

***SPIR STAR***<sup>®</sup>

HIGH PRESSURE PERFORMANCE

# 2024 PRODUCT GUIDE

## HOSE

## ADAPTERS

## QUICK DISCONNECTS

## VALVES

## TUBING



**Phone: 281-664-7800**  
**Toll Free: 800-890-7827**



**[sales@spirstar.com](mailto:sales@spirstar.com)**

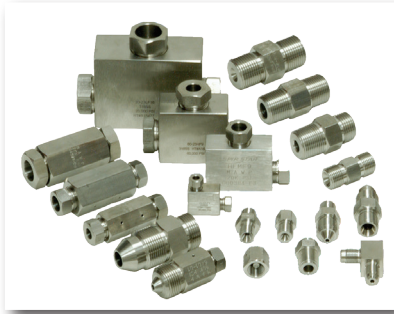
**[www.spirstar.com](http://www.spirstar.com)**  
**[www.spirstarvalves.com](http://www.spirstarvalves.com)**





## HIGH PRESSURE HOSE ASSEMBLIES

**SPIR STAR** thermoplastic hose assemblies are available in inner diameters up to one inch with working pressures up to 58,000 psi. **SPIR STAR** hose assemblies are more beneficial than many other hose products due to light weight, low volumetric expansion, external pressure resistance, durability, and excellent chemical resistance.



## HIGH PRESSURE FITTINGS AND ADAPTERS

**SPIR STAR** High Pressure Fittings and Adapters are available with numerous connection types such as JIC, NPT, BSP, Type M, Medium and High pressure with working pressures up to 60,000 psi. These products are supplied in 316 stainless steel as a standard, however they can also be supplied in exotic materials as needed.



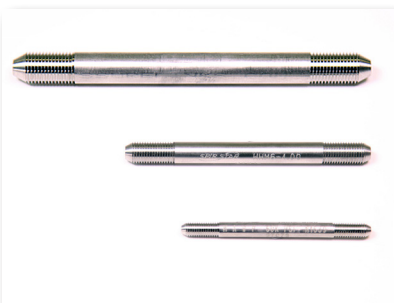
## QUICK DISCONNECTS

**SPIR STAR** offers an extensive variety of quick disconnects for use in many applications with working pressures up to 30,000 psi. These products are available in both carbon and stainless steel construction with multiple connection types such as NPT, JIC, BSP, Type M, Medium and High Pressure.



## HIGH PRESSURE VALVES

**SPIR STAR** is a trusted supplier for high quality and dependable high pressure valves throughout multiple industries. **SPIR STAR** valves are made in the U.S.A. and consist of NPT, Medium Pressure and High Pressure needle valves, ball valves, and check valves with working pressures up to 60,000 psi. 10,000 psi Ball, Check, and Needle valves are available upon request.



## TUBING

**SPIR STAR** offers a complete line of stainless steel tubing available in sizes up to one inch outer diameter and up to 60,000 psi working pressure. **SPIR STAR** provides tubing in custom lengths up to twenty feet long that are coned, threaded and ready for use, as well as bulk tubing that can be cut and have the ends prepared on site.



## Fittings | Adapters | Quick Disconnects | Valves

All SPIR STAR fittings, adapters, SPC quick disconnects, and valves are made in the USA with material traceability reports available upon request. The items included in the catalog are common in stock items; however, we also offer a large variety of non-standard fittings and adapters, non-standard valves, and exotic materials if required.

<b>Hose Part Number Descriptions</b>	<b>4</b>
<b>Adapter Part Number Descriptions</b>	<b>5</b>
<b>Valve Part Number Descriptions</b>	<b>6</b>
<b>Hose Product Overview</b>	<b>7-9</b>
<b>Hose Accessories</b>	<b>10-11</b>
<b>High Pressure Fittings</b>	<b>12-15</b>
<b>High Pressure x Medium Pressure Adapters</b>	<b>16-17</b>
<b>High Pressure x NPT Adapters</b>	<b>18-19</b>
<b>Medium Pressure Fittings</b>	<b>20-23</b>
<b>Medium Pressure x NPT Adapters</b>	<b>24-25</b>
<b>NPT Fittings</b>	<b>26-29</b>
<b>JIC Adapters</b>	<b>30-31</b>
<b>Type M Adapters</b>	<b>33-34</b>
<b>BSPP Adapters</b>	<b>35</b>
<b>Quick Disconnect Couplings</b>	<b>36-37</b>
<b>SPC Series Quick Disconnects</b>	<b>38-49</b>
<b>Medium and High Pressure Tubing</b>	<b>40</b>
<b>Valves</b>	<b>41-61</b>
<b>Hose Care and Use</b>	<b>62-66</b>
<b>Torque Values</b>	<b>67</b>
<b>Terms and Conditions</b>	<b>68-69</b>

10002 Sam Houston Center Drive

Houston, TX 77064-5553

Phone: 281-664-7800 | Fax: 281-664-7850

Toll Free: 800-890-7827 | Fax: 888-893-1255

[www.SPIRSTAR.com](http://www.SPIRSTAR.com) | [www.SPIRSTARVALVES.com](http://www.SPIRSTARVALVES.com)

ISO 45001:2018 Certified | ISO 9001:2015 Certified



# Hose Construction

Number of spiralized layers

Inner diameter in mm

5/4HT

H	Reinforced Type
HT	Suitable for Extremely High Temperatures
L	Particularly Flexible
M	Special Treated PA II Inner core for Offshore Applications
PPA	PVDF Inner Core/Polyamide Outer Cover
R	Reinforced Outer Cover
W	Open Spiral Layer





# Hose Part Number Descriptions

Hose assembly part numbers are an easy way to identify and order a hose assembly using a full assembly description.

Hose assembly part number description structure: H5420F4NHPC

H = Hose

Hose Type = (5/4)

Length = (20)

Length Increments (F for Feet) (I for Inches) (M for Meters)

End Fitting Size If Multiple Options (1/4")

End Fitting Type (High Pressure Tube Nipple)

Material of End Fitting if Multiple Options (S=Stainless Steel) (CS = Plated Steel)

Accessories (Abrasion Cover)

Connection Type Nomenclature	Connection Size Nomenclature
TM = Type M	1 - 1/16"
NMP = Medium Pressure Nipple	2 = 1/8"
NHP = High Pressure Tube Nipple	4 = 1/4"
MNPT = NPT Male	6 = 3/8"
FJIC = JIC Female Swivel	8 = 1/2"
FBSPP = BSPP Female Swivel	9 = 9/16"
MBSPP = BSPP Male	12 = 3/4"
Accessories Nomenclature	
C = Abrasion Cover	16 = 1"
BS = Burst Shield	18 = 1-1/8"
CG = Containment Grip	21 = 1-5/16"

## Examples:

**H134H50FTMSC** = 13/4H Hose, 50 FT, type M end fittings, stainless steel with abrasion cover

**H62W2414FJIC** = 6/2W Hose, 24 inch, 1/4" FJIC end fittings

**H84125F9NMPCG** = 8/4 Hose, 125 Feet, 9/16 " medium pressure tube nipple end fittings with containment grips

# Adapter Part Number Descriptions

Adapter part numbers, **except for Type M** adapters begin with the letter “H” (ex: HNM4-NM4). The “H” is just an internal place holder. All Type M adapter part numbers begin with letter “M” (ex: M9-M9)

If the adapter includes a female connection, it will be indicated in the beginning of the part number (ex: HNF8-HM9)

Connection Type Nomenclature	Connection Size Nomenclature
C = Female Coupling (always female)	1 = 1/16"
CR = Female Cross (always female)	2 = 1/8"
E = Elbow	
FJ = Female JIC	4 = 1/4"
HF = High Pressure Female	6 = 3/8"
HM = High Pressure Male	8 = 1/2"
HP = High Pressure Male (when used with Type M)	9 = 9/16"
M = Type M	12 = 3/4"
MF = Medium Pressure Female	16 = 1"
MJ = Male JIC	18 = 1-1/8"
MM = Medium Pressure Male	21 = 1-5/16"
MP = Medium Pressure Male (when used with Type M)	
NF = Female NPT	
NM = Male NPT	
T = Tee	

## Examples:

**HNM4-NM4** = 1/4" male NPT x 1/4" male NPT

**HCRNF8** = 1/2" female NPT cross

**HHF9-NM8** = 9/16" high pressure female x 1/2" male NPT

**M21-MP9** = 1-5/16" type M x 9/16" male medium pressure

**HHM9-MM12** = 9/16" high pressure male x 3/4" male medium pressure

**HMJ6-NM6** = 3/8" male JIC x 3/8" male NPT



# Valve Part Number Descriptions

Valve part numbers begin with SS, followed by the valve type, connection type, the valve inner diameter if applicable, and any descriptive suffix necessary.

