

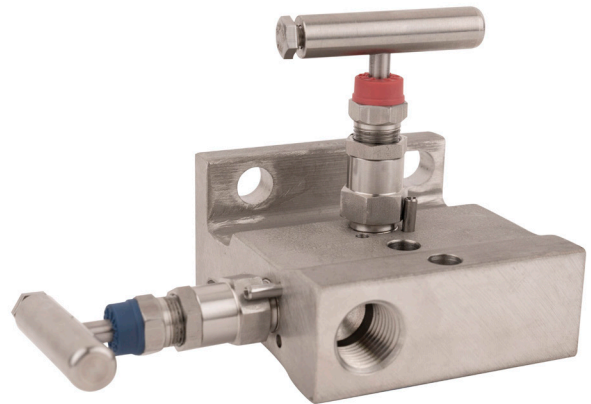
Block and bleed, two valve manifolds with indirect and direct mount capabilities for static pressures to 6000 psig (414 barg).

### General Application

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

### Technical Data

<b>Materials</b>	CS, 316 SS, Monel®
<b>Seats</b>	Metal or soft
<b>Connections</b>	<b>Instrument:</b> Flanged
	<b>Process:</b> 1/2" (15 mm) NPT or integral 1/2" (15mm) tube fitting
<b>Pressure (max):</b>	6000 psig (414 barg)
<b>Temperature (min/max)</b>	-313°C to 1000°F (-192°C to 538°C)






