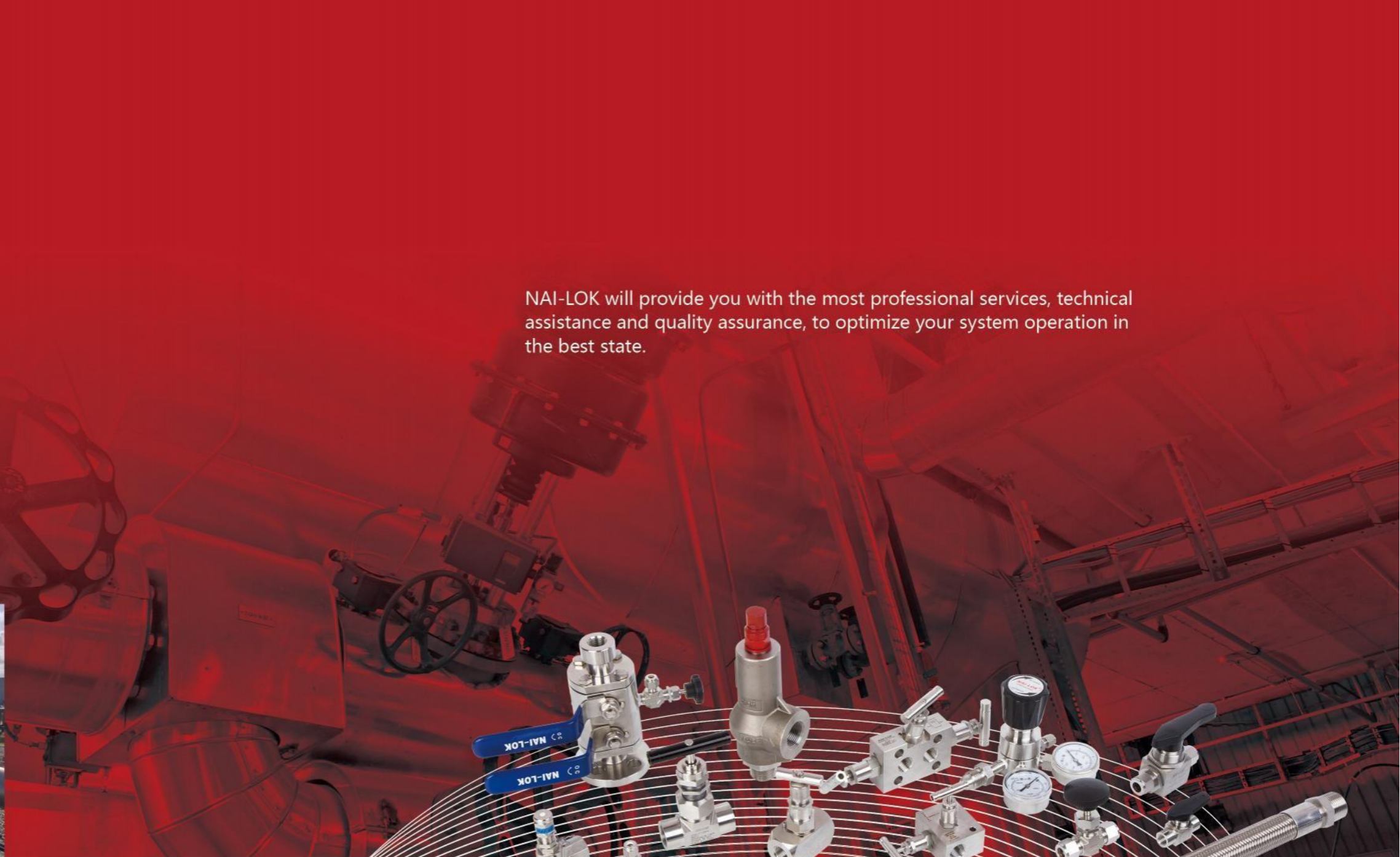


NAI-LOK will provide you with the most professional services, technical assistance and quality assurance, to optimize your system operation in the best state.



Authorized NAI-LOK  
Distributor in your territory



Gas Concepts

[sales@gasconcepts.co.za](mailto:sales@gasconcepts.co.za)

**NAI-LOK**<sup>®</sup> **NLK**  
Advanced Control Technology

[www.nailokgroup.com](http://www.nailokgroup.com)

# ABOUT US

NAI-LOK brand was established in Shanghai in 2000, we focus on the production, research and development, sales of instrumentation valves, fittings, hose & tubing. We have two plants in China and our headquarter is located in Shanghai. We manufacture valves in special materials such as HASTELLOY®, titanium, nickel alloys, INCOLOY®, MONEL®, super-duplex, corrosion resistant alloys and urea grade materials. We have the world's advanced processing equipment, testing equipment, class 1000 grade clean room to ensure quality control and on time delivery.

We strive to develop, serve global customers and provide stable and reliable products.

We have the capability to manufacture and supply 4 different product categories, including:

- General Instrumentation Valves and Fittings
- High Purity & Ultra High Purity Products- GPTECH UHP PRODUCTS
- Hose & Tubing
- Special Alloy Valves

## NAI-LOK INDUSTRIAL CO.,LTD

### Head Quarter & 1st Factory

Zetian Industrial Part, No.1121, Wangyuan South Road, Nanqiao Town, Fengxian District, Shanghai, China 201400



> 1st Factory

### 2st Factory

No.397 Damuqiao Road, Shaxi Town, Taicang City, Jiangsu Province, China 215421



> 2st Factory



### Accredited Quality

We have passed ISO9001 quality management system certification, domestic TS security certification, CE.



### Industry-Leading Experience

A primary focus of NAILOK is continuously investing in state-of-the-art machinery according to the latest technology

## Your long-term business partner

With engineering, production, assembling and testing under one roof, we manufacture valves you urgently need in a very limited time frame. Flexible at all times, especially for emergency valve requirements.

- ✓ Inconel Fittings
- ✓ Hastelloy Manifolds Valve
- ✓ Monel Fittings
- ✓ Hastelloy Ball Valves



## Major Applications

NAI-LOK is a valve and pipeline system solutions provider, supplying excellent technologies, products and services with proven quality. NAILOK's products are applied to a wide range of environments in almost all industries, including measuring and instrumentation systems, process control systems, cyogenic piping systems, high purity gas lines, special harsh conditions.



We strive to develop, serve global customers and provide stable and reliable products.

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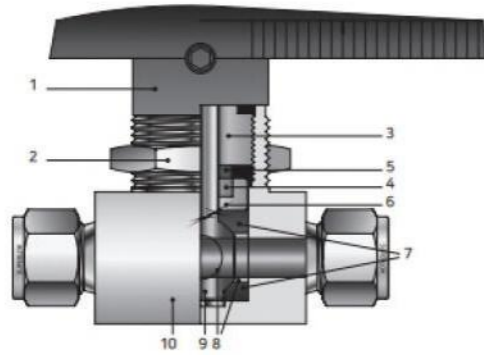


**Features of BG Series**

- Pressure up to 3000 psig (206 bar)
- Lowest dead space design
- One-piece body - reduces the number of potential leak points.
- Bi-directional flow
- Nylon directional handle - indicates the flow through the valve.
- Panel mounting nut - is standard and permits valve to panel or actuator.
- Available in pneumatic

**Standard Materials of Construction**

NO	Component	Material Grade/ASTM Specification
		Stainless Steel
1	Handle	Nylon
	Set Screw	Stainless Steel
2	Panel Nut	Stainless Steel
3	Packing Bolt	SS316/A276
4	Packing	PTFE
5	Upper Packing Gland	SS316/A276
6	Lower Packing Gland	
7	Upper & Lower Ball Seat	PTFE
8	Side Discs	SS316-Sintered
	Side Ring	
9	Ball Stem	SS316/A276
10	Body	SS316/A182



**Specifications**

- Pressure rating : up to 3000psig (206 bar)@70 °F (21°C)
- Temperature rating : 50 to 150 °F (10 to 65°C) with PTFE seat and packing

**Testing**

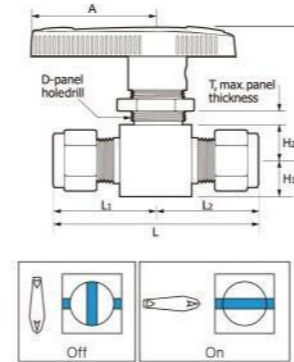
Each valve is tested with nitrogen at 1000psig (69bar) to maximum allowable leak rate of 0.1 SCCM.

**Safety in Valve Selection**

Proper installation, materials compalibility, operation and maintenance of these valves are the responsibility of the user. The total system design must be taken into consideration to ensure optimal performance and safety.

**2-way On-off Valves**

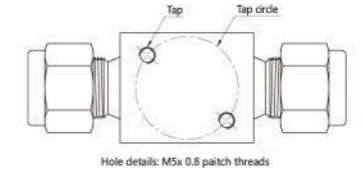
In-line pattern



Angle pattern



Bottom mounting option (In-line Only)



**Ordering Information and Table of Dimensions**

Basic Ordering Number	End Connections		Orifice		Cv		Dimensions mm (in.)										
	Inlet	Outlet	mm	in.	Inline	Angle	L	L1	L2	H3	H2	H1	A	T <sup>o</sup>	D	H	W
BG-	N-4T	1/4" NAI-LOK	3.2	0.125	0.6	0.35	56.1(2.21)	27.9(1.10)	27.9(1.10)	27.2(1.07)	8.6(0.34)	8.6(0.34)	28.4(1.12)	6.4(1/4)	15.1(19/32)	34.5(1.36)	14.7(0.58)
	N-6M	6mm NAI-LOK	3.2	0.125	0.6	0.35	56.1(2.21)	27.9(1.10)	27.9(1.10)	27.2(1.07)	8.6(0.34)	8.6(0.34)	28.4(1.12)	6.4(1/4)	15.1(19.32)	34.5(1.36)	14.7(0.58)
	F-2N	1/8" Female NPT	3.2	0.125	0.5	0.3	41.1(1.62)	20.6(0.81)	20.6(0.81)	20.6(0.81)	8.6(0.34)	8.6(0.34)	28.4(1.12)	6.4(1/4)	15.1(19/32)	34.5(1.36)	14.7(0.58)
	N-4T	1/4" NAI-LOK	4.8	0.187	1.5	0.9	65.5(2.58)	32.8(1.29)	32.8(1.29)	32.8(1.29)	11.2(0.44)	11.2(0.44)	38.9(1.53)	4.8(3/16)	19.8(25/32)	39.6(1.56)	19.8(0.78)
	N-6M	6mm NAI-LOK	4.8	0.187	1.4	0.9	60.7(2.39)	30.5(1.20)	30.5(1.20)	29.7(1.17)	11.2(0.44)	11.2(0.44)	38.9(1.53)	4.8(3/16)	19.8(25/32)	39.6(1.56)	19.8(0.78)
	N-8M	8mm NAI-LOK	4.8	0.187	1.5	0.9	62.5(2.46)	31.2(1.23)	31.2(1.23)	30.5(1.20)	11.2(0.44)	11.2(0.44)	38.9(1.53)	4.8(3/16)	19.8(25/32)	39.6(1.56)	19.8(0.78)
	F-4N	1/4" Female NPT	4.8	0.187	0.9	0.75	52.3(2.06)	26.2(1.03)	26.2(1.03)	26.2(1.03)	11.2(0.44)	11.2(0.44)	38.9(1.53)	4.8(3/16)	19.8(25/32)	39.6(1.56)	19.8(0.78)
	M-4N	1/4" Male NPT	4.8	0.187	1.2	0.75	50.8(2.00)	25.4(1.00)	25.4(1.00)	26.2(1.03)	11.2(0.44)	11.2(0.44)	38.9(1.53)	4.8(3/16)	19.8(25/32)	39.6(1.56)	19.8(0.78)
	N-6T	3/8" NAI-LOK	7.1	0.281	6.0	2.0	77.5(3.05)	38.6(1.52)	38.6(1.52)	38.2(1.5)	14.2(0.56)	14.2(0.56)	50.8(2.00)	9.5(3/8)	28.6(1-1/8)	52.6(2.07)	28.4(1.12)
	N-10M	10mm NAI-LOK	7.1	0.281	6.0	2.0	78.0(3.07)	38.9(1.53)	38.9(1.53)	39(1.53)	14.2(0.56)	14.2(0.56)	50.8(2.00)	9.5(3/8)	28.6(1-1/8)	52.6(2.07)	28.4(1.12)
	F-4N	1/4" Female NPT	7.1	0.281	3.0	1.7	63.5(2.50)	31.8(1.25)	31.8(1.25)	31.8(1.25)	14.2(0.56)	14.2(0.56)	50.8(2.00)	9.5(3/8)	28.6(1-1/8)	52.6(2.07)	28.4(1.12)
	F-6N	3/8" Female NPT	7.1	0.281	2.6	1.5	63.5(2.50)	31.8(1.25)	31.8(1.25)	31.8(1.25)	14.2(0.56)	14.2(0.56)	50.8(2.00)	9.5(3/8)	28.6(1-1/8)	52.6(2.07)	28.4(1.12)
	N-8T	1/2" NAI-LOK	10.3	0.406	12.0	4.6	99.6(3.92)	49.8(1.96)	49.8(1.96)	49.8(1.96)	17.5(0.69)	17.5(0.69)	76.2(3.00)	9.5(3/8)	38.1(1-1/2)	66.3(2.61)	38.1(1.50)
	N-12T	3/4" NAI-LOK	10.3	0.406	6.4	3.8	99.6(3.92)	49.8(1.96)	49.8(1.96)	49.5(1.94)	17.5(0.69)	17.5(0.69)	76.2(3.00)	9.5(3/8)	38.1(1-1/2)	66.3(2.61)	38.1(1.50)
	N-12M	12mm NAI-LOK	9.5	0.375	12.0	4.6	99.6(3.92)	49.8(1.96)	49.8(1.96)	48.7(1.91)	17.5(0.69)	17.5(0.69)	76.2(3.00)	9.5(3/8)	38.1(1-1/2)	66.3(2.61)	38.1(1.50)
	F-8N	1/2" Female NPT	10.3	0.406	6.3	3.5	79.2(3.12)	39.6(1.56)	39.6(1.56)	39.6(1.56)	17.5(0.69)	17.5(0.69)	76.2(3.00)	9.5(3/8)	38.1(1-1/2)	66.3(2.61)	38.1(1.50)

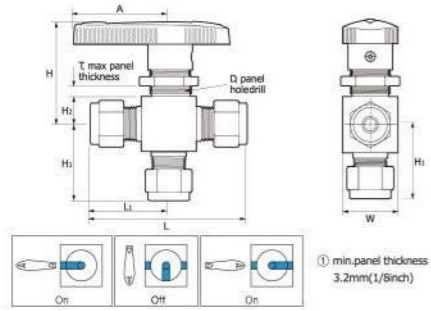
All dimensions shown are for reference only and are subject to change.

**Pneumatic Actuator Ball Valve**



**Technical Information**

- Standard: NBR O-Ring-20 to 80
- Low Temperature: Silicon O-Ring-40 to 80
- High Temperature: FKM O-Ring-15 to 150
- Air-pressure: Min. 2.5 bar, Max. 8 bar.
- Air supply end connection: Female G1/8 inch (ISO 228-1).
- Position indicator is Standard.



### 3-way Switching Valves

#### Technical Data for BG Series with Standard PTFE Seat

Valve Series 3-way	Working Pressure		Temp. Range
	psig	bar	
BG	2500	172	10°C to 65°C 50° F to 150° F
	1500	103	

### Ordering Information and Table of Dimensions

Basic Ordering Number	End Connections		Orifice		Cv	Dimensions mm (in.)									
	Inlet	Outlet	mm	in.		L	L1	H1	H2	A	T <sup>①</sup>	D	H	W	
BG3-	N-4T	1/4" NAI-LOK	3.2	0.125	0.6	51.1(2.01)	25.7(1.01)	24.6(0.97)	8.6(0.34)	28.7(1.13)	6.4(1/4)	15.0(19/32)	34.5(1.36)	14.7(0.58)	
	N-6M	6mm NAI-LOK	3.2	0.125	0.6	56.1(2.21)	27.9(1.10)	27.2(1.07)	8.6(0.34)	28.7(1.13)	6.4(1/4)	15.0(19/32)	34.5(1.36)	14.7(0.58)	
	F-2N	1/8" Female NPT	3.2	0.125	0.5	41.4(1.63)	20.6(0.81)	20.6(0.81)	8.6(0.34)	28.7(1.13)	6.4(1/4)	15.0(19/32)	34.5(1.36)	14.7(0.58)	
	N-8M	8mm NAI-LOK	4.8	0.187	1.5	62.5(2.46)	31.2(1.23)	30.5(1.20)	11.2(0.44)	38.9(1.53)	4.8(3/16)	19.8(25/32)	39.6(1.56)	19.8(0.78)	
	F-4N	1/4" Female NPT	4.8	0.187	0.9	52.3(2.06)	26.2(1.03)	26.2(1.03)	11.2(0.44)	38.9(1.53)	4.8(3/16)	19.8(25/32)	39.6(1.56)	19.8(0.78)	
	N-6T	3/8" NAI-LOK	7.1	0.281	6.0	73.4(2.89)	36.8(1.45)	36.3(1.43)	14.2(0.56)	50.8(2.00)	9.7(3/8)	28.7(1-1/8)	52.6(2.07)	28.4(1.12)	
	N-10M	10mm NAI-LOK	7.1	0.281	6.0	78(3.07)	39(1.53)	39(1.53)	14.2(0.56)	50.8(2.00)	9.7(3/8)	28.7(1-1/8)	52.6(2.07)	28.4(1.12)	
	F-6N	3/8" Female NPT	7.1	0.281	2.6	63.5(2.50)	31.8(1.25)	31.8(1.25)	14.2(0.56)	50.8(2.00)	9.7(3/8)	28.7(1-1/8)	52.6(2.07)	28.4(1.12)	
	N-8T	1/2" NAI-LOK	10.3	0.406	12.0	88.4(3.48)	44.2(1.74)	44.2(1.74)	17.5(0.69)	76.2(3.00)	9.7(3/8)	38.1(1-1/2)	66.3(2.61)	38.1(1.50)	
	N-12M	12mm NAI-LOK	9.5	0.375	12.0	86.5(3.40)	43.2(1.70)	43.2(1.70)	17.5(0.69)	76.2(3.00)	9.7(3/8)	38.1(1-1/2)	66.3(2.61)	38.1(1.50)	
	F-8N	1/2" Female NPT	10.3	0.406	6.3	79.5(3.13)	39.6(1.56)	39.6(1.56)	17.5(0.69)	76.2(3.00)	9.7(3/8)	38.1(1-1/2)	66.3(2.61)	38.1(1.50)	

All dimensions shown are for reference only and are subject to change.

### Flow Data

#### 2-way

Cv	Water US GPM (L/min.)				Air SCFM (NL/min.)			
	@21° C (70° F)				@21° C (70° F)			
	Pressure Drop to Atmosphere (Δp) psi (bar)							
	10(0.7)	50(3.5)	100(7.0)	10(0.7)	50(3.5)	100(7.0)	10(0.7)	50(3.5)
0.2	0.6(2.3)	1.4(5.3)	2.0(7.6)	2.3(76)	6.0(215)	11.0(396)		
0.5	1.6(5.7)	3.5(13.2)	5.0(18.9)	5.6(195)	15.0(538)	27.0(963)		
0.6	1.9(7.2)	4.2(15.9)	6.0(22.7)	6.8(235)	18.0(651)	32.0(1161)		
0.9	2.8(10.6)	6.4(23.8)	9.0(34.0)	10.0(340)	27.0(963)	48.0(1720)		
1.2	3.8(14.0)	8.5(31.8)	12.0(45.4)	14.0(481)	36.0(1303)	64.0(2294)		
1.5	4.7(17.8)	11.0(41.6)	15.0(56.8)	17.0(595)	45.0(1614)	80.0(2832)		
2.4	7.6(28.4)	17.0(64.3)	24.0(90.8)	27.0(935)	72.0(2606)	120.0(4531)		
2.6	8.2(31.0)	18.0(68.1)	26.0(98.4)	29.0(1020)	78.0(2804)	140.0(5098)		
3.0	9.5(35.6)	21.2(79.5)	30.0(113.6)	34.0(1189)	90.0(3115)	160.0(5664)		
6.0	19.0(71.9)	42.0(159.0)	60.0(227.1)	68.0(2351)	180.0(6514)	320.0(11611)		
6.3	19.9(75.5)	44.5(170.3)	63.0(237.0)	71.0(2464)	190.0(6797)	340.0(12178)		
6.4	20.2(75.7)	45.3(170.3)	64.0(242.2)	72.0(2520)	190.0(6797)	340.0(12178)		
12.0	37.9(143.8)	84.9(321.7)	120.0(454.2)	130.0(4814)	360.0(13027)	640.0(22939)		

#### 3-way

Cv	Water US GPM (L/min.)				Air SCFM (NL/min.)			
	@21° C (70° F)				@21° C (70° F)			
	Pressure Drop to Atmosphere (Δp) psi (bar)							
	10(0.7)	50(3.5)	100(7.0)	10(0.7)	50(3.5)	100(7.0)	10(0.7)	50(3.5)
0.15	0.4(1.5)	1.0(3.8)	1.5(5.7)	1.7(57)	4.5(161)	8.0(286)		
0.30	0.9(3.4)	2.1(7.9)	3.0(11.4)	3.4(116)	9.0(312)	16.0(566)		
0.35	1.1(4.2)	2.4(9.1)	3.5(13.2)	4.0(136)	10.0(368)	19.0(680)		
0.75	2.3(8.7)	5.3(20.1)	7.5(28.4)	8.5(283)	22.0(821)	40.0(1444)		
0.80	2.5(9.5)	5.6(21.2)	8.0(30.3)	9.0(312)	24.0(878)	42.0(1529)		
0.90	2.8(10.6)	6.3(23.8)	9.0(34.1)	10.0(340)	27.0(963)	48.0(1728)		
1.5	4.7(17.8)	11.0(41.6)	15.0(56.8)	17.0(595)	45.0(1614)	80.0(2832)		
1.7	5.3(20.1)	12.0(45.4)	17.0(64.3)	19.0(680)	51.0(1841)	90.0(3115)		
2.0	6.3(23.8)	14.0(53.0)	20.0(75.7)	22.0(793)	60.0(2181)	100.0(3965)		
3.5	11.0(41.6)	25.0(94.6)	35.0(132.5)	39.0(1359)	100.0(3682)	180.0(6797)		
3.8	12.0(45.4)	27.0(102.2)	38.0(143.8)	43.0(1501)	110.0(3965)	200.0(7363)		
4.6	15.0(56.8)	33.0(124.9)	46.0(174.1)	52.0(1812)	140.0(5098)	240.0(8779)		

### Ordering Information

Example: **BG - N4T - SS**  
**1 2 3**

#### 1. Valve Series

BG  
BG3

#### 2. End Connection

N= NAI-LOK Tube Fitting  
F= Female Thread  
M= Male Thread

#### 3. Body Material

SS = SS316

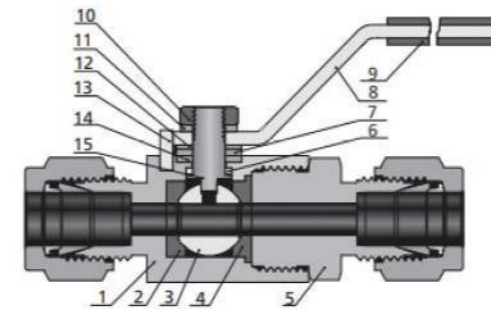


### Features

- Compact and economical design.
- Standard lever handle, optional butterfly handle.
- Low operating torque.
- Options for handle color.
- Any reasonable connections available.

### Standard Materials of Construction

Body Material	Valve Body Materials
	Stainless Steel
1.Body	ASTM A276
2.Seat	PTFE
3.Ball	ASTM A276
4.Back Seat	PTFE
5.End Connector	SS316/A276
6.Lower Packing	PTFE
7.Washer	Stainless Steel
8.Handle	Nylon / Aluminium
9.Sleeve	Vinyl
10.Stem Nut	Stainless Steel
11.Gasket	Stainless Steel
12.Coned-disk Spring	S17700/A693
13.Pin	Stainless Steel
14.Upper Packing	PTFE
15.Stem	ASTM A276

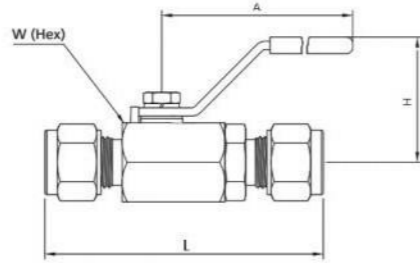


### Specifications

Pressure rating: 1000 psig (69.0 bar)  
Temperature rating: -20 °F to 450 °F (-28°C to 232°C)

### Testing

Each valve is tested with nitrogen at 1000psig (69 bar) to maximum allowable leak rate of 0.1 Sccm.



**Table of Dimensions**

Basic Ordering Number	End Connections Inlet / Outlet	Orifice mm (in.)	Cv	Dimensions, mm (in.)			
				L	H	HEX	A
N-6M	6mm NAI-LOK	5 (0.2)	1.25	79 (3.11)	27.6 (1.09)	17 (11/16)	59.5 (2.34)
N-4T	1/4" NAI-LOK		1.25	79 (3.11)			
F-4N	1/4" Female NPT		1.35	41.9 (1.65)			
MF-4N	1/4" M/F NPT		1.35	52.4 (2.06)			
N-10M	10mm NAI-LOK	7.5 (0.3)	2.6	91.7 (3.61)	36.5 (1.44)	20.64 (13/16)	81 (3.19)
N-6T	3/8" NAI-LOK		2.5	91.3 (3.59)			
F-6N	3/8" Female NPT		2.6	47 (1.85)			
MF-6N	3/8" M/F NPT		2.6	53.5 (2.1)			
N-12M	12mm NAI-LOK	9 (0.35)	9.25	99.2 (3.9)	39.7 (1.56)	27 (1-1/16)	81 (3.19)
N-8T	1/2" NAI-LOK		9.25	101 (3.98)			
F-8N	1/2" Female NPT		9.25	56.15 (2.21)			
MF-8N	1/2" M/F-NPT		9.25	66.6 (2.62)			
WF-15A8N	1/2" Welding/F-NPT		9.25	95.0 (3.74)			
N-16M	16mm NAI-LOK	12.5 (0.49)	10.6	107 (4.24)	44.85 (1.76)	32 (1-1/4)	102.5 (4.04)
N-10T	5/8" NAI-LOK		10.6	108 (4.25)			
F-12N	3/4" Female NPT		12.65	63 (2.48)			
N-12T	3/4" NAI-LOK		12.65	107 (4.22)			
MF-12N	3/4" M/F-NPT		12.65	75.9 (2.99)			
WF-20A12N	3/4" Welding/F-NPT		12.65	100 (3.93)			
N-16T	1" NAI-LOK	16 (0.63)	17.35	133 (5.23)	49.75 (1.95)	38 (1-1/2)	102.5 (4.04)
F-16N	1" Female NPT		17.35	78.1 (3.07)			
WF-25A16N	1" Welding/F-NPT		17.35	115 (4.53)			

Dimensions shown are for reference only and are subject to change.

**Ordering Information**

**Example:** BR - N4T - SS - N  
 1 2 3 4

- 1. Valve Series**  
BR
- 2. End Connection**  
N= NAI-LOK Tube Fitting  
F= Female Thread  
M= Male Thread
- 3. Body Material**  
SS= SS316  
HC= Hastelloy
- 4. Handle**  
N= Black Nylon  
L= Level  
B= Butterfly  
(only 1/2 size)



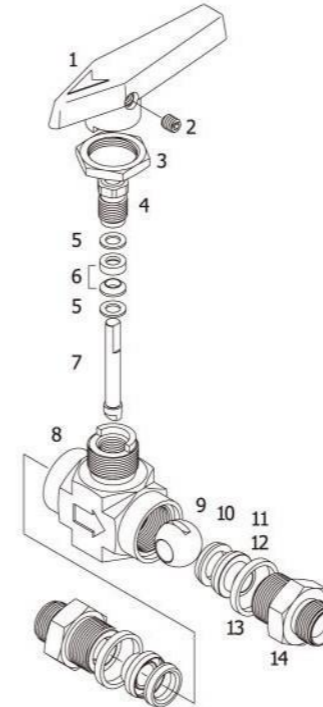
**Features**

- Compact design.
- Working Temperature: - 65 °F to 450 °F ( - 54 °C to 232 °C )
- Bi-directional flow for straight valves
- Panel mounting as standard.
- Low operating torques and positive handle stops.
- High pressure capacity designed for blow-out proof with internally loaded ball stem.
- Available in pneumatic.

**Materials of Construction**

Components	Valve Body Material Stainless Steel Grade/ASTM Specification
1. Handle	Nylon with brass insert
2. Set Screw	Stainless steel
3. Panel Nut	Nylon with brass insert Stainless steel
4. Packing Bolt	
5. Upper / Lower Gland	
6. Stem Chevron Packing	PTFE/D1710 type 1, Grade 1, Class B
7. Stem	SS316/A276
8. Body	SS316/A182 Type F316
9. Ball	SS316/A276
10. Seat	Standard PCTFE (Kel-F), optional PTFE, PEEK
11. Retainer	SS316/A276
12. Retainer Seal	PTFE/D1710 type 1, Grade 1, Class B
13. End Connector Seal	
14. End Connector	SS316/A276

\* Molybdenum disulfide with hydrocarbon coating



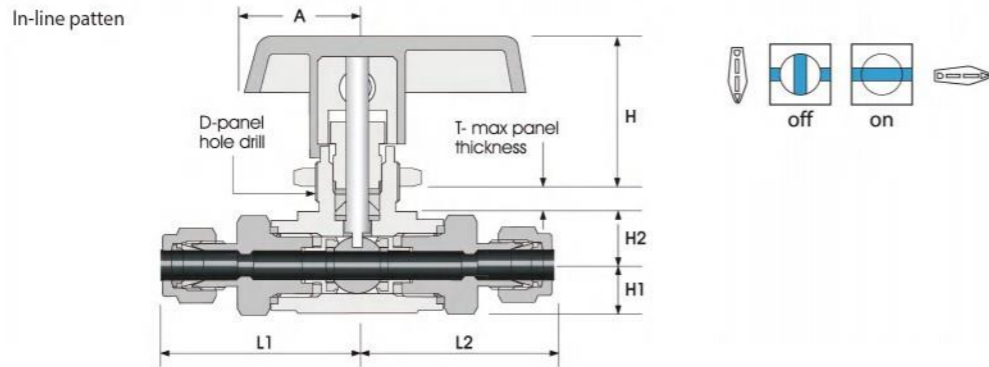
**Specifications**

Temperature rating: - 65 °F to 450 °F ( - 54 °C to 232 °C )  
 Pressure rating: 6000 psig (414 bar)

**Testing**

Leak-tight performance testing for every valve at the maximum pressure with nitrogen

**Bi-directional 2-way Ball Valves**



**Technical Data**

Valve Series	Sealing Materials	Pressure Rating @-27 to 37 °C (-20 to 100 °F)	Temperature Rating
	Seat		
BV series	PCTFE	6,000 psig (413 bar)	-30 to 180 °C (-22 to 356 °F)
	PEEK	6,000 psig (413 bar)	-54 to 230 °C (-65 to 446 °F)
	PTFE	1,500 psig (103 bar)	-30 to 176 °C (-22 to 349 °F)

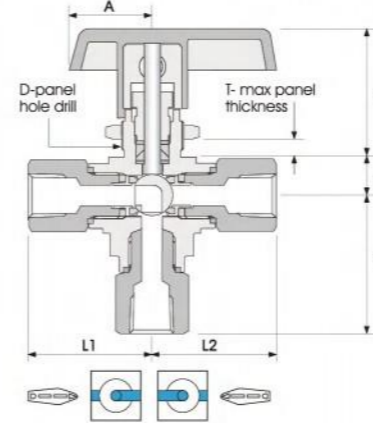
.PCTFE is standard seat material.

**Ordering Information and Dimensions**

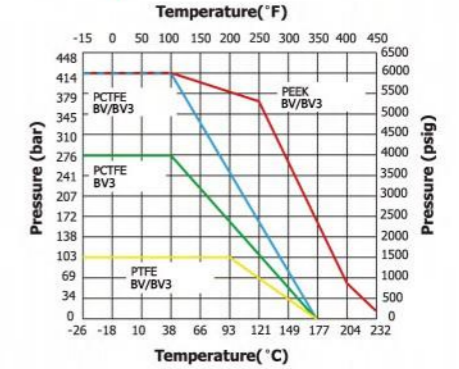
Basic Ordering Number	End Connections		Orifice		Cv	Dimensions mm (in.)							
	Inlet	Outlet	mm	inch		L1	L2	H1	H2	H	A	D	T
N-1T	1/16" NAI-LOK		1.3	0.052	0.06	33.0(1.30)	33.0(1.30)						
N-2T	1/8" NAI-LOK		2.4	0.0945	0.21	34.5(1.36)	34.5(1.36)						
F-2N	1/8" Female NPT		4.2	0.165	0.43	27.2(1.07)	27.2(1.07)						
M-2N	1/8" Male NPT		4.2	0.165	0.43	30.0(1.18)	30.0(1.18)						
N-4T	1/4" NAI-LOK		4.2	0.165	0.43	37.6(1.48)	37.6(1.48)	9.5 (0.37)	8.5 (0.33)	24.8 (0.98)	19.1 (0.75)	14.7 (0.58)	3.3 (0.13)
M-4N	1/4" Male NPT		4.2	0.165	0.43	34.3(1.35)	34.3(1.35)						
N-3M	3mm NAI-LOK		2.2	0.086	0.18	34.8(1.37)	34.8(1.37)						
N-2T	1/8" NAI-LOK		2.4	0.0945	0.26	41.9(1.65)	41.9(1.65)						
N-4T	1/4" NAI-LOK						44.2(1.74)						
MN-4N4T	1/4" Male NPT	1/4" NAI-LOK					41.1(1.62)						
FN-4F4T	1/4" Female NPT	1/4" NAI-LOK	4.7	0.185	1.04	44.2(1.74)	38.4(1.51)						
F-4N	1/4" Female NPT					38.4(1.51)	38.4(1.51)						
M-4N	1/4" Male NPT					41.1(1.62)							
MF-4N	1/4" Male NPT	1/4" Female NPT				38.4(1.51)	41.1(1.62)	10.7 (0.42)	11.9 (0.47)	38.9 (1.53)	25.4 (1.00)	19.6 (0.77)	6.4 (0.25)
MN-4N6T	1/4" Male NPT	3/8" NAI-LOK											
FN-4N6T	1/4" Female NPT	3/8" NAI-LOK	6.4	0.252	2.34	45.7(1.8)	38.4(1.51)						
N-6T	3/8" NAI-LOK						45.7(1.8)						
M-6N	3/8" Male NPT					82.2(3.24)							
N-6M	6 mm NAI-LOK		4.7	0.185	1.04	89.0(3.50)							
N-8M	8 mm NAI-LOK					90.4(3.56)							
N-10M	10 mm NAI-LOK		6.4	0.252	2.34	92.0(3.62)							
F-6N	3/8" Female NPT					99.0(3.90)							
F-8N	1/2" Female NPT					109.20(4.30)							
N-8T	1/2" NAI-LOK					118.8(4.68)							
M-8N	1/2" Male NPT		10.3	0.406	6.42	112.8(4.44)		17.5 (0.69)	17.8 (0.70)	44.2 (1.74)	38.1 (1.50)	22.9 (0.90)	9.7 (0.38)
N-12T	3/4" NAI-LOK					118.4(4.66)							
N-12M	12 mm NAI-LOK		9.5	0.375	5.57	116.68(4.59)							
N-16M	16 mm NAI-LOK		10.3	0.406	6.42	118.4(4.66)							

All dimensions shown are for reference only and are subjects to change.