## Valve Type Nomenclature

BV = Ball Valve

CV = Check Valve

NV = Needle Valve

RV = Relief Valve

## Connection Type Nomenclature

NM = Male NPT

NF = Female NPT

MF = Medium Pressure Female

HF = High Pressure Female

## Connection Size Nomenclature

4 = 1/4"

6 = 3/8"

8 = 1/2"

9 = 9/16"

12 = 3/4"

16 = 1"

## Examples:

**SS-BVNF4-4-15K** = ball valve with a 1/4" inner diameter with 1/4" female NPT connections

**SS-NVMF9-20K** = needle valve with 9/16" medium pressure female connections

**SS-CVNF6-SS** = check valve with 3/8" female NPT connections and soft seat seal

## ID 3 mm

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
3/2	3.4	0.13	6.9	0.27	1,000	14,500	2,500	36,250	60	2.36	0.072	0.048	2.0	0.08
3/4	3.4	0.13	8.0	0.31	2,000	29,000	5,000	72,500	110	4.33	0.135	0.091	2.0	0.08
3/6	3.0	0.12	9.1	0.36	2,800	40,600	7,000	101,500	150	5.91	0.222	0.149	1.8	0.07

## ID 4 mm

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
4/2	4.0	0.16	8.0	0.31	1,200	17,400	3,000	43,500	75	2.95	0.110	0.074	2.5	0.10
4/2H	4.0	0.16	8.1	0.32	1,400	20,300	3,500	50,750	75	2.95	0.112	0.075	2.5	0.10
4/2W	4.0	0.16	9.8	0.39	1,400	20,300	3,500	50,750	65	2.56	0.160	0.108	2.5	0.10
4/4	4.0	0.16	10.3	0.41	2,200	31,900	5,500	79,750	130	5.12	0.234	0.157	1.8	0.07
4/4UHP-X	4.0	0.16	9.9	.39	3,035	44,008	6,100	88,450	90	3.54	0.234	0.157	2.5	0.10
4/6	4.0	0.16	11.5	0.45	2,800	40,600	7,000	101,500	175	6.89	0.365	0.245	1.8	0.07

## ID 5 mm

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
5/2	5.0	0.20	9.4	0.37	1,040	15,080	2,600	37,700	95	3.74	0.125	0.084	3.0	0.12
5/2OK	5.0	0.20	10.8	0.37	1,040	15,080	2,600	37,700	95	3.74	0.220	0.148	3.5	0.14
5/3	5.0	0.20	10.3	0.41	1,120	16,240	2,800	40,600	95	3.74	0.218	0.146	3.0	0.12
5/4	5.0	0.20	11.2	0.44	1,800	26,100	4,500	65,250	150	5.91	0.260	0.175	2.5	0.10
5/6	4.8	0.19	13.2	0.52	2,500	36,250	6,250	90,620	200	7.87	0.450	0.302	2.0	0.08
5/6H	4.6	0.18	14.4	0.57	2,800	40,600	7,000	101,500	220	8.66	0.563	0.378	2.0	0.08
5mmUHP	4.5	0.18	15.3	0.60	3,200	46,400	8,000	116,000	250	9.84	0.693	0.466	2.0	0.08
5mmUHP-X	4.5	0.18	15.3	0.60	4,000	58,000	8,000	116,000	250	9.84	0.693	0.464	2.5	0.10

## ID 6 mm

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
6/2	6.3	0.25	11.5	0.45	1,100	15,950	2,500	36,250	110	4.33	0.175	0.118	4.0	0.16
6/2OK	6.2	0.24	13.1	0.52	1,000	14,500	2,500	36,250	110	4.33	0.306	0.206	4.0	0.16
6/3	6.1	0.24	12.3	0.48	1,040	15,080	2,600	37,700	110	4.33	0.280	0.188	4.0	0.16
6/2WL Twin	5.9	0.23	12.0	0.47	1,200	17,400	3,000	43,500	80	3.15	0.474	0.319	4.0	0.16
6/2WL	5.9	0.23	12.0	0.47	1,200	17,400	3,000	43,500	80	3.15	0.237	0.159	4.0	0.16
6/2W	6.0	0.24	12.0	0.47	1,280	18,560	3,200	46,400	95	3.74	0.230	0.155	4.0	0.16
6/4	6.3	0.25	12.6	0.50	1,500	21,750	3,800	55,100	180	7.09	0.295	0.198	3.5	0.14
6/6H	5.9	0.23	16.4	0.65	2,800	40,600	7,000	101,500	250	9.84	0.750	0.504	3.0	0.12
6mmUHP	5.8	0.23	18.6	0.73	3,200	46,400	8,000	116,000	280	11.02	1.060	0.712	3.0	0.12

## ID 8 mm

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
8/2-1000	8.1	0.32	13.3	0.52	1000	14,500	2,500	36,250	110	4.33	0.200	0.134	5.5	0.22
8/2W	8.0	0.31	14.3	0.56	1,040	15,080	2,600	37,700	110	4.33	0.314	0.211	5.5	0.22
8/2W Twin	8.0	0.31	14.3	0.56	1,040	15,080	2,600	37,700	110	4.33	0.628	0.422	5.5	0.22
8/2WR	8.0	0.31	16.0	0.63	1,040	15,080	2,600	37,700	110	4.33	0.364	0.245	4.5	0.18
8/4	8.0	0.31	14.6	0.57	1,500	21,750	3,800	55,100	200	7.87	0.390	0.262	4.5	0.18
8/6	8.0	0.31	16.4	0.65	2,100	30,450	5,250	76,120	250	9.84	0.640	0.430	4.5	0.18
8/6H	7.7	0.30	18.8	0.74	2,500	36,250	6,250	90,620	260	10.24	0.925	0.622	4.5	0.18
8/6UHP-X	7.6	0.30	19.3	0.76	3,035	44,000	7,000	101,500	300	11.81	1.055	0.709	4.5	0.18



# Hose Overview

## ID 10 mm

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
10/2	10.1	0.40	15.5	0.61	690	10,000	1,725	25,010	160	6.30	0.280	0.188	6.5	0.26
10/2W	10.0	0.39	17.2	0.68	1,100	15,950	2,760	40,020	125	4.92	0.430	0.289	6.5	0.26
10/4	9.9	0.39	18.4	0.72	1,500	21,750	3,800	55,100	200	7.87	0.690	0.464	5.5	0.22
10/6	9.8	0.39	20.4	0.80	1,920	27,840	4,800	69,600	250	9.84	1.000	0.672	5.5	0.22
10mmUHP-X	9.8	0.39	24.0	0.94	3,035	44,000	6,100	88,450	320	12.60	1.730	1.163	6.0	0.24

## ID 13 mm

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
13/2	12.9	0.51	19.3	0.76	690	10,000	1,725	25,010	200	7.87	0.435	0.292	8.5	0.33
13/2WR	12.8	0.50	22.2	0.87	1,040	15,080	2,600	37,700	150	5.91	0.590	0.396	7.5	0.30
13/2W	12.8	0.50	20.8	0.82	1,040	15,080	2,600	37,700	150	5.91	0.590	0.396	8.5	0.33
13/4H	12.8	0.50	22.0	0.87	1,400	20,300	3,500	50,750	200	7.87	0.880	0.591	7.5	0.30
13/6	12.8	0.50	23.4	0.92	1,800	26,100	4,500	65,250	300	11.81	1.160	0.779	7.5	0.30
13/6H	12.7	0.50	24.6	0.97	2,000	29,000	5,000	72,650	300	11.81	1.200	0.806	7.5	0.30
13mmUHP	12.8	0.50	27.7	1.09	2,800	40,600	6,000	87,000	350	13.78	2.085	1.401	7.5	0.30

## ID 16 mm

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
16/4	16.0	0.63	25.5	1.00	1,040	15,080	2,600	37,700	250	9.84	1.002	0.673	10.5	0.41
16/6	15.9	0.63	27.7	1.09	1,520	22,040	3,800	55,100	320	12.60	1.480	0.995	10.5	0.41
16mmUHP	15.9	0.63	31.8	1.25	2,000	29,000	5,000	72,500	400	15.75	2.523	1.693	10.5	0.41

