

## ANDERSON GREENWOOD M4TL LIQUID LEVEL MANIFOLDS

A single-flanged, two-valve manifold consisting of two block valves with no equalizer passage suitable for pressures up to 6000 psig (414 barg)



### 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.
- Free-swivelling ball end stems ensure bubble-tight valve closure without seat galling.
- Easy instrument removal due to direct bolting to the manifold. Signal lines, purge lines, etc. are left undisturbed, facilitating repairs, service and calibration.
- Immediate installation with AGCO 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 ensured by the AGCO Mount. Instrument piping stability is enhanced when supported directly by the pipe stand through the manifold.
- All packing is below stem threads, body-to-bonnet seal is below the threads minimizing process fluid corrosion.
- Reduced chance of instrument damage. With the AGCO Mount, the instrument can be warehoused safely until final 'loop' checkout.

### GENERAL APPLICATION

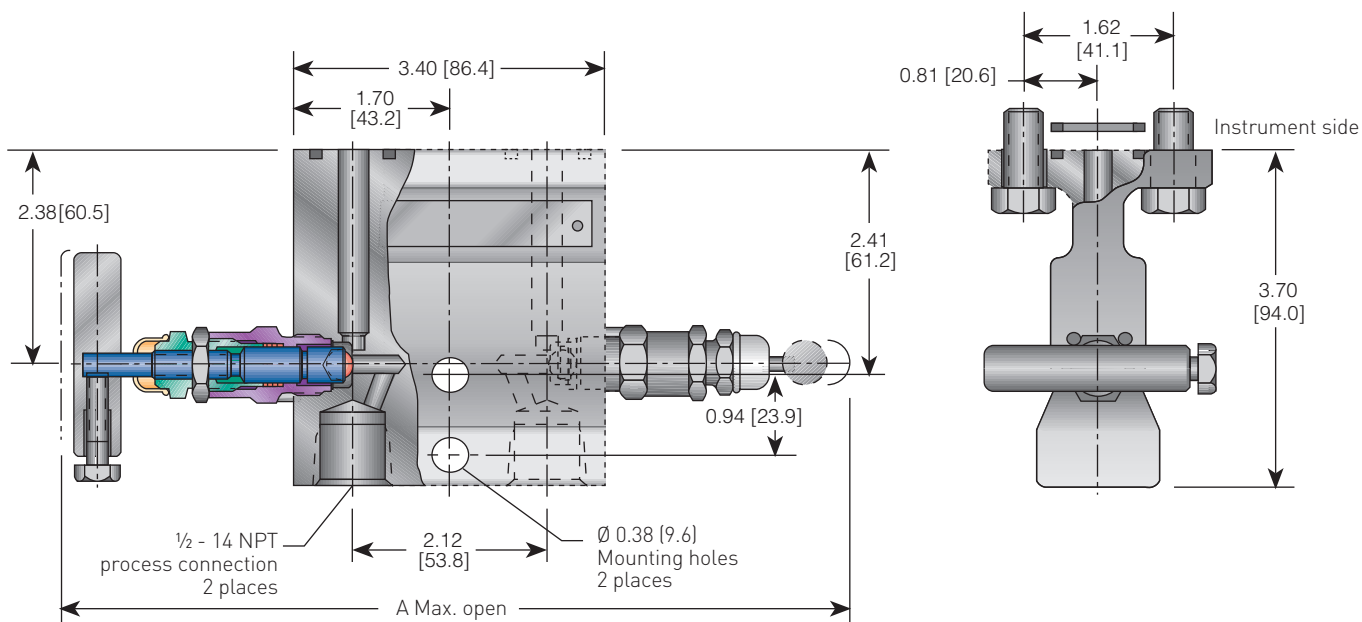
The manifold is designed for direct mounting to  $\Delta P$ -style differential pressure transmitters in liquid level service on pressurized vessels.

