

Five valve manifolds with a  $\frac{3}{16}$ " (4.8mm) orifice soft and metal seat for differential pressure natural gas services to 6000 psig (414 barg).

### General Application

The M6A is for differential pressure transmitters in natural gas applications and is usually supported in the vertical meter tubing from the orifice flange union. Static pressure and calibration test connections are standard.



### Technical Data

<b>Materials</b>	CS, 316 SS, Monel®, Hastelloy®
<b>Seats</b>	Metal or soft
<b>Connections</b>	<b>Instrument:</b> 1/2" NPT and socket weld
	<b>Process:</b> 1/2" NPT and socket weld
<b>Pressure (max):</b>	6000 psig (414 barg)
<b>Temperature (min/max)</b>	-70°C to 1000°F (-57°C to 538°C)

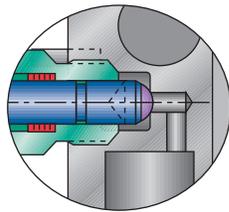
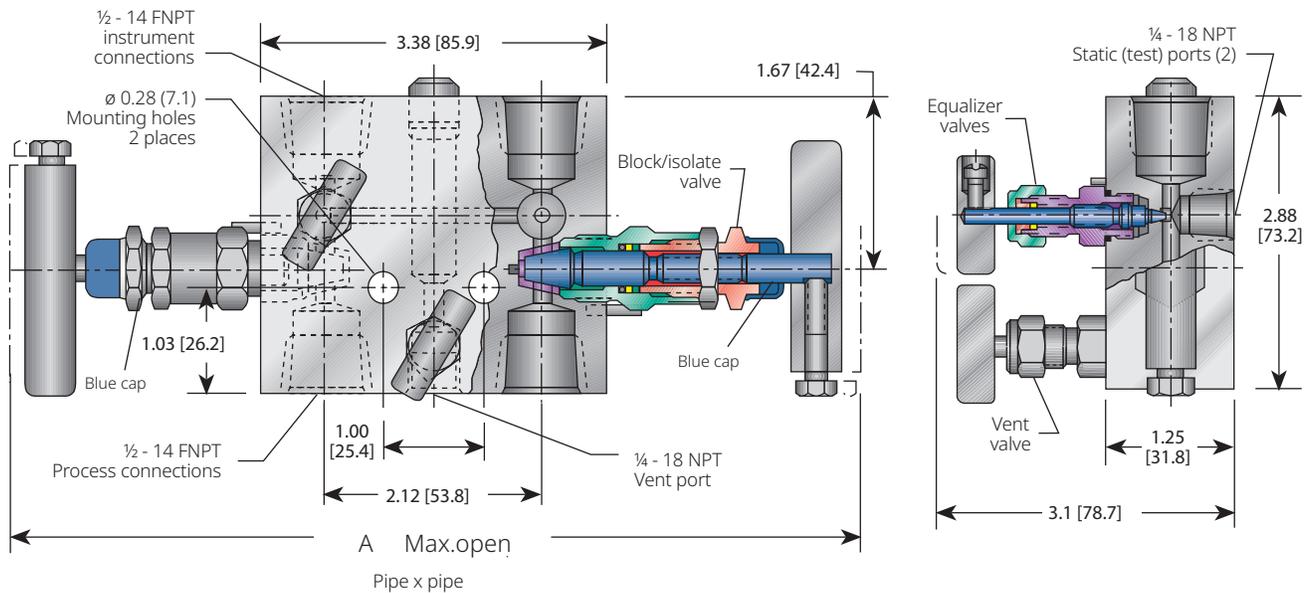
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Hastelloy® is a registered trademark of Haynes International, Inc.

### Features

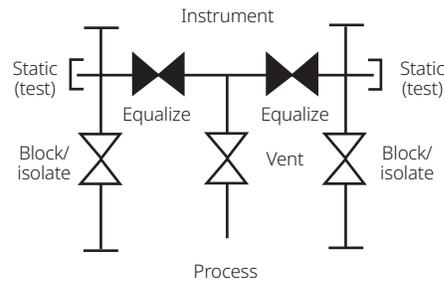
- Easy Installation in meter tubing with no additional support generally required.
- Upstream or downstream  $\frac{1}{4}$ " FNPT ports for connecting the static pressure to the meter.
- Hard or field-replaceable soft seats for bubble-tight performance in abrasive applications.
- Bonnet-to-body and stem threads isolated from process corrosion - important in sour gas applications.
- Stem backout prevention eliminates accidental removal while under pressure.
- FKM O-ring with PTFE back-up ring standard stem packing with long life assured by mirror finish stem in the packing area.
- Integral hard back seat forms a secondary seal for the stem threads when valve is fully opened.
- ENC plated rolled stem threads increase strength and extend life.

