

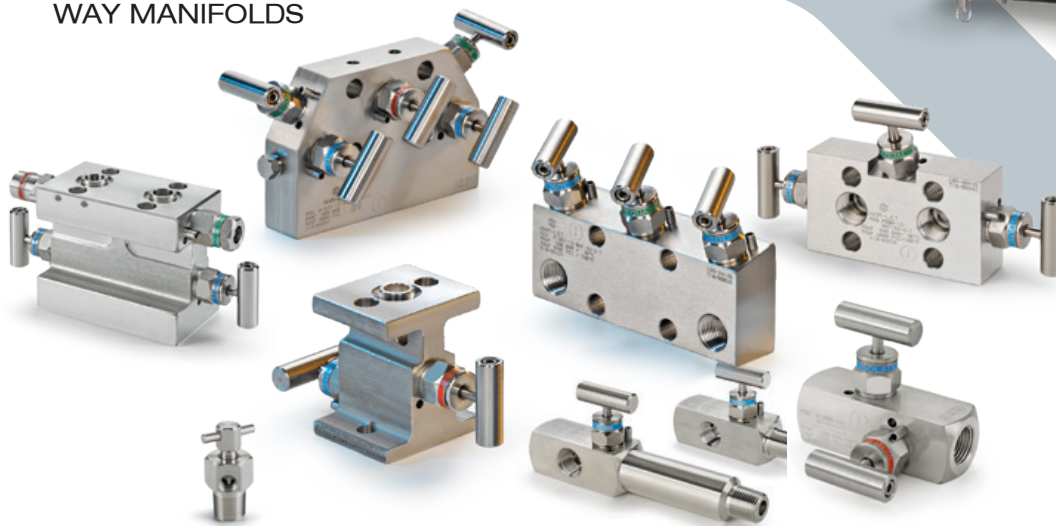
HAM-LET ASTAVA

MANIFOLDS | INSTRUMENT ENCLOSURES



1|2|3|4|5

WAY MANIFOLDS

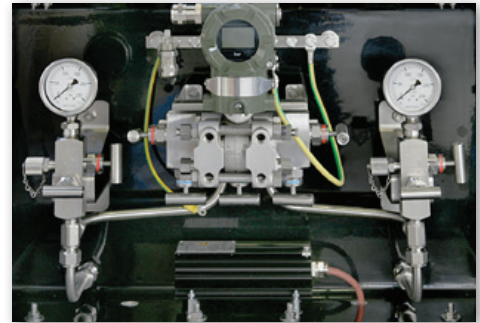
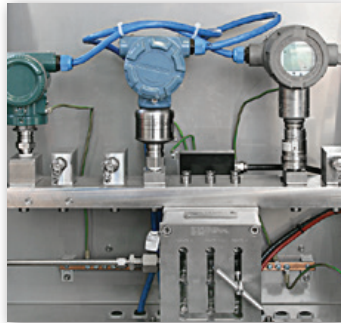


OVERVIEW

HAM-LET ASTAVA offers a broad line of 1,2,3,4,5 instrument manifolds, all available in a wide range of materials and are fully compatible with the requirements of the Oil & Gas, Petro-Chemical and Chemical industries.

In addition to this standard range of products, HAM-LET ASTAVA has over 3,500 different types of valves and manifolds available.

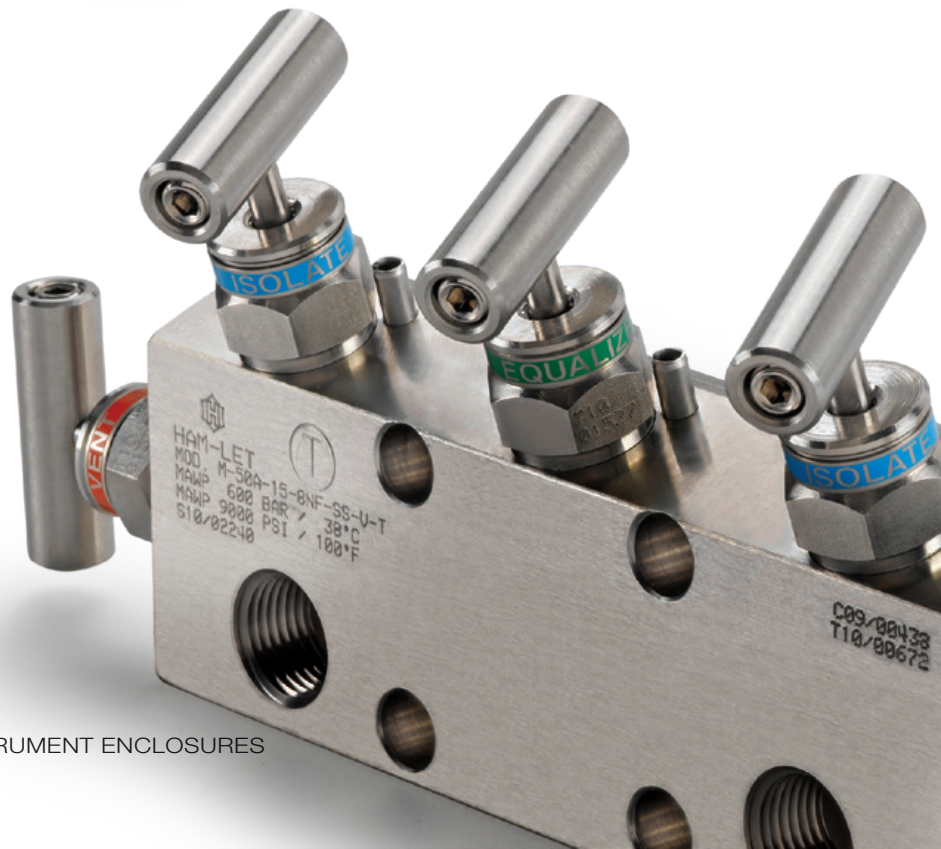
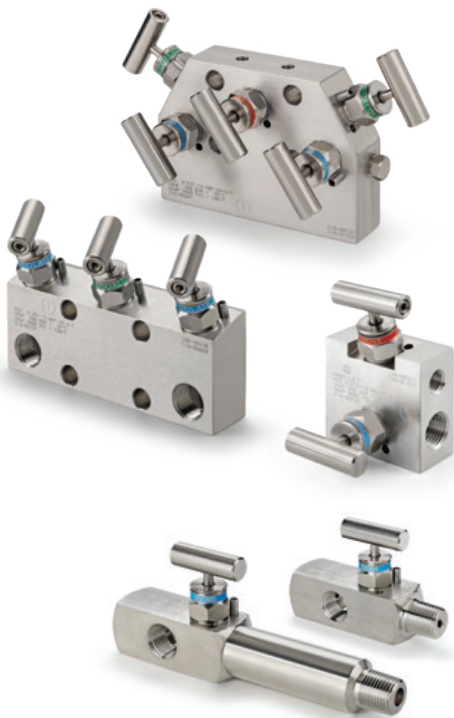
HAM-LET ASTAVA draws from a strong engineering heritage, as well as seasoned business management. We offer a broad range of products – valves and manifolds suitable for gas and liquid services - as well as full-service solutions, that include custom engineering, design and manufacture of Instrument enclosures, modular mounting systems, hook-ups and interlocking solutions for critical conditions and temperatures.



As a customer-focused company, HAM-LET ASTAVA provides high-quality products and engineering solutions that address our customers' business and technical requirements. For the HAM-LET ASTAVA line, we can offer scalability to design:

- Choice of materials from AISI 316 to special alloy solutions for highly toxic areas
- Connections, Pressure and Temperature rating varieties
- Bonnet assemblies offer different stem, seal and material selections
- Option for standard packing, O-Ring sealing and fugitive emissions bonnets
- Extensive range of valve configurations and flow schemes
- Fully equipped instrument enclosures

With over 50 years of designing and manufacturing reliable products and solutions, HAM-LET ASTAVA has acquired an outstanding reputation for quality and customer service. We are always inspired by the need to evolve and stay ahead of the ever changing marketplace.



MANIFOLD FEATURES AND BENEFITS

The following unique features of the HAM-LET ASTAVA Line of Instrument Manifolds enable tailoring our high-quality products to the exact requirement of the customer and application:

NACE MR-01-75 / MR-01-03

All Manifolds comply to NACE MR-01-75 / MR-01-03 as standard.

FULL TRACEABILITY

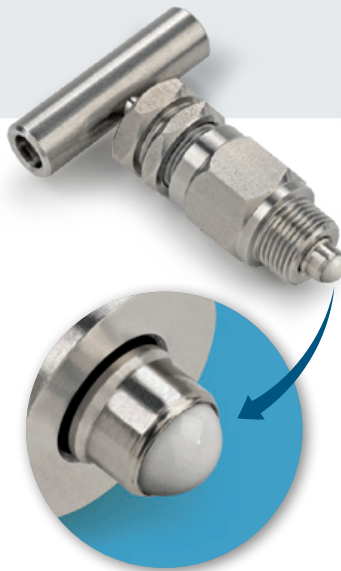
All products are fully traceable to its components.

WIDE VARIETY OF SEALING MATERIALS

PTFE; Grafoil®; Fluorocarbon FKM; NBR; EPDM; Silicon; perfluorelastomer – provides wide coverage of applications.

CERAMIC STEM BALL TIP Al_2O_3

Superior hardness prevents deformation of the sealing tip and wear, significantly increasing the lifetime of the product for isolation purposes.



BONNET SELECTIONS

O-ring stem-seal bonnet

1. No packing adjustment
2. Extremely low operating torque
3. Compact design
4. Long life cycle
5. Sealing below stem thread
6. Metal-to-Metal bonnet option

Packing stem-seal bonnet

1. Wide chemical compatibility range
2. High temperature option (Grafoil®)
3. Low operating torque
4. Sealing below stem thread

STEM MATERIAL

ST. ST. 316 Ti with chromium carbide diffusion coating

1. Long life cycle
2. Prevent galling

Features

- Certified for ISO 15848-1:2006(E), (With PEEK or Polyimide seals)
- Blowout-proof stem
- Integrated back seat on stem for a secondary seal in the fully opened position
- Safety stop pin – prevents the bonnet from detaching the body due to vibration
- Stem seals below stem threads
- A choice of O-ring materials
- Oxygen clean per ASTM G-93 as an option
- 100% Factory Tested Compliance with MSS-SP-99
- Direct mount flange design per IEC61518 / DIN19213 (MAWP 6000 psig)
- Working pressure range up to 690 bar (10,000 psig)
- Working Temperature range up to 550°C (1022°F)

Grafoil —TM GrafTech International Holdings, Inc.

BONNET AND STEM CONCEPT

The special sealing design applied in all HAM-LET ASTAVA Instrument Manifolds features a non-rotating ceramic ball tip.

The chemical composition of a ceramic ball tip is superior in hardness and functionality to a metal ball tip, eliminating sealing tip deformation and significantly increasing the lifetime of the product.

The stem threads are rolled and an integrated back seat design is applied to the packing type of bonnet.

Applying a Stainless Steel 316 Ti stem with a chromium carbide diffusion coating results in maximum operation cycles and minimal risk of stem galling. Both packing and O-ring bonnets are designed with sealing below stem threads for maximum protection of the stem threads.

For maximum safety, the bonnet design prevents stem blowout, and a locking pin prevents unintentional disassembling of the bonnet.

