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TRUSTED FOR OVER

- Quality
- Service
- Experience

**30** YEARS

**MAC-WELD**  
MACHINING LTD.

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MAC-WELD Needle & Gauge Valves are designed and tested to industry quality standards.

## **Needle and Gauge Root Valves**

Widely used in many industries, Mac-Weld high pressure Instrument Needle Valves provide quality and reliable function to throttle, regulate and isolate gaseous and aggressive non-viscous liquid services. Mac-Weld Gauge Root Valves offer multifunction capability to isolate, calibrate and vent gauge, pressure switches and static instrument applications.

## **Specifications and Features**

Mac-Weld instrument Needle and Gauge Valves 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° F (414 bar @ 38° 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 Needle & Gauge Valve specifications.*

Part Number	NV - L - 08F - 08F - P		
Component	NV	Needle Valve	
	GV	Gauge Valve	
Body Material	SS	316 Stainless Steel	
	L	316L Stainless Steel	
End Connection Inlet	02F	1/8" Female NPT	
	04F	1/4" Female NPT	
	06F	3/8" Female NPT	
	08F	1/2" Female NPT	
	12F	3/4" Female NPT	
	16F	1" Female NPT	
	02M	1/8" Male NPT	
	04M	1/4" Male NPT	
	06M	3/8" Male NPT	
	08M	1/2" Male NPT	
	12M	3/4" Male NPT	
	16M	1" Male NPT	
End Connection Outlet	02F	1/8" Female NPT	
	04F	1/4" Female NPT	
	06F	3/8" Female NPT	
	08F	1/2" Female NPT	
	12F	3/4" Female NPT	
	16F	1" Female NPT	
	02M	1/8" Male NPT	
	04M	1/4" Male NPT	
	06M	3/8" Male NPT	
	08M	1/2" Male NPT	
	12M	3/4" Male NPT	
	16M	1" Male NPT	
Drain c/w Plug		P	1/4" Female NPT
			Threads to ASME B1.20.1

**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.

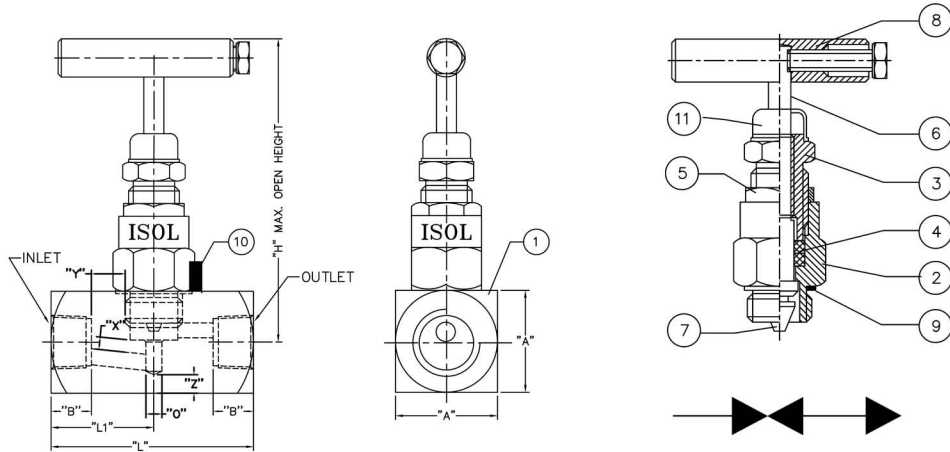
For Safe, easy and trouble-free operation the customer must consider material compatibility, temperature and pressure ratings when selecting a product.

## Instrument Needle Valve

Female Inlet x Female Outlet

Mac-Weld Instrument Needle Valves provide reliable regulating and isolation capability for high pressure 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 NO.	PART DESCRIPTION	MATERIAL	QTY
1	BODY	SS 316L	1
2	GLAND BODY	SS 316L	1
3	GLAND RETAINER	SS 304	1
4	GLAND SEAL	P.T.F.E	2
5	CHECK NUT	SS 304	1
6	SPINDLE	SS 316L	1
7	TRIM	SS 316L	1
8	HANDLE	SS 304	1
9	WASHER	S.S.	1
10	LOCK PIN	SS 304	1
11	DUST CAP	P.V.C.	1