M4TP

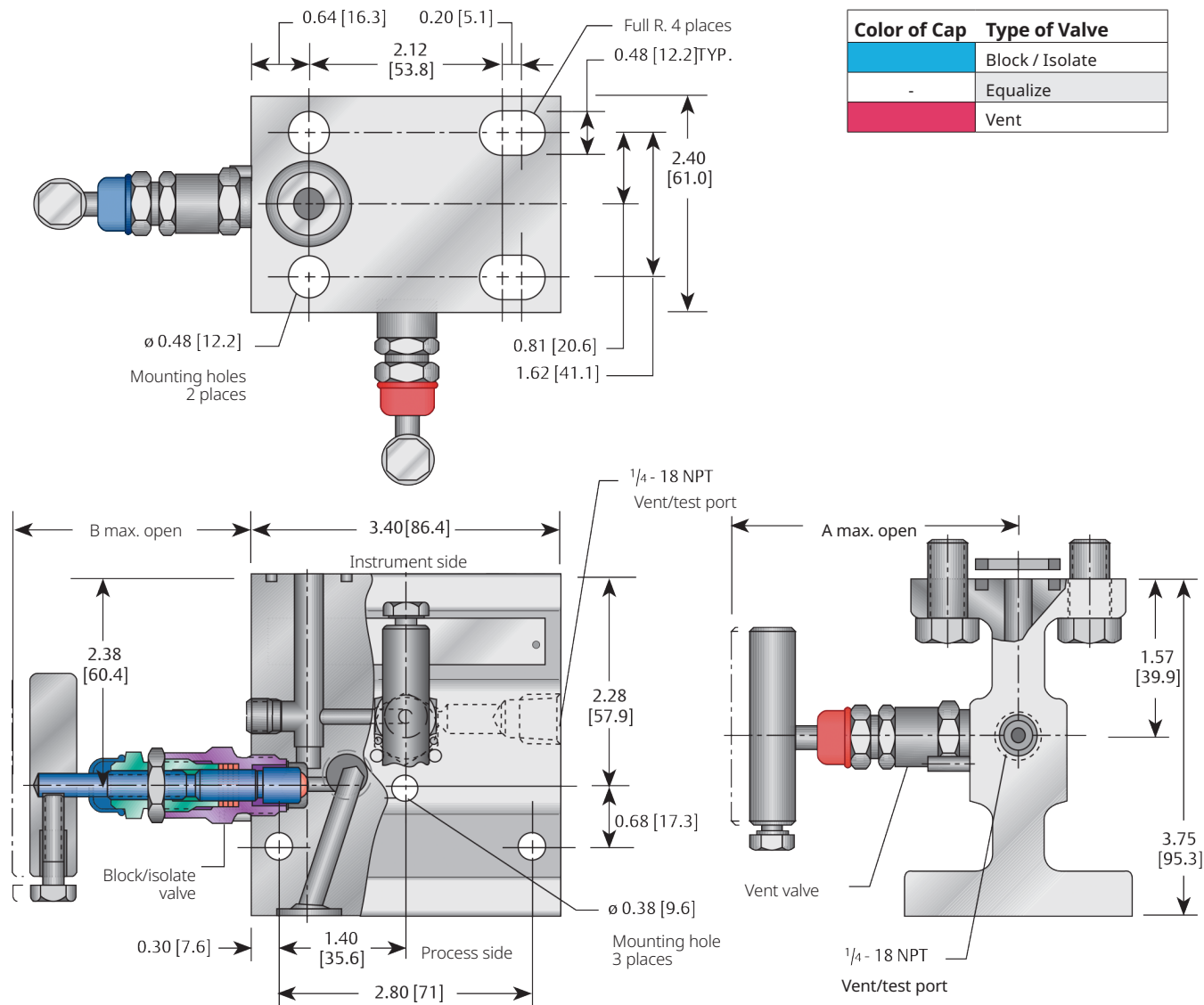
### Features

- 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 AGI Mount. Direct bolting to the manifold allows the instrument to be removed independently of the piping, facilitating repairs, service, and calibration.
- Immediate installation with AGI 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 AGI 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 AGI Mount, the instrument can be warehoused safely until final 'loop' checkout.
- Stem caps color coded to easily identify valve operation purpose.

### M4AP Dimensions

M4AP metal seat (soft seat available) dimensions, inches (mm)

Color of Cap	Type of Valve
	Block / Isolate
	Equalize
	Vent

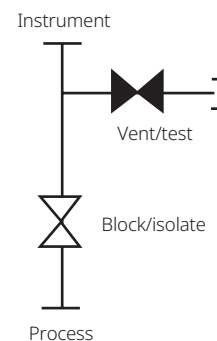


#### Dimensions, inches (mm)

Packing	A	B
PTFE/Graphite	3.18 (80.8)	2.65 (67.3)

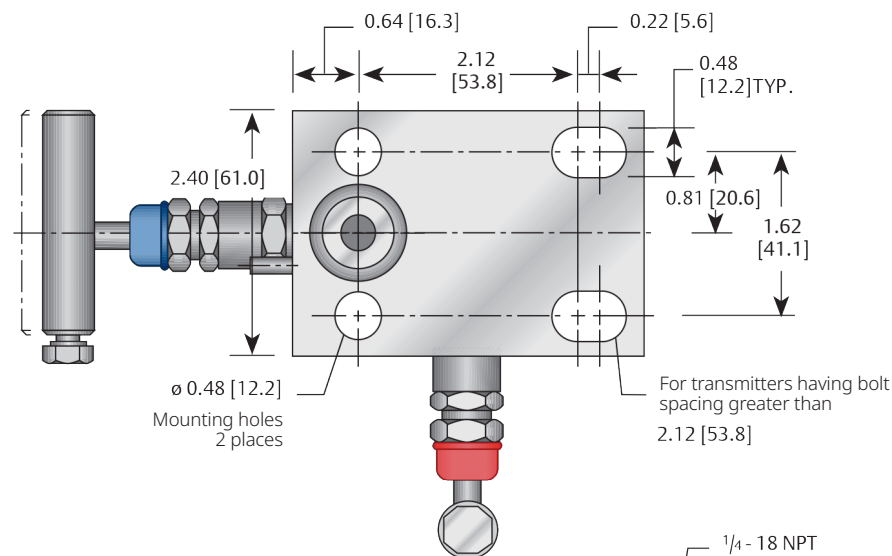
#### Note

<b>Approximate valve weight</b>	<b>4.4 lb (2.0 kg)</b>
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

