Anderson Greenwood Instrumentation Manifolds

Two/Three/Five Valve

MC/MT SERIES

A range of 2, 3 and 5 valve integral manifolds to be used with Rosemount® Coplanar™ style transmitters for static and differential pressure applications.

General Application

The MC/MT series includes 2 valve manifolds for static pressure; 3 and 5 valve models for differential pressure transmitters with specific variants for gas and power services, including those that meet ASME B31.3 and B31.1 Power Products for fossil fuel power plants.

TECHNICAL DATA

Materials
316 SS, Hastelloy®

Seats:
Metal

Connections:
MC: Pipe x flanged
MT: Flange x flanged
MC: 1/2" NPT inlet
MT: Flange by Flange with 1/4' FNPT thread ports inlet

Orifice size:
0.156" (4.8 mm)
0.136" (3.5 mm) minimal orifice size for MC5G

Pressure (max):
6000 psig (414 barg)

Temperature range (min/max):
-313°F to 1000°F
(-192°C to 538°C)

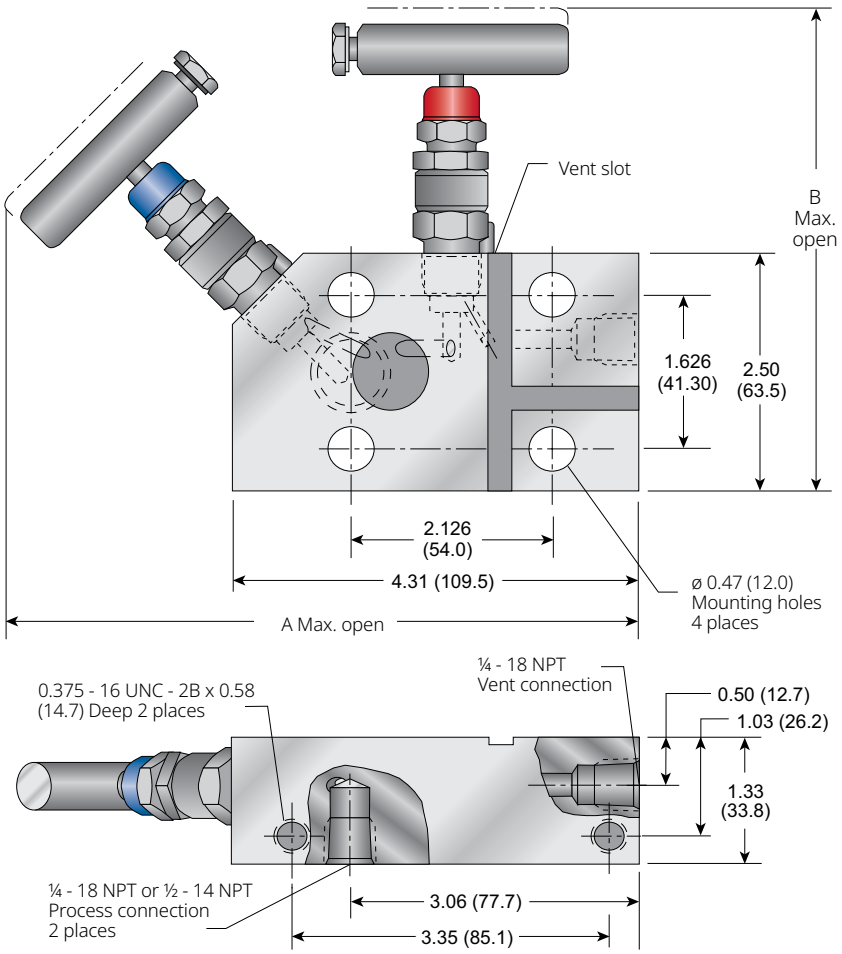
Hastelloy® is a registered trademark of Haynes International, Inc.

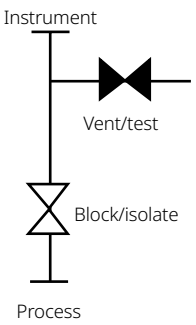
Features

- Compatible with Rosemount® Coplanar™ style pressure transmitter models 3051.
- Ball end stems eliminate seat galling, provide bubble-tight shutoff and long life. Hardened, non-rotating balls ensure perfectly aligned closure.
- Packing below threads prevents lubricant washout, thread corrosion, process contamination and eliminates galling.
- Easily adjustable PTFE and Graphite packing decreases replacement downtime and increases valve life.
- Dust Caps protect stems from lubricant contamination.
- Safety back seating prevents stem blowout or accidental removal and provides a metal-to-metal secondary stem seal while in the fully open position.
- ENC plated 316 SS stems prevent galling of stem threads.
- Rolled stem and bonnet threads provide additional strength.
- Mirror stem finish in the packing areas provides smooth operation and extends packing life.
- Metal-to-metal body-to-bonnet seals in constant compression prevent bonnet thread corrosion, eliminate possible tensile breakage and give a reliable seal.
- Bonnet lock pins prevent accidental separation from the body while enabling easy maintenance and repair.
- Patented porting design allows complete venting of process fluids before start-up for easy installation commissioning, preventing trapping of unwanted liquid or gas process fluids.
- Bonnet cap or ring label identifies valve function.