HAM-LET'S VALVE BONNETS HAVE COLOR CODED RING LABELS FOR SERVICE IDENTIFICATION:



Red:
Vent Valves



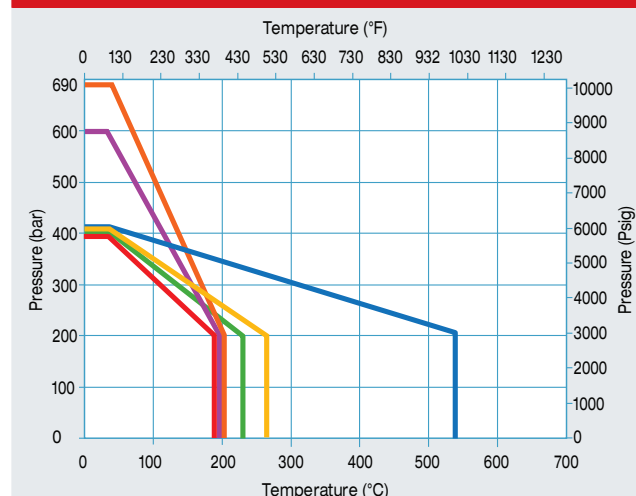
Blue:
Isolate Valves



Green:
Equalize Valves

For severe service applications, HAM-LET ASTAVA Manifolds can be configured with a metal-to-metal seal below the bonnet thread. A dust-ring is attached to the bonnet thread or tack weld on the locking pin for extreme vibrating conditions.

PRESSURE AND TEMPERATURE RATING



Packing Material	Grafoil®	Down to -60°C (-76°F)
	PTFE	Down to -60°C (-76°F)
	PEEK	Down to -60°C (-76°F)
	Polyimide	Down to -10°C (14°F)

O-Ring Material	Fluorocarbon FKM	Down to -20°C (-4°F)
	NBR	Down to -34°C (-29°F)
	Perfluor	Down to -40°C (-40°F)
	EPDM	Down to -45°C (-49°F)

10,000 psi (690 bar)

Available upon request

HANDLE OPTIONS

The standard handle of the HAM-LET ASTAVA Line of Instrument Manifolds is a Stainless Steel T-bar. For high pressure applications of 10,000 psi (690 bar) an extended T-bar or hand wheel can be applied. Anti-tamper bonnet and key* lock options assure that the manifold is operated by qualified personnel only.

*Not included in order of Anti-Tampered bonnet manifold. This key should be separately ordered.

CLEANING




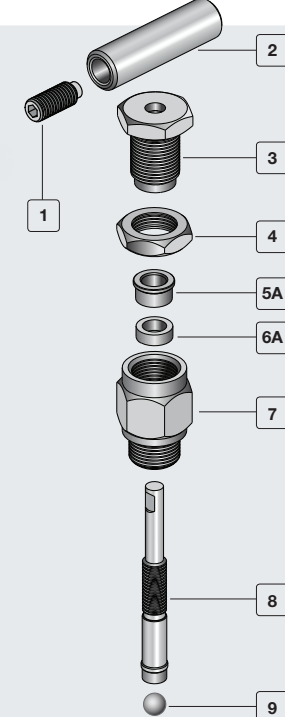
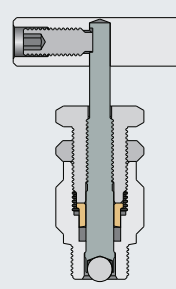
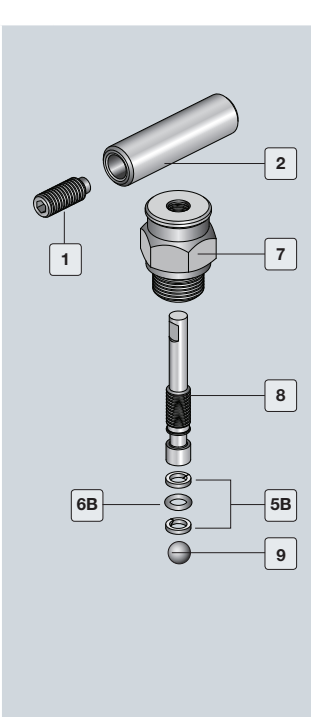
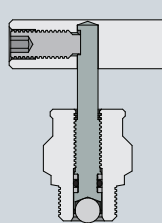
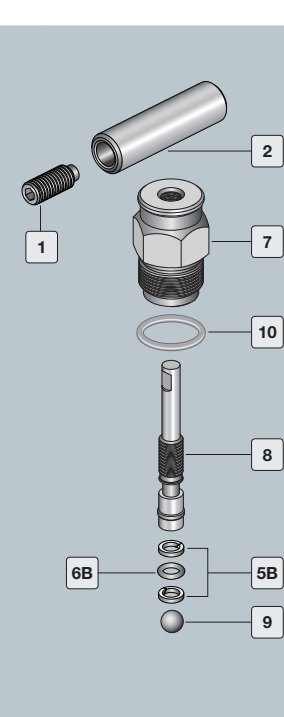
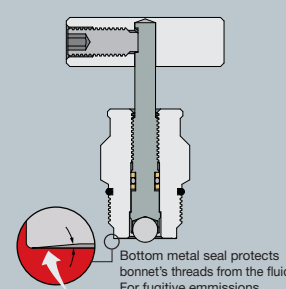
All HAM-LET instrument manifolds are cleaned in accordance with ASTAVA cleaning procedure WIQ-016. Oxygen clean is available in accordance with ASTM G-93.

TESTING

All HAM-LET instrument manifolds are factory tested with Nitrogen at 800 psig (55 bar) based on MSS-SP-99. Seats have a maximum allowable leak rate of 0.1 std cm³ /min. The Hydrostatic and Helium leak test is available upon request.

Grafoil — TM GrafTech International Holdings, Inc.

MATERIAL OF CONSTRUCTION

 <p>Packing Bonnet</p>  <p>O-ring Bonnet</p>  <p>Metal-to-Metal Bonnet</p>	 	 	 				
	Packing Bonnet	O-ring Bonnet	Metal-to-Metal Bonnet				
No	Part	Qty.	Material	Qty.	Material	Qty.	Material
1	Set Screw	1	St.St. 304	1	St.St. 304	1	St.St. 304
2	Bar Handle	1	St.St. 316L	1	St.St. 316L	1	St.St. 316L
3	Gland	1	St.St. 316L	-	-	-	-
4	Locking Nut	1	St.St. 316L	-	-	-	-
5A	Pressure ring	1	St.St. 316L	-	-	-	-
5B	Back-up ring	-	-	2	Virgin PTFE	2	Virgin PTFE
6A	Stem Packing	1	Virgin PTFE	-	-	-	-
6B	Stem O-ring	-	-	1	Fluorocarbon FKM	1	Fluorocarbon FKM
7	Bonnet	1	St.St. 316L	1	St.St. 316L	1	St.St. 316L
8	Stem	1	St.St. 316Ti Chrome-Carbide diffusion coated	1	St.St. 316Ti Chrome-Carbide diffusion coated	1	St.St. 316Ti Chrome-Carbide diffusion coated
9	Ball	1	Ceramic	1	Ceramic	1	Ceramic
10	Dust Protector	-	-	-	-	1	Fluorocarbon FKM

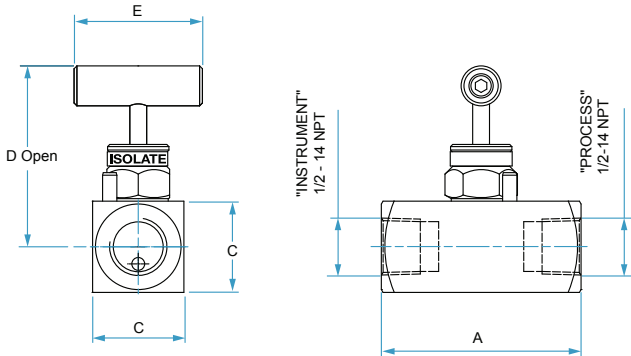
STANDARD CONFIGURATION DIMENSIONS

1-WAY MANIFOLDS

Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions									
					A		B		C		D		E	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in
Remote Mount	1/2" FNPT	1/2" FNPT	-	M-10S-10-8N-SS-V-T	70.0	2.76	-	-	32.0	1.26	63.0	2.48	45.0	1.77
	1/2" FNPT	1/2" FNPT	-	M-10S-10-8N-SS-T-T	70.0	2.76	-	-	32.0	1.26	79.0	3.11	50.0	1.97
	1/2" MNPT	1/2" FNPT	1/2" FNPT	M-11S-85-8N-SS-V-T	110.0	4.33	38.0	1.50	32.0	1.26	63.0	2.48	45.0	1.77
	1/2" MNPT	1/2" FNPT	1/2" FNPT	M-11S-85-8N-SS-T-T	110.0	4.33	38.0	1.50	32.0	1.26	79.0	3.11	50.0	1.97

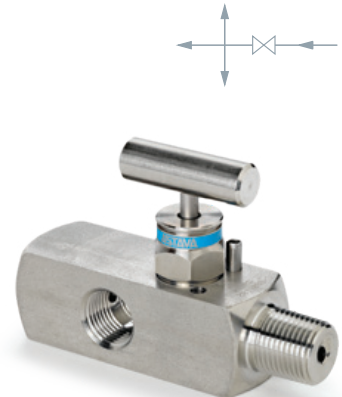
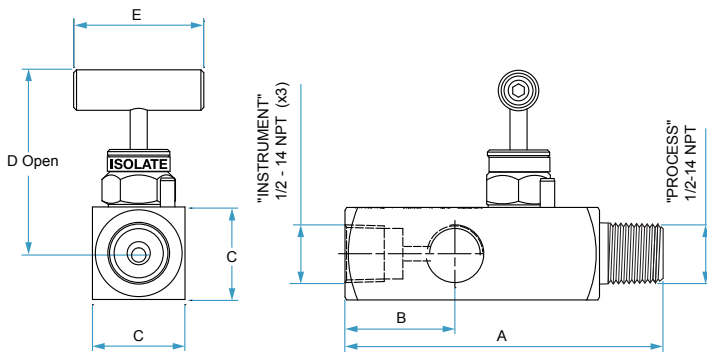
NEEDLE VALVE

M-10S-10-8N-SS-V-T



MULTIPORT VALVE

M-11S-85-8N-SS-V-T



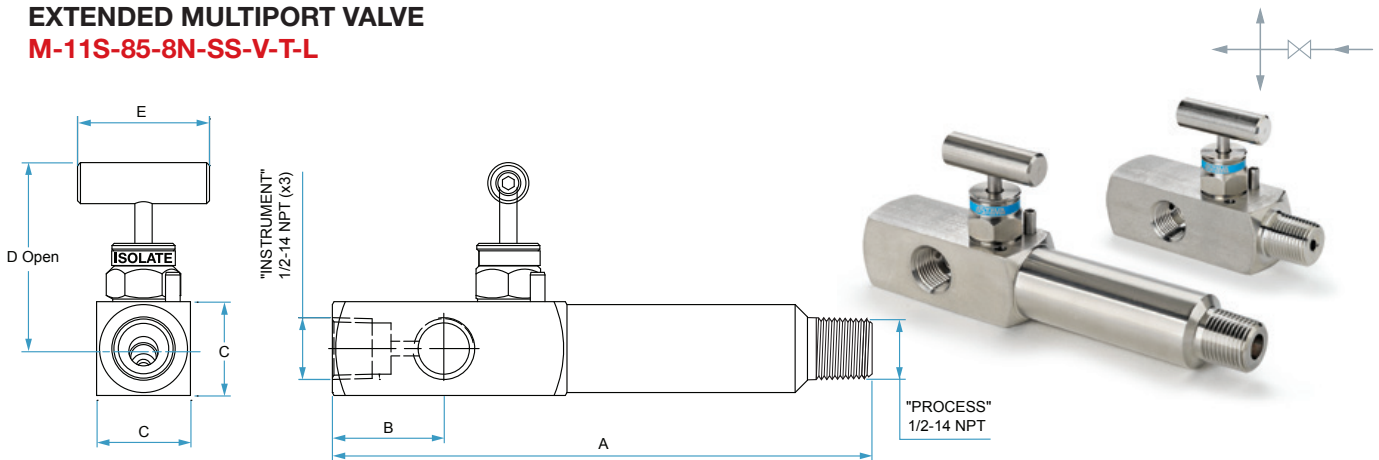
STANDARD CONFIGURATION DIMENSIONS

1-WAY MANIFOLDS

Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions									
					A		B		C		D		E	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in
Remote Mount	1/2" MNPT	1/2" FNPT	1/2" FNPT	M-11S-85-8N-SS-V-T-L	184.0	7.24	38.0	1.50	32.0	1.26	63.0	2.48	45.0	1.77
	1/2" MNPT	1/2" FNPT	1/2" FNPT	M-11S-85-8N-SS-T-T-L	184.0	7.24	38.0	1.50	32.0	1.26	79.0	3.11	50.0	1.97
	1/2" MNPT	1/2" FNPT	1/4" FNPT	M-12M-85-8N-SS-V-T-P	100.0	3.54	30.0	1.18	32.0	1.26	63.0	2.48	45.0	1.77
	1/2" MNPT	1/2" FNPT	1/4" FNPT	M-12M-85-8N-SS-T-T-P	100.0	3.54	30.0	1.18	32.0	1.26	79.0	3.11	50.0	1.97

