MARSH®

Needle Valves

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Marsh gives you a choice of six valve series for accurate regulation, control and positive shutoff of gases or liquids up to 10,000 psi (70,000 kPa). Marsh Needle Valves are used in oil and gas production, chemical processing, hydraulic equipment, and anywhere a flow of liquids must be carefully regulated. All of Marsh's needle valves are bar-stock machined for rugged and reliable performance. Connection sizes range from ⅛", to 1" NPT in either globe or angle patterns.

When a bubble-tight shutoff is required, Marsh's soft-seat needle valves in alloy steel or 316 stainless steel fulfill this specification. For high pressures or corrosive media, there are metal-to-metal seat needle valves in alloy steel and 316 stainless steel. If extra pressure outlets or a bypass is needed, try the Block/Bleed Terminal Needle Valves. And if the area for the valve opening is limited, Marsh offers a miniature needle valve line.

So for your flow regulation requirements, check out the full range of Marsh Needle Valves to meet your needs and specifications.

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Marsh Metal-to-Metal Seat Needle Valves

316 Stainless Steel and Alloy Steel

These 316 Stainless steel valves are ideally suited for applications where caustic liquids and corrosive media are common. Pressure ratings to 10,000 psi (70,000 kPa).

- "T" bar handle
- Non-galling Teflon* packing
- Roll-formed stem threads for longer life
- Precision-machined stem for perfect concentricity and easier operation
- Bonnet locking pin prevents accidental removal of bonnet
- Integral back-seated stem prevents accidental removal of stem.
- Self centering, non-rotating tip
- Metal-to-metal seat
- Pressure rating, 10,000 psi (70,000 kPa)

Specifications and Description

Body and Bonnet Material
316 stainless steel or ASTM A105 alloy steel.

Stem Material
316 stainless steel.

Pressure/Temperature Rating
10,000 psi (70,000 kPa)
@ 200°F [93°C]

4000 psi (28,000 kPa)
@ 500°F [260°C]

Optional Graphite Packing (HT)
10,000 psi (70,000 kPa)
@ 200°F [93°C]

Alloy steel
1500 psi (10,400 kPa)
@ 850°F [460°C]

316 stainless steel
1500 psi (10,400 kPa)
@ 1000°F [538°C]

Packing
Two piece molded Teflon* (PTFE).

Seat
Metal-to-metal.

Handle
"T" bar; 316 stainless steel or ASTM A108 alloy steel

Connection
National Pipe Thread, meeting specifications of ANSI B2.1.

Finish
Stainless steel is passivated (surface corrosion removed). Alloy steel has a clear zinc dichromate finish.

Stem Retaining Method
All valves feature integral back-seated stem for preventing accidental removal.

Assembly
Bonnet is threaded into body and pinned into place to prevent turning.

* Teflon is a registered trademark of DuPont.
** NACE valves are manufactured of 316 SS.

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Pattern	Connection Size	Part Number		C_v
		316 SST	Alloy	
FFG	1/8" NPT	N1311	N1511	0.4
	1/4" NPT	N1312	N1512	0.4
	3/8" NPT	N1313	N1513	0.9
	1/2" NPT	N1314	N1514	1.1
	3/4" NPT	N1316	N1516	2.3
	1" NPT	N1318	N1518	3.5
MFG	1/4" NPT	N1332	N1532	0.4
	1/2" NPT	N1334	N1534	1.2
FFA	1/8" NPT	N1351	N1551	0.7
	1/4" NPT	N1352	N1552	0.8
	3/8" NPT	N1353	N1553	1.6
	1/2" NPT	N1354	N1554	2.2
	3/4" NPT	N1356	N1556	2.2
	1" NPT	N1358	N1558	2.2
FMA	1/4" NPT	N1372	N1572	0.6
	1/2" NPT	N1374	N1574	1.5

Option	Suffix
Graphite Packing - High Temp.	HT
NACE**	N
Panel Mount	PM

Marsh Soft-Seat Needle Valves

316 Stainless Steel and Alloy Steel

Recommended for applications where bubble-tight seal and shutoff of liquids or gases are required. Pressure rating to 6,000 psi (42,000 kPa). These valves are designed with a replaceable Delrin** sleeve insert for added valve life.

