



# Needle Valves



- **ONV5 Series Integral-Bonnet Needle Valves**
- **OBNV6 Series Bar-Stock Needle Valves**
- **OHNV10 Series High Pressure Needle Valves**

# ONV5 Series - Integral-Bonnet Needle Valves

Working Pressure: 5,000(345bar)@100°F (37°C)

## Features

### Stem Designs

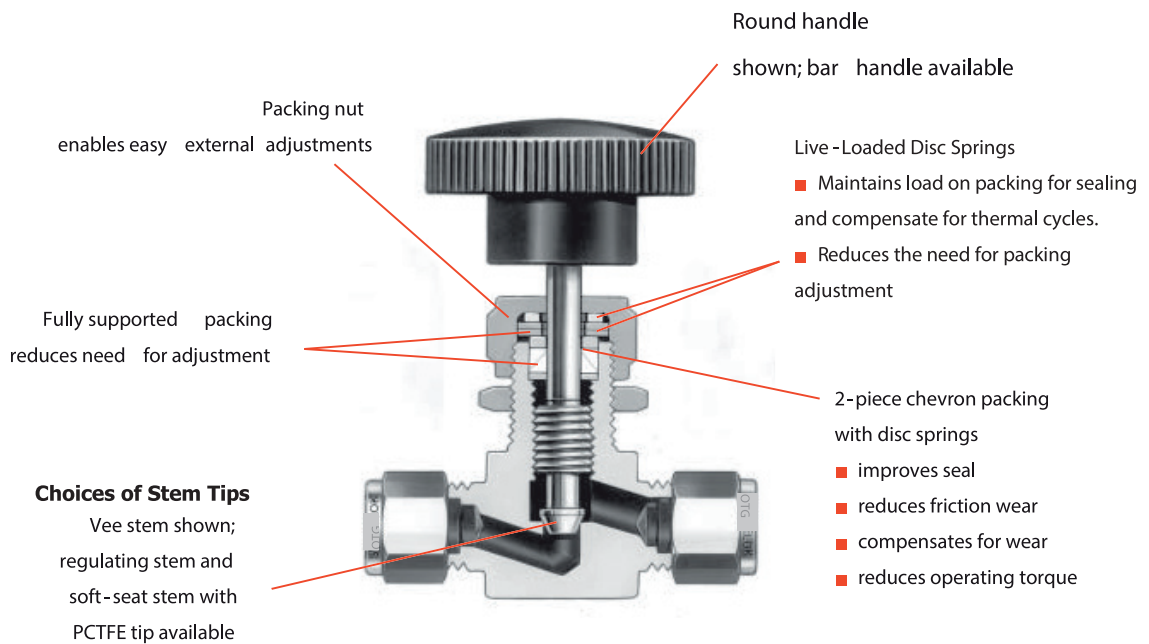
- Vee—all series
- Soft-seat—all series
- Regulating series—ONV1&2, ONV3, ONV4

### Flow Patterns

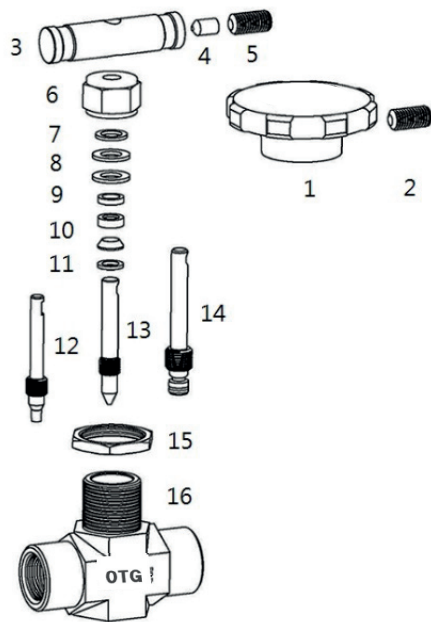
- 2-Way Straight Pattern
- 2-Way Angle Pattern
- 3-Way Flow Pattern