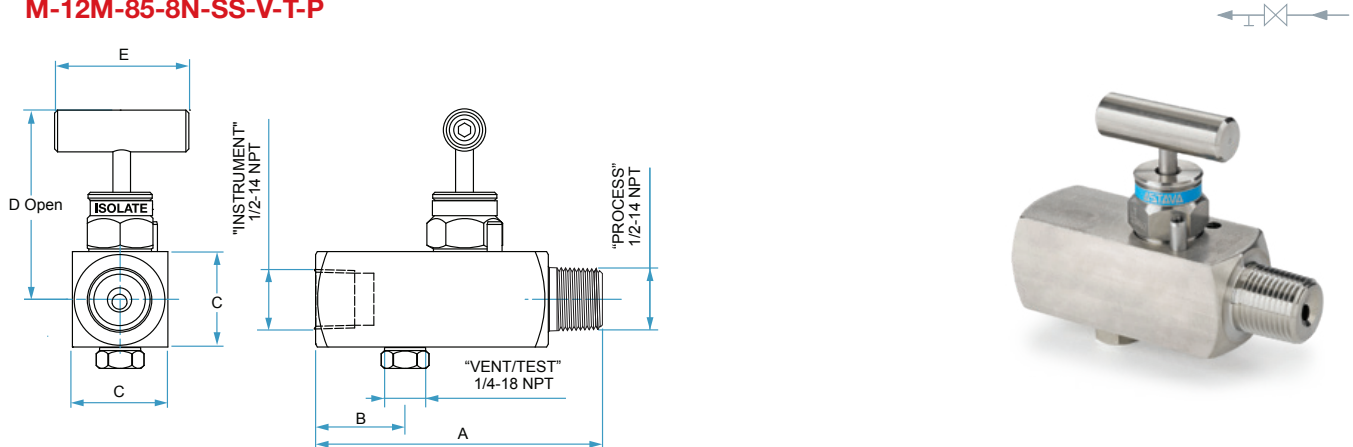
EXTENDED MULTIPORT VALVE

M-11S-85-8N-SS-V-T-L



GAUGE VALVE

M-12M-85-8N-SS-V-T-P



ORDERING INFORMATION

1-WAY MANIFOLDS

M-1		0S		10		8		N		SS		T		LD		OC	
Family		End Connection		Type End Connection		Body Material		Packing		Option							
M-1	1 Way Manifold	00	Female Integral Let-Lok®	N	NPT	SS	SS 316	T	PTFE	OC	Oxygen Clean						
Flow Scheme		10	Female to Female	G	BSPP	M	Alloy 400	G	Grafoil®	HYD	Hydrostatic pressure test						
		80	Male to Male	R	BSPT	D	Duplex 1.4462	PK	PEEK	K	10,000 psi (690 bar)						
		85	Male to Female	L	Female integral Let-Lok®	HC	Alloy C-276	PI	Polyimide	L	Extended Inlet						
		75	Female to Male			T	Titanium	V	Fluorocarbon FKM	B	Bleed valve						
0S	Straight	Size				SD	SuperDuplex	EP	EPDM	P	Blind plug						
1S	Straight					A6	Alloy 625	BU	NBR								
2M	Angle Square					A8	Alloy 825	KZ	Perfluorelastomer								
(See table A)								Handle									
								T	T bar								
								AT	Anti Tamper*								
								LD	Locking device*								

* Key should be separately ordered

TABLE A: FLOW SCHEMATIC AND VALVE POSITION

Designator	Flow Schematic	Sketch
0S		
1S		
2M		

Warning!

The system designer and user have the sole responsibility for selecting products suitable for their special application requirements, ensuring their safe and trouble-free installation, operation, and maintenance. Application details, material compatibility and product ratings should all be considered for each selected product. Improper selection, installation or use of products can cause property damage or personal injury.

Grafoil —TM GrafTech International Holdings, Inc.

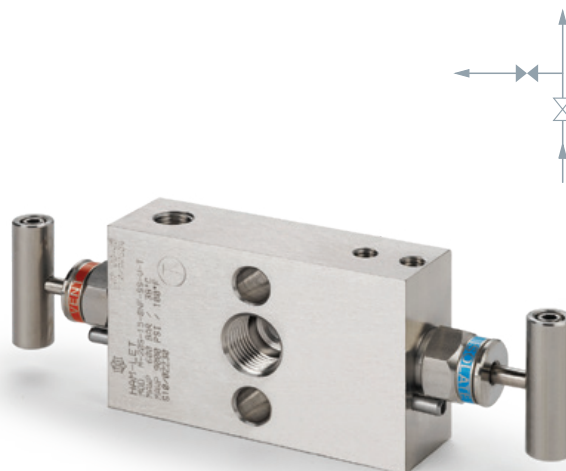
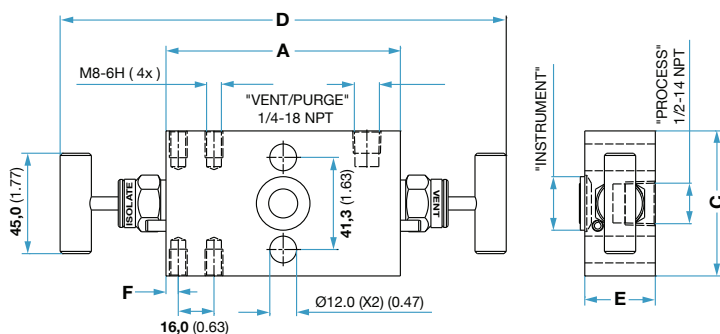
STANDARD CONFIGURATION DIMENSIONS

2-WAY DIRECT MOUNT

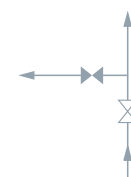
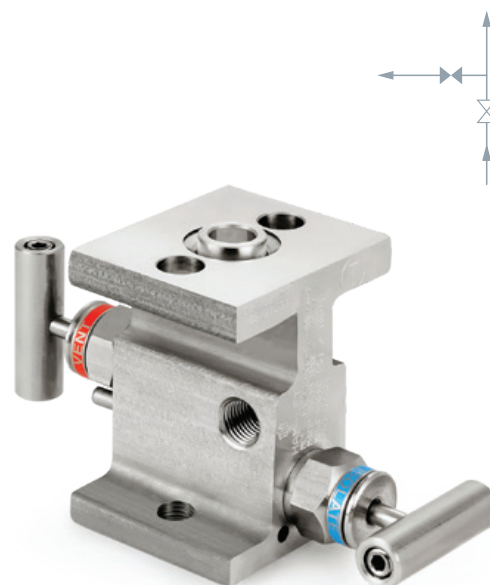
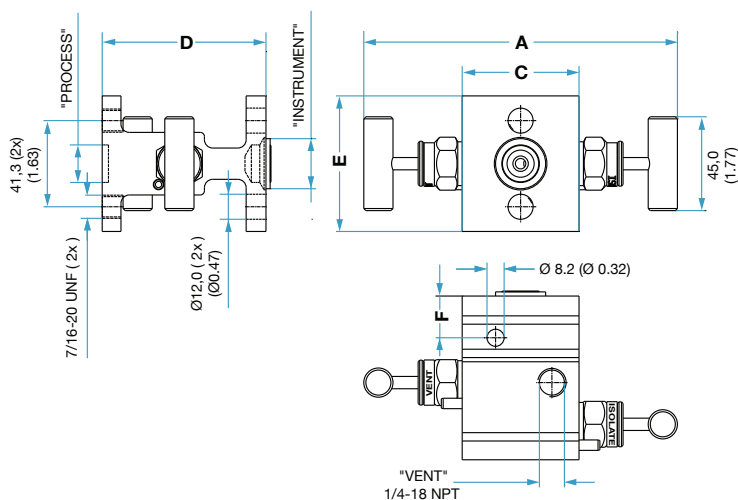
Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions											
					A		B		C		D		E		F	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Direct Mount	1/2" FNPT	*Flange	1/4" FNPT	M-20S-15-8NF-SS-V-T	85	3.35	-	-	65.0	2.56	182	7.17	32.0	1.26	5.0	0.20
	*Flange	*Flange	1/4" FNPT	M-20H-90-FF-SS-V-T	153	6.02	-	-	56.0	2.20	78	3.07	65.0	2.56	20.0	0.79