**3-way Diverter Ball Valves**



**Pressure-Temperature Curve**

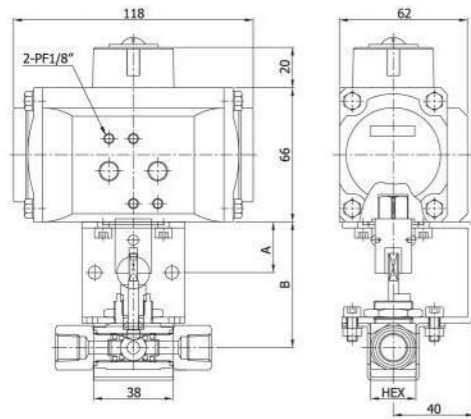


**Ordering Information and Dimensions**

Basic Ordering Number	End Connections	Orifice		Cv	Dimensions mm (in.)								
		mm	Inch		L1	L2	H1	H2	H	A	D	T	
N-1T	1/16" NAI-LOK	1.3	0.052	0.06	33.0 (1.30)	33.0 (1.30)	35.3(1.39)						
N-2T	1/8" NAI-LOK	2.4	0.093	0.21	34.5 (1.36)	34.5 (1.36)	36.8(1.45)						
F-2N	1/8" Female NPT	4.2	0.165	0.63	27.2 (1.07)	27.2 (1.07)	29.2(1.15)	8.4 (0.33)	24.8 (0.98)	19.1 (0.75)	14.7 (0.58)	3.3 (0.13)	
M-2N	1/8" Male NPT	4.2	0.165	0.59	30.0 (1.18)	30.0 (1.18)	32.0(1.26)						
N-4T	1/4" NAI-LOK	4.2	0.165	0.63	37.6 (1.48)	37.6 (1.48)	39.6(1.56)						
M-4N	1/4" Male NPT	4.2	0.165	0.59	34.3 (1.35)	34.3 (1.35)	36.3(1.43)						
N-2T	1/8" NAI-LOK	2.4	0.093	0.21	41.9 (1.65)	41.9 (1.65)	45.5(1.79)						
N-4T	1/4" NAI-LOK	4.7	0.187	0.70	44.2 (1.74)	44.2 (1.74)	47.8 (1.88)						
F-4N	1/4" Female NPT	5.0	0.196	0.87	38.4 (1.51)	38.4 (1.51)	41.9 (1.65)						
NM-T4N	1/4" NAI-LOK, 1/4" Male NPT	4.7	0.187	0.70	44.2 (1.74)	44.2 (1.74)	47.8 (1.88)						
M-4N	1/4" Male NPT				41.1 (1.62)	41.1 (1.62)	44.7 (1.76)	11.9 (0.47)	38.9 (1.53)	25.4 (1.00)	19.6 (0.77)	6.4 (0.25)	
N-6T	3/8" NAI-LOK	5.0	0.196	0.87	45.7 (1.8)	45.7 (1.8)	49.3 (1.94)						
M-6N	3/8" Male NPT				41.1 (1.62)	41.1 (1.62)	44.7 (1.76)						
N-6M	6 mm NAI-LOK	4.7	0.187	0.70	44.5 (1.75)	44.5 (1.75)	47.8 (1.88)						
N-8M	8 mm NAI-LOK	5.0	0.196	0.87	45.2 (1.78)	45.2 (1.78)	48.5 (1.91)						
N-10M	10 mm NAI-LOK				46.0 (1.81)	46.0 (1.81)	49.5 (1.95)						
F-6N	3/8" Female NPT				49.5 (1.95)	49.5 (1.95)	58.2 (2.29)						
F-8N	1/2" Female NPT				54.6 (2.15)	54.6 (2.15)	63.2 (2.49)						
N-8T	1/2" NAI-LOK				59.4 (2.34)	59.4 (2.34)	68.1 (2.68)						
NF-8T8F	1/2" NAI-LOK, 1/2" Female NPT	10.3	0.406	3.62	59.4 (2.34)	59.4 (2.34)	63.2 (2.49)	17.8 (0.70)	44.2 (1.74)	38.1 (1.50)	22.9 (0.90)	9.7 (0.38)	
M-8N	1/2" Male NPT				56.4 (2.22)	56.4 (2.22)	65.8 (2.59)						
N-12T	3/4" NAI-LOK				58.9 (2.32)	58.9 (2.32)	68.1 (2.68)						
N-12M	12 mm NAI-LOK	9.5	0.375	0.375	58.9 (2.32)	58.9 (2.32)	67.8 (2.67)						
N-16M	16 mm NAI-LOK	10.3	0.406	0.406	59.2 (2.34)	59.2 (2.34)	65.5 (2.58)						

All dimensions shown are for reference only and are subjects to change.

**Pneumatic Actuator Ball valve**



**Technical Information**

- Standard: NBR O-Ring - 20 to 80.
- Low Temperature: Silicon O-Ring -40 to 80
- High Temperature: FKM O-Ring -15 to 150
- Air-pressure: Min. 2.5 bar, Max. 8 bar.
- Air supply end connection: Female G 1/8 inch (ISO 228-1)
- Position indicator is standard.

**Ordering Information**

Example:  $\frac{BV}{1} - \frac{N}{2} - 4T - \frac{SS}{3} - \frac{PAS}{4}$

**1. Valve Series**

BV  
BV3

**2. End Connection**

N= NAI-LOK Tube Fitting  
F= Female Thread  
M= Male Thread

**3. Body Material**

SS= SS316

**4. Pneumatic Actuator**

PAS= Single Return  
PAD= Double return



**Features**

- Fixed ball with double sealing.
- Low operating torque.
- Integral ball stem machined from single piece of bar stock eliminates the backlash during handle actuation.
- Panel mounting as standard
- Available in pneumatic.

**Flow Rate**

**BT series Flow Data @ 21 °C (70 °F)**

Flow Rate	Pressure Drop to Atmosphere (ΔP) in bar (psig)	3-Way	2-Way					
		Cv 0.75	Cv 1	Cv 1.2	Cv 1.3	Cv 1.4	Cv 1.5	Cv 1.6
Water L/min (U.S.GPM)	0.68 (10)	9.0 (2.4)	12.1 (3.2)	14.3 (3.8)	15.5 (4.1)	17.8 (4.4)	17.8 (4.7)	19.3 (5.1)
	3.4 (50)	20.0 (5.3)	26.8 (7.1)	32.1 (8.5)	34.8 (9.2)	37.4 (9.9)	40.1 (10.6)	42.7 (11.3)
	6.8 (100)	28.3 (7.5)	37.8 (10.0)	45.4 (12.0)	49.2 (13.0)	53.0 (14.0)	56.7 (15.0)	60.5 (16.0)
Air std L/min (SCFM)	0.68 (10)	226 (8.0)	311 (11.0)	396 (14.0)	424 (15.0)	453 (16.0)	481 (17.0)	509 (18.0)
	3.4 (50)	651 (23.0)	849 (30.0)	1019 (36.0)	1104 (39.0)	1189 (42.0)	1274 (45.0)	1359 (48.0)
	6.8 (100)	1132 (40.0)	1500 (53.0)	1812 (64.0)	1953 (69.0)	2095 (74.0)	2265 (80.0)	2406 (85.0)

**BTP series Flow Data @21 °C (70 °F)**

Flow Rate	Pressure Drop to Atmosphere (ΔP) in bar (psig)	3-Way	2-Way					
		Cv 0.75	Cv 1	Cv 1.2	Cv 1.3	Cv 1.4	Cv 1.5	Cv 1.6
Water L/min (U.S.GPM)	10.3 (150)	34.8 (9.2)	45.4 (12)	56.7 (15)	60.5 (16)	64.3 (17)	68.1 (18)	74.1 (19.6)
	41.3 (600)	69.1 (18)	94 (25)	109 (29)	121 (32)	128 (34)	140 (37)	147 (39)
	68.9 (1000)	90.8 (24)	143 (38)	143 (38)	155 (41)	166 (44)	178 (47)	189 (50)
Air std L/min (SCFM)	10.3 (150)	1614 (57)	2152 (76)	2805 (92)	2803 (99)	3029 (107)	3256 (115)	3454 (122)
	41.3 (600)	5946 (210)	8070 (285)	9627 (340)	10505 (371)	11298 (399)	12119 (428)	12912 (456)
	68.9 (1000)	9912 (350)	13308 (470)	16140 (570)	17272 (610)	18688 (660)	19821 (700)	21321 (750)

All the data listed are typical valves for your reference only.

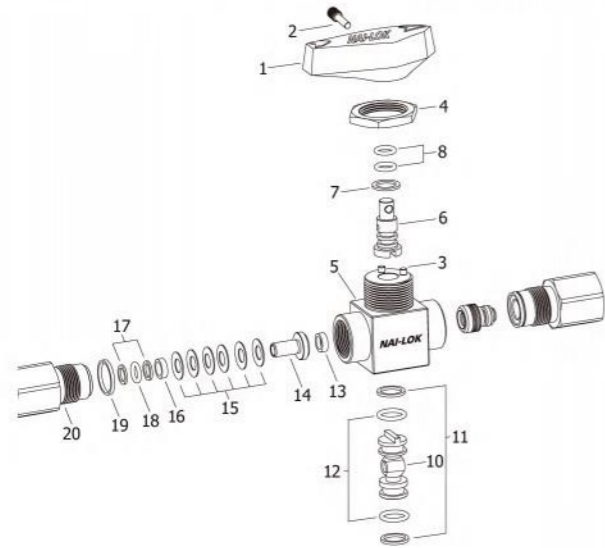
**Specifications**

Pressure rating: 6000 psig (414 bar)

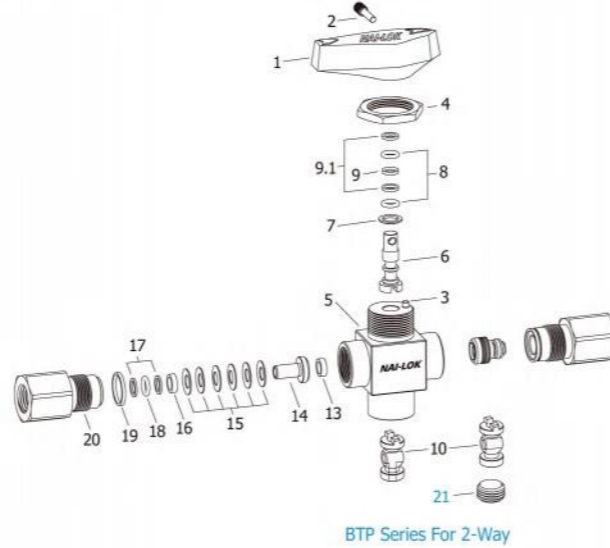
Temperature rating: 0 °F to 450 °F (-18°C to 232°C)



#### BT Series For 2-Way



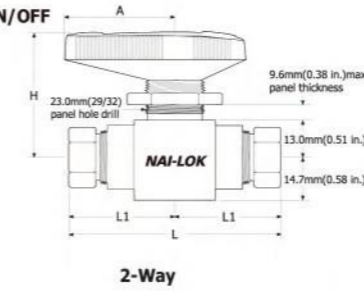
#### BTP Series For 2-Way,3-Way



#### Materials of Construction

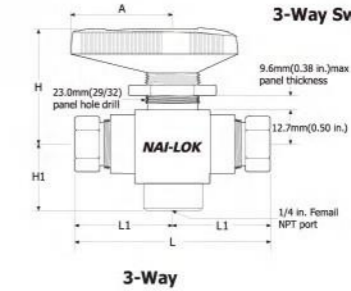
Component	BT Series		BTP Series	
	2-Way	3-Way	2-Way	3-Way
	<b>Grade/ASTM Specification</b>			
1. Handle	Nylon with brass insert			
2. Set Screw	SS316/A276			
3. Stop Pin (2-Way - 2, 3-Way - 1)	SS316			
4. Panel Nut	SS316/A479 or A276			
5. Body	SS316/A479 or A276			
6. Stem	SS316/A479 or A276			
7. Stem Bearing	PEEK			
8. Stem O-rings (2)	FKMO-ring (HNBR for BT/BTP Series)		FKMO-ring	
9. Stem Support Ring	-	PEEK		
9.1. Stem Backup Rings (2)	-	PTFE/D1710, type 1		
10. Trunnion Ball	SS316/A479 or A276			
11. Trunnion Ball Back-up Rings (2)	Reinforced PTFE	-		
12. Trunnion Ball O-rings (2)	FKMO-ring (HNBR for BT Series)	-		
13. Seats (2)	PCTFE, optional PTFE, PEEK (PAI for BT/BTP Series)		PEEK	
14. Seat Carriers (2)	SS316/A479 or A276			
15. Seat Springs (12)	Alloy X-750/AMS 5542			
16. Seat Carrier Guides (2)	SS316/A479 or A276			
17. Seat Carrier Back-up Rings (4)	Reinforced PTFE			
18. Seat Carrier O-rings (2)	FKMO-ring (HNBR for BT/BTP Series)		FKMO-ring	
19. End Connector Seals (2)	PTFE/D1710, type 1			
20. End Connectors (2)	SS316/A479 or A276			
21. Plug	-	SS316/A479 or A276		-

#### 2-Way ON/OFF



2-Way

#### 3-Way Switching



3-Way

#### Ordering Information and Dimensions

BT Series Basic Ordering Number	Cv	Orifice mm (in.)	BTP Series Basic Ordering Number	Cv	Orifice mm (in.)	End Connection	Dimensions, mm (in.)						
							L	L1	H	A			
<b>2-Way</b>													
BT-	F-2N	1.2	BTP-	F-2N	1.2	1/8" Female NPT	76.2(3)	3.81(1.5)	46.7 (1.83)	38.0 (1.50)	4.75 (0.187)	4.75 (0.187)	
	F-4N	1		-	1	1/4" Female NPT	98.5(3.88)	49.3(1.94)					
	-	-		F-4N	1	1/4" Female NPT	81.2(3.2)	40.6(1.6)					
	F-8N	1.2		-	-	1/2" Female NPT	105 (4.14)	52.6 (2.07)					
	N-4T	1.6		N-4T	1.6	1/4" NAI-LOK	112 (4.39)	55.6 (2.19)					
	N-6T	1.4		N-6T	1.4	3/8" NAI-LOK	117 (4.60)	58.4 (2.30)					
	N-8T	1		N-8T	1	1/2" NAI-LOK	105 (4.14)	52.6 (2.07)					
	N-6M	1.6		N-6M	1.6	6mm NAI-LOK	105 (4.14)	52.6 (2.07)					
	N-8M	1.5		N-8M	1.5	8mm NAI-LOK	105 (4.14)	52.6 (2.07)					
	N-10M	1.3		N-10M	1.3	10mm NAI-LOK	112 (4.41)	55.9 (2.20)					
	N-12M	1		N-12M	1	12mm NAI-LOK	117(4.6)	58.4(2.3)					
	<b>3-Way</b>												
BT-	F-2N	0.75	BTP-	F-2N	0.75	1/8" Female NPT	76.2(3)	3.81(1.5)	46.7 (1.83)	38.0 (1.50)	4.75 (0.187)	4.75 (0.187)	
	F-4N			-		1	1/4" Female NPT	76.2(3)					38.1(1.5)
	-			F-4N		1	1/4" Female NPT	81.2(3.2)					40.6(1.6)
	N-4T			N-4T		1.6	1/4" NAI-LOK	105 (4.14)					52.6 (2.07)
	N-6T			N-6T		1.4	3/8" NAI-LOK	112 (4.39)					55.6 (2.19)
	N-8T			N-8T		1	1/2" NAI-LOK	117 (4.60)					58.4 (2.30)
	N-6M			N-6M		1.6	6mm NAI-LOK	105 (4.14)					52.6 (2.07)
	N-8M			N-8M		1.5	8mm NAI-LOK	105 (4.14)					52.6 (2.07)
	N-10M			N-10M		1.3	10mm NAI-LOK	112 (4.41)					55.9 (2.20)
	N-12M			N-12M		1	12mm NAI-LOK	117(4.6)					58.4(2.3)

All dimensions shown are for reference only and are subject to change.

#### Flow Rate

##### BT series Flow Data @ 21 °C (70 °F)

Flow Rate	Pressure Drop to Atmosphere (ΔP) in bar (psig)	3-Way		2-Way					
		Cv 0.75	Cv 1	Cv 1.2	Cv 1.3	Cv 1.4	Cv 1.5	Cv 1.6	
Water L/min (U.S.GPM)	0.68 (10)	9.0(2.4)	12.1 (3.2)	14.3 (3.8)	15.5 (4.1)	17.8 (4.4)	17.8 (4.7)	19.3 (5.1)	
	3.4 (50)	20.0 (5.3)	26.8 (7.1)	32.1 (8.5)	34.8 (9.2)	37.4 (9.9)	40.1 (10.6)	42.7 (11.3)	
	6.8 (100)	28.3 (7.5)	37.8 (10.0)	45.4 (12.0)	49.2 (13.0)	53.0 (14.0)	56.7 (15.0)	60.5 (16.0)	
Air std L/min (SCFM)	0.68 (10)	226 (8.0)	311 (11.0)	396 (14.0)	424 (15.0)	453 (16.0)	481 (17.0)	509 (18.0)	
	3.4 (50)	651 (23.0)	849 (30.0)	1019 (36.0)	1104 (39.0)	1189 (42.0)	1274 (45.0)	1359 (48.0)	
	6.8 (100)	1132 (40.0)	1500 (53.0)	1812 (64.0)	1953 (69.0)	2095 (74.0)	2265 (80.0)	2406 (85.0)	

##### BTP series Flow Data @21 °C (70 °F)

Flow Rate	Pressure Drop to Atmosphere (ΔP) in bar (psig)	3-Way		2-Way					
		Cv 0.75	Cv 1	Cv 1.2	Cv 1.3	Cv 1.4	Cv 1.5	Cv 1.6	
Water L/min (U.S.GPM)	10.3 (150)	34.8 (9.2)	45.4 (12)	56.7 (15)	60.5 (16)	64.3 (17)	68.1 (18)	74.1 (19.6)	
	41.3 (600)	69.1 (18)	94 (25)	109 (29)	121 (32)	128 (34)	140 (37)	147 (39)	
	68.9 (1000)	90.8 (24)	143 (38)	143 (38)	155 (41)	166 (44)	178 (47)	189 (50)	
Air std L/min (SCFM)	10.3 (150)	1614 (57)	2152 (76)	2805 (92)	2803 (99)	3029 (107)	3256 (115)	3454 (122)	
	41.3 (600)	5946 (210)	8070 (285)	9627 (340)	10505 (371)	11298 (399)	12119 (428)	12912 (456)	
	68.9 (1000)	9912 (350)	13308(470)	16140 (570)	17272 (610)	18 688 (660)	19821 (700)	21321 (750)	

All the data listed are typical valves for your reference only.

**BT Series Pressure-Temperature Ratings**

Body Material		316 Stainless Steel							
End Connection	NAI-LOK	6M, 1/4 in.	8M, 3/8 in.	12M, 1/2 in.	10M				
	Female NPT	1/8, 1/4 in.	-	-	-				
Seat Material		PEEK							
Temperature		Working Pressure							
°C	°F	bar	psig	bar	psig	bar	psig	bar	psig
-17 to 37	0 to 100	689	10000	516	7500	454	6600	413	6000
65	150	516	7500	516	7500	454	6600	406	5900
93	200	344	5000	344	5000	344	5000	344	5000
121	250	282	4100	282	4100	282	4100	282	4100
148	300	220	3200	220	3200	220	3200	220	3200
176	350	158	2300	158	2300	158	2300	158	2300
204	400	96.4	1400	96.4	1400	96.4	1400	96.4	1400
232	450	34.4	500	34.4	500	34.4	500	34.4	500

**Ordering Information**

Example: **BTP - N - 4T - SS - 3 - PE**  
 1      2                      3      4      5

- |                        |                          |                         |                        |                         |
|------------------------|--------------------------|-------------------------|------------------------|-------------------------|
| <b>1. Valve Series</b> | <b>2. End Connection</b> | <b>3. Body Material</b> | <b>4. Flow Pattern</b> | <b>5. Seat Material</b> |
| BT                     | N= NAI-LOK Tube Fitting  | SS= SS316               | 2= 2 Way               | PT= PTFE                |
| BTP                    | F= Female Thread         |                         | 3= 3 Way               | PE= PEEK                |
|                        |                          |                         |                        | PC= PCTFE               |

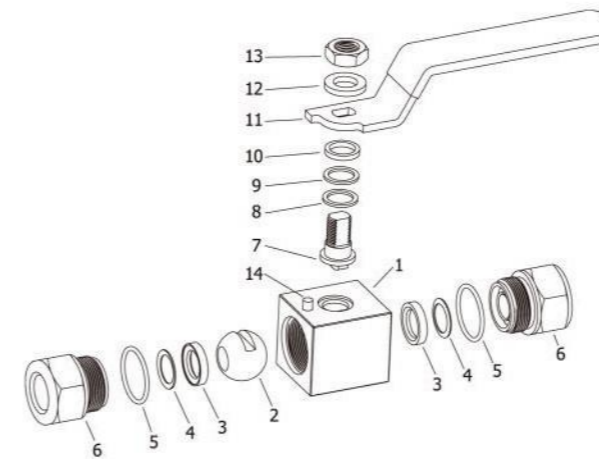


**Features**

- High pressure up to 10,000 psi (689 bar).
- Blowout proof design with internally loaded stem.
- Handle indicates the flow direction.
- Positive stop with a robust stop pin.
- Available in pneumatic.

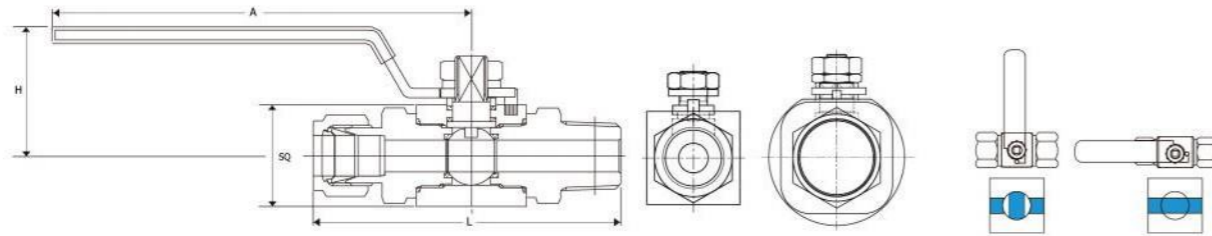
**Table 1. Materials of Construction**

Component	Materials Grade/ASTM Specification
1 Body	SS316/A276 or A479
2 Ball	SS316/A276 or A479
3 Seat (2)	PVDF/PCTFE/PEEK
4 Disc Spring (2)	Type 630/A564
5 End Seal (2)	FKM O-ring/ HNBR O-ring
6 End Connector (2)	SS316/A276 or A479
7 Stem	SS316/A276 or A479
8 Bearing	PTFE
9 Packing	PTFE
10 Gland	SS316/ ASTM A276 or ASTM A479
11 Lever Handle	SS304 handle with vinyl sleeve
12 Washer	SS304
13 Stem Nut	SS304
14 Stop Pin	SS304



**Specifications**

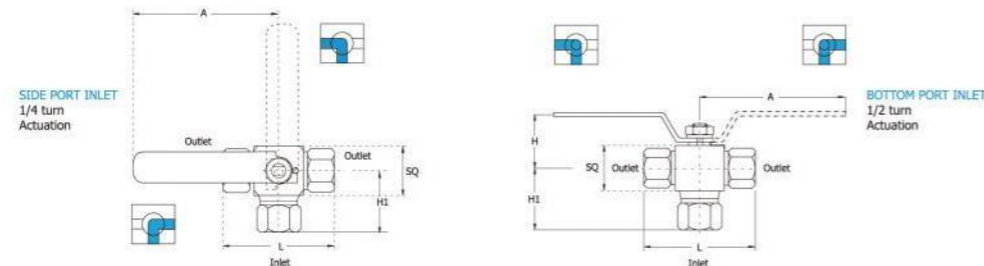
Pressure rating: up to 10000 psig (690 bar)  
 Temperature rating: -40 °F to 450 °F (-40°C to 232°C)  
 Optional pneumatic and electric actuator



**Table of Dimensions**

Basic Ordering Number	End Connections Inlet & Outlet	Orifice mm (in.)vv	Cv	Dimensions mm (in.)			
				A	H	L	SQ
N-4T	1/4" NAI-LOK	4.8 (0.19)	1.2	108.3 (4.26)	38.4 (1.52)	97.12 (3.82)	32.0 (1.26)
N-6T	3/8" NAI-LOK	7.1 (0.28)	3.7				
N-8T	1/2" NAI-LOK	10.0 (0.39)	7.5				
F-4N	1/4" Female NPT						
F-6N	3/8" Female NPT	7.1 (0.28)	3.7				
F-8N	1/2" Female NPT						
M-4N	1/4" Male NPT	10.0 (0.39)	7.2				
M-6N	3/8" Male NPT						
M-8N	1/2" Male NPT	12.7 (0.50)	10.1				
F-8N	1/2" Female NPT						
F-12N	3/4" Female NPT	10.0 (0.39)	30.0				
N-12M	12mmNAI-LOK						
N-16M	16mmNAI-LOK	12.7 (0.50)	19.0				
N-8T	1/2" NAI-LOK						
N-10T	5/8" NAI-LOK	10.4 (0.41)	19.0				
N-12T	3/4" NAI-LOK						
F-12N	3/4" Female NPT	12.7 (0.50)	19.0				
F-16N	1" Female NPT						
N-12T	3/4" NAI-LOK	19.0 (0.75)	30.0				
N-16T	1" NAI-LOK						
M-12N	3/4" Male NPT	15.7 (0.62)	30.0				
M-16N	1" Male NPT						
F-16N	1" Female NPT	25.0 (0.98)	Full Bore	193.7 (7.62)	84.1 (3.31)	112.90 (4.44)	70 (2.76)

All dimensions shown are for reference only and are subjects to change.



BH 3-way ball valve is designed to switch media through the inlet port and direct it to out of two outlet ports.

**Ordering Information and Dimensions**

Basic Ordering Number	End Connections	Orifice mm (in.)	Dimensions mm (in.)				SQ	
			A	H	H1	L		
N-4T	1/4" NAI-LOK	4.8 (0.19)	108.3 (4.26)	38.4 (1.52)	50.9 (2.0)	97.12 (3.82)	32.0 (1.26)	
N-6T	3/8" NAI-LOK	7.1 (0.28)						
N-8T	1/2" NAI-LOK	10.0 (0.39)						7.5
F-4N	1/4" Female NPT							
F-6N	3/8" Female NPT	7.1 (0.28)						3.7
F-8N	1/2" Female NPT							
M-4N	1/4" Male NPT	10.0 (0.39)						7.2
M-6N	3/8" Male NPT							
M-8N	1/2" Male NPT	12.7 (0.50)	10.1					
F-8N	1/2" Female NPT							
F-12N	3/4" Female NPT	10.0 (0.39)	30.0					
N-10T	5/8" NAI-LOK							
N-12T	3/4" NAI-LOK	12.7 (0.50)	19.0					
N-12T	3/4" NAI-LOK							
N-16T	1" NAI-LOK	10.4 (0.41)	19.0					
F-12N	3/4" Female NPT							
F-16N	1" Female NPT	12.7 (0.50)	19.0					
F-16N	1" Female NPT							
F-16N	1" Female NPT	19.0 (0.75)	30.0	149.0 (5.86)	56.0 (2.20)	75.3 (2.96)	125.0 (4.92)	50.0 (1.97)
F-16N	1" Female NPT	15.7 (0.62)	30.0	149.0 (5.86)	56.0 (2.20)	80.0 (3.15)	134.0 (5.27)	50.0 (1.97)
F-16N	1" Female NPT	19.0 (0.75)	30.0	149.0 (5.86)	56.0 (2.20)	59.5 (2.34)	96.0 (3.78)	50.0 (1.97)
F-16N	1" Female NPT	25.0 (0.98)	Full Bore	193.7 (7.62)	84.1 (3.31)	67.0 (2.64)	111.0 (4.37)	70 (2.76)

**Pressure - Temperature Ratings**

Valve Series	Seat Material	Maximum Working Pressure at -54 ~ 21°C (-65 ~ 70 °F) psig(bar)	Temperature Rating °C (°F)
BH	PCTFE	6,000 (413)	-30 to 180 (-22 to 356)
	PEEK	10,000 (689)	-54 to 260 (-65 to 500)
	PVDF	5,000 (344)	-30 to 110 (-22 to 230)
	PEEK	6,000 (413)	-40 to 210 (-40 to 410)
	PCTFE	6,000 (413)	-40 to 160 (-40 to 320)

All the data listed are typical valves for your reference only.

**Pneumatic Actuator Ball Valve**



**Technical Information**

- Standard : NBR O-Ring - 20 to 80.
- Low Temperature : Silicon O-Ring -40 to 80
- High Temperature : FKM O-Ring -15 to 150
- Air-pressure : Min. 2.5 bar, Max. 8 bar.
- Air supply end connection : Female G 1/8 inch (ISO 228-1).
- Position indicator is standard.

**Ordering Information**

Example: **BH - N - 4T - SS - PC - PAS**  
 1 2 3 4 5

- |                        |                          |                         |                         |                              |
|------------------------|--------------------------|-------------------------|-------------------------|------------------------------|
| <b>1. Valve Series</b> | <b>2. End Connection</b> | <b>3. Body Material</b> | <b>4. Seat Material</b> | <b>5. Pneumatic Actuator</b> |
| BH                     | N= NAI-LOK Tube Fitting  | SS= SS316               | PE= PEEK                | PAS= Single Return           |
| BH3                    | F= Female Thread         |                         | PC= PCTFE               | PAD= Double Return           |
|                        | M= Male Thread           |                         |                         |                              |



### Feature

- Working pressures up to 6000 psig (413 bar)
- Fractional and metric NAI-LOK tube fittings; ISO and NPT pipe end connections available
- 316 stainless steel body/ Monel/ Hastelloy materials
- Available in pneumatic

### Materials of Construction

Component	Material Grade/ ASTM Specification
1 Handle	Nylon with stainless steel insert
2 Set Screw	S17400 SS
3 Packing Bolt	316 SS / A479
4 Packing Bolt Gasket	Silver-plated 316 SS / A240
5 Guide Ring (2)	Silver-plated 316 SS /
6 Stem Backup Ring	A240
7 Stem O-ring	Ultralow-temperature fluorocarbon / D2000
8 Thrust Washer	PEEK
9 Stem	316 SS / A276
10 Panel Nut	316 SS / B783
11 Body	316 SS / A479
12 Ball	PTFE-coated 316 SS / A276
13 End Screw Gasket (2)	Silver-plated 316 SS / A240
14 Seat (2)	PEEK
15 Seat O-ring (2)	Ultralow-temperature fluorocarbon / D2000
16 Seat Backup Ring (2)	PTFE / D1710
17 Seat Gland (2)	316 SS / A479
18 Seat Spring (2)	316 SS / A240 or A666
19 End Screw (2)	316 SS / A479
Lubricant	PTFE-based

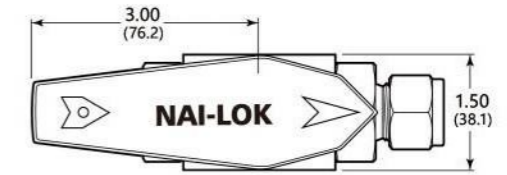
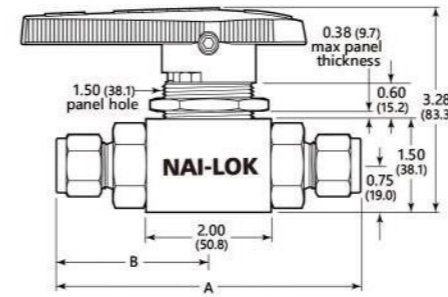
Wetted components listed in italics.



### Pressure-Temperature Rating

End Connection	NAI-LOK Tube Fitting			Female Pipe	
	3/8, 1/2 in., 12mm	3/4 in., 16mm	1in.	3/8, 1/2 in.	3/4 in.
Temperature °F (°C)	Working Pressure, psig (bar)				
-40(-40)~250 (121)	6000 (414)	5800 (400)	4700 (324)	6000 (414)	6000 (414)

Note: Rating are based on valves of standard Materials.



### Table of Dimensions

Basic Ordering Number	End Connections Inlet & Outlet
N-6T	3/8" NAI-LOK
N-8T	1/2" NAI-LOK
N-12T	3/4" NAI-LOK
N-16T	1" NAI-LOK
N-12M	12mm NAI-LOK
N-16M	16mm NAI-LOK
F-6N	3/8" Female NPT
F-8N	1/2" Female NPT
F-12N	3/4" Female NPT
F-8RT	1/2" Female ISO Tapered

All dimensions shown are for reference only and are subjects to change.

Cv	Orifice in.(mm)	Dimensions	
		A	B
4.0	0.281 (7.1)	4.57 (116)	2.29 (58.2)
7.2	0.406 (10.3)	4.80 (122)	2.40 (61.0)
7.1	0.472 (12.0)	4.80 (122)	2.40 (61.0)
6.5	0.472 (12.0)	5.10 (130)	2.55 (64.8)
5.2	0.406 (13.0)	4.80 (122)	2.40 (61.0)
12.4	0.472 (12.0)	4.80 (122)	2.40 (61.0)
11.0	0.472 (12.0)	4.00 (102)	2.00 (50.8)
13.8		4.00 (102)	2.00 (50.8)
7.8		4.12 (105)	2.06 (52.3)
13.8	0.472 (12.0)	4.00 (102)	2.00 (50.8)

### Ordering Information

Example: **BF - N-8T - SS**  
**1 2 3**

1. Valve Series  
BF

2. End Connection  
N= NAI-LOK Tube Fitting  
F= Female Thread

3. Body Material  
SS= SS316  
HC= Hastelloy

4. Flow Pattern  
A= Angle

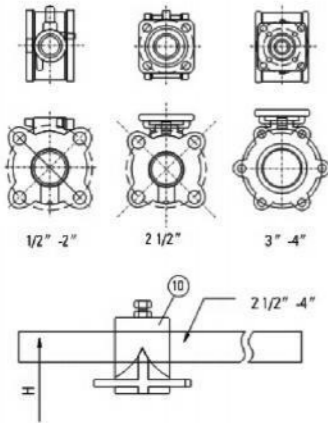
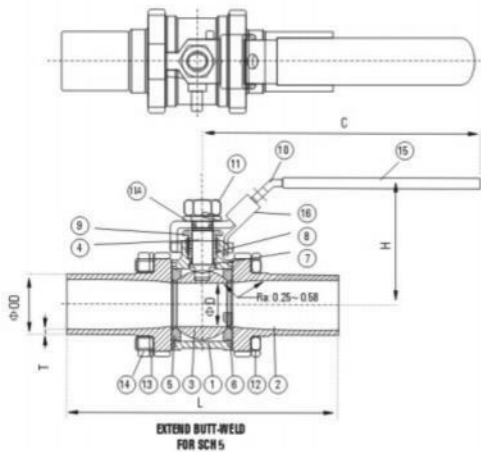


**Feature**

- Pressure range: 800psi
- Swing out 3PC design for easy field maintenance
- All extend weld ends in SS316L material all ows orbital welding in place.
- Locking handle stand in most sizes.
- High purity cleaning (Oil free)
- 100% leak testing of all valve assemblies.
- Double polyethylene bag packaging with polyethylene caps.