### Live -Loaded Packing System



### Materials of Construction



Components	Valve Body Material		
	Stainless Steel	Brass	Alloy 400
	Material Grade / ASTM Standard		
1	Round Handle Glass Nylon with Brass insert		
2	Set Screw Stainless Steel		
3	Optional Bar Handle SS316/A276		
4	Handle Pin Stainless Steel		
5	Set Screw Stainless Steel		
6	SS316 / A276	C36000/B16 C3604/JIS H3250	Alloy R-405/B164
7	Gland 304 SS/A240, A167		
8	Disc Spring (2)(3) SUS304 CP / JIS G4305 2 Springs: ONV5A, ONV5B Series 3 Springs: ONV5C, ONV5D Series		
9	Packing Gland SS316 / A276		
10	Chevron Packing (2) PTFE / D1710		
11	Lower Gland SS316 / A276		Alloy R-405/B164
12	Hard Chrome-plated SS316/A276	SS316 / A276	Alloy R-405/B164
13			
14	Soft-Seat Stem Non-rotating Stem Tip PCTFE/D1430		
15	SS316 / A276	C36000/B16 C3604/JIS H3250	SS316
16	F316 / A182	C37700/B283 C3771/JIS H3250	Alloy 400/B564

- Wetted parts listed in **orange color**.
- Wetted parts** are lubricated with Fluorocarbon-based lubricant.

### Pressure & Temperature Ratings

Valve with PCTFE Soft-Seat Stem reduce the maximum temperature rating to 200°F(93°C).

The standard PTFE packing valve with Regulating or Vee Stem has no change in the temperature rating.

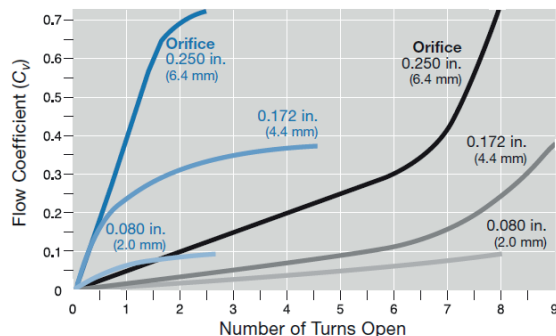
500°F (315°C) max with PEEK packing.

Material	SS316	Brass	Alloy 400	
ASME Material Group	TABLE 2-2.2	N/A	N/A	
ASME CLASS Rating	2080	N/A	N/A	
Temperature	Working Pressure, psig (bar)			
°F	°C			
- 65 to -20	-53 to -28	5000 (345)	3000 (207)	3000 (207)
-20 to 100	-28 to 37	5000 (345)	3000 (207)	3000 (207)
200	93	4293 (296)	2353 (162)	2640 (181)
300	148	3877 (267)	2059 (142)	2470 (170)
350	176	3719 (256)	1471 (101)	2430 (167)
400	204	3562 (246)	392 (27)	2390 (164)
450	232	3437 (237)	-	2380 (163)
500	260	3310(228)	-	2375 (163)
600	315	3130(215)	-	-

