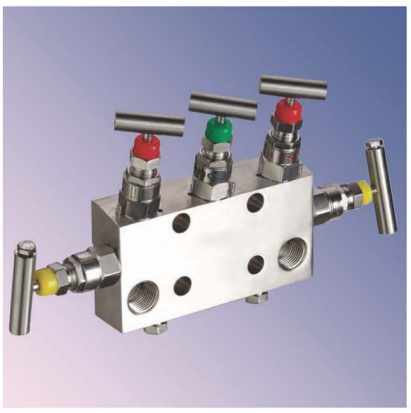
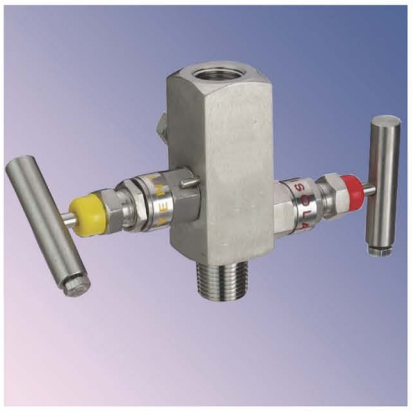
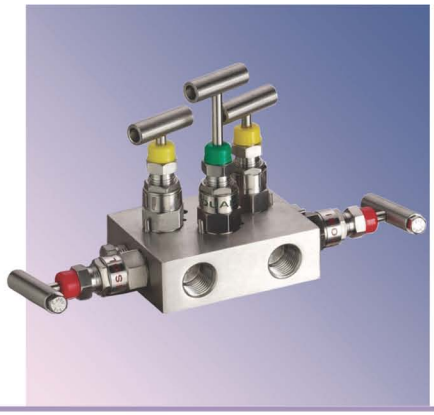
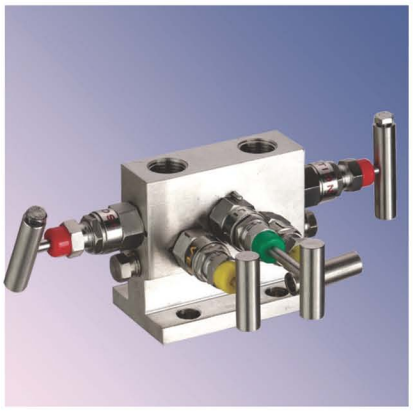


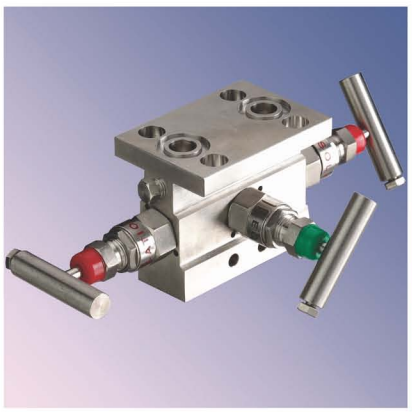




Recognized globally for our quality, service and the ability to deliver!

ISO 9001:2008





MAC-WELD
MACHINING & MANUFACTURING LTD.

www.mac-weld.com

MAC-WELD MACHINING LTD.

CONTENTS

Introduction Page 1 - 2

2 Valve Manifolds Page 3 - 4

3 Valve Manifolds Page 5 - 7

5 Valve Manifolds Page 8 - 11

Materials & Testing Page 12 - 13

INSTRUMENT MANIFOLDS

MAC-WELD 2, 3 and 5 Valve Manifolds are designed and tested to industry quality standards.

2 Valve Manifolds

Mac -Weld 2 valve manifolds provide economical and convenient mounting of gauge and absolute pressure transmitters and pressure switches. Mac-Weld 2 valve manifolds are offered in direct mount and remote mount configurations.

3 and 5 Valve Manifolds

Mac-Weld 3 and 5 valve manifolds are economical and convenient for mounting differential pressure transmitters and differential pressure switches. Mac-Weld 3 and 5 valve manifolds are available in direct mount and remote mount configurations.

Specifications and Features

Mac-Weld 2, 3, and 5 valve manifolds incorporate high quality needle valves designed to operate at pressures up to 6000 psig with standard PTFE gland packing. The packing is positioned below the stem threads to ensure no contact between system process and the stem threads. The upper gland body is tightened and secured into position by a lock nut. The lower gland body is directly screwed into the component body and secured into place to prevent accidental loosening of the gland body during operation. Additionally:

- Standard seat diameter - 5mm CV: 0.4
- Maximum standard pressure up to 6000 psig @ 100^0 F (414 barg @ 38^0 C)
- Stainless steel pin prevents loosening of the gland body during operation
- Gland is externally adjustable
- Backseat stop spindle prevents blowout
- Non-rotating trim enables the spindle to self center with the orifice for bubble tight shut-off
- Dust cap prevents ingress of contaminants

Please refer to the following pages to reference Instrument Manifold Configuration and sizes.

Part Number Reference Chart

Part Number	M-5T-L-DM-08F-FLG-P							
Component	M	Manifold						
No. Valves	2	2 Valve Manifold						
	3	3 Valve Manifold						
	5	5 Valve Manifold						
Model	BB	Block & Bleed						
	# (2,3,5)	Bar Type						
	C	Horizontal						
	T	T Type						
	H	H Type						
Body Material	SS	316 Stainless Steel						
	L	316L Stainless Steel						
Mounting	DM	Direct Mount						
	RM	Remote Mount						
Process Connection	08F	½" Female NPT (Threads to ASME B1.20.10)						
	08M	½" Male NPT (Threads to ASME B1.20.10)						
	FLG	Flange						
Instrument Connection	08F	½" Female NPT (Threads to ASME B1.20.10)						
	08M	½" Male NPT (Threads to ASME B1.20.10)						
	FLG	Flange						
Drain c/w Plug	P	¼" Female NPT						
	PB	¼" Female NPT Bottom						
Vent	V08F	½" Female NPT						
	V04F	¼" Female NPT						

A Note on Safe Product Selection:

Customer to select suitable product type and size based on the application considering the overall system design.