* Flange Standard per IEC 61518-A

M-20S-15-8NF-SS-V-T



M-20H-90-FF-SS-V-T

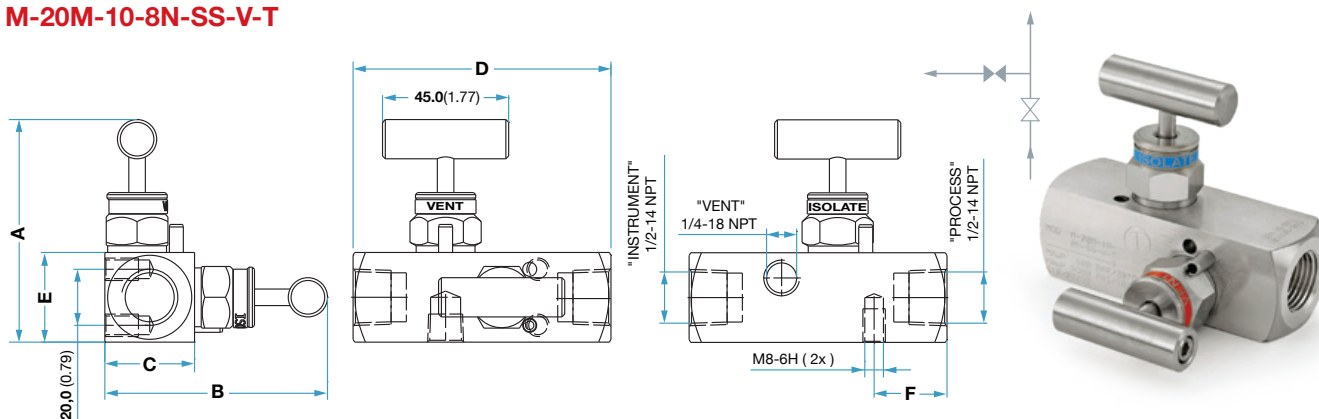


STANDARD CONFIGURATION DIMENSIONS

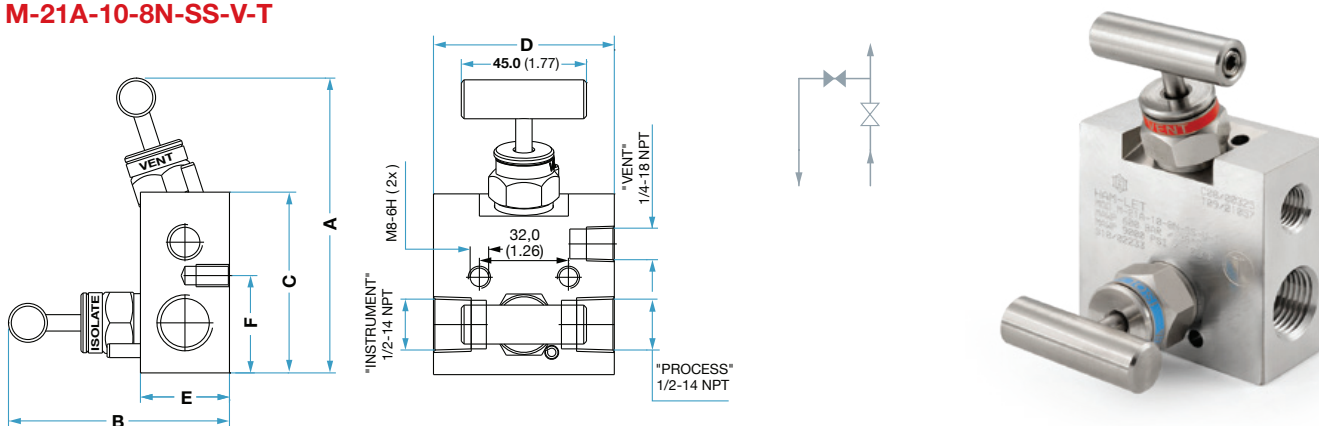
2-WAY REMOTE MOUNT

Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions											
					A		B		C		D		E		F	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Remote Mount	1/2" FNPT	1/2" FNPT	1/4" FNPT	M-20M-10-8N-SS-V-T	79	3.11	79.0	3.11	32.0	1.26	92.0	3.62	32	1.26	26	1.02
	1/2" FNPT	1/2" FNPT	1/4" FNPT	M-21A-10-8N-SS-V-T	107	4.21	79.4	3.13	65.0	2.56	65.0	2.56	32	1.26	35	1.38
	1/2" FNPT	1/2" FNPT	1/4" FNPT	M-21S-10-8N-SS-V-T	156	6.14	-	-	65.0	2.56	59.0	2.32	32	1.26	18	0.71

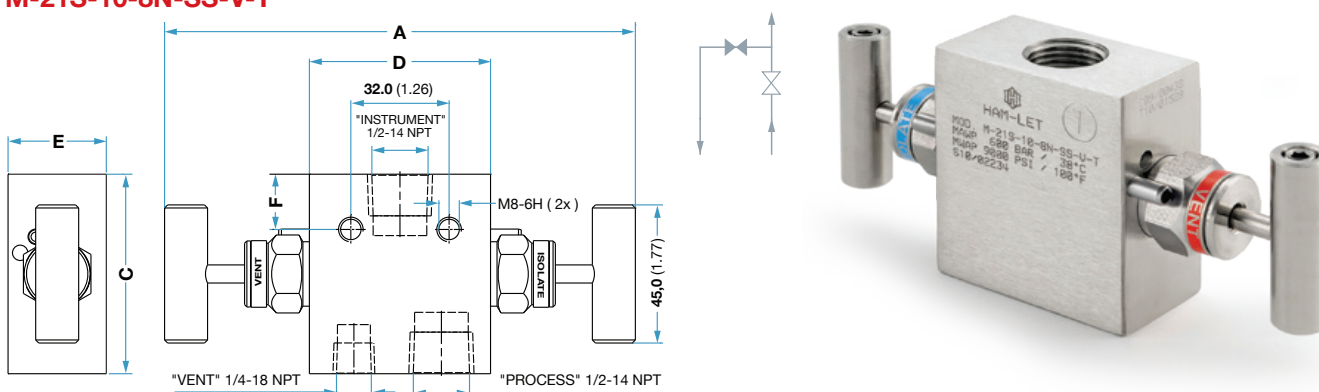
M-20M-10-8N-SS-V-T



M-21A-10-8N-SS-V-T



M-21S-10-8N-SS-V-T



ORDERING INFORMATION

2-WAY MANIFOLDS

2
WAY MANIFOLDS

M-2		0M		-	10		-	8		N		-	SS		-	T		-	LD		-	OC	
Family		End Connection		Type End Connection		Body Material		Packing		Option													
M-2	2 Way Manifold	00	Female integral Let-Lok®	FF	Flange*	SS	SS 316	T	PTFE	OC	Oxygen Clean												
Flow Scheme	0M	10	Female to Female	N	NPT	M	Alloy 400	G	Grafoil®	HYD	Hydrostatic pressure test												
		80	Male to Male*	G	BSPP	D	Duplex 1.4462	PK	PEEK	K	10,000 psi (690 bar)												
		85	Male to Female*	R	BSPT	HC	Alloy C-276	PI	Polyimide	V	Vent port 1/2"												
		15	Female to Flange	NF	NPT to Flange*	T	Titanium	V	Fluorocarbon FKM	B	Bleed valve												
		90	Flange to Flange	RF	BSPT to Flange*	SD	SuperDuplex	EP	EPDM	P	Blind plug												
		* M-20M & M-20I Only		GF	BSPP to Flange*			BU	NBR														
Size		L	Female integral Let-Lok®			KZ	Perfluorelastomer																
		4	1/4"					Handle															
		6	3/8"					T	T bar														
		8	1/2"					AT	Anti Tamper*														
								LD	Locking device*														

(See table A)

* Flange Standard per IEC 61518-A

(See table A)

TABLE A: FLOW SCHEMATIC AND VALVE POSITION

Designator	Flow Schematic	Sketch
0M		
0I		
0H		
0S		
1S		
1A		

Warning!

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Grafoil —TM GrafTech International Holdings, Inc.

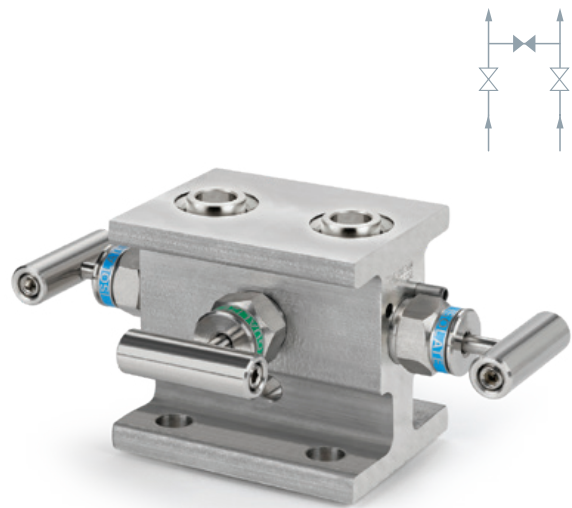
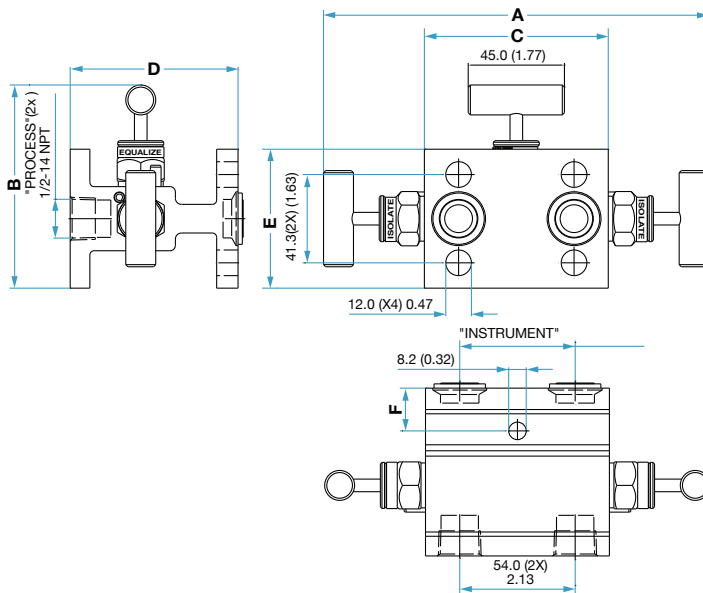
STANDARD CONFIGURATION DIMENSIONS

3-WAY DIRECT MOUNT

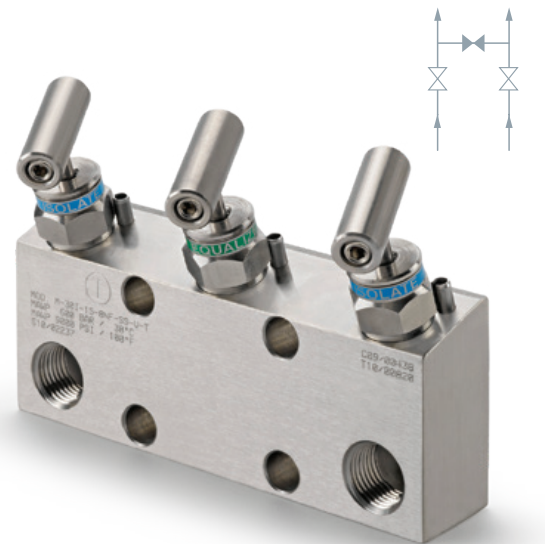
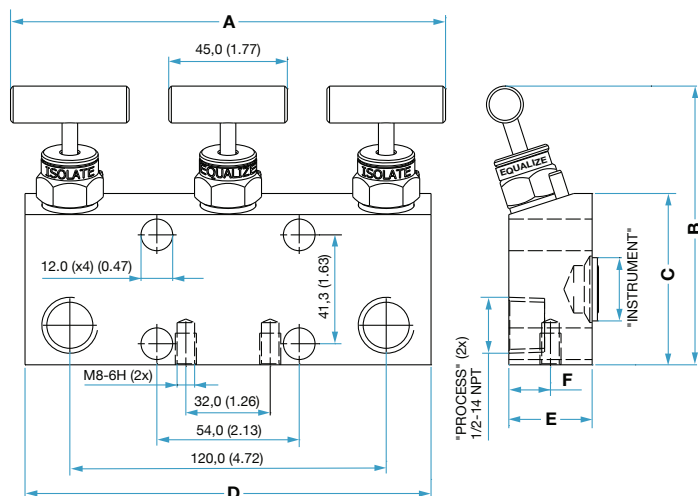
Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions											
					A		B		C		D		E		F	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Direct Mount	1/2" FNPT	*Flange	-	M-30H-15-8NF-SS-V-T	181.0	7.13	95.0	3.74	86.0	3.39	79.0	3.11	66.0	2.60	20.0	0.79
	1/2" FNPT	*Flange	-	M-30I-15-8NF-SS-V-T	161.0	6.34	107.0	4.21	65.0	2.56	150.0	5.91	32.0	1.26	16.0	0.63