## ID 20 mm

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
20/2	19.0	0.75	26.2	1.03	520	7,540	1,300	18,850	240	9.45	0.750	0.504	13.0	0.51
20/2W	18.8	0.74	29.5	1.16	760	11,020	1,900	27,550	220	8.66	1.160	0.779	13.0	0.51
20/4	18.8	0.74	28.8	1.13	1,040	15,080	2,600	37,700	250	9.84	1.350	0.907	13.0	0.51
20/6	18.8	0.74	32.8	1.29	1,400	20,300	3,500	50,750	350	13.78	2.170	1.458	13.0	0.51

## ID 25 mm

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
25/2	24.8	0.98	33.5	1.32	440	6,380	1,100	15,950	300	11.81	0.950	0.638	16.5	0.65
25/2W	25.0	0.98	35.6	1.40	640	9,280	1,600	23,200	280	11.02	1.490	1.001	16.5	0.65
25/4	24.8	0.98	36.3	1.43	900	13,050	2,250	32,620	300	11.81	1.715	1.152	19.0	0.75
25/6	24.8	0.98	39.8	1.57	1,400	20,300	3,000	43,500	600	23.62	2.800	1.881	17.5	0.69

## HL Series

## Hydraulic Line

Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
Viper	6.1	0.24	12.5	0.49	700	10,150	1,800	26,100	80	3.15	0.206	0.138	4.0	0.16
Viper Twin	6.1	0.24	12.5	0.49	700	10,150	1,800	26,100	80	3.15	0.412	0.227	4.0	0.16

# Oil & Gas

M Series										Methanol Washed Inner Core				
Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
6/2WM	6.0	0.24	12.2	0.48	1,100	15,950	2,760	40,020	95	3.74	0.240	0.161	4.0	0.16
6/4M	6.0	0.24	13.0	0.51	1,035	15,000	4,140	60,030	180	7.09	0.338	0.227	3.0	0.12
8/2WM	8.0	0.31	14.3	0.56	1,040	15,080	2,600	37,700	110	4.33	0.314	0.211	5.5	0.22
10/2WM	10.0	0.39	17.2	0.68	1,100	15,950	2,760	40,020	125	4.92	0.466	0.313	5.0	0.20
13/2WM	12.7	0.50	20.8	0.82	1,040	15,080	2,600	37,700	150	5.91	0.630	0.423	8.5	0.33

PPA Series										PVDF Inner Core and Polyamide Outer Cover				
Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
5/4PPA	5.0	0.20	11.2	0.44	1,285	18,630	4,500	65,250	250	9.84	0.256	0.172	2.5	0.10
6/2WPPA	6.3	0.25	12.2	0.48	1,035	15,000	3,200	46,400	150	5.91	0.266	0.179	3.5	0.14
6/4PPA	6.3	0.25	12.6	0.50	1,180	17,110	4,140	60,030	280	11.02	0.305	0.205	3.5	0.14
8/4PPA	8.0	0.31	14.7	0.58	1,085	15,730	3,800	55,100	300	11.81	0.420	0.282	4.5	0.18
10/4PPA	10.0	0.39	18.4	0.72	1,180	17,110	4,140	60,030	300	11.81	0.680	0.457	5.5	0.22
13/4HPPA	12.8	0.50	22.0	0.87	1,040	15,080	3,620	52,490	300	11.81	1.000	0.672	7.5	0.30
20/6PPA	18.8	0.74	32.8	1.29	1,040	15,080	3,620	52,490	600	23.62	2.170	1.458	13.0	0.51
25/4PPA	24.8	0.98	36.3	1.43	690	10,000	2,250	32,620	500	19.69	1.820	1.223	19.0	0.75

HT Series										For High Temperatures up to 300° F/150° C				
Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
5/4HT	5.0	0.20	11.2	0.44	1,285	18,630	4,500	65,250	250	9.84	0.280	0.188	2.5	0.10
6/2WHT	6.3	0.25	12.2	0.48	915	13,260	3,200	46,400	150	5.91	0.266	0.179	3.5	0.16
6/4HT	6.3	0.25	12.6	0.50	1,085	15,730	3,800	55,100	280	11.02	0.320	0.215	3.5	0.14
8/2WHT	8.0	0.31	14.5	0.57	745	10,800	2,600	37,700	250	9.84	0.400	0.269	4.0	0.16
8/4HT	8.0	0.31	14.6	0.57	1,085	15,730	3,800	55,100	300	11.81	0.413	0.278	4.5	0.18
10/4HT	9.9	0.39	18.4	0.72	1,085	15,730	3,800	55,100	300	11.81	0.695	0.467	5.0	0.20
13/4HHT	12.8	0.50	22.0	0.87	1,040	15,080	3,620	52,490	300	11.81	1.000	0.672	7.5	0.30

# Hydrogen

Hydrogen Series										Gaseous compressed Hydrogen				
Type	ID		OD		Working Pressure		Burst Pressure		Bend Radius		Weight		Nipple ID	
	(mm)	(in)	(mm)	(in)	(bar)	(psi)	(bar)	(psi)	(mm)	(in)	(kg/m)	(lbs/ft)	(mm)	(in)
6mmH	6.3	0.25	12.6	0.50	962.5	13,956	3,850	55,825	180	7.09	0.295	0.198	4.5	0.18
16mmH	15.8	0.62	25.7	1.01	600	8,700	3,000	43,500	300	11.81	1,150	0.773	10.5	0.41



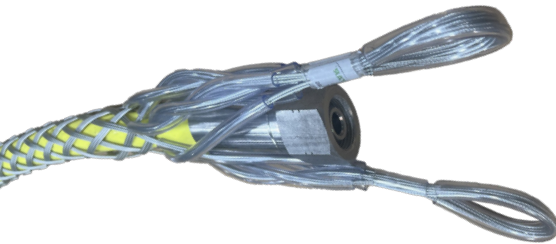
## Abrasion Cover



### Features

- Helps to protect the hose from excessive wear
- Helps to extend the life of the hose
- Available in a variety of colors
- Durable PVC reinforced construction

## Containment Grip



### Features

- Helps to protect personnel and surrounding equipment from injury in the event of a connection failure
- Available In stainless steel or galvanized carbon steel
- Supports hose assembly in hanging position application

## Burst Guard



### Features

- Helps to protect personnel and surrounding equipment from injury in the event of a hose failure
- Made of synthetic rubber with steel wire reinforcement

## Features

- Reduces stress near the hose end fitting
- Helps prevent kinking of the hose
- Made of high tensile spring steel with a corrosion resistant coating

## Spring Guard



## Features

- Reduces stress near the end fitting
- Helps prevent kinking of the hose
- Made of PVC material

## Bend Restrictor



## Features

- Made of durable nylon
- Extra heavy stitching
- Helps to protect personnel and surrounding equipment from injury in the event of connection failure

## Whip Check

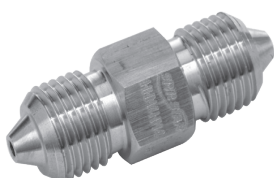


# High Pressure Fittings

**SPIR STAR High Pressure fittings and adapters seal with a 60 degree cone and are rated for working pressures up to 60,000 psi. Standard material is 316 stainless steel.**

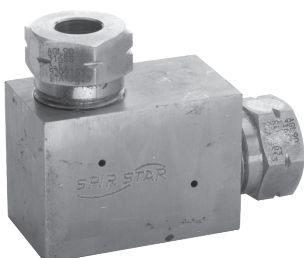
<i>Common Description</i>	<i>Actual Thread Dimension</i>
1/4" High Pressure	9/16"-18 Thread on Gland Nut
3/8" High Pressure	3/4"-16 Thread on Gland Nut
9/16" High Pressure	1 1/8"-12 Thread on Gland Nut

## High Pressure Male Hex Nipples



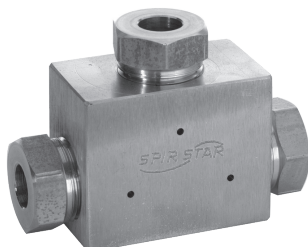
Part Number	Description	Max Working Pressure
<i>HHM4-HM4</i>	1/4" HP Male x 1/4" HP Male	60,000 psi
<i>HHM4-HM6</i>	1/4" HP Male x 3/8" HP Male	60,000 psi
<i>HHM4-HM9</i>	1/4" HP Male x 9/16" HP Male	60,000 psi
<i>HHM6-HM6</i>	3/8" HP Male x 3/8" HP Male	60,000 psi
<i>HHM6-HM9</i>	3/8" HP Male x 9/16" HP Male	60,000 psi
<i>HHM9-HM9</i>	9/16" HP Male x 9/16" HP Male	60,000 psi

