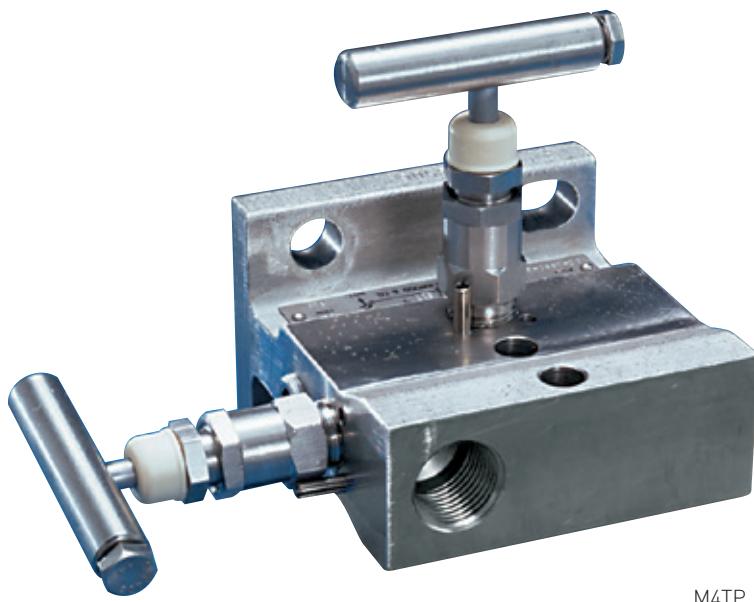


## ANDERSON GREENWOOD M4AP/M4TP STATIC PRESSURE MANIFOLDS

Block and bleed, two valve manifolds with indirect and direct mount capabilities for static pressures to 6000 psig (414 barg)



### FEATURES

- Cost savings of 20-30% when manifolding instruments by eliminating several parts used in conventional methods of 'piping up'.
- Compact design requires minimum space for operation and installation.
- Fewer leak points reduce leakage by having fewer parts to assemble.
- Free-swivelling ball end stem (metal seat) ensures bubble-tight valve closure without seat galling.
- Easy instrument removal via the AGCO Mount. Direct bolting to the manifold allows the instrument to be removed independently of the piping, facilitating repairs, service, and calibration.
- Immediate installation with AGCO Mount as the manifold, steam block, bracket and all associated piping can be installed without the instrument at the time of plant construction.
- Secure mounting provided by the AGCO Mount. Instrument piping stability is enhanced when directly supported by the pipestand through the manifold.
- Packing is below stem threads, body-to-bonnet seal is below the threads eliminating process fluid corrosion.
- Reduced chance of instrument damage. With the AGCO Mount, the instrument can be warehoused safely until final 'loop' checkout.