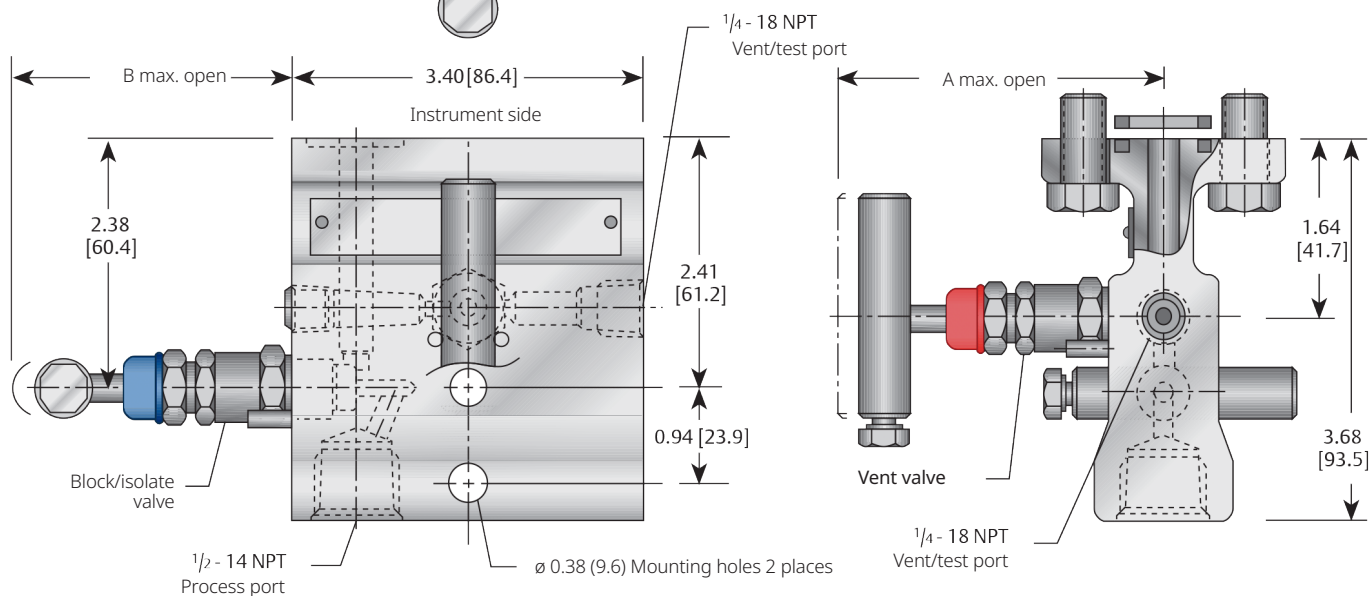


## M4TP Dimensions

M4TP metal seat (soft seat available) dimensions, inches (mm)



Color of Cap	Type of Valve
	Block / Isolate
	Equalize
	Vent

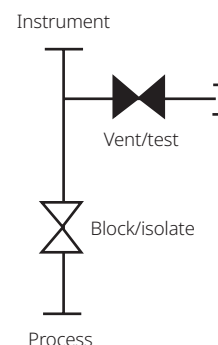


### Dimensions, inches (mm)

Packing	A	B
PTFE/Graphite	3.18 (80.8)	2.65 (67.3)

### Note

<b>Approximate valve weight</b>	<b>4.2 lb (1.9 kg)</b>
Metal seat	0.156-inch (4.0 mm) diameter orifice
Valve C <sub>v</sub>	0.36 maximum
Soft seat	0.187-inch (4.8 mm) diameter orifice
Valve C <sub>v</sub>	0.83 maximum



### 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 flanged inlet. The M4TP has a 1/2" (15mm) NPT inlet connection. A 1/4" (7mm) NPT purge connection is available on both the M4AP and M4TP. The 1/4" (7mm) NPT vent port may be used for testing calibration. They can be mounted using the AGI Mount option for ease of assembly and maintenance.

### 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 PTFE or Graphite 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 or Graphite packing gland, the bonnet is available with a FKM O-ring and PTFE back-up ring.

### Metal-seated Bonnet Assemblies

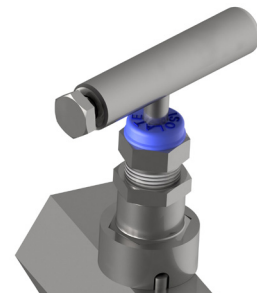
The metal-seated bonnet assemblies have a rotating stem with free swivel ball-type seat for long service life. The specially hardened ball seat is ideal for both gas and liquid service.