## High Pressure Female Elbows



Part Number	Description	Max Working Pressure
<i>HEHF4</i>	1/4" HP Female Elbow	60,000 psi
<i>HEHF6</i>	3/8" HP Female Elbow	60,000 psi
<i>HEHF9</i>	9/16" HP Female Elbow	60,000 psi

## High Pressure Female Tees



Part Number	Description	Max Working Pressure
<i>HTHF4</i>	1/4" HP Female Tee	60,000 psi
<i>HTHF6</i>	3/8" HP Female Tee	60,000 psi
<i>HTHF9</i>	9/16" HP Female Tee	60,000 psi

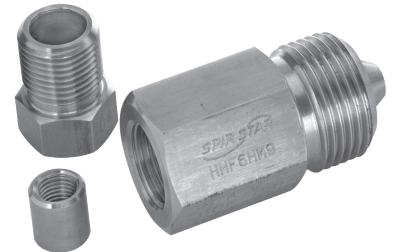
## High Pressure Female Crosses

Part Number	Description	Max Working Pressure
HCRHF4	1/4" HP Female Cross	60,000 psi
HCRHF6	3/8" HP Female Cross	60,000 psi
HCRHF9	9/16" HP Female Cross	60,000 psi



## High Pressure Female x High Pressure Male

Part Number	Description	Max Working Pressure
HHF4-HM6	1/4" HP Female x 3/8" HP Male	60,000 psi
HHF4-HM9	1/4" HP Female x 9/16" HP Male	60,000 psi
HHF6-HM4	3/8" HP Female x 1/4" HP Male	60,000 psi
HHF6-HM9	3/8" HP Female x 9/16" HP Male	60,000 psi
HHF9-HM4	9/16" HP Female x 1/4" HP Male	60,000 psi
HHF9-HM6	9/16" HP Female x 3/8" HP Male	60,000 psi



## High Pressure Slimline Couplers

Slimline couplers are designed to be used for high pressure water blasting applications, such as tube bundle cleaning.

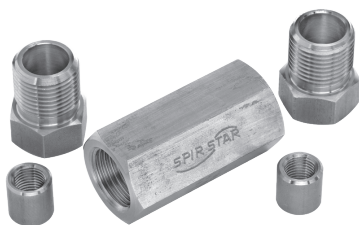
Part Number	Description	Max Working Pressure
HCSL-HF4-LL	1/4" HP Female Slimline Coupler Left x Left* 0.438" OD	40,000 psi
HCSL-HF4-LR	1/4" HP Female Slimline Coupler Left x Right* 0.438" OD	40,000 psi
HCSL-HF4-RR	1/4" HP Female Slimline Coupler Right x Right* 0.438" OD	40,000 psi
HCSL-HF6-LL	3/8" HP Female Slimline Coupler Left x Left* 0.563" OD	40,000 psi
HCSL-HF6-LR	3/8" HP Female Slimline Coupler Left x Right* 0.563" OD	40,000 psi
HCSL-HF6-RR	3/8" HP Female Slimline Coupler Right x Right* 0.563" OD	40,000 psi
HCSL-HF9-LL	9/16" HP Female Slimline Coupler Left x Left* 0.750" OD	40,000 psi
HCSL-HF9-LR	9/16" HP Female Slimline Coupler Left x Right* 0.750" OD	40,000 psi
HCSL-HF9-RR	9/16" HP Female Slimline Coupler Right x Right* 0.750" OD	40,000 psi
* Designates Left Hand Thread or Right Hand Thread		





# High Pressure Fittings

## High Pressure Heavy Duty Couplers



Part Number	Description	Max Working Pressure
HC-HF4	1/4" HP Female Coupler	60,000 psi
HC-HF6	3/8" HP Female Coupler	60,000 psi
HC-HF9	9/16" HP Female Coupler	60,000 psi
HC-HF9-HF6	9/16" HP x 3/8" HP Female Coupler	60,000 psi

Also available as bulkhead.

## High Pressure Tube Nipples



Part Number	Description	Max Working Pressure
HHM4-3.00	1/4" HP Nipple x 3" Long	60,000 psi
HHM4-6.00	1/4" HP Nipple x 6" Long	60,000 psi
HHM6-3.00	3/8" HP Nipple x 3" Long	60,000 psi
HHM6-4.00	3/8" HP Nipple x 4" Long	60,000 psi
HHM9-4.00	9/16" HP Nipple x 4" Long	60,000 psi
HHM9-6.00	9/16" HP Nipple x 6" Long	60,000 psi

## High Pressure Plugs



Part Number	Description	Max Working Pressure
HHM2-PLUG	1/8" HP Plug	60,000 psi
HHM4-PLUG	1/4" HP Plug	60,000 psi
HHM6-PLUG	3/8" HP Plug	60,000 psi
HHM9-PLUG	9/16" HP Plug	60,000 psi

## High Pressure Gland Nuts & Collars

Part Number	Description	Max Working Pressure
<i>GN-1/8HP</i>	1/8" HP Gland Nut	60,000 psi
<i>GN-1/4HP</i>	1/4" HP Gland Nut	60,000 psi
<i>GN-3/8HP</i>	3/8" HP Gland Nut	60,000 psi
<i>GN-9/16HP</i>	9/16" HP Gland Nut	60,000 psi
<i>CLR-1/8HP</i>	1/8" HP Collar	60,000 psi
<i>CLR-1/4HP</i>	1/4" HP Collar	60,000 psi
<i>CLR-3/8HP</i>	3/8" HP Collar	60,000 psi
<i>CLR-9/16HP</i>	9/16" HP Collar	60,000 psi
* <i>GN-1/4HP-AV</i>	1/4" HP Anti-Vibration Assembly	60,000 psi
* <i>GN-3/8HP-AV</i>	3/8" HP Anti-Vibration Assembly	60,000 psi
* <i>GN-9/16HP-AV</i>	9/16" HP Anti-Vibration Assembly	60,000 psi
* Indicates Anti-Vibration style		



## High Pressure Caps

Part Number	Description	Max Working Pressure
<i>HHF4-CAP</i>	1/4" HP Female Cap	60,000 psi
<i>HHF6-CAP</i>	3/8" HP Female Cap	60,000 psi
<i>HHF9-CAP</i>	9/16" HP Female Cap	60,000 psi

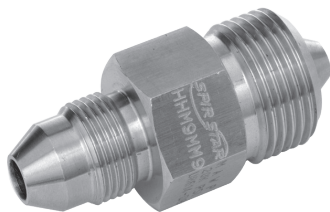


# High Pressure x Medium Pressure Adapters

**SPIR STAR High Pressure x Medium Pressure fittings and adapters seal with a 60 degree cone and are rated for working pressures up to 20,000 psi. Standard material is 316 stainless steel.**

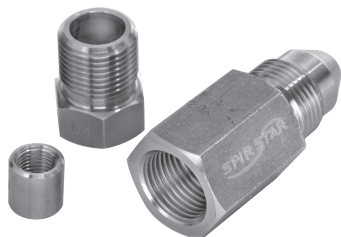
<i>Common Description</i>	<i>Actual Thread Dimension</i>
1/4" High Pressure	9/16"-18 Thread on Gland Nut
3/8" High Pressure	3/4"-16 Thread on Gland Nut
9/16" High Pressure	1 1/8"-12 Thread on Gland Nut
1/4" Medium Pressure	7/16"-20 Thread on Gland Nut
3/8" Medium Pressure	9/16"-18 Thread on Gland Nut
9/16" Medium Pressure	13/16"-16 Thread on Gland Nut
3/4" Medium Pressure	3/4"-14 Thread on Gland Nut

## High Pressure Male x Medium Pressure Male



Part Number	Description	Max Working Pressure
HHM4-MM4	1/4" HP Male x 1/4" MP Male	20,000 psi
HHM4-MM6	1/4" HP Male x 3/8" MP Male	20,000 psi
HHM4-MM9	1/4" HP Male x 9/16" MP Male	20,000 psi
HHM6-MM4	3/8" HP Male x 1/4" MP Male	20,000 psi
HHM6-MM6	3/8" HP Male x 3/8" MP Male	20,000 psi
HHM6-MM9	3/8" HP Male x 9/16" MP Male	20,000 psi
HHM9-MM6	9/16" HP Male x 3/8" MP Male	20,000 psi
HHM9-MM9	9/16" HP Male x 9/16" MP Male	20,000 psi
HHM9-MM12	9/16" HP Male x 3/4" MP Male	20,000 psi