For Safe, easy and trouble-free operation the customer must consider material compatibility, temperature and pressure ratings when selecting a product.

Part Number Reference Chart

Part Number	M - 5T - L - DM - 08F - FLG - P						
Component	M	Manifold					
No. Valves	2	2 Valve Manifold					
	3	3 Valve Manifold					
	5	5 Valve Manifold					
Model	GV	Gauge Valve					
	BB	Block & Bleed					
	# (2,3,5)	Bar Type					
	C	Horizontal					
	T	T Type					
	H	H Type					
Body Material	SS	316 Stainless Steel					
	L	316L Stainless Steel					
Mounting	DM	Direct Mount					
	RM	Remote Mount					
Process Connection	08F	½" Female NPT (Threads to ASME B1.20.10)					
	08M	½" Male NPT (Threads to ASME B1.20.10)					
	FLG	Flange					
Instrument Connection	08F	½" Female NPT (Threads to ASME B1.20.10)					
	08M	½" Male NPT (Threads to ASME B1.20.10)					
	FLG	Flange					
Drain c/w Plug	P	¼" Female NPT					
	PB	¼" Female NPT Bottom					
Vent	V08F	½" Female NPT					
	V04F	¼" Female NPT					

Please Note the following:

Part Number Reference Chart is provided for informational purposes only. Mac-Weld provides standard stock items with predetermined part numbers for your convenience.

A Note on Safe Product Selection:

Customer to select suitable product type and size based on the application considering the overall system design.

For Safe, easy and trouble-free operation the customer must consider material compatibility, temperature and pressure ratings when selecting a product.

MAC-WELD MACHINING LTD.

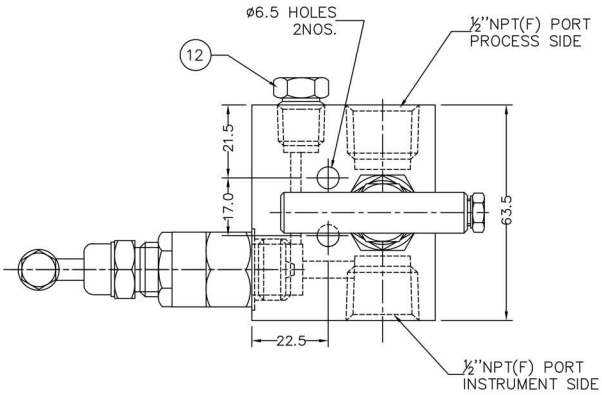
2 - Valve Manifold

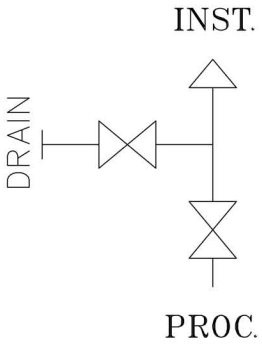
Remote Mount with Drain

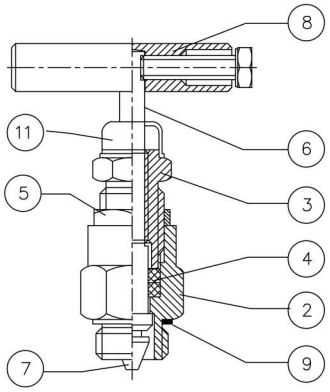
Mac-Weld 2 - Valve remote mount manifold provides block and bleed with drain/vent for pressure gauge, switch or transmitter applications.

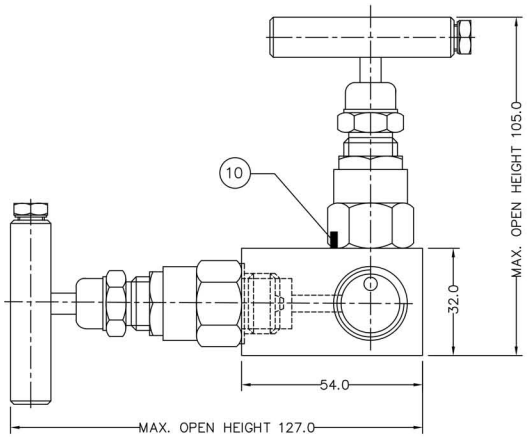
- 316L Stainless Steel Body, stem and trim
- 6000 psig @ 100° F (414 bar @ 38° C)
- PTFE Packing
- Non-rotating trim provides bubble tight shut-off
- Optional availability: NACE certified wetted parts and graphoil packing

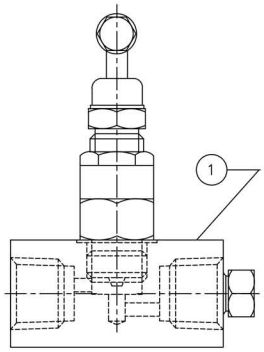
PART NUMBER				
M-2C-L-RM-08F-08F-P				
MANIFOLD TYPE AND DESCRIPTION	END CONNECTION		DRAIN / VENT c/w PLUG	MATERIAL
	PROCESS	INSTRUMENT		
Stainless Steel 2 Valve Block & Bleed, Remote mount, T-Bar handle, c/w Drain/Vent	½" Female NPT	½" Female NPT	¼" Female NPT	316L











PART NO.	PART DESCRIPTION	MATERIAL	QTY
1	BODY	SS 316L	1
2	GLAND BODY	SS 316L	2
3	GLAND RETAINER	SS 304	2
4	GLAND SEAL	P.T.F.E	4
5	CHECK NUT	SS 304	2
6	SPINDLE	SS 316L	2
7	TRIM	SS 316L	2
8	HANDLE	SS 304	2
9	WASHER	S.S.	2
10	LOCK PIN	SS 304	2
11	DUST CAP	P.V.C.	2
12	DRAIN PLUG ¼" NPT (M)	SS 316L	1

MAC-WELD MACHINING LTD.