### Bonnet Lock (BL)

The Anderson Greenwood bonnet lock prevents accidental loosening of the bonnet-to-body seal. A high-strength, short bonnet pin aligns a hex collar over the bonnet. Tests indicate the minimum torque required to break the collar loose is greater than the torque required to twist off the handle.

### Standard Materials

Valve	Body	Bonnet	Stem	Ball	Bolts	Packing
CS <sup>[1]</sup>	A576-10L18	A576-1018	A276-316	17-4 PH	A193-B7	PTFE
CS <sup>[1]</sup>	A105	A479-316	A276-316	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 <sup>[2]</sup>	A479-316	A479-316	Monel® 400	Monel® K500	A193-B7	PTFE
Monel®	Monel® 400	Monel® R405	Monel® 400	Monel® K500	A193-B7	PTFE



#### NOTES

[1] CS is zinc TCP plated to prevent corrosion.

[2] SG (Sour Gas) Meets the requirements of NACE MRO175/ISO15156 (for chloride conditions <\_ 50 mg/l (ppm)) and NACE MRO103-2005

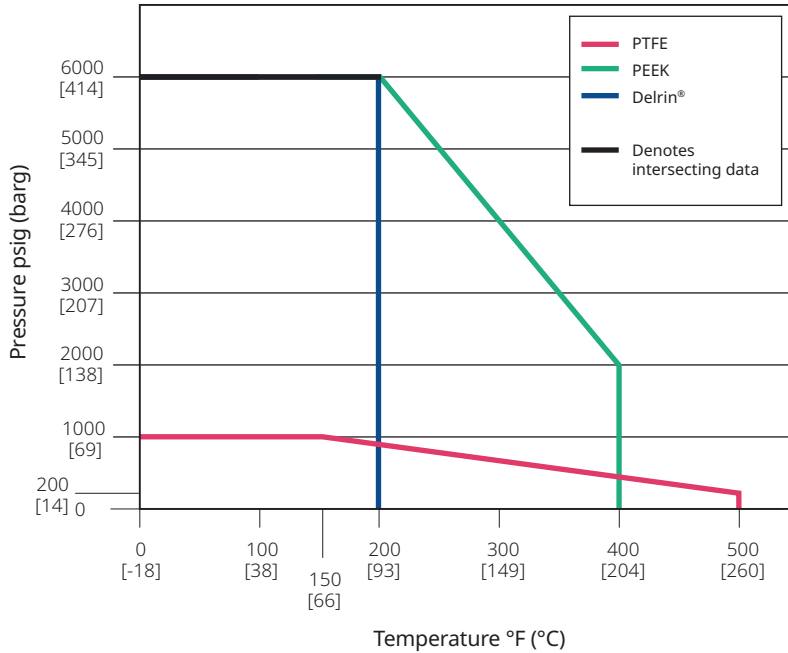
### Pressure and Temperature Ratings

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

**NOTES:** Minimum temperature -70°F (-57°C). Carbon Steel and O-ring -20°F (-29°C), 316SS Material with Delrin® seat -40°F (-40°C). 316SS integral metal seat minimum temperature (-313°F (-192°C) @ 2500psi (172 bar).