### Flow Data at 100°F (37°C) Flow Coefficient at Turns Open

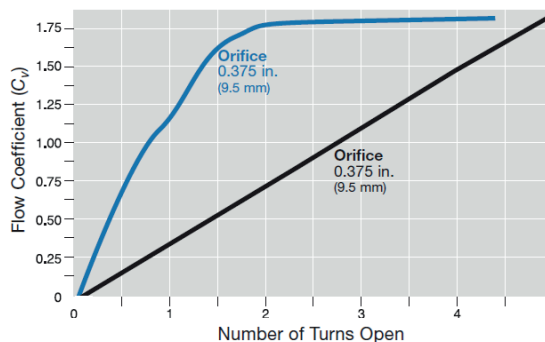
#### ONV5A, ONV5B and ONV5C Series

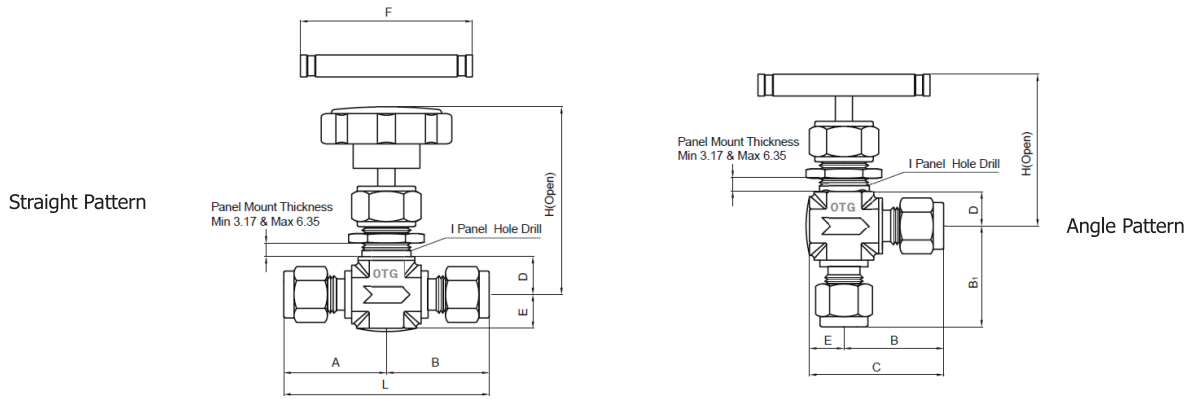
— Vee and Soft-Seat Stem — Regulating Stem