**Materials of Construction**

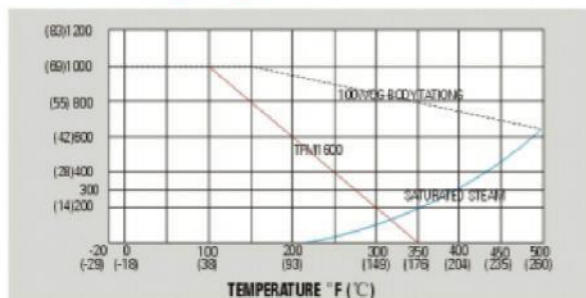
Part Name	Material
1 Body	CF8M
2 End Cap	CF3M
3 Ball	CF8M
4 Stem	TFM1600
5 Ball Seat	PTFE, TEFLON
6 Booy Seat	PTFE, TEFLON
7 Thrust Washer	SS304
8 Stem Packing	SS304
9 Stem Nut	SS304
10 Handle	SS304
11 Handle Nut	SS304
11a Handle Washer	SS304
12 Booy Bolt	SS304
13 Bolt Washer	SS304
14 Bout Nut	SS304
15 Handle Sleeve	VINTL
16 Looking Device	SS304



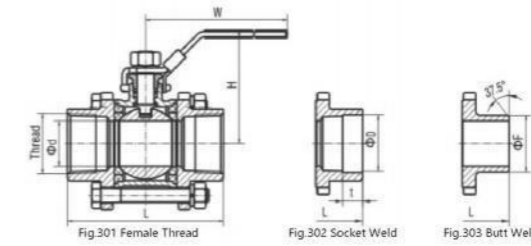
**Dimensions(mm)**

Size	ØD	ØOD	T(SCH5)	L	C	H
1/2"	9.4	12.7	1.65	135	103	58
3/4"	15.8	19.05	1.65	135	128	63
1"	22.1	25.4	1.65	152	155	73
1 1/4"	28.5	31.8	1.65	157	155	77
1 1/2"	34.8	38.1	1.65	190	194	90
2"	47.5	50.8	1.65	204	194	98
2 1/2"	60.2	63.5	2.1	254	295	139
3"	72.9	76.2	2.1	280	295	149
4"	97.4	101.6	2.1	306	495	178

**Pressure Psi (Bar)**



**3PC Threaded Ball Valve**



Size	d	L				D	t	F	H	w	
		Fig.301	Fig.301a	Fig.302	Fig.303						
1/2"	DN15	15	75	62	75	75	22.2	9.5	21.7	52	110
3/4"	DN20	20	80	68	80	80	27.6	12.5	27.2	63	120
1"	DN25	25	90	81	90	90	34.3	12.5	34	67	130
1 1/4"	DN32	32	110	96	110	110	43.1	12.5	42.7	80	140
1 1/2"	DN40	38	120	106	120	120	49.2	12.5	48.6	93	175
2"	DN50	49	140	126	140	140	61.7	16	60.5	110	175
2 1/2"	DN65	64	185	/	185	185	74.4	16	76.3	117	220
3"	DN80	76	205	/	205	205	90.3	16	88.9	134	270
4"	DN100	100	240	/	240	240	115.7	19	114.3	157	310

**3PC Flanged End Ball Valve**

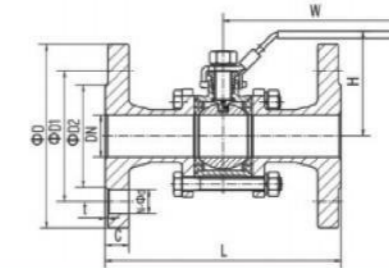


Fig.315D  
GD/DIN PN16/PN40

Size	DN	L	D	D1	D2	C	t	N-Ø	H	W
DN15	15	130	95	65	45	16	2	4-Ø14	52	110
DN20	20	150	105	75	58	18	2	4-Ø14	63	120
DN25	25	160	115	85	68	18	2	4-Ø14	67	130
DN32	32	180	140	100	78	18	2	4-Ø18	80	140
DN40	38	200	150	110	88	18	3	4-Ø18	93	175
DN50	49	230	165	125	102	20	3	4-Ø18	110	175
DN65	65	290	185	145	122	18	3	4-Ø18	123	220
DN80	80	310	200	160	138	20	3	8-Ø18	135	240
DN100	100	350	220	180	158	18	3	8-Ø18	160	300

Fig.315M  
ASME 150LB

Size	C	L	H	H1	H2	W	D	D1	D2	t	C	N-ØM	d	A	B	R	r	k	ISO5211	
1/2"	DN15	15	108	77	40.5	9	110	90	60.5	35	2	10	4-Ø16	12	42	36	3	3	9	F03/F04
3/4"	DN20	20	117	81.5	45	9	120	100	70	43	2	11	4-Ø16	12	42	36	3	3	9	F03/F04
1"	DN25	25	127	90	52	11	130	110	79.5	51	2	12	4-Ø16	14	50	42	3.5	3	11	F04/F05
1 1/4"	DN32	32	140	94.5	56.5	11	140	115	89	63.5	2	13	4-Ø16	14	50	42	3.5	3	11	F04/F05
1 1/2"	DN40	38	165	104	69	15	175	125	98.5	73	2	15	4-Ø16	18	70	50	4.5	3.5	14	F05/F07
2"	DN50	49	178	112	77	15	175	150	120.5	92	2	16	4-Ø19	18	70	50	4.5	3.5	14	F05/F07
2 1/2"	DN65	64	190	123	90	15	220	180	140	105	2	18	4-Ø19	18	70	50	4.5	3.5	14	F05/F07
3"	DN80	76	203	144.5	108	18	270	190	152.5	127	2	19	4-Ø19	22	102	70	5.5	4.5	17	F07/F10
4"	DN100	100	229	170	123	18	310	230	190.5	157	2	24	8-Ø19	22	102	70	5.5	4.5	17	F07/F10



**Feature**

- 316SS body materials as standard
- Temperature rating up to 375 °F (191°C) with standard Viton O-ring
- Variety of end connections include NAI-LOK tube fitting, Male/Female NPT & ISO thread

**Technical Informatio**

Valve Series	CV Series		CVH Series	
Materials	SS316		SS316	
Maximum Working Pressure @70 °F (21°C) Unit:psig(bar)	3000 (206)		6000 (413)	
Temperature Ratings F(°C)	Seal Material	Designator	Rating	Seal Material
	FKM O-ring	VT	-10 to 375 (-23 to 190)4	EPDM O-ring
-FKM is standard for SS316 valves.				
Cracking Pressure	Refer to swprng table of each valve serie			

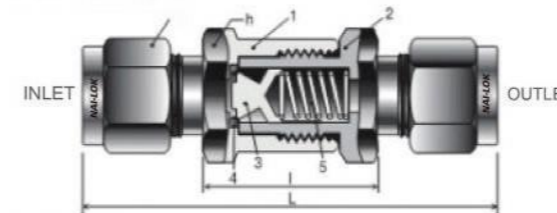
**Class Ratings**

Valve Series	CV Series	CVH Series
Temperature, °F (°C)	SS316	SS316
-18 to 100 (-28 to 38)	3000 (206)	6000 (413)
200 (93)	2575 (177)	5160 (355)
225 (175)	2510 (172)	5030 (346)
250 (121)	2450 (168)	4910 (338)
300 (148)	2325 (160)	4660 (321)
350 (176)	2255 (155)	4470 (308)
375 (190)	2185 (150)	4375 (301)
400 (204)	-	4280 (294)

**CV Series**

**Features**

- Working pressure up to 3,000 psig (206 bar)



**Materials of Construction**

Component	Valve Body Material
	Material Grade/ASTM
1. Body	SS316/276, A479
2. Connector	
3. Poppet	
4. O-ring	FKM
5. Spring	SS302/A313
6. O-ring Seal	FKM
7. Washer	SS316 With PTFE Coating

**Ordering Information and Dimensions**

Basic Ordering	End Connections		Orifice mm(in.)	Cv	Dimensions mm (in.)							
	Number	Inlet			Outlet	h-Hex	H-Hex	L	I			
CV-	N-2T	1/8" NAI-LOK		4.8 (0.19)	0.16	15.88 (5/8)	11.11 (7/16)	55.60 (2.19)	25.00 (0.98)			
	M-2N	1/8" Male NPT					-	44.40 (1.75)	-			
	F-2N	1/8" Female NPT					-	46.50 (1.83)	-			
	N-4T	1/4" NAI-LOK					7.1 (0.28)	0.47	19.05(3/4)	14.29 (9/16)	60.00(2.36)	25.00 (0.98)
	N-6M	6mm NAI-LOK								14.00	56.40 (2.22)	-
	MD-4N4T	1/4" Male NPT	1/4" NAI-LOK							14.29 (9/16)	56.40 (2.22)	-
	M-4N	1/4" Male NPT		-	53.40 (2.10)	-						
	F-4N	1/4" Female NPT		10.0 (0.39)	1.48	22.22(7/8)	17.46 (11/16)	65.50 (2.58)	2710 (1.07)			
	N-6T	3/8" NAI-LOK					-	56.80 (2.24)	-			
	N-10M	10 mm NAI-LOK					19.00	63.80 (2.51)	-			
	M-6N	3/8" Male NPT					-	55.50 (2.19)	-			
	F-6N	3/8" Female NPT		13.5 (0.53)	2.6	28.58(1-1/8)	22.22 (7/8)	80.20 (3.16)	3620 (1.43)			
	N-8T	1/2" NAI-LOK					-	74.40 (2.93)	-			
	N-12M	12 mm NAI-LOK					22.00	84.70 (3.33)	-			
	M-8N	1/2" Male NPT					-	84.70 (3.33)	-			
	F-8N	1/2" Female NPT		16.0 (0.63)	5.2	31.75(1-1/4)	25.40 (1)	91.80 (3.61)	48.10(1.89)			
N-10T	5/8" NAI-LOK		28.58 (1-1/8)				110.70 (4.35)	66.1(2.6)				
N-12T	3/4" NAI-LOK		-				103.00 (4.06)	-				
M-12N	3/4" Male NPT		-				103.00 (4.06)	-				
F-12N	3/4" Female NPT		18.0 (0.71)	8.0	34.93(1-3/8)	38.1(1-1/2)	120.8 (4.75)	68 (2.68)				
N-16T	1" NAI-LOK					-	115.8 (4.56)	-				
M-16N	1" Male NPT					41.28(1-5/8)	111 (4.37)	-				
F-16N	1" Female NPT					-	111 (4.37)	-				

Dimensions are for reference only and are subject to change.

**Ordering Information**

**Example:**  $\frac{CV}{1} - \frac{N-4T}{2} - \frac{SS}{3}$

**1. Valve Series**

CV

**2. End Connection**

N= NAI-LOK Tube Fitting  
F= Female Thread  
M= Male Thread

**3. Body Material**

SS= SS316  
HC= Hastelloy

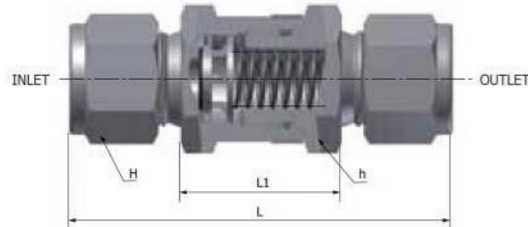
**4. Cracking Pressure**

1/3: 1/3 PSI  
1: 1 PSI  
3: 3 PSI  
5: 5 PSI

**CVH Series High Pressure Check Valves**

**Features**

- High pressure 6,000 psig (413 bar)
- Blow-out resistant and stop reversingflow design



**Materials of Construction**

Component	Valve Body Material
	Stainless Steel Material Grade/ASTM
1. Body	SS316
2. Connector	
3. Poppet Stop	
4. Poppet With Bonded Seal	SS316
5. Spring	SS316
6. Indicator Ring*	SS316
7. O-ring	Viton

**Spring Cracking, Reseal and Back Pressure @ 70 °F (21 °C)**

Spring Nominal Cracking Pressure Designator		Cracking Pressure Ranges				Reseal Pressures psig (bar)
		Min. Pressure		Max. Pressure		
psig	bar	psig	bar	psig	bar	
1/3	0.02	0	0	3	0.21	Up to 6 (0.41) back pressure
1	0.07	0	0	4	0.28	Up to 5 (0.35) back pressure
5	0.34	3	0.21	9	0.62	Up to 2 (0.14) back pressure
10	0.69	7	0.48	15	1.03	Mini mum 3 (0.21) Reseal pressure
25	1.72	20	1.38	30	2.07	Mini mum 17 (1.2) Reseal pressure

**CVH Series Ordering Information and Dimensions**

Basic Ordering Number	End Connections	Cv	Dimensions mm (in.)				Pressure Rating psig (bar)
			L	L1	H	h	
CVH-	N-2T	1/8" NAI-LOK	57.7 (2.27)	26.4 (1.04)	11.11 (7/16)	11/16	6000 (413)
	N-4T	1/4" NAI-LOK	61.7 (2.43)	26.4 (1.04)	14.29 (9/16)		
	N-6M	6 mm NAI-LOK	61.7 (2.43)	26.4 (1.04)	14		
	F-4N	1/4" Female NPT	54.1 (2.13)	-	-		
	M-2N	1/8" Male NPT	45.5 (1.79)	26.4 (1.04)	-		
	M-4N	1/4" Male NPT	55.1 (2.17)	26.4 (1.04)	-		
	N-6T	3/8" NAI-LOK	69.9 (2.75)	31.2 (1.23)	17.46 (11/16)	1	6000 (413)
	N-8T	1/2" NAI-LOK	75.2 (2.96)	31.2 (1.23)	22.22 (7/8)	1	
	N-8M	8 mm NAI-LOK	68.6 (2.70)	31.2 (1.23)	16	1	
	N-10M	10 mm NAI-LOK	71.1 (2.80)	31.2 (1.23)	19	1	
	N-12M	12 mm NAI-LOK	75.2 (2.96)	31.2 (1.23)	22	1	
	F-6N	3/8" Female NPT	64.8 (2.55)	-	-	1	
F-8N	1/2" Female NPT	77.0 (3.03)	-	-	1-1/16	4900 (337)	
M-6N	3/8" Male NPT	59.9 (2.36)	31.2 (1.23)	-	1	6000 (413)	
M-8N	1/2" Male NPT	69.3 (2.73)	31.2 (1.23)	-	1		
N-12T	3/4" NAI-LOK	89.4 (3.52)	45.2 (1.78)	28.58 (1-1/8)	1-5/8	5000 (344)	
N-16T	1" NAI-LOK	98.6 (3.88)	45.5 (1.79)	38.1 (1-1/2)		4700 (323)	
N-22M	22 mm NAI-LOK	88.4 (3.48)	45.5 (1.79)	32		4900 (337)	
N-25M	25 mm NAI-LOK	98.6 (3.88)	45.5 (1.79)	40		4600 (316)	
F-12N	3/4" Female NPT	82.0 (3.23)	82.0 (3.23)	-		4600 (316)	
F-16N	1" Female NPT	97.3 (3.83)	97.3 (3.83)	-		4400 (303)	
M-12N	3/4" Male NPT	83.6 (3.29)	45.5 (1.79)	-		5000 (344)	
M-16N	1" Male NPT	93.2 (3.67)	45.7 (1.80)	-			

Dimensions are for reference only and are subject to change.

**Ordering Information**

**Example:**  $\frac{CVH}{1} - \frac{N-2T}{2} - \frac{SS}{3}$

**1. Valve Series**  
CVH

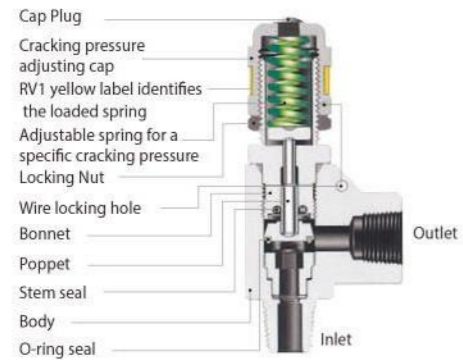
**2. End Connection**  
N= NAI-LOK Tube Fitting  
F= Female Thread  
M= Male Thread

**3. Body Material**  
SS= SS316  
HC= Hastelloy

**4. Cracking Pressure**  
1/3: 1/3 PSI  
1: 1 PSI  
3: 3 PSI  
5: 5 PSI



### RV1 Series for working pressure 300 psig (20.6 bar)



### Features

- Compact body, for installation in small space
- Cracking pressure, adjustable externally
- Lock wire capability, to maintain pressure relief setting
- Operating temperature range: -10 °F to 400 °F (-23°C to 204°C)
- Cracking pressure: is affected by the outlet pressure

### Technical Data

#### Series Technical Data

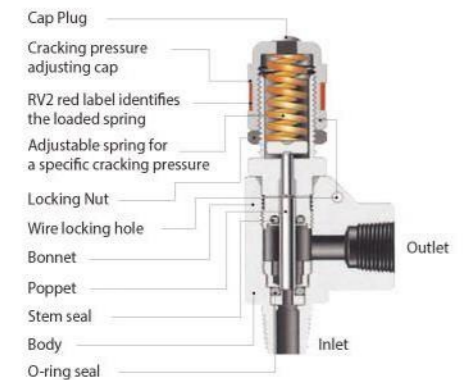
- Maximum working pressure : 300 psig @ 68 °F (20.6 bar @ 20°C)
- Cracking pressure range : 10 to 225 psig (0.68 to 15.5 bar)

#### Table 1 Series Spring Designator

Spring Designator	Cracking Pressure		Color Code
	psig	bar	
RV1-L	10 to 225	0.68 to 15.5	Red

- Orifice : 4.8 mm (0.19 in.)

### RV2 Series for working pressure 6,000 psig (413 bar)



### Series Temperature Data

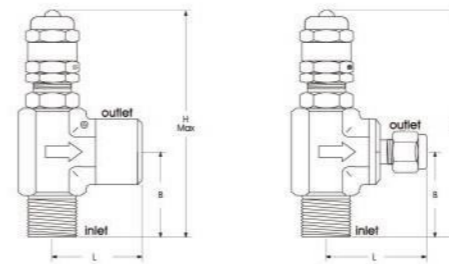
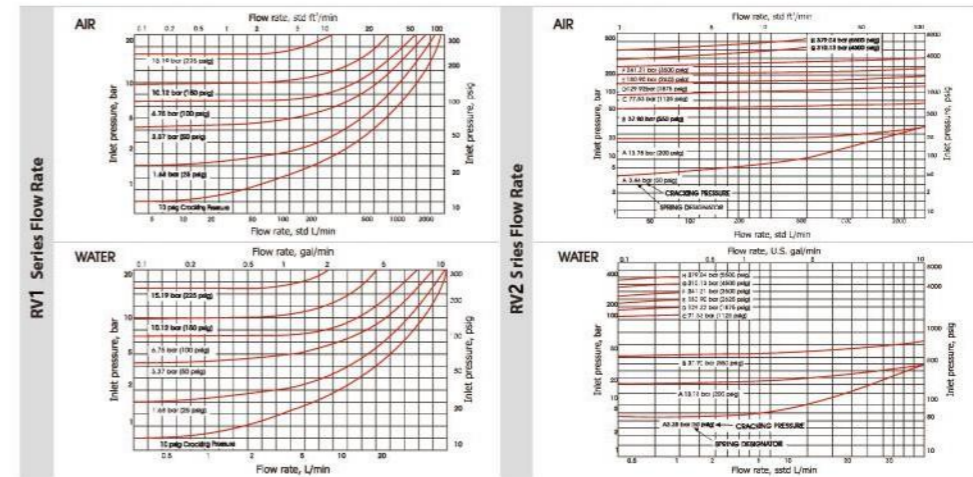
RatinSeal Material	Temperature Rating, °C ( °F )	
	RV1 Series	RV1 Series
FKM (Viton)	-12 ~ 135 (10.4 ~ 275)	-4 ~ 121 (24.8 ~ 250)
Buna N	-23 ~ 148 (-9.4 ~ 298)	-17 ~ 121 (1.4 ~ 250)
Ethylene Propylene (EPDM)	-40 ~ 148 (-40 ~ 298)	-1 ~ 121 (30.2 ~ 250)

### RV2 Series Technical

- Maximum working pressure : 6,000 psig @ 68 °F (413 bar @ 20°C)
- Orifice size : 3.4 mm (0.13 in.)
- Cracking pressure range : 220 to 6,000 psig (15.1 to 413 bar)

#### Table 2. RV2 Series Spring Designators

Spring Designator	Cracking Pressure		Spring Designator	Cracking Pressure	
	psig	bar		psig	bar
RV2-A	220 to 350	15.1 to 24	RV2-E	2250 to 3000	155 to 206
RV2-B	350 to 750	24 to 51.6	RV2-F	3000 to 4000	206 to 275
RV2-C	750 to 1500	51.6 to 103	RV2-G	4000 to 5000	275 to 344
RV2-D	1500 to 2250	103 to 155	RV2-H	5000 to 6000	344 to 413



Material of Construction	
Cap Plug	Polypropylene
Adjusting Cap	ASTM A276 / A479 Type 316
Spring	Stainless Steel 302
Locking Nut	ASTM A276 / A479 Type 316
Bonnet	
Poppet	
Stem & O-ring Seal	Standard Viton, optional EPDM and Buna N
Body	ASTM A182 F316

## Ordering Information and Dimensions

Basic Ordering Number	End Connections		Orifice mm (in.)	Dimensions mm (in.)		
	Inlet	Outlet		H	B	L
N-4T	1/4" NAI-LOK		RV1 : 4.8 (0.19) RV2 : 3.4 (0.13)	100 (3.93)	37 (1.45)	39 (1.53)
N-6M	6 mm NAI-LOK				38 (1.49)	40 (1.57)
N-8M	8 mm NAI-LOK			105 (4.13)	44 (1.73)	42 (1.65)
N-8T	1/2" NAI-LOK				98 (3.85)	36 (1.41)
N-12M	12 mm NAI-LOK			94 (3.70)		32 (1.25)
MN-8N8T	1/2" Male NPT	1/2" NAI-LOK			98 (3.85)	36 (1.41)
MN-8N12M	1/2" Male NPT	12 mm NAI-LOK	94 (3.70)	32 (1.25)		35 (1.37)
MF-4N	1/4" Male NPT	1/4" Female NPT		98 (3.85)	36 (1.41)	38 (1.49)
MF-4R	1/4" Male	1/4" Female ISO 7/1	94 (3.70)		32 (1.25)	35 (1.37)
MF-6N	3/8" Male NPT	3/8" Female NPT		98 (3.85)	36 (1.41)	38 (1.49)
MF-6R	3/8" Male	3/8" Female ISO 7/1	94 (3.70)		32 (1.25)	35 (1.37)
MF-8N	1/2" Male NPT	1/2" Female NPT		98 (3.85)	36 (1.41)	38 (1.49)
MF-8R	1/2" Male	1/2" Female ISO 7/1	94 (3.70)		32 (1.25)	35 (1.37)

All dimensions shown are for reference only and are subject to change.

## Ordering Information

Example: **RV1 - N-4T - L - SS**  
1 2 3 4

### 1. Valve Series

- RV1
- RV2

### 2. End Connection

- N= NAI-LOK Tube Fitting
- F= Female Thread
- M= Male Thread

### 3. Cracking Pressure

- L-10-225psi (0.68-15.5Bar)
- A-220-350psi (15.1-24Bar)
- B-350-750psi (24-51.6Bar)
- C-750-1500psi (51.6-103Bar)
- D-1500-2250psi (103-155Bar)
- E-2250-3000psi (155-206Bar)
- F-3000-4000psi (206-275Bar)
- G-4000-5000psi (275-344Bar)
- H-5000-6000psi (344-413Bar)

### 4. Body Material

- SS= SS316





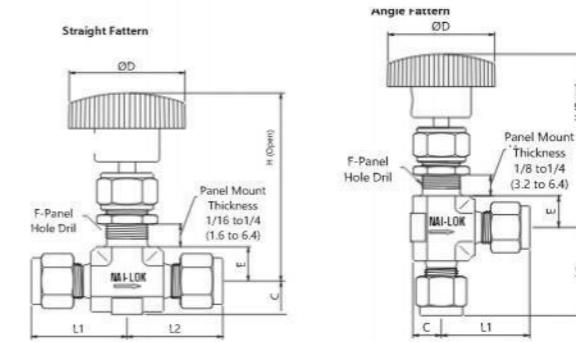
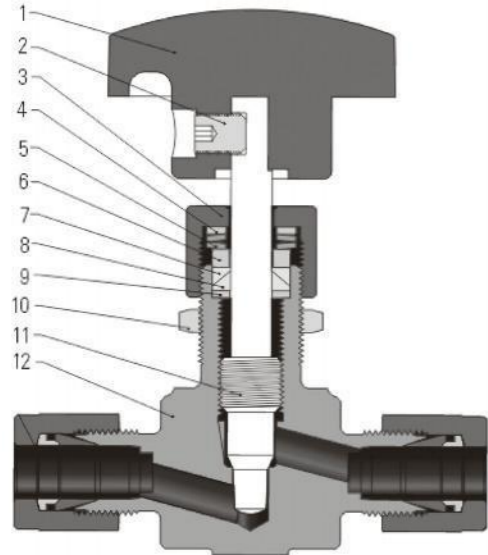
**Features**

- Maximum working pressures: Stainless steel 6000 psig (414 bar)
- Working temperature: PTFE: -65 °F to 450 °F (-54°C to 232 °C)  
PEEK: -65 °F to 600 °F (-54°C to 315°C)
- Rolled stem threads for longer valve life
- Easy external adjustments by packing nut
- Live-loaded packing system
- Handle of different colors available for option
- Compact design
- Leak-tight performance testing for every valve with nitrogen at the maximum working pressure

**Standard Materials Of Construction**

ITEM	Component	Valve Body Material
1	Handle	Anodized aluminum or stainless steel or black knob
2	Set Screw	Nickel cadmium-plated Steel
3	Packing Nut	316SS
4	Gland	304SS
5	Packing Spring	S17700
6	Packing Gland	304SS
7	Upper Packing	PTFE or PEEK
8	Lower Packing	PTFE or PEEK
9	Lower Gland	316SS
10	Panel Nut	316SS
11	Stem	316SS
12	Body	316SS
Lubricants		Molybdenum disulfide-based and silicone-based

1. Graphs are based on PEEK packing.
2. Temperature rating is limited to 200 °F (93°C ) max with PCTFE stem tip (soft tip).
3. Contact NAI-LOK or our authorized distributors for curve graph of other materials.



**Dimensions**

Basic Ordering Number	Connection Type and Size		Office in.(TT)	Cv	Dimension in.(TT)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
F-2N	1/8" Female NPT	1/8" Female NPT	0.08 (2.0)	0.09	0.81 (2.06)	0.81 (2.06)	0.31 (7.9)	1.0 (25.4)	0.44 (11.2)	0.47 (11.9)	2.28 (57.9)
N-2T	1/8" NAI-LOK	1/8" NAI-LOK			0.98 (25.0)	0.98 (25.0)					
N-3M	3mm NAI-LOK	3mm NAI-LOK									
F-2N	1/8" Female NPT	1/8" Female NPT	0.157 (4.0)	0.35	0.81 (2.06)	0.81 (2.06)	0.39 (9.9)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
M-2N	1/8" Male NPT	1/8" Male NPT			0.98 (25.0)	0.98 (25.0)					
M-4N	1/4" Male NPT	1/4" Male NPT			1.13 (28.7)	1.13 (28.7)					
N-4T	1/4" NAI-LOK	1/4" NAI-LOK			1.17 (29.7)	1.17 (29.7)					
N-6M	6mm NAI-LOK	6mm NAI-LOK									
N-8M	8mm NAI-LOK	8mm NAI-LOK									
F-4N	1/4" Female NPT	1/4" Female NPT	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)	0.5 (12.7)	1.88 (47.8)	0.5 (12.7)	0.78 (19.8)	2.97 (75.4)
F-6N	3/8" Female NPT	3/8" Female NPT			1.12 (28.4)	1.12 (28.4)					
M-6N	3/8" Male NPT	3/8" Male NPT			1.50 (38.1)	1.50 (38.1)					
M-8N	1/2" Male NPT	1/2" Male NPT			1.29 (32.8)	1.29 (32.8)					
N-6T	3/8" NAI-LOK	3/8" NAI-LOK			1.4 (35.6)	1.4 (35.6)					
N-8T	1/2" NAI-LOK	1/2" NAI-LOK			1.3 (33.0)	1.3 (33.0)					
N-10M	10mm NAI-LOK	10mm NAI-LOK			1.4 (35.6)	1.4 (35.6)					
N-12M	12mm NAI-LOK	12mm NAI-LOK			1.56 (39.7)	1.56 (39.7)					
N-14M	14mm NAI-LOK	14mm NAI-LOK			1.50 (38.1)	1.50 (38.1)					
M-M20	M20x1.5 Male ISO	M20x1.5 Male ISO									
F-8N	1/2" Female NPT	1/2" Female NPT	0.375 (9.5)	1.80	1.50 (38.1)	1.50 (38.1)	0.75 (19.1)	3.00 (76.2)	0.75 (19.1)	1.03 (26.2)	3.91 (99.3)
F-12N	3/4" Female NPT	3/4" Female NPT			1.63 (41.3)	1.63 (41.3)					
M-12N	3/4" Male NPT	3/4" Male NPT									
N-8T	1/2" NAI-LOK	1/2" NAI-LOK			1.90 (48.3)	1.90 (48.3)					
N-12T	3/4" NAI-LOK	3/4" NAI-LOK									
N-14M	14mm NAI-LOK	14mm NAI-LOK									

Dimensions are for reference only and subject to change

**Ordering Information**

Example: **NG - N-2T - SS**  
                  **1     2     3**

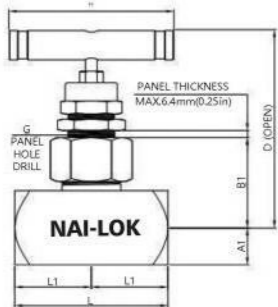
- |                              |   |   |                                    |  |
|------------------------------|---|---|------------------------------------|--|
| <b>1. Valve Series</b><br>NG | <b>2. End Connection</b><br>N= NAI-LOK Tube Fitting<br>F= Female Thread<br>M= Male Thread | <b>3. Body Material</b><br>SS= SS316<br>HC= Hastelloy | <b>4. Flow Pattern</b><br>A= Angle | <b>5. Packing Material</b><br>P= PEEK<br>G= Graphite |
|------------------------------|---|---|------------------------------------|--|



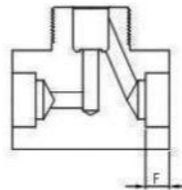
### Features

- Maximum working pressures: Stainless steel 6000 psig (414 bar)
- Working temperature: PTFE: -65 °F to 450 °F (-54°C to 232 °C)  
PEEK: -65 °F to 600 °F (-54°C to 315°C)
- Leak-tight performance testing for every valve with nitrogen at the maximum working pressure

### Dimensions



• In-line pattern



• Socket weld end

Basic Ordering Number	End connections		Orifice mm(in)	Cv	Dimensions, mm(inch)							
	Inlet	Outlet			L	L1	B1	A1	H	G	D	F
NB-	F-2N	1/8" Female NPT	4.0 (0.156)	0.35	57.2(2.25)	28.7(1.13)	34.0(1.34)	12.7(0.50)	63.5(2.50)	20.6(0.81)	77.2(3.04)	-
	F-4N	1/4" Female NPT			57.2(2.25)	28.7(1.13)	34.0(1.34)	12.7(0.50)	63.5(2.50)	20.6(0.81)	77.2(3.04)	-
	M-4N	1/4" Male NPT			57.2(2.25)	28.7(1.13)	34.0(1.34)	12.7(0.50)	63.5(2.50)	20.6(0.81)	77.2(3.04)	-
	M-F-4N	1/4" Male to Female NPT			57.2(2.25)	28.7(1.13)	34.0(1.34)	12.7(0.50)	63.5(2.50)	20.6(0.81)	77.2(3.04)	-
	N-4T	1/4" NAI-LOK	6.4 (0.25)	0.86	71.6(2.82)	35.8(1.41)	34.0(1.34)	12.7(0.50)	63.5(2.50)	20.6(0.81)	77.2(3.04)	-
	F-8N	1/2" Female NPT			82.6(3.25)	41.4(1.63)	48.2(1.90)	19.8(0.78)	88.9(3.50)	26.9(1.06)	111(4.36)	-
	M-8N	1/2" Male NPT			79.5(3.13)	39.6(1.56)	46.0(1.81)	16.0(0.63)	88.9(3.50)	26.9(1.06)	108(4.27)	-
	M-F-8N	1/2" Male to Female NPT			82.6(3.25)	41.4(1.63)	48.2(1.90)	19.8(0.78)	88.9(3.50)	26.9(1.06)	111(4.36)	-

All dimensions shown are for reference only and are subject to change. Dimensions with NAI-LOK nuts are in finger-tight position.

- Non-rotating globe disc providing repetitive leak tight shut-off is standard.
- To order Dimensions are for reference only and subject to change.

### Pressure-Temperature Ratings

NB Series (High Pressure)

ASME Class	N/A
Material Group	N/A
Material Name	SS316
Temperature, °F (°C)	Working pressure, psig (bar)
-65(-53) to 100(38)	10000 (689)
200 (93)	9290 (640)
300 (148)	8390 (578)
400 (204)	7705 (530)
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)

### Grafoil Packing Information

Grafoil is a high temperature packing material that requires a load on the material to generate a seal. In air, Grafoil maximum temperature is 973 °F (523°C) in steam, Grafoil goes up to the maximum temperature of 1,200 °F (648°C). Grafoil packing is not for use with pneumatic actuating valves.

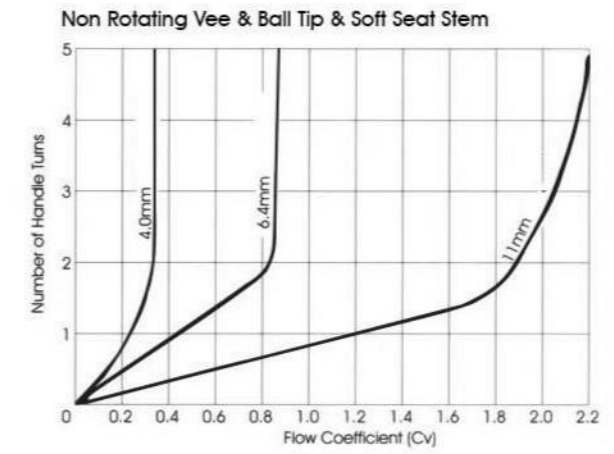
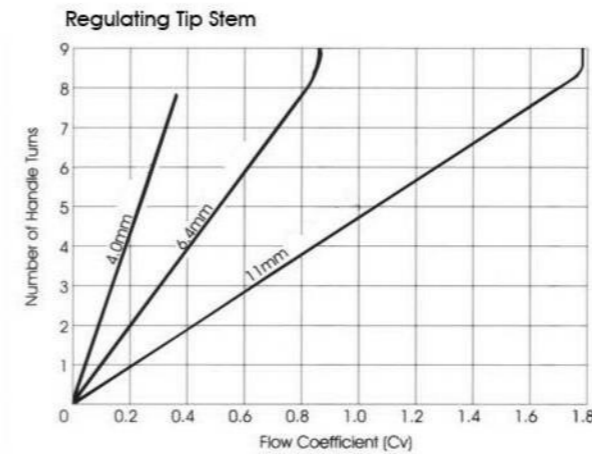
### Valve Ratings With Optional PEEK Packing

SS316 and C276 valve with PEEK packing is limited to maximum 600 °F (315 °C) rating ; Alloy 400 valve with PEEK packing is limited to maximum 500 °F (260 °C) rating.

### Valve Ratings With Nai-Lok End Connections

Valve ratings may be limited to the maximum working pressure of connective pipe and tubing. For valve rating with NAI-LOK tube fitting end connections, refer to NAI-LOK catalog providing suggested working pressures in various tubing OD, wall thicknesses, and materials.

### Flow Data @ 100 °F (38°C) for valves with regulating disc



### Globe and Ball Disc

Valve with standard globe and ball disc is designed for use in a fully open or fully closed position.

### Cv Reduction

Valve flow may be reduced by the restriction of pipe and tubing connected.