M-30H-15-8NF-SS-V-T

* Flange Standard per IEC 61518-A



M-30I-15-8NF-SS-V-T



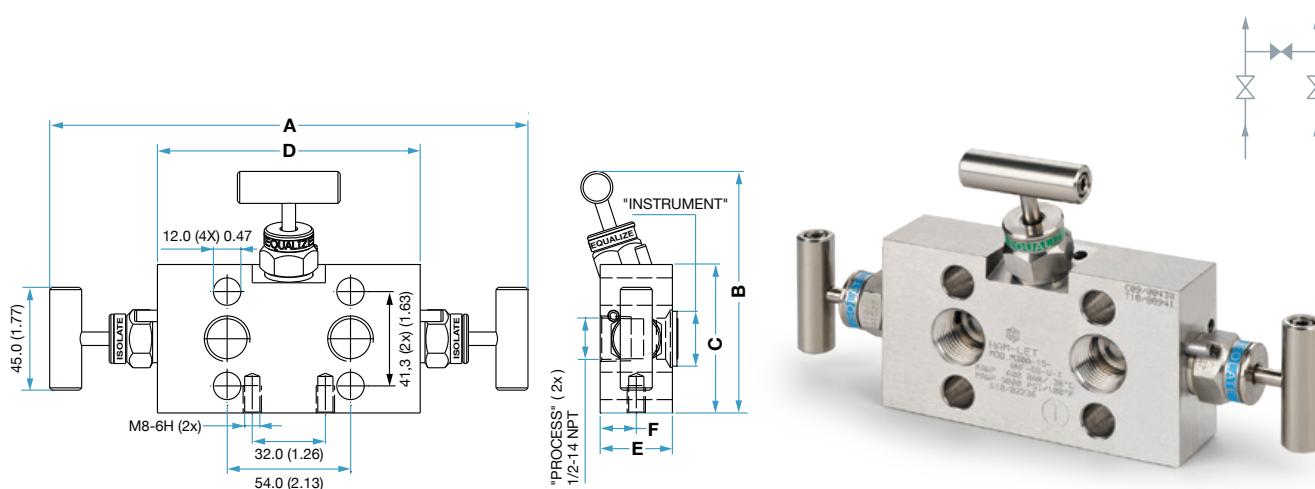
STANDARD CONFIGURATION DIMENSIONS

3-WAY DIRECT MOUNT

Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions											
					A		B		C		D		E		F	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Direct Mount	1/2" FNPT	*Flange	-	M-30A-15-8NF-SS-V-T	210.0	8.27	106.0	4.17	65.0	2.56	115.0	4.53	32.0	1.26	16.0	0.63
	*Flange	*Flange	-	M-30H-90-FF-SS-V-T	181.0	7.13	95.0	3.74	86.0	3.39	79.0	3.11	66.0	2.60	-	-

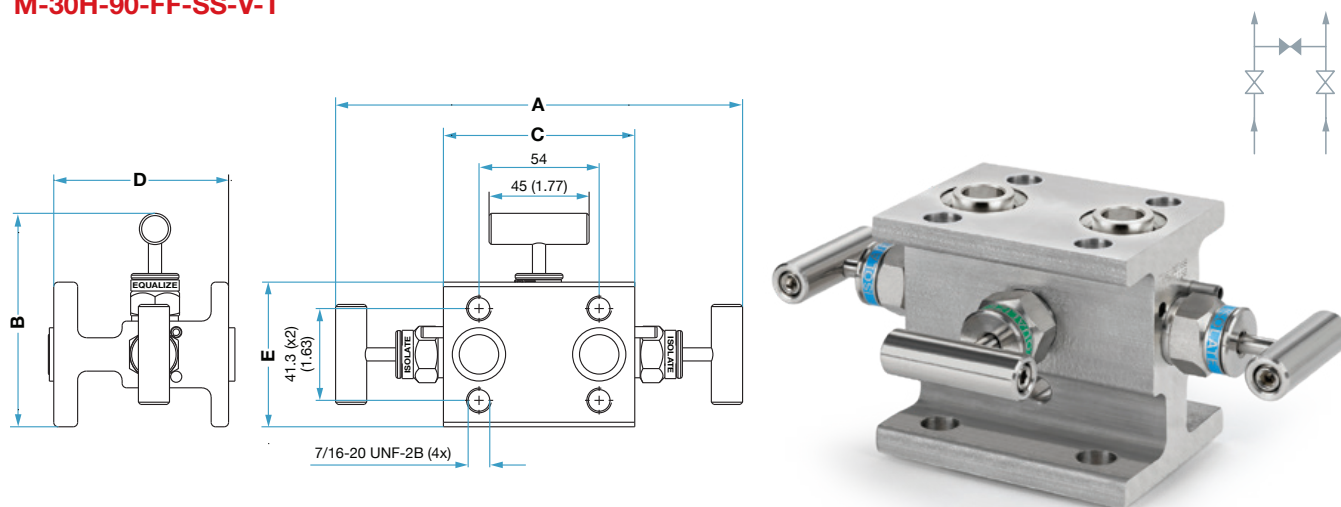
M-30A-15-8NF-SS-V-T

* Flange Standard per IEC 61518-A



* Optimal vent / test ports

M-30H-90-FF-SS-V-T

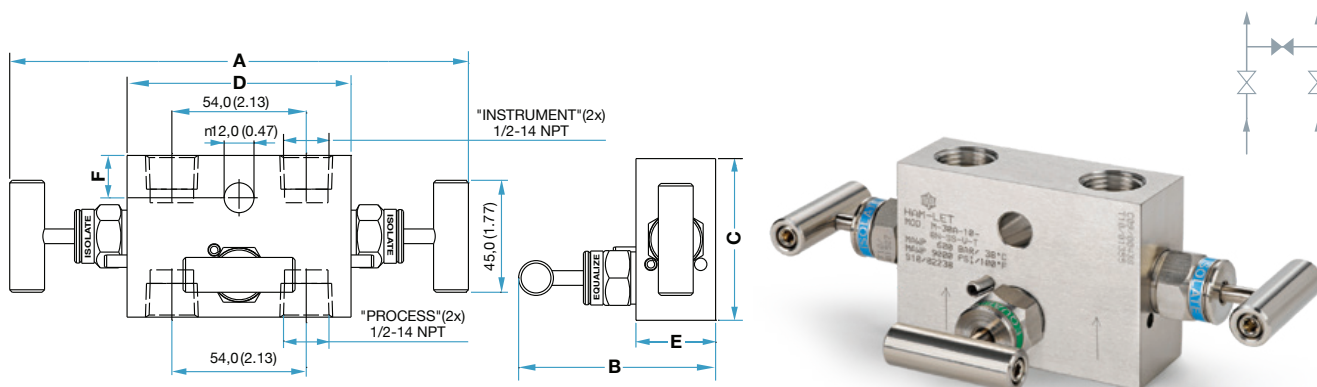


STANDARD CONFIGURATION DIMENSIONS

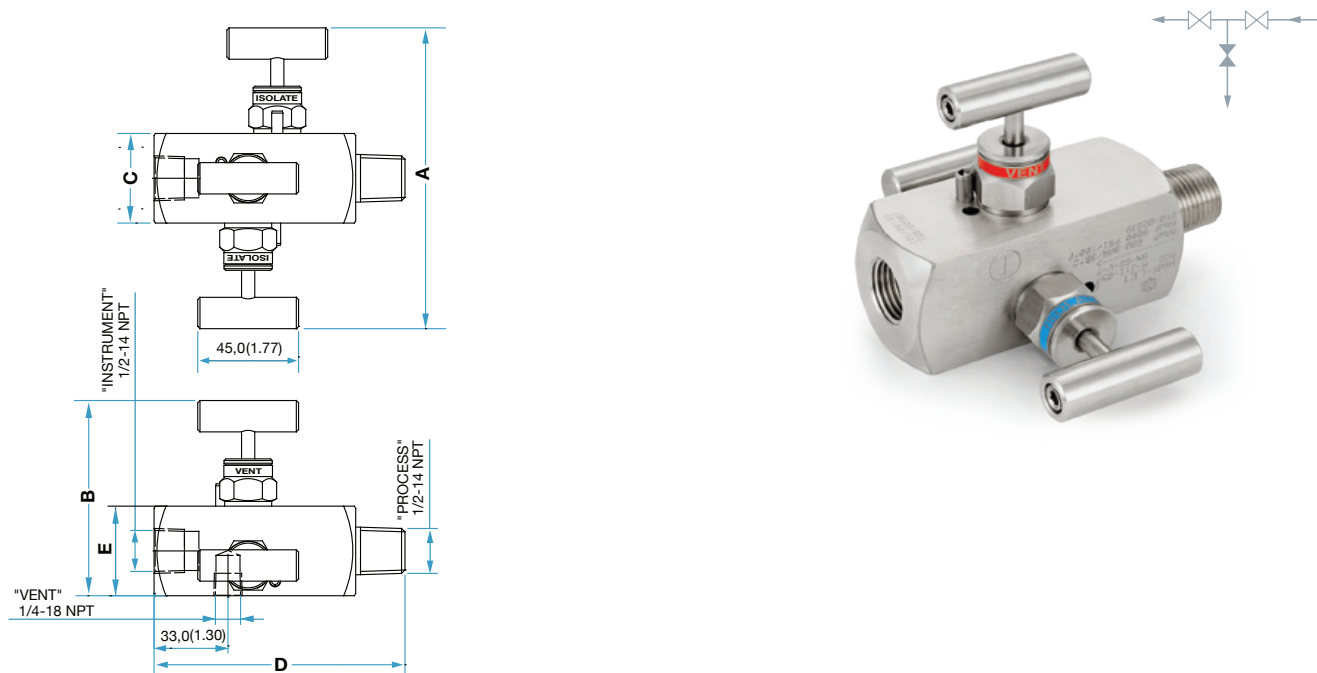
3-WAY REMOTE MOUNT

Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions											
					A		B		C		D		E		F	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Remote Mount	1/2" FNPT	1/2" FNPT	-	M30S-10-8N-SS-V-T	185.0	7.28	79.0	3.11	65.0	2.56	90.0	3.54	32.0	1.26	17.0	0.67
	1/2" MNPT	1/2" FNPT	1/4" FNPT	M32M-85-8N-SS-V-T	135.0	5.31	87.0	3.43	40.0	1.57	112.0	4.41	40.0	1.57	-	-

M-30S-10-8N-SS-V-T



M-32M-85-8N-SS-V-T-K



ORDERING INFORMATION

3-WAY MANIFOLDS

M-3		OS	-	10	-	8	N	-	SS	-	T	-	LD	-	OC
Family		End Connection		Type End Connection		Body Material		Packing		Option					
M-3	3 Way Manifold	00	Female integral Let-Lok®	FF	Flange*	SS	SS 316	T	PTFE	OC	Oxygen Clean				
Flow Scheme		10	Female to Female	N	NPT	M	Alloy 400	G	Grafoil®	HYD	Hydrostatic pressure test				
	0A	Angle Flat	80	Male to Male*	G	BSPP	D	Duplex 1.4462	PK	PEEK	K	10,000 psi (690 bar)			
	OS	Straight	85	Male to Female*	R	BSPT	HC	Alloy C-276	PI	Polyimide	V	Vent port 1/2"			
	OI	In-line	15	Female to Flange	NF	NPT to Flange*	T	Titanium	V	Fluorocarbon FKM	P	Blind plug			
	OH	H- Type	90	Flange to Flange	RF	BSPT to Flange*	SD	SuperDuplex	EP	EPDM					
1I	In - line	* M-32M Only		GF	BSPP to Flange*			BU	NBR	Handle					
2M	Angle Square	Size		L	Female integral Let-Lok®			KZ	Perfluorelastomer	T	T bar				
		4	1/4"							AT	Anti Tamper*				
		6	3/8"							LD	Locking device*				
		8	1/2"												
								</							