MC2 Dimensions

MC2 2-Valve Manifold for Static Pressure-Dimensions, Inches (mm)





Color of Cap	Type of Valve
	Isolation/block
	Vent/Bleed

Dimensions - Inches (mm)

Valve[1]	PTFE packed and Graphite	E Series Graphite Packing
A	6.96 (176.8)	7.49 (190.2)
B	5.145 (130.8)	5.75 (146.1)
Bonnet Cap or Ring Label identification Blue isolation/block Red Vent/Bleed		

Minimum Temperature

316 SS O-ring seal	-20°F (-29°C)
316 SS, Monel®, Hastelloy®, PTFE packed	-313°F (-192°C) @2500 psi (172 bar) 316SS integral seat
316 SS, Monel®, Hastelloy®, Graphite packed	-313°F (-192°C) @2500 psi (172 bar) 316SS itegral seat

Anderson Greenwood Instrumentation Manifolds

Two Valve

Standard Materials

Valve	Body and bonnet[2]	Stem and ball
316 SS	A479-316 316	A276-316 316
SG[3]	A479-316 316	Monel® 400 Monel® K500
SG3[4]	Hastelloy® C-276	Hastelloy® C-276 Elgiloy®

Pressure and Temperature Ratings

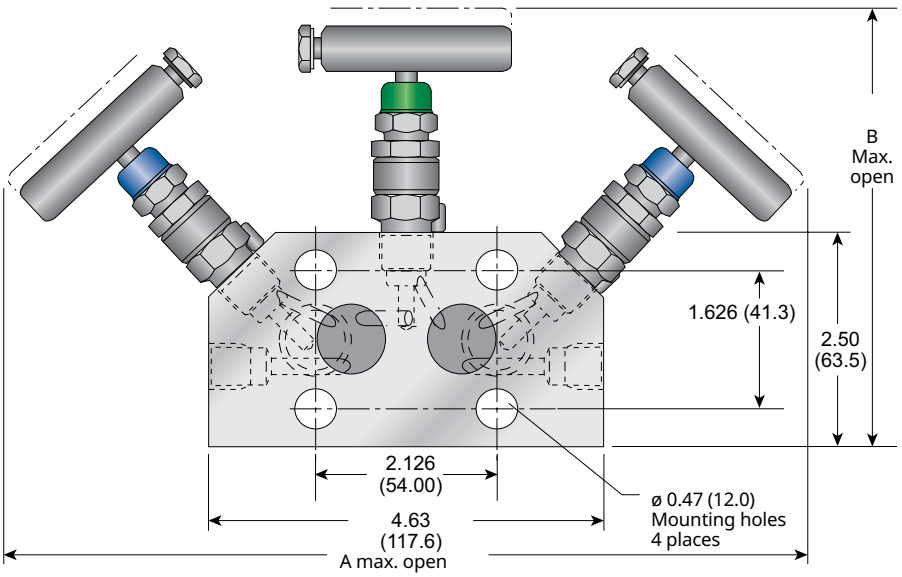
Valve	Packing	Ratings
316 SS	PTFE	6000 psig at 200°F (414 barg at 93°C) 4000 psig at 500°F (276 barg at 260°C)
316 SS	Graphite/ Low emissions graphite	6000 psig at 200°F (414 barg at 93°C) 1500 psig at 1000°F (103 barg at 538°C)
SG[3]	PTFE	6000 psig at 200°F (414 barg at 93°C) 4000 psig at 500°F (276 barg at 260°C)
SG[3]	Graphite/ Low emissions graphite	6000 psig at 200°F (414 barg at 93°C) 1500 psig at 1000°F (103 barg at 538°C)
SG3[4]	PTFE	6000 psig at 200°F (414 barg at 93°C) 4000 psig at 500°F (276 barg at 260°C)
SG3[4]	Graphite/ Low emissions graphite	6000 psig at 200°F (414 barg at 93°C) 1500 psig at 1000°F (103 barg at 538°C)

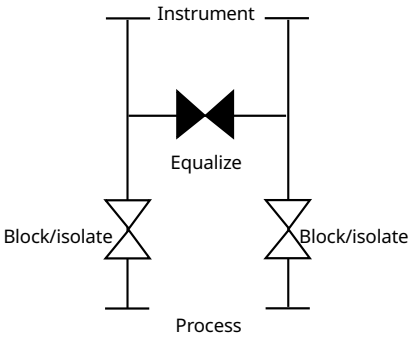
NOTES

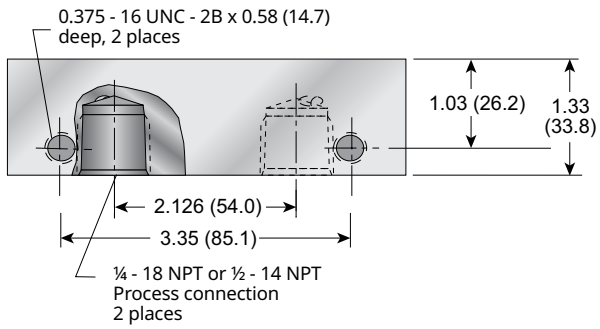
1. Approximate valve weight: 4.1 lb (1.9 kg). 0.156 inch (4.0 mm) diameter orifice. Valve Cv 0.36 maximum.
2. Body face is slotted to assure atmospheric vent when a differential transmitter is used.
3. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103.
4. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l [ppm]).
5. Optional bolting 2.25” consult factory.