### Ordering Information

Example:  $\frac{NB}{1} - \frac{N-2T}{2} - \frac{SS}{3}$

#### 1. Valve Series

NB

#### 2. End Connection

N= NAI-LOK Tube Fitting  
F= Female Thread  
M= Male Thread

#### 3. Body Material

SS= SS316  
HC= Hastelloy

#### 4. Packing Material

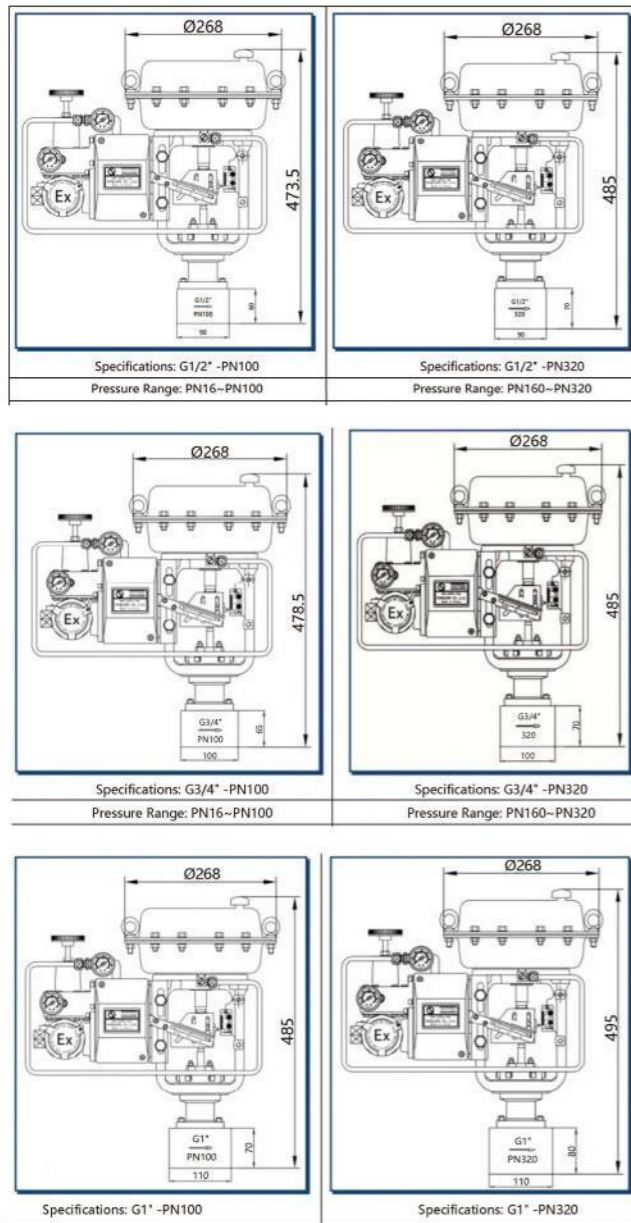
P= PEEK  
G= Graphite



**Features**

- Widely used to control various pressure, flow, and temperature of fluid
- Compact design
- Small pressure drop loss big circulation
- High precision of flow characteristic
- S-shaped streamlined, small pressure drop loss big circulation, adjustable range

**Dimensions**



**Please Indicate the Following when Making Inquiries and Ordering**

- 1) Valve type
- 2) Valve diameter×Cv value
- 3) Body pressure and connection form
- 4) Body and valve assembly material, to be hardened
- 5) Valve characteristics and spool form
- 6) Upper cover type
- 7) Actuator type, whether with handwheel mechanism, air supply pressure
- 8) Forward/reaction (air closed or air open)
- 9)Accessories (pressure reducing valve with filter etc.)
- 10)Special requirements (no water treatment, no copper, etc.)
- 11)Name of the medium
- 12) Normal flow and maximum flow
- 13) Medium pressure, valve fully open and fully closed valve inlet and outlet pressure
- 14) Medium temperature and specific gravity
- 15)Medium viscosity, whether it contains suspension, whether there is flash phenomenon

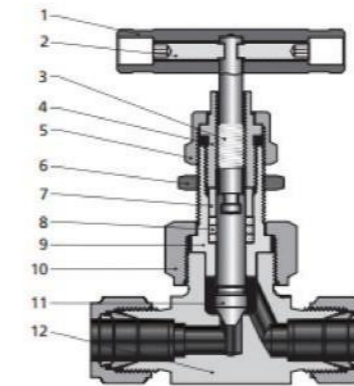


**Features**

- Pressure Rating up to 6,000 psig (413 bar) @ 100° F (38 °C).
- Temperature Rating up to 449 °F (232°C) with standard PTFE packing; up to 1,200 °F (648°C) with Grafoil packing.
- Standard 316 stainless steel, optional Alloy 400, and Alloy C276 construction.
- Valve stem back seating against the bevelled edge of bonnet in fully open position prevents maximum leakage through bonnet when packing fails.
- 100% Factory tested

**Materials of Construction**

Item	Component	Valve Body Materials			
		SS316	Alloy 400	Titanium	Alloy C-276
		Material Grade/ASTM Specification			
1	Handle	Anodized aluminum of stainless steel or black knob			
2	Set Screw	Galvanized carbon steel			
3	Upper Stem	316 SS/A479			
4	Packing Bolt	304 SS/A479			
5	Lock Nut	316 SS/A479			
6	Panel Nut	Stainless steel			
7	Gland	316 SS/A479			
8	Packing	PTFE or PEEK or graphite			
9	Bonnet	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574
10	Union Nut	316 SS/A479			
11	Stem	Hardened 316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574
12	Body	316 SS/A182	Alloy 400/B 164, B127, B564	Titanium Gr 4/B348 or Titanium Gr 4/B381	Alloy C-276/B564
	Seat	Same as Body			

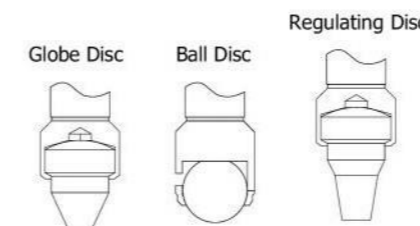


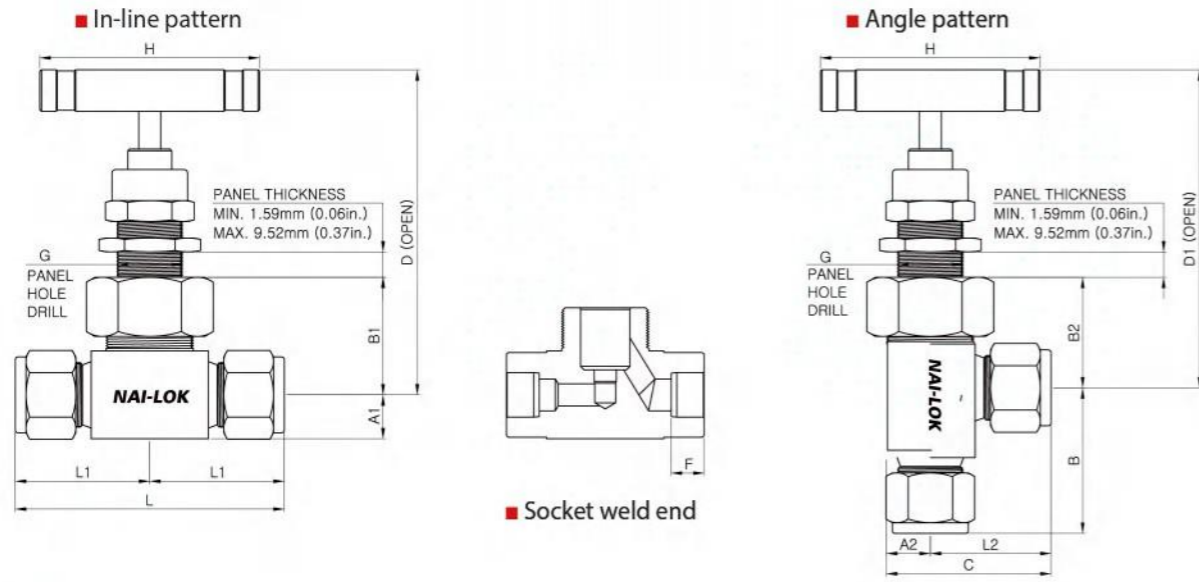
Note: Contact NAI-LOK or our authorized distributors for other materials.

**Technical Data**

Ratings below are for valves with standard PTFE packing. Refer to valve ratings with optional packing.

Valve Material	Stem Disc Designato	Temperature Rating °F (°C)	Pressure Rating @ -65 to 100 °F (-53 to 38°C)
SS316 Alloy 400 Alloy C276	Globe: Nil. Regulating: -R Ball: -B	-65 to 450 (-53 to 232)	6,000 psig (413 bar)





### Dimensions

Basic Ordering Number	End connections		Orifice mm (in.)	Cv	Dimensions, mm (inch)															
	Inlet	Outlet			L	L1	L2	B	C	B1	B2	A1	A2	H	G	D	D1	F		
F-2N	1/8" Female NPT		4.0 (0.156)	0.35	50.8 (2.00)	25.4 (1.00)	22.6 (0.89)	25.4 (1.00)	32.3 (1.27)	27.7 (1.09)	27.7 (1.09)	9.7 (0.38)	9.7 (0.38)	44.4 (1.75)	15.1 (0.59)	77.2 (3.04)	77.2 (3.04)	-		
F-4N	1/4" Female NPT				52.3 (2.06)	26.2 (1.03)	22.6 (0.89)	25.4 (1.00)	32.3 (1.27)	27.7 (1.09)	27.7 (1.09)	9.7 (0.39)	9.7 (0.38)	44.4 (1.75)	15.1 (0.59)	77.2 (3.04)	77.2 (3.04)	-		
M-4N	1/4" Male NPT				50.8 (2.00)	25.4 (1.00)	25.4 (1.00)	25.4 (1.00)	35.1 (1.38)	27.7 (1.09)	27.7 (1.09)	9.7 (0.38)	9.7 (0.38)	44.4 (1.75)	15.1 (0.59)	77.2 (3.04)	77.2 (3.04)	-		
M-F-4N	1/4" Male to Female NPT				51.6 (2.03)	26.2 (1.03)	22.6 (0.89)	25.4 (1.00)	32.3 (1.27)	27.7 (1.09)	27.7 (1.09)	9.7 (0.39)	9.7 (0.38)	44.4 (1.75)	15.1 (0.59)	77.2 (3.04)	77.2 (3.04)	-		
N-6M	6 mm NAI-LOK				61.0 (2.40)	30.5 (1.20)	29.5 (1.16)	37.6 (1.48)	39.1 (1.54)	27.7 (1.09)	27.7 (1.09)	9.7 (0.38)	9.7 (0.38)	44.4 (1.75)	15.1 (0.59)	77.2 (3.04)	77.2 (3.04)	-		
N-4T	1/4" NAI-LOK				61.0 (2.40)	30.5 (1.20)	29.5 (1.16)	37.6 (1.48)	39.1 (1.54)	27.7 (1.09)	27.7 (1.09)	9.7 (0.38)	9.7 (0.38)	44.4 (1.75)	15.1 (0.59)	77.2 (3.04)	77.2 (3.04)	-		
N-8M	8 mm NAI-LOK				61.0 (2.40)	30.5 (1.20)	-	-	-	27.7 (1.09)	-	9.7 (0.38)	-	44.4 (1.75)	15.1 (0.59)	77.2 (3.04)	-	-		
F-6N	3/8" Female NPT				57.2 (2.25)	28.4 (1.12)	25.4 (1.00)	28.4 (1.12)	38.1 (1.50)	34.0 (1.34)	37.3 (1.47)	12.7 (0.50)	12.7 (0.50)	63.5 (2.50)	19.8 (0.78)	92 (3.62)	92 (3.62)	-		
N-10M	10mm NAI-LOK				72.4 (2.85)	36.1 (1.42)	33.0 (1.30)	39.4 (1.55)	45.7 (1.80)	34.0 (1.34)	34.3 (1.35)	12.7 (0.50)	12.7 (0.50)	63.5 (2.50)	19.8 (0.78)	92 (3.62)	92 (3.62)	-		
N-6T	3/8" NAI-LOK				71.9 (2.83)	35.8 (1.41)	32.8 (1.29)	42.2 (1.66)	45.5 (1.79)	34.0 (1.34)	31.0 (1.22)	12.7 (0.50)	12.7 (0.50)	63.5 (2.50)	19.8 (0.78)	92 (3.62)	92 (3.62)	-		
N-12M	12 mm NAI-LOK		77.2 (3.04)	38.6 (1.52)	35.6 (1.40)	41.9 (1.65)	48.3 (1.90)	34.0 (1.34)	34.0 (1.34)	12.7 (0.50)	12.7 (0.50)	63.5 (2.50)	19.8 (0.78)	92 (3.62)	92 (3.62)	-				
N-8T	1/2" NAI-LOK		77.2 (3.04)	38.6 (1.52)	35.6 (1.40)	41.9 (1.65)	48.3 (1.90)	34.0 (1.34)	34.0 (1.34)	12.7 (0.50)	12.7 (0.50)	63.5 (2.50)	19.8 (0.78)	92 (3.62)	92 (3.62)	-				
F-8N	1/2" Female NPT		79.2 (3.12)	39.6 (1.56)	33.3 (1.31)	39.6 (1.56)	50.8 (2.00)	46.2 (1.82)	50.8 (2.00)	15.7 (0.62)	17.5 (0.69)	88.9 (3.50)	26.2 (1.03)	121 (4.78)	126 (4.97)	-				
F-12N	3/4" Female NPT		82.6 (3.25)	41.1 (1.62)	-	-	-	48.5 (1.91)	-	19.8 (0.78)	-	88.9 (3.50)	26.2 (1.03)	124 (4.88)	-	-				
F-16N	1" Female NPT		91.9 (3.62)	46.0 (1.81)	-	-	-	54.1 (2.13)	-	25.4 (1.00)	-	88.9 (3.50)	26.2 (1.03)	129 (5.10)	-	-				
M-F-8N	1/2" Male to Female NPT		79.2 (3.12)	39.6 (1.56)	33.3 (1.31)	39.6 (1.56)	50.8 (2.00)	46.2 (1.82)	50.8 (2.00)	15.7 (0.62)	17.5 (0.69)	88.9 (3.50)	26.2 (1.03)	121 (4.78)	126 (4.97)	-				
M-F-12N	3/4" Male to Female NPT		82.6 (3.25)	41.1 (1.62)	36.5 (1.43)	41.3 (1.62)	56.4 (2.22)	48.5 (1.91)	50.8 (2.00)	19.8 (0.78)	19.8 (0.78)	88.9 (3.50)	26.2 (1.03)	124 (4.88)	126 (4.97)	-				
M-F-16N	1" Male to Female NPT		91.9 (3.62)	46.0 (1.81)	-	-	-	54.1 (2.13)	-	25.4 (1.00)	-	88.9 (3.50)	26.2 (1.03)	129 (5.10)	-	-				
N-12T	3/4" NAI-LOK		99.0 (3.89)	49.5 (1.94)	42.7 (1.68)	52.8 (2.08)	60.2 (2.37)	46.2 (1.82)	47.8 (1.88)	15.7 (0.62)	17.5 (0.69)	88.9 (3.50)	26.2 (1.03)	121 (4.78)	123 (4.85)	-				
N-16T	1" NAI-LOK		104 (4.09)	51.8 (2.04)	-	-	-	47.8 (1.88)	-	17.5 (0.69)	-	88.9 (3.50)	26.2 (1.03)	123 (4.85)	-	-				

All dimensions shown are for reference only and are subject to change. Dimensions with NAI-LOK nuts are in finger-tight position.  
 • Non-rotating globe disc providing repetitive leak tight shut-off is standard.  
 • To order Angle Pattern, insert -A in the basic ordering number.  
 • Dimensions are for reference only and subject to change

### Pressure-Temperature Ratings

#### Pressure-Temperature Ratings

ASME Class	2500		N/A
Material Group	2.2	3.4	N/A
Material Name	SS316	Alloy 400	Alloy C-276
Temperature, °F (°C)	Working pressure, psig (bar)		
-65 (-53) to 100 (38)	6000 (413)	5000 (344)	6000 (413)
200 (93)	5160 (355)	4400 (303)	6000 (413)
300 (148)	4660 (321)	4120 (283)	6000 (413)
400 (204)	4280 (294)	3980 (274)	5880 (405)
500 (260)	3980 (274)	3960 (272)	5540 (381)
600 (315)	3760 (259)	-	5040 (347)
700 (371)	3600 (248)	-	4730 (325)
800 (426)	3460 (238)	-	4230 (291)
900 (482)	3280 (225)	-	3745 (258)
1000 (537)	3030 (208)	-	3030 (208)
1100 (593)	2685 (184)	-	2685 (184)
1200 (648)	1715 (118)	-	1545 (106)

### Grafoil Packing Information

Grafoil is a high temperature packing material that requires a load on the material to generate a seal. In air, Grafoil maximum temperature is 973 °F (523 °C), in steam, Grafoil goes up to to the maximum temperature of 1,200 °F (648 °C). Grafoil packing is not for use with pneumatic actuating valves.

### Valve Ratings With NAI-LOK End Connections

Valve ratings may be limited to the maximum working pressure of connective pipe and tubing. For valve rating with NAI-Lok tube fitting end connections, refer to NAI-LOK catalog providing suggested working pressures in various tubing OD, wall thicknesses, and materials.

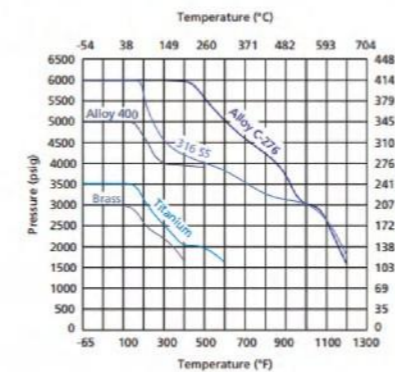
### Packing Adjustment And Actuation Torque

Extreme temperature fluctuations while valve in service may require packing adjustment. Valves that have not been actuated for a period of time may have a higher initial actuation torque.

### Valve Ratings With Optional Peek Packing

SS316 and C276 valve with PEEK packing is limited to maximum 600 °F (315 °C) rating ; Alloy 400 valve with PEEK packing is limited to maximum 500 °F (260 °C) rating.

### Flow Data @ 100 °F (38°C) For Valves With Regulating Disc



### Globe and Ball Disc

Valve with standard globe and ball disc is designed for use in a fully open or fully closed position.

### Cv Reduction

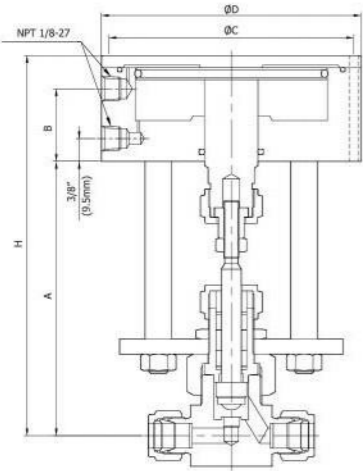
Valve flow may be reduced by the restriction of pipe and tubing connected.

### Ordering Information

Example: **NH - F4N - SS**  
 1 2 3

- |                              |   |   |   |                                    |
|------------------------------|---|---|---|------------------------------------|
| <b>1. Valve Series</b><br>NH | <b>2. End Connection</b><br>N= NAI-LOK Tube Fitting<br>F= Female Thread<br>M= Male Thread | <b>3. Body Material</b><br>SS= SS316<br>HC= Hastelloy | <b>4. Packing Material</b><br>P= PEEK<br>G=Graphite | <b>5. Flow Pattern</b><br>A= Angle |
|------------------------------|---|---|---|------------------------------------|

**Double Acting Dimensions**



Valve Series	Dimensions in. (mm)				
	A	H	D	C	B
NHA	4.22 (107)	5.91 (150)	3.25 (82.6)	3.25 (82.6)	1.12 (28.4)
NHB	4.47 (114)	6.22 (158)	4.25 (108)	3.81 (96.8)	1.19 (30.2)

All dimensions are reference only and subject to change.

**Double Acting Dimensions**

Maximum applicable pressure	Temperature rating °F ( °C)
150 psig (10.4 bar)	-20 to 300 (-28 to 204)

**Pneumatic Actuator Applicability**

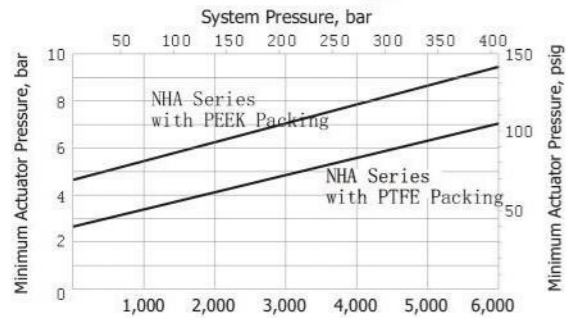
NHA andNHB series valves with PTFE or PEEK packing are applicable to pneumatic actuator.

**Operation Information**

Curve 1 and 2 indicate the minimum actuator pressure to open or close double acting actuator against system pressure. To prolong valve life, actuators should be operated at minimum air actuator pressures. Curves shown are based on packing bolt factory adjustment.

Packing bolt adjustment may be required to maintain the valve leak-tight. If the packing bolt is over-tightened, the actuating pressure can not overcome the friction force between the over-tightened packing and the stem. If the packing bolt is under-tightened for low system pressures, it may leak at high system pressures. However, packing bolt torque must be sufficiently maintained to prevent packing from leakage.

**Curve 1  
NH series with Double Acting Actuator**



**Actuator Ordering Information**

To order valves with a pneumatic double acting actuator, insert the desired actuator designator from the chart in the valve ordering number.

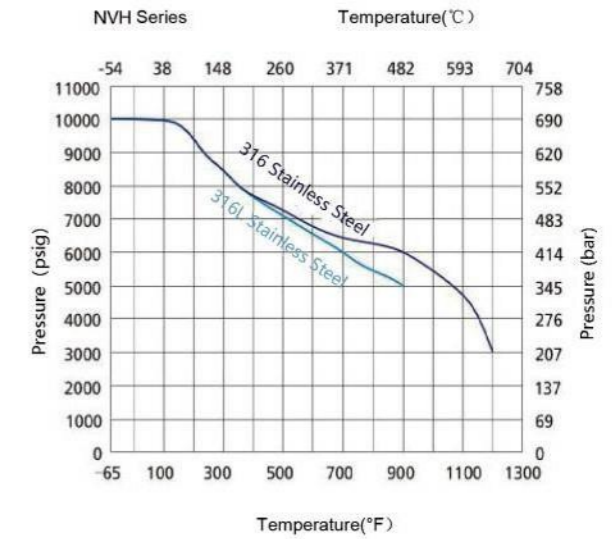
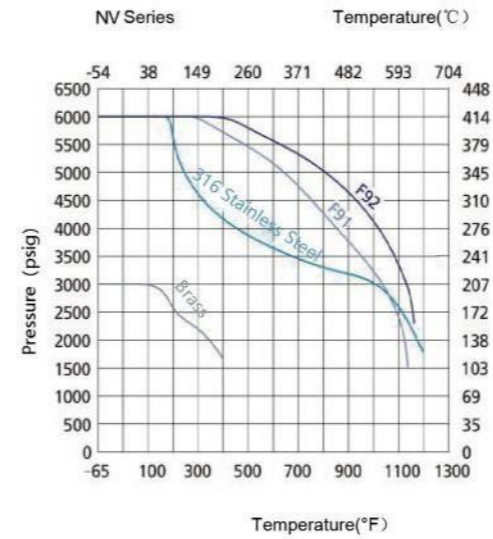
Valve Series	Double Acting Designator
NH	AD

**Characteristic:**

- NV Working pressure up to 6000 psig
- NVH Working pressure up to 10,000 psig
- Integral forged valve body
- Two-section valve stem design
- The upper valve rod thread is subject to rolling hardening treatment
- The grease on the upper stem thread is isolated from the system medium
- Panel mountable
- The handle is locked with two screws, which is stable and durable
- 100% Gas tested
- 316SS, Monel, Hastelloy materials
- Working Temperature:
  - PTFE packing: -54°C -232°C (-65 °F -450 °F )
  - PEEK packing: -54°C -260°C (-65 °F -500 °F )
  - Graphite packing: -54°C -649°C (-65 °F -1200 °F )



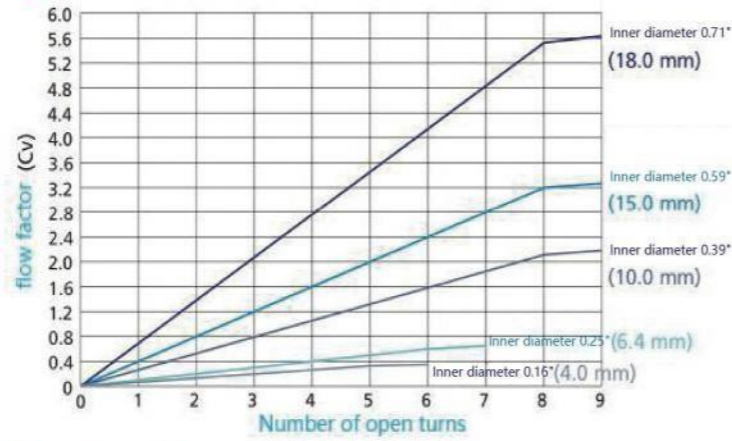
**Temperature-pressure Curve**



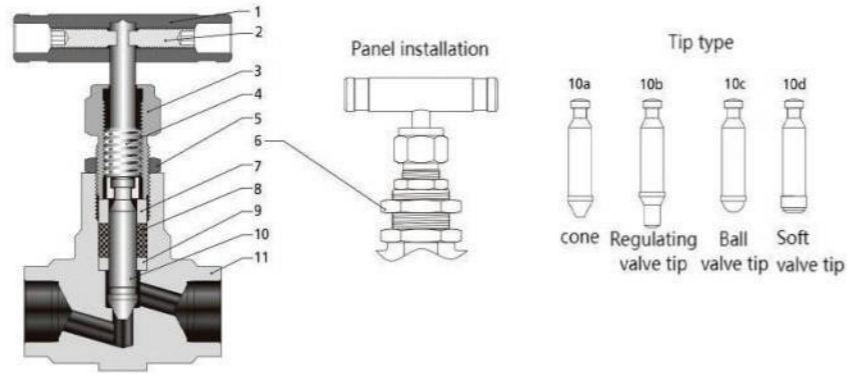
- Graph based on graphite filler
  - Soft valve tip is only applicable to NV series needle valve
  - PCTFE valve tip (soft valve tip) is only applicable to NV series needle valve. The maximum service temperature is 93°C (200 °F)
- For curve table of other materials, please contact NAI-LOK

**Flow Data 38°C (100° F)**

Adjusting Valve Tip



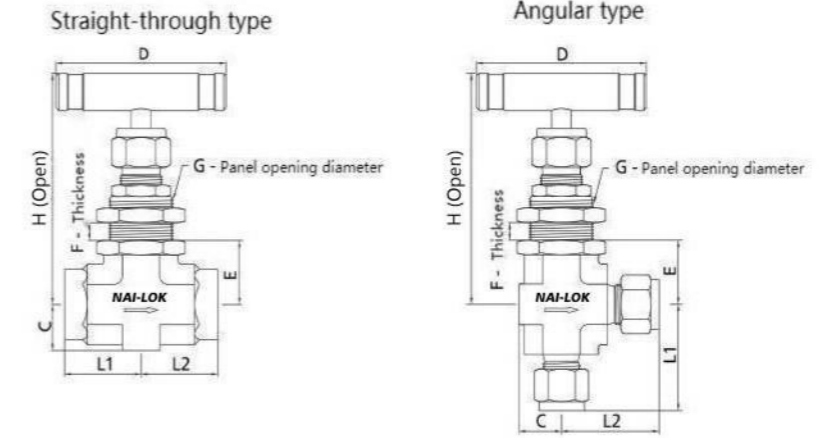
**Standard Material Of Construction**



No.	Element	Valve Material	
		316 Stainless Steel	F91
Material Grade/ASTM Specifications			
1	Handle	Anodized aluminum rod, stainless steel bar handle or black round handle	
2	Set Screw	Galvanized Carbon Steel	
3	Packing Gland	304 Stainless Steel/A479	F91/A182
4	Upper Valve Stem	316 Stainless Steel/A479	
5	Lock Nut	Stainless Steel	1020/A108
6	Threading Nut	Stainless Steel	1020/A108
7	Compression Ring	316 Stainless Steel/A479	
8	Filler	PTFE/PEEK/Graphite	
9	Packing Pad	316 Stainless Steel/A479	
10a 10b 10c	Lower Valve Stem	Sclerosis 316 Stainless Steel/A479	
11	Stem	316 Stainless Steel/A479	
12	Valve Tip	PTFE/PCTFE	
13	Valve Body	316 Stainless Steel/A182	F91/A182
14	Valve Seat	The Same as valve body	
15	Lubricant	Molybdenum disulfide	

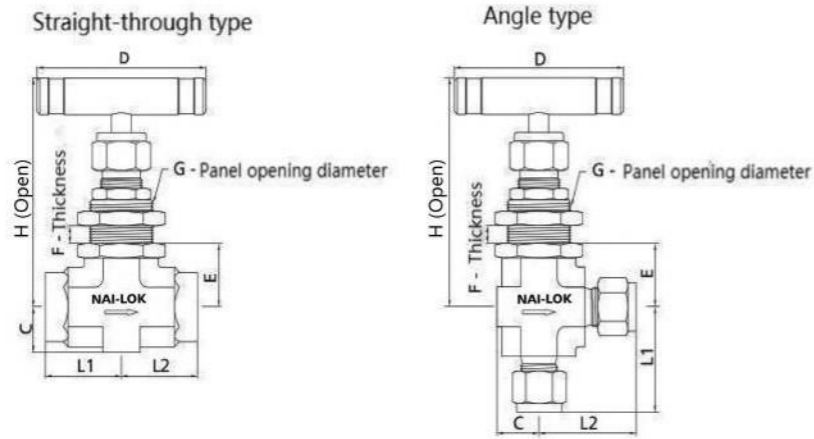
Remark: For other materials, please contact NAI-LOK

**Dimensions**



Order	Port type and size		im.(mm)	Cv	Size,in.(mm)													
	Inlet	Outlet			L1	L2	H	D	C	E	F	G						
F-2N	1/8" NPT Female	1/8" NPT Female	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	2.85 (72.5)	2.17 (55)	0.49 (12.5)	0.71 (18.0)	0.25 (6.4)	0.77 (19.6)						
F-4N	1/4" NPT Female	1/4" NPT Female			1.03 (26.2)	1.03 (26.2)												
N-4T	1/4" NAI-LOK	1/4" NAI-LOK			1.22 (30.9)	1.22 (30.9)												
N-6M	6 mm NAI-LOK	6 mm NAI-LOK			1.25 (31.75)	1.25 (31.75)												
N-8M	8 mm NAI-LOK	8 mm NAI-LOK			1.03 (26.2)	1.03 (26.2)												
M-4N	1/4" NPT Male	1/4" NPT Male			1.13 (28.6)	1.13 (28.6)												
M-6N	3/8" NPT Male	3/8" NPT Male			1.13 (28.6)	1.13 (28.6)												
F-6N	3/8" NPT Female	3/8" NPT Female			1.42 (36.1)	1.42 (36.1)							3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
NV- M-6N	3/8" NPT Male	3/8" NPT Male			1.44 (36.5)	1.44 (36.5)												
N-6T	3/8" NAI-LOK	3/8" NAI-LOK			1.53 (38.9)	1.53 (38.9)												
N-10M	10 mm NAI-LOK	10 mm NAI-LOK	1.56 (39.7)	1.56 (39.7)														
N-12M	12 mm NAI-LOK	12 mm NAI-LOK	1.26 (32.0)	1.26 (32.0)														
N-14M	14 mm NAI-LOK	14 mm NAI-LOK	1.50 (38.1)	1.50 (38.1)														
F-8N	1/2" NPT Female	1/2" NPT Female	1.53 (38.9)	1.53 (38.9)														
M-8N	1/2" NPT Male	1/2" NPT Male	1.50 (38.1)	1.50 (38.1)														
N-8T	1/2" NAI-LOK	1/2" NAI-LOK	1.50 (38.1)	1.50 (38.1)														
F-M20	M20 x 1.5	M20 x 1.5																

Dimensions are for reference only and subject to change



**Dimensions**

Order	Port type and size		im.(mm)	Cv	Size,in.(mm)								
	Inlet	Outlet			L1	L2	H	D	C	E	F	G	
NVH-	N-4T	1/4" NAI-LOK	1/4" NAI-LOK	0.16 (4.0)	0.35	1.41 (35.8)	1.41 (35.8)	2.85 (72.5)	2.17 (55)	0.62 (15.8)	0.76 (19.4)	0.25 (6.4)	0.77 (19.6)
	F-2N	1/8" NPT Female	1/8" NPT Female			1.00 (25.4)	1.00 (25.4)						
	F-4N	1/4" NPT Female	1/4" NPT Female			1.06 (26.2)	1.06 (26.2)						
	M-4N	1/4" NPT Male	1/4" NPT Male	1.22 (30.9)	1.22 (30.9)	3.38 (85.5)	2.50 (63.5)	0.76 (19.4)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)		
	F-6N	3/8" NPT Female	3/8" NPT Female	1.12 (28.6)	1.12 (28.6)								
	M-6N	3/8" NPT Male	3/8" NPT Male	1.50 (38.1)	1.50 (38.1)								
F-8N	1/2" NPT Female	1/2" NPT Female	0.39 (10.0)	2.18	1.56 (39.7)	1.56 (39.7)	4.16 (105.7)	3.50 (88.9)	0.88 (22.2)	1.10 (28.3)	0.38 (9.7)	1.08 (27.5)	

1. All sizes and types are standard. Other sizes and types are available. Please contact NAI-LOK.  
2. All dimensions are for reference only. For other dimensions, please contact NAI-LOK

**Ordering Information**

**Example:** NV - N-2T - SS  
**1**      **2**      **3**

- |                        |                          |                         |                            |                        |
|------------------------|--------------------------|-------------------------|----------------------------|------------------------|
| <b>1. Valve Series</b> | <b>2. End Connection</b> | <b>3. Body Material</b> | <b>4. Packing Material</b> | <b>5. Flow Pattern</b> |
| NV                     | N= NAI-LOK Tube Fitting  | SS= SS316               | P= PEEK                    | A= Angle               |
| NVH                    | F= Female Thread         | HC= Hastelloy           | G=Graphite                 |                        |
|                        | M= Male Thread           |                         |                            |                        |



**Features**

- Standard 1/2"NPT female outlet.
- ASME B16.5 flanged inlet connections 1/2" to 2"sizes.
- Needle valve with PTFE packing is standard, optional Graphite.
- Bleed port 1/2"NPT female with hex plug is standard.
- Optional fire safe design to BS6755 Part 2.
- Ratings: Class1500 to 2500
- 100% Gas tested

**Ordering Information**

**MOV-S Series (Single Block)**

Flange to 1/2"NPTF  
Isolate: OS&Y or Needle

Designators	ISO late	Intermediate Ordering #
Y	OS&Y	MOV-S-Y
N	Globe Needle	MOV-S-N

**MOV-B Series (Single Block & Bleed)**

Flange to 1/2"NPTF  
Isolate: OS&Y or Needle  
Bleed: OS&Y or Needle

Designators	Isolate	Bleed	Intermediate Ordering #
Y	OS&Y	OS&Y	MOV-B-Y
N	Globe Needle	Globe Needle	MOV-B-N
D	OS&Y	Globe Needle	MOV-B-D

**MOV-D Series (Double Block & Bleed)**

Flange to 1/2"NPTF  
Primary Isolate: OS&Y or Needle  
Secondary Isolate: OS&Y or Needle  
Bleed: OS&Y or Needle

Designators	Primary Isolate	Secondary Isolate	Bleed	Intermediate Ordering #
Y	OS&Y	OS&Y	OS&Y	MOV-D-Y
N	Globe Needle	Globe Needle	Globe Needle	MOV-D-N
D	OS&Y	OS&Y	Globe Needle	MOV-D-D

**Process Connections**

Flange Size	
Designator	Size
8	1/2" (DN15)
12	3/4" (DN20)
16	1" (DN25)
24	1 1/2" (DN40)
32	2" (DN50)
48	3" (DN80)

Flange Class	
Designator	Class Rating
A	150
B	300
C	600
D	900/1500
E	2500

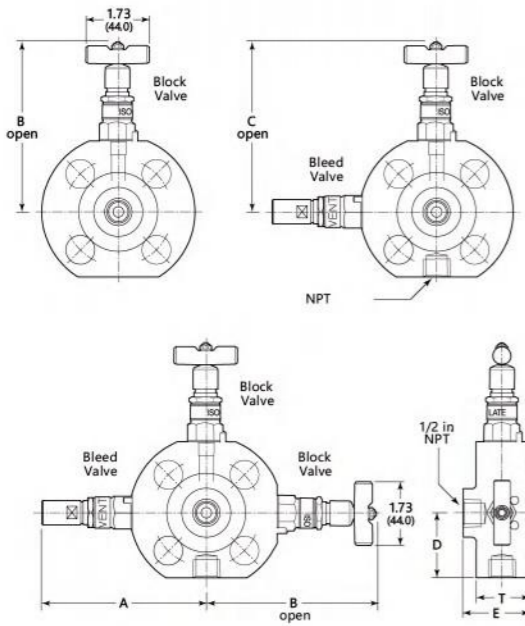
Finish Standard	
Designator	Finish
1	Raised Faced Smooth
2	Raised Faced Serrated
3	Raised Faced Stock

**Packing Material**

OS&Y Packing	Needle Valve Packing
Nil: Standard Graphite PE: PTFE	Nil: Standard PTFE GF: Graphite RP: Reinforced PTFE

**Option, Trim and Body Material**

Option	Trim Material	Body Material
SG: NACE MR0175 FS: Fire tested design	S: SS316 D: Duplex M: Monel	S: SS316 D: Duplex M: Monel



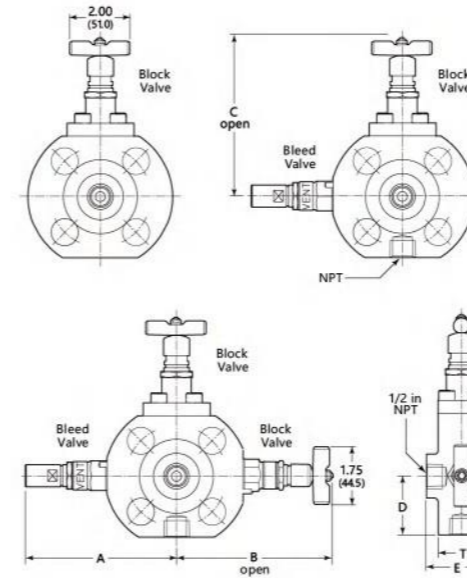
**Process MONO Flange Valve**

**Dimensions, Integral Screwed-Bonnet Assemblies (MOV-03 Series)**

Dimensions are for reference only and are subject to change.