STANDARD CONFIGURATION DIMENSIONS

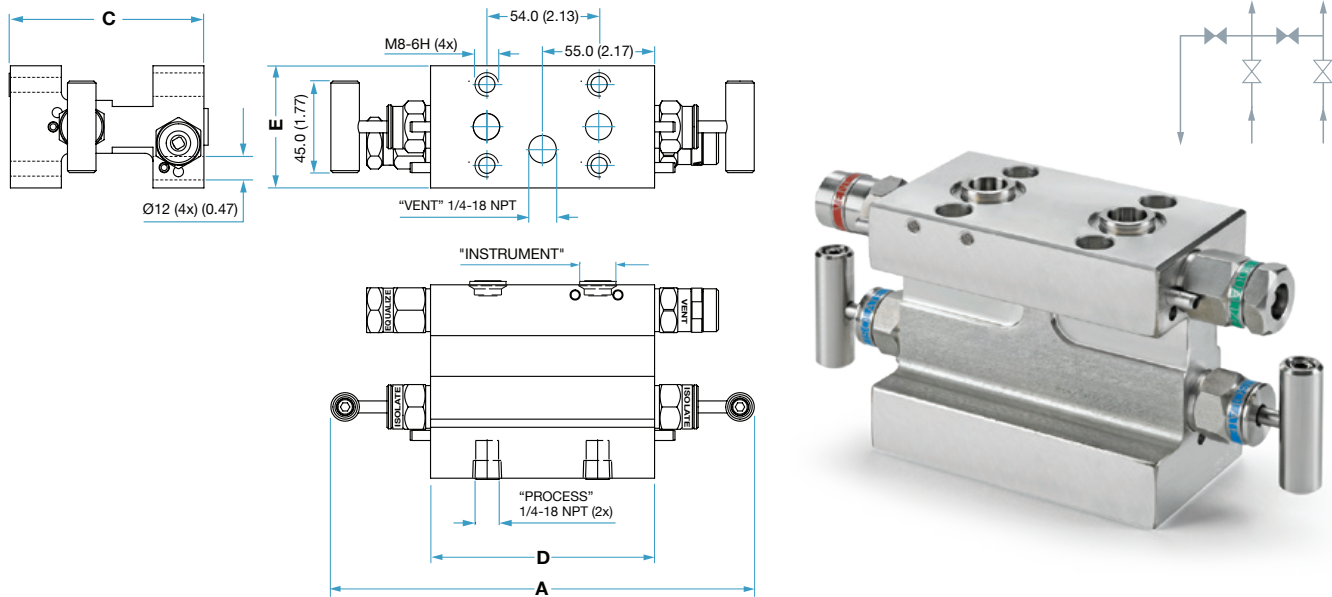
4-WAY REMOTE MOUNT

4
WAY MANIFOLDS

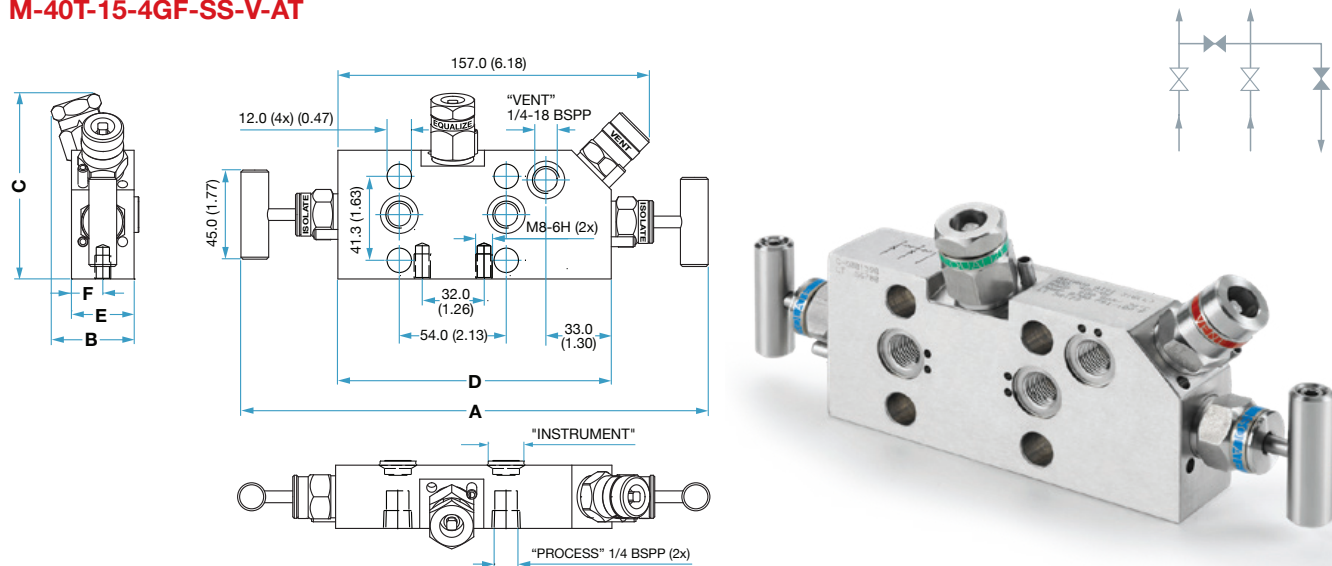
Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions											
					A		B		C		D		E		F	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Direct Mount	1/4" FNPT	*Flange	1/4" FNPT	M-40H-15-4NF-SS-V-AT	208.0	8.18	-	-	95.0	3.74	110.0	4.33	60.0	2.36	-	-
	1/4" BSPP	*Flange	1/4" BSPP	M-40T-15-4GF-SS-V-AT	236.0	6.29	42.0	1.65	94.0	3.69	138.0	5.43	32.0	1.24	16.0	0.63

* Flange Standard per IEC 61518-A

M-40H-15-4NF-SS-V-AT



M-40T-15-4GF-SS-V-AT



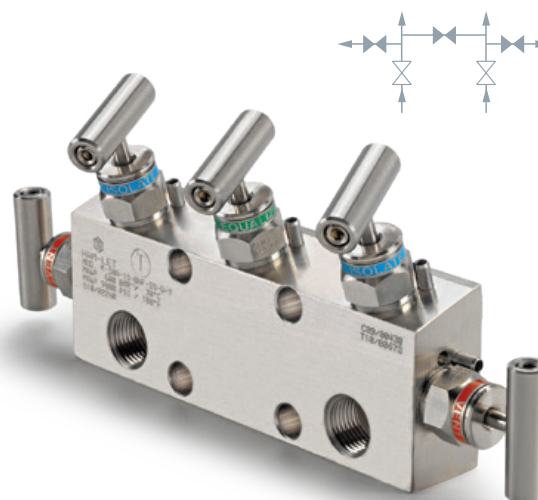
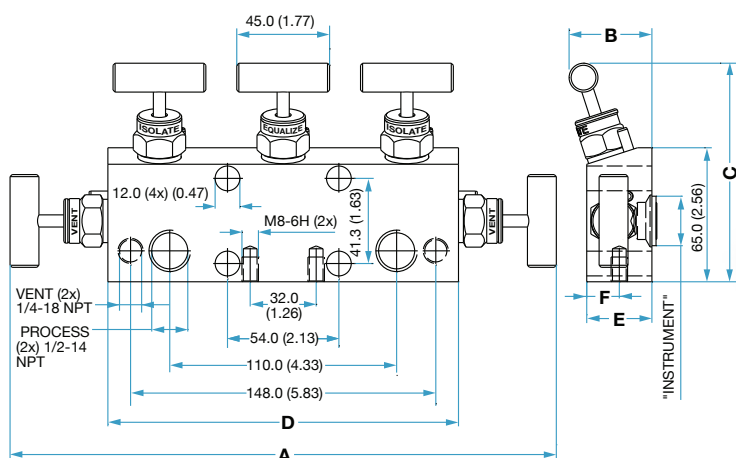
STANDARD CONFIGURATION DIMENSIONS

5-WAY DIRECT MOUNT

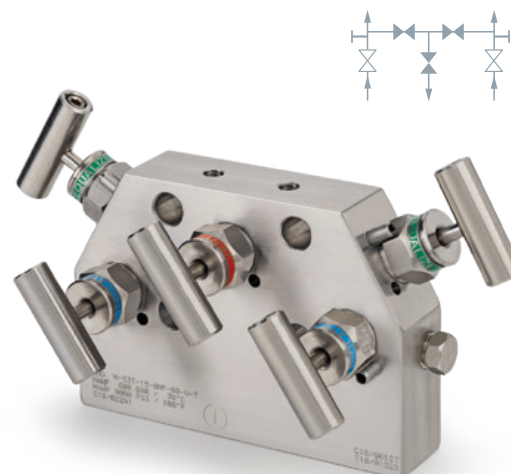
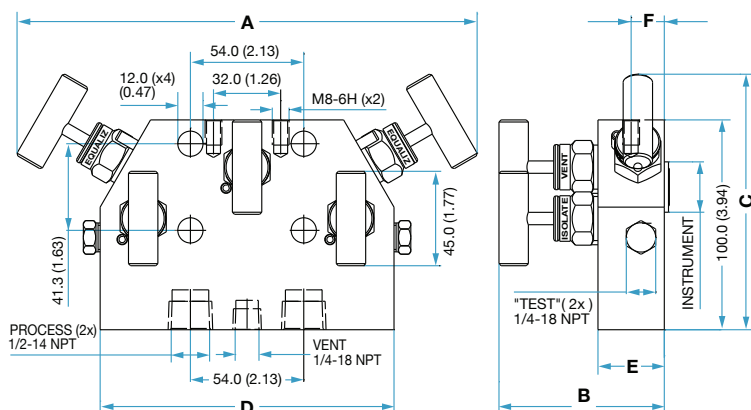
Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions											
					A		B		C		D		E		F	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Direct Mount	1/2" FNPT	*Flange	1/4" FNPT	M-50A-15-8NF-SS-V-T	265.0	10.43	41.0	1.61	106.0	4.17	170.0	6.69	32.0	1.26	16.0	0.63
	1/2" FNPT	*Flange	1/4" FNPT	M-53T-15-8NF-SS-V-T	220.0	8.66	79.0	3.11	122.0	4.80	140.0	5.51	32.0	1.26	16.0	0.63

* Flange Standard per IEC 61518-A

M-50A-15-8NF-SS-V-T



M-53T-15-8NF-SS-V-T-P



Grafoil — TM GraffTech International Holdings, Inc.

HAM-LET LEADING BY INNOVATION

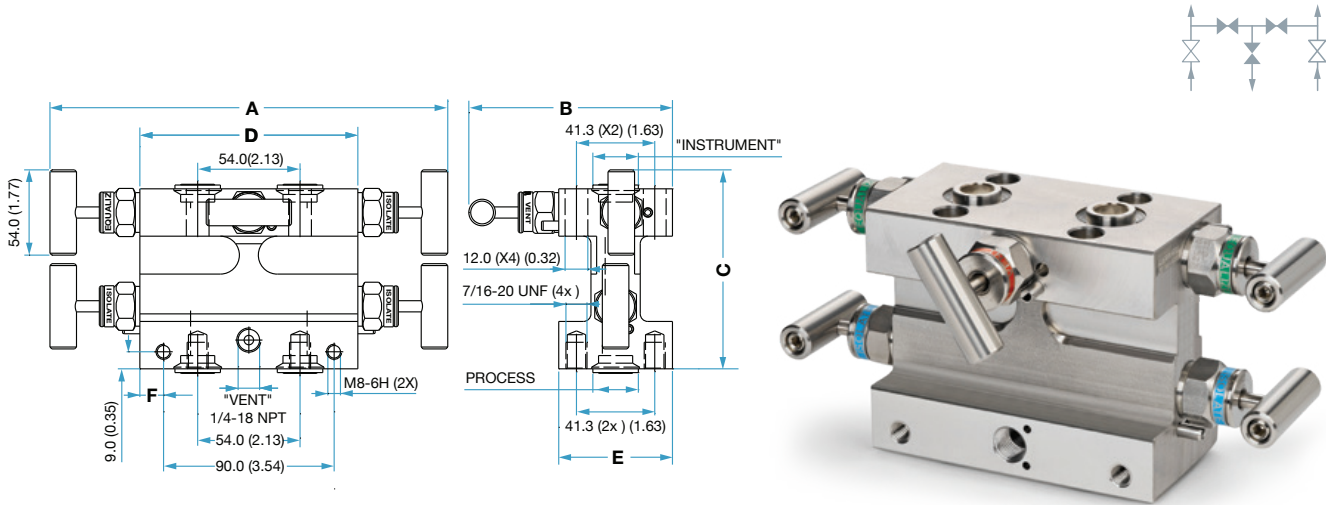
STANDARD CONFIGURATION DIMENSIONS

5-WAY DIRECT MOUNT

Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions											
					A		B		C		D		E		F	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Direct Mount	*Flange	*Flange	1/4" FNPT	M-54H-90-FF-SS-V-T	210.0	8.27	108.0	4.25	105.0	4.13	115.0	4.53	60.0	2.36	12.5	049