MC3 Dimensions

MC3 3-Valve Manifold with Optional Externally Valved Test Ports-Dimensions, Inches (mm)







Color of Cap	Type of Valve
	Isolation/block
	Equalize

Dimensions - Inches (mm)

Valve[1]	PTFE packed and Graphite	E Series Graphite Packing
A	9.93 (252.2)	10.98 (278.9)
B	5.15 (130.8)	5.76 (146.1)

Minimum Temperature

316 SS O-ring seal	-20°F (-29°C)
316 SS, Monel®, Hastelloy®, PTFE packed	-313°F (-192°C) @2500 psi (172 bar) 316SS integral seat
316 SS, Monel®, Hastelloy®, Graphite packed	-313°F (-192°C) @2500 psi (172 bar) 316SS integral seat

Standard Materials

Valve[2]	Body and bonnet	Stem and ball
316 SS	A479-316	A276-316
	316	316
SG[3]	A479-316	Monel® 400
	316	Monel® K500
SG3[4]	Hastelloy® C-276	Hastelloy® C-276
		Elgiloy®

Pressure and Temperature Ratings

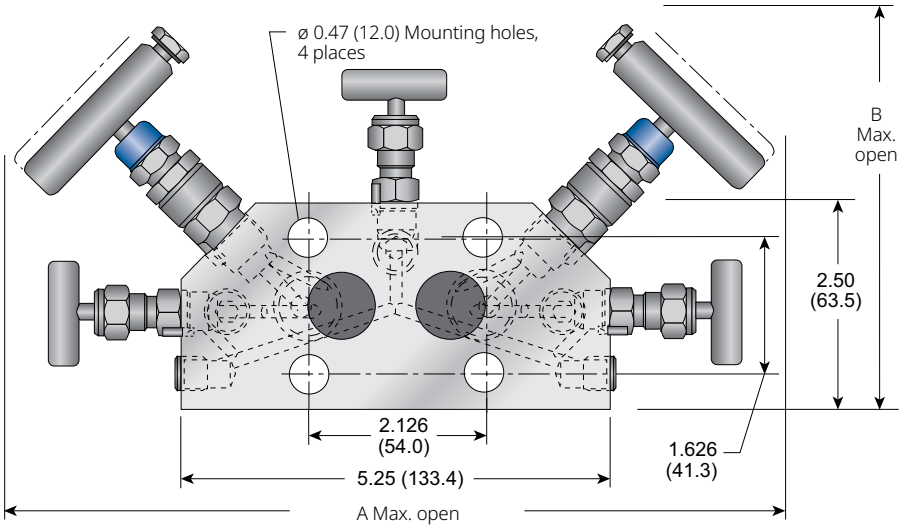
Valve	Packing	Ratings
316 SS	PTFE	6000 psig at 200°F (414 barg at 93°C)
		4000 psig at 500°F (276 barg at 260°C)
316 SS	Graphite/	6000 psig at 200°F (414 barg at 93°C)
	Low emissions graphite	1500 psig at 1000°F (103 barg at 538°C)
SG[3]	PTFE	6000 psig at 200°F (414 barg at 93°C)
		4000 psig at 500°F (276 barg at 260°C)
SG[3]	Graphite/	6000 psig at 200°F (414 barg at 93°C)
	Low emissions graphite	1500 psig at 1000°F (103 barg at 538°C)
SG3[4]	PTFE	6000 psig at 200°F (414 barg at 93°C)
		4000 psig at 500°F (276 barg at 260°C)
SG3[4]	Graphite/	6000 psig at 200°F (414 barg at 93°C)
	Low emissions graphite	1500 psig at 1000°F (103 barg at 538°C)

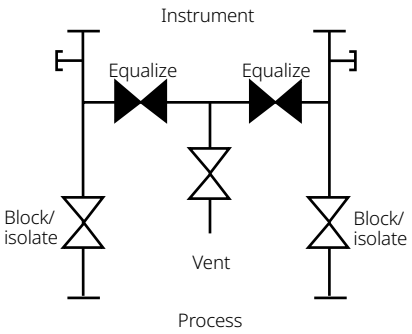
NOTES

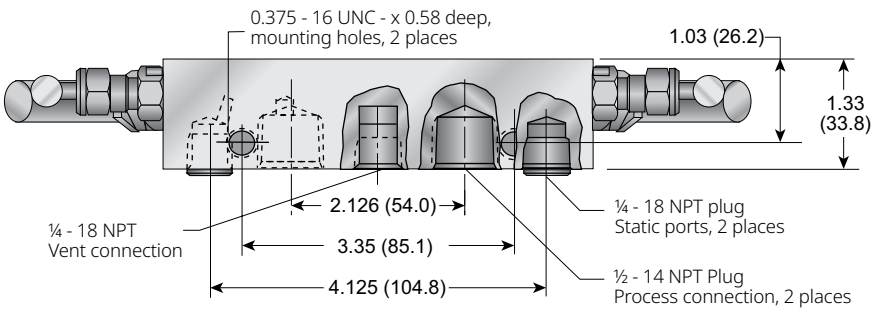
1. Approximate valve weight:
   5.0 lb (2.3 kg) for MC3VI ( )-2-H5,
   0.4 lb (2.0 kg) for MC3VI ( )-2
   0.156 inch (4.0 mm) diameter orifice.
   Valve Cv 0.36 maximum.
2. Optional test port valves are H5VDS-22, convertible soft-to-metal seat.
3. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103.
4. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l [ppm]).
5. Optional bolting 2.25”, consult factory.