**MOV-03 Series (Integral Screwed-Bonnet) Bore Sizes**

All bores 0.15 in (4.0 mm)



**Process MONO Flange Valve**

**Dimensions, Bolted-Bonnet Assemblies (MOV-04 Series)**

Dimensions are for reference only and are subject to change.

**MOV-04 Series (Integral Screwed-Bonnet) Bore Sizes**

Configuration	Bore Diameter in. (mm)
MOV0401 (block)	0.23 (6.0)
MOV0402 (block and bleed)	0.23 (6.0)
MOV0403 (double block and bleed)	0.15 (4.0)

Note: All vent ports 0.15 in. (4.0 mm)

Flange Size in.	ASME Class	Dimensions, in. (mm)								Weight lb (kg)
		A	B	C	D	RF Flange		RTJ Flange		
						E	T	E	T	
1/2" (DN 15)	150	3.94 (100)	4.33 (110)	4.25 (108)	1.57 (40.0)	1.73 (44.0)	1.24 (31.5)	—	—	4.0 (1.8)
	300/600	4.17 (106)	4.49 (114)	4.49 (114)				1.79 (45.5)	1.30 (33.0)	4.2 (1.9)
	900/1500	4.57 (116)	4.88 (124)	4.88 (124)	2.17 (55.0)	1.73 (44.0)	1.32 (33.5)	1.79 (45.5)	1.38 (35.0)	6.4 (2.9)
	2500	4.72 (120)	5.04 (128)	5.04 (128)	2.36 (60.0)	1.93 (48.9)	1.51 (38.4)	1.93 (48.9)	1.51 (38.4)	8.2 (3.7)
3/4" (DN 20)	150	4.17 (106)	4.49 (114)	4.49 (114)	1.77 (45.0)	1.73 (44.0)	1.24 (31.5)	—	—	4.4 (2.0)
	300/600	4.57 (116)	4.88 (124)	4.88 (124)				2.17 (55.0)	1.79 (45.5)	1.30 (33.0)
	900/1500	4.72 (120)	5.04 (128)	5.04 (128)	2.36 (60.0)	1.73 (44.0)	1.32 (33.5)	1.79 (45.5)	1.38 (35.0)	7.5 (3.4)
	2500	4.96 (126)	5.28 (134)	5.28 (134)	2.56 (65.0)	2.00 (50.9)	1.59 (40.4)	2.00 (50.9)	1.59 (40.4)	9.3 (4.2)
1" (DN 25)	150	4.33 (110)	4.65 (118)	4.65 (118)	1.97 (50.0)	1.73 (44.0)	1.24 (31.5)	—	—	5.3 (2.4)
	300/600	4.72 (120)	5.04 (128)	5.04 (128)				2.36 (60.0)	1.79 (45.5)	1.30 (33.0)
	900/1500	5.12 (130)	5.43 (138)	5.43 (138)	2.76 (70.0)	2.00 (50.9)	1.51 (38.4)	2.00 (50.9)	1.51 (38.4)	10.6 (4.8)
	2500	5.35 (136)	5.43 (138)	5.67 (144)	2.95 (75.0)	2.00 (50.9)	1.71 (43.4)	2.00 (50.9)	1.71 (43.4)	11.9 (5.4)
1 1/2" (DN 40)	150	4.72 (120)	5.04 (128)	5.04 (128)	2.36 (60.0)	1.73 (44.0)	1.24 (31.5)	1.79 (45.5)	1.30 (33.0)	7.72 (3.5)
	300/600	5.35 (136)	5.43 (138)	5.67 (144)				2.95 (75.0)	1.81 (46.0)	1.32 (33.5)
	900/1500	5.75 (146)	5.67 (144)	6.07 (154)	3.35 (85.0)	2.08 (52.9)	1.59 (40.4)	2.08 (52.9)	1.59 (40.4)	15.7 (7.1)
	2500	6.30 (160)	6.61 (168)	6.61 (168)	3.94 (100)	2.38 (60.4)	2.16 (54.9)	2.38 (60.4)	2.16 (54.9)	24.9 (11.3)
2" (DN 50)	150	5.35 (136)	5.43 (138)	5.67 (144)	2.95 (75.0)	1.81 (46.0)	1.24 (31.5)	1.87 (47.5)	1.30 (33.0)	11.5 (5.2)
	300/600		5.67 (144)					3.12 (80.0)	1.89 (48.0)	1.32 (33.5)
	900/1500	6.54 (166)	6.61 (168)	6.85 (174)	4.13 (105)	2.38 (60.4)	1.89 (47.9)	2.38 (60.4)	1.89 (47.9)	25.1 (11.4)
	2500									4.53 (115)

Note: Contact your authorized sales and service representative for additional options such as single block and bleed and dual outlets.

Flange Size in.	ASME Class	Dimensions, in. (mm)								Weight lb (kg)		
		A	B	C	D	RF Flange		RTJ Flange				
						E	T	E	T			
1/2" (DN 15)	150	3.94 (100)	4.33 (110)	4.72 (120)	1.69 (43.0)	2.03 (51.5)	1.63 (41.5)	—	—	4.4 (2.0)		
	300/600	4.17 (106)	4.49 (114)					1.77 (45.0)	4.6 (2.1)			
	900/1500	4.57 (116)	4.88 (124)	5.35 (136)	1.97 (50.0)			2.03 (51.5)	1.63 (41.5)	7.0 (3.2)		
	2500	4.72 (120)	5.04 (128)	5.59 (142)	2.17 (55.0)			2.03 (51.5)	1.63 (41.5)	9.0 (4.1)		
3/4" (DN 20)	150	4.17 (106)	4.49 (114)	4.96 (126)	1.77 (45.0)	2.03 (51.5)	1.63 (41.5)	—	—	4.8 (2.2)		
	300/600	4.57 (116)	4.88 (124)					2.05 (52.0)	2.03 (51.5)	1.63 (41.5)	7.0 (3.2)	
	900/1500	4.72 (120)	5.04 (128)	5.35 (136)	2.17 (55.0)			2.03 (51.5)	1.63 (41.5)	8.4 (3.8)		
	2500	4.96 (126)	5.28 (134)	5.59 (142)	2.36 (60.0)			2.11 (53.5)	2.11 (53.5)	10.4 (4.7)		
1" (DN 25)	150	4.33 (110)	4.65 (118)	4.96 (126)	1.97 (50.0)	2.03 (51.5)	1.63 (41.5)	—	—	6.0 (2.7)		
	300/600	4.72 (120)	5.04 (128)					5.35 (136)	2.17 (55.0)	2.03 (51.5)	1.63 (41.5)	7.9 (3.6)
	900/1500	5.12 (130)	5.43 (138)	5.91 (150)	2.76 (70.0)			2.11 (53.5)	1.63 (41.5)	2.03 (51.5)	1.63 (41.5)	11.7 (5.3)
	2500	5.35 (136)	5.43 (138)							2.95 (75.0)	1.87 (47.5)	1.87 (47.5)
1 1/2" (DN 40)	150	4.72 (120)	5.04 (128)	5.35 (136)	2.36 (60.0)	2.03 (51.5)	1.63 (41.5)			2.03 (51.5)	—	8.6 (3.9)
	300/600	5.35 (136)	5.43 (138)							5.91 (150)	2.95 (75.0)	2.11 (53.5)
	900/1500	5.75 (146)	5.67 (144)	7.09 (180)	3.74 (95.0)			2.19 (55.5)	2.19 (55.5)			17.4 (7.9)
	2500	6.30 (160)	6.61 (168)					7.09 (180)	3.74 (95.0)	2.67 (67.9)	2.20 (55.9)	2.67 (67.9)
2" (DN 50)	150	5.35 (136)	5.43 (138)	5.91 (150)	2.95 (75.0)	2.11 (53.5)	1.63 (41.5)	2.11 (53.5)	—	12.8 (5.8)		
	300/600		5.67 (144)					6.22 (158)	3.12 (80.0)	2.19 (55.5)	2.19 (55.5)	1.63 (41.5)
	900/1500	6.54 (166)	6.61 (168)	7.09 (180)	4.13 (105)			2.42 (61.5)	1.95 (49.5)	2.42 (61.5)	1.95 (49.5)	28.0 (12.7)
	2500							7.56 (192)	4.33 (110)	2.88 (73.4)	2.44 (61.9)	2.88 (73.4)

Note: Contact your authorized sales and service representative for additional options such as single block and bleed and dual outlets. Dimensions are reference only and subject to change.



**Max Allowable Temperature**

- 450 °F (232°C) max with PTFE stem packing
- 1200 °F (648°C) max with Graphite stem packing and 316SS, Hastelloy C-276, Super Duplex

**Stem Threads Are Protected From Process Media (Not-wetted)**

- Manifold bodies : 316/316L Stainless Steel, Monel Alloy 400, Hastelloy C-276, Super Duplex available
- Bonnet locking pin to prevents bonnet loosening due to vibration.
- All Valves 100% factory tested.



**GV Series Gauge and Root Valves**



**M Series Instrument Manifolds 5-Valve Manifolds**



**M Series Instrument Manifolds 2-Valve Manifolds**

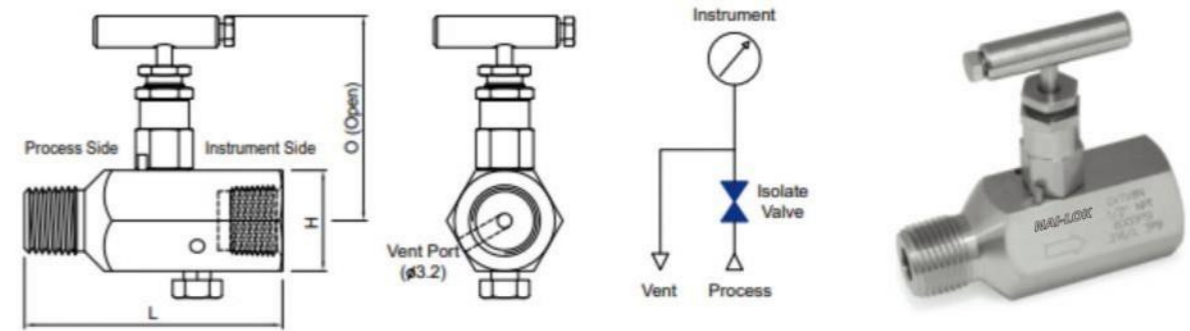


**M Series Instrument Manifolds 3-Valve Manifolds**



**VGVTVMF(Male to Female with Vent Port)**

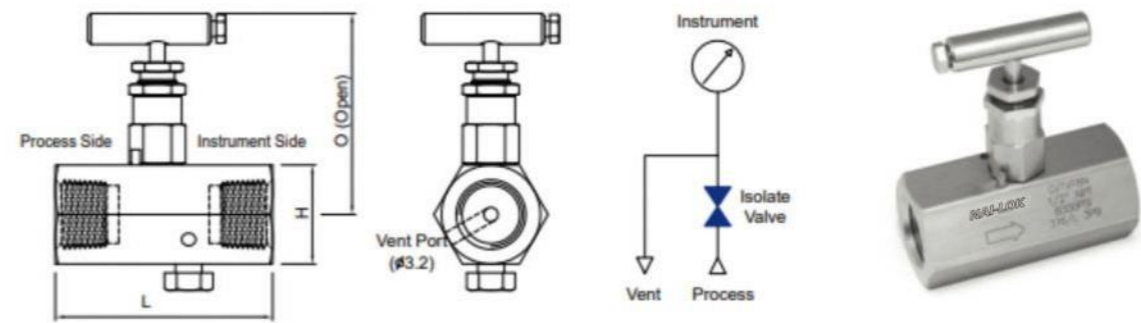
I : PTFE Packing  
G: Graphite Packing



Part No.	End Connection		Dimensions in.(mm)		
	Process	Instrument	L	O (Open)	H(Hex)
VGVTVMF4N-VP	1/4" NPT Male	1/4" NPT Female	2.94(75.0)	2.68(68.0)	1.18(30.0)
VGVTVMF8N-VP	1/2" NPT Male	1/2" NPT Female	3.50(89.0)	2.72(69.0)	1.26(32.0)
VGVTVMF12N12N-VP	3/4" NPT Male	3/4" NPT Female	3.50(89.0)	2.72(69.0)	1.26(32.0)
VGVTVMF12N-VP	3/4" NPT Male	3/4" NPT Female	3.50(89.0)	2.83(72.0)	1.50(38.0)

**VGVTVF(Female to Female with Vent Port)**

I : PTFE Packing  
G: Graphite Packing

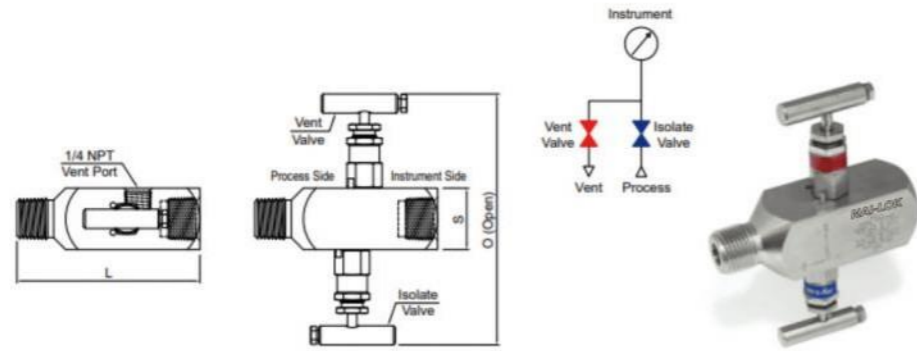


Part No.	End Connection		Dimensions in.(mm)		
	Process	Instrument	L	O (Open)	H(Hex)
VGVTVF4N-VP	1/4" NPT Female		2.25(57.5)	2.68(68.0)	1.18(30.0)
VGVTVF8N-VP	1/2" NPT Female		2.81(71.5)	2.72(69.0)	1.26(32.0)
VGVTVF12N-VP	3/4" NPT Female		2.81(71.5)	2.83(72.0)	1.50(38.0)

All dimensions are in millimeters ( inches) reference only, subject to change.

**VG2TV-MF(Male to Female with 1/4" NPT Vent Port)**

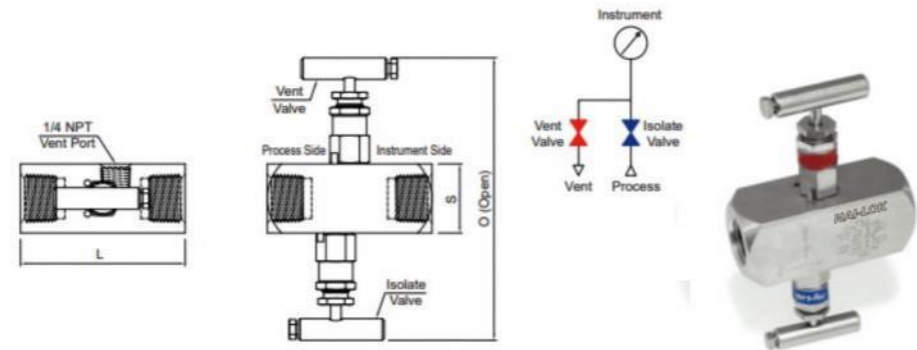
I : PTFE Packing  
G: Graphite Packing



Part	End Connection		Dimensions in.(mm)		
	Process	Instrument	L	O (Open)	S(Square)
VG2TV-MF4N	1/4 in. NPT Male	1/4" NPT Female	3.19(81.0)	5.35(136.0)	1.18(30.0)
VG2TV-MF8N	1/2 in. NPT Male	1/2" NPT Female	3.75(95.5)	5.43(138.0)	1.26(32.0)
VG2TV-MF12N8N	3/4 in. NPT Male	1/2" NPT Female	3.75(95.5)	5.43(138.0)	1.26(32.0)
VG2TV-MF12N	3/4 in. NPT Male	3/4" NPT Female	3.75(95.5)	5.67(144.0)	1.50(38.0)

**VG2TV-F(Female to Female with 1/4" NPT Vent Port)**

I : PTFE Packing  
G: Graphite Packing

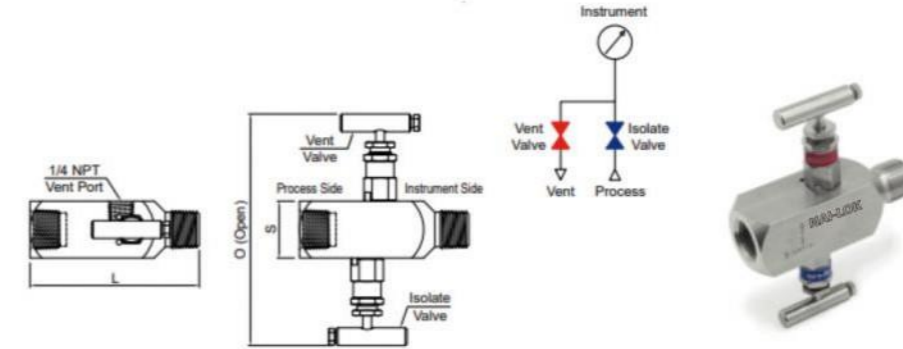


Part	End Connection		Dimensions in.(mm)		
	Process	Instrument	L	O (Open)	S(Square)
VG2TV-F4N	1/4" NPT Female		2.50(63.5)	5.36(136.0)	1.18(30.0)
VG2TV-F8N	1/2" NPT Female		3.06(78.0)	5.43(138.0)	1.26(32.0)
VG2TV-F12N8N	3/4" NPT Female	1/2" NPT Female	3.06(78.0)	5.67(144.0)	1.50(38.0)
VG2TV-F12N	3/4" NPT Female		3.06(78.0)	5.67(144.0)	1.50(38.0)

All dimensions are in millimeters ( inches) reference only, subject to change.

**VG2TV-FM(Female to Male with 1/4" NPT Vent Port)**

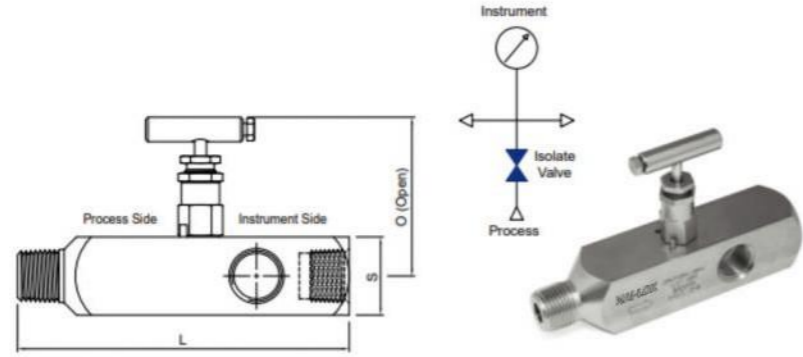
I : PTFE Packing  
G: Graphite Packing



Part No.	End Connection		Dimensions in.(mm)		
	Process	Instrument	L	O (Open)	S(Square)
VG2TV-FM4N	1/4" NPT Female	1/4" NPT Male	3.19(81.0)	5.36(136.0)	1.18(30.0)
VG2TV-FM8N	1/2" NPT Female	1/2" NPT Male	3.75(95.5)	5.43(138.0)	1.26(32.0)
VG2TV-FM12N8N	3/4" NPT Female	1/2" NPT Male	3.75(95.5)	5.67(144.0)	1.50(38.0)
VG2TV-FM12N	3/4" NPT Female	3/4" NPT Male	3.75(95.5)	5.67(144.0)	1.50(38.0)

**VGRVTVMF(Male to Female with Multi Port)**

I: PTFE Packing  
G: Graphite Packing



Part No.	End Connection		Dimensions in.(mm)		
	Process	Instrument	L	O (Open)	S(Square)
VGRVTVMF8N	1/2" NPT Male	1/2" NPT Female	5.35(136.0)	2.72(69.0)	1.26(32.0)
VGRVTVMF12N8N	3/4" NPT Male	1/2" NPT Female	5.35(136.0)	2.72(69.0)	1.26(32.0)
VGRVTVF8N	1/2" NPT Female		5.35(136.0)	2.72(69.0)	1.26(32.0)
VGRVTVF12N8N	3/4" NPT Female	1/2" NPT Female	4.02(102.0)	2.78(70.5)	1.38(35.0)

All dimensions are in millimeters ( inches) reference only, subject to change.

**Ordering Information**

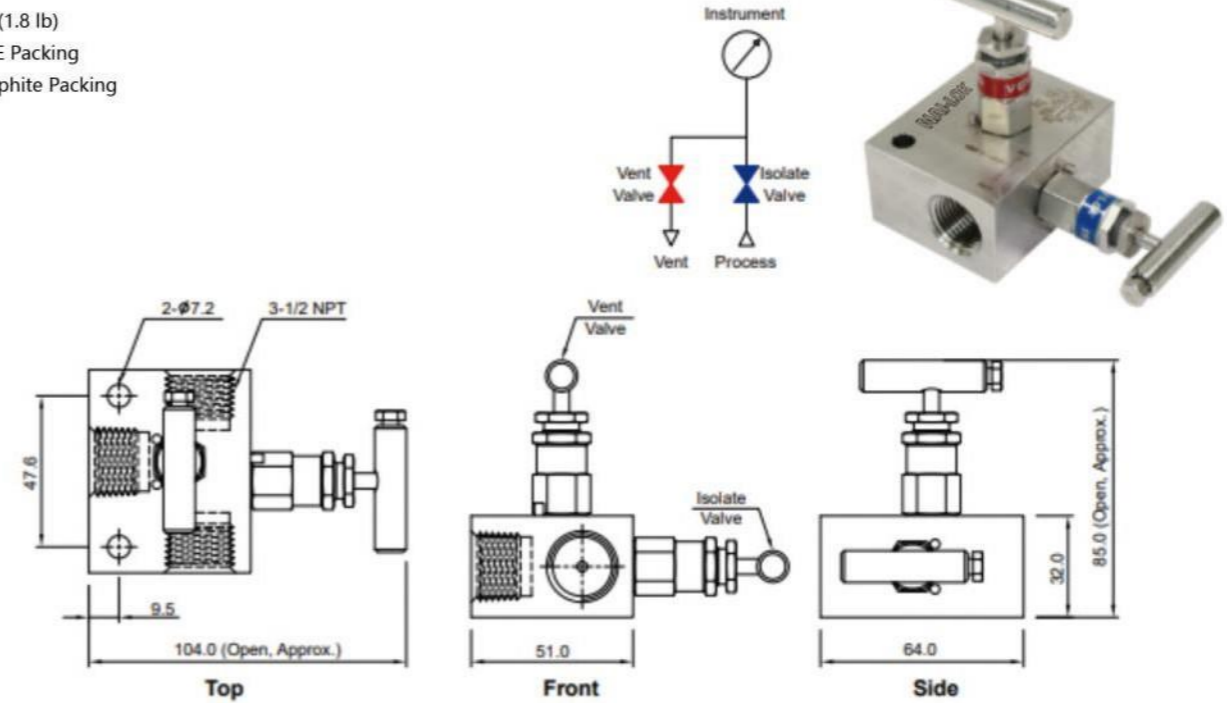
<p><b>Valve Designator</b></p> <ul style="list-style-type: none"> <li>• VGV: Gauge Valves</li> <li>• VGV2: Gauge 2-valves</li> <li>• VGRV: Root Valves</li> <li>• Example: VGVTFMF8N-S316 (Gauge Valve, PTFE Packing,Vee Tip, Male to Female End,1/2" NPT,316 Stainless Steel)</li> </ul>	<p><b>Packing Designator</b></p> <ul style="list-style-type: none"> <li>• T: PTFE(Standard)</li> <li>• G: Graphite(Optional)</li> </ul>	<p><b>Stem Tip Designation</b></p> <ul style="list-style-type: none"> <li>• V: Vee Tip(Standard)</li> <li>• B: Ball Tip(Optional)</li> </ul>	<p><b>Type of End Designator</b> Apply only for Gauge Valve</p> <ul style="list-style-type: none"> <li>• F: Female to Female</li> <li>• MF: Male to Female</li> <li>• FM: Female to Male</li> </ul>	<p><b>1st Size Designator</b></p> <ul style="list-style-type: none"> <li>• 4N: 1/4" NPT</li> <li>• 8N: 1/2" NPT</li> <li>• 12N: 3/4" NPT</li> </ul>	<p><b>2nd Size Designator</b> Apply only for Gauge 2-Valve</p> <ul style="list-style-type: none"> <li>• Nil: Without</li> <li>• 4N : 1/4" NPT</li> <li>• 8N : 1/2" NPT</li> <li>• 12N :3/4" NPT</li> </ul>	<p><b>Vent Port Size Designator</b> Apply only for Gauge Valve</p> <ul style="list-style-type: none"> <li>• Nil: Without</li> <li>• 4N: 1/4" NPT</li> <li>• 8N : 1/2" NPT</li> <li>• 12N :3/4" NPT</li> </ul>	<p><b>Option Designator</b></p> <ul style="list-style-type: none"> <li>• SOG: NACE MR-01-75</li> <li>• P: with Plug</li> </ul>	<p><b>Body Material Designator</b></p> <ul style="list-style-type: none"> <li>• S316: 316 Stainless Steel</li> <li>• 316L: 316L Stainless Steel</li> <li>• MONE: Monel Alloy 400</li> <li>• C276 : Hastelloy<sup>®</sup> C-276</li> <li>• F53: Super Duplex</li> </ul>
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**Remote Mount Manifolds (Female to Female)**

**Pressure Manifolds**

VM2VTIV8N

0.8Kg (1.8 lb)  
I: PTFE Packing  
G: Graphite Packing

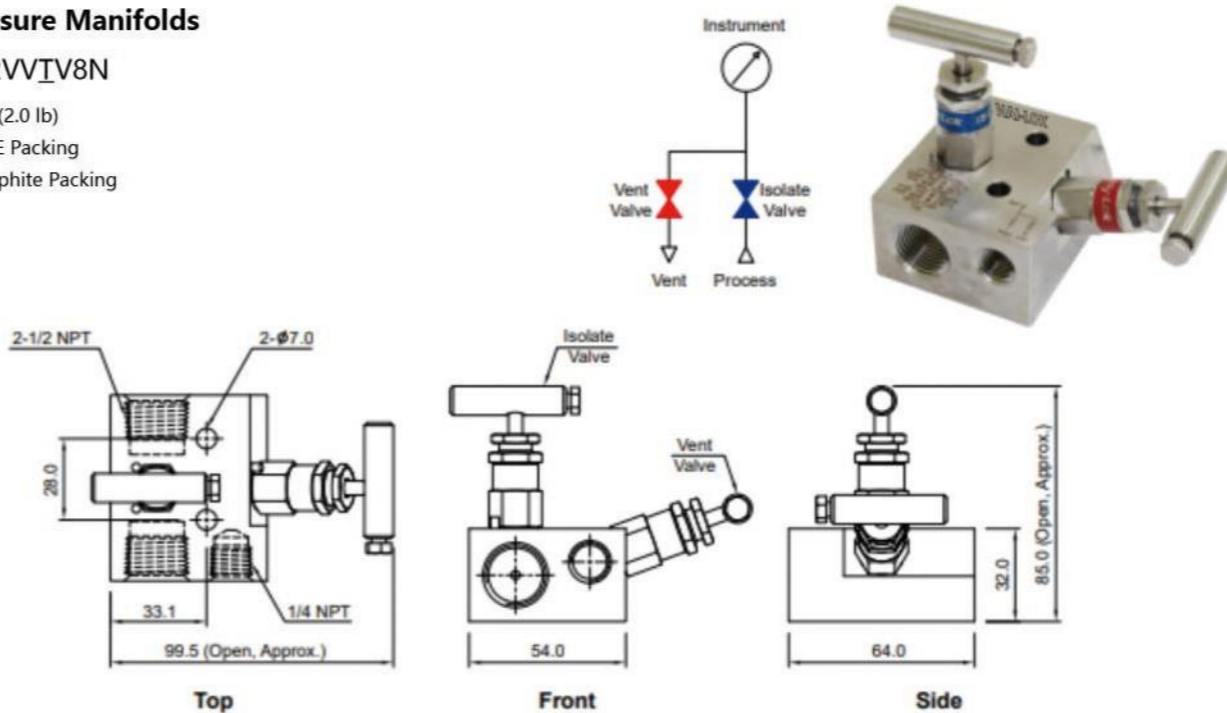


**Remote Mount Manifolds/Vertical Vent (Female to Female)**

**Pressure Manifolds**

VM2VWIV8N

0.9Kg (2.0 lb)  
I: PTFE Packing  
G: Graphite Packing



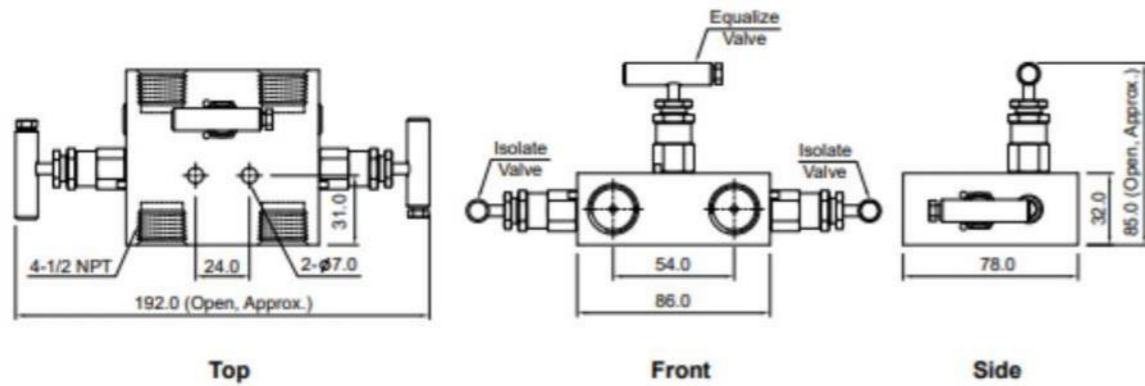
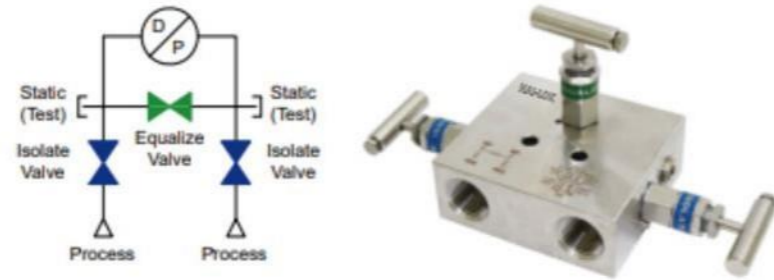
All dimensions are in millimeters ( inches) reference only, subject to change.