- "T" bar handle
- Non-galling Teflon* packing
- Roll-formed stem threads for longer life
- Precision-machined stem for perfect concentricity, easier operation
- Bonnet locking pin prevents accidental removal of bonnet
- Integral back-seated stem prevents accidental removal of stem.
- Self-centering, non-rotating tip
- Replaceable Delrin** Sleeve insert extends the valve life .
- Soft-seat
- Bubble-tight shutoff of liquids or gases to 6,000 psi (42,000 kPa)

Specifications and Description

Body and Bonnet Material
316 stainless steel or ASTM A105 alloy steel

Stem Material
316 stainless steel

Pressure/Temperature Rating
6000 psi (42,000 kPa)
@ 200°F [93°C]

4000 psi (28,000 kPa) @ 500°F [260°C]

Optional Graphite Packing (HT)
6000 psi (42,000 kPa)
@ 200°F [93°C]

Alloy steel
1500 psi (10,400 kPa)
@ 850°F [460°C]

316 stainless steel
1500 psi (10,400 kPa)
@ 1000°F [538°C]

Packing
Two piece molded Teflon* (PTFE).

Seat
Delrin** Soft-Seat.

Handle
"T" bar; 316 stainless steel or ASTM A108 alloy steel

Connection
National Pipe Thread, meeting specifications of ANSI B2.1.

Finish
Stainless steel is passivated (surface corrosion removed). Alloy steel has a clear zinc dichromate finish.

Stem Retaining Method
All valves feature integral back-seated stem for preventing accidental removal.

Assembly
Bonnet is threaded into body and pinned into place to prevent turning.

* Teflon is a registered trademark of DuPont.
** Delrin is a registered trademark of Dupont.
*** NACE valves are manufactured of 316 SS.

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Pattern	Connection Size	Part Number		C_V
		316 SST	Alloy	
FFG	1/4" NPT	N5312	N5512	0.6
	1/2" NPT	N5314	N5513	0.7
	1" NPT	N5318	N5518	2.0
MFG	1/4" NPT	N5332	N5532	0.8
	1/2" NPT	N5334	N5534	0.9
	1/4" x 1/2" NPT	N5335	N5535	0.8
MFA	1/4" NPT	-	N5572	0.7
	1/2" NPT	-	N5574	0.7

Option	Suffix
Graphite Packing - High Temp.	HT
NACE***	N
Panel Mount	PM

Patterns and Dimensions

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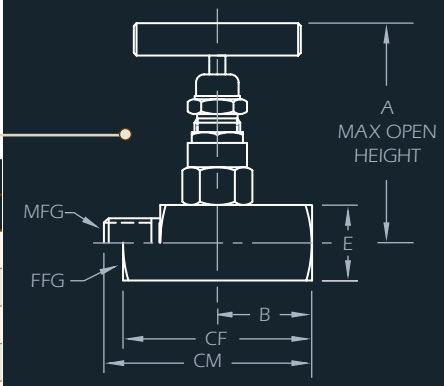
Metal-to-Metal - 316 Stainless Steel or Alloy

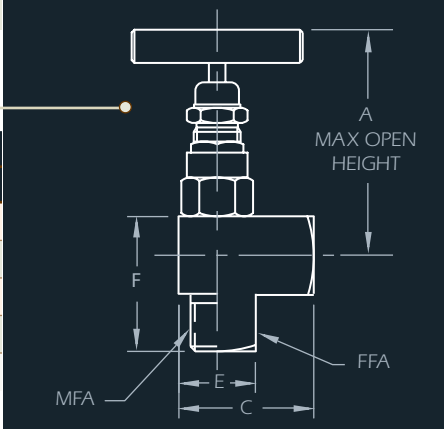
FFG and MFG
Double Female and Male/Female Globe Pattern

