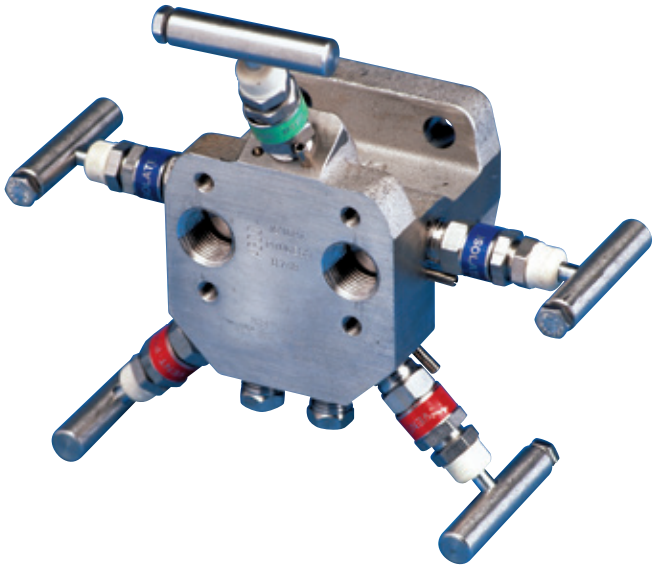
ANDERSON GREENWOOD M24A/M24T DIFFERENTIAL PRESSURE MANIFOLDS

Lightweight and compact 5 valve manifolds designed for direct mounting to differential pressure transmitters for pressures to 6000 psig (414 barg)



FEATURES

- Direct mounting compact design requires minimum space for operation and installation with fewer potential leak points.
- Cost savings when manifolding the valves by eliminating several parts used in conventional methods of 'piping up'.
- Free-swivelling ball end stem ensures perfect alignment, providing repetitive bubble-tight shutoff and long life.
- PTFE or graphite packing below stem threads prevents lubricant washout and thread corrosion.
- Back seat stem prevents blowout or removal while in operation.
- Threaded vent ports allow vent to be piped away safely. Supplied plugged as standard.
- Direct mounting via standard flanged connections at 2⅛" (54 mm) centers. Non-standard centers also available.
- Standard pipe bracket bolts directly to the manifold providing a rigid support for the transmitter. Instrument can be removed easily for service or repair.