**Remote Mount Manifolds (Female to Female)**

**Differential Pressure Manifolds**

VM3VIV8N

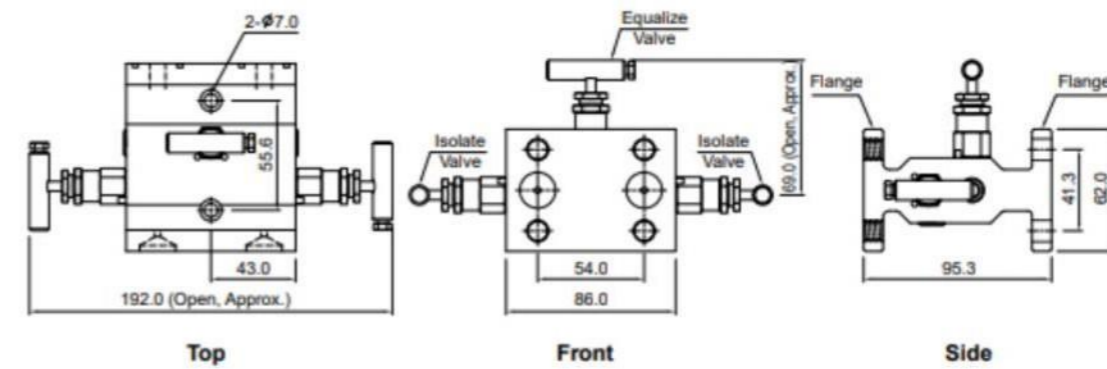
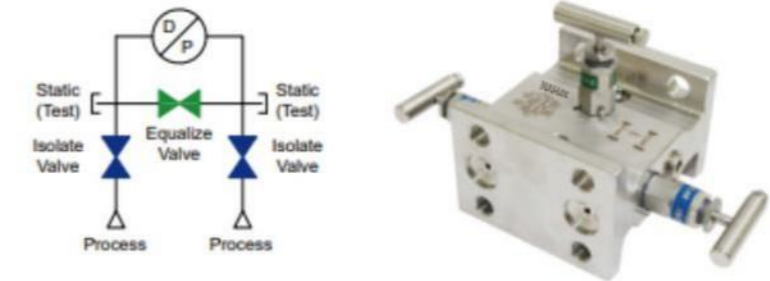
1.7Kg (3.7 lb)  
I: PTFE Packing  
G: Graphite Packing



**Direct Mount Manifolds/2-Flange (Female to Flange)**

**Differential Pressure Manifolds**

VM3V2FIV

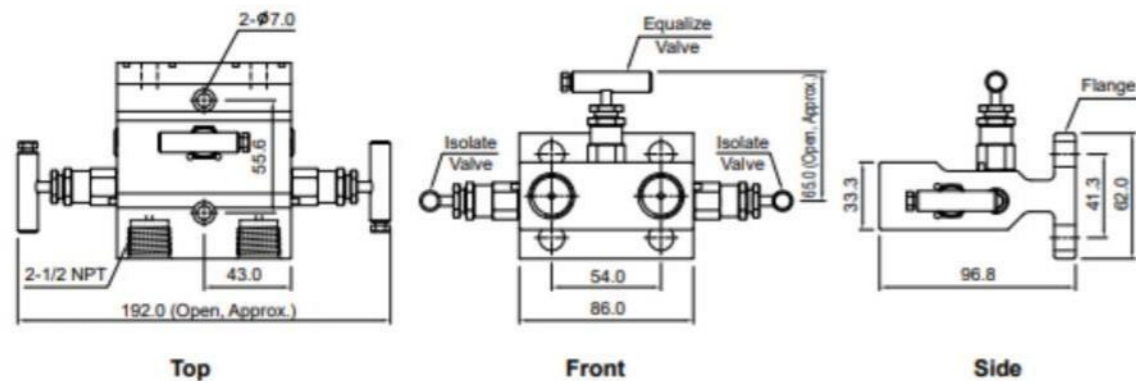


**Direct Mount Manifolds/1- Flange (Female to Flange)**

**Differential Pressure Manifolds**

VM3V1FIV8N

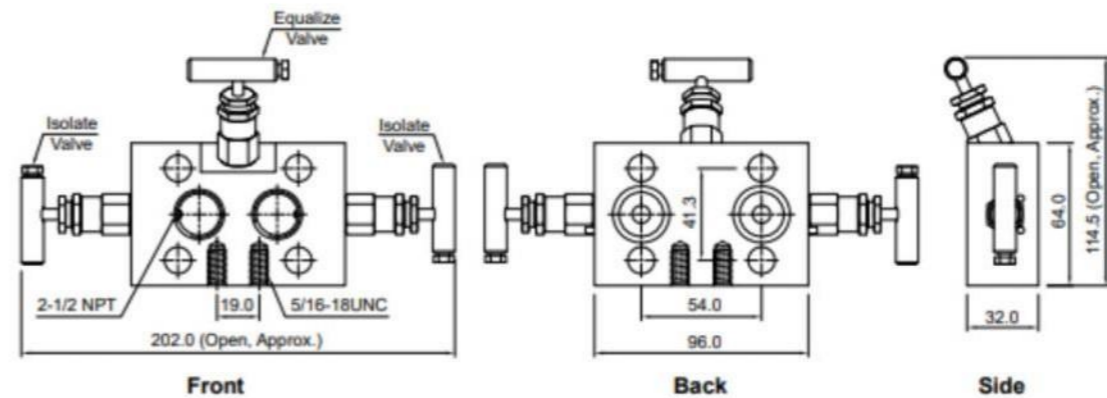
2.0Kg (4.4 lb)  
I: PTFE Packing  
G: Graphite Packing



**Direct Mount Manifolds(Female to Female)**

**Differential Pressure Manifolds**

VM3VDMIV8N



All dimensions are in millimeters ( inches) reference only, subject to change.

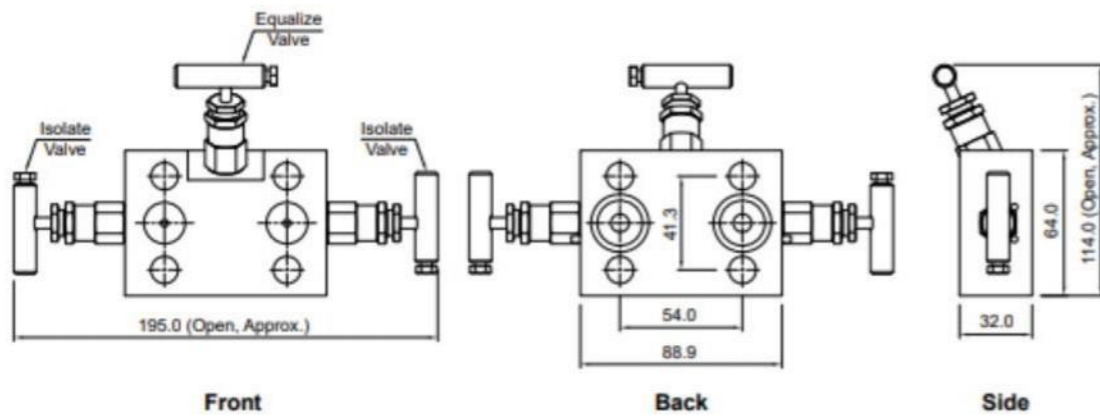
All dimensions are in millimeters ( inches) reference only, subject to change.

**Double Direct Mount Manifolds (Flange to Flange)**

**Differential Pressure Manifolds**

VM3V2DMIV

1.4Kg (3.1 lb)  
I: PTFE Packing  
G: Graphite Packing

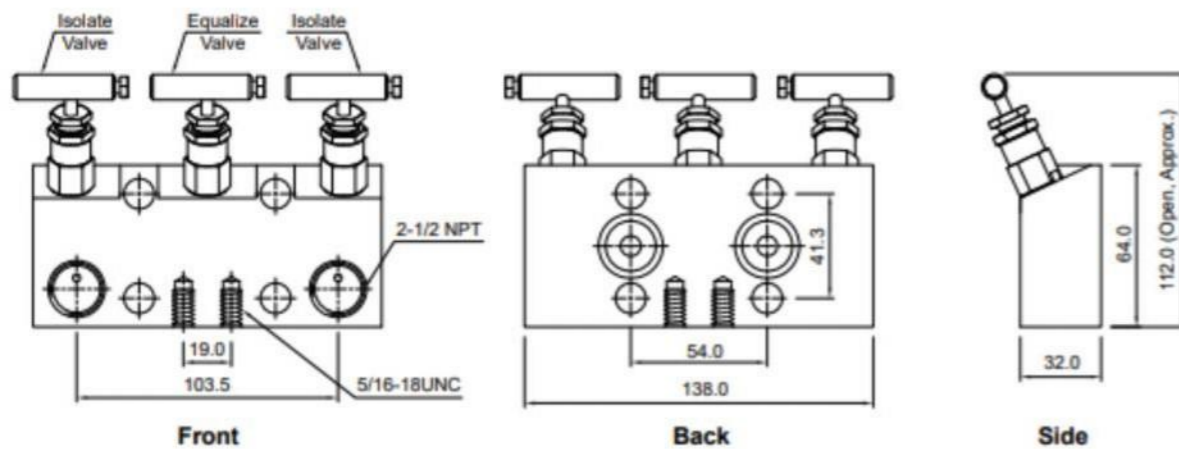
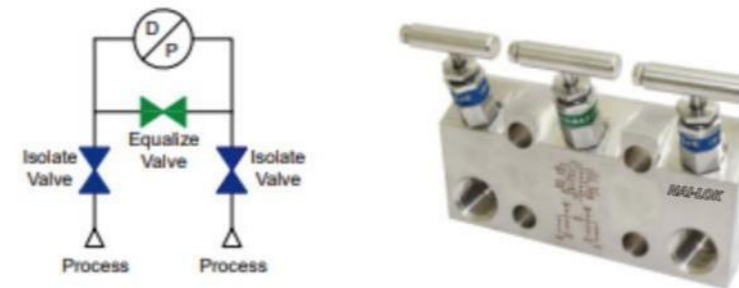


**Direct Mount Manifolds/B Port (Female to Flange)**

**Differential Pressure Manifolds**

VM3VDMBIV8N

1.8Kg (4.0 lb)  
I: PTFE Packing  
G: Graphite Packing



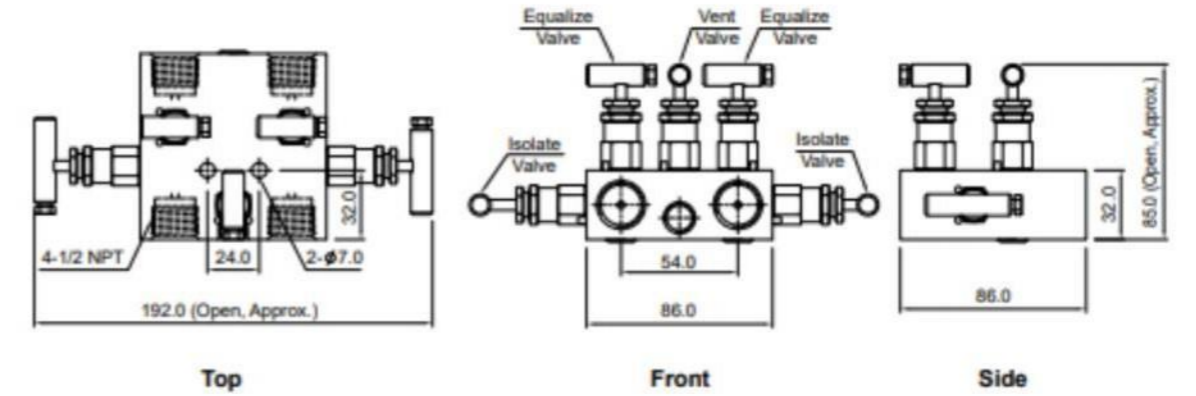
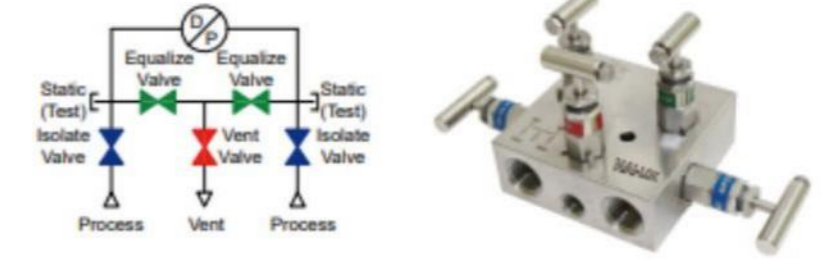
All dimensions are in millimeters (inches) reference only, subject to change.

**Remote Mount Manifolds (Female to Female)**

**Differential Pressure Manifolds**

VM5VIV8N

1.9Kg (4.2 lb)  
I: PTFE Packing  
G: Graphite Packing

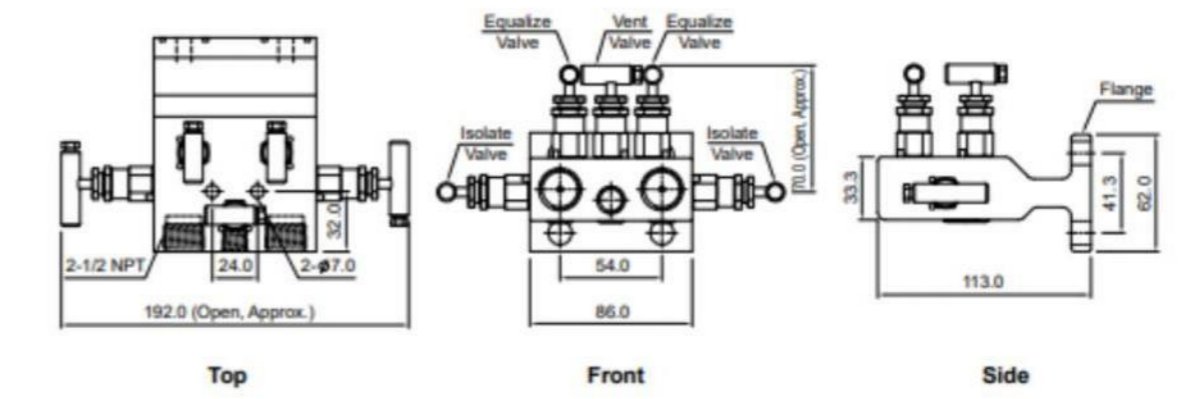
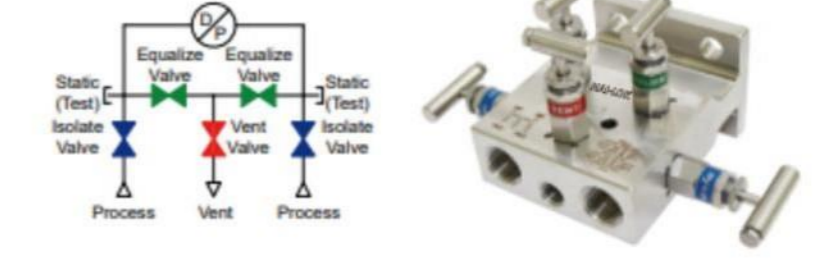


**Direct Mount Manifolds/1-Flange (Female to Flange)**

**Differential Pressure Manifolds**

VM5V1FIV8N

2.6Kg (5.7 lb)  
I: PTFE Packing  
G: Graphite Packing



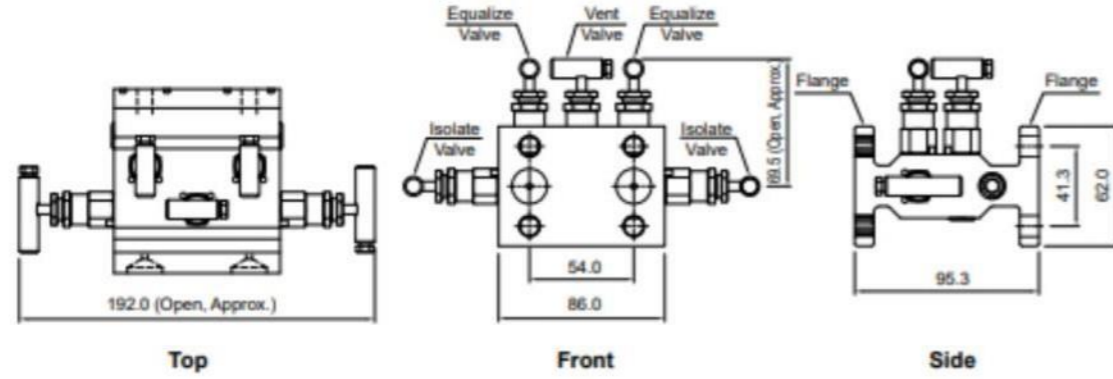
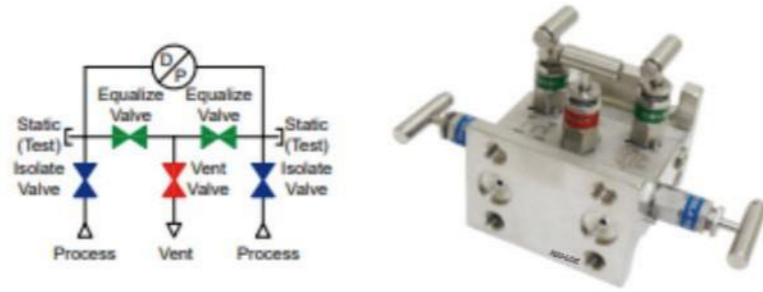
All dimensions are in millimeters (inches) reference only, subject to change.

**Direct Mount Manifolds/2-Flange (Flange to Flange)**

**Differential Pressure Manifolds**

VM5V2FIV

- 2.5Kg (5.5 lb)
- I: PTFE Packing
- G: Graphite Packing

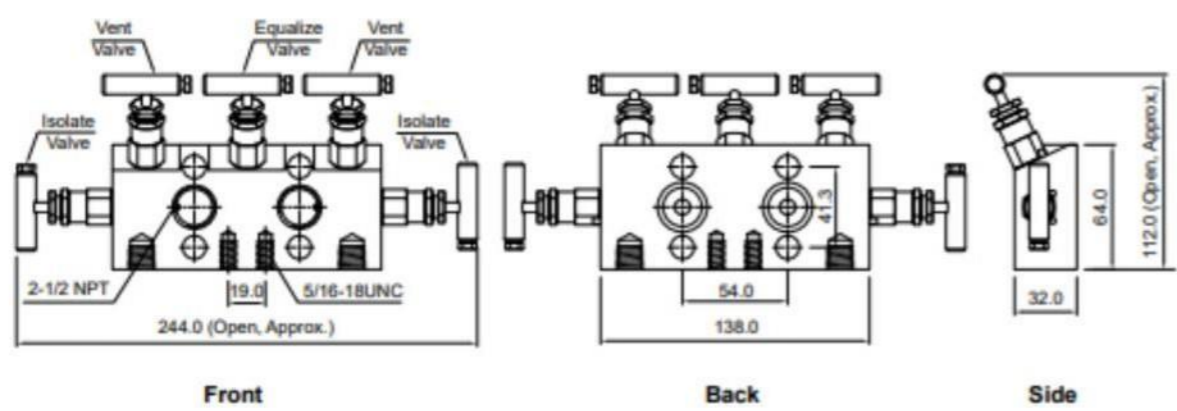


**Direct Mount Manifolds/A Port (Female to Flange)**

**Differential Pressure Manifolds**

VM5VDMATV8N

- 2.6Kg (5.8 lb)
- I: PTFE Packing
- G: Graphite Packing



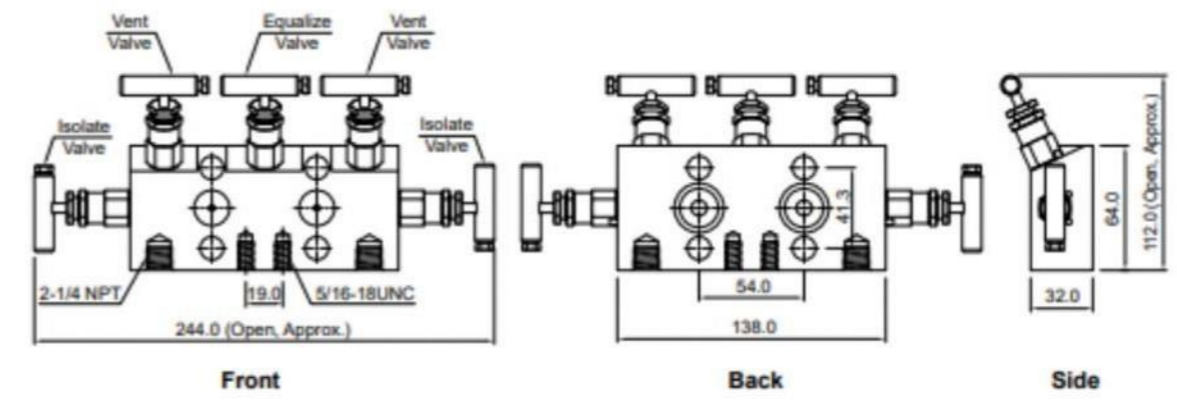
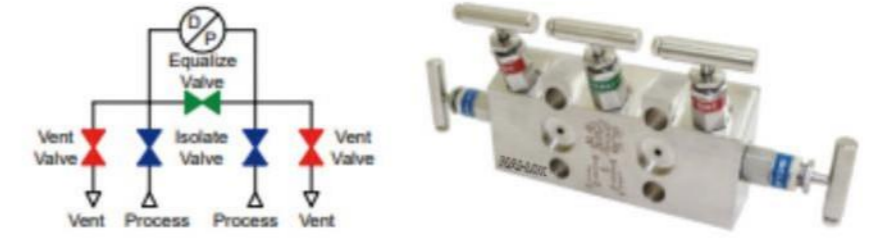
All dimensions are in millimeters ( inches) reference only, subject to change.

**Double Direct Mount Manifolds (Flange to Female)**

**Differential Pressure Manifolds**

VM5V2DMIV

- 2.6Kg (5.8 lb)
- I: PTFE Packing
- G: Graphite Packing

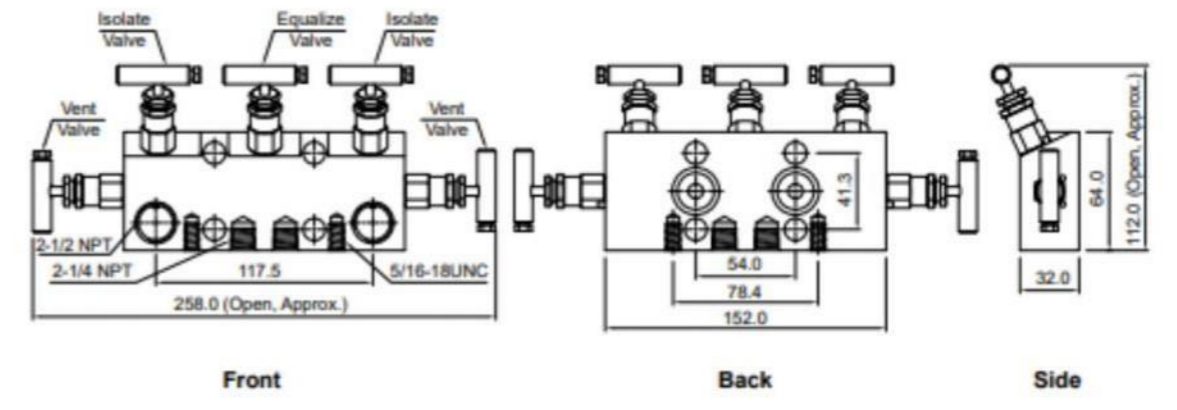
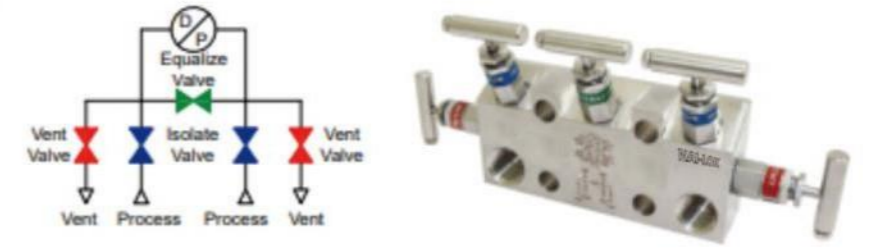


**Direct Mount Manifolds/B Port (Female to Flange)**

**Differential Pressure Manifolds**

VM5DMBIV8N

- 3.0Kg (6.62 lb)
- I: PTFE Packing
- G: Graphite Packing



All dimensions are in millimeters ( inches) reference only, subject to change.

**Options**

**High Temperature Packing**

Graphite valve packing material for high-temperature service. Includes Graphite flange seals on DINIEC 61518 Type B flanges. To order a manifold with an optional Graphite packing material, replace T with G in the manifold ordering number. Example: VM3V1FIV8N → VM3V1FGV8N

**Flange Seal Materials**

Flange seals are available in Graphite and PTFE for system compatibility. Temperature ratings are included in the table below. To order a manifold with an optional Graphite packing material, replace T with G in the manifold ordering number. Example: VM3V1FIV8N → VM3V1FGV8N

Packing or Flange Seal Material	Temperature Rating °F (°C)	Material Designator
Graphite	-65 °F to 1000 °F (-53°C to 537°C)	G
PTFE	-65 °F to 450 °F (-53°C to 232°C)	T

**Maintenance kits**

**Flange Seal Kits**

Select a Kit ordering number from the tables below based on the manifold series and seal material.

Flange Seal Material	Kit Ordering Number		Material Designator
	2-Valve (one seal)	3 & 5-Valve (one seal)	
Graphite	KIT-M2VFS-G	KIT-M3VFS-G	G
PTFE	KIT-M2VFS-I	KIT-M3VFS-I	T

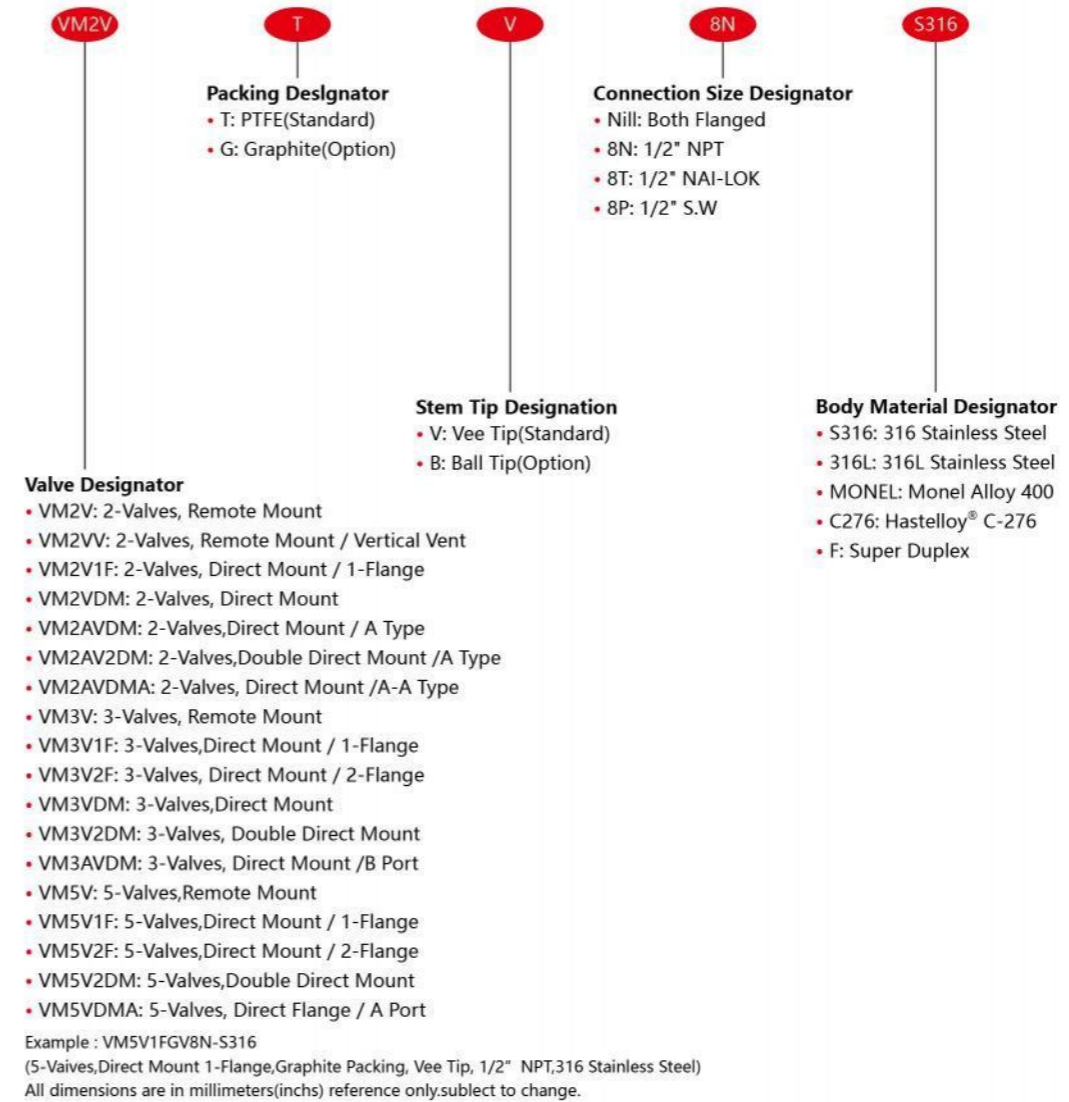
**Transmitter Fixing Bolt Kits**

Select a Kit ordering number from the tables below based on the manifold series and bolt length. All Bolts are stainless steel(A193 B8M) with 7/16in.-20 threads.

Bolt Length	Kit Ordering Number	
	2-Valve (two bolts)	3 & 5-Valve (four bolts)
L22	KIT-M2VBT-L22	KIT-M3VBT-L22
L45	KIT-M2VBT-L45	KIT-M3VBT-L45



**Ordering Information**





**Features**

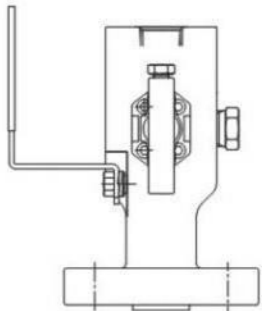
- ANSI B16.5 flanged inlet connections 1/2" to 2" sizes.
- Class 150 rated to Class 2500 rated.
- 1/2"NPT thread female outlet to ANSI /ASME B1.20.1
- 1/2"NPT thread female vent connection to ANSI/ASME B1.20.1
- Flange constructions Per the requirements of ASME B16.5.
- Stainless steel duplex stainless steel/Hastelloy/Monel material

**Ordering Information**

**1.Body Construction**

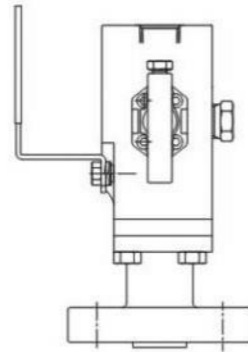
One Piece Forged Design

Designator:D1



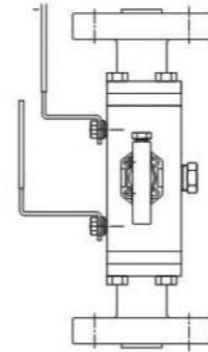
Two Piece Bolted Design

Designator:D2



Three Piece Bolted Design

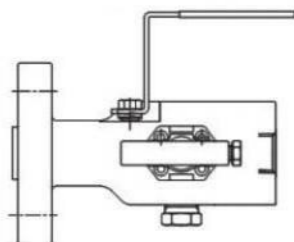
Designator:D3



**2.Process and Outlet Connection**

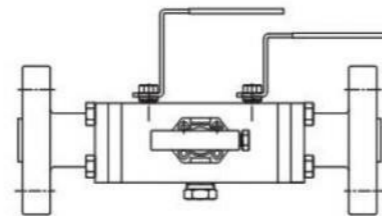
Flange to 1/2"NPTF

Designator-F



Flange to Flange

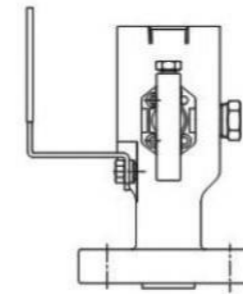
Designator-FF



**3.Single and Double Block and Bleed Valve**

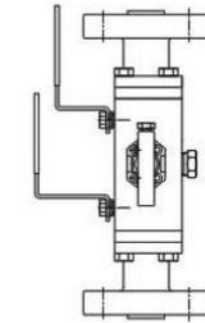
Single Block and Bleed

Designator-S



Double Block and Bleed

Designator-D



**4.Configuration**

Single Block and Bleed Valve

Designator	Block	Vent
B	Ball	Ball
Y	OS&Y	OS&Y
N	Globe Needle	Globe Needle
A	Ball	OS&Y
C	Ball	Globe Needle
D	OS&Y	Globe Needle

Double Block and Bleed Valve

Designator	Block	Block	Vent
B	Ball	Ball	Ball
Y	OS&Y	OS&Y	OS&Y
A	Ball	Ball	OS&Y
C	Ball	Ball	Globe Needle
D	OS&Y	Globe Needle	Globe Needle
E	OS&Y	OS&Y	Globe Needle

**5.Process Connections**

Flange Size		Flange Class		Bore Size		Finish Standard	
Designator	Size	Designator	Rating	Designator	Size	Designator	Finish
8	1/2" (DN15)	A	150	Null	Full	1	Raised Faced Smooth
12	1/2" (DN20)	B	300	1	Reduce	2	Raised Faced Serrated
16	1" (DN25)	C	600	2	9.5mm	3	Raised Faced Stock
24	1 1/2" (DN40)	D	900	3	14mm	4	Ring Type Joint
32	2" (DN50)	E	1500	4	19mm		
		F	2500				

**How to order**

Designators	Selected Flange Size	Selected Flange Class	Selected Bore Size	Selected Finish Standard	Intermediate Ordering Number
8A11	1/2" (DN15)	150	9.5mm	Raised Faced Smooth Finish	D1F-SN-8A11
16C31	1" (DN25)	600	14mm	Raised Faced Smooth Finish	D1F-SN-16C31
24D2	1 1/2" (DN40)	900	Full Bore	Raised Faced Serrated	D3F-DC-24D2



**Ordering Information**

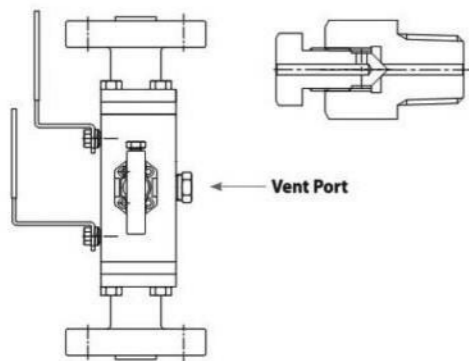
**6.Seat and Packing**

Ball Valve Seat Material		OS&Y Packing		Needle Valve Packing	
Designator	Seat	Designator	Packing	Designator	Packing
Nil	Reinforced PTFE	Nil	Graphite	Nil	Graphite
PK	PEEK	PE	PTFE	RP	Reinforced PTFE

**How to order**

Designator	Ball Valve Seat Material	OS&Y Packing	Needle Valve Packing	Intermediate Ordering Number
Nil	Reinforced PTFE	Standard Packing	Standard Graphite	D1F-SNT-84A1-
PKPE	PK:PEEK	PE:PTFE	Standard Graphite	D1F-SCTC-16C1-PKPE
PKPERP	PK:PEEK	PE:PTFE	RP:Reinforced PTFE	D1F-SDT-24D2-PKPERP

**7.Vent(Bleed) Port**



**VP" option**

- Vent port 1/2"NPTF with Hex Plug is standard.
- Vent port with "Vent Plug" is an option with "VP" designator.

**VP" option**

Designator	On Vent Port	Intermediate Ordering
Nil	HexPlug	D1F-SC-16C1
VP	Vent Plug	D1F-SC-16C1-VF

**8.Option, Trim and Body Material**

Option	Trim Material	Body Material
FS:Fire Tested Design to BS6755 Part2	Nil:Standard 5S316 D:Duplex M:Mone/ UNS N04400 H: Hastelloy	S:ASTM A182F316/F316L D:ASTM A182F51 M:ASTM B564 UNS N04400 LF:ASTM A350LF2

FS: Optional fire tested design valve is supplied with the following seat & packing materials.

- Ball Seat: Standard Reinforced PTFE
- OS&Y Packing:Standard Graphite Packing
- Needle Valve Packing: Optional Graphite Packing

**Completion of DBB ordering numbers**

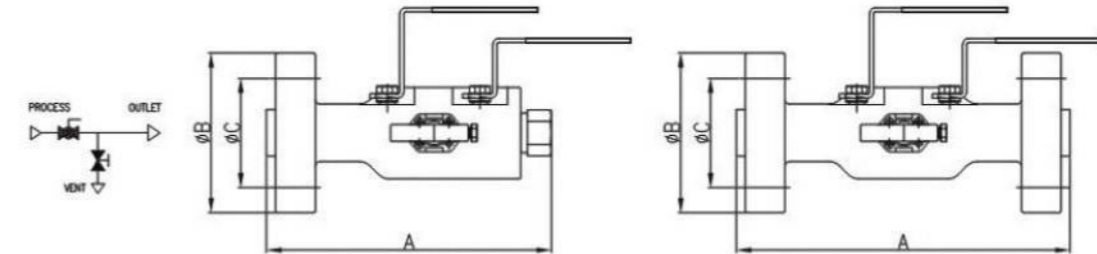
Complete Ordering Number	Option	Trim Material	Body Material
D1F-SN-8A1-5	No Option	No Option	S316
D3F-DC-16D4-PKPE-SG-MS	Nace	Monel	S316
D1F-SDT-24DS-FS-5	Fire Safely	No Option	S316

**Product range / Weights and Dimensions**

**D1FF Series**

**9.5mm Bore**

One Piece Forged Flange to 1/2" NPTF Single Block Bleed Valve with Ball and OS&Y(or Needle) on Block and Vent. 3/8" (9.5mm) and 1/2" (14mm),3/4"(19mm) Bore Size



Size(inch)	Class	Dimension(mm)					Weight(kg)	
		A(RF)	A(RTJ)	A(Flange/NPT)	B	C	Flange	Flange/NPT
1/2"	150	188		168	88.9	60.5	4.3	3.6
	300	188	193	168	95.2	66.5	5	3.9
	600	188	196	168	95.2	66.5	5.2	4
	900/1500	206	213	176	120.6	82.5	7.9	5
	2500	206	213	176	133.4	88.5	10.8	6
3/4"	150	188		168	98.6	69.9	4.9	3.9
	300	188	196	168	117.3	82.5	6.3	4
	600	188	196	168	117.3	82.5	6.5	4.2
	900/1500	206	213	176	130	88.9	9.5	5.6
	2500	206	213	176	139.7	95.3	11	7.1
1"	150	188	193	173	108	79.2	5	3.9
	300	190	195	173	124	88.9	6.3	4.3
	600	190	198	173	124	88.9	6.5	4.5
	900/1500	240	240	195	149.3	101.6	11.5	6.8
	2500	255	255	203	158.8	108	14.3	8.1
1 1/2"	150	198	203	178	127	98.6	7	4.6
	300	218	218	185	155.4	114.3	10.1	6
	600	235	235	204	155.4	114.3	11	6.5
	900/1500	280	280	215	177.8	123.9	16.5	9.4
	2500	316	316	220	203.2	146.1	25.8	14
2"	150	203	213	183	152.4	120.7	9.4	5.5
	300	223	228	190	165.1	127	12.8	6.8
	600	243	253	202	165.1	127	13.4	8.1
	900/1500	288	288	215	215.9	165.1	25.4	14
	2500	313	313	220	235	171.5	36.6	22

All dimensions are in millimeters unless otherwise specified and only for reference subject to change.

