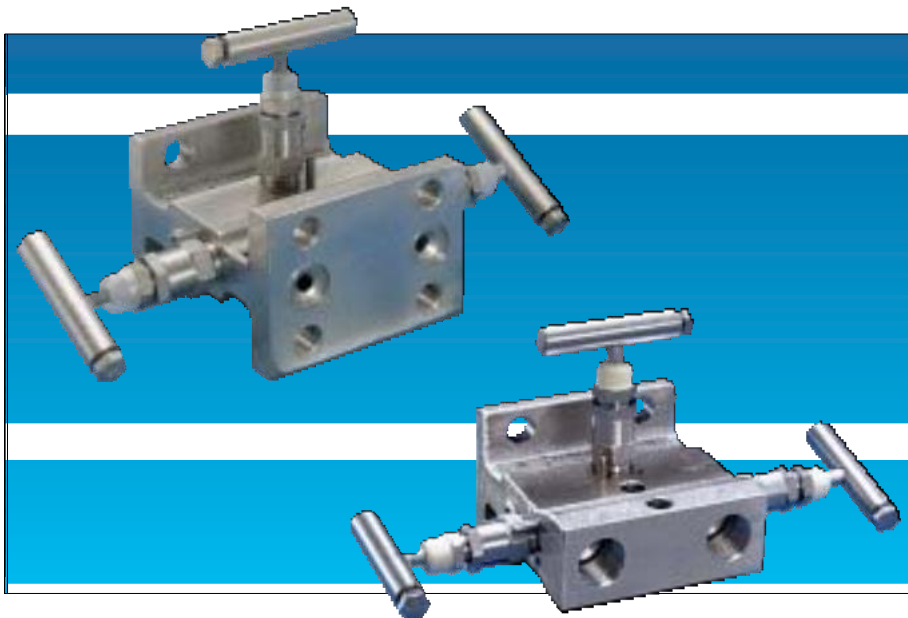


Differential Pressure Manifolds - M4A and M4T 3-Valve Manifolds



Product Overview

Our M4 Manifold is a three-valve unit designed for mounting on differential pressure transmitters having 2 1/8-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

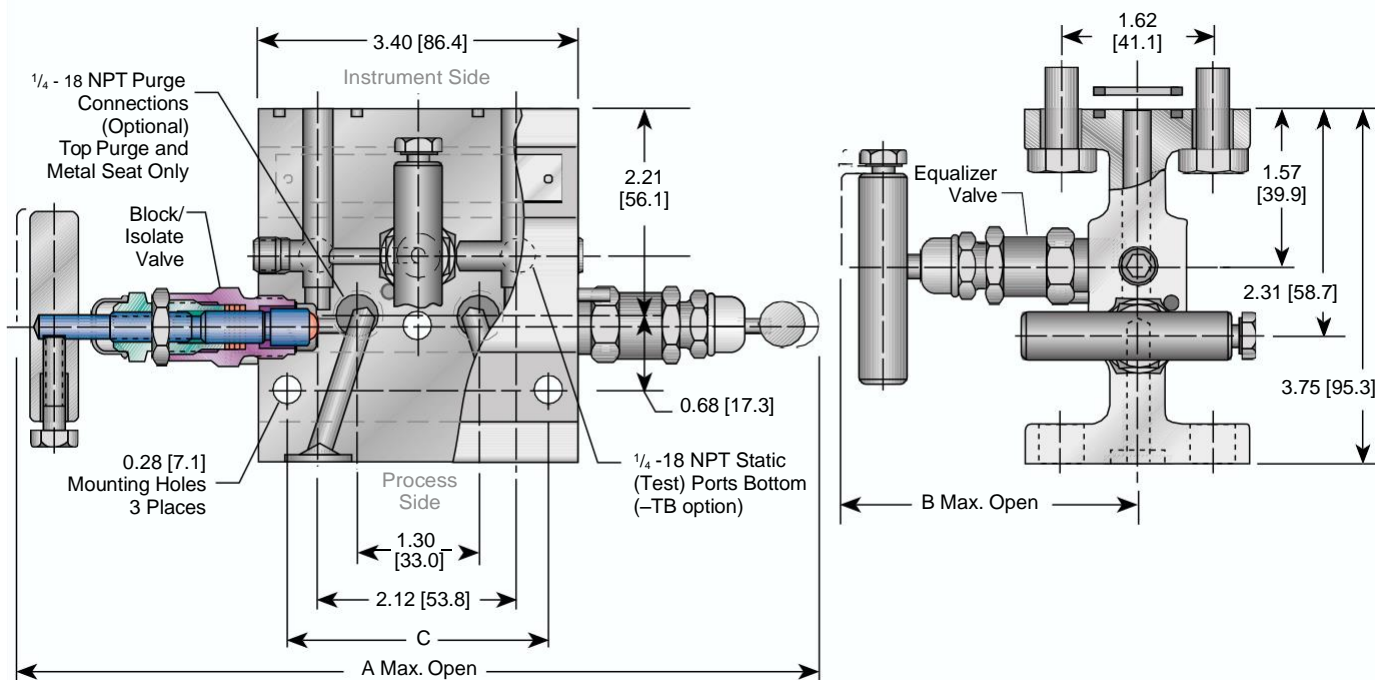
- Cost savings/less labor results when unitizing the manifolding. It eliminates numerous parts used in conventional methods of 'piping up.' Results in cost reduction of 20-30 percent.
- Stem backout prevention eliminates stem blowout, or accidental removal while in operation.
- Bonnet-to-body seal is 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]