MC5G Dimensions

MC5G 5-Valve Manifold for Gas Service (Patent Protected)-Dimensions, Inches (mm)







Color of Cap	Type of Valve
	Isolation/block

Standard Materials

Valve[1]	Body and bonnet	Stem and ball	Packing
316 SS	A479-316 316	A276-316 316	PTFE
SG[2]	A479-316 316/Monel®	Monel® 400 Monel® K500	PTFE
SG3[3]	Hastelloy® C-276	Hastelloy® C-276 Elgiloy®	PTFE

Dimensions - Inches (mm)

Valve[1]	Graphite and PTFE
A	10.55 (268)
B	5.15 (130.8)

Pressure and Temperature Ratings

Valve	Ratings
316 SS, SG[2], SG3[3]	6000 psig at 200°F (414 barg at 93°C) 4000 psig at 500°F (276 barg at 260°C)

Minimum Temperature

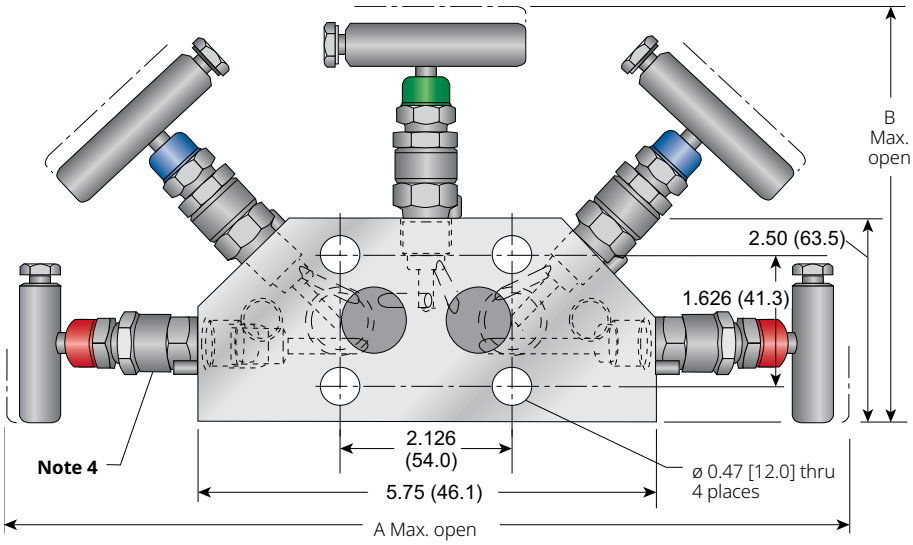
316 SS O-ring seal	-20°F (-29°C)
316 SS, Monel®, Hastelloy®, PTFE packed	-40°F (-40°)
316 SS, Monel®, Hastelloy®, Graphite packed	-40°F (-40°)

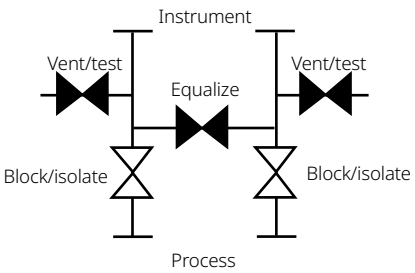
NOTES

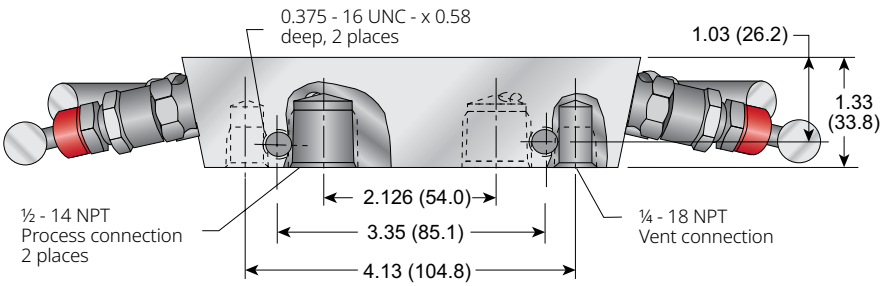
1. Approximate valve weight: 4.8 lb (2.2 kg).
   0.136 inch (3.5 mm) diameter orifice.
   Valve Cv 0.24 maximum.
2. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103.
3. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l [ppm]).
4. Static port plug is optional.