PART INFORMATION											
FNPT X FNPT			DIMENSIONS: INCHES (MILIMETRES)								
PART NUMBER	END CONNECTION		"A"	"B"	"L"	"L1"	"O"	"X"	"Y"	"Z"	"H" MAX
	INLET SIZE (NPT)	OUTLET SIZE (NPT)									
NV-L-02F-02F	1/8"	1/8"	1.10 (28.00)	0.39 (10.00)	2.20 (56.00)	1.10 (28.00)	0.16 (4.00)	0.15 (3.80)	0.35 (9.00)	0.20 (5.00)	3.43 (87.00)
NV-L-04F-04F	1/4"	1/4"		0.55 (14.00)				0.16 (4.10)	0.20 (5.00)		
NV-L-06F-06F	3/8"	3/8"		0.75 (19.00)				0.18 (4.50)	0.24 (6.00)		
NV-L-08F-08F	1/2"	1/2"	1.26 (32.00)	0.75 (19.00)	2.68 (68.00)	1.34 (34.00)	0.20 (5.00)	0.18 (4.50)	0.24 (6.00)	0.24 (6.00)	3.50 (89.00)
NV-L-12F-12F	3/4"	3/4"	1.50 (38.00)	0.95 (24.00)	3.50 (89.00)	1.75 (44.50)	0.32 (8.00)	0.19 (4.90)	0.31 (7.80)	0.28 (7.00)	3.66 (93.00)
NV-L-16F-16F	1"	1"	1.77 (45.00)					0.39 (10.00)			0.27 (6.90)

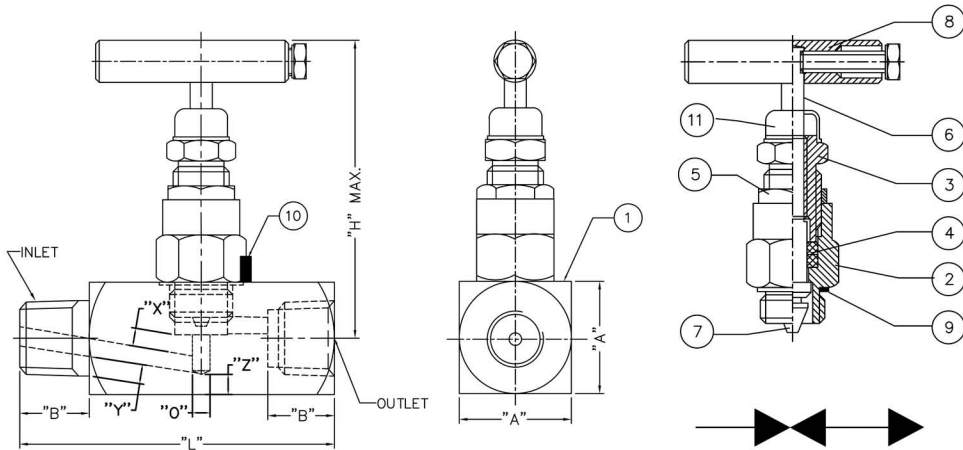


## Instrument Needle Valve

Male Inlet x Female Outlet

Mac-Weld Instrument Needle Valves provide reliable throttling and block capability for high pressure gas or liquid service.

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

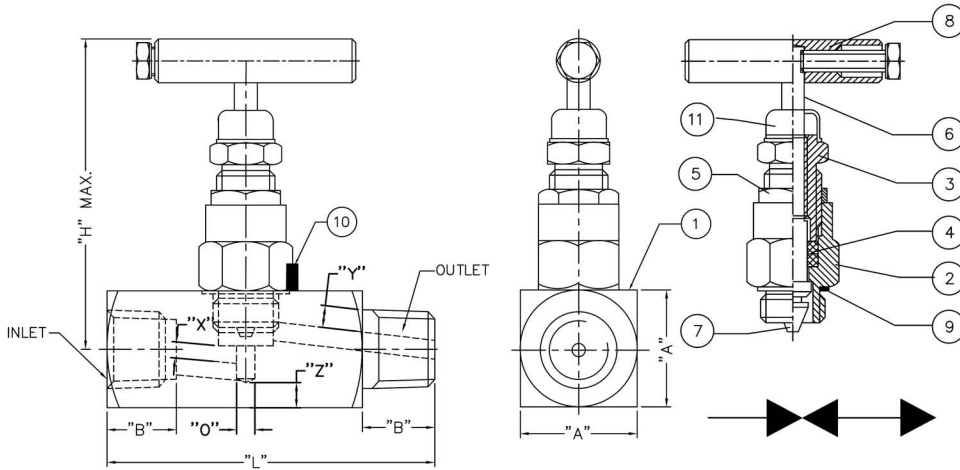
PART INFORMATION										
MNPT X FNPT			DIMENSIONS: INCHES (MILIMETRES)							
PART NUMBER	END CONNECTION		"A"	"B"	"L"	"O"	"X"	"Y"	"Z"	"H" MAX
	INLET SIZE (NPT)	OUTLET SIZE (NPT)								
NV-L-02M-02F	1/8"	1/8"	1.10 (28.00)	0.39 (10.00)	2.68 (68.00)	0.16 (4.00)	0.14 (3.50)	0.10 (2.50)	0.24 (6.00)	3.43 (87.00)
NV-L-04M-04F	1/4"	1/4"		0.55 (14.00)	3.07 (78.00)		0.14 (3.50)	0.20 (5.00)		
NV-L-06M-06F	3/8"	3/8"		0.16 (4.00)	0.16 (4.00)					
NV-L-08M-08F	1/2"	1/2"	1.26 (32.00)	0.75 (19.00)	3.46 (88.00)	0.20 (5.00)	0.20 (5.00)	0.22 (5.50)	0.24 (6.00)	3.50 (89.00)
NV-L-12M-12F	3/4"	3/4"	1.50 (38.00)	0.95 (24.00)	4.13 (105.00)	0.32 (8.00)	0.22 (5.50)	0.28 (7.20)	0.20 (5.00)	3.66 (93.00)
NV-L-16M-16F	1"	1"	1.77 (45.00)			0.39 (10.00)	0.26 (6.50)		0.24 (6.00)	4.53 (115.00)