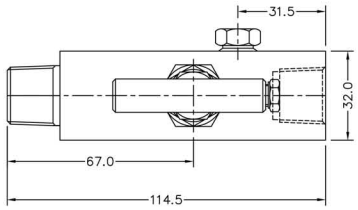
GV 2 - Valve Manifold

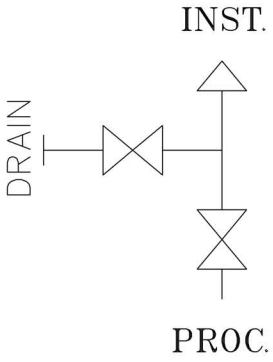
Direct Mount with Drain

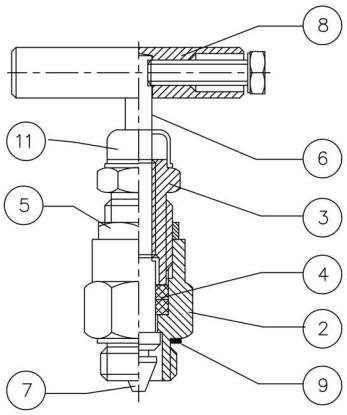
Mac-Weld's GV 2 - Valve Manifold directly mounts to in-line gauge or static instruments to provide single block and bleed for isolation and drain/vent capability.

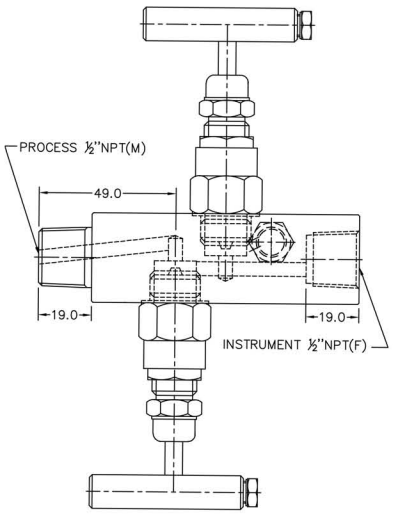
- 316L Stainless Steel Body, stem and trim
- 6000 psig @ 100° F (414 bar @ 38° C)
- PTFE Packing
- Non-rotating trim provides bubble tight shut-off
- Optional availability: NACE certified wetted parts and graphoil packing

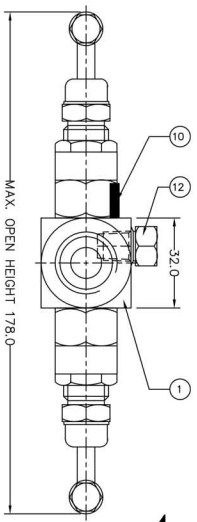
PART NUMBER				
M-2GV-L-DM-08M-08F-P				
MANIFOLD TYPE AND DESCRIPTION	END CONNECTION		DRAIN / VENT c/w PLUG	MATERIAL
	PROCESS	INSTRUMENT		
Stainless Steel 2 Valve Block & Bleed In-Line style, direct mount, T-Bar handle, c/w Drain/Vent	½" Male NPT	½" Female NPT	¼" Female NPT	316L











PART NO.	PART DESCRIPTION	MATERIAL	QTY
1	BODY	SS 316L	1
2	GLAND BODY	SS 316L	2
3	GLAND RETAINER	SS 304	2
4	GLAND SEAL	P.T.F.E	4
5	CHECK NUT	SS 304	2
6	SPINDLE	SS 316L	2
7	TRIM	SS 316L	2
8	HANDLE	SS 304	2
9	WASHER	S.S.	2
10	LOCK PIN	SS 304	2
11	DUST CAP	P.V.C.	2
12	DRAIN PLUG ¼" NPT (M)	SS 316L	1

MAC-WELD MACHINING LTD.

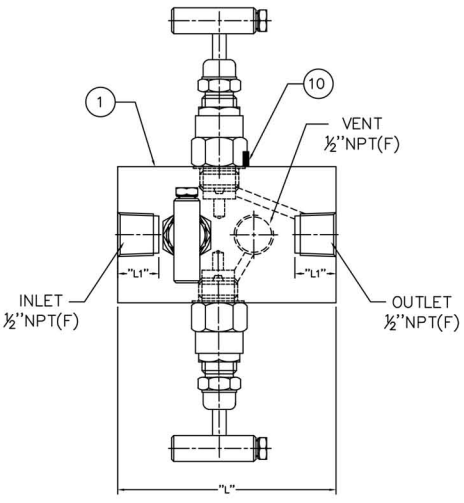
3-Valve In-Line Block & Bleed Manifold

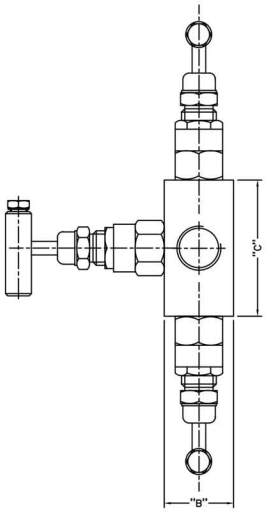
Remote Mount with Vent

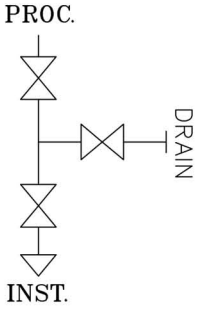
Mac-Weld's 3 - Valve In-Line Block and Bleed manifold is a variation of a typical 2 valve block and bleed manifold for gauge and static instrument applications. An additional block valve is provided as well as a single ½" vent/drain port located on the underside of the manifold.