Dimension	Nominal Sizes (inches[mm])					
	1/8"	1/4"	3/8"	1/2"	3/4"	1"
A	3.39 [86.0]	3.39 [86.0]	3.46 [88.0]	3.62 [92.0]	3.66 [93.0]	4.41 [112.0]
B		1.18 [30.0]		1.26 [32.0]	1.26 [32.0]	1.69 [43.0]
CF	2.36 [60.0]	2.36 [60.0]	2.68 [68.0]	2.68 [68.0]	2.68 [68.0]	3.15 [80.0]
CM		2.99 [76.0]		3.50 [89.0]	3.50 [89.0]	4.13 [105.0]
E	1.12 [28.5]	1.12 [28.5]	1.26 [32.0]	1.50 [38.0]	1.57 [40.0]	1.77 [45.0]
Orifice	0.17 [4.2]	0.17 [4.2]	0.25 [6.4]	0.28 [7.0]	0.35 [9.0]	0.47 [12.0]



FFA and MFA
Double Female and Male/Female Angle Pattern

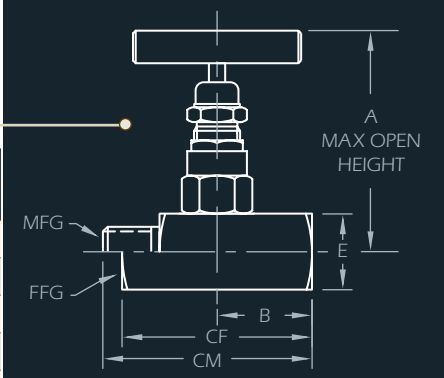
Dimension	Nominal Sizes (inches[mm])					
	1/8"	1/4"	3/8"	1/2"	3/4"	1"
A	3.39 [86.0]	3.39 [86.0]	3.39 [86.0]	3.62 [92.0]	3.62 [92.0]	4.41 [112.0]
C	1.65 [42.0]	1.65 [42.0]	1.65 [42.0]	1.97 [50.0]	1.97 [50.0]	2.36 [60.0]
E	1.10 [28.0]	1.10 [28.0]	1.10 [28.0]	1.26 [32.0]	1.42 [36.0]	1.81 [46.0]
F	1.65 [42.0]	1.65 [42.0]	1.65 [42.0]	1.97 [50.0]	1.97 [50.0]	2.36 [60.0]
Orifice	0.17 [4.2]	0.17 [4.2]	0.25 [6.4]	0.28 [7.0]	0.35 [9.0]	0.47 [12.0]



Soft-Seat - 316 Stainless Steel or Alloy

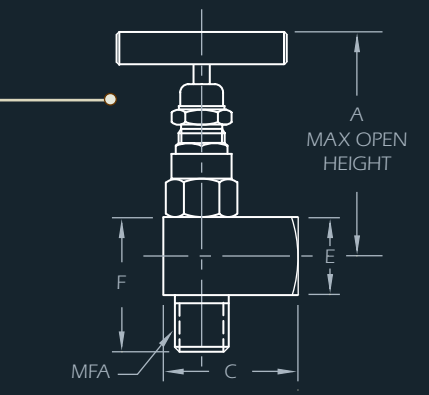
FFG and MFG
Double Female and Male/Female Globe Pattern

Dimension	Nominal Sizes (inches[mm])			
	1/4"	1/2"	1/4" x 1/2"	1"
A	3.39 [86.0]	3.62 [92.0]	3.62 [92.0]	4.41 [112.0]
B	1.18 [30.0]	1.26 [32.0]		1.26 [32.0]
CF	2.36 [60.0]	2.68 [68.0]		3.15 [80.0]
CM	2.99 [76.0]	3.50 [89.0]	3.50 [89.0]	
E	1.12 [28.5]	1.26 [32.0]	1.50 [38.0]	1.77 [45.0]
Orifice	0.17 [4.2]	0.28 [7.0]	0.28 [7.0]	0.47 [12.0]



