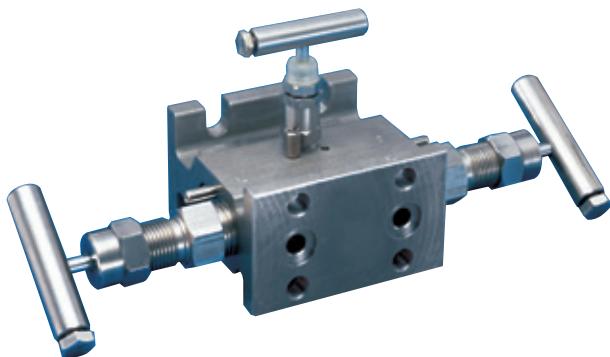


## ANDERSON GREENWOOD M45A DIFFERENTIAL PRESSURE MANIFOLDS

Differential pressure manifolds with two  $\frac{3}{8}$ " (9.5 mm) orifice soft-seated block valves and a metal seated equalizer valve for direct or remote mounting at pressures to 6000 psig (414 barg)



### GENERAL APPLICATION

The M45A is designed for mounting on differential pressure transmitters with  $2\frac{1}{8}$ " (54 mm) center-to-center connections.

### TECHNICAL DATA

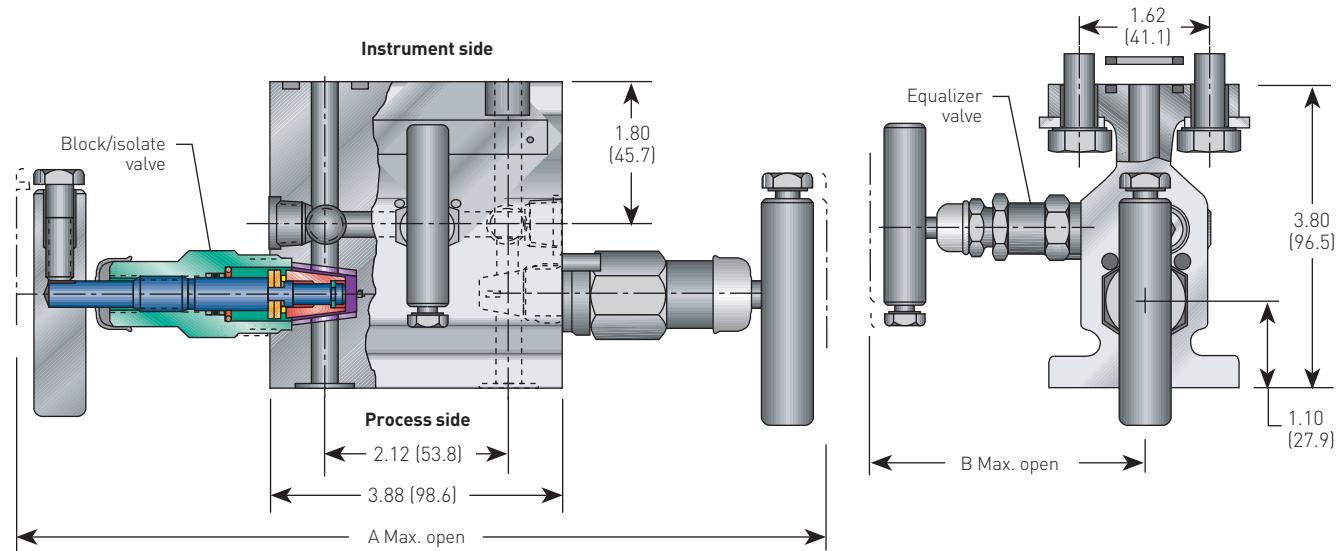
Materials:	CS, SS
Seats:	Metal and soft
Connections	
Instrument:	Flanged
Process:	Flanged
Pressure (max.):	6000 psig (414 barg)
Temperature (max.):	1000°F (538°C)