#### ONV5D Series

— Vee and Soft-Seat Stem — Regulating Stem





### Ordering Information and Dimensions

Basic Ordering Number	End Connections Inlet/Outlet	Cv	Orifice, mm (in.)	Dimensions, mm (in.)												
				L	A & B	B1	C	H	E	D	F	I				
ONV5A-	O-2T-	1/8 in. OTG-Lok	2.0 (.080)	49.3 (1.94)	24.9 (0.98)	32.8 (1.29)	63.5 (2.50)	7.9 (0.31)	11.2 (0.44)	25.4 (1.00)	11.9 (0.47)					
	O-3M-	3 mm OTG-Lok									12.2 (0.48)					
	F-2N-	1/8 in. Female NPT									47.8 (1.88)	23.9 (0.94)	31.8 (1.25)	26.9 (1.06)		
	M-2N-	1/8 in. Male NPT									38.1 (1.50)	19.1 (0.75)				
	MO-2N2T-	1/8 in. Male NPT to 1/8 in. OTG-Lok									43.9 (1.73)	24.9 (0.98)	19.1 (0.75)	32.8 (1.29)	11.9 (0.47)	
ONV5B-	O-4T-	1/4 in. OTG-Lok	4.4 (.172)	57.6 (2.27)	28.7 (1.13)	38.4 (1.51)	63.5 (2.50)	9.7 (0.38)	11.2 (0.44)	35.1 (1.38)	13.5 (0.53)					
	O-6M-	6 mm OTG-Lok														
	O-8M-	8 mm OTG-Lok														
	F-2N-	1/8 in. Female NPT										41.1 (1.62)	20.6 (0.81)	30.2 (1.19)		
	M-2N-	1/8 in. Male NPT										50.0 (1.97)	24.9 (0.98)	34.5 (1.36)		
	M-4N-	1/4 in. Male NPT														
	MO-4N4T-	1/4 in. Male NPT to 1/4 in. OTG-Lok										49.5 (1.95)	28.7 (1.13)	24.9 (0.98)	38.4 (1.51)	
	ONV5C-	O-6T-										3/8 in. OTG-Lok	0.73	6.4 (.250)	65.5 (2.58)	32.8 (1.29)
O-8T-		1/2 in. OTG-Lok	71.1 (2.80)	35.6 (1.40)	48.3 (1.90)											
O-10M-		10 mm OTG-Lok	66.0 (2.60)	33.0 (1.30)	45.7 (1.80)											
O-12M-		12 mm OTG-Lok	71.1 (2.80)	35.6 (1.40)	48.3 (1.90)											
F-4N-		1/4 in. Female NPT	53.8 (2.12)	26.9 (1.06)	39.6 (1.56)											
F-4R-		1/4 in. Female ISO Tapered														
M-6N-		3/8 in. Male NPT	62.5 (2.25)	28.4 (1.12)	41.1 (1.62)											
MO-4N6T-		1/4 in. Male NPT to 3/8 in. OTG-Lok	61.5 (2.42)	32.8 (1.29)	45.5 (1.79)											
MO-6N6T-		3/8 in. Male NPT to 3/8 in. OTG-Lok														
MO-6N8T-		3/8 in. Male NPT to 1/2 in. OTG-Lok				64.0 (2.52)	35.6 (1.40)	48.3 (1.90)								
MF-4N-		1/4 in. Male NPT to 1/4 in. Female NPT	55.6 (2.19)	26.9 (1.06)	39.6 (1.56)											
ONV5D-		O-8T-	1/2 in. OTG-Lok	1.8	9.5 (.375)	96.5 (3.80)	48.3 (1.90)	67.3 (2.65)	99.3 (3.91)	19.1 (0.75)	19.1 (0.75)	76.2 (3.00)				
	O-12T-	3/4 in. OTG-Lok														
	O-12M-	1/2 mm OTG-Lok														
	O-18M-	18mm OTG-Lok														
	F-6N-	3/8 in. Female NPT	76.2 (3.00)										38.1 (1.50)	57.2 (2.25)	98.6 (3.88)	
	F-6R-	3/8 in. Female ISO Tapered														
	F-8N-	1/2 in. Female NPT														
	F-8R-	1/2 in. Female ISO Tapered														
	M-8N-	1/2 in. Male NPT														
MF-8N-	1/2 in. Male NPT to 1/2 in. Female NPT															

\* Dimensions are shown with OTG-Lok nuts finger-tight.  
Dimensions are for reference only and are subject to change.

### Ordering Information

Select applicable valve pattern, options and body material from the designators listed below.

ONV5Cc	O	8T	A	R	BH	SS
<b>Valve Series</b>	<b>Connection Type</b>	<b>Connection Size</b>	<b>Flow Pattern</b>	<b>Stem Type</b>	<b>Option</b>	<b>Body Material</b>
			<ul style="list-style-type: none"> <li>▪ Nil: Straight Pattern</li> <li>▪ A: Angle Pattern</li> </ul>	<ul style="list-style-type: none"> <li>▪ Nil: Standard Vee Stem</li> <li>▪ R: Regulating Stem</li> <li>▪ K: PCTFE Soft Seat Stem</li> </ul>	<ul style="list-style-type: none"> <li>▪ Nil: Standard</li> <li>▪ BH: Bar Handle</li> <li>▪ PK: PEEK Packing</li> <li>▪ SG: Sour Gas Service</li> </ul>	<ul style="list-style-type: none"> <li>▪ SS: SS316</li> <li>▪ BS: Brass</li> <li>▪ MO: Alloy 400</li> </ul>

# OBNV6 Series - Bar Stock Needle Valves

Working Pressure: 6,000(413bar)@100°F (37°C)

## Features

### Integral Bonnet Body

- One-Piece construction out of cold drawn bar.
- Compact design.
- High pressure application.