### TECHNICAL DATA

Materials:	CS, SS, Hastelloy
Seats:	Metal or soft
Connections:	1/2" NPT
Pressure (max.):	6000 psig (414 barg)
Temperature (max.):	1000°F (538°C)

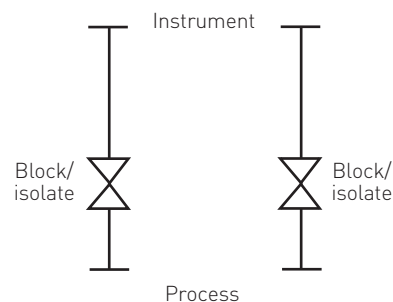
# ANDERSON GREENWOOD M4TL LIQUID LEVEL MANIFOLDS

METAL SEAT (SOFT SEAT AVAILABLE) DIMENSIONS, INCHES (mm)



## DIMENSIONS, INCHES (mm)

Packing	A
PTFE	8.60 (218.4)
GRAFOIL®	9.90 (251.5)



## STANDARD MATERIALS

Valve	Packing	Body	Bonnet	Stem	Ball	Bolts
CS <sup>[2]</sup>	PTFE	A576 10L18	A108	A581-303	17-4 PH	A193-B7
CS <sup>[2]</sup>	GRAFOIL®/ Low emissions graphite	A576 10L18	A105	A581-303	17-4 PH	A193-B7
SS	PTFE	A479-316	A479-316	A276-316	316	A193-B7
SS	GRAFOIL®/ Low emissions graphite	A479-316	A479-316	A276-316	316	A193-B7
SG <sup>[3]</sup>	PTFE	A479-316	Monel® 400	Monel® K500	A193-B7	PTFE
SG <sup>[3]</sup>	GRAFOIL®/ Low emissions graphite	A479-316	A479-316	Monel® 400	Monel® K500	A193-B7
SG <sup>[4]</sup>	PTFE	Hastelloy® C-276	Hastelloy® C-276	Hastelloy® C-276	Elgiloy®	A193-B7

## NOTES

- Approximate valve weight: 5.0 lb (2.3 kg).  
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.
- CS is zinc chromate plated to prevent corrosion.
- 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 MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)).
- 316 SS bolts lower pressure ratings to a maximum of 4500 psig (310 barg). Consult factory for full ratings.

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## BONNET ASSEMBLY OPTIONS

The 4TL has metal seats as standard with the option of soft seated designs. 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.

### 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.

### 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.

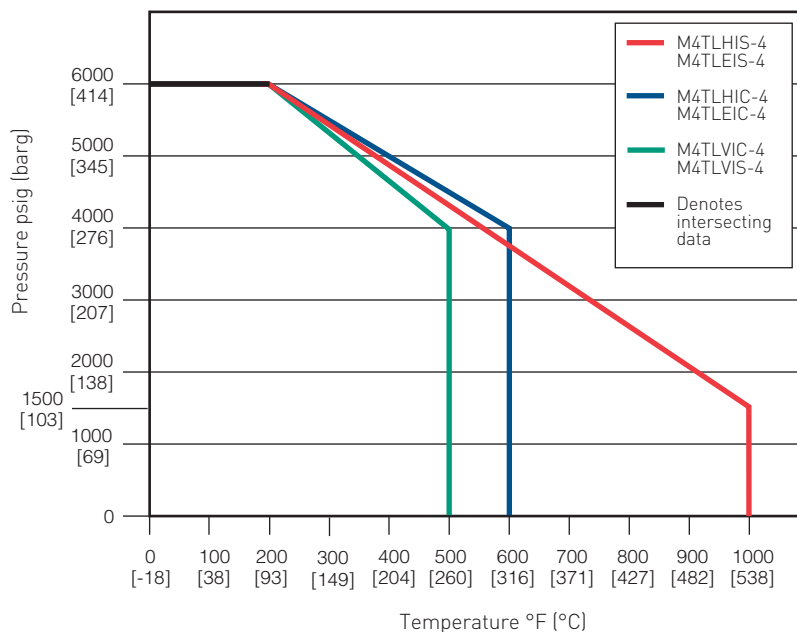
## PRESSURE AND TEMPERATURE RATINGS

Valve	Packing	Ratings
CS <sup>[1]</sup>	PTFE	6000 psig at 200°F [414 barg at 93°C] 4000 psig at 500°F [276 barg at 260°C]
CS <sup>[1]</sup>	GRAFOIL®/ Low emissions graphite	6000 psig at 200°F [414 barg at 93°C] 4000 psig at 600°F [276 barg at 316°C]
SS	PTFE	6000 psig at 200°F [414 barg at 93°C] 4000 psig at 500°F [276 barg at 260°C]
SS	GRAFOIL®/ Low emissions graphite	6000 psig at 200°F [414 barg at 93°C] 1500 psig at 1000°F [103 barg at 538°C]
SG <sup>[2]</sup> , SG3 <sup>[3]</sup>	PTFE	6000 psig at 200°F [414 barg at 93°C] 4000 psig at 500°F [276 barg at 260°C]
SG <sup>[2]</sup> , SG3 <sup>[3]</sup>	GRAFOIL®/ Low emissions graphite	6000 psig at 200°F [414 barg at 93°C] 1500 psig at 1000°F [103 barg at 538°C]