MC5P Dimensions

MC5P 5-Valve Manifold with Two Integral Test Valves (Patent Protected)-Dimensions, Inches (mm)







Color of Cap	Type of Valve
	Isolation/block
	Vent/Bleed
	Equalize

Standard Materials

Valve[1]	Body and bonnet	Stem and ball	Packing
316 SS	A479-316 316	A276-316 316	PTFE
SG[2]	A479-316 316/Monel®	Monel® 400 Monel® K500	PTFE
SG3[3]	Hastelloy® C-276	Hastelloy® C-276 Elgiloy®	PTFE

Dimensions - Inches (mm)

Valve[1]	PTFE packed and Graphite	E Series Graphite Packing
A	11.05 (280.7)	12.48 (315.0)
B	5.15 (130.8)	5.75 (146.1)

Pressure and Temperature Ratings

Valve	Ratings	Packing
316 SS, SG[2], SG3[3]	6000 psig at 200°F (414 barg at 93°C) 4000 psig at 500°F (276 barg at 260°C)	PTFE
316 SS, SG[2], SG3[3]	6000 psig at 200°F (414 barg at 93°C) 1500 psig at 1000°F (103 barg at 538°C)	Graphite

Minimum Temperature

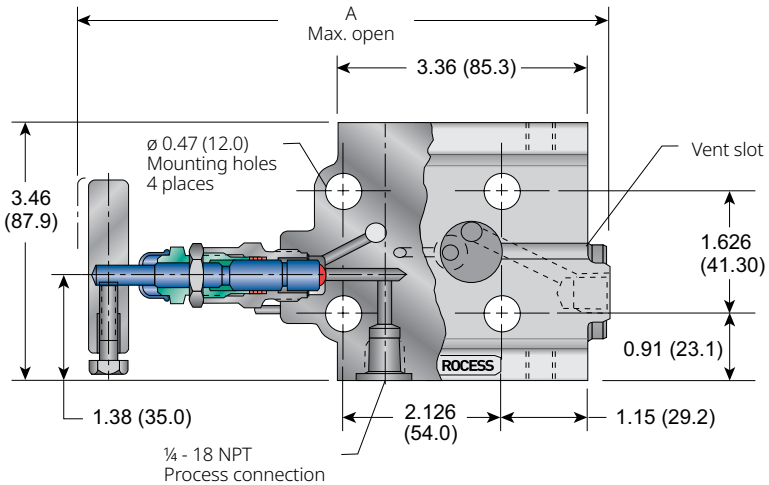
316 SS O-ring seal	-20°F (-29°C)
316 SS, Monel®, Hastelloy®, PTFE packed	-313°F (-192°C) @2500 psi (172 bar) 316SS integral seat
316 SS, Monel®, Hastelloy®, Graphite packed	-313°F (-192°C) @2500 psi (172 bar) 316SS integral seat

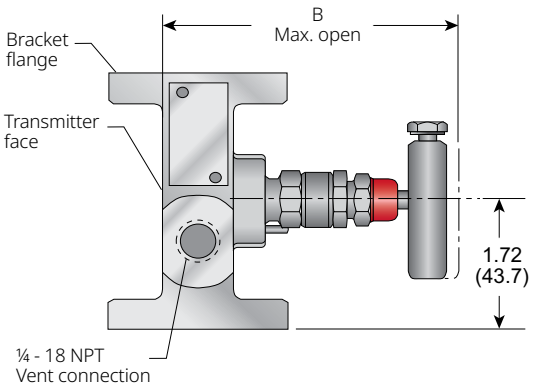
NOTES

1. Approximate valve weight: 5.3 lb (2.4 kg).
   0.156 inch (4.0 mm) diameter orifice.
   Valve Cv 0.36 maximum.
2. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103.
3. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l [ppm]).
4. Valve bonnet labels not supplied on Graphite packed bonnets due to temperature limitations.

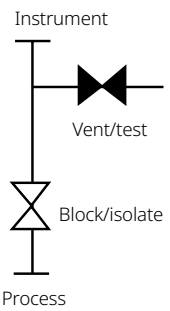
MT2 Dimensions

MT2 2-Valve Manifold for Static Pressure-Dimensions, Inches (mm)





Color of Cap	Type of Valve
	Isolation/block
	Vent/Bleed



Standard Materials

Valve	Body and bonnet[2]	Stem and ball
316 SS	A479-316	A276-316
	316	316
SG[3]	A479-316	Monel® 400
	316	Monel® K500
SG3[4]	Hastelloy® C-276	Hastelloy® C-276
		Elgiloy®

Pressure and Temperature Ratings

Valve	Packing	Ratings
316 SS	PTFE	6000 psig at 200°F (414 barg at 93°C)
		4000 psig at 500°F (276 barg at 260°C)
316 SS	Graphite/	6000 psig at 200°F (414 barg at 93°C)
	Low emissions graphite	1500 psig at 1000°F (103 barg at 538°C)
SG[3]	PTFE	6000 psig at 200°F (414 barg at 93°C)
		4000 psig at 500°F (276 barg at 260°C)
SG[3]	Graphite/	6000 psig at 200°F (414 barg at 93°C)
	Low emissions graphite	1500 psig at 1000°F (103 barg at 538°C)
SG3[4]	PTFE	6000 psig at 200°F (414 barg at 93°C)
		4000 psig at 500°F (276 barg at 260°C)
SG3[4]	Graphite/	6000 psig at 200°F (414 barg at 93°C)
	Low emissions graphite	1500 psig at 1000°F (103 barg at 538°C)

Dimensions - Inches (mm)

Valve[1]	PTFE packed and Graphite	E Series Graphite Packing
A	6.77 (171.9)	7.44 (188.9)
B	4.02 (102.1)	4.69 (119.1)