### Flow Patterns

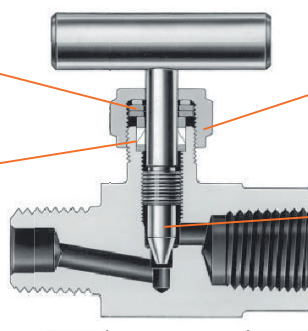
- 2-Way Straight Pattern.
- 2-Way Angle Pattern.

### Live-Loaded Disc Springs

- Maintains load on packing for sealing and compensates for thermal cycles.
- Reduce the need for packing adjustment.

### Chevron Packing

- 2-Piece packing on stem improves sealing integrity.



### Packing Nut

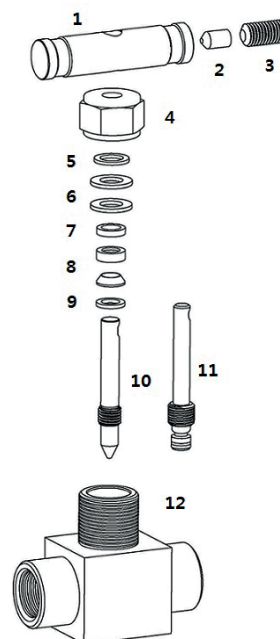
- Allows external packing adjustment.

### Choices of Stem Tips

- Standard Vee Stem.
- Soft-Seat Stem with PCTFE tip available.

## Materials of Construction

Components		Valve Body Material
		Material Grade / ASTM Standard
1	Bar Handle	SS316 / A276
2	Handle Pin	Steel / A108
3	Set Screw	Stainless Steel
4	Packing Nut	SS316 / A276
5	Gland	SS316 / A276
6	Disc Spring (2)(3)	S17700/A693 OBNV6A Series: 2 Springs OBNV6B Series: 3 springs
7	Upper Gland	SS316 / A276
8	Chevron Packing (2)	PTFE / D1710 (Optional PEEK)
9	Lower Gland	SS316 / A276
10	Vee Stem	Hard Chrome-plated SS316/A276
11	Soft-Seat Stem	
	Non-rotating Stem Tip	PCTFE/D1430
12	Body	SS316 / A276



Wetted parts listed in orange color.

Wetted parts are lubricated with Fluorocarbon-based.

## Pressure-Temperature Ratings

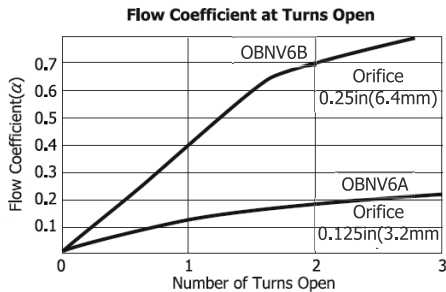
- Valves with PCTFE Soft-Seat Stem reduce the maximum temperature rating to 200 °F (93 °C).
- The standard PTFE packing valve with Regulating or Vee Stem has no change in the temperature rating.

## Flow Data

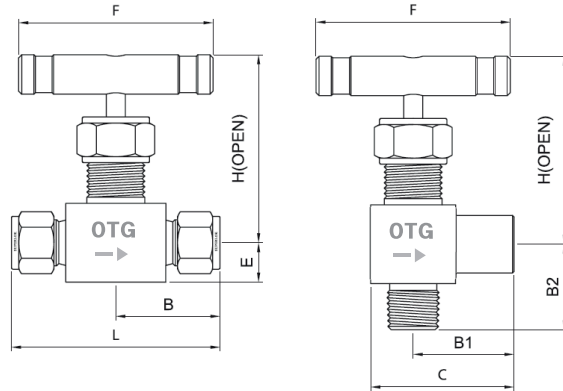
Cv are measured at the valve. Therefore restrictions at end connections may reduce flow.