## M6A Dimensions

Soft seat (metal seat available)



Metal seat



## Bonnet Assemblies

The M6A offers the option of metal or soft seats. All stem threads are rolled and lubricated to prevent galling and reduce operating torque. All bonnets are assembled with a bonnet locking pin to prevent accidental removal while in service and the block/isolation valve has a protective dust cap is fitted to contain stem lubricant and prevent the influx of contaminants.

Measurement	Version	Dimension
A	PTFE	8.71 (221.2)
A	Graphite	8.71(221.2)

## Soft-seated Bonnet Assemblies

The soft-seated bonnet assemblies have a one-piece rotating stem and plug with standard stem packing provided by an 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 natural gas service. The stem seal is PTFE or graphite packing gland which is adjustable in service.

### Standard Materials

Valve	Seat	Body	Bonnet	Stem	Ball	Flow washer
CS <sup>[1]</sup>	Soft	A108	A108	A276-316	Delrin Seat	316
CS <sup>[1]</sup> PTFE/Graphite	Integral	A108/A479-316	A108/A479-316	A276-316	17-4PH	N/A
316 SS	Soft	A479-316	A479-316	A276-316	Delrin Seat	316
316 SS	Integral	A479-316	A479-316	A276-316	316	N/A
SG <sup>[5]</sup>	Soft	A479-316	A479-316	Monel <sup>®</sup> 400	Delrin Seat	316
SG <sup>[5]</sup>	Integral	A479-316	A479-316	Monel <sup>®</sup> 400	Monel <sup>®</sup> K500	N/A
SG3 <sup>[6]</sup>	Hastelloy <sup>®</sup> C-276	Hastelloy <sup>®</sup> C-276	Hastelloy <sup>®</sup> C-276	Hastelloy <sup>®</sup> C-276	Elgiloy <sup>®</sup>	Hastelloy <sup>®</sup>

#### NOTE

1. Approximate valve weight: 4.0 lb (1.8 kg).

#### Metal seat:

Block Valves 0.187 inch (4.8 mm) diameter orifice with Cv 0.83 maximum  
 Equalizer and Vent Valves 0.156 inch (4.0mm) diameter orifice with Cv 0.36 maximum

#### Soft seat:

Block Valves 0.187 inch (4.8 mm) diameter orifice with Cv 0.83 maximum  
 Equalizer and Vent Valves 0.156 inch (4.0mm) diameter orifice with Cv 0.36 maximum

#### Minimum Temperature

Carbon steel	-20°F	[-29°C]
316 SS O-ring seal	-20°F	[-29°C]
316 SS, Monel <sup>®</sup> , Hastelloy <sup>®</sup> , PTFE packed Delrin <sup>®</sup> seat	-70°F	[-57°C]
316 SS, Monel <sup>®</sup> , Hastelloy <sup>®</sup> , Graphite packed	-40°F	[-40°C]
	-70°F	[-57°C]

#### Pressure and Temperature Ratings

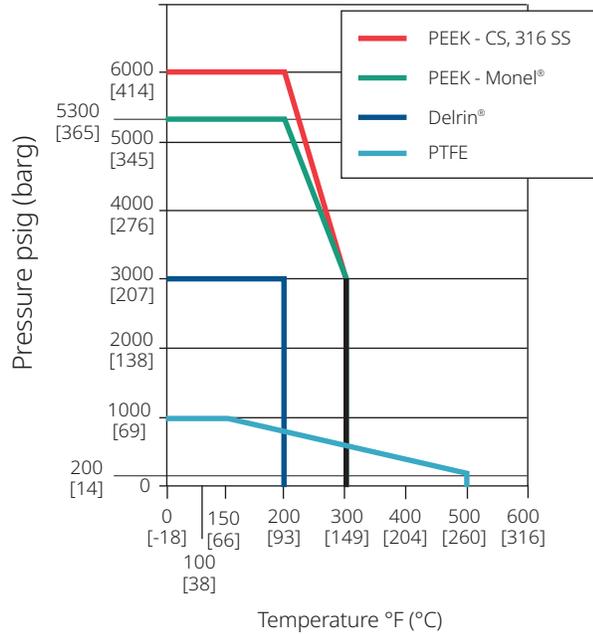
Valve	Packing	Seat material	Ratings	
CS <sup>[1]</sup> , 316 SS, SG <sup>[4]</sup> , SG3 <sup>[5]</sup> , Monel <sup>®</sup>	PTFE O-ring	Delrin <sup>®</sup>	3000 psig at 200°F	[207 barg at 93°C]
CS <sup>[1]</sup> , 316 SS, SG <sup>[4]</sup> , SG3 <sup>[5]</sup>	PTFE O-ring	PEEK	6000 psig at 200°F	[414 barg at 93°C]
			3000 psig at 300°F	[207 barg at 149°C]
Monel <sup>®</sup>	PTFE O-ring	PEEK	5300 psig at 200°F	[365 barg at 93°C]
			3000 psig at 300°F	[207 barg at 149°C]
CS <sup>[1]</sup> , 316 SS, SG <sup>[4]</sup> , SG3 <sup>[5]</sup> , Monel <sup>®</sup>	PTFE	PTFE <sup>3</sup>	1000 psig at 150°F	[69 barg at 66°C]
			200 psig at 500°F	[14 barg at 260°C]
CS <sup>[1]</sup> , 316 SS, SG <sup>[4]</sup> , SG3 <sup>[5]</sup>	PTFE Graphite/ Low emissions graphite, 316 SS	Body material	6000 psig at 200°F	[414 barg at 93°C]
			6000 psig at 200°F	[414 barg at 93°C]
			1500 psig at 1000°F	[103 barg at 583°C]