Minimum Temperature

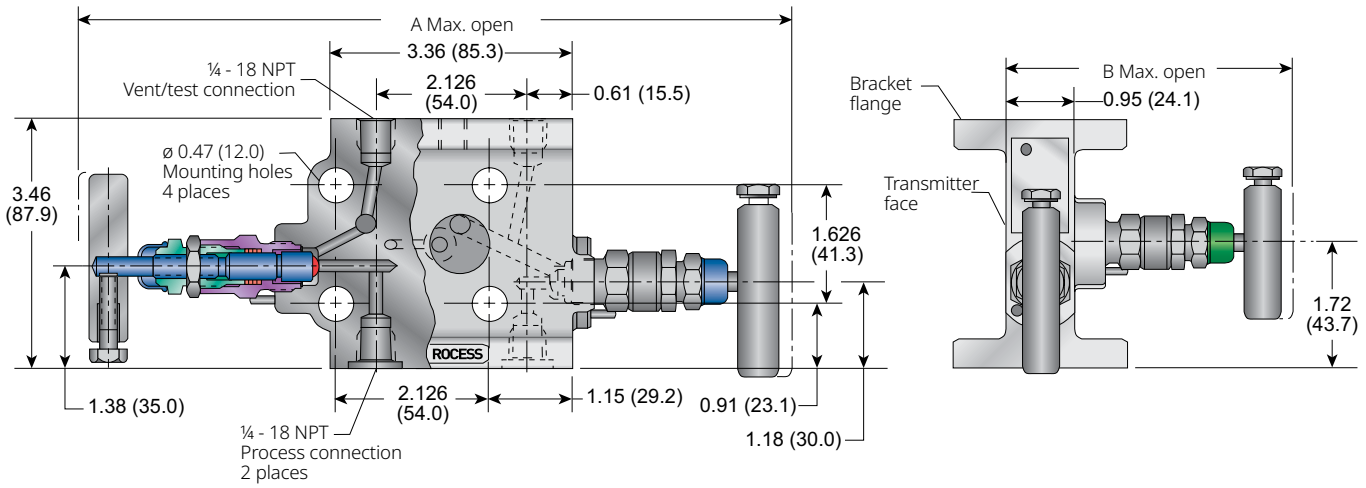
316 SS O-ring seal	-20°F (-29°C)
316 SS, Monel®, Hastelloy®, PTFE packed	-313°F (-192°C) @2500 psi (172 bar) 316SS integral seat
316 SS, Monel®, Hastelloy®, Graphite packed	-313°F (-192°C) @2500 psi (172 bar) 316SS integral seat

NOTES

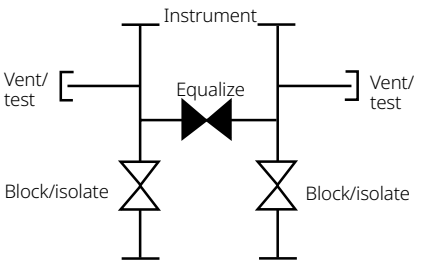
1. Approximate valve weight: 4.6 lb (2.09 kg).
   0.156 inch (4.0 mm) diameter orifice.
   Valve Cv 0.36 maximum.
2. Body face is slotted to assure atmospheric vent when a differential transmitter is used.
3. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103.
4. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l [ppm]).

MT3 Dimensions

MT3 3-Valve Manifold with Test Ports-Dimensions, Inches (mm)



Color of Cap	Type of Valve
	Isolation/block
	Equalize



Standard Materials[2]

Valve	Body and bonnet	Stem and ball
316 SS	A479-316	A276-316
	316	316
SG[3]	A479-316	Monel® 400
	316	Monel® K500
SG3[4]	Hastelloy® C-276	Hastelloy® C-276
		Elgiloy®

Dimensions - Inches (mm)

Valve[1]	PTFE packed and Graphite	E Series Graphite Packing
A	9.68 (245.9)	11.02 (279.9)
B	4.02 (102.1)	4.69 (119.1)

Pressure and Temperature Ratings

Valve	Packing	Ratings
316 SS	PTFE	6000 psig at 200°F (414 barg at 93°C)
		4000 psig at 500°F (276 barg at 260°C)
316 SS	Graphite/	6000 psig at 200°F (414 barg at 93°C)
	Low emissions graphite	1500 psig at 1000°F (103 barg at 538°C)
SG[3]	PTFE	6000 psig at 200°F (414 barg at 93°C)
		4000 psig at 500°F (276 barg at 260°C)
SG[3]	Graphite/	6000 psig at 200°F (414 barg at 93°C)
	Low emissions graphite	1500 psig at 1000°F (103 barg at 538°C)
SG3[4]	PTFE	6000 psig at 200°F (414 barg at 93°C)
		4000 psig at 500°F (276 barg at 260°C)
SG3[4]	Graphite/	6000 psig at 200°F (414 barg at 93°C)
	Low emissions graphite	1500 psig at 1000°F (103 barg at 538°C)