**Product range / Weights and Dimensions**

**D1FF Series**

**14mm Bore**

One Piece Forged Flange to 1/2"NPTF Single Block Bleed Valve with Ball and OS&Y(or Needle) on Block and Vent. 3/8" (9.5mm)and 1/2" (14mm),3/4"(19mm) Bore Size

Size(inch)	Class	Dimension(mm)					Weight(kg)	
		A(RF)	A(RTJ)	A(Flange/NPT)	B	C	Flange	Flange/NPT
1"	150	231	231	197	108	79.2	7.7	3.9
	300	241	241	197	124	88.9	8.8	4.3
	600	241	241	203	124	88.9	8.8	4.5
	900/1500	261	261	203	149.3	101.6	12.7	6.8
	2500	273	273	203	158.8	108	16.5	8.1
1 1/2"	150	241	241	207	127	98.6	9.1	4.9
	300	251	251	207	155.4	114.3	12.3	6.4
	600	251	251	215	155.4	114.3	12.3	6.9
	900/1500	291	291	215	177.8	123.9	17.7	9.8
	2500	316	316	220	203.2	146.1	27	14
2"	150	241	213	210	152.4	120.7	10.9	5.9
	300	261	241	210	165.1	127	14.1	7.5
	600	261	261	220	165.1	127	14.1	8.4
	900/1500	306	306	220	215.9	165.1	26.6	14
	2500	346	346	230	235	171.5	37.8	22.1

**D1FF Series**

**19mm Bore**

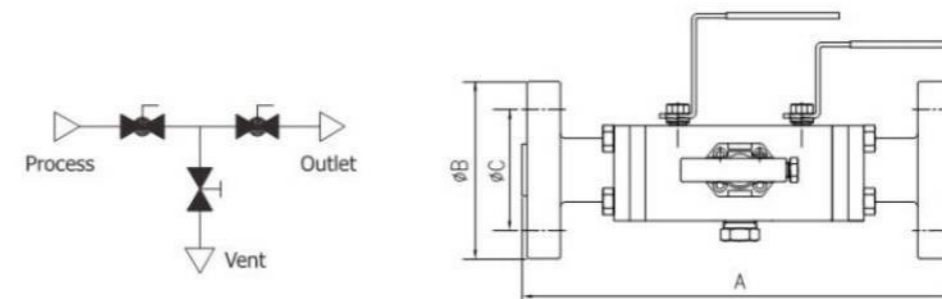
Size(inch)	Class	Dimension(mm)				Weight(kg)
		A(RF)	A(RTJ)	B	C	
1 1/2"	150	253	253	127	98.6	9.8
	300	263	263	155.4	114.3	13.0
	600	263	263	155.4	114.3	13.0
	900/1500	303	303	177.8	123.9	18.4
	2500	328	328	203.2	146.1	27.7
2"	150	253	253	152.4	12.7	11.7
	300	273	273	165.1	127	14.9
	600	273	273	165.1	127	14.9
	900/1500	318	318	215.9	165.1	27.4
	2500	358	358	235	171.5	38.6

All dimensions are in millimeters unless otherwise specified and only for reference subject to change.

**D3FF Series**

**Full Bore**

Three Piece Bolted Design Flange to Flange Double Block and Bleed Valve with Ball and OS&Y (or Needle) on Block and Vent.



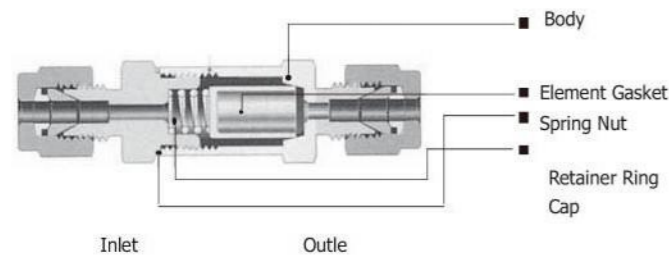
Size(inch)	Bore(mm)	Class	Dimension(mm)				Weight(kg)
			A(RF)	A(RTJ)	B	C	
1/2"	14	150	235	248	88.9	60.5	8.5
		300	241	254	95.2	66.5	9.5
		600	254	254	95.2	66.5	10.0
		900/1500	287	287	120.6	82.5	13.0
		2500	303	303	133.4	88.5	16.0
3/4"	19	150	264	277	98.6	69.9	9.5
		300	277	290	117.3	82.5	10.5
		600	290	290	117.3	82.5	11.0
		900/1500	320	320	130	88.9	16.0
		2500	333	333	139.7	95.3	19.0
1"	25	150	272	285	108	79.2	15.0
		300	279	292	124	88.9	16.7
		600	292	292	124	88.9	17.5
		900/1500	364	364	149.3	101.6	21.2
		2500	377	377	158.8	108	24.2
1 1/2"	38	150	361	374	127	98.6	24.7
		300	367	384	155.4	114.3	27.1
		600	384	384	155.4	114.3	27.9
		900/1500	402	402	177.8	123.9	35.1
		2500	463	466	203.2	146.1	45.5
2"	50	150	390	403	152.4	120.7	48.2
		300	398	411	165.1	127	50.3
		600	416	419	165.1	127	51.1
		900/1500	481	484	215.9	165.1	66.8
		2500	652	655	235	171.5	150.0



**Features**

- Gas and liquid filtration
- Standard micron filtering ranges
- Sintered Elements : 0.5, 2, 7, 15, 60 and 90 micron
- Variety of end connections include NAI-LOK tube fitting male/female NPT&ISO thread

**FI Series In-line Filters**



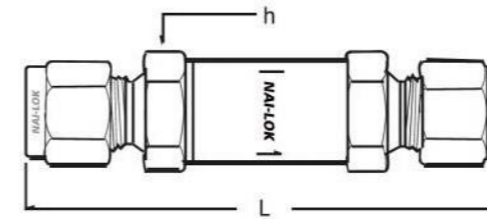
**Materials of Construction**

Component	FI Series	FT Series
	Grade/ASTM Specification	
Body	SS316	SS316 / A276
Nut	-	SS316 / A276
Cap	-	SS316 / A276
Retainer Ring	-	Stainless Stee
Element	SS316 (Sintered, Strainer)	
Spring	SS302	
Gasket	SS316 / A240 silver plated	

**Sintered Elements Technical Information**

Element Designator	Nominal Pore Size, µm	Pore Size Range, µm	Element Porosity	Cv Factor	Max. Pressure Differential Across Clean Filters at 70 °F (21°C)  1160 psig (80.0 bar)
05	0.5	0.5 - 2	17%	0.046	
2	2	1 - 4	22%	0.056	
7	7	5 - 10	27%	0.120	
15	15	11 - 25	36%	130.3	
60	60	50 - 75	44%	80.50	
90	90	75 - 110	45%		

**FI Series In-line Filter**



**Dimensions**

Basic Ordering Number	End Connections Inlet and Outlet	Orifice (inch)	Dimensions. mm (in.)	
			L	H
N-2T	1/8" NAI-LOK	0.09 (2.4)	59.7(2.35)	9/16
F-2N	1/8" Female NPT		54.9(2.16)	
N-3M	3mm NAI-LOK		60.5(2.38)	
N-4T	1/4" NAI-LOK	0.19 (4.7)	74.9(2.95)	3/4
M-4N	1/4" Male NPT		68.3(2.69)	
F-4N	1/4" Female NPT		72.9(2.87)	
N-6M	6mm NAI-LOK	0.28 (7.1)	75.2(2.96)	1
M-8N	1/2" Male NPT		81.3(3.20)	
N-6T	3/8" NAI-LOK		81.5(3.21)	
N-8T	1/2" NAI-LOK	0.41 (10.3)	88.6(3.49)	1

All dimensions shown are for reference only and are subject to change.

**Flow Capacities**

Filter Series	Nominal Pore Micron	Pressure Drop		
		20 psi	60 psi	120 psi
		Water GPM @70 °F (21°C)		
FI 1/8,3MM	05	0.01	0.44	0.13
	2	0.11	0.26	0.44
	7	0.14	0.33	0.53
	15	0.17	0.39	0.64
	60	0.21	0.55	0.77
FI 1/4,6MM	05	0.06	0.19	0.32
	2	0.34	0.94	1.42
	7	0.57	1.42	2.19
	15	0.71	1.42	2.30
	60	1.27	3.61	5.04
FI 1/2,12MM	05	0.13	0.44	0.83
	2	0.37	1.20	1.75
	7	0.91	2.41	3.83
	15	1.19	2.85	4.49
	60	2.83	7.34	10.95
	90	3.25	8.32	12.05
	40, 140, 230, 440	2.7	6.04	9.4

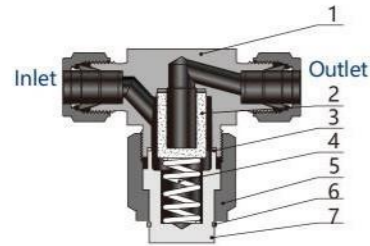
**Technical Information**

Filter Series	Pressure Rating @100 °F (38 °C), psig (bar)	Temperature Rating, °F (°C)	Filtration Area in.² (mm²)	
			Sintered	Strainer
Body Material	SS316	SS316		
1/8,3MM	3000 (206)	-20 to 90 (-28 to 482)	0.55(350)	-
1/4,6MM			1.30(830)	1.0(640)
1/2,12MM			2.0(1280)	1.7(1090)

**FT Series Tee Filter**



FT Series



**Standard Materials of Construction**

Component		Material Grade/ASTM Specification
		<b>316 SS</b>
1	Body	F316 SS/A182
2	Element	Sintered 316 SS or strainer SS316
3	Gasket	316 SS/A479 with PTFE/D1710 coating or silver-plated
4	Spring	302 SS/A313316
5	Bonnet Nut	SS/A479
6	Backup Ring	Stainless steel
7	Bonnet	316 SS/A479

**Filter Elements**

Filter elements remove 95% of particles larger than the nominal pore size.

Sintered		Strainer	
Element Nominal Pore Size $\mu\text{m}$	Pore Size Range $\mu\text{m}$	Nominal Pore Size $\mu\text{m}$	Mesh
0.5	0.5 to 2	2	6250
2	1 to 45	7	3500
7	to 1011	15	800
15	to 2535	40	400
40	to 5350	60	230
60	to 7570	80	200

**Filtration Area**

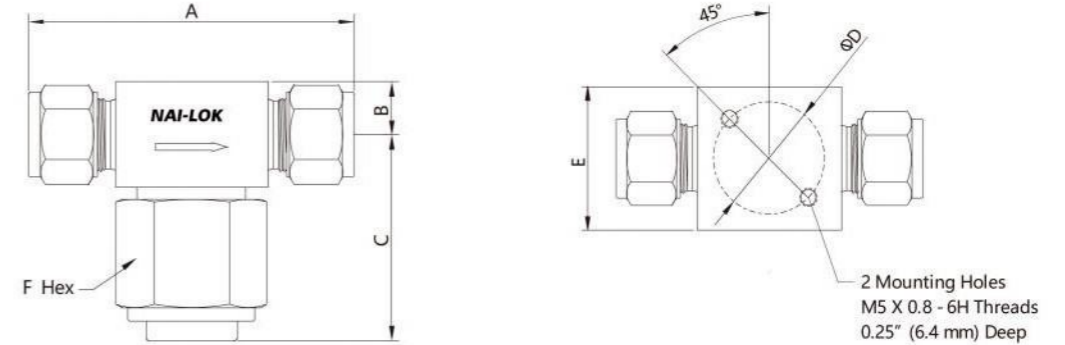
Series	Filtration Area Type	Filtration Area, $\text{ft}^2$ (mm <sup>2</sup> )	
		Sintered	Strainer
FT	2	1.30 (830)	1.00 (640)
	4	1.30 (830)	1.00 (640)
	8	2.00 (1280)	1.70 (1090)

**Flow Data**

Series	Filtration Area Type	Element Nominal Pore Size $\mu\text{m}$	Element Type	Inlet Pressure, psig (bar)			Pressure Drop, psig (bar)		
				5 (0.34)	10 (0.68)	15 (1.0)	10 (0.68)	50 (3.4)	100 (6.8)
				Air Flow, std ft <sup>3</sup> /min (L/min)			Water Flow, U.S.gal/min (L/min)		
FT	2	0.5	Sintered	0.04 (1.1)	0.06 (1.7)	0.12 (3.4)	0.04 (0.15)	0.17 (0.64)	0.29 (1.0)
		2	Sintered	0.20 (5.6)	0.40 (11)	0.60 (17)	0.08 (0.30)	0.24 (0.91)	0.40 (1.5)
		7	Sintered	0.50 (14)	0.90 (25)	1.2 (34)	0.10 (0.37)	0.30 (1.1)	0.48 (1.8)
		15	Sintered	0.80 (22)	1.3 (36)	1.5 (42)	0.12 (0.45)	0.36 (1.3)	0.58 (2.1)
		60	Sintered	1.7 (48)	2.2 (62)	2.4 (68)	0.15 (0.56)	0.50 (1.8)	0.70 (2.6)
		80	Sintered	1.8 (51)	2.2 (62)	2.6 (73)	0.20 (0.75)	0.50 (1.8)	0.60 (2.2)
	4	0.5	Sintered	0.12 (3.4)	0.26 (7.3)	0.48 (13)	0.04 (0.15)	0.17 (0.64)	0.29 (1.0)
		2	Sintered	0.60 (17)	1.4 (39)	2.3 (65)	0.24 (0.90)	0.86 (3.2)	1.3 (4.9)
		7	Sintered	1.4 (39)	2.9 (82)	4.7 (130)	0.40 (1.5)	1.3 (4.9)	2.0 (7.5)
		15	Sintered	1.2 (34)	2.9 (82)	4.7 (130)	0.50 (1.8)	1.3 (4.9)	2.1 (7.9)
		60	Sintered	3.1 (87)	5.9 (160)	8.5 (240)	0.80 (3.0)	2.7 (10)	3.9 (14)
		80	Sintered	4.1 (110)	7.5 (210)	10 (280)	1.1 (4.1)	3.4 (12)	4.9 (18)
8	0.5	Sintered	0.36 (10)	0.86 (24)	1.6 (45)	0.26 (0.98)	1.1 (4.1)	0.76 (2.8)	
	2	Sintered	1.4 (39)	2.8 (79)	4.0 (110)	0.09 (0.34)	0.40 (1.5)	1.6 (6.0)	
	7	Sintered	1.8 (51)	4.2 (119)	6.8 (190)	0.64 (2.4)	5.5 (20)	3.5 (13)	
	15	Sintered	1.8 (51)	4.9 (130)	7.9 (220)	0.84 (3.1)	2.2 (8.3)	4.1 (15)	
	60	Sintered	5.1 (140)	10 (280)	15 (420)	1.5 (5.6)	2.6 (9.8)	6.7 (25)	
	80	Sintered	6.1 (170)	11 (310)	16 (450)	1.7 (6.4)	4.8 (18)	7.6 (28)	

**Dimensions**

**FT Series**



Basic Ordering Number	Connection Type and Size		Filtration Area Type	Dimensions, in. (mm)					
	Inlet	Outlet		A	B	C	ØD	E	F
N-2T	1/8" NAI-LOK	1/8" NAI-LOK	2	2.27 (57.7)	0.38 (9.7)	1.49 (37.8)	1.00 (25.4)	1.00 (25.4)	1 (25.4)
N-4T	1/4" NAI-LOK	1/4" NAI-LOK	4	2.47 (62.7)					
N-6T	3/8" NAI-LOK	3/8" NAI-LOK	8	2.84 (72.1)	0.46 (11.7)	1.74 (44.2)	1.13 (28.7)	1.13 (28.7)	1 1/8 (28.6)
N-8T	1/2" NAI-LOK	1/2" NAI-LOK	8	3.04 (77.2)					
N-6M	6 mm NAI-LOK	6 mm NAI-LOK	4	2.46 (62.5)	0.38 (9.7)	1.49 (37.8)	1.00 (25.4)	1.00 (25.4)	1 (25.4)
N-8M	8 mm NAI-LOK	8 mm NAI-LOK	8	2.84 (72.1)					
N-10M	10 mm NAI-LOK	10 mm NAI-LOK	8	2.86 (72.6)	0.46 (11.7)	1.74 (44.2)	1.13 (28.7)	1.13 (28.7)	1 1/8 (28.6)
N-12M	12 mm NAI-LOK	12 mm NAI-LOK	8	3.04 (77.2)					
F-2N	1/8" Female NPT	1/8" Female NPT	2	2.00 (50.8)	0.46 (11.7)	1.74 (44.2)	1.13 (28.7)	1.13 (28.7)	1 1/8 (28.6)
F-4N	1/4" Female NPT	1/4" Female NPT	4	2.13 (54.1)					
M-4N	1/4" Male NPT	1/4" Male NPT	4	2.38 (60.5)					
M-6N	3/8" Male NPT	3/8" Male NPT	8						
M-8N	1/2" Male NPT	1/2" Male NPT	8	2.75 (69.9)					

All dimensions shown are for reference only and are subject to change.

**Ordering Information**

Example: **FI - N-4T - 15 - SS**  
 1      2      3      4

**1. Valve Series**

FI  
FT

**2. End Connection**

N= NAI-LOK Tube Fitting  
F= Female Thread  
M= Male Thread

**3. Port Size,  $\mu\text{m}$**

05-0.5  
2-2  
7-7  
15-15  
60-60  
90-90

**4. Body Material**

SS= SS316

**QC Series Quick Connectors**



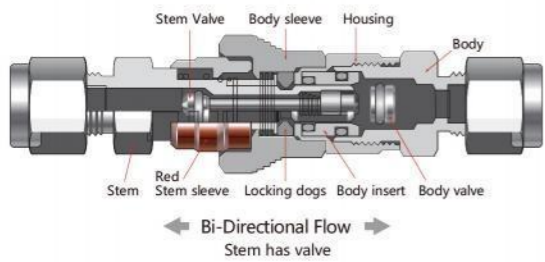
**Features**

- Working Pressure up to: 3000 psig(207 bar)
- Bi-directional flow design.
- Simple to operate.
- No tools required to couple and uncouple.
- Compact and light-weight design
- SS316, Hastelloy material

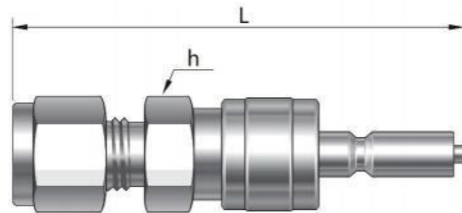
**Materials of Construction**

Component	Material
	<b>SS316</b>
Body, Housing Body valve Body insert Body sleeve	SS316 / ASTM A276
Stem Stem sleeve Stem valve	SS316 / ASTM A276
o-rings	FKM
Springs	SS302/ASTM A313
Lubricants	Silicon and TFE based

Wetted parts indicated in blue.

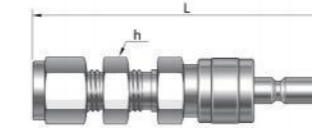


**Ordering Information and Dimensions Stems**



Series	Basic Ordering Number	End Connection	Cv	Full Flow	L mm (in.)	h Hex. in.
QC-	S-N-2T	1/8" NAI-LOK	0.08	0.08	70.4 (2.77)	5/8
	S-N-4T	1/4" NAI-LOK	0.2	0.4	61.5 (2.42)	5/8
	S-N-6M	6 mm NAI-LOK	0.2	0.4	61.5 (2.42)	5/8
	S-M-2N	1/8" Male NPT	0.2	0.4	54.1 (2.13)	5/8
	S-M-4N	1/4" Male NPT	0.2	0.4	57.9 (2.28)	5/8
	S-F-2N	1/8" Female NPT	0.2	0.4	52.6 (2.07)	5/8
	S-F-4N	1/4" Female NPT	0.2	0.4	58.9 (2.32)	3/4
	S-N-6T	3/8" NAI-LOK	0.5	1.5	67.1 (2.64)	3/4
	S-N-10M	10 mm NAI-LOK	0.5	1.5	70.4 (2.77)	3/4
	S-M-6N	3/8" Male NPT	0.5	1.6	62.7 (2.47)	3/4
	S-F-6N	3/8" Female NPT	0.5	1.6	62.7 (2.47)	7/8
	S-N-8T	1/2" NAI-LOK	1.5	3.3	80.3 (3.16)	15/16
	S-N-12M	12 mm NAI-LOK	1.5	3.3	60.3 (3.16)	15/16
	S-M-8N	1/2" Male NPT	1.3	3.1	77.2 (3.04)	15/16
	S-F-8N	1/2" Female NPT	1.3	3.1	76.7 (3.02)	1 1/16

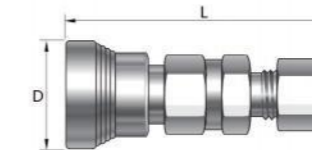
**Ordering Information and Dimensions Stems-Bulkhead**



Series	Basic Ordering Number	End Connection	Panel Thickness Max. mm (in.)	Panel Hole Dia. Min. mm (in.)	L mm(in.)	h Hex. in.
QC-	SB-N-4T	1/4" NAI-LOK	6.4 (0.25)	11.9 (15/32)	71.1 (2.80)	5/8
	SB-N-6M	6 mm NAI-LOK	6.4 (0.25)	11.5 (29.64)	71.1 (2.80)	16 mm
	SB-N-6T	3/8" NAI-LOK	6.9 (0.27)	15.1 (19/32)	76.0 (3.07)	3/4
	SB-N-10M	10 mm NAI-LOK	6.9 (0.27)	16.7 (21/32)	78.7 (3.10)	22 mm
	SB-N-8T	1/2" NAI-LOK	6.6 (0.26)	19.8 (25/32)	92.2 (3.63)	15/16
	SB-N-12M	12 mm NAI-LOK	6.6 (0.26)	19.4 (49/64)	92.2 (3.63)	24 mm

All dimensions shown are for reference only and are subjects to change.

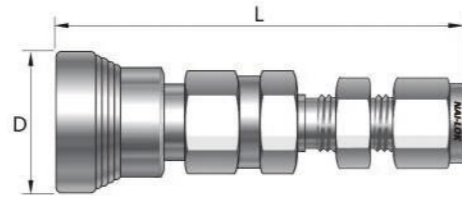
**Ordering Information and Dimensions Bodies**



Series	Basic Ordering Number	End Connection	L mm (in.)	D mm (in.)
QC-	B-N-2T	1/8" NAI-LOK	57.4 (2.26)	23.1 (0.91)
	B-N-4T	1/4" NAI-LOK	56.4 (2.30)	23.1 (0.91)
	B-N-6M	6 mm NAI-LOK	58.4 (2.30)	23.1 (0.91)
	B-M-2N	1/8" Male NPT	51.1 (2.01)	23.1 (0.91)
	B-M-4N	1/4" Male NPT	54.9 (2.16)	23.1 (0.91)
	B-M-4R	1/4" Male ISO	54.9 (2.16)	23.1 (0.91)
	B-F-2N	1/8" Female NPT	54.9 (2.16)	23.1 (0.91)
	B-F-4N	1/4" Female NPT	61.5 (2.42)	23.1 (0.91)
	B-F-4R	1/4" Female ISO	61.5 (2.42)	23.1 (0.91)
	B-N-6T	3/8" NAI-LOK	65.5 (2.58)	26.2 (1.03)
	B-N-10M	10 mm NAI-LOK	68.1 (2.68)	26.2 (1.03)
	B-M-6N	3/8" Male NPT	60.5 (2.38)	26.2 (1.03)
	B-M-6R	3/8" Male ISO	60.5 (2.38)	26.2 (1.03)
	B-F-6N	3/8" Female NPT	65.3 (2.57)	26.2 (1.03)
	B-F-6R	3/8" Female ISO	65.3 (2.57)	26.2 (1.03)
	B-N-8T	1/2" NAI-LOK	78.5 (3.09)	30.7 (1.21)
	B-N-12M	12 mm NAI-LOK	78.5 (3.09)	30.7 (1.21)
	B-M-8N	1/2" Male NPT	75.4 (2.97)	30.7 (1.21)
	B-M-8R	1/2" Male ISO	75.4 (2.97)	30.7 (1.21)
	B-F-8N	1/2" Female NPT	81.8 (3.22)	30.7 (1.21)
	B-F-8R	1/2" Female ISO	81.8 (3.22)	30.7 (1.21)

All dimensions shown are for reference only and are subjects to change.

**Ordering Information and Dimensions Stems-Bulkhead**



Series	Basic Ordering Number	End Connection	Panel Thickness Max.	Panel Hole Dia. Min.	L	D
			mm (in.)			
QC-	BD-N-4T	1/4" NAI-LOK	6.4 (0.25)	11.9 (15/32)	67.8 (2.67)	23.1 (0.91)
	BD-N-6M	6 mm NAI-LOK	6.4 (0.25)	11.9 (15/32)	67.8 (2.67)	23.1 (0.91)
	BD-N-6T	3/8" NAI-LOK	6.9 (0.27)	15.1 (19/32)	75.7 (2.98)	26.2 (1.03)
	BD-N-10M	10 mm NAI-LOK	6.9 (0.27)	16.7 (21/32)	75.9 (2.99)	26.2 (1.03)
	BD-N-8T	1/2" NAI-LOK	6.6 (0.26)	19.8 (25/32)	90.4 (3.56)	30.7 (1.21)
	BD-N-12M	12 mm NAI-LOK	6.6 (0.26)	19.4 (49/64)	90.4 (3.56)	30.7 (1.21)

All dimensions shown are for reference only and are subjects to change.

**Ordering Information**

Example: **QCBD - N-4T - SS**  
1    2    3

**1. Valve Series**

QC

**2. End Connection**

N= NAI-LOK Tube Fitting  
 F= Female Thread  
 M= Male Thread

**3. Body Material**

SS= SS316  
 HC= Hastelloy

**Features**

- Sizes from 10 to 3785 cm<sup>3</sup> (1 gal)
- Working pressures up to 5000 psig (344 bar)
- 304L, 316L stainless steel, Hastelloy, Monel upon request
- Body made of seamless tubing provides consistent wall thickness size and capacity
- All double-ended cylinders are hydrostatically tested to at least 5/3 times the working pressure



**Sampling Assemblies, Sample Cylinders and Accessories**

Accessories, such as valves, relief devices, outage tubes, carrying handles, caps and plugs available

**Options for Internal Cylinder Surface Treatments**

**PTFE Coating**

The internal cylinder surface can be coated with PTFE to provide a nonstick surface for easy cleaning.

**Electropolishing**

Electropolishing can provide a clean internal surface with a high degree of passivation.

**Special Application Sample Cylinder**

Sulfinert coated sample cylinders available, Sulfinert coating to provide stable storage of sulfur and mercury compounds at ppb levels in petroleum samples for a long time.

To order Sulfinert coated products, please add -SI as a suffix to the standard ordering number.

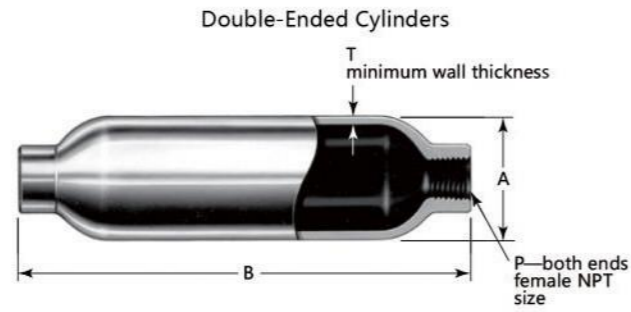
**Overpressure Protection**

Cylinders for compressed air must be equipped with pressure relief devices.

**Pressure-Temperature Ratings**

Material	316L SS	304L SS	Alloy 400
Specification	Double-Ended 5000	Double-Ended 1800	Double-Ended 1800
Temperature, °F (°C)	Working Pressure, psig (bar)		
-65 (-53) to 100 (37)	5000 (344)	1800 (124)	1800 (124)
200 (93)	3960 (272)	1360 (93.7)	1580 (108)
300 (148)	3570 (245)	1230 (84.7)	1490 (102)
400 (204)	3290 (226)	1130 (77.8)	1430 (98.5)
500 (260)	3060 (210)	1050 (72.3)	1420 (97.8)
600 (315)	2920 (201)	1000 (68.9)	1420 (97.8)
650 (343)	2870 (197)	980 (67.5)	1420 (97.8)
700 (371)	2810 (193)	970 (66.8)	1420 (97.8)
750 (398)	2750 (189)	950 (65.4)	1410 (97.1)
800 (426)	2700 (186)	930 (64.0)	—
850 (454)	2640 (181)	—	—

**Sample Cylinders**



**Ordering Information, Technical Data, and Dimensions**

Material Grade/ Cylinder Specification	Pressure Rating psig (bar)	Internal Volume cm <sup>3</sup> ± 5 %	P in.	Ordering Number	Dimensions, in. (mm)			Weight (kg)				
					A	B	T					
<b>Double-Ended</b>												
304L SS/ 1800	1800 (124)	40	1/8	304L-2-40	1.25 (31.8)	3.88 (98.6)	0.070 (1.8)	0.31 (0.14)				
		50	1/4	304L-4-50	1.50 (38.1)	3.75 (95.2)	0.093 (2.4)	0.38 (0.17)				
		75		304L-4-75		4.94 (125)		0.62 (0.28)				
		150		304L-4-150	2.00 (50.8)	5.25 (133)		0.94 (0.43)				
		300		304L-4-300		8.94 (227)		1.6 (0.73)				
		400		304L-4-400		11.4 (290)		2.1 (0.95)				
		500		304L-4-500		13.8 (351)		2.6 (1.2)				
1000	1/4	304L-4-1000	3.50 (88.9)	10.9 (277)		0.180 (4.6)		6.5 (2.9)				
1000	1/2	304L-8-1000	4.00 (102)	17.2 (437)	0.206 (5.2)	14 (6.4)						
304L SS/ 1800	1800 (124)	2250					1/4	304L-4-2250	4.00 (102)	17.2 (437)	0.206 (5.2)	14 (6.4)
		2250					1/2	304L-8-2250				
		3785 (1 gal)					1/4	304L-4-1GAL	4.00 (102)	26.7 (678)	0.206 (5.2)	21 (9.5)
3785 (1 gal)	1/2	304L-8-1GAL										
316L SS/ 1800	1800 (124)	150	1/4	316L-4-150	2.00 (50.8)	5.25 (133)	0.093 (2.4)	0.94 (0.43)				
		300		316L-4-300		8.94 (227)		1.6 (0.73)				
		500		316L-4-500		13.8 (351)		2.6 (1.2)				
316L SS/ 5000	5000 (344)	150	1/4	316L-50DF4-150	1.90 (48.2)	8.00 (203)	0.240 (6.1)	3.0 (1.4)				
		300		316L-50DF4-300		14.5 (368)		5.6 (2.5)				
		500		316L-50DF4-500		23.5 (597)		9.1 (4.1)				
Alloy 400/ 1800	1800 (124)	150	1/4	M-4-150	2.00 (50.8)	5.25 (133)	0.093 (2.4)	0.94 (0.43)				
		300		M-4-300		8.94 (227)		1.8 (0.82)				
		500		M-4-500		13.8 (351)		2.9 (1.3)				

Dimensions are for reference only and are subject to change.

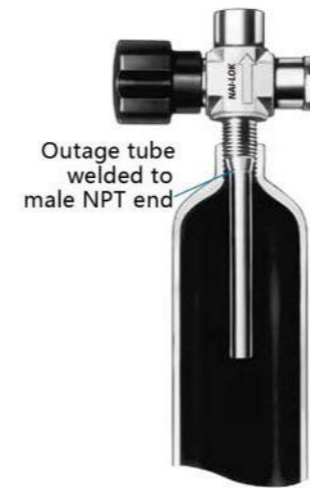
**Outage Tubes**

**Features**

- Made from 316 stainless steel or alloy 400 tubing
- Offered in 1/4 or 1/2 in. NPT sizes
- Marked "Outage Tube" for identification

**Construction**

Outage tubes are welded to the male inlet end of an adapter or tee. This adapter or tee is then threaded into the female port of a sample cylinder.

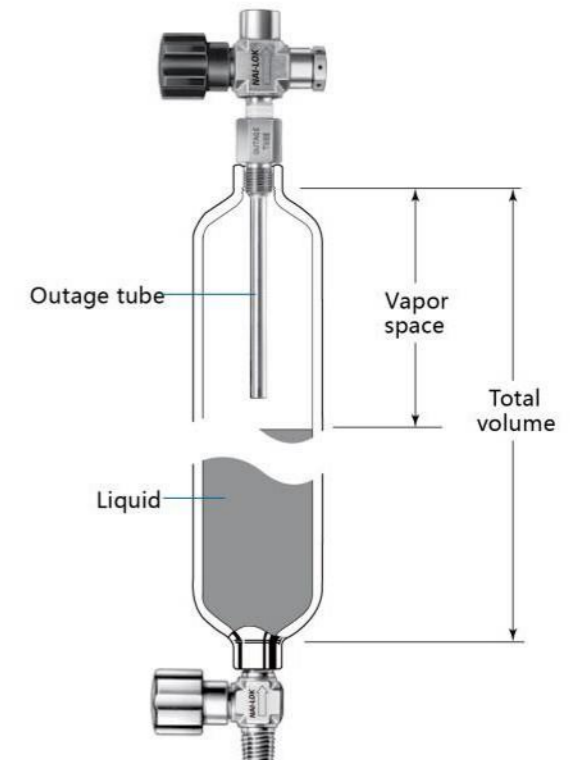


Outage tubes are welded to the male inlet end of an adapter or tee. This adapter or tee is then threaded into the female port of a sample cylinder.

**Tube Length**



Outage tube length (L) is measured from the end of the pipe fitting to the end of the tube. Standard tube length is 10.4 in.(26.4 cm). Tubing can be cut to a desired length; instructions are included.