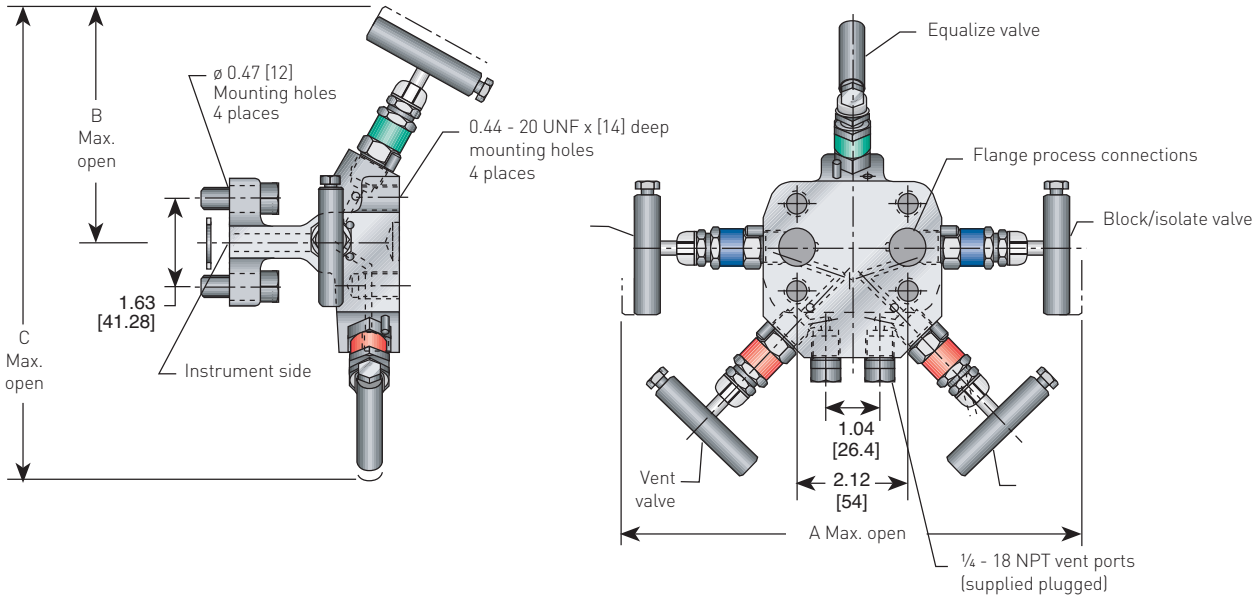
GENERAL APPLICATION

The M24A and M24T are five-valve manifolds that enable instrument operation, isolation, zeroing, calibration and venting to close the system in a single unit. They are suitable for liquid or vapor service.

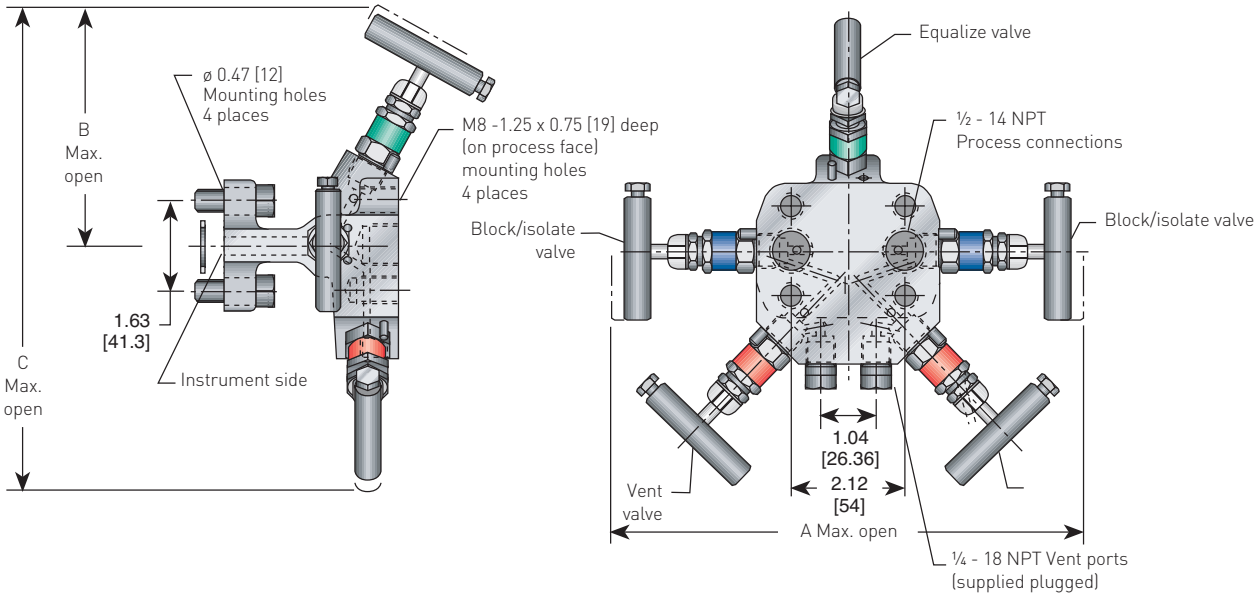
TECHNICAL DATA

Materials:	SS, Monel
Seats:	Metal
Connections:	Pipe x flanged to instrument Flanged x flanged to instrument
Instrument:	Flanged
Process:	Flanged or ½" NPT
Pressure (max.):	6000 psig (414 barg)
Temperature (max.):	1000°F (538°C)

M24A DIMENSIONS, inches [mm] - FLANGED X FLANGED

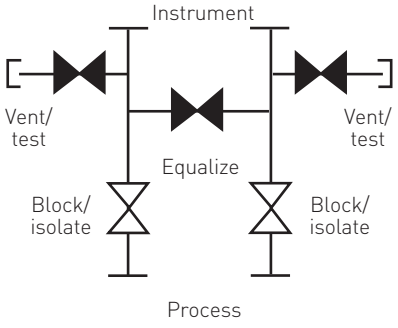


M24T DIMENSIONS, inches [mm] - THREADED X FLANGED



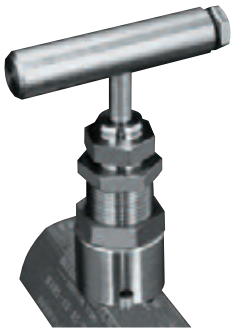
MAXIMUM DIMENSIONS, inches [mm]