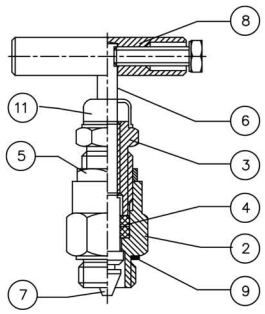
- 316L Stainless Steel Body, stem and trim
- 6000 psig @ 100° F (414 bar @ 38° C)
- PTFE Packing
- Non-rotating trim provides bubble tight shut-off
- Optional availability: NACE certified wetted parts and graphoil packing

PART NUMBER				
M-3BB-L-RM-08F-08F-V08F				
MANIFOLD TYPE AND DESCRIPTION	END CONNECTION		DRAIN / VENT c/w PLUG	MATERIAL
	PROCESS	INSTRUMENT		
Stainless Steel 3 Valve Block and Bleed In-Line Manifold, Remote mount, T-Bar handle, c/w Vent/Drain	½" Female NPT	½" Female NPT	½" Female NPT	316L









PART NO.	PART DESCRIPTION	MATERIAL	QTY
1	BODY	SS 316L	1
2	GLAND BODY	SS 316L	3
3	GLAND RETAINER	SS 304	3
4	GLAND SEAL	P.T.F.E	6
5	CHECK NUT	SS 304	3
6	SPINDLE	SS 316L	3
7	TRIM	SS 316L	3
8	HANDLE	SS 304	3
9	WASHER	S.S.	3
10	LOCK PIN	SS 304	3
11	DUST CAP	P.V.C.	3

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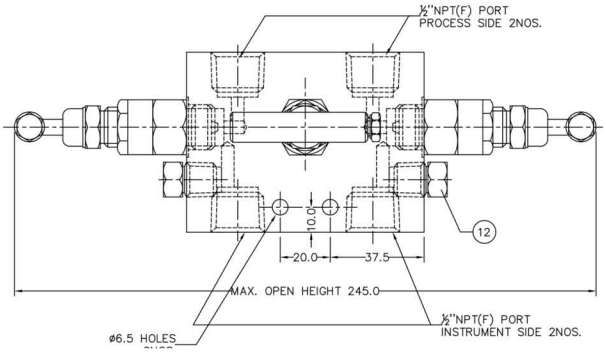
3 - Valve Manifold

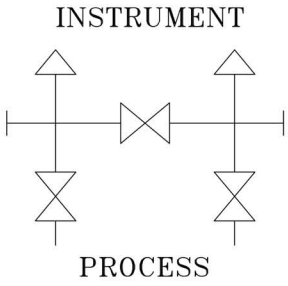
Remote Mount with Drain

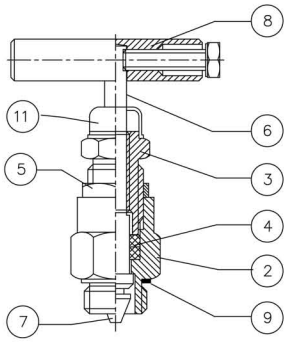
Mac-Weld's 3-Valve Remote Mount Manifold with drain/vent for differential pressure instrumentation. The manifold has one equalizer valve, two isolation valves and two drain/vent ports.

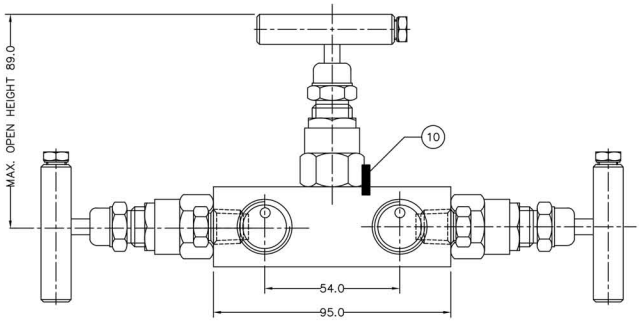
- 316L Stainless Steel Body, stem and trim
- 6000 psig @ 100° F (414 bar @ 38° C)
- PTFE Packing
- Non-rotating trim provides bubble tight shut-off
- Optional availability: NACE certified wetted parts and graphoil packing

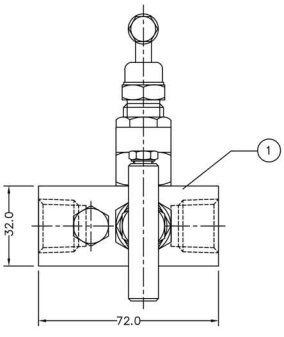
PART NUMBER				
M-3C-L-RM-08F-08F-P				
MANIFOLD TYPE AND DESCRIPTION	END CONNECTION		DRAIN / VENT c/w PLUG	MATERIAL
	PROCESS	INSTRUMENT		
Stainless Steel 3 Valve Manifold, Remote mount, T-Bar handle, c/w Drain/Vent	½" Female NPT	½" Female NPT	¼" Female NPT	316L











PART NO.	PART DESCRIPTION	MATERIAL	QTY
1	BODY	SS 316L	1
2	GLAND BODY	SS 316L	3
3	GLAND RETAINER	SS 304	3
4	GLAND SEAL	P.T.F.E	6
5	CHECK NUT	SS 304	3
6	SPINDLE	SS 316L	3
7	TRIM	SS 316L	3
8	HANDLE	SS 304	3
9	WASHER	S.S.	3
10	LOCK PIN	SS 304	3
11	DUST CAP	P.V.C.	3
12	DRAIN PLUG ¼" NPT (F)	SS 316L	2

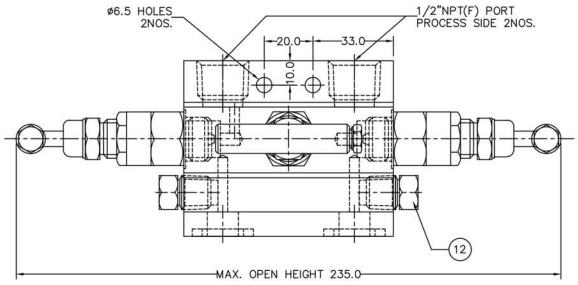
3 - Valve 'T' Type Manifold

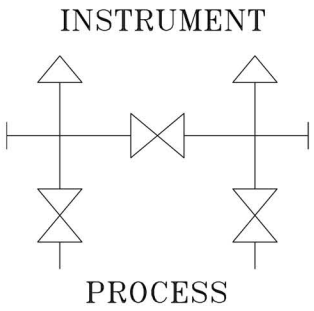
Direct Mount with Drain

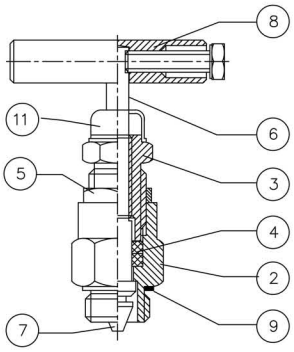
Mac-Weld's 3 - Valve Direct Mount 'T' Type Manifold with drain/vent for differential pressure instrumentation. The manifold has one equalizer valve, two isolation valves and two drain/vent ports