### Pressure vs. Temperature

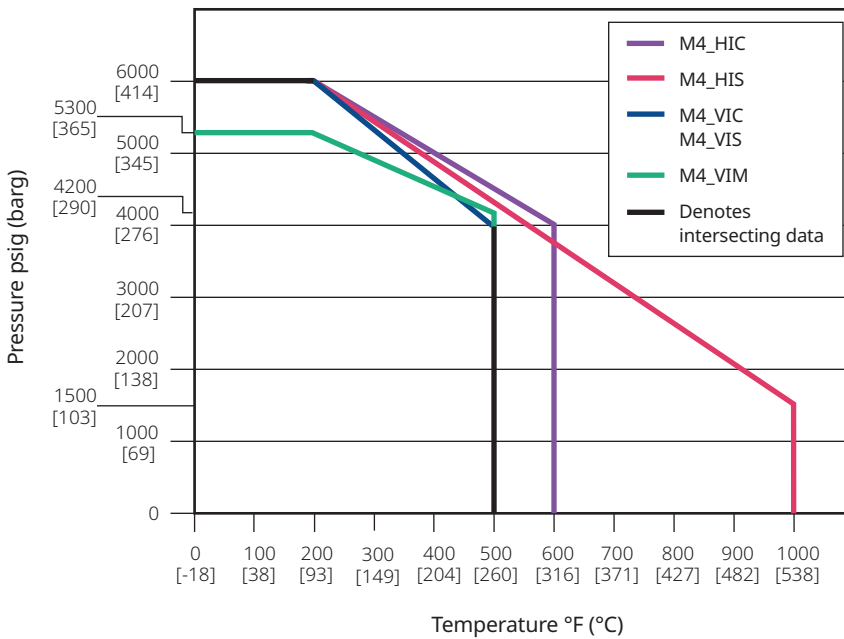
#### Pressure vs. Temperature - Soft Seat



#### NOTES

1. PCTFE is no longer available (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



Minimum temperature -70°F (-57°C). Carbon Steel and O-ring -20°F (-29°C), 316SS Delrin® seat -40°F (-40°C). 316SS integral metal seat minimum temperature (-313°F (-192°C) @ 2500psi (172 bar)

### Selection Guide

M4TP	D	C	-4	4	-SG
BASIC SERIES	BONNET PACKING	SEAT MATERIAL	BODY MATERIAL	PROCESS CONNECTIONS	OPTIONS
M4AP Flange x flange	V PTFE (soft and integral seats)	D Delrin®	C CS, GRAFOIL® Packed Bonnet A105 Material, Teflon® Packed Bonnet A108	4 Flange (outlet) x ½-inch FNPT (inlet) (M4TP only)	AM AGI mount
M4TP Pipe x flange	H Graphite (integral seat only)	V PTFE	S 316 SS		AMS A276-316 mount kit (Stainless steel)
	E Low emissions graphite (integral seat only)	E PEEK	M Monel®		AMV AGI mount kit (verticle)
		I Integral (body material)	J Hastelloy®		BL Bonnet Lock
			W 316LSS maximum pressure 5000psig (345 barg)		HD Hydrostatic testing (100%) (MSS-SP-61)
					SG SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005
					SG3 (Sour Gas) Meets the requirements of NACE MRO175/ISO15156 (for chloride conditions > 50 mg/l (ppm)) Hastelloy Material used for all wetted materials
					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)
					SST 316SS Circular Tag (10 Characters Max)
					T Large gasket groove diameter
					PMI00 PMI Body
					PMI01 PMI Body and Bonnet
					PMI02 PMI Body, Bonnet and Stem
					OC00 Oxygen clean (OC)
					LT Low Temperature for integral seat 316SS -313°F (-192°C) @ 2500 psi (1782 bar) for integral seat (I) graphite packing. Must include - SBB option to use

### Selection Guide - M4TP B31.1

M4TPHP	S	-4 -XP	B	-AM
BASIC SERIES	BODY MATERIAL	PROCESS CONNECTIONS	CONNECTION STYLE	OPTIONS
M4TPHP	C CS, A105	4 Flange (outlet) x ½-inch FNPT (inlet) (M4TP only) x ¼-inch (vent)	B Female socket weld intel	AM AGI mount
	S 316 SS			AMS AGI mount kit (stainless steel)
				AMV AGI mount kit (verticle)
	BL Bonnet Lock			
	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]			
	SST 316SS Circular Tag (10 Characters Max)			
	T Large gasket groove diameter			
	XP B31.1			
	PMI00 PMI Body			
	PMI01 PMI Body and Bonnet			
	PMI02 PMI Body, Bonnet and Stem			
R3V Add for use with Rosemount® model 3051C (B8M Class 2) for -XP manifolds				
OC00 Oxygen clean (OC)				

#### NOTES

1. All manifolds come standard with Graphite 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. Delrin® is a registered trademark of E.I. du Pont de Nemours and Company.