Minimum Temperature

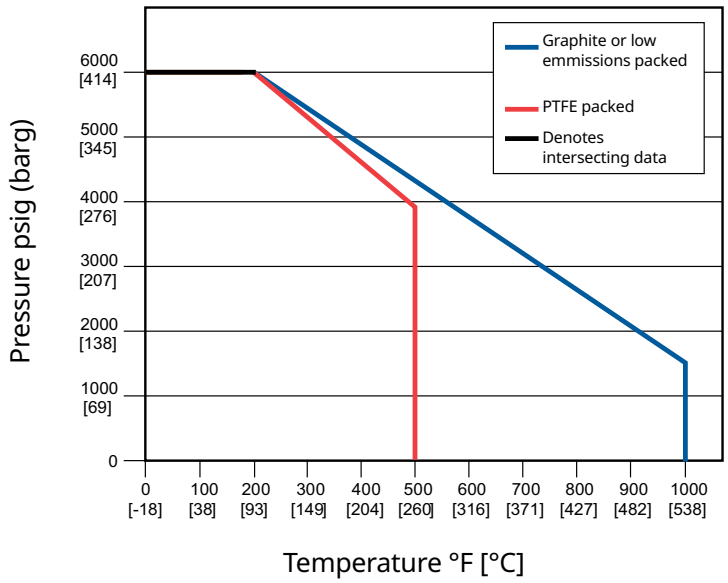
316 SS O-ring seal	-20°F (-29°C)
316 SS, Monel®, Hastelloy®, PTFE packed	-313°F (-192°C) @2500 psi (172 bar) 316SS integral seat
316 SS, Monel®, Hastelloy®, Graphite packed	-313°F (-192°C) @2500 psi (172 bar) 316SS integral seat

NOTES

1. Approximate valve weight: 4.9 lb (2.22 kg).
   0.156 inch (4.0 mm) diameter orifice.
   Valve Cv 0.36 maximum.
2. Monel® and Hastelloy® are also available.
3. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103.
4. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l [ppm]).

Pressure vs. Temperature

Pressure vs. Temperature



Minimum temperature

316 SS O-ring seal	-20°F (-29°C)
316 SS, Monel®, Hastelloy®, PTFE packed -313°F (-192°C) @2500psi (172 bar) 316SS integral seat	(MC5G Minimum Temp 40°F (-40°))
316 SS, Monel®, Hastelloy®, Graphite packed -313°F (-192°C) @2500psi (172 bar) 316SS integral seat	(MC5G Minimum Temp 40°F (-40°))

Bonnet Assemblies

The metal-seated bonnet assemblies have rotating stems with free swivel ball-type seats for long service life.

The specially hardened ball seat is ideal for gas, steam and liquid service.

All stem threads are rolled and lubricated to prevent galling and reduce operating torque. The stem seal is a 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 PTFE and Graphite assemblies have a protective dust cap fitted to contain stem lubricant and prevent the influx of contaminants.

The high-temperature bonnet assemblies use stems and bonnets 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.

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.