### GENERAL APPLICATION

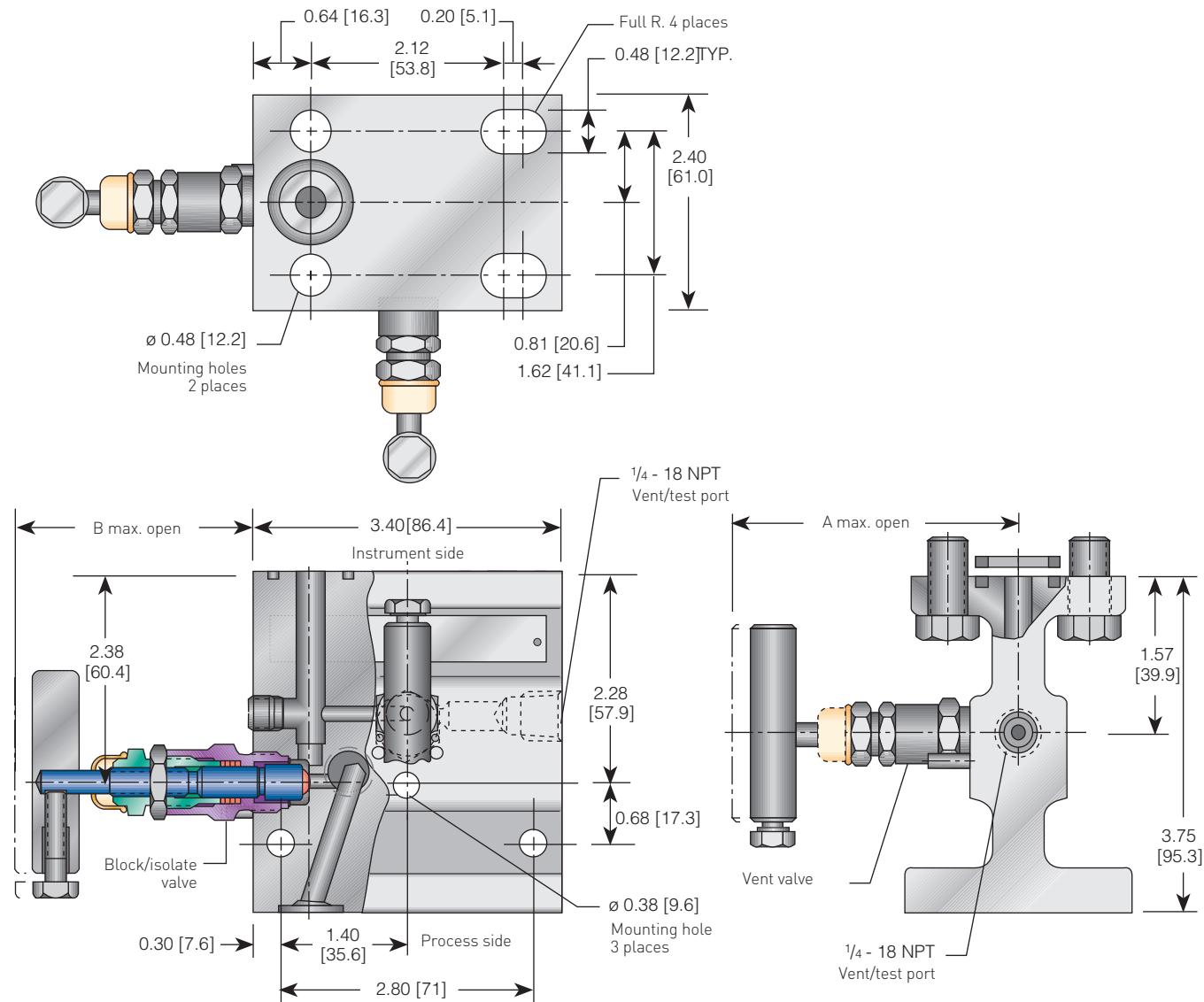
The M4AP and M4TP are designed for use on block and bleed applications with DP-style pressure transmitters.

### TECHNICAL DATA

Materials:	CS, SS, Monel
Seats:	Metal and soft
Connections:	
Instrument:	Flanged
Process:	1/2" (15mm) NPT or integral 1/2"(15mm) tube fitting
Pressure (max.):	6000 psig (414 barg)
Temperature range:	-70° to 1000°F (-57° to 538°C)

# ANDERSON GREENWOOD M4AP STATIC PRESSURE MANIFOLDS

## M4AP METAL SEAT (SOFT SEAT AVAILABLE) DIMENSIONS, INCHES (mm)

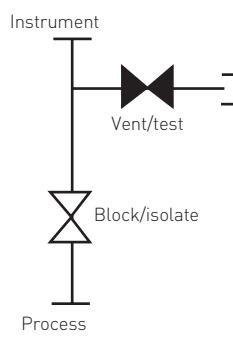


## DIMENSIONS, INCHES (mm)

Packing	A	B
PTFE	3.14 [79.8]	2.60 [66.0]
GRAFOIL® Low emissions graphite	3.79 [96.3]	3.25 [82.6]