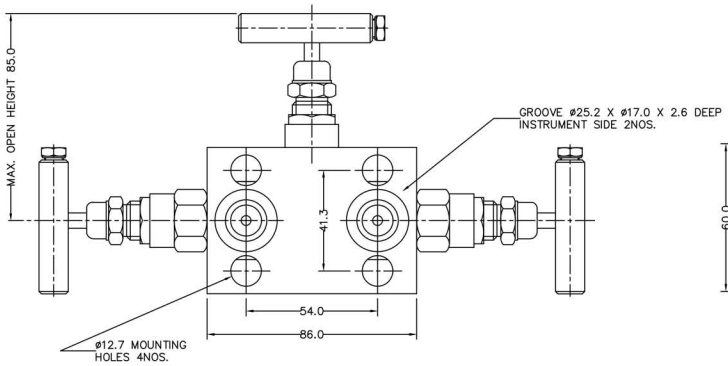
- 316L Stainless Steel Body, stem and trim
- 6000 psig @ 100° F (414 bar @ 38° C)
- PTFE Packing
- Non-rotating trim provides bubble tight shut-off
- Optional availability: NACE certified wetted parts and graphoil packing
- Flange O-rings and mounting bolts included with manifold

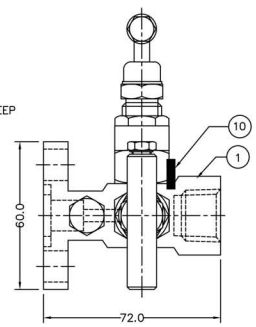
PART NUMBER				
M-3T-L-DM-08F-FLG-P				
MANIFOLD TYPE AND DESCRIPTION	END CONNECTION		DRAIN / VENT c/w PLUG	MATERIAL
	PROCESS	INSTRUMENT		
Stainless Steel 3 Valve Manifold,'T' Type, Direct mount, T-Bar handle,c/w Drain/Vent	½" Female NPT	Flange	¼" Female NPT	316L











PART NO.	PART DESCRIPTION	MATERIAL	QTY
1	BODY	SS 316L	1
2	GLAND BODY	SS 316L	3
3	GLAND RETAINER	SS 304	3
4	GLAND SEAL	P.T.F.E	6
5	CHECK NUT	SS 304	3
6	SPINDLE	SS 316L	3
7	TRIM	SS 316L	3
8	HANDLE	SS 304	3
9	WASHER	S.S.	3
10	LOCK PIN	SS 304	3
11	DUST CAP	P.V.C.	3
12	DRAIN PLUG ¼" NPT (F)	SS 316L	2

MAC-WELD MACHINING LTD.

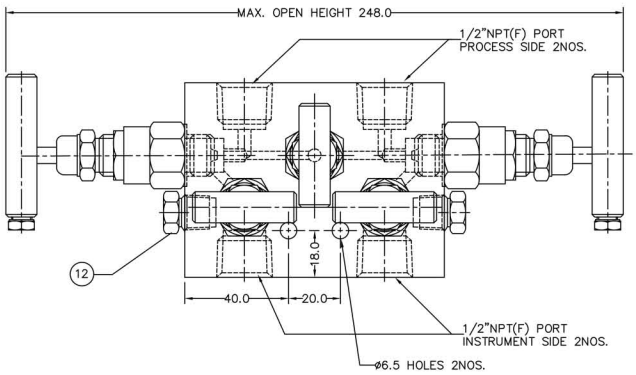
5 - Valve Manifold

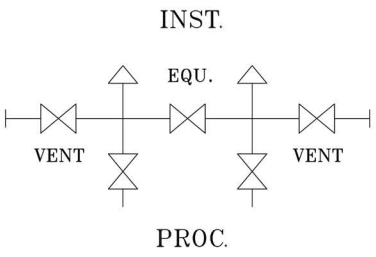
Remote Mount with Drain

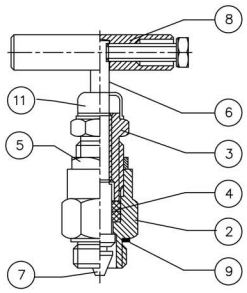
Mac-Weld's 5 - Valve Remote Mount Manifold with drain/vent for differential pressure instrumentation. The manifold has one equalizer valve, two isolation valves and two drain/vent ports.

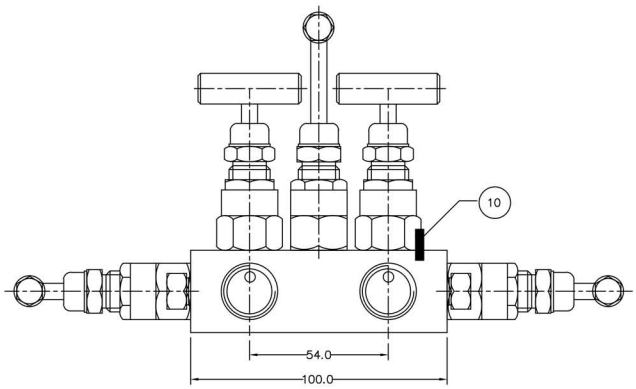
- 316L Stainless Steel Body, stem and trim
- 6000 psig @ 100° F (414 bar @ 38° C)
- PTFE Packing
- Non-rotating trim provides bubble tight shut-off
- Optional availability: NACE certified wetted parts and graphoil packing