### FEATURES

- Cost savings of 20-30% when unitizing the manifolding by eliminating several parts used in conventional methods of 'piping up'.
- Roddable block valve soft seats simplify maintenance and ensure accuracy.
- Back seat stem design eliminates stem blowout or accidental removal while in operation.
- Fewer leak points reduce the chances of leakage.
- Soft seat design enables field replacement without valve removal.
- Integral hard back seat protects against stem blowout and provides a secondary packing seal.
- Rolled stem threads provide a stronger, more durable thread area, increasing valve life.
- Mirror stem finish in the packing area enables smooth operation and extends packing life.
- Constant compression metal-to-metal bonnet-to-body seal below bonnet threads prevents corrosion, eliminates tensile breakage and creates a reliable seal point.
- Easily adjustable stem packing decreases downtime and provides long service life.
- Manifold mounts directly to the pipe stand. AGCO mount supports the transmitter, allows loop installation without the transmitter and easy removal for service or repair.

# ANDERSON GREENWOOD M45A DIFFERENTIAL PRESSURE MANIFOLDS

## DIMENSIONS, INCHES [mm]

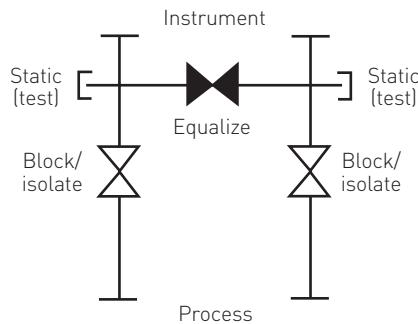


## DIMENSIONS, INCHES (mm)

Packing	A	B
PTFE	11.90 [302.3]	3.40 [86.4]
GRAFOIL®	11.90 [302.3]	4.05 [102.9]
O-ring	11.36 [288.5]	3.40 [86.4]

## NOTE

1. Bottom static [test] connection available.



## MOUNTING

For direct or remote mounting, the M45A permits the transmitter's futbol flanges to connect the process signal lines to the manifold directly, with either 1/2" pipe or tubing connections.

# ANDERSON GREENWOOD M45A DIFFERENTIAL PRESSURE MANIFOLDS

## BONNET ASSEMBLIES

The M45A features two block valves with roddable soft seats and a metal-seated equalizer valve. 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 bonnets are available with a FKM O-ring and PTFE back-up ring.

### Metal-seated bonnet assembly

The metal-seated bonnet assembly has 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. The high-temperature bonnet assembly uses a strengthened stem and bonnet incorporating adjustable graphite O-rings and back-up pressure rings to ensure a leak-free stem seal and is fitted with a larger size T-bar handle.

## STANDARD MATERIALS

Valve <sup>[1]</sup>	Body	Block Valve	Bonnet	Equalizer Valve <sup>[2]</sup>	Stem
CS <sup>[4]</sup>	A105	A108	A108	A581-303	
CS <sup>[4]</sup>	A105	A108	A105	A581-303	
SS	A479-316	A479-316	316	A276-316	
SS	A479-316	A479-316	316	A276-316	
SG <sup>[5]</sup>	A479-316	A479-316	316	Monel®	
SG3 <sup>[6]</sup>	Hastelloy® C276	Hastelloy® C276	Hastelloy® C276	Hastelloy® C276	Hastelloy® C276