## Instrument Needle Valve

Female Inlet x Male Outlet

Mac-Weld Instrument Needle Valves provide reliable throttling and block capability for high pressure gas or liquid service.

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

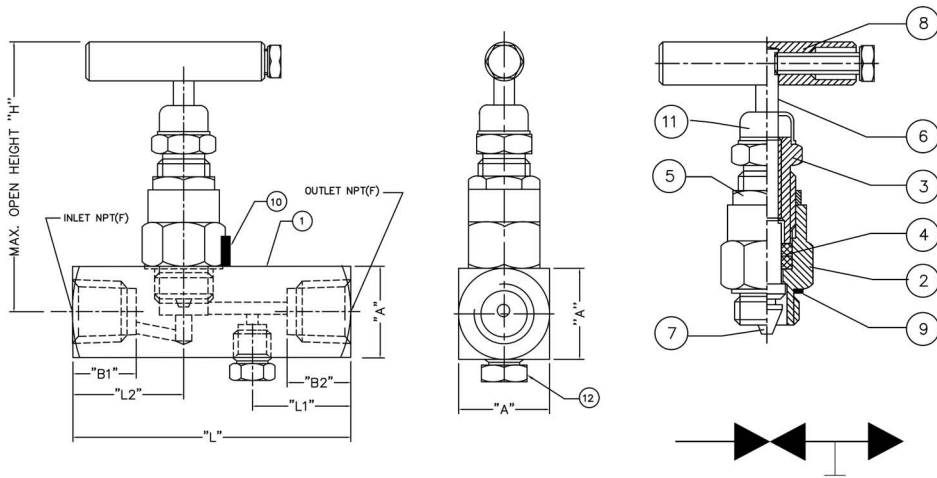
PART INFORMATION										
PART NUMBER	FNPT X MNPT		DIMENSIONS: INCHES (MILIMETRES)							
	END CONNECTION		"A"	"B"	"L"	"O"	"X"	"Y"	"Z"	"H" MAX
	INLET SIZE (NPT)	OUTLET SIZE (NPT)								
NV-L-02F-02M	1/8"	1/8"	1.10 (28.00)	0.39 (10.00)	2.68 (68.00)	0.16 (4.00)	0.13 (3.40)	0.12 (3.00)	0.22 (5.50)	3.43 (87.00)
NV-L-04F-04M	1/4"	1/4"		0.55 (14.00)	3.07 (78.00)		0.17 (4.40)	0.16 (4.00)	0.19 (4.70)	
NV-L-06F-06M	3/8"	3/8"		0.16 (4.00)	0.20 (5.00)		0.20 (5.00)			
NV-L-08F-08M	1/2"	1/2"	1.26 (32.00)	0.75 (19.00)	3.46 (88.00)	0.20 (5.00)	0.18 (4.50)	0.26 (6.50)	0.24 (6.00)	3.50 (89.00)
NV-L-12F-12M	3/4"	3/4"	1.50 (38.00)	0.95 (24.00)	4.13 (105.00)	0.32 (8.00)	0.20 (5.00)	0.31 (7.90)	0.28 (7.00)	3.66 (93.00)
NV-L-16F-16M	1"	1"	1.77 (45.00)			0.39 (10.00)	0.22 (5.60)		0.28 (7.00)	4.53 (115.00)

## Instrument Needle Valve

Female Inlet x Male Outlet

Mac-Weld Instrument Needle Valves provide reliable throttling and block capability for high pressure gas or liquid service.