Valve	A	B	C
PTFE packing	8.65 [220]	4.35 [110]	8.65 [220]
GRAFOIL® packing	9.75 [248]	4.80 [122]	9.60 [244]



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. 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. The M24's high-temperature bonnet assemblies use a strengthened stem and bonnet incorporating adjustable graphite rings and back-up pressure rings to ensure a leak-free stem seal and are fitted with larger size T-bar handles.



GRAFOIL® PACKED BONNET LOCK[1]

STANDARD MATERIALS

Valve[1]	Body	Bonnet	Stem	Ball Seat
SS[2]	A351 CF8M	316 SS	316 SS	316 SS
SG[2]	A351 CF8M	316 SS	Monel® 400	Monel® K500

NOTES

1. Approximate valve weight: 6.0 lb [2.7 kg]. 0.187-inch [4.8 mm] diameter orifice. Valve C_v 0.52 maximum.
2. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for Chloride conditions ⩽ 50 mg/l [ppm]) and NACE MR0103.
3. For any other material requirements, please consult the factory.

BONNET LOCK (BL) (PATENTED)

- 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.

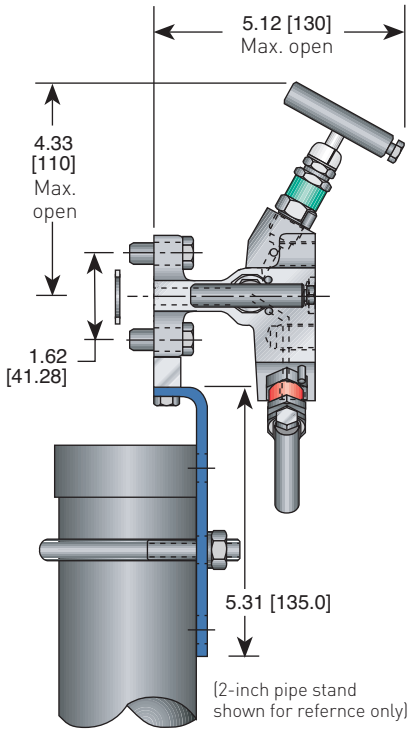
NOTE

1. Standard on power plant manifolds.

AGCO MOUNT (AM)

The AGCO mount principle is to mount the manifold not the transmitter enabling easier instrument loop installations and lower on-going maintenance costs. The transmitter is simply removed by releasing the four mounting bolts and disconnecting signal leads. M24 utilizes an AGCO Mount, suitable for 2-inch [50 mm] NB pipestand. Supplied in zinc plated CS as standard, also available in stainless steel.

AGCO MOUNT DIMENSIONS, inches [mm]



VALVE BONNET IDENTIFICATION

Ring labels: the valve bonnets have color coded ring labels for service identification.

Red: Vent valves
Blue: Isolate valves
Green: Equalize valves

CONNECTIONS

Standard connections

Process	Threaded ½-inch NPT to ANSI/ASME B1-20-1 on 2⅛-inch [54 mm] centers.
Instrument	Flanged for direct mounting to transmitters on 2⅛-inch [54 mm] centers. Flanged connections are on 2⅛-inch [54 mm] centers.
Vent	Threaded ¼-inch NPT to ANSI/ASME B1-20-1.