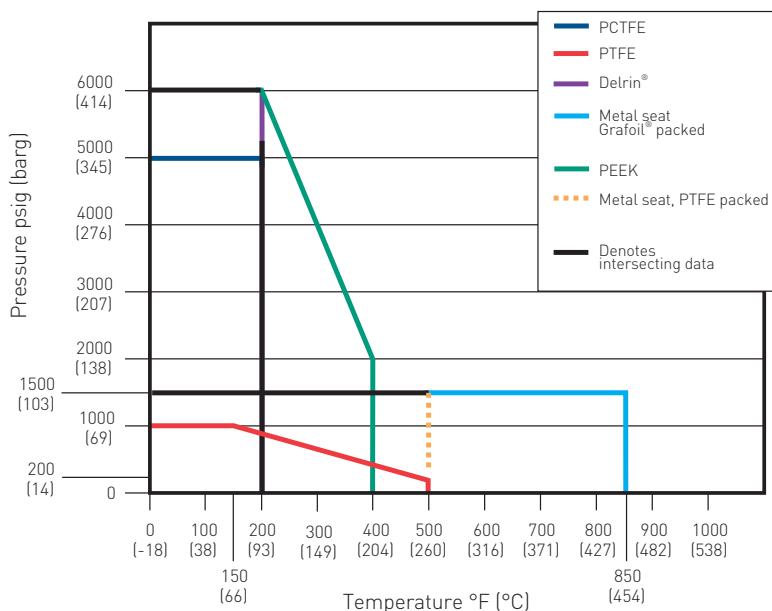
### NOTES

1. Approximate valve weight: 7.1 lb (3.2 kg). 0.375-inch (9.5 mm) diameter orifice. Valve Cv 3.0 maximum.
2. Equalizer valve utilizes free-swiveling ball ended stem. Equalizer orifice size 0.187-inch (4.8 mm).
3. PCTFE (Polychlorotrifluoroethylene is exact equivalent of Kel-F®), PEEK and PTFE also available.
4. CS is zinc cobalt plated to resist corrosion.
5. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions < 50 mg/l [ppm]) and NACE MR0103.
6. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l [ppm]).
7. 316 SS bolts lower pressure ratings to a maximum of 4500 psi (310 barg). Consult factory for full rating with 316 SS bolts.

## PRESSURE AND TEMPERATURE RATINGS

Valve	Packing	Seat	Pressure and temperature ratings
CS <sup>[4]</sup>	PTFE	Delrin® <sup>[3]</sup>	6000 psig at 200°F [414 barg at 93°C]
CS <sup>[4]</sup>	GRAFOIL®	SS	1500 psig at 850°F [103 barg at 454°C]
SS	PTFE	Delrin®	6000 psig at 200°F [414 barg at 93°C]
SS	GRAFOIL®	SS	1500 psig at 1000°F [103 barg at 538°C]
SG <sup>[5]</sup> , SG3 <sup>[6]</sup>	PTFE	Delrin® <sup>[3]</sup>	6000 psig at 200°F [414 barg at 93°C]

## PRESSURE VS. TEMPERATURE

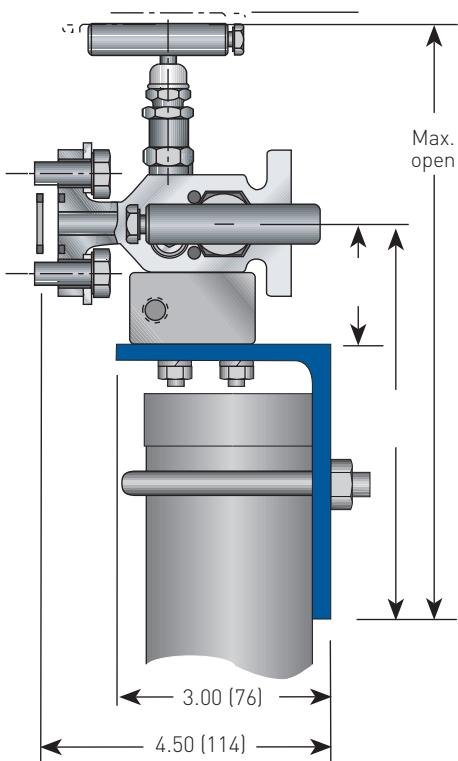


## MINIMUM TEMPERATURE

Carbon steel	-20°F (-29°C)
316 SS O-ring seal	-20°F (-29°C)
316 SS, Monel, Hastelloy	-70°F (-57°C)
PTFE packed	
316 SS, Monel, Hastelloy	-70°F (-57°C)
Grafoil packed	

# ANDERSON GREENWOOD M45A DIFFERENTIAL PRESSURE MANIFOLDS

AGCO MOUNT WITH M45A MANIFOLD DIMENSIONS, INCHES (mm)