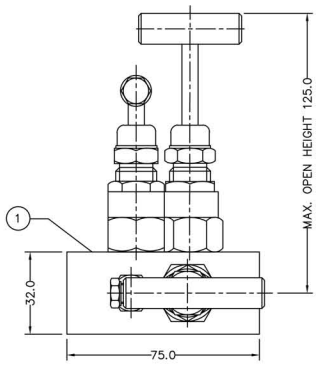
PART NUMBER				
M-5C-L-RM-08F-08F-P				
MANIFOLD TYPE AND DESCRIPTION	END CONNECTION		DRAIN / VENT c/w PLUG	MATERIAL
	PROCESS	INSTRUMENT		
Stainless Steel 5 Valve Manifold, Remote mount, T-Bar handle	½" Female NPT	½" Female NPT	¼" Female NPT	316L











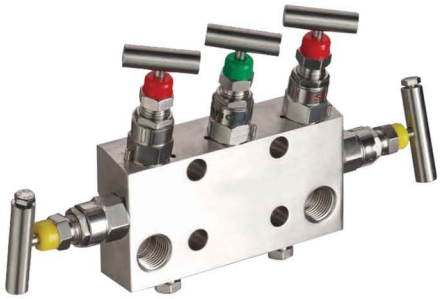
PART NO.	PART DESCRIPTION	MATERIAL	QTY
1	BODY	SS 316L	1
2	GLAND BODY	SS 316L	5
3	GLAND RETAINER	SS 304	5
4	GLAND SEAL	P.T.F.E	10
5	CHECK NUT	SS 304	5
6	SPINDLE	SS 316L	5
7	TRIM	SS 316L	5
8	HANDLE	SS 304	5
9	WASHER	S.S.	5
10	LOCK PIN	SS 304	5
11	DUST CAP	P.V.C.	5
12	DRAIN PLUG ¼" NPT (F)	SS 316L	2

MAC-WELD MACHINING LTD.

5 - Valve Bar/ Wafer Type Manifold

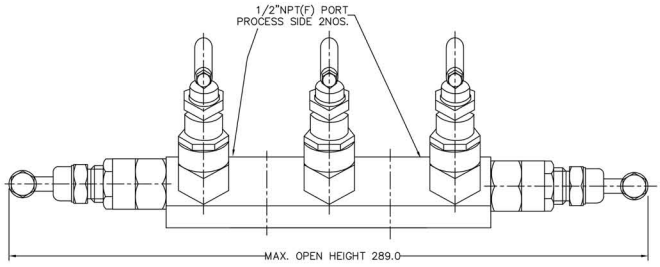
Remote Mount with Drain

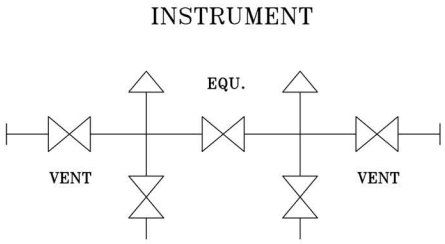
Mac-Weld's 5 - Valve Bar/Wafer Type remote mount Manifold is designed for differential pressure instrument applications. Standard manifold configuration is one equalizer valve positioned between two isolation valves. Additionally, two drain/vent ports are provided.

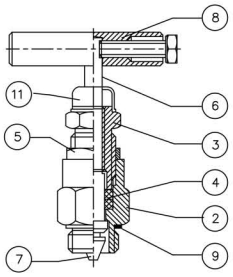


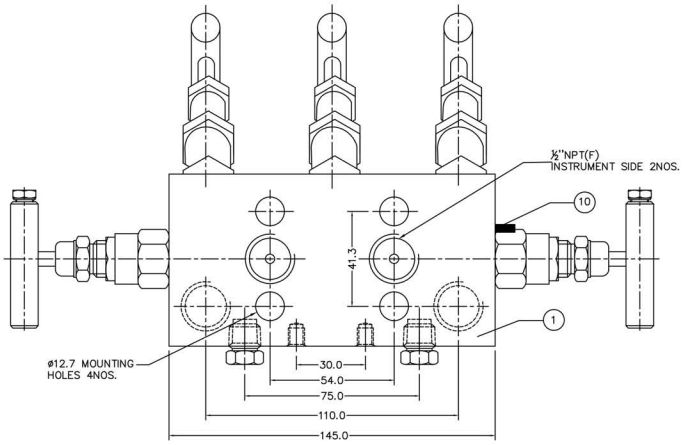
- 316L Stainless Steel Body, stem and trim
- 6000 psig @ 100° F (414 bar @ 38° C)
- PTFE Packing
- Non-rotating trim provides bubble tight shut-off
- Optional availability: NACE certified wetted parts and graphoil packing

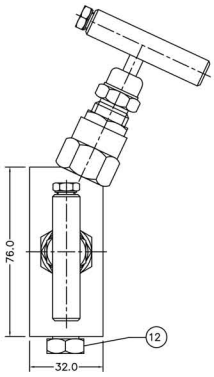
PART NUMBER				
M-5-L-RM-08F-08F-P				
MANIFOLD TYPE AND DESCRIPTION	END CONNECTION		DRAIN / VENT c/w PLUG	MATERIAL
	PROCESS	INSTRUMENT		
Stainless Steel 5 Valve Bar/ Wafer Type Manifold, Remote mount, T-Bar handle, c/w Drain/Vent	½" Female NPT	½" Female NPT	¼" Female NPT	316L











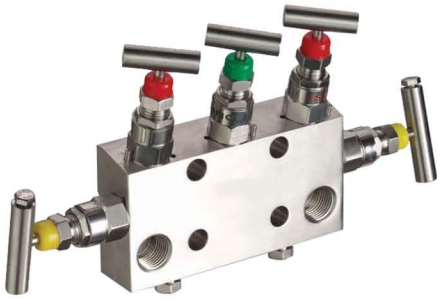
PART NO.	PART DESCRIPTION	MATERIAL	QTY
1	BODY	SS 316L	1
2	GLAND BODY	SS 316L	5
3	GLAND RETAINER	SS 304	5
4	GLAND SEAL	P.T.F.E	10
5	CHECK NUT	SS 304	5
6	SPINDLE	SS 316L	5
7	TRIM	SS 316L	5
8	HANDLE	SS 304	5
9	WASHER	S.S.	5
10	LOCK PIN	SS 304	5
11	DUST CAP	P.V.C.	5
12	DRAIN PLUG ¼" NPT (M)	SS 316L	2

MAC-WELD MACHINING LTD.