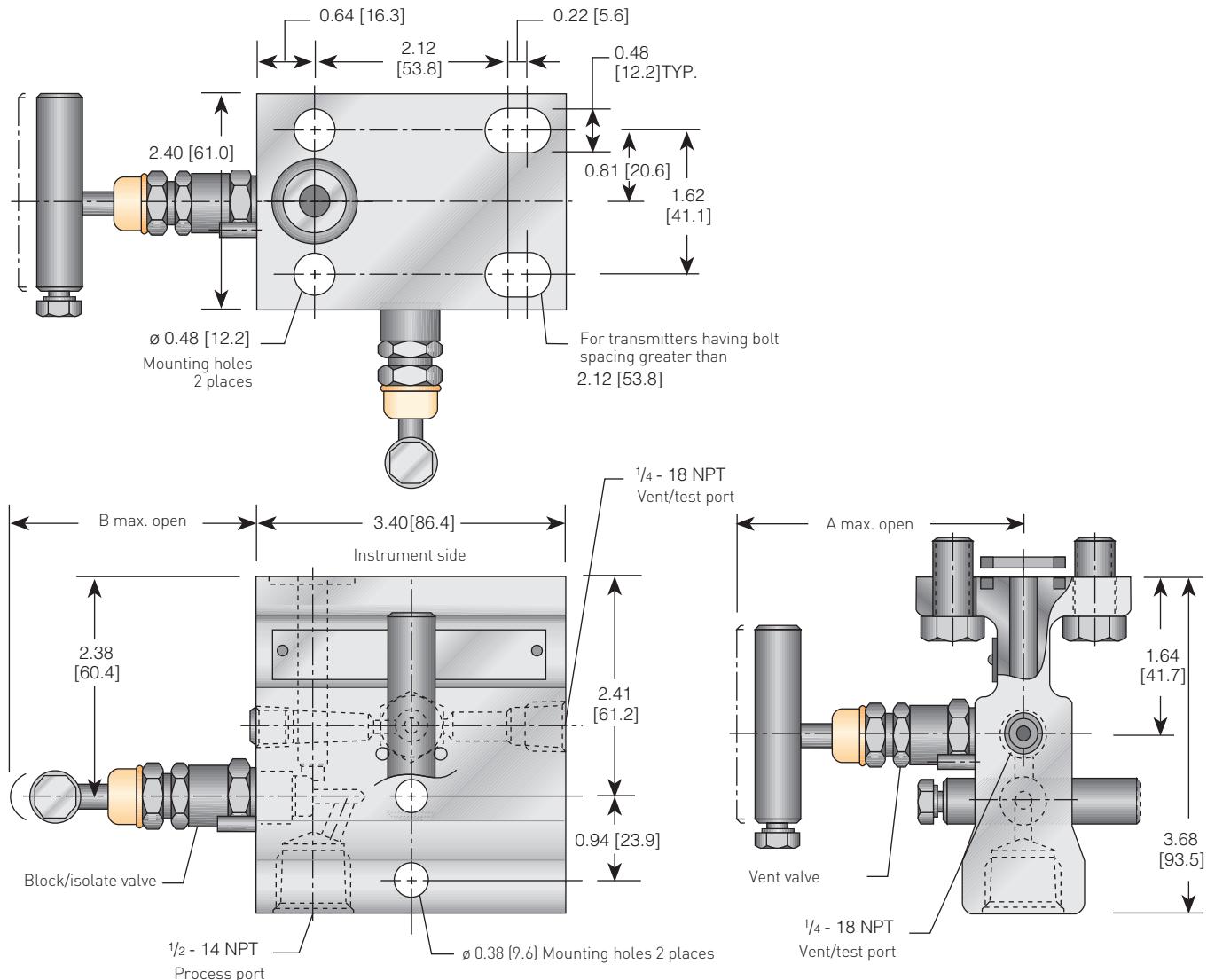
## NOTES

1. Approximate valve weight: 4.4 lb (2.0 kg).
- Metal seat:  
0.156-inch (4 mm) diameter orifice.  
Valve Cv 0.36 maximum.
- Soft seat:  
0.187-inch (4.8 mm) diameter orifice.  
Valve Cv 0.83 maximum.