**Nai-Lok Super Clean Pipe & Tube**

**Seamless Clean Pipe**



- BA- Our special cold working, optimum pass schedule and bright-annealing give very fine and lustrous smoothness and good anticorrosion.
- EP- Precision electropolishing bright, smooth and corrosion resistant surface. anticorrosion.
- HC -Hastelloy® C-276 is a low-carbon, nickel-chromium-molybdenum metal with exceptional corrosion resistance
- Size: 1/8 to 2-1/2 in. and 3 to 25 mm sizes
- Standards: ASTM A269/A632
- Marked to indicate size, material, specifications, and heat code

**Chemical Composition Standard**

Grade	Chemical Composition(Wt%)	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Ai
AP / MP	SUS316L JIS Standard (AOD)	≤ 0.030	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	12.00 16.00	16.00 18.00	2.00 3.00	-	-
	SUS304 JIS Standard	≤ 0.08	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	8.00 11.00	18.00 20.00	-	-	-
BA /EP	SUS316L Single Melt (VOD)	≤ 0.030	≤ 0.75	≤ 0.80	≤ 0.040	≤ 0.005	12.00 16.00	16.00 18.00	2.00 3.20	≤ 0.50	-
	SUS316L Double Melt(VAR)	≤ 0.010	≤ 0.30	≤ 0.40	≤ 0.030	≤ 0.003	14.50 15.00	16.50 17.00	2.20 2.50	≤ 0.25	≤ 0.01
	SUS316L Double Melt (VIM+VAR)	≤ 0.010	≤ 0.20	≤ 0.05	≤ 0.020	≤ 0.003	14.50 15.00	16.50 17.00	2.20 2.50	≤ 0.20	≤ 0.01

Internationale Standard SEMI SPEC F20-0706E

**Surface Roughness**

Tube O.D. (D) mm	External Surface μin. (μm)	Internal Surface μin. (μm)
6.35 D ≤ ≤ 48.6	Ra ≤ 63(1.6)	Ra ≤ 15(0.38)
48.6 D < ≤ 63.5		Ra ≤ 20(0.51)

**Fractional Sizes**

Tubing nominal length is 6 m.

Tube OD in.	Tube wall in.	Weight lb/ft	Working Pressure psig
1/8	0.028	0.029	8500
1/4	0.035	0.080	5100
	0.049	0.105	7500
	0.065	0.128	10200
3/8	0.035	0.127	3300
	0.049	0.171	4800
	0.065	0.215	6500
1/2	0.035	0.174	2600
	0.049	0.236	3700
	0.065	0.302	5100
5/8	0.065	0.389	4000
3/4	0.065	0.476	3300
1	0.083	0.813	3100
1 1/4	0.095	1.187	2800
	0.120	1.473	3600
1 1/2	0.120	1.792	3000
	0.134	1.981	3400
2	0.134	2.705	2500
	0.188	3.686	3600

**Working Pressure at Ambient Temperature**

Tube O.D. in.	Wall Thickness in.			
	0.035	0.039	0.049	0.065
	Working Pressure psig			
1/4	5100	5700	-	-
3/8	3300	3700	4800	-
1/2	2600	3000	3700	-
3/4	-	-	2400	3300
1	-	-	1800	2400
1 1/2	-	-	-	1600
2	-	-	-	1200
2 1/2	-	-	-	950

Tube OD mm.	Tube wall mm.	Weight kg/m	Working Pressure bar
3	0.5	0.021	330
	0.7	0.027	560
6	1.0	0.125	420
	1.5	0.169	710
8	1.0	0.175	310
	1.5	0.244	520
10	1.0	0.225	240
	1.5	0.319	400
12	1.0	0.275	200
	1.5	0.394	330
	2.0	0.500	470
16	1.0	0.375	140
	1.5	0.507	230
	2.0	0.651	330
18	1.0	0.425	120
	1.5	0.619	200
20	2.0	0.801	290
	2.0	0.901	260
22	2.0	1.00	230
	2.0	1.15	200
25	2.0	1.41	260

**Elevated Temperature Factors**

Temperature		Factor
°F	°C	316L
200	93	1.00
400	204	0.96
600	315	0.85
800	426	0.79
1000	537	0.76

Example:

1/2 in. O.D. × 0.035 in. wall thickness TSSM series tubing at 600 °F (315 °C):

1. Working pressure is 2600 psig at -20 °F to 100 °F (-28 °C to 37 °C);

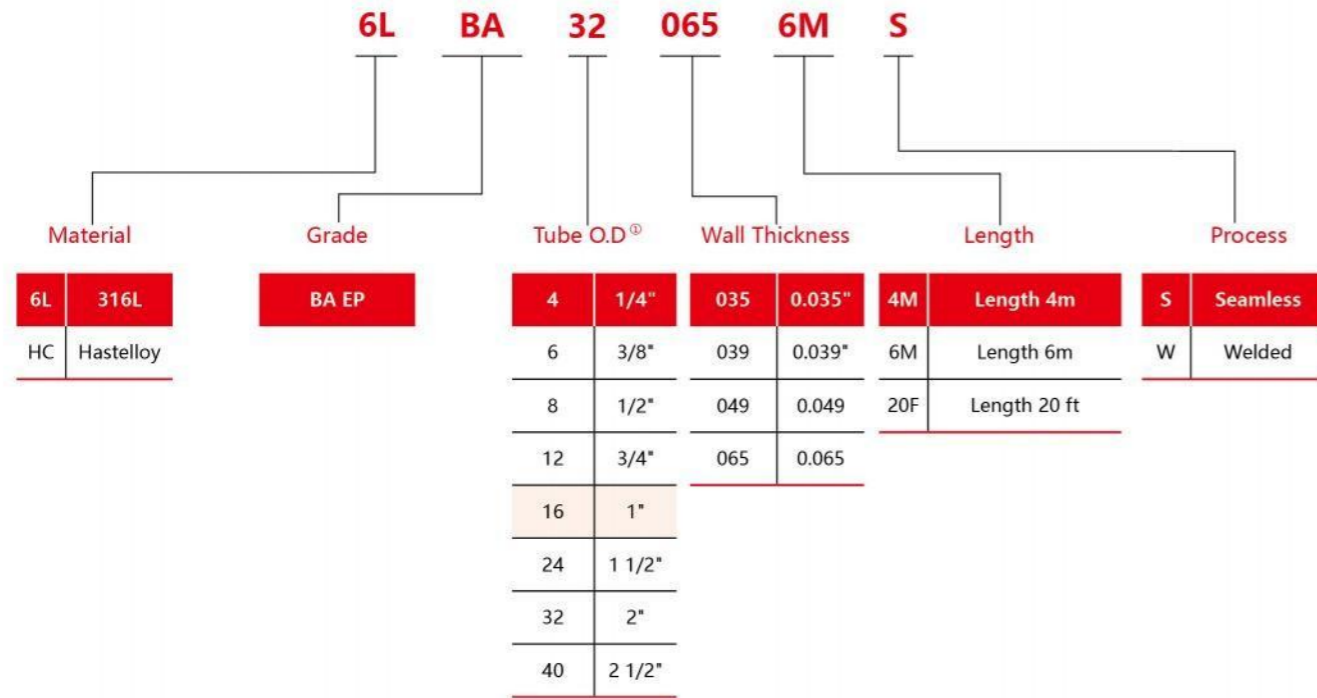
2. Elevated temperature factor is 0.85 at 600 °F (315 °C);

2600 psig × 0.85 = 2210 psig

conclude the working pressure of 1/2 in. O.D. × 0.035 in. wall thickness



**Ordering Number Description**



① To order metric sizes, please contact NAI-LOK Group.

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of NAI-LOK product part number. Not all combinations are available.
2. Purity test reports are available. Please contact NAI-LOK Group for more information.

**N15A Series**



**Features**

- Materials: 316/316L, enhanced-316/316L
- Working pressures: up to 15,000 psig (1034 bar)
- Working temperature: -325 °F to 800 °F (-198°C to 427°C)
- Supply conditions: annealed seamless tubing
- Marked with brand, material grade, specification, pressure, annealing designator and heat number
- Standard length: 40 in, 80 in, 10 ft, 20 ft, 1 m, 2 m, 3 m and 6 m  
Customized length as per customer requirement is also available

**Materials**

UNS	Grade	NAI-LOK Designator	Composition %							
			C	Mn	P	S	Si	Cr	Ni	Mo
S31600/S31603	316/316L	SS	≤ 0.035	≤ 2.00	≤ 0.045	≤ 0.03	≤ 1.00	16-18	10-14	2.0-3.0

② Enhanced-316/316L complying with GB50516-2021 Technical Code for Hydrogen Fuelling Station is available, in which Ni<sub>eq</sub> is not less than 28.5%.

Contact NAI-LOK Group for more information.

**Mechanical Properties**

Annealed Seamless Tubing

UNS	Grade	Yield Strength ksi	Tensile Strength ksi	Elongation %	Hardness
S31600/S31603	316/316L	≥ 30	≥ 75	≥ 30	≤ 90 HRB

**Dimensional Tolerance**

Tube O.D. in.	O.D. Tolerance in.	Wall Thickness Tolerance %
1/8	+/-0.005	+/-10
1/4		
3/8		
1/2		
3/4		
1		

**Working Pressure at Ambient Temperature**

Annealed Seamless Tubing

Tube O.D. in.	Wall Thickness in.	Working Pressure psig (bar)
1/8	0.037	15,000 (1034)
1/4	0.083	15,000 (1034)
	0.065	10,300 (710)
3/8	0.118	15,000 (1034)
	0.095	10,000 (690)
1/2	0.156	15,000 (1034)
	0.134	11,200 (772)
3/4	0.240	15,000 (1034)
	0.188	10,000 (690)
1	0.220	10,000 (690)

③ Working pressures are calculated from an S value of 20,000 psi (138 MPa) at -20 to 100 °F (-28 to 38°C) for ASME B31.3.

**Elevated Temperature Factors**

Temperature		Factor
°F	°C	
100	38	1.00
200	93	
300	149	
400	204	0.96
500	260	0.89
600	316	0.85
700	371	0.81
800	427	0.79
1000	537	0.76

**Ordering Information**

Annealed Seamless Tubing

Tube O.D. in.	Wall Thickness in.	Ordering Number <sup>(3)</sup>	
1/8	0.037	N15A-2-037-6M	N15A-2-037-20F
1/4	0.083	N15A-4-083-6M	N15A-4-083-20F
	0.065	N15A-4-065-6M	N15A-4-065-20F
3/8	0.118	N15A-6-118-6M	N15A-6-118-20F
	0.095	N15A-6-095-6M	N15A-6-095-20F
1/2	0.156	N15A-8-156-6M	N15A-8-156-20F
	0.134	N15A-8-134-6M	N15A-8-134-20F
3/4	0.240	N15A-12-240-6M	N15A-12-240-20F
	0.188	N15A-12-188-6M	N15A-12-188-20F
1	0.220	N15A-16-220-6M	N15A-16-220-20F

In the ordering number, "6M" designator refers to 6 m tubing length and "20F" designator refers to 20 ft tubing length.



**Features**

- Metal components are machined from 316 stainless steel for use in rugged environments.
- Molded thermoplastic insulation with excellent electrical, chemical, and ultraviolet resistance and low water absorption maintains dielectric strength and integrity over a wide range of operating and climatic conditions.
- Gaugeable NAI-LOK<sup>®</sup> tube fitting or tapered pipe thread end connections (NPT/BSP) provide direct connection to tubing or piping system.

**Dielectric Fittings**

Dielectric fittings isolate monitoring instruments from the effects of electrical current. Installed on impulse lines ahead of monitoring stations in natural gas pipelines, the fittings interrupt cathodic current flow while permitting full fluid flow.

The fitting design is unique in that it separates the two primary functions of electrical insulation and fluid containment. Thermoplastic insulators provide high dielectric strength over a wide range of operating and climatic conditions. A fluorocarbon FKM quad seal contained in the fitting provides the primary fluid seal.

**Materials**

Body: 316 stainless steel

Insulators: Polyamide-imide

Quad Seal: 70 durometer fluorocarbon FKM

Backup Ring: Virgin PTFE

**Technical Data**

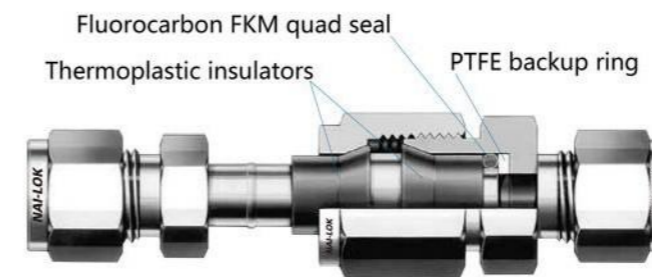
Electrical Resistance of Insulators at 70 °F (20°C):

10 × 10<sup>6</sup> Ω at 10 V (dc)

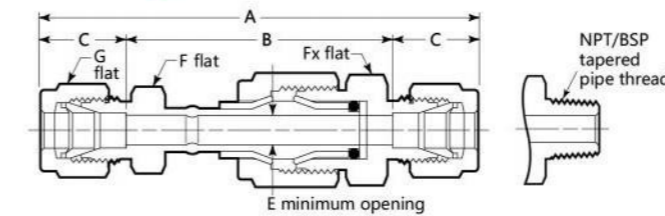
Pressure Rating: 5000 psig (344 bar)

Temperature Rating: -40 to 200 °F (-40 to 93°C)

**DT Series**



**Ordering Information and Dimensions**



Caution: Do not disassemble the insulating connection. It must not be broken or used as a disconnection point.

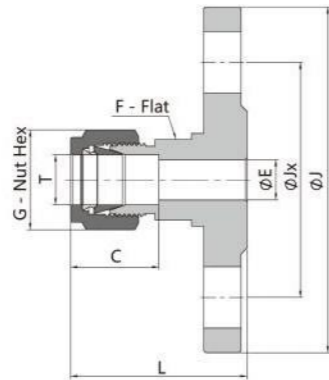
End Connections			Ordering Number	Dimensions, in. (mm)						
Inlet/Outlet	Tube Size	Pipe Size		A	B	C	E	F	Fx	G
Tube Fittings NAI-LOK	1/4"	—	N-4-T	3.77 (95.8)	2.57 (65.3)	0.60 (15.2)	0.19 (4.8)	1/2	13/16	9/16
	3/8"	—	N-6-T	3.92 (99.6)	2.59 (65.8)	0.66 (16.8)		5/8		11/16
	1/2"	—	N-8-DE-6-T	4.17 (106)	2.37 (60.2)	0.90 (22.9)		13/16	7/8	
	12 mm	—	N-12-DE-6-M	4.23 (107)	2.43 (61.7)			22 mm		
NAI-LOK Tube Fitting / Male NPT	3/8"	1/4 in.	N-6-DE-1-4	3.73 (94.7)	—	0.66 (16.8)	5/8	7/8	11/16	

Dimensions are for reference only and are subject to change.



**Feature**

- Integrally forged body.
- ASME flanges comply with ASME B16.5.
- DIN flanges comply with DIN 2501/2526.
- GB flanges comply with GB/T 9123.1.
- EN flanges comply with EN 1092-1.
- JIS flanges comply with JIS B 2220.



**ASME Flanges**

T-Tube O.D.(in.)	ASME Flange NPS	Class	Basic Ordering Number Raised Face Flange	Dimensions, in.(mm)						
				L	J	Jx	E	C	G	F
1/4	1/2	150	-FA-4N-F8-150	1.61(40.9)	3.50(88.9)	2.38(60.5)	0.19(4.8)	0.60(15.2)	0.56(14.3)	0.81(20.6)
3/8	1/2	300	-FA-6N-F8-300	1.79(45.5)	3.75(95.3)	2.62(66.5)	0.28(7.1)	0.66(16.8)	0.69(17.5)	0.81(20.6)
1/2	1/2	150	-FA-8N-F8-150	1.78(45.2)	3.50(88.9)	2.38(60.5)	0.41(10.4)	0.90(22.9)	0.87(22.2)	0.81(20.6)
1/2	1	150	-FA-8N-F16-150	1.90(48.3)	4.25(108.0)	3.12(79.2)	0.41(10.4)	0.90(22.9)	0.87(22.2)	0.81(20.6)
1/2	2	150	-FA-8N-F32-150	2.09(53.1)	6.00(152.4)	4.76(121.0)	0.41(10.4)	0.90(22.9)	0.87(22.2)	0.81(20.6)
3/4	1	150	-FA-12N-F16-150	1.98(50.3)	4.25(108.0)	3.12(79.2)	0.62(15.7)	0.96(24.4)	1.13(28.6)	1.25(31.8)
1	1	150	-FA-16N-F16-150	2.38(60.5)	4.25(108.0)	3.12(79.2)	0.88(22.4)	1.23(31.2)	1.50(38.1)	1.37(34.9)

**DIN/GB Flanges, Pressure Class PN 40**

T-Tube O.D.(mm)	DIN Flange Size DN	Basic Ordering Number Raised Face Flange	Dimensions, mm(in.)						
			L	J	Jx	E	C	G	F
6	25	-FA-6M-F25-40B1	47.5(1.87)	115.0(4.53)	85.0(3.35)	4.8(0.19)	15.3(0.60)	14.0(0.55)	20.0(0.79)
12	15	-FA-12M-F15-40B1	48.5(1.91)	95.0(3.74)	65.0(2.56)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
12	25	-FA-12M-F25-40B1	50.5(1.99)	115.0(4.53)	85.0(3.35)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
12	50	-FA-12M-F50-40B1	55.3(2.18)	165.0(6.50)	125.0(4.92)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
18	15	-FA-18M-F15-40B1	51.8(2.04)	95.0(3.74)	65.0(2.56)	15.1(0.59)	24.4(0.96)	30.0(1.18)	32.0(1.26)
18	25	-FA-18M-F25-40B1	53.8(2.12)	115.0(4.53)	85.0(3.35)	15.1(0.59)	24.4(0.96)	30.0(1.18)	32.0(1.26)
25	25	-FA-25M-F25-40B1	64.0(2.52)	115.0(4.53)	85.0(3.35)	21.8(0.86)	31.3(1.23)	38.0(1.50)	35.0(1.38)

**EN Flange, Pressure Class PN 40**

T-Tube O.D.(mm)	EN Flange Size DN	Basic Ordering Number Raised Face Flange	Dimensions, mm(in.)						
			L	J	Jx	E	C	G	F
6	25	-FA-6M-F25E-40B1	47.5(1.87)	115.0(4.53)	85.0(3.35)	4.8(0.19)	15.3(0.60)	14.0(0.55)	20.0(0.79)
12	15	-FA-12M-F15E-40B1	48.5(1.91)	95.0(3.74)	65.0(2.56)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
12	25	-FA-12M-F25E-40B1	50.5(1.99)	115.0(4.53)	85.0(3.35)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
12	50	-FA-12M-F50E-40B1	55.3(2.18)	165.0(6.50)	125.0(4.92)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
18	15	-FA-18M-F15E-40B1	51.8(2.04)	95.0(3.74)	65.0(2.56)	15.1(0.59)	24.4(0.96)	30.0(1.18)	32.0(1.26)
18	25	-FA-18M-F25E-40B1	53.8(2.12)	115.0(4.53)	85.0(3.35)	15.1(0.59)	24.4(0.96)	30.0(1.18)	32.0(1.26)
25	25	-FA-25M-F25E-40B1	64.0(2.52)	115.0(4.53)	85.0(3.35)	21.8(0.86)	31.3(1.23)	38.0(1.50)	35.0(1.38)

**JIS Flange, Pressure Class 10K**

T-Tube O.D.	JIS Flange Size DN	Basic Ordering Number Raised Face Flange	Dimensions, in.(mm)						
			L	J	Jx	E	C	G	F
1/4"	15	-FA-4N-F15-10KRF	1.66(42.2)	3.74(95.0)	2.76(70.1)	0.19(4.8)	0.60(15.2)	0.56(14.3)	0.81(20.6)
3/8"	15	-FA-6N-F15-10KRF	1.72(43.7)	3.74(95.0)	2.76(70.1)	0.28(7.1)	0.66(16.8)	0.69(17.5)	0.81(20.6)
1/2"	15	-FA-8N-F15-10KRF	1.83(46.5)	3.74(95.0)	2.76(70.1)	0.41(10.4)	0.90(22.9)	0.87(22.2)	0.81(20.6)
3/4"	15	-FA-12N-F15-10KRF	1.91(48.5)	3.74(95.0)	2.76(70.1)	0.62(15.7)	0.96(24.4)	1.13(28.6)	1.25(31.8)
1"	25	-FA-16N-F25-10KRF	2.40(61.0)	4.92(125.0)	3.54(89.9)	0.88(22.4)	1.23(31.2)	1.50(38.1)	1.37(34.9)
12mm	15	-FA-12M-F15-10KRF	1.83(46.5)	3.74(95.0)	2.76(70.1)	0.37(9.5)	0.90(22.8)	0.87(22.0)	0.79(20.0)
18mm	15	-FA-18M-F15-10KRF	1.91(48.5)	3.74(95.0)	2.76(70.1)	0.59(15.1)	0.96(24.4)	1.18(30.0)	1.26(32.0)
25mm	25	-FA-25M-F25-10KRF	2.40(61.0)	4.92(125.0)	3.54(89.9)	0.86(21.8)	1.23(31.3)	1.50(38.0)	1.38(35.0)



**Feature**

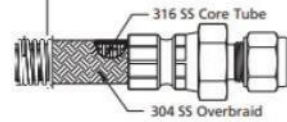
- Vacuum and positive pressure applications
- Size: 1/4" to 1/2"
- Standard and custom length available.

**Technical Data**

<b>Core Tube And Fitting Material</b>	<b>316 Stainless steel</b>
Overbraid Material	316 Stainless steel / 304 Stainless steel
working Pressure	4000 psig(276 bar)
Hose Size	1/4" to 1/2"
Working Temperature	-65 °F to 400 °F (-53°C to 204°C )

**Spring Guard**

A helical metal spring used to protect the hose from abrasion overbending, and kinking.



**Dimension (mm)**

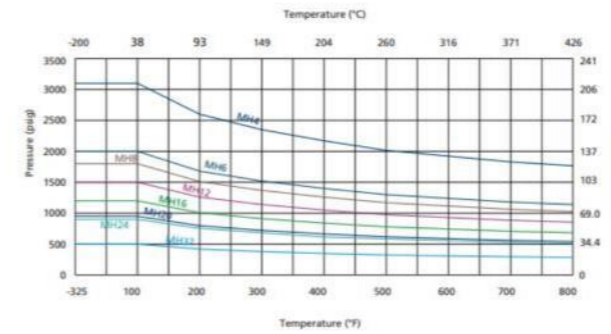


Dimension drawings shown are for reference only.

**Hose Technical Data**

Nominal Hose Size	Inside Diameter in.(mm)	Min. Bend Radius		Temperature Range °F (°C)	working Pressure at 70 °F (20°C) psig (bar)	Min. Burst Pressure at 70 °F (20°C) psig (bar)
		Static in.(mm)	Dynamic in.(mm)			
1/4(6.4)	0.28(7.1)	2.25(57.2)	10.0(254)	-325 to 800 (-200 to 426)	4000(275)	12400(854)
3/8(9.7)	0.42(10.6)	3.00 (76.2)	12.0(305)		3100(213)	8000(551)
1/2(12.7)	0.53(13.5)	4.50 (114)	16.0(406)		2000(137)	7200(496)
3/4(19.0)	0.80(20.3)	6.00 (152)	17.0(432)		1800 (124)	6000 (413)
1(25.4)	1.03(26.0)	6.75(171)	20.0(508)		1500 (103)	4800(330)
1 1/4(31.8)	1.30(33.0)	8.86(225)	23.0(584)		1200(82.6)	3800(261)
1 1/2(38.1)	1.53 (38.9)	11.0(280)	26.0(660)		950(65.4)	3600(248)
2(50.8)	2.05(52.1)	13.8(350)	32.0(813)		900(62.0)	2000 (137)

**Pressure vs. Temperature**



**Testing**

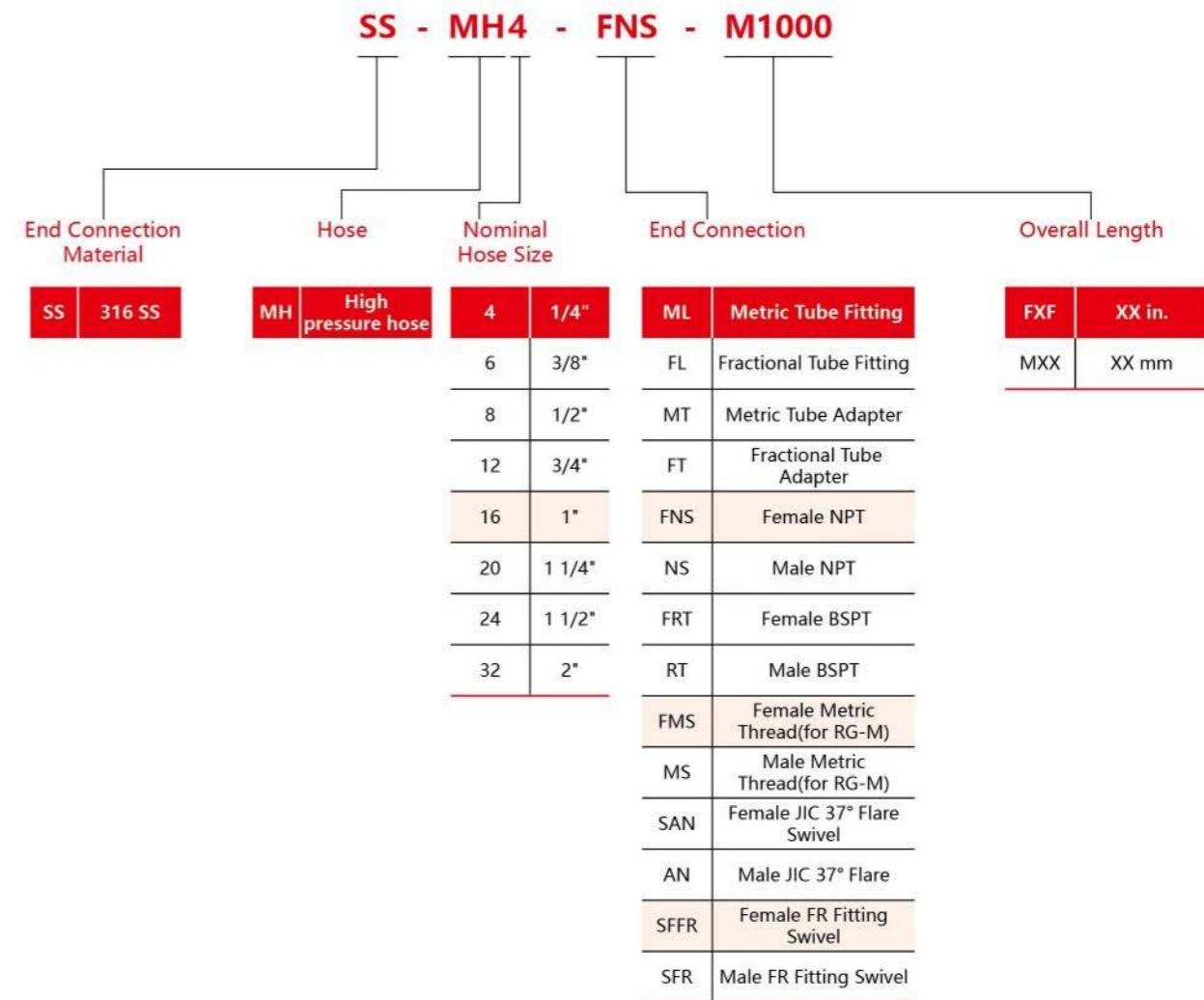
Every hose assembly is factory tested with pure water at 1.5 times the maximum working pressure.

**Cleaning and Packaging**

NAI-LOK hose components are cleaned in accordance with NAI-LOK standard cleaning and packaging process for general industrial procedures.

Shorter hoses are packed in cartons with suitable protective material, longer hoses are coiled, bagged and boxed or crated.

**Ordering Number Description**



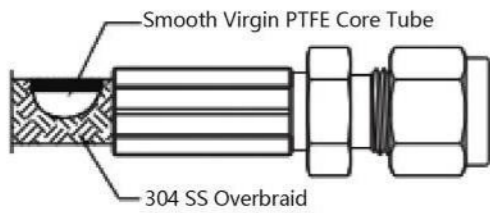


**Feature**

- Smooth virgin PTFE hose
- PTFE hose with permeation-resistant features
- Light weight construction
- Standard and customized length available.

**Technical Data**

<b>Core Tube Material</b>	Smooth virgin PTFE
<b>Overbraid Material</b>	316 Stainless steel / 304 Stainless steel
<b>working Pressure</b>	3000 psig ( 206 bar)
<b>Hose Size</b>	1/4" to 1"
<b>Working Temperature</b>	-65 °F to 400 °F (-53°C to 204°C)
<b>End Connection</b>	NAI-LOK tube fitting or NPT thread



**Dimension (mm)**

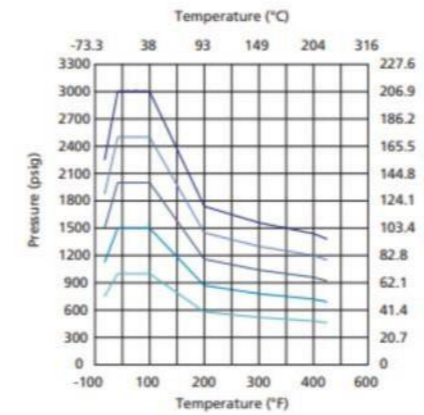


Dimension drawings shown are for reference only.

**Hose Technical Data**

Nominal Hose Size	Inside Diameter in.(mm)	Min. Bend Radius		Temperature Range °F (°C)	working Pressure at 70 °F (20°C) psig (bar)	Min. Burst Pressure at 70 °F (20°C) psig (bar)
		Static in.(mm)	Dynamic in.(mm)			
1/4(6.4)	0.19(4.8)	1.5(38.1)	2.0(50.8)	-65 to 400 (-53 to 204)	3000(206)	12000(826)
3/8(9.7)	0.31(7.9)	3.5(88.9)	5.0(127)		2500(173)	10000(690)
1/2(12.7)	0.41(10.3)	4.5(114)	6.0(152)		2000(137)	8000(551)
3/4(19.0)	0.63(15.9)	6.0(152)	7.5(190)		1500(103)	6000 (413)
1(25.4)	0.88(22.2)	9.0(229)	11.3(287)		1000(68)	4000(275)

**Pressure vs. Temperature**



**Testing**

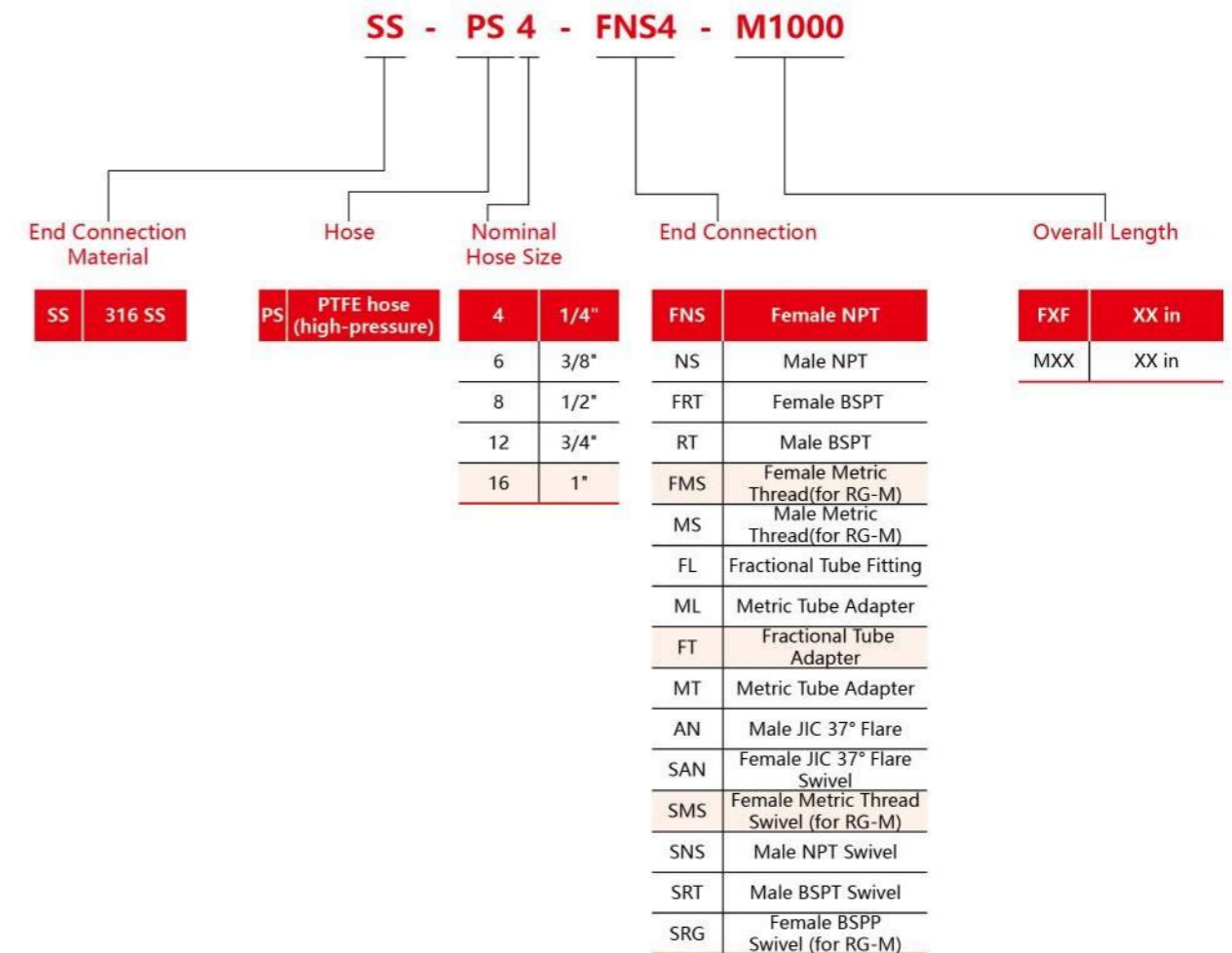
Every PTFE-lined hose assembly is factory tested with pure water at 1.5 times the maximum working pressure.

**Cleaning and Packaging**

NAI-LOK PTFE-lined hose components are cleaned in accordance with NAI-LOK standard Cleaning and Packaging Process for general industrial procedures.

Shorter hoses are packed in cartons with suitable protective material, longer hoses are coiled, bagged and boxed or crated.

**Ordering Number Description**



Connections are described based on the following rules:

1. Metric Tube Fitting - Fractional Tube Fitting - Metric Tube Adapters - Fractional-Tube Adapters - NPT Threads - BSPT Threads - BSPP Threads - SAE/MS Parallel Threads - 37° Flare - Others
2. Put the sizes from the biggest down to the smallest if they are of the same type.
3. Put the female before male if they are of the same type and size.



**Feature**

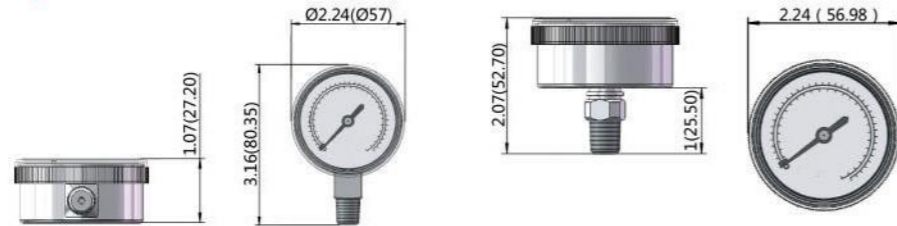
- Compact body, for installation in small space
- 100% factory tested, oil-free.
- Body material: 316 stainless steel
- Different pressure ranges are available.

**Technical Data**

Body Material	316 Stainless steel
Connection	1/4" NPT male
Dual Scale	Psig / Bar
Dial Face Size	2"



**Dimension (mm)**



Dimension drawings shown are for reference only.

**Ordering Information**

NPG-B		S	M	4	A
Basic Series		Material	Connection	Connection Size	Pressure Ranges
NPG	NPG-B (bottom connection) NPG-K (back connection)	S - 316 Stainless steel	M-Male NPT	4-1/4 in.	A-0-30psi / 2.1bar B-0-60psi / 4.2bar C-0-100psi / 6.9bar D-0-160psi / 11bar E-0-200psi / 13.8bar F-0-300psi / 20.6bar G-0-600psi / 41.3bar H-0-1000psi / 69bar I-0-1500psi / 103bar J-0-2000psi / 138bar K-0-2500psi / 173bar L-0-4000psi / 276bar M-0-6000psi / 414bar

Thank you for choosing NAI-LOK.