M-54H-90-FF-SS-V-T

* Flange Standard per IEC 61518-A



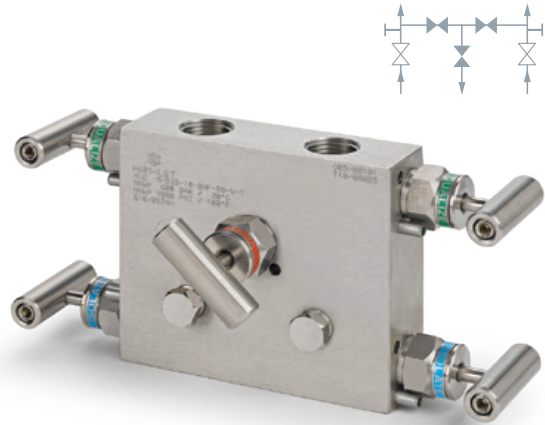
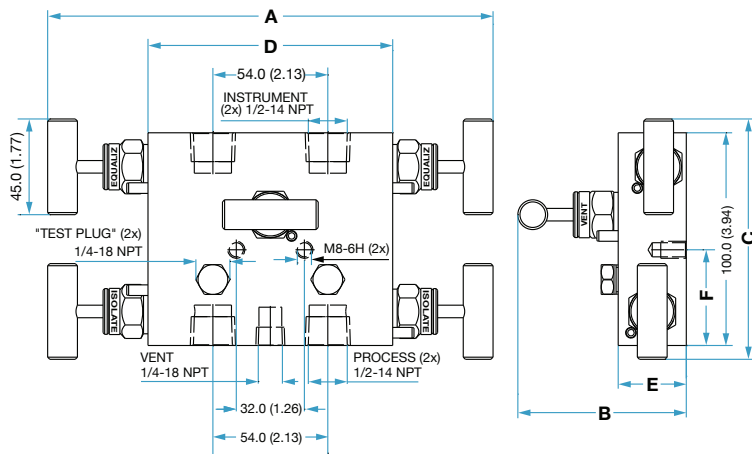
STANDARD CONFIGURATION DIMENSIONS

5-WAY REMOTE MOUNT

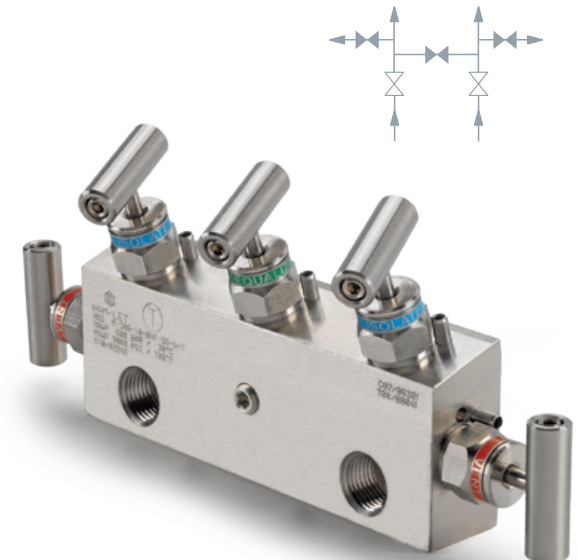
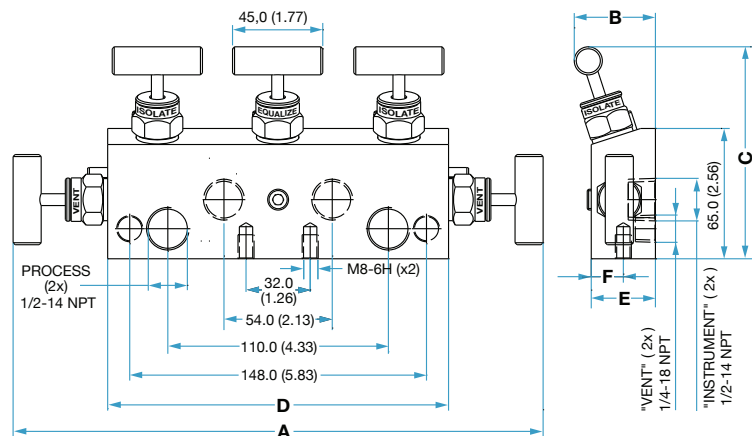
5
WAY MANIFOLDS

Instrument Mount Type	End Connection			HAM-LET Ordering Description	Dimensions											
					A		B		C		D		E		F	
	Process	Instrument	Vent / Bleed		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Remote Mount	1/2" FNPT	1/2" FNPT	1/4" FNPT	M-53S-10-8N-SS-V-T	210.0	8.27	80.0	3.15	113.0	4.45	115.0	4.53	32.0	1.26	45.0	1.77
	1/2" FNPT	1/2" FNPT	1/4" FNPT	M-50A-10-8N-SS-V-T	265.0	10.43	41.0	1.61	106.0	4.17	170.0	6.69	32.0	1.26	16.0	0.63

M-53S-10-8N-SS-V-T-P



M-50A-10-8N-SS-V-T



ORDERING INFORMATION

5-WAY MANIFOLDS

5
WAY MANIFOLDS

M-5		0A		10		8		N		SS		T		LD		OC	
Family		End Connection		Type End Connection		Body Material		Packing		Option							
M-5	5 Way Manifold	10	Female to Female	FF	Flange*	SS	SS 316	T	PTFE	OC	Oxygen Clean						
Flow Scheme		15	Female to Flange	N	NPT	M	Alloy 400	G	Grafoil®	HYD	Hydrostatic pressure test						
		90	Flange to Flange	G	BSPP	D	Duplex 1.4462	PK	PEEK	K	10,000 psi (690 bar)						
	0A	Angle Flat	Size	R	BSPT	HC	Alloy C-276	PI	Polyimide	V	Vent port 1/2"						
	1A	Angle Flat		NF	NPT to Flange*	T	Titanium	V	Fluorocarbon FKM	P	Blind plug						
	2T	Taper		RF	BSPT to Flange*	SD	SuperDuplex	EP	EPDM	Handle							
	3T	Taper		GF	BSPP to Flange*	BU	NBR										
	3S	Straight	L	Female integral Let-Lok®	KZ	Perfluorelastomer											
	4H	H- Type	4	1/4"							T	T bar					
4A	Angle Flat	6	3/8"							AT	Anti Tamper*						
		8	1/2"							LD	Locking device*						

* Flange Standard per IEC 61518-A

* Flange Standard per IEC 61518-A

* Key should be separately ordered

TABLE A: FLOW SCHEMATIC AND VALVE POSITION

Designator	Flow Schematic	Sketch
0A		
1A		
2T		
3T		
3S		
4H		
4A		
4I		

Warning!

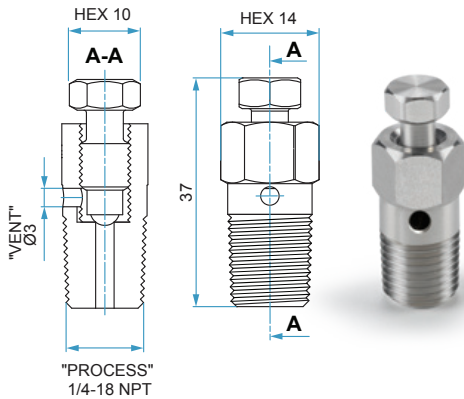
The system designer and user have the sole responsibility for selecting products suitable for their special application requirements, ensuring their safe and trouble-free installation, operation, and maintenance. Application details, material compatibility and product ratings should all be considered for each selected product. Improper selection, installation or use of products can cause property damage or personal injury.

Grafoil —TM GrafTech International Holdings, Inc.