# ANDERSON GREENWOOD M4TP STATIC PRESSURE MANIFOLDS

## M4TP METAL SEAT (SOFT SEAT AVAILABLE) DIMENSIONS, INCHES (mm)



## DIMENSIONS, INCHES (mm)

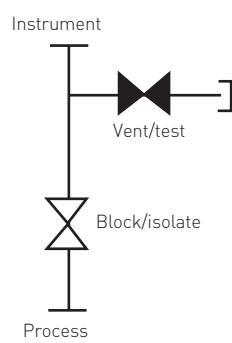
Packing	A	B
PTFE	3.14 [79.8]	2.60 [66.0]
GRAFOIL® Low emissions graphite	3.79 [96.3]	3.25 [82.6]

## NOTE

1. Approximate valve weight: 4.2 lb (1.9 kg).

Metal seat:  
0.156-inch (4 mm) diameter orifice.  
Valve Cv 0.36 maximum.

Soft seat:  
0.187-inch (4.8 mm) diameter orifice.  
Valve Cv 0.83 maximum.



# ANDERSON GREENWOOD M4AP/M4TP STATIC PRESSURE MANIFOLDS

## PRODUCT OVERVIEW

In the M4AT and M4PT manifolds, the block valve isolates the instrument from the process and is open during normal operation. When the block valve is closed, the bleed valve can be opened to vent pressure from the transmitter.

The M4AP permits the transmitter's futbol flange to connect the process signal line to the manifold inlet, with either a  $\frac{1}{2}$ " (15mm) pipe or tubing connection. The M4TP has a  $\frac{1}{2}$ " (15mm) NPT inlet connection. A  $\frac{1}{4}$ " (7mm) NPT purge connection is available. The  $\frac{1}{4}$ " (7mm) NPT vent port may be used for testing calibration. They can be mounted using the AGCO Mount option for ease of assembly and maintenance.

## STANDARD MATERIALS

Valve	Body	Bonnet	Stem	Ball	Bolts	Packing
CS1	A576-10L18	A108	A581-303	17-4 PH	A193-B7	PTFE
CS1	A576-10L18	A105	A581-303	17-4 PH	A193-B7	GRAFOIL®
316 SS	A479-316	A479-316	A276-316	316 SS	A193-B7	PTFE
316 SS	A479-316	A479-316	A276-316	316 SS	A193-B7	GRAFOIL®
SG	A479-316	A479-316	Monel® 400	Monel® K500	A193-B7	PTFE
Monel®	Monel® 400	Monel® R405	Monel® 400	Monel® K500	A193-B7	PTFE

## PRESSURE AND TEMPERATURE RATINGS

Packing	Valve	Seat	Pressure and temperature ratings		
PTFE	CS, SS	Delrin®	6000 psig at 200°F	[414 barg at 93°C]	
PTFE	CS, SS	PEEK	6000 psig at 200°F	[414 barg at 93°C]	
			2000 psig at 400°F	[138 barg at 204°C]	
PTFE	CS, SS	PTFE	1000 psig at 150°F	[69 barg at 66°C]	
			200 psig at 500°F	[14 barg at 260°C]	
PTFE	CS, SS	Integral	6000 psig at 200°F	[414 barg at 93°C]	
			4000 psig at 500°F	[276 barg at 260°C]	
PTFE	Monel®	Integral	5300 psig at 200°F	[365 barg at 93°C]	
			4200 psig at 500°F	[290 barg at 260°C]	
GRAFOIL®/Low emissions graphite	CS	Integral	6000 psig at 200°F	[414 barg at 93°C]	
			4000 psig at 600°F	[276 barg at 316°C]	
GRAFOIL®/Low emissions graphite	SS		6000 psig at 200°F	[414 barg at 93°C]	
			1500 psig at 1000°F	[103 barg at 538°C]	

## NOTES

1. CS is zinc cromate plated to prevent corrosion.
2. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions  $\leq 50$  mg/l (ppm)) and NACE MR0103-2005.
3. Minimum temperature -70°F (-57°C).