5 - Valve Bar Type Manifold

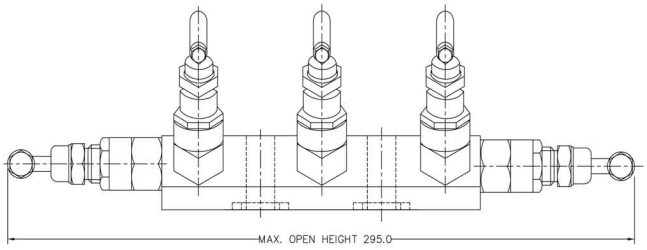
Direct Mount with Drain

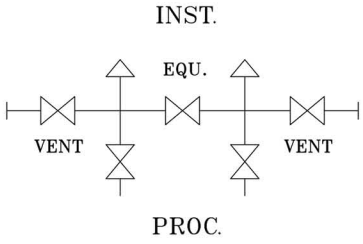
Mac-Weld's 5 - Valve Bar Type Manifold is direct mount for differential pressure instrument applications. Standard manifold configuration is one equalizer valve positioned between two isolation valves. Additionally, two drain/vent ports are provided.

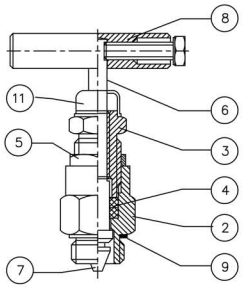


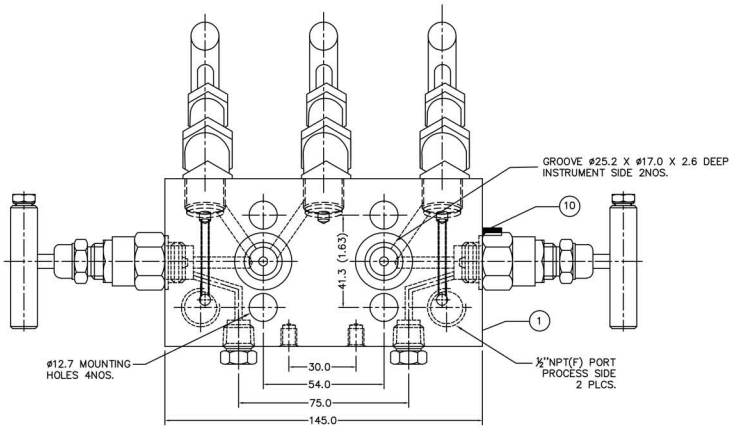
- 316L Stainless Steel Body, stem and trim
- 6000 psig @ 100° F (414 bar @ 38° C)
- PTFE Packing
- Non-rotating trim provides bubble tight shut-off
- Optional availability: NACE certified wetted parts and graphoil packing
- Flange O-rings and mounting bolts included with manifold

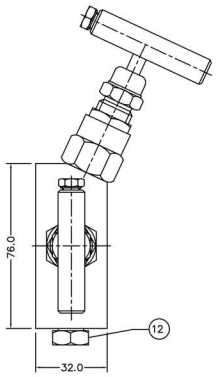
PART NUMBER				
M-5-L-DM-08F-FLG-P				
MANIFOLD TYPE AND DESCRIPTION	END CONNECTION		DRAIN / VENT c/w PLUG	MATERIAL
	PROCESS	INSTRUMENT		
Stainless Steel 5 Valve Bar Type Manifold, Direct mount, T-Bar handle, c/w Drain/Vent	½" Female NPT	Flange	¼" Female NPT	316L











PART NO.	PART DESCRIPTION	MATERIAL	QTY
1	BODY	SS 316L	1
2	GLAND BODY	SS 316L	5
3	GLAND RETAINER	SS 304	5
4	GLAND SEAL	P.T.F.E	10
5	CHECK NUT	SS 304	5
6	SPINDLE	SS 316L	5
7	TRIM	SS 316L	5
8	HANDLE	SS 304	5
9	WASHER	S.S.	5
10	LOCK PIN	SS 304	5
11	DUST CAP	P.V.C.	5
12	DRAIN PLUG ¼" NPT (M)	SS 316L	2

MAC-WELD MACHINING LTD.

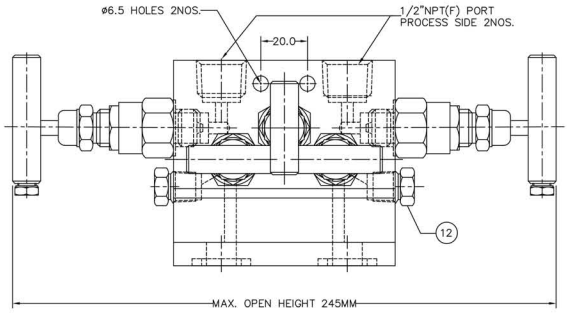
5 - Valve 'T' Type Manifold

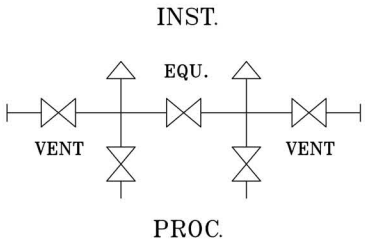
Direct Mount with Drain

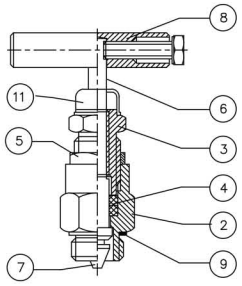
Mac-Weld's 5 - Valve Direct Mount 'T' Type Manifold with drain/vent for differential pressure instrumentation. The manifold has one equalizer valve, two isolation valves, two vent valves and drain/vent ports.