### NOTES

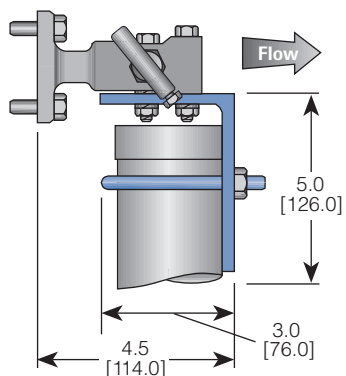
1. CS is zinc chromate plated to prevent corrosion.
2. SG [Sour Gas] meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions < 50 mg/l (ppm)) and NACE MR0103-2005.
3. SG3 [Sour Gas] meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)).
4. 316 SS bolts lower pressure ratings to a maximum of 4500 psig (310 barg). Consult factory for full ratings.
5. Minimum temperature: -70°F (-57°C).

## PRESSURE VS. TEMPERATURE



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## AGCO MOUNT KITS



AGCO Mount kits are available for all manifolds where they apply. See AM option for each manifold.

### AGCO MOUNT KITS FOR LIQUID LEVEL MANIFOLD

Manifold style	Description	Material
M4TL	Standard kit For bottom test ports With steam block	CS, zinc chromate plated
M4TL	Standard kit For bottom test ports With CS steam block	SS

# ANDERSON GREENWOOD M4TL LIQUID LEVEL MANIFOLDS

## SELECTION GUIDE

Example:	M4TL	V	I	C	- 4	- AM
<b>Packing</b>						
<b>V</b>	PTFE					
<b>H</b>	Grafoil®					
<b>Seat material</b>						
<b>I</b>	Integral (body material)					
<b>Body material</b>						
<b>C</b>	CS, A576-10L18					
<b>S</b>	SS, A479-31					
<b>W</b>	316L SS					
<b>J</b>	Hastelloy®					
<b>Connections</b>						
<b>4</b>	Flange outlet x ½-inch FNPT (inlet)					
<b>Connection style</b>						
<b>B</b>	Female socket weld					
<b>Options</b>						
<b>AM</b>	AGCO mount					
<b>AMMS</b>	AGCO mount kit -multi mount-stainless					
<b>AMV</b>	AGCO mount kit (vertical)					
<b>AMVS</b>	AGCO mount kit (vertical stainless steel)					
<b>AMW</b>	AGCO mount kit (wall mounting)					
<b>BL</b>	Bonnet lock device					
<b>CL00</b>	Chlorine cleaning (CL)					
<b>HD</b>	Hydrostatic testing (100%) (MSS-SP-61)					
<b>OC00</b>	Oxygen clean (OC)					
<b>PMI00</b>	PMI body only					
<b>PT</b>	Top purge port ¼"					
<b>R3V</b>	Add for use with Rosemount model 305C (SS 18-8 Bolts)					
<b>SB</b>	Steam block					
<b>SG</b>	(Sour Gas) NACE edition 2003 /MR0103					
<b>SG3</b>	(Sour Gas) NACE MR0175/ISO 15156-3 (latest edition)					
<b>SS</b>	All 316 SS construction					
<b>SSB</b>	316 SS flange bolt (B8M Class 2) - will provide full pressure rating					
<b>SSC</b>	316 flange bolt (B8M) - maximum pressure rating 4500 psi (310 barg)					
<b>SSD</b>	696 material bolt					
<b>T</b>	Large diameter gasket groove					
<b>TB</b>	Bottom test port ¼"					
<b>TF</b>	Top test ports ¼" FNPT					
<b>XP</b>	ASME B31.1 (with Grafoil bonnets only)					
<b>OR</b>	O-ring gasket					

## NOTE

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