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

PART INFORMATION										
FNPT X FNPT X FNPT				DIMENSIONS: INCHES (MILIMETRES)						
PART NUMBER	END CONNECTION		DRAIN/VENT c/w PLUG (NPT)	"A"	"B1"	"B2"	"L"	"L1"	"L2"	"H" MAX
	INLET SIZE (NPT)	OUTLET SIZE (NPT)								
NV-L-08F-08F-P	1/2"	1/2"	1/4"	1.26 (32.00)	0.75 (19.00)	0.75 (19.00)	3.07 (78.00)	1.18 (30.00)	1.26 (32.00)	3.50 (89.00)

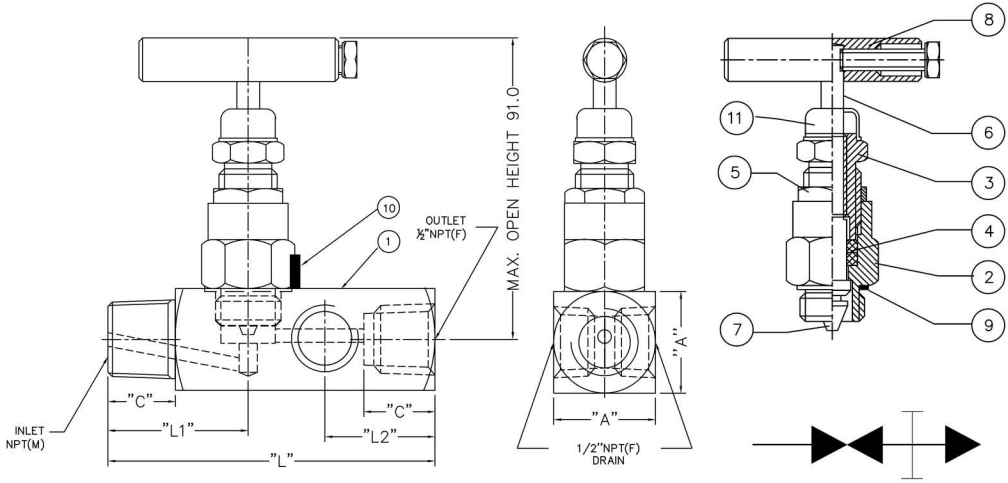


## Gauge Root Valve

Male Inlet x 3 Female Outlet

Mac-Weld's Gauge Root Valve provides an efficient means of mounting gauge and static instrumentation.

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

PART INFORMATION							
MNPT X FNPT X 2 FNPT			DIMENSIONS: INCHES (MILIMETRES)				
PART NUMBER	END CONNECTION		"A"	"C"	"L"	"L1"	"L2"
	INLET SIZE (NPT)	OUTLET SIZE (NPT)					
GV-L-08M-08F	1/2"	1/2"	1.26 (32.00)	0.75 (19.00)	4.33 (110.00)	2.01 (51.00)	1.26 (32.00)
GV-L-12M-08F	3/4"	1/2"	1.26 (32.00)	0.75 (19.00)	4.33 (110.00)	2.01 (51.00)	1.26 (32.00)

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

**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

Body: 414 barg  
Seat: 150 barg

##### Pneumatic

Seat: 40 barg

#### ANSI-B 16.34

Test pressure at 38°C (100°F)

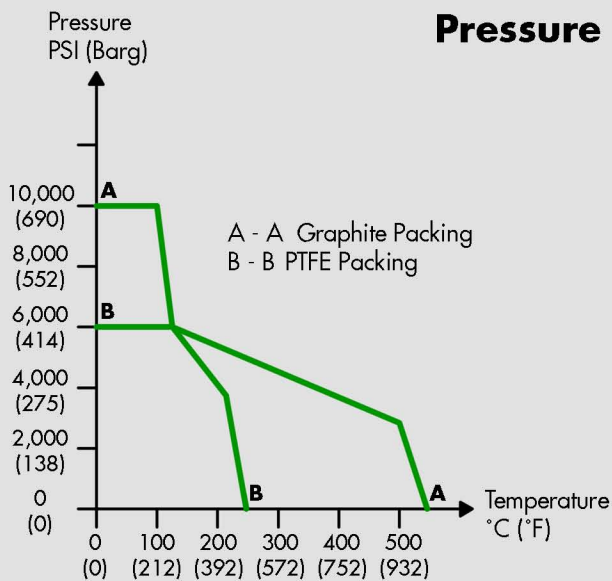
##### Hydrostatic

Body: 630 barg

##### Pneumatic

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 temperatures.