## High Pressure Female x Medium Pressure Male

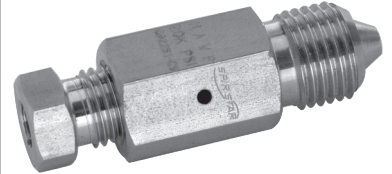


Part Number	Description	Max Working Pressure
HHF4-MM4	1/4" HP Female x 1/4" MP Male	20,000 psi
HHF4-MM6	1/4" HP Female x 3/8" MP Male	20,000 psi
HHF4-MM9	1/4" HP Female x 9/16" MP Male	20,000 psi
HHF6-MM4	3/8" HP Female x 1/4" MP Male	20,000 psi
HHF6-MM6	3/8" HP Female x 3/8" MP Male	20,000 psi
HHF6-MM9	3/8" HP Female x 9/16" MP Male	20,000 psi
HHF9-MM6	9/16" HP Female x 3/8" MP Male	20,000 psi
HHF9-MM9	9/16" HP Female x 9/16" MP Male	20,000 psi

# High Pressure x Medium Pressure Adapters

## Medium Pressure Female x High Pressure Male

Part Number	Description	Max Working Pressure
<i>HMF4-HM4</i>	1/4" MP Female x 1/4" HP Male	20,000 psi
<i>HMF4-HM6</i>	1/4" MP Female x 3/8" HP Male	20,000 psi
<i>HMF4-HM9</i>	1/4" MP Female x 9/16" HP Male	20,000 psi
<i>HMF6-HM4</i>	3/8" MP Female x 1/4" HP Male	20,000 psi
<i>HMF6-HM6</i>	3/8" MP Female x 3/8" HP Male	20,000 psi
<i>HMF6-HM9</i>	3/8" MP Female x 9/16" HP Male	20,000 psi
<i>HMF9-HM4</i>	9/16" MP Female x 1/4" HP Male	20,000 psi
<i>HMF9-HM6</i>	9/16" MP Female x 3/8" HP Male	20,000 psi
<i>HMF9-HM9</i>	9/16" MP Female x 9/16" HP Male	20,000 psi





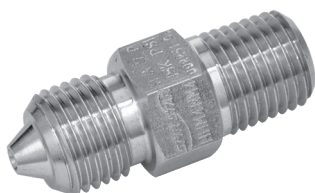
# High Pressure x NPT Adapters

**SPIR STAR High Pressure x NPT (National Pipe Taper) fittings and adapters seal with a 60 degree cone High Pressure connection and a tapered thread NPT connection and are rated for working pressures up to 15,000 psi. Working pressures may be decreased depending upon the NPT thread size. Standard material is 316 stainless steel.**

<i>Common Description</i>	<i>Actual Thread Dimension</i>
1/4" High Pressure	9/16"-18 Thread on Gland Nut
3/8" High Pressure	3/4"-16 Thread on Gland Nut
9/16" High Pressure	1 1/8"-12 Thread on Gland Nut

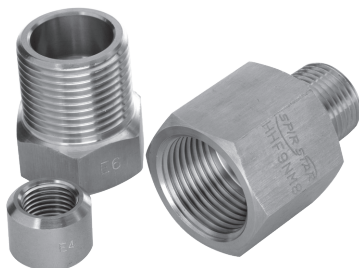
<i>NPT Thread Size</i>	<i>Working Pressure</i>
1/16" - 1/2" NPT	15,000 psi
3/4" - 1" NPT	10,000 psi

## High Pressure Male x NPT Male



Part Number	Description	Max Working Pressure
HHM4-NM4	1/4" HP Male x 1/4" NPT Male	15,000 psi
HHM4-NM6	1/4" HP Male x 3/8" NPT Male	15,000 psi
HHM4-NM8	1/4" HP Male x 1/2" NPT Male	15,000 psi
HHM6-NM4	3/8" HP Male x 1/4" NPT Male	15,000 psi
HHM6-NM6	3/8" HP Male x 3/8" NPT Male	15,000 psi
HHM6-NM8	3/8" HP Male x 1/2" NPT Male	15,000 psi
HHM9-NM4	9/16" HP Male x 1/4" NPT Male	15,000 psi
HHM9-NM6	9/16" HP Male x 3/8" NPT Male	15,000 psi
HHM9-NM8	9/16" HP Male x 1/2" NPT Male	15,000 psi
HHM9-NM12	9/16" HP Male x 3/4" NPT Male	10,000 psi
HHM9-NM16	9/16" HP Male x 1" NPT Male	10,000 psi

## High Pressure Female x NPT Male

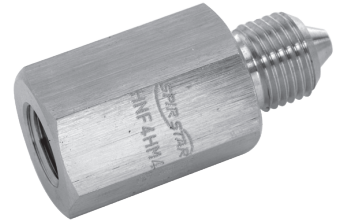


Part Number	Description	Max Working Pressure
HHF4-NM4	1/4" HP Female x 1/4" NPT Male	15,000 psi
HHF4-NM6	1/4" HP Female x 3/8" NPT Male	15,000 psi
HHF4-NM8	1/4" HP Female x 1/2" NPT Male	15,000 psi
HHF6-NM4	3/8" HP Female x 1/4" NPT Male	15,000 psi
HHF6-NM6	3/8" HP Female x 3/8" NPT Male	15,000 psi
HHF6-NM8	3/8" HP Female x 1/2" NPT Male	15,000 psi
HHF9-NM6	9/16" HP Female x 3/8" NPT Male	15,000 psi
HHF9-NM8	9/16" HP Female x 1/2" NPT Male	15,000 psi
HHF9-NM16	9/16" HP Female x 1" NPT Male	10,000 psi

# High Pressure x NPT Adapters

## NPT Female x High Pressure Male

Part Number	Description	Max Working Pressure
<i>HNF4-HM4</i>	1/4" NPT Female x 1/4" HP Male	15,000 psi
<i>HNF4-HM6</i>	1/4" NPT Female x 3/8" HP Male	15,000 psi
<i>HNF4-HM9</i>	1/4" NPT Female x 9/16" HP Male	15,000 psi
<i>HNF6-HM4</i>	3/8" NPT Female x 1/4" HP Male	15,000 psi
<i>HNF6-HM6</i>	3/8" NPT Female x 3/8" HP Male	15,000 psi
<i>HNF8-HM4</i>	1/2" NPT Female x 1/4" HP Male	15,000 psi
<i>HNF8-HM6</i>	1/2" NPT Female x 3/8" HP Male	15,000 psi
<i>HNF8-HM9</i>	1/2" NPT Female x 9/16" HP Male	15,000 psi



# Medium Pressure Fittings

**SPIR STAR Medium Pressure fittings and adapters seal with a 60 degree cone and are rated for working pressures up to 20,000 psi. Standard material is 316 stainless steel.**

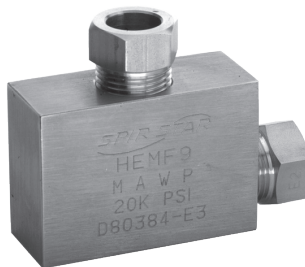
<i>Common Description</i>	<i>Actual Thread Dimension</i>
1/4" Medium Pressure	7/16"-20 Thread on Gland Nut
3/8" Medium Pressure	9/16"-18 Thread on Gland Nut
9/16" Medium Pressure	13/16"-16 Thread on Gland Nut
3/4" Medium Pressure	3/4"-14 Thread on Gland Nut
1" Medium Pressure	1 3/8"-12 Thread on Gland Nut

## Medium Pressure Male Hex Nipples



Part Number	Description	Max Working Pressure
HMM4-MM4	1/4" MP Male x 1/4" MP Male	20,000 psi
HMM6-MM6	3/8" MP Male x 3/8" MP Male	20,000 psi
HMM6-MM9	3/8" MP Male x 9/16" MP Male	20,000 psi
HMM9-MM9	9/16" MP Male x 9/16" MP Male	20,000 psi
HMM9-MM12	9/16" MP Male x 3/4" MP Male	20,000 psi
HMM9-MM16	9/16" MP Male x 1" MP Male	20,000 psi
HMM12-MM12	3/4" MP Male x 3/4" MP Male	20,000 psi
HMM16-MM16	1" MP Male x 1" MP Male	20,000 psi

## Medium Pressure Female Elbows



Part Number	Description	Max Working Pressure
HEMF4	1/4" MP Female Elbow	20,000 psi
HEMF6	3/8" MP Female Elbow	20,000 psi
HEMF9	9/16" MP Female Elbow	20,000 psi
HEMF12	3/4" MP Female Elbow	20,000 psi
HEMF16	1" MP Female Elbow	20,000 psi