FUTBOL FLANGES

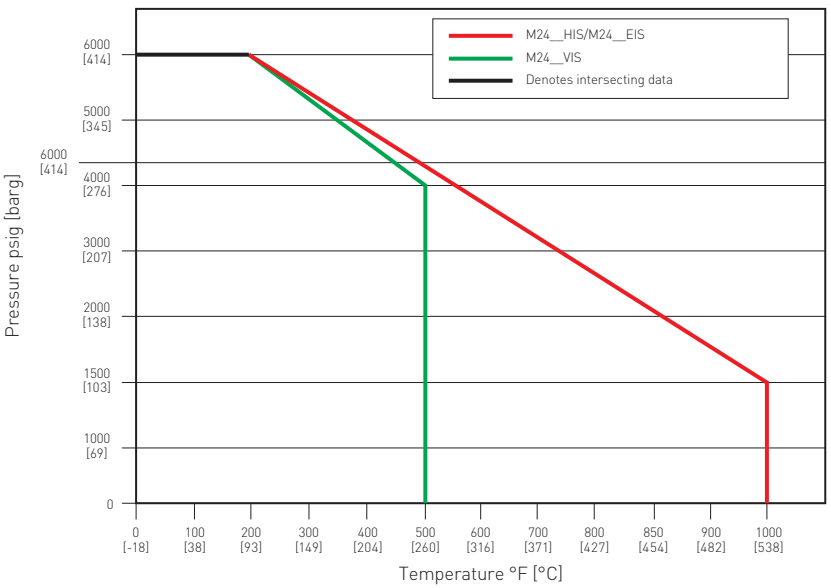
Futbol flanges are available for bolting to the process side of a flanged manifold. This provides the ideal solution to welded connection requirements, allowing the flanges to be welded to process piping while keeping the flexibility to remove the manifold when required, for maintenance or repair.

Connection	CS	SS
½" FNPT	KFC-4	KFS-4
½" MNPT	KFC-4M	KFS-4M
½" Buttweld	KFC-4BW	KFS-4BW
½" Socket weld	KFC-4B	KFS-4B

NOTES

1. Threaded connection: vent supplied with blanking plug as standard.
2. All manifolds are supplied with seal rings and four 7/16-inch UNF HT steel mounting bolts. PTFE seal rings are supplied with the standard bonnet; Graphite seal rings are supplied with high temperature bonnet.

PRESSURE VS. TEMPERATURE



PRESSURE AND TEMPERATURE RATINGS

Valve	PTFE bonnet
316 SS	6000 psig at 200°F [414 barg at 93°C]
Valve	**High temperature**
316 SS	6000 psig at 200°F [414 barg at 93°C]
	1500 psig at 1000°F [103 barg at 538°C]

MINIMUM TEMPERATURE

316 SS, PTFE packed	-70°F (-57°C)
316 SS, GRAFOIL® packed	-70°F (-57°C)

SELECTION GUIDE

Example:	M24T	V	I	S	- 4	- SG
Valve type						
M24A (Flanged x flanged)						
M24T (Threaded x flanged)						
Bonnet packing						
V PTFE						
H GRAFOIL®						
E Low emissions graphite						
Seat						
I Integral (body material)						
Body material						
S 316 SS						
Process connections (M24T only)						
4 ½-inch FNPT						
Options						
-AT Tamper-proof bonnet						
-BL Bonnet lock device						
-CB Ceramic ball ended stem						
-K Key for -AT						
-LAT Lockable tamper-proof bonnet						
-AM AGCO Mount kit						
-OC00 Cleaned for oxygen service						
-R3V[1] Add for use with Rosemount® Model 3051C (SS 18-8 bolts)						
-SSA[1] 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[1] 316 flange bolt (B8M) - maximum pressure rating 4500 psi [310 barg]						
-SG (Sour gas) meets the requirements of NACE MR0175/ISO 15156 (for Chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103 (SS valves only)						

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.

SELECTION GUIDE - POWER INDUSTRY APPLICATIONS[1]

Example:	M24THP	S	- 4	-XP	- AM
Valve type					
M24AHP					
M24THP					
Body material					
S SS					
Connections[3] (process x instrument x vent)					
4 ½-inch FNPT x flange x ¼-inch FNPT					
4AT ½-inch AGCO tube x flange x ¼-inch FNPT					
Options					
-AM AGCO Mount kit					
-SSB 316 SS flange bolt (B8M Class 2) - will provide full pressure rating					

NOTES

1. All manifolds come standard with GRAFOIL® packing, integral seats, bonnet locks, and are subjected to hydrostatic testing.
2. Manifold ratings:
   SST 6000 psig at 100°F
   [414 barg at 38°C]
   3030 psig at 1000°F
   [209 barg at 538°C]
3. M24A connections are flange x flange x ¼ -inch FNPT.