## Number of Handle Turns - Cv

@100 °F (37 °C)



Material		SS316
ASME Material Group		TABLE 2-2.2
ASME CLASS Rating		2500
Temperature		Working Pressure, psig (bar)
°F	°C	
- 65 to 100	-53 to 37	6000 (413)
200	93	5160 (355)
300	148	4660 (321)
350	176	4470 (307)
400	204	4280 (294)
450	232	4130 (284)



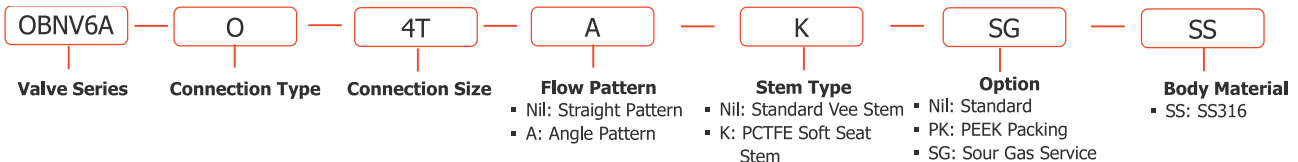
## Ordering Information and Dimensions

Basic Ordering Number	End Connections Inlet/Outlet	Cv	Orifice, mm (in.)	Dimensions, mm (in.)							
				L	B	B1	B2	C	H	E	F
OBNV6A-	O-4T-SS	0.21	3.2 (.125)	62.5 (2.46)	31.2 (1.23)	28.7 (1.13)	29.5 (1.16)	39.9 (1.57)	42.2 (1.66)	10.7 (0.42)	44.4 (1.75)
	F-4N-SS			47.8 (1.88)	23.9 (1.25)	25.4 (1.00)	25.4 (1.00)	36.6 (1.44)			
	F-4R-SS			49.3 (1.94)	24.6 (0.97)	-	-	-			
	M-4N-SS			48.5 (1.91)	24.3 (0.96)	25.4 (1.00)	26.2 (1.03)	36.6 (1.44)			
	MF-4N-SS			-	-	28.7 (1.13)	25.4 (1.00)	39.9 (1.57)			
	MO-4N4T-SS			-	-	-	-	-			
OBNV6B-	O-6T-SS	0.73	6.4 (.250)	78.2 (3.08)	39.1 (1.54)	-	-	-	58.7 (2.31)	16.8 (0.66)	63.5 (2.50)
	O-8T-SS			83.8 (3.30)	41.9 (1.65)	-	-	-			
	F-6N-SS			63.5 (2.50)	31.8 (1.25)	35.8 (1.41)	35.8 (1.41)	52.3 (2.06)			
	F-8N-SS			64.8 (2.55)	32.4 (1.28)	35.8 (1.41)	31.0 (1.22)	52.3 (2.06)			
	F-8R-SS			63.5 (2.50)	31.8 (1.25)	-	-	-			
	MF-6N-SS			-	-	35.8 (1.41)	31.0 (1.22)	52.3 (2.06)			
	MF-8N-SS			-	-	-	35.8 (1.41)	-			
	MF-12N8N-SS			-	-	-	-	-			

\* Dimensions are shown with OTG-Lok nuts finger-tight. Dimensions are for reference only and are subject to change.

## Ordering Information

To complete your ordering number, insert the designator of options into the basic ordering number.



# OHNV10 Series - High Pressure Needle Valves

**Working Pressure: 10,000 psig (689 bar) @100° F (37° C)**

## Features

**Temperature rating** from -54°C (-65 ° F) to 232 ° C (450 ° F) with standard PTFE packaging and up to 648 ° C (1200 ° F) with optional Graphite packing.

### Body Construction

Construction out of robust cold-drawn Hex bar.

### Bar handle

Allows low-torque valve actuation.