## Medium Pressure Female Tees



Part Number	Description	Max Working Pressure
HTMF4	1/4" MP Female Tee	20,000 psi
HTMF6	3/8" MP Female Tee	20,000 psi
HTMF9	9/16" MP Female Tee	20,000 psi
HTMF12	3/4" MP Female Tee	20,000 psi
HTMF16	1" MP Female Tee	20,000 psi

# Medium Pressure Fittings

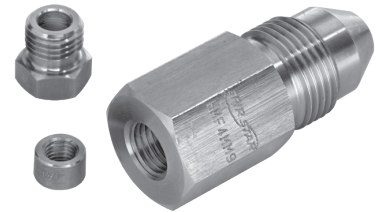
## Medium Pressure Female Crosses

Part Number	Description	Max Working Pressure
HCRMF4	1/4" MP Female Cross	20,000 psi
HCRMF6	3/8" MP Female Cross	20,000 psi
HCRMF9	9/16" MP Female Cross	20,000 psi
HCRMF12	3/4" MP Female Cross	20,000 psi
HCRMF16	1" MP Female Cross	20,000 psi



## Medium Pressure Female x Medium Pressure Male

Part Number	Description	Max Working Pressure
HMF4-MM6	1/4" MP Female x 3/8" MP Male	20,000 psi
HMF4-MM9	1/4" MP Female x 9/16" MP Male	20,000 psi
HMF6-MM9	3/8" MP Female x 9/16" MP Male	20,000 psi
HMF9-MM6	9/16" MP Female x 3/8" MP Male	20,000 psi
HMF9-MM12	9/16" MP Female x 3/4" MP Male	20,000 psi
HMF9-MM16	9/16" MP Female x 1" MP Male	20,000 psi



## Medium Pressure Slimline Couplers

Slimline couplers are designed to be used for high pressure water blasting applications, such as tube bundle cleaning.

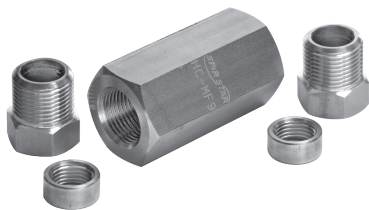
Part Number	Description	Max Working Pressure
HCSL-MF4-LL	1/4" MP Female Slimline Coupler Left x Left* 0.375" OD	20,000 psi
HCSL-MF4-LR	1/4" MP Female Slimline Coupler Left x Right* 0.375" OD	20,000 psi
HCSL-MF4-RR	1/4" MP Female Slimline Coupler Right x Right* 0.375" OD	20,000 psi
HCSL-MF6-LL	3/8" MP Female Slimline Coupler Left x Left* 0.499" OD	20,000 psi
HCSL-MF6-LR	3/8" MP Female Slimline Coupler Left x Right* 0.499" OD	20,000 psi
HCSL-MF6-RR	3/8" MP Female Slimline Coupler Right x Right* 0.499" OD	20,000 psi
HCSL-MF9-LL	9/16" MP Female Slimline Coupler Left x Left* 0.687" OD	20,000 psi
HCSL-MF9-LR	9/16" MP Female Slimline Coupler Left x Right* 0.687" OD	20,000 psi
HCSL-MF9-RR	9/16" MP Female Slimline Coupler Right x Right* 0.687" OD	20,000 psi
* Designates Left Hand Thread or Right Hand Thread		





# Medium Pressure Fittings

## Medium Pressure Heavy Duty Couplers



Part Number	Description	Max Working Pressure
HC-MF4	1/4" MP Female Coupler	20,000 psi
HC-MF6	3/8" MP Female Coupler	20,000 psi
HC-MF9	9/16" MP Female Coupler	20,000 psi
HC-MF12	3/4" MP Female Coupler	20,000 psi
HC-MF16	1" MP Female Coupler	20,000 psi

Also available as bulkhead.

## Medium Pressure Tube Nipples



Part Number	Description	Max Working Pressure
HMM6-3.00	3/8" MP Nipple x 3" Long	20,000 psi
HMM9-3.00	9/16" MP Nipple x 3" Long	20,000 psi
HMM9-4.00	9/16" MP Nipple x 4" Long	20,000 psi
HMM9-6.00	9/16" MP Nipple x 6" Long	20,000 psi
HMM9-8.00	9/16" MP Nipple x 8" Long	20,000 psi

## Medium Pressure Plugs



Part Number	Description	Max Working Pressure
HMM4-PLUG	1/4" MP Plug	20,000 psi
HMM6-PLUG	3/8" MP Plug	20,000 psi
HMM9-PLUG	9/16" MP Plug	20,000 psi
HMM12-PLUG	3/4" MP Plug	20,000 psi
HMM16-PLUG	1" MP Plug	20,000 psi

# Medium Pressure Fittings

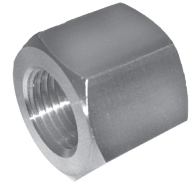
## Medium Pressure Gland Nuts & Collars

Part Number	Description	Max Working Pressure
GN-1/4MP	1/4" MP Gland Nut	20,000 psi
GN-3/8MP	3/8" MP Gland Nut	20,000 psi
GN-9/16MP	9/16" MP Gland Nut	20,000 psi
GN-3/4MP	3/4" MP Gland Nut	20,000 psi
GN-1MP	1" MP Gland Nut	20,000 psi
CLR-1/4MP	1/4" MP Collar	20,000 psi
CLR-3/8MP	3/8" MP Collar	20,000 psi
CLR-9/16MP	9/16" MP Collar	20,000 psi
CLR-3/4MP	3/4" MP Collar	20,000 psi
CLR-1MP	1" MP Collar	20,000 psi
* GN-1/4MP-AV	1/4" MP Anti-Vibration Assembly	20,000 psi
* GN-3/8MP-AV	3/8" MP Anti-Vibration Assembly	20,000 psi
* GN-9/16MP-AV	9/16" MP Anti-Vibration Assembly	20,000 psi
* Indicates Anti-Vibration style		



## Medium Pressure Caps

Part Number	Description	Max Working Pressure
HMF4-CAP	1/4" MP Female Cap	20,000 psi
HMF6-CAP	3/8" MP Female Cap	20,000 psi
HMF9-CAP	9/16" MP Female Cap	20,000 psi
HMF12-CAP	3/4" MP Female Cap	20,000 psi
HMF16-CAP	1" MP Female Cap	20,000 psi



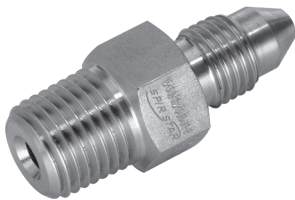
# Medium Pressure x NPT Adapters

SPiR STAR Medium Pressure x NPT (National Pipe Taper) fittings and adapters seal with a 60 degree cone Medium pressure connection and a tapered thread NPT connection. They are rated for 15,000 psi. Working pressures may be decreased depending upon the NPT thread size. Standard material is 316 stainless steel.

Common Description	Actual Thread Dimension
1/4" Medium Pressure	7/16"-20 Thread on Gland Nut
3/8" Medium Pressure	9/16"-18 Thread on Gland Nut
9/16" Medium Pressure	13/16"-16 Thread on Gland Nut
3/4" Medium Pressure	3/4"-14 Thread on Gland Nut
1" Medium Pressure	1 3/8"-12 Thread on Gland Nut

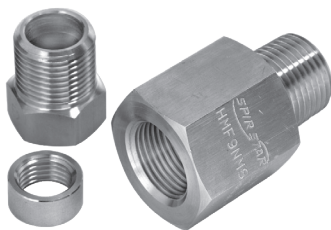
NPT Thread Size	Working Pressure
1/16" - 1/2" NPT	15,000 psi
3/4" - 1" NPT	10,000 psi

## Medium Pressure Male x NPT Male



Part Number	Description	Max Working Pressure
HMM4-NM4	1/4" MP Male x 1/4" NPT Male	15,000 psi
HMM4-NM6	1/4" MP Male x 3/8" NPT Male	15,000 psi
HMM6-NM4	3/8" MP Male x 1/4" NPT Male	15,000 psi
HMM6-NM6	3/8" MP Male x 3/8" NPT Male	15,000 psi
HMM6-NM8	3/8" MP Male x 1/2" NPT Male	15,000 psi
HMM9-NM4	9/16" MP Male x 1/4" NPT Male	15,000 psi
HMM9-NM6	9/16" MP Male x 3/8" NPT Male	15,000 psi
HMM9-NM8	9/16" MP Male x 1/2" NPT Male	15,000 psi
HMM9-NM16	9/16" MP Male x 1" NPT Male	10,000 psi
HMM12-NM8	3/4" MP Male x 1/2" NPT Male	15,000 psi
HMM12-NM12	3/4" MP Male x 3/4" NPT Male	10,000 psi
HMM12-NM16	3/4" MP Male x 1" NPT Male	10,000 psi
HMM16-NM8	1" MP Male x 1/2" NPT Male	15,000 psi
HMM16-NM12	1" MP Male x 3/4" NPT Male	10,000 psi
HMM16-NM16	1" MP Male x 1" NPT Male	10,000 psi