#### NOTES

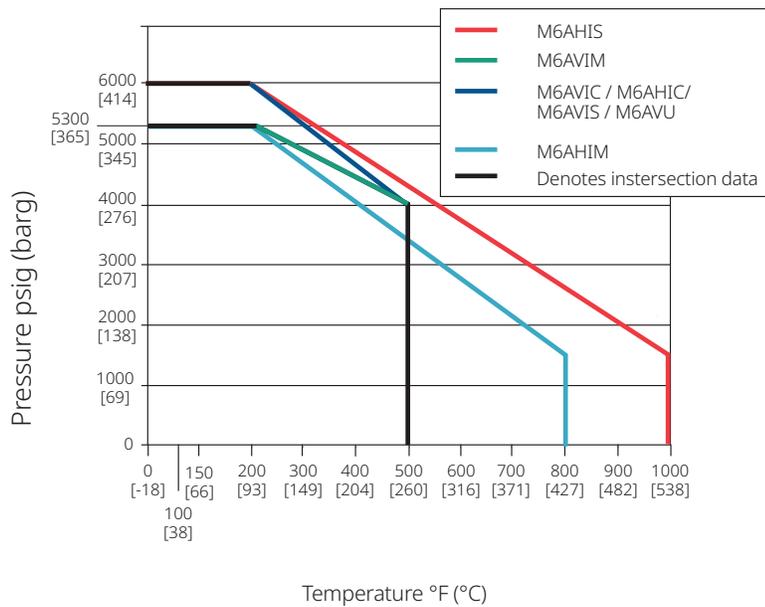
- [1] CS parts are zinc TCP plated to prevent corrosion.
- [2] PCTFE is no longer available (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F<sup>®</sup>.
- [3] Block valves only.
- [4] SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for Chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103.
- [5] SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for Chloride conditions > 50 mg/l [ppm]).

### Pressure vs. Temperature

#### Pressure vs. Temperature - Soft Seat



#### Pressure vs. Temperature - Metal Seat



### Selection Guide - 3/16 inch (4.8mm) orifice

M6A	V	D	S	-4	-SG
BASIC SERIES	PACKING	SEAT	BODY MATERIAL	PROCESS CONNECTION	OPTIONS
<b>M6A</b> Pipe x pipe	<b>V</b> PTFE <b>R</b> O-ring <b>H</b> Graphite <b>E</b> Low emissions graphite (block valves only)	<b>SOFT</b>		<b>4</b> 1/2-inch FNPT <b>4B</b> 1/2-inch socket weld (F-out x F-in)	<b>AM</b> AGI Mount kit for 2-inch pipe stand <b>AMS</b> AGI Mount kit for 2-inch 316SS <b>HD</b> Hydrostatic testing (100 percent) (MSS SP-61) <b>OC00</b> Cleaned for oxygen service <b>SG</b> Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005 <b>SG3</b> (Sour Gas) Meets the requirements of NACE MRO175/ISO15156 (for chloride conditions > 50 mg/l (ppm)) Hastelloy® Material used for all wetted materials <b>PV</b> Plug-vent
		<b>V</b> PTFE (block valves only, max pressure 1000Psig (68.9 barg))	<b>C</b> CS		
		<b>D</b> Delrin®	<b>S</b> 316 SS, A479-316		
		<b>E</b> PEEK	<b>M</b> Monel®		
		<b>HARD</b>			
<b>I</b> Integral (body material)					