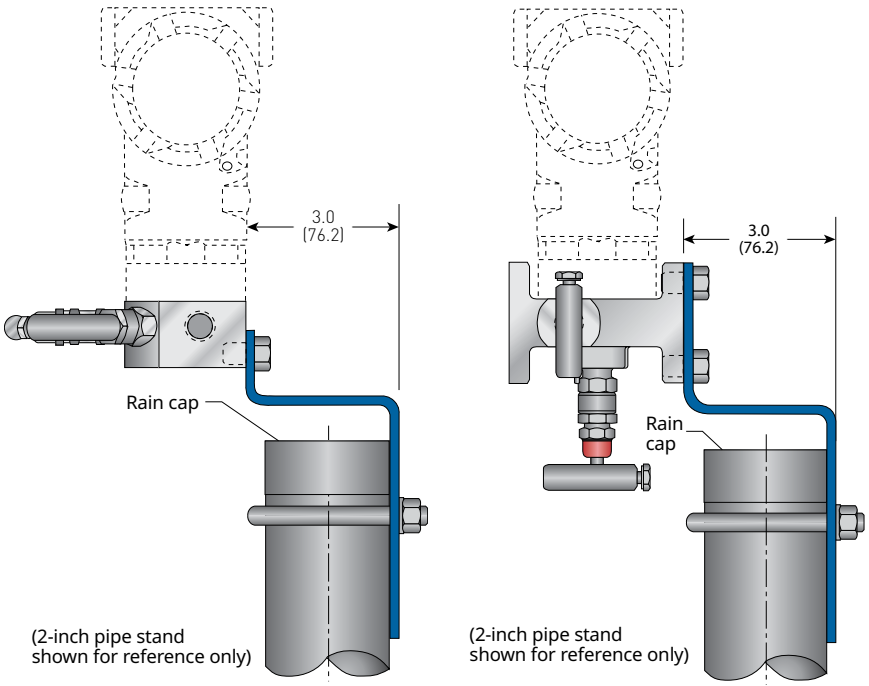
MC/MT Mounting Kits

MC/MT AGI Mount Kits

Manifold style	Material
MT-AM	CS[1]
MT-AMS	SS
MC-AM	CS[1]
MC-AMS	316 SS

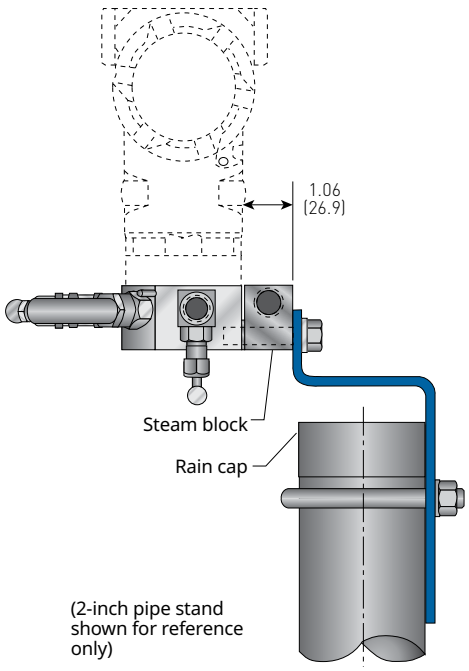
NOTE

1. Zinc TCP plated



MC Steam Block Option Kit

Manifold style	Material
MC	316 SS



Selection Guide - MC (Rosemount® Coplanar™ only) Specifications

MC	3	V	I	S	-4	-PS
BASIC SERIES	**TYPE**	**PACKING**	**SEAT**	**MATERIAL**	**END CONNECTION**	**OPTIONS**
MC Coplanar™	**2** 2 valve (static pressure)	**V** PTFE	**I** Integral (body material)	**S** 316 SS	**4** 1/2-inch FNPT	**AM** AGI Mount kit for 2-inch pipe stand mounting of manifold
						AMS AGI Mount kit for 2 inch Pipe Stand mounting of manifold 316SS
	3 3 valve (ΔP)	**H** Graphite (not available for MC5G)		**J** Hastelloy®		**BL** Bonnet lock device
	5G 5 valve (gas)(ΔP)	**E** Low emissions graphite (not available for MC5G)				**CB** Ceramic ball ended stem
	5P 5 valve (power)(ΔP)					**H5** H5VDS-22 vent valve (2) (MC3 only)
						1H5 H5VDS-22 vent valve (1) (MC2, MC3 only)
						HD Hydrostatic testing (100 percent) (MSS SP-61)
						OC00 Cleaned for oxygen service
						PS[1] Required MC5G Static test ports only
						SB Steam block (MC only)
						SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103
						SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l [ppm])
						LT Low Temperature bonnet min temperature -313°F (-192°C) @ 2500 psi (172 bar) 316SS integral seat (not available on MC5G)

NOTES
1. Required on MC5G Static test.
2. Bolts, plugs, bleed plugs and gaskets are not included; contact factory if bolts, plugs or gaskets are required.

Selection Guide - MT (Rosemount® Coplanar™ only) Specifications

MT	3	V	I	S	-2	-PS
BASIC SERIES	**TYPE**	**PACKING**	**SEAT**	**MATERIAL**	**END CONNECTION**	**OPTIONS**
MT Traditional (flange by flange)	**2** 2 valve (static pressure)	**V** PTFE	**I** Integral (body material)	**S** 316 SS	**2** ¼-inch FNPT (use if futbol mounting to inlet)	**AM** AGI Mount kit for 2-inch pipe stand mounting of manifold
						AMS AGI Mount kit for 2 inch Pipe Stand mounting of manifold 316SS
	3 3 valve (ΔP)	**H** Graphite		**J** Hastelloy®		**BL** Bonnet lock device
		E Low emissions graphite				**CB** Ceramic ball ended stem
						CL00 Cleaned for chlorine service
						HD Hydrostatic testing (100 percent) (MSS SP-61)
						OC00 Cleaned for oxygen service
						SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103
						SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for C-chloride conditions > 50 mg/l [ppm])
						LT Low Temperature bonnet min temperature -313°F (-192°C) @ 2500 psi (172 bar) 316SS integral seat

NOTE
Bolts, bleed plugs and gaskets are not included; contact factory if bolts, plugs or gaskets are required.

Selection Guide - MC ASME B31.1 - Power industry

MC and MT ASME B31.1 or B31.3 specifications meets MSS SP-105

MC	3HP	S	-4 -XP	-AM
BASIC SERIES	**TYPE**	**MATERIAL**	**END CONNECTION**	**OPTIONS**
MC Coplanar™	**2HP** 2 valve (static pressure) **3HP** 3 valve (ΔP) **5HP** 5 valve (power)(ΔP)	**S** 316 SS	**4** 1/2-inch FNPT	**AM** AGI Mount kit for 2-inch pipe stand mounting of manifold **AMS** AGI Mount kit for 2 inch Pipe Stand mounting of manifold 316SS

Selection Guide - MT ASME B31.1 - Power industry

MC	3HP	S	-2 -XP	-AM
BASIC SERIES	**TYPE**	**MATERIAL**	**END CONNECTION**	**OPTIONS**
MT Traditional (flange by flange)	**2HP** 2 valve (static pressure) **3HP** 3 valve (ΔP)	**S** 316SS	**2** ¼-inch FNPT (use if futbol mounting to inlet)	**AM** AGI Mount kit for 2-inch pipe stand mounting of manifold **AMS** AGI Mount kit for 2 inch Pipe Stand mounting of manifold 316SS

NOTES
1. All manifolds come standard with Graphite 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. Bolts, plugs, bleed plugs and gaskets are not included; contact factory if bolts, plugs or gaskets are required.