## FEATURES AND BENEFITS

- Lowers maintenance costs by simply removing four transmitter bolts, disconnecting signal leads and performing needed transmitter maintenance.
- Reduces potential environmental contamination and the possibility of signal-line damage.
- Reduces pipestand corrosion by using the bracket overhang and plastic rain hat to cover the pipestand.
- Optional steam heat block permits tracing the manifold and transmitter from a common connection.
- Shipped ready for assembly and installation; includes optional heat block and purge ports (if specified).
- AGCO Mount system is essentially free if you get credit from the transmitter company for the mounting bracket and futbol connectors.

## AGCO MOUNT KITS

Manifold style	Model suffix	Material	Description
M45A <sup>[1]</sup>	AM	CS <sup>[2]</sup>	Standard kit
M45A <sup>[1]</sup>	AMS	SS	SS components

## NOTES

1. Zinc chromate plated.

# ANDERSON GREENWOOD M45A DIFFERENTIAL PRESSURE MANIFOLDS

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## **BONNET LOCK (BL) (PATENTED)**

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- Anderson Greenwood's Bonnet Lock prevents accidental loosening of the bonnet-to-body seal.
- A high-strength, short bonnet pin aligns a hex collar over the bonnet. A standard panel nut (GRAFOIL® packed) then locks the collar against the valve.
- Tests indicate the minimum torque required to break the collar loose is greater than the torque required to twist off handle.
- Available on GRAFOIL® packed bonnets.

**Note 1:** Standard on power plant manifolds.



GRAFOIL® PACKED BONNET LOCK<sup>[1]</sup>

# ANDERSON GREENWOOD M45A DIFFERENTIAL PRESSURE MANIFOLDS

## SELECTION GUIDE

Example:	M45A	V	D	S	- SG
<b>Valve type</b>					
<b>M45A</b> 3-Valve manifold, flange x flange					
<b>Bonnet packing</b>					
<b>H</b> GRAFOIL®					
<b>V</b> PTFE					
<b>R</b> O-ring (FKM) block valve only					
<b>Seat</b>					
<b>D</b> Delrin®					
<b>E</b> PEEK					
<b>K</b> PCTFE					
<b>S</b> 316 SS					
<b>V</b> PTFE					
<b>Body material</b>					
<b>C</b> CS, A576-10L18					
<b>J</b> Hastelloy®					
<b>S</b> SS, A479-316					
<b>W</b> SS, A479-316L - maximum pressure 5000 psig [345 barg]					
<b>Options</b>					
<b>-AM</b> AGCO Mount kit for 2-inch pipe stand mounting of manifold (see table p 4)					
<b>-BC</b> Accessory bracket - mount conduit with -AM					
<b>-BL</b> Bonnet lock device GRAFOIL® only					
<b>-BP</b> Accessory bracket - mount purge meters with -AM					
<b>-CL00</b> Cleaned for chlorine service					
<b>-HD</b> Hydrostatic testing (100 percent) (MSS SP-61)					
<b>-MS</b> Monel® stem (standard on Monel and SG valves)					
<b>-OC00</b> Cleaned for oxygen service					
<b>-R3V<sup>(1)</sup></b> Add for use with Rosemount® model 3051C (SS 18-8 bolts)					
<b>-SSA<sup>(1)</sup></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<sup>(1)</sup></b> 316 flange bolt (B8M) - maximum pressure rating 4500 psi [310 barg]					
<b>-SG</b> (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions < 50 mg/l [ppm]) and NACE MR0103 (SS valves only) (not available for O-ring packed valves)					
<b>-SG3</b> (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l [ppm])					
<b>-TB</b> Test ports - bottom of manifold [1/4-inch FNPT] (option not available with -AM)					

## NOTE

1. 316 SS bolts lower pressure ratings to a maximum of 4500 psi [310 barg]. Consult factory for full rating with 316 SS bolts.

**ANDERSON GREENWOOD M45A DIFFERENTIAL PRESSURE MANIFOLDS**

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