### Packing Below Stem Threads

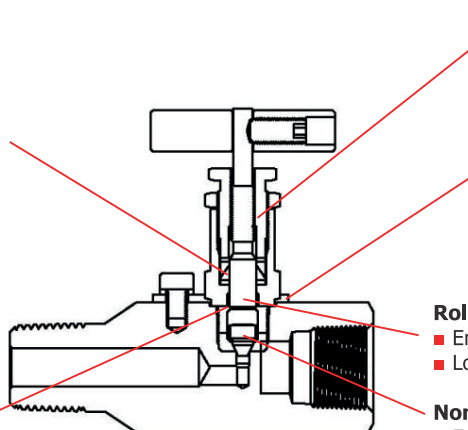
Isolates stem threads from system fluid and lubricant washout.

### Two-Piece Chevron PTFE Packing Design

Provides highly qualified sealing maintain ability.

### Stem Back Seating Design

- provides positive back stop and back sealing in valve full open position.
- Prevents stem blowout.
- In valve in full open position, prevents a leakage through the bonnet when packing fails.



### Packing Bolt

Permits external packing adjustment maintaining the valve in-line.

### Sturdy Locking Plate

Holds the bonnet valve to the body at the factory-fastened level.

### Roll Stem Threads and Hard-Chrome Plated

- Enhances cycle life.
- Low torque actuation.

### Non-Rotating Vee Stem

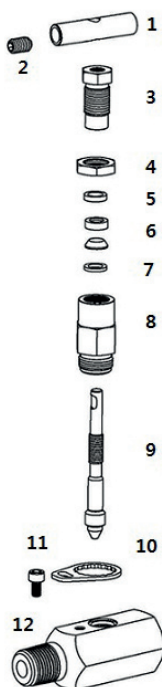
- Ensures repetitive leak-tight shutoff. Non-rotating stem tip at closure is used for long-life and leak-tight shutoff.
- Protects the valve seat from damage.

### Grafoil Packing

Grafoil is a high temperature packing material that requires a load to seal.

Grafoil is rated to the maximum of 973 °F (523 °C) for air service. In steam, it is rated to the maximum temperature of 1200 °F (648 °C). Grafoil packing is not for use with pneumatic actuating valves.

## Materials of Construction



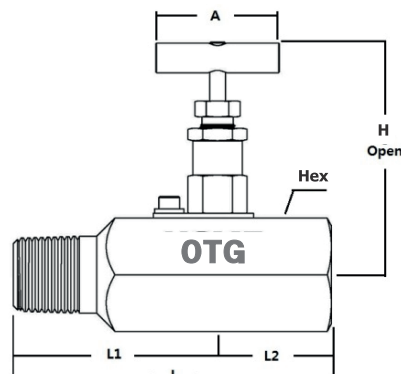
Components		Valve Body Material
		Stainless Steel
		Material Grade / ASTM Standard
1	Bar Handle	SS316 / A276
2	Set Screw	Stainless Steel
3	Packing Bolt	SS316 / A276
4	Locking Nut	
5	Upper Gland	
6	<b>Packing</b>	Standard Chevron PTFE / D1710 Optional Grafoil®
7	<b>Lower Gland</b>	SS316/A276
8	<b>Bonnet</b>	SS316/A276
9	<b>Vee Stem</b>	Hard Chrome-plate SS316/A276
	<b>Non-Rotating Stem Tip</b>	SS630/A564 (17-4PH)
10	Locking Plate	Stainless Steel
11	Locking Bolt	
12	<b>Hex Body</b>	SS316 / A276

Wetted components and lubricants are listed in **Orange color**.