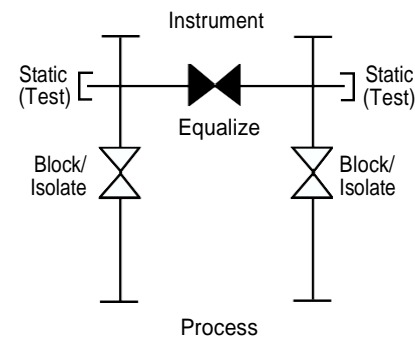


Dimensions, inches [mm]

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]

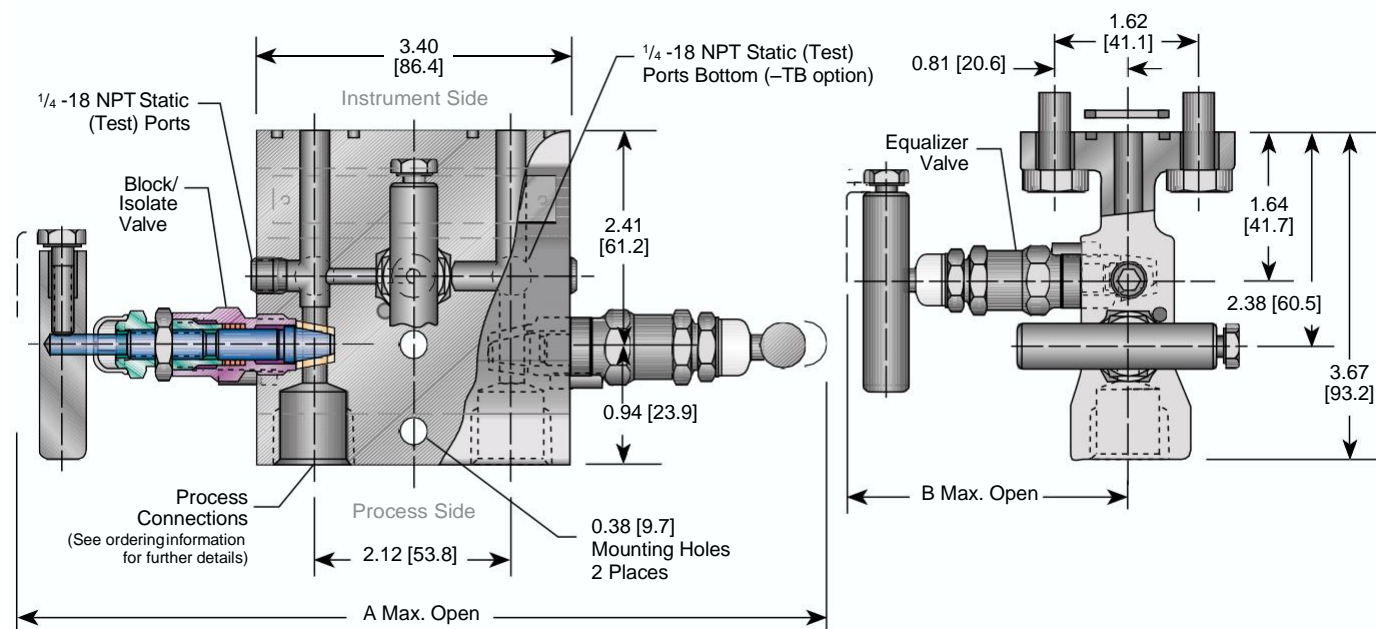
Note

1. 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]