MFA
Male/Female Angle Pattern

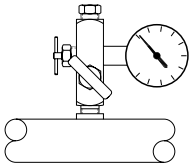
Dimension	Nominal Sizes (inches[mm])	
	1/4"	1/2"
A	3.39 [86.0]	3.62 [92.0]
C	1.65 [42.0]	1.97 [50.0]
E	1.10 [28.0]	1.26 [32.0]
F	1.65 [42.0]	1.97 [50.0]
Orifice	0.17 [4.2]	0.28 [7.0]



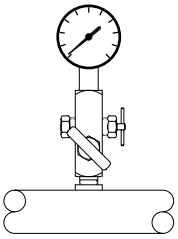
Marsh Block/Bleed Terminal Needle Valves

316 Stainless Steel and Alloy Steel

These valves can function in a wide range of applications: provide extra pressure outlets, permit line samplings, isolate gauges so readings are only taken when needed, reduce costs and increase dependability on a typical gauge leg arrangement by eliminating extra parts and joints, and provide a bypass.



- "T" bar handle
- Non-galling Teflon* packing
- Roll-formed stem threads for longer life.
- Precision-machined stem for perfect concentricity, easier operation.
- Integral back-seated stem prevent accidental removal of stem.
- Hardened 316 stainless steel, self-centering, non-rotating tip
- Carbon steel or 316 SST port plug
- Pressure rating, 10,000 psi (70,000 kPa)



Specifications and Description

Body and Bonnet Material
316 stainless steel or ASTM A105 alloy steel

Stem Material
316 stainless steel

Pressure/Temperature Rating
10,000 psi (70,000 kPa)
@ 200°F [93°C]

4000 psi (28,000 kPa)
@ 500°F [260°C]

Optional Graphite Packing (HT)
10,000 psi (70,000 kPa)
@ 200°F [93°C]

Alloy steel
1500 psi (10,400 kPa)
@ 850°F [460°C]

316 stainless steel
1500 psi (10,400 kPa)
@ 1000°F [538°C]

Packing
Two piece molded Teflon* (PTFE).

Seat
Metal-to-metal.

Handle
"T" bar; 316 stainless steel or ASTM A108 alloy steel

Connection
National Pipe Thread, meeting specifications of ANSI B2.1.

Finish
Stainless steel is passivated (surface corrosion removed). Alloy steel has a clear zinc dichromate finish.

Stem Retaining Method
All valves feature integral back-seated stem for preventing accidental removal.

Assembly
Bonnet is threaded into body and pinned into place to prevent turning.

* Teflon is a registered trademark of DuPont.

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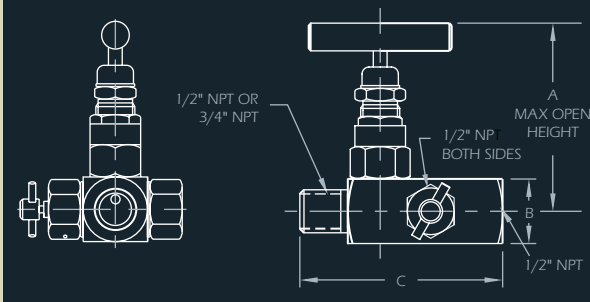
Pattern	Connection Size	Part Number		C_V
		316 SST	Alloy	
Block/ Bleed	1/2" x 1/2" NPT	N8534	N7334	0.4
	3/4" x 1/2" NPT	N8536	N7336	0.4

Option	Suffix
Graphite Packing - High Temp.	HT



Dimension	Nominal Size (inches [mm])	
	1/2"	3/4" x 1/2"
A	3.54 [90.0]	3.54 [90.0]
B	1.50 [38.0]	1.50 [38.0]
C	3.74 [95.0]	3.74 [95.0]
Orifice	0.28 [7.0]	0.28 [7.0]

Marsh Miniature Needle Valves

316 Stainless Steel and Alloy Steel

Miniature size for applications where space is limited. Ideal for test stand circuitry and mobile or general equipment. Body length under 2"; maximum height with valve open is 2½".

