 and 1151HP 6, 7, 8 and any DP transmitter with bolt spacing between 2.125-inch [54 mm] and 2.281-inch [58 mm] (Metal Seat only) -SP Special options or requirements not otherwise noted by descriptive codes. |
|--|---|--|

Note

1. Integral tube fitting design, refer to page 79.

Differential Pressure Manifolds – M4A and M4T ASME B31.1

Ordering Information – Power Industry Applications²

	M4THP	S	- 4	-XP	- SG
Valve Type					
M4AHP – 3-Valve Manifold, Flange x Flange					
M4THP – 3-Valve Manifold, FNPT x Flange					
Body Material					
C – CS, A105					
S – SS, A479-316					
Connections (Process x Instrument x Vent) (M4T only)⁵					
4 – 1/2-inch FNPT x Flange x 1/4-inch FNPT					
3AT – 3/8-inch AGCO Tube x Flange x 1/4-inch FNPT					
4AT – 1/2-inch AGCO Tube x Flange x 1/4-inch FNPT					
4B – 1/2-inch Pipe S.W. x Flange x 1/4-inch FNPT					
4TB – 1/2-inch Tube S.W. x Flange x 1/4-inch FNPT					
Options					
-AM AGCO Mount Kits (CS) (for pipestand mounting of manifold, table page 84)					
-SP Special options or requirements not otherwise noted by descriptive codes.					

Notes

- Integral tube fitting design, refer to page 79.
- All Manifolds come standard with GRAFOIL® packing, integral seats, bonnet locks, and are subjected to hydrostatic testing.
- Manifold ratings:
 - SST 6000 psig @ 100°F
2915 psig @ 1000°F
[414 barg @ 38°C]
[201 barg @ 538°C]
 - STL 6170 psig @ 100°F
3430 psig @ 800°F
[425 barg @ 38°C]
[236 barg @ 427°C]
- See page 147 for Code Requirements.
- M4A Connections are Flange x Flange x 1/4-inch FNPT.