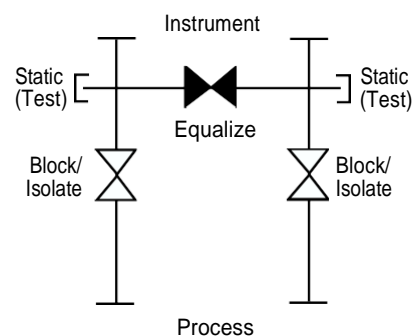


Dimensions, inches [mm]

Valve/	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

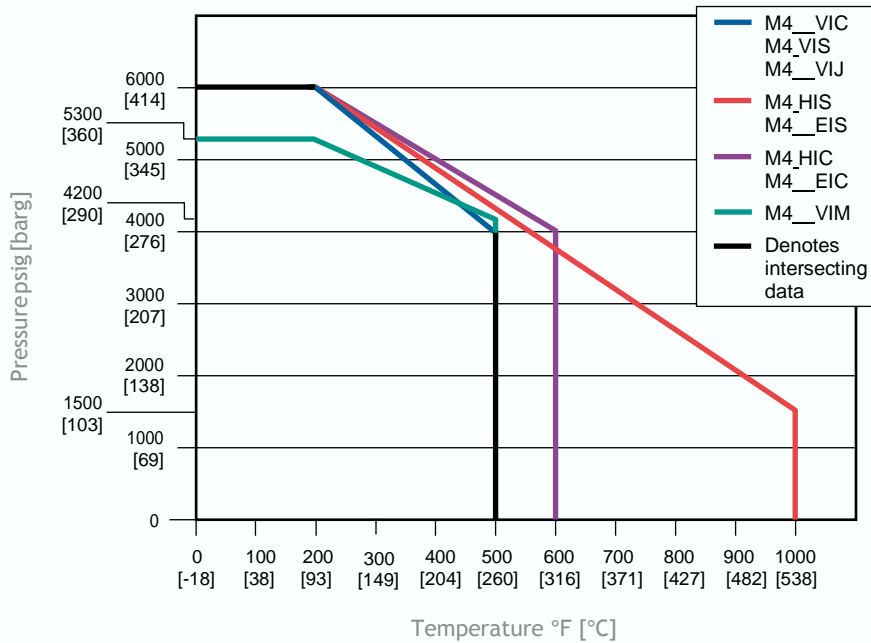
Valve	Packing	Ratings	
CS ²	Teflon®	6000 psig @ 200°F 4000 psig @ 500°F	[414 barg @ 93°C] [276 barg @ 260°C]
CS ²	GRAFOIL® Graphite	6000 psig @ 200°F 4000 psig @ 600°F	[414 barg @ 93°C] [276 barg @ 316°C]
SS	Teflon®	6000 psig @ 200°F 4000 psig @ 500°F	[414 barg @ 93°C] [276 barg @ 260°C]
SS	Graphite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

Soft Seat

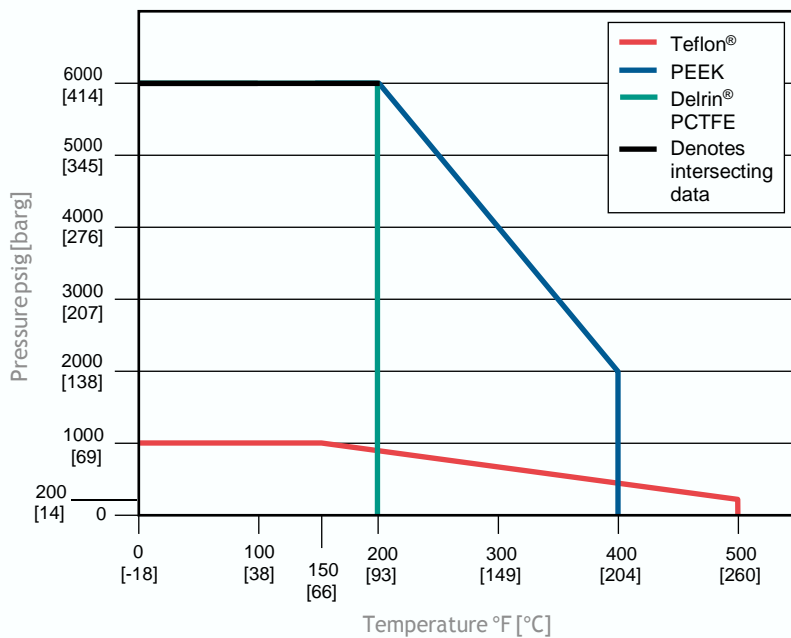
Valve	Packing	Ratings	
CS ² SS	Teflon® Viton® O-ring with Teflon® back up ring	6000 psig @ 200°F	[414 barg @ 93°C]
SG ³	Teflon®	6000 psig @ 200°F	[414 barg @ 93°C]