## BONNET ASSEMBLY OPTIONS

The M4AT and M4PT offer the option of metal or soft seated designs.

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

### Soft-seated bonnet assemblies

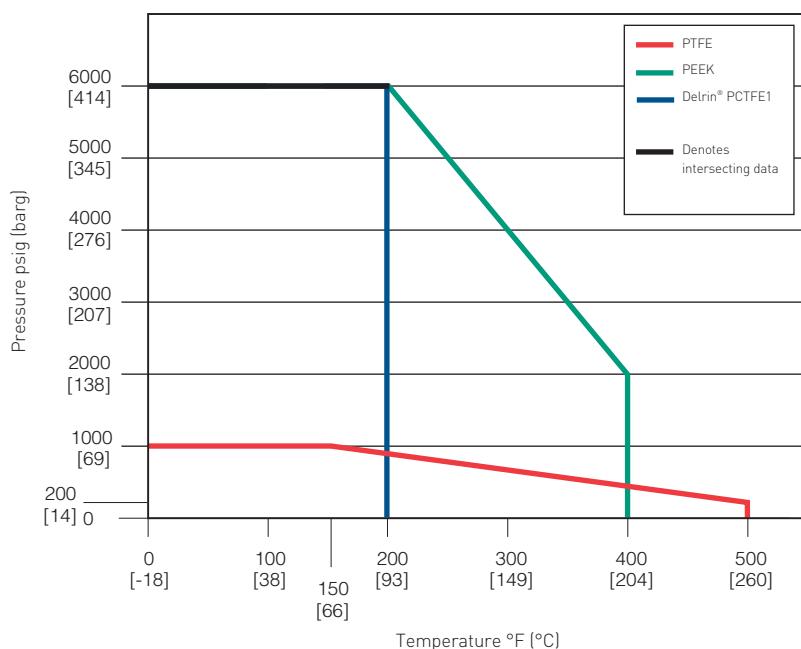
The soft-seated bonnet assemblies have a one-piece rotating stem and plug. In addition to the adjustable PTFE packing gland, the bonnet is available with a FKM O-ring and PTFE back-up ring.