## Medium Pressure Female x NPT Male



Part Number	Description	Max Working Pressure
HMF6-NM4	3/8" MP Female x 1/4" NPT Male	15,000 psi
HMF6-NM6	3/8" MP Female x 3/8" NPT Male	15,000 psi
HMF6-NM8	3/8" MP Female x 1/2" NPT Male	15,000 psi
HMF9-NM4	9/16" MP Female x 1/4" NPT Male	15,000 psi
HMF9-NM6	9/16" MP Female x 3/8" NPT Male	15,000 psi
HMF9-NM8	9/16" MP Female x 1/2" NPT Male	15,000 psi
HMF9-NM16	9/16" MP Female x 1" NPT Male	10,000 psi

# Medium Pressure x NPT Adapters

## NPT Female x Medium Pressure Male

Part Number	Description	Max Working Pressure
<i>HNF2-MM9</i>	1/8" NPT Female x 9/16" MP Male	15,000 psi
<i>HNF4-MM4</i>	1/4" NPT Female x 1/4" MP Male	15,000 psi
<i>HNF4-MM6</i>	1/4" NPT Female x 3/8" MP Male	15,000 psi
<i>HNF4-MM9</i>	1/4" NPT Female x 9/16" MP Male	15,000 psi
<i>HNF6-MM9</i>	3/8" NPT Female x 9/16" MP Male	15,000 psi
<i>HNF8-MM9</i>	1/2" NPT Female x 9/16" MP Male	15,000 psi
<i>HNF8-MM12</i>	1/2" NPT Female x 3/4" MP Male	15,000 psi
<i>HNF8-MM16</i>	1/2" NPT Female x 1" MP Male	15,000 psi
<i>HNF12-MM16</i>	3/4" NPT Female x 1" MP Male	10,000 psi
<i>HNF16-MM16</i>	1" NPT Female x 1" MP Male	10,000 psi



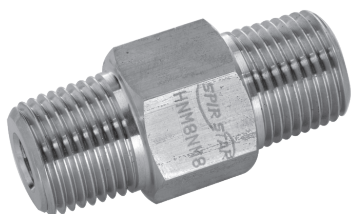


# NPT Fittings

NPT (National Pipe Taper) fittings and adapters have working pressures up to 15,000 psi. Working pressures may be decreased depending upon thread size. Standard material is 316 stainless steel.

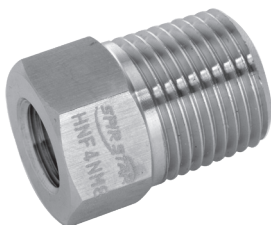
NPT Thread Size	Working Pressure
1/16" - 1/2" NPT	15,000 psi
3/4" - 1" NPT	10,000 psi

## NPT Male Hex Nipples



Part Number	Description	Max Working Pressure
HNM2-NM2	1/8" NPT Male x 1/8" NPT Male	15,000 psi
HNM4-NM4	1/4" NPT Male x 1/4" NPT Male	15,000 psi
HNM6-NM4	3/8" NPT Male x 1/4" NPT Male	15,000 psi
HNM6-NM6	3/8" NPT Male x 3/8" NPT Male	15,000 psi
HNM8-NM4	1/2" NPT Male x 1/4" NPT Male	15,000 psi
HNM8-NM6	1/2" NPT Male x 3/8" NPT Male	15,000 psi
HNM8-NM8	1/2" NPT Male x 1/2" NPT Male	15,000 psi
HNM12-NM8	3/4" NPT Male x 1/2" NPT Male	10,000 psi
HNM12-NM12	3/4" NPT Male x 3/4" NPT Male	10,000 psi
HNM16-NM8	1" NPT Male x 1/2" NPT Male	10,000 psi
HNM16-NM12	1" NPT Male x 3/4" NPT Male	10,000 psi
HNM16-NM16	1" NPT Male x 1" NPT Male	10,000 psi

## NPT Bushings



Part Number	Description	Max Working Pressure
HNF1-NM2	1/16" NPT Female x 1/8" NPT Male	15,000 psi
HNF1-NM4	1/16" NPT Female x 1/4" NPT Male	15,000 psi
HNF1-NM6	1/16" NPT Female x 3/8" NPT Male	15,000 psi
HNF1-NM8	1/16" NPT Female x 1/2" NPT Male	15,000 psi
HNF2-NM4	1/8" NPT Female x 1/4" NPT Male	15,000 psi
HNF2-NM6	1/8" NPT Female x 3/8" NPT Male	15,000 psi
HNF2-NM8	1/8" NPT Female x 1/2" NPT Male	15,000 psi
HNF4-NM6	1/4" NPT Female x 3/8" NPT Male	15,000 psi
HNF4-NM8	1/4" NPT Female x 1/2" NPT Male	15,000 psi
HNF4-NM12	1/4" NPT Female x 3/4" NPT Male	10,000 psi
HNF4-NM16	1/4" NPT Female x 1" NPT Male	10,000 psi
HNF6-NM4	3/8" NPT Female x 1/4" NPT Male	15,000 psi
HNF6-NM8	3/8" NPT Female x 1/2" NPT Male	15,000 psi
HNF6-NM12	3/8" NPT Female x 3/4" NPT Male	10,000 psi
HNF6-NM16	3/8" NPT Female x 1" NPT Male	10,000 psi
HNF8-NM4	1/2" NPT Female x 1/4" NPT Male	15,000 psi
HNF8-NM6	1/2" NPT Female x 3/8" NPT Male	15,000 psi
HNF8-NM12	1/2" NPT Female x 3/4" NPT Male	10,000 psi
HNF8-NM16	1/2" NPT Female x 1" NPT Male	10,000 psi
HNF12-NM16	3/4" NPT Female x 1" NPT Male	10,000 psi

## NPT Female Elbows

Part Number	Description	Max Working Pressure
HENF4	1/4" NPT Female Elbow	15,000 psi
HENF6	3/8" NPT Female Elbow	15,000 psi
HENF8	1/2" NPT Female Elbow	15,000 psi
HENF12	3/4" NPT Female Elbow	10,000 psi
HENF16	1" NPT Female Elbow	10,000 psi



## NPT Street Elbows

Part Number	Description	Max Working Pressure
HSENF4	1/4" NPT Male x NPT Female Street Elbow	15,000 psi
HSENF6	3/8" NPT Male x NPT Female Street Elbow	15,000 psi
HSENF8	1/2" NPT Male x NPT Female Street Elbow	15,000 psi



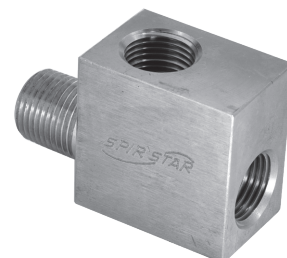
## NPT Female Tees

Part Number	Description	Max Working Pressure
HTNF4	1/4" NPT Female Tee	15,000 psi
HTNF6	3/8" NPT Female Tee	15,000 psi
HTNF8	1/2" NPT Female Tee	15,000 psi
HTNF12	3/4" NPT Female Tee	10,000 psi
HTNF16	1" NPT Female Tee	10,000 psi



## NPT Street Tees

Part Number	Description	Max Working Pressure
HSTNF4	1/4" NPT Male x NPT Female Street Tee	15,000 psi
HSTNF6	3/8" NPT Male x NPT Female Street Tee	15,000 psi
HSTNF8	1/2" NPT Male x NPT Female Street Tee	15,000 psi



# NPT Fittings

## NPT Female Crosses



Part Number	Description	Max Working Pressure
<i>HCRNF4</i>	1/4" NPT Female Cross	15,000 psi
<i>HCRNF6</i>	3/8" NPT Female Cross	15,000 psi
<i>HCRNF8</i>	1/2" NPT Female Cross	15,000 psi
<i>HCRNF12</i>	3/4" NPT Female Cross	10,000 psi
<i>HCRNF16</i>	1" NPT Female Cross	10,000 psi

## NPT Slimline Couplers

Slimline couplers are designed to be used for high pressure water blasting applications, such as tube bundle cleaning.