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®						
E – PEEK						
K – PCTFE						
V – Teflon®						
Body Material						
C – CS ³ , A576-10L18						
W – SS, A479-316L						
S – SS, A479-316						
Process Connections (M4T only)						
4 – 1/2-inch FNPT						
AT ² – Integral Single Ferrule Tube Fittings						
- 3AT 3/8-inch, 316 SS						
- 4AT 1/2-inch, 316 SS						
ATD ² – Integral Dual Ferrule Tube Fittings						
- 3ATD 3/8-inch, 316 SS						
- 4ATD 1/2-inch, 316 SS						
Options						
–AL Arctic Lubricant (low temperature service). Not available for CS valves.						–R3V Add for use with Rosemount® Model 3051C (SS 18-8 Bolts)
–AM AGCO Mount Kits (CS) (for pipes-tand mounting of manifold, table page 84)						–SB Steam Block (CS)
–BC Accessory Bracket – Mount Conduit with -AM						–SG Sour Gas meets the requirements of NACE MR0175-latest revision. (SS valves only) (not available for O-ring packed valves)
–BL Bonnet Lock Device (Accessories, page 146)						–SSA ¹ SS Flange Bolt (grade 18-8)
–BP Accessory Bracket Mount Purge Meters with -AM						–SSC ¹ 316 Flange Bolt (B8M)
–CL Cleaned for Chlorine Service.						–ST Stellite Ball Ended Stem
–HD Hydrostatic Testing (100 percent) (MSS-SP-61)						–T Taylor Groove Instrument Flange (Metal Seat only)
–LP Street Elbows and Top Purge Ports						–TB Test Ports – Bottom of Manifold (1/4-inch FNPT) (option not available for M4A with -AM)
–MS Monel® Stem (standard on Monel® valves and SG valves)						–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)
–OC Cleaned for Oxygen Service.						–SP Special options or requirements not otherwise noted by descriptive codes.
–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)						

Differential Pressure Manifolds – M4A and M4T Specifications

Ordering Information – Metal Seat

M4T V I S – 4 – SG

Note

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

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

–AL	Arctic Lubricant (low temperature service). Not available for CS valves.	–PB	Bottom Purge Ports (1/4-inch FNPT) (not available with –SB option) (M4T Metal Seat only) (option not available for M4A with –AM)	–T	Taylor Groove Instrument Flange (Metal Seat only)
–AM	AGCO Mount Kits (CS) (for pipes-tand mounting of manifold, table page 84)	–PHB	Phenolic Black Handle	–TB	Test Ports – Bottom of Manifold (1/4-inch FNPT) (option not available for M4A with –AM)
–BC	Accessory Bracket – Mount Conduit with –AM	–PT	Top Purge Ports (1/4-inch FNPT) (Metal Seat only) (if elbows are required, specify –LP, not –PT)	–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)
–BL	Bonnet Lock Device (Accessories, page 146)	–R3V	Add for use with Rosemount® Model 3051C (SS 18-8 Bolts)	–SP	Special options or requirements not otherwise noted by descriptive codes.
–BP	Accessory Bracket Mount Purge Meters with –AM	–SB	Steam Block (CS)		
–CL	Cleaned for Chlorine Service.	–SG	Sour Gas meets the requirements of NACE MR0175-latest revision. (SS valves only) (not available for O-ring packed valves)		
–HD	Hydrostatic Testing (100 percent) (MSS-SP-61)	–SSA ¹	SS Flange Bolt (grade 18-8)		
–LP	Street Elbows and Top Purge Ports	–SSC ¹	316 Flange Bolt (B8M)		
–MS	Monel® Stem (standard on Monel® valves and SG valves)	–ST	Stellite Ball Ended Stem		
–OC	Cleaned for Oxygen Service.				

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

1. Integral tube fitting design, refer to page 79.
2. All Manifolds come standard with GRAFOIL® packing, integral seats, bonnet locks, and are subjected to hydrostatic testing.
3. 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]
4. See page 147 for Code Requirements.
5. M4A Connections are Flange x Flange x 1/4-inch FNPT.