### Metal-seated bonnet assemblies

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

# ANDERSON GREENWOOD M4AP/M4TP STATIC PRESSURE MANIFOLDS

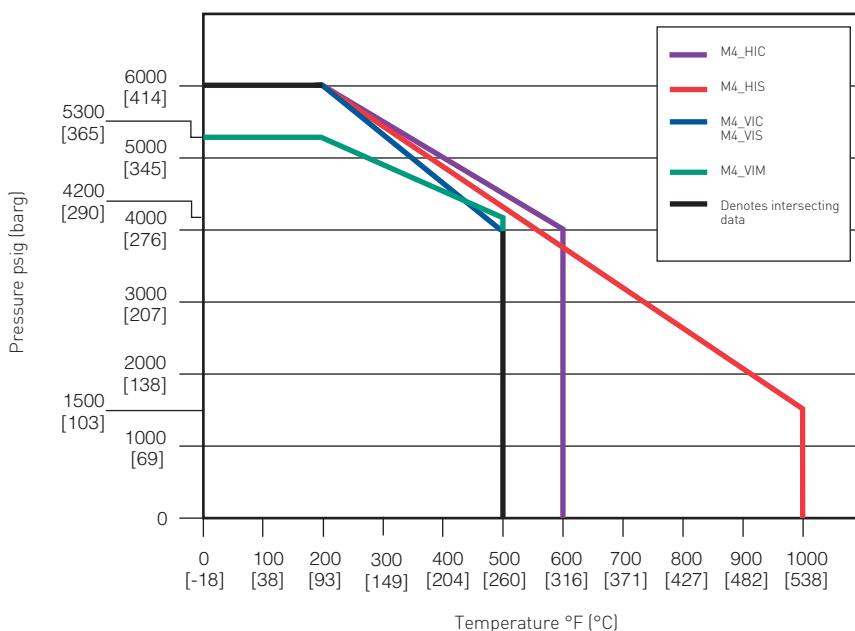
## PRESSURE VS. TEMPERATURE - SOFT SEAT



## NOTES

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
2. Delrin® is a registered trademark of the E.I. duPont de Nemours Company.

## PRESSURE VS. TEMPERATURE - METAL SEAT



# ANDERSON GREENWOOD M4AP/M4TP STATIC PRESSURE MANIFOLDS

## SELECTION GUIDE

### Example:

M4TP V D C - 4 - AM

### Valve type

**M4AP** Flange x flange

**M4TP** Pipe x flange

### Bonnet packing

**V** PTFE (soft and integral seats)

**H** Grafoil® (integral seat only)

**E** Low emissions graphite (integral seat only)

### Seat material

**D** Delrin® (standard)

**V** PTFE

**E** PEEK

**K** PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.

**I** Integral (body material)

### Body material

**C** CS

**S** 316 SS

**M** Monel®

**J** Hastelloy®

**W** 316LSS

### Process connections

**4** Flange (outlet) x 1/2-inch FNPT (inlet) (M4TP only)

### Options

**-AM** AGCO Mount

**-AMS** AGCO Mount kit (stainless steel)

**-AMV** AGCO Mount kit (vertical)

**-HD** Hydrostatic testing (100%) (MSS-SP-61)

**-SG** (Sour Gas) NACE edition 2003/MR0103

**-SG3** (Sour Gas) NACE MR0175/ISO 15156-3 (latest edition)

**-SSA** 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** 316 flange bolt (B8M) - maximum pressure rating 4500 psi (310 barg)

**-T** Large gasket groove diameter

# ANDERSON GREENWOOD M4TP STATIC PRESSURE MANIFOLDS

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## M4TP ASME B31.1 SELECTION GUIDE

Example:	M4TPHP	S	- 4	- XP	B	- AM
Valve type						
<b>M4TPHP</b>						
Body material						
<b>C</b> CS, A105						
<b>S</b> 316 SS						
Process connections						
<b>4</b> Flange (outlet) x 1/2-inch FNPT (inlet) [M4TP only] x 1/4-inch (vent)						
Connection style						
<b>B</b> Female socket weld inlet						
Options						
<b>-AM</b> AGCO Mount						
<b>-AMS</b> AGCO Mount kit (stainless steel)						
<b>-AMV</b> AGCO Mount kit (vertical)						
<b>-SSA</b> SS flange bolt (grade 18-8) - maximum pressure rating 4500 psi [310 barg]						
<b>-SSB</b> 316 SS flange bolt (B8M Class 2) - will provide full pressure rating						
<b>-SSC</b> 316 flange bolt (B8M) - maximum pressure rating 4500 psi [310 barg]						
<b>-T</b> Large gasket groove diameter						
<b>-XP</b> B31.1						

## NOTES

1. All manifolds come standard with GRAFOIL® packing, integral seats, bonnet locks, and are subjected to hydrostatic testing.
2. Manifold ratings:

316 SS	6000 psig at 100°F
	3030 psig at 1000°F
	[414 barg at 38°C]
	[209 barg at 538°C]
A105 CS	6170 psig at 100°F
	3430 psig at 800°F
	[425 barg at 38°C]
	[236 barg at 427°C]
3. Monel® is a registered trademark of the Special Metals Corporation.
4. Hastelloy® is a registered trademark of Haynes International, Inc.
5. Grafoil® is a registered trademark of GrafTech International.
6. Delrin® is a registered trademark of E.I. du Pont de Nemours and Company.