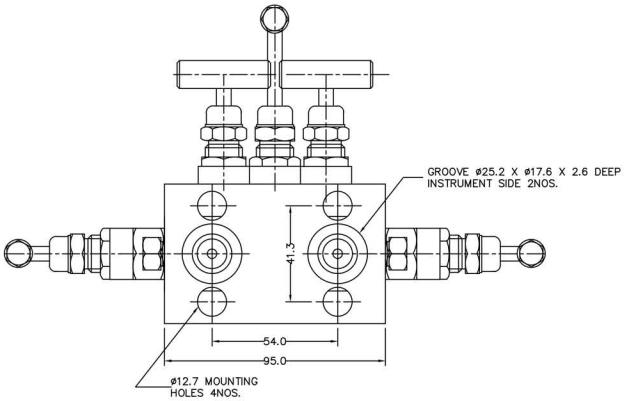
- 316L Stainless Steel Body, stem and trim
- 6000 psig @ 100° F (414 bar @ 38° C)
- PTFE Packing
- Non-rotating trim provides bubble tight shut-off
- Optional availability: NACE certified wetted parts and graphoil packing
- Flange O-rings and mounting bolts included with manifold

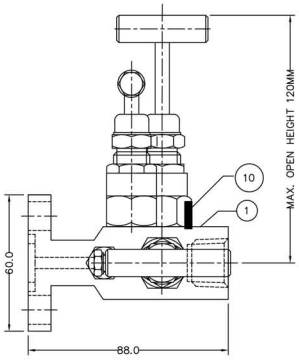
PART NUMBER				
M-5T-L-DM-08F-FLG-P				
MANIFOLD TYPE AND DESCRIPTION	END CONNECTION		DRAIN / VENT c/w PLUG	MATERIAL
	PROCESS	INSTRUMENT		
Stainless Steel 5 Valve Manifold, 'T' Type, Direct mount, T-Bar handle,c/w Drain/Vent	½" Female NPT	Flange	¼" Female NPT	316L











PART NO.	PART DESCRIPTION	MATERIAL	QTY
1	BODY	SS 316L	1
2	GLAND BODY	SS 316L	5
3	GLAND RETAINER	SS 304	5
4	GLAND SEAL	P.T.F.E	10
5	CHECK NUT	SS 304	5
6	SPINDLE	SS 316L	5
7	TRIM	SS 316L	5
8	HANDLE	SS 304	5
9	WASHER	S.S.	5
10	LOCK PIN	SS 304	5
11	DUST CAP	P.V.C.	5
12	DRAIN PLUG ¼" NPT (M)	SS 316L	2

MANIFOLD BODY			
MATERIAL	BAR STOCK	FORGING	UNS
316L SS	ASTM A-276 ASTM A-479	ASTM A-276 F-316L	S31600

VALVE COMPONENTS			
VALVE BODY	STEM / TRIM GLAND & GLAND WASHER	RETAINER	HANDLE
316L SS	316L SS	304 SS	304 SS

FLANGE MOUNTING COMPONENTS	
FLANGE O-RINGS	BOLTS
Polytetrafluoroethylene (PTFE)	304 SS

A Note on Safe Product Selection:

Customer to select suitable product type and size based on the application considering the overall system design.

For Safe, easy and trouble-free operation the customer must consider material compatibility, temperature and pressure ratings when selecting a product.

Gland Packing Materials

The standard packing and flange o-ring material for all Mac-Weld valves is Polytetrafluoroethylene (PTFE). The maximum operating temperature is 464°F (240°C). Graphoil packing is available for temperatures above 464°F (240°C).

Cleaning

Mac-Weld instrument valve and manifold components are cleaned during the manufacturing process. Upon final assembly and testing each valve manifold undergoes a final cleaning and drying.

Operating Pressure

The recommended operating pressure for stainless steel 316/ 316L is 6,000 psig (414 barg). The Maximum Allowable Working Pressure: 6,000 psig (414 barg) @ 38°C (100°F)

Testing

Mac -Weld valve manifolds are factory tested in accordance to the following standards:

MSS-SP-99

Test pressure at 25°C Room Temperature

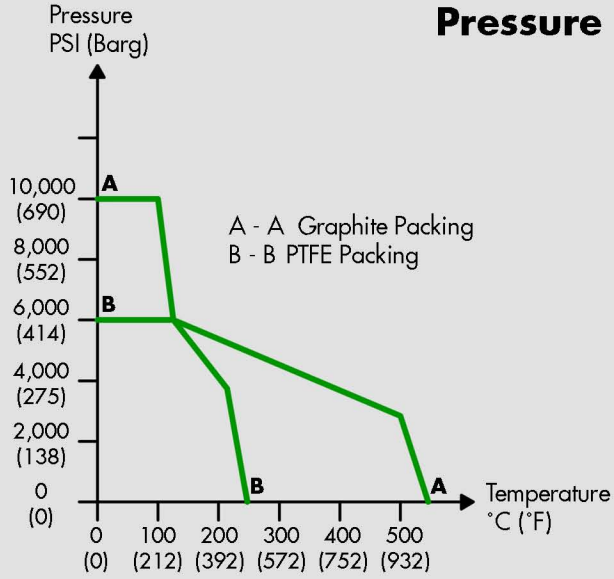
Hydrostatic	Pneumatic
Body: 414 barg Seat: 150 barg	Seat: 40 barg

ANSI-B 16.34

Test pressure at 38°C (100°F)

Hydrostatic	Pneumatic
Body: 630 barg	Seat: 7 barg

Pressure vs Temperature



PTFE (Polytetrafluoroethylene) is a standard for all valves up to an operating temperature of 240 °C Max.

Graphoil is recommended for operating temperature above 240°C. Graphoil packing contains no resin binders, it's self lubricating at all temperstures.