- "T" bar handle
- Roll-formed stem threads for longer life.
- Precision-machined stem for perfect concentricity, easier operation.
- Non-galling Teflon* packing
- Bonnet locking pin prevents accidental removal of bonnet
- Metal-to-metal seat
- Pressure rating, 6,000 psi (42,000 kPa)

Specifications and Description

Body and Bonnet Material

316 stainless steel or ASTM A108 alloy steel

Stem Material

316 stainless steel

Bonnet Cap (Protective Cover)

Low density polyethylene, red.

Pressure/Temperature Rating

6000 psi (42,000 kPa) @ 200°F [93°C]

4000 psi (28,000 kPa) @ 500°F [260°C]

Packing

Molded Teflon* (PTFE).

Seat

Metal-to-metal.

Handle

"T" bar; 316 stainless steel or ASTM A108 alloy steel

Connection

National Pipe Thread, meeting specifications of ANSI B2.1.

Finish

Stainless steel is passivated (surface corrosion removed). Alloy steel has a clear zinc dichromate finish.

Stem Retaining Method

All valves feature integral back-seated stem for preventing accidental removal.

Assembly

Bonnet is threaded into body and pinned into place to prevent turning.

*Teflon is a registered trademark of DuPont.

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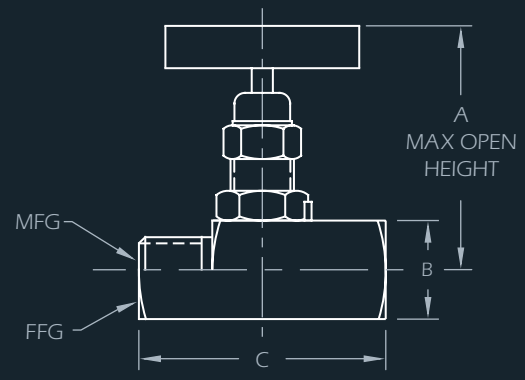
Pattern	Connection Size	Part Number		C_v
		316 SST	Alloy	
FFG	1/8" NPT	N0311	N0511	0.25
	1/4" NPT	N0312	N0512	0.25
MFG	1/4" NPT	N0332	N0532	0.25



Dimension	Nominal Size (inches [mm])	
	1/8"	1/4"
A	2.44 [62.0]	2.44 [62.0]
B	0.87 [22.0]	0.87 [22.0]
C	1.89 [48.0]	1.89 [48.0]
Orifice	0.13 [3.2]	0.13 [3.2]

Flow Coefficient (C_V)

Method of Calculating Flow: The flow coefficient "C_v" of a valve is the flow rate of water (gallons/minute) through a fully opened valve, with a pressure drop of 1 psi across the valve. To find the flow of liquid through a valve from the flow coefficient (C_v), use the following formula:

$$Q_L = C_v \sqrt{\frac{\Delta P}{G}}$$

Q_L = flow rate of liquid (gal/min.)
ΔP = differential pressure across the valve (psi)
G = specific gravity of liquid (for water, G = 1)

To find the flow of gas through a valve, use the following formula:

$$Qg = 61 C_v \sqrt{\frac{P_2\ \Delta P}{g}} \quad \left\{ \begin{array}{l} \text{For noncritical flow} \\ \dfrac{\Delta P}{P_2} \text{ less than } 1.0 \end{array} \right\}$$

Qg = flow rate of gas (CFH at STP)
P = outlet pressure (psi)
g = specific gravity of gas; g air = 1.0000

IMPORTANT: Flow coefficients are dependent on both the size of the valve and the valve pattern itself. Marsh "C_v" factors give flow information for all sizes and patterns so that the designer is able to provide sufficient flow within the system.

For more than a century and a quarter, the Marsh name has been renowned by quality instrumentation. Today that same name and tradition for quality is available to you in a broad line of gauges, needle valves, and thermometers for applications from oil and gas drilling, refining, chemical processing, and hydraulic machinery to refrigeration, machine tools, transportation, instrumentation panels, general equipment, and thousands of other industrial installations. To find out more, contact Marsh or your nearest Marsh distributor.

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