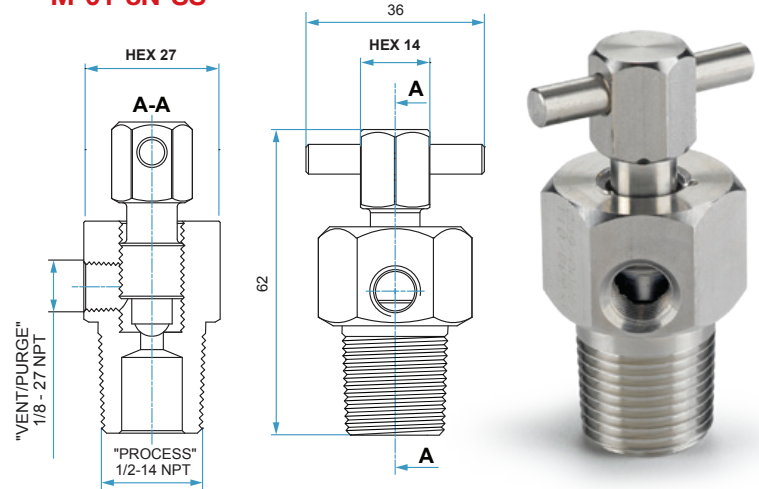
BLEED VALVE



1/4" MNPT
M-01-4N-SS

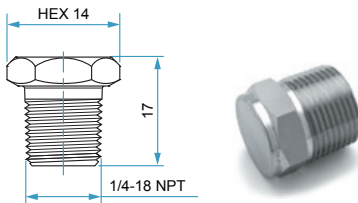


1/2" MNPT
M-01-8N-SS

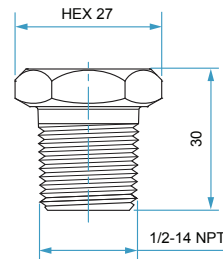


BLIND PLUG

1/4" MNPT
M-02-4N-SS

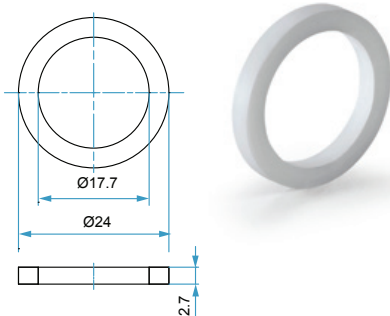


1/2" MNPT
M-02-8N-SS



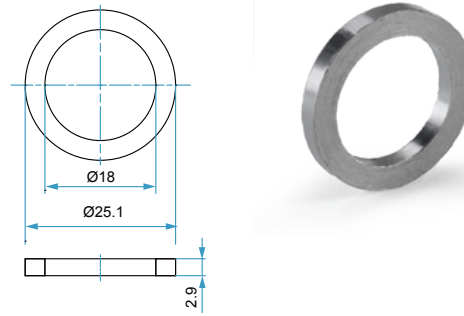
MOUNTING GASKET IEC 61518-A

PTFE
M-03-GK-IECA-T



Kit contains: 2 Gaskets

GRAFOIL®
M-03-GK-IECA-G

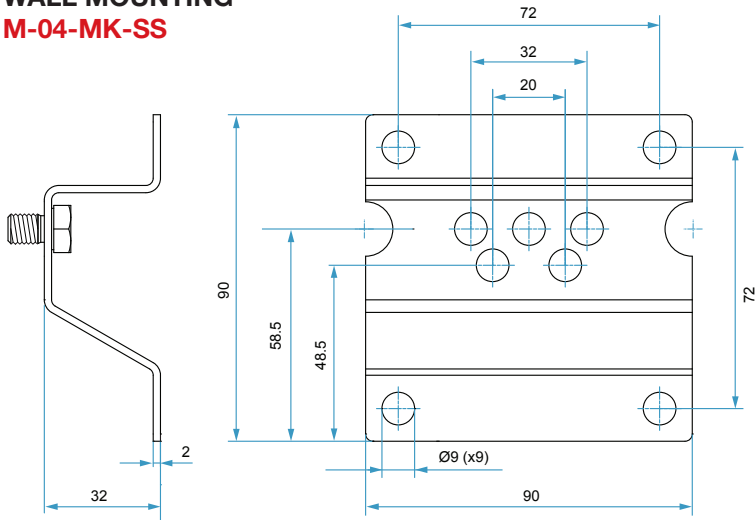


Kit contains: 2 Gaskets

MOUNTING BRACKET - AISI 316



WALL MOUNTING M-04-MK-SS

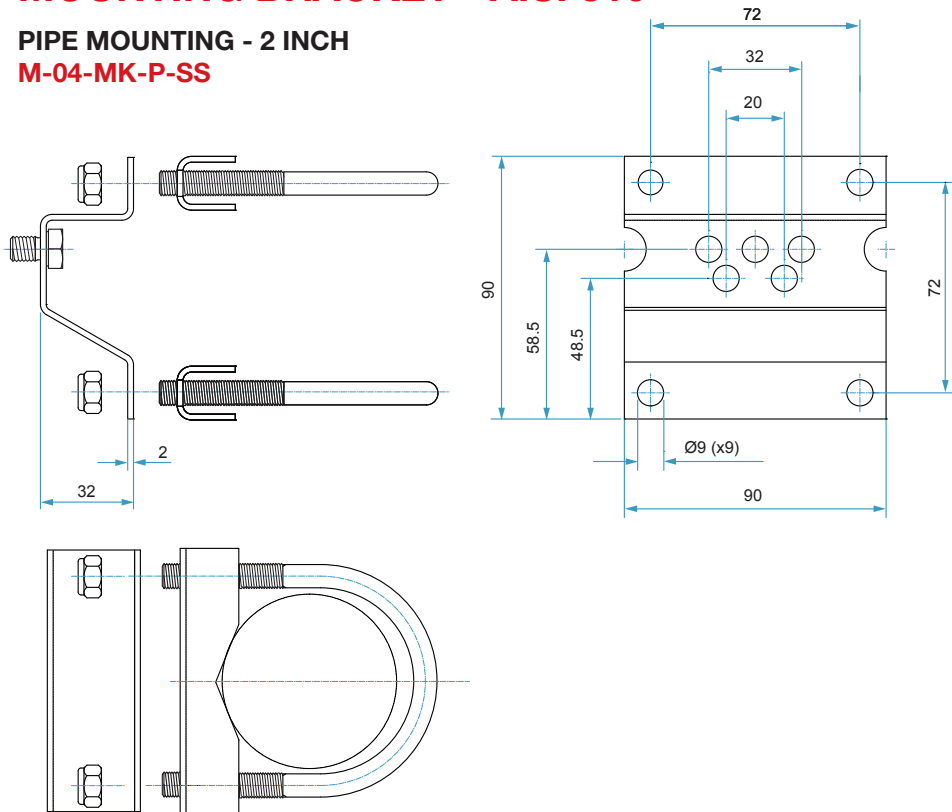


Kit contains: Bracket, 2x Bolts M8X12.

Upon order, please make sure that the Manifold is suitable for bracket mounting.

MOUNTING BRACKET - AISI 316

PIPE MOUNTING - 2 INCH M-04-MK-P-SS



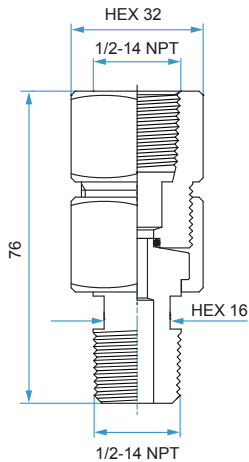
Kit contains: Bracket, 2x Bolts M8X12, 2x Tie rod, 2x Tie rod brackets, 4x Snapnut M8.

Upon order, please make sure that the Manifold is suitable for bracket mounting.

GAUGE CONNECTOR

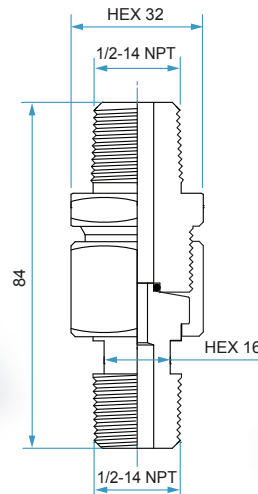


360° POSITIONING MALE TO FEMALE M-05-85-8N-SS-V



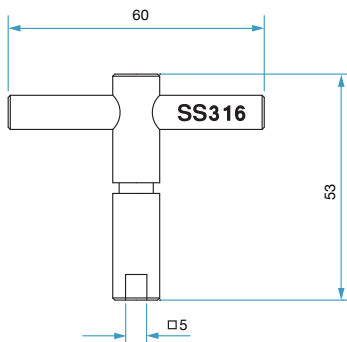
(Fluorocarbon FKM O-ring)

360° POSITIONING MALE TO MALE M-05-80-8N-SS-V



ANTI TAMPER KEY

5 MM M-06-KEY-5MM-SS



Not included in order of Anti-Tampered bonnet manifold.
This key should be separately ordered.

STANDARD CONFIGURATION DIMENSIONS

INSTRUMENT ENCLOSURES

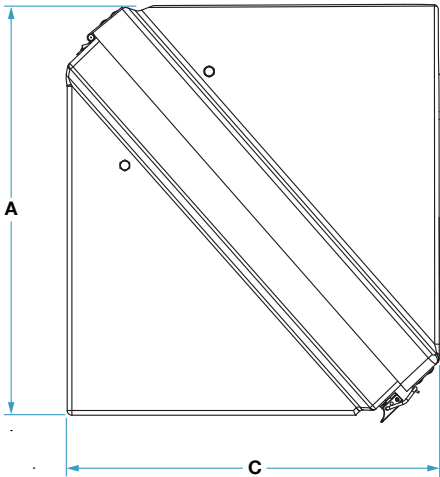
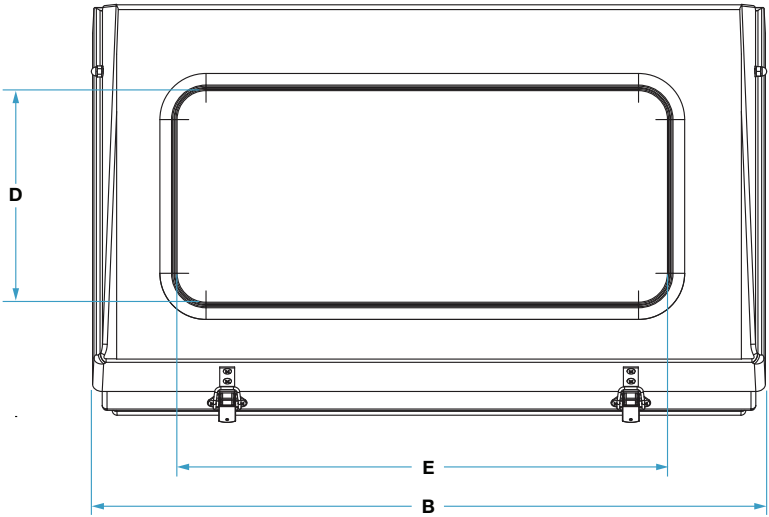


Technical Specification:

- Body material: Glass Reinforced Polyester (GRP)
- Toggle clamps, hinges material: Stainless Steel 316
- Sealing: Polychloroprene (CR) closed cell sealing
- Surface resistance: Anti static, EN 50014 compliance (<1.10 9 Ohm)
- Flame retardant: DIN 4102 Class B2
- Ingress protection: IP 65

Type	Material / Color	Weight (Kg)	Enclosure Dimensions (mm)			Safety Glass Window Dimensions (mm)		
			A	B	C	Type	D	E
4	GRP Black	19	500	500	650	R	290	290
5	GRP Black	14	550	500	500	R	290	290
6	GRP Black	14	430	700	390	L	210	500
7	GRP Black	9	430	430	390	S	210	210
8	GRP Blue	8	400	375	400	S	210	210
9	GRP Black	20	530	700	390	L	210	500
10	GRP Black	19	530	430	390	S	210	210

For other colors, please contact your local HAM-LET representative.



EQUIPPED INSTRUMENT ENCLOSURES

1 Body options:

- Full body GRP enclosures
- Half body GRP enclosures
- Full body AISI 316 enclosures

2 Heating options

- Steam heater
- Electrical space heater (Black anodized aluminum, AISI 316)
- Electrical block heater (Black anodized aluminum, AISI 316)
- Thermostat (Black anodized aluminum)

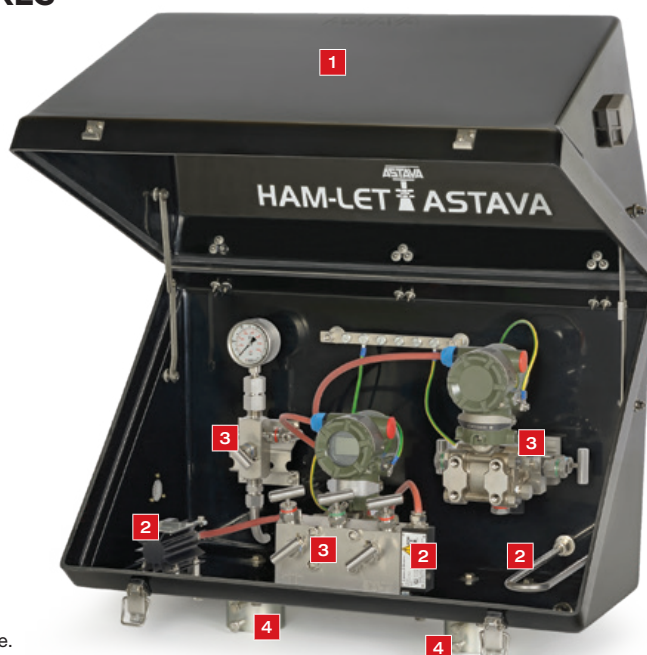
3 Manifolds:

- According to customer application

4 Mounting accessories:

- According to ordering information

For mounting accessories, heating options, junction boxes and accessories, please contact your local HAM-LET representative.



ORDERING INFORMATION INSTRUMENT ENCLOSURES

OPTIONAL

Family		WINDOW (HxW)		INSULATION		SPECIAL LAY OUT		MOUNTING ACCESSORIES	
HA	Enclosure	N	Blind enclosure	N	No Insulation	Blank	No option	00	no options
SIZE (HxWxD)	4	S	Safety glass window (210x210)	I	Insulation 20 mm polyurethane	C	4x Clasps stainless steel for removable toplid	01	2" mounting bracket outside in galv.carbon steel (HA7,8,10)
	5	L	Safety glass window (210x500)					02	2" mounting bracket outside in AISI 316 (HA7,8,10)
	6	R	Safety glass window (290x290)					04	2" mounting brackets on backside of cabinet in AISI 316
	7	T	Safety glass window (310x540)					05	2" mounting bracket outside in AISI 316 large support plate (HA4, HA5)
	8							21	2x 2" mounting bracket outside in galv.carbon steel (C-C can be specified)
9	530x700x390							22	2x 2" mounting bracket outside in AISI 316 (C-C can be specified)
10	530x430x390							A	2" pipe 300mm with two pairs of rails inside carbon steel
								B	2x 2" Pipe 300mm with two pairs of rails inside carbon steel
								D	2" pipe AISI 316 inside cabinet 300 mm
								E	2" pipe Galv. Carbon steel inside cabinet 300 mm
								F	2x 2" pipe AISI 316 inside cabinet 300 mm

Warning!

The system designer and user have the sole responsibility for selecting products suitable for their special application requirements, ensuring their safe and trouble-free installation, operation, and maintenance. Application details, material compatibility and product ratings should all be considered for each selected product. Improper selection, installation or use of products can cause property damage or personal injury.

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