**Lubricant:** Fluorocarbon-based.

### Pressure-Temperature Ratings

Body Material		SS316		Steel
Packing Material		Grafoil	PTFE	PTFE
Temperature		Working Pressure,		
°F	°C	psig (bar)		
- 65 to -20	-53 to -28	10000 (689)	10000 (689)	-
-20 to 100	-28 to 37	10000 (689)	10000 (689)	10000 (689)
200	93	9290 (640)	9290 (640)	9290 (640)
300	148	8390 (578)	8390 (578)	8390 (578)
350	176	8045 (554)	8045 (554)	8045 (554)
400	204	7705 (530)	7705 (530)	-
450	232	7435(512)	7435 (512)	-
500	260	7165 (493)	-	-
600	315	6770 (466)	-	-
700	371	6480 (446)	-	-
800	426	6230 (429)	-	-
900	482	5905 (406)	-	-
1000	537	5450 (375)	-	-
1100	593	4835 (333)	-	-
1200	648	3085 (212)	-	-



### Ordering Information and Dimensions

Basic Ordering No.	End Connection Inlet / Outlet	Orifice mm (in.)	Cv	Dimensions, mm (in.)						
				L	L1	L2	Hex	A	H	
OHNV10A-	O-4T-SS	1/4 in. OTG-Lok	3.2 (0.126)	0.21	83.0 (3.27)	41.5 (1.63)	41.5 (1.63)	32.00 (1.26)	45.0 (1.77)	67.2 (2.65)
	O-6T-SS	3/8 in. OTG-Lok			86.2 (3.39)	43.1 (1.70)	43.1 (1.70)			
	O-8T-SS	1/2 in. OTG-Lok			92.0 (3.62)	46.0 (1.81)	46.0 (1.81)			
	F-4N-SS	1/4 in. Female NPT			62.0 (2.44)	31.0 (1.22)	31.0 (1.22)			
	F-6N-SS	3/8 in. Female NPT			70.0 (2.76)	35.0 (1.38)	35.0 (1.38)			
	F-8N-SS	1/2 in. Female NPT			76.2 (3.00)	38.1 (1.50)	38.1 (1.50)			
	MF-8N-SS	1/2 in. Male to 1/2 in. Female NPT			88.9 (3.50)	44.45 (1.75)	44.45 (1.75)			
OHNV10B-	F-12N-SS	3/4 in. Female NPT	5.0 (0.196)	0.6	93.9 (3.70)	46.95 (1.85)	46.95 (1.85)	41.0 (1.62)	50.0 (1.97)	83.9 (3.3)
OHNV10C-	F-16N-SS	1 in. Female NPT			46.0 (1.81)	92.9 (3.66)				

\* Dimensions are shown with OTG-Lok nuts finger-tight.  
Dimensions are for reference only and are subject to change.

### Ordering Information

To complete your ordering number, insert the designator of options into the basic ordering number.



### Factory Test and Cleaning

- Every valve is factory tested with nitrogen @1000 psig (69 bar) for leakage at the seat to a max. allowable leak rate of 0.1 std cm3/min.
- Packing seal is tested to no detectable leakage with a liquid leak detector.
- Every valve is cleaned and packaged in accordance with OTG's cleaning standard OCS-01.

### Operation

- Valves that have not been cycled for a period of time may have a higher initial actuation torque.
- Packing adjustment may be required in service, especially for soft-seat stem to compensate its physical compression.
- Soft seat stem is recommended for gaseous and low density fluids, the shut-off torque should not exceed 7.9 Um. (70lb. in.).

### Options

#### Sour Gas Service

The materials of wetted components are selected in accordance with NACE MR0175/ISO 15156-2/3 or NACE MR0103 depending on the application. To order, add "SG" to the valve ordering number.

#### Grafoil Packing

Grafoil is a high temperature packing material that requires a load to seal. Grafoil is rated to the maximum of 973 °F (523 °C) for air service. In steam, it is rated to the maximum temperature of 1200 °F (648 °C). Grafoil packing is not for use with pneumatic actuating valves.

### Safe Valve Selection

The selection of a valve for any application or system must be considered to ensure safe performance. Valve rating, valve function, material compatibility, proper installation, operation and maintenance remain the sole responsibility of the system designer and the user. OTG Corporation accepts no liability for any improper selection, compatibility, installation, operation or maintenance.