Part Number	Description	Max Working Pressure
<i>HCSL-NF1</i>	1/16" NPT Female Slimline Coupler 0.440" OD	15,000 psi
<i>HCSL-NF2</i>	1/8" NPT Female Slimline Coupler 0.480" OD	15,000 psi
<i>HCSL-NF2-NF1</i>	1/8" NPT Female x 1/16" NPT Female Slimline Coupler 0.480" OD	15,000 psi
<i>HCSL-NF4</i>	1/4" NPT Female Slimline Coupler 0.688" OD	15,000 psi
<i>HCSL-NF6</i>	3/8" NPT Female Slimline Coupler 0.875" OD	15,000 psi
<i>HCSL-NF8</i>	1/2" NPT Female Slimline Coupler 1.125" OD	15,000 psi

## NPT Heavy Duty Couplers



Part Number	Description	Max Working Pressure
<i>HC-NF4 HD</i>	1/4" NPT Female Coupler	15,000 psi
<i>HC-NF6 HD</i>	3/8" NPT Female Coupler	15,000 psi
<i>HC-NF6-NF4 HD</i>	3/8" NPT Female x 1/4" NPT Female Coupler	15,000 psi
<i>HC-NF8 HD</i>	1/2" NPT Female Coupler	15,000 psi
<i>HC-NF8-NF4 HD</i>	1/2" NPT Female x 1/4" NPT Female Coupler	15,000 psi
<i>HC-NF8-NF6 HD</i>	1/2" NPT Female x 3/8" NPT Female Coupler	15,000 psi
<i>HC-NF12 HD</i>	3/4" NPT Female Coupler	10,000 psi
<i>HC-NF12-NF8 HD</i>	3/4" NPT Female x 1/2" NPT Female Coupler	10,000 psi
<i>HC-NF16 HD</i>	1" NPT Female Coupler	10,000 psi
<i>HC-NF16-NF12 HD</i>	1" NPT Female x 3/4" NPT Female Coupler	10,000 psi

Also available as bulkhead.

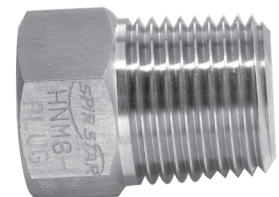
## NPT Pipe Nipples

Part Number	Description	Max Working Pressure
<i>HNM4-2.00</i>	1/4" NPT Male Nipple x 2" Long	15,000 psi
<i>HNM4-3.00</i>	1/4" NPT Male Nipple x 3" Long	15,000 psi
<i>HNM4-4.00</i>	1/4" NPT Male Nipple x 4" Long	15,000 psi
<i>HNM4-6.00</i>	1/4" NPT Male Nipple x 6" Long	15,000 psi
<i>HNM6-2.00</i>	3/8" NPT Male Nipple x 2" Long	15,000 psi
<i>HNM6-3.00</i>	3/8" NPT Male Nipple x 3" Long	15,000 psi
<i>HNM6-4.00</i>	3/8" NPT Male Nipple x 4" Long	15,000 psi
<i>HNM6-6.00</i>	3/8" NPT Male Nipple x 6" Long	15,000 psi
<i>HNM8-2.00</i>	1/2" NPT Male Nipple x 2" Long	15,000 psi
<i>HNM8-3.00</i>	1/2" NPT Male Nipple x 3" Long	15,000 psi
<i>HNM8-4.00</i>	1/2" NPT Male Nipple x 4" Long	15,000 psi
<i>HNM8-6.00</i>	1/2" NPT Male Nipple x 6" Long	15,000 psi
<i>HNM12-4.00</i>	3/4" NPT Male Nipple x 4" Long	10,000 psi
<i>HNM12-6.00</i>	3/4" NPT Male Nipple x 6" Long	10,000 psi
<i>HNM16-4.00</i>	1" NPT Male Nipple x 4" Long	10,000 psi
<i>HNM16-6.00</i>	1" NPT Male Nipple x 6" Long	10,000 psi



## NPT Plugs

Part Number	Description	Max Working Pressure
<i>HNM1-PLUG</i>	1/16" NPT Male Plug	15,000 psi
<i>HNM2-PLUG</i>	1/8" NPT Male Plug	15,000 psi
<i>HNM4-PLUG</i>	1/4" NPT Male Plug	15,000 psi
<i>HNM6-PLUG</i>	3/8" NPT Male Plug	15,000 psi
<i>HNM8-PLUG</i>	1/2" NPT Male Plug	15,000 psi
<i>HNM12-PLUG</i>	3/4" NPT Male Plug	10,000 psi
<i>HNM16-PLUG</i>	1" NPT Male Plug	10,000 psi

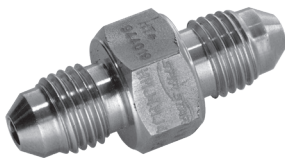


# JIC Adapters

SPiR STAR JIC fittings and adapters seal with a 37 degree cone and are rated for working pressures up to 15,000 psi. Standard material is 316 stainless steel.

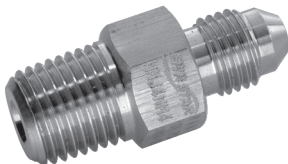
Common Description	Actual Thread Dimension
#4 1/4" JIC	7/16"-20 Thread
#6 3/8" JIC	9/16"-18 Thread
#8 1/2" JIC	3/4"-16 Thread
#12 3/4" JIC	1 1/16"-12 Thread
#16 1" JIC	1 5/16"-12 Thread

## JIC Male x JIC Male



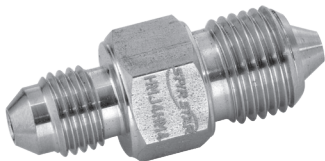
Part Number	Description	Max Working Pressure
HMJ4-MJ4	1/4" JIC Male x 1/4" JIC Male	15,000 psi
HMJ4-MJ6	1/4" JIC Male x 3/8" JIC Male	15,000 psi
HMJ4-MJ8	1/4" JIC Male x 1/2" JIC Male	15,000 psi
HMJ6-MJ6	3/8" JIC Male x 3/8" JIC Male	15,000 psi
HMJ6-MJ8	3/8" JIC Male x 1/2" JIC Male	15,000 psi
HMJ8-MJ8	1/2" JIC Male x 1/2" JIC Male	15,000 psi
HMJ16-MJ16	1" JIC Male x 1" JIC Male	10,000 psi

## JIC Male x NPT Male



Part Number	Description	Max Working Pressure
HMJ4-NM4	1/4" JIC Male x 1/4" NPT Male	15,000 psi
HMJ4-NM6	1/4" JIC Male x 3/8" NPT Male	15,000 psi
HMJ4-NM8	1/4" JIC Male x 1/2" NPT Male	15,000 psi
HMJ6-NM4	3/8" JIC Male x 1/4" NPT Male	15,000 psi
HMJ6-NM6	3/8" JIC Male x 3/8" NPT Male	15,000 psi
HMJ6-NM8	3/8" JIC Male x 1/2" NPT Male	15,000 psi
HMJ8-NM4	1/2" JIC Male x 1/4" NPT Male	15,000 psi
HMJ8-NM6	1/2" JIC Male x 3/8" NPT Male	15,000 psi
HMJ8-NM8	1/2" JIC Male x 1/2" NPT Male	15,000 psi
HMJ8-NM12	1/2" JIC Male x 3/4" NPT Male	10,000 psi
HMJ8-NM16	1/2" JIC Male x 1" NPT Male	10,000 psi
HMJ16-NM16	1" JIC Male x 1" NPT Male	10,000 psi

## JIC Male x High Pressure Male

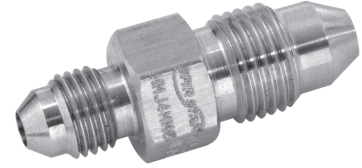


Part Number	Description	Max Working Pressure
HMJ4-HM4	1/4" JIC Male x 1/4" HP Male	15,000 psi
HMJ4-HM6	1/4" JIC Male x 3/8" HP Male	15,000 psi
HMJ4-HM9	1/4" JIC Male x 9/16" HP Male	15,000 psi
HMJ6-HM4	3/8" JIC Male x 1/4" HP Male	15,000 psi
HMJ6-HM6	3/8" JIC Male x 3/8" HP Male	15,000 psi
HMJ6-HM9	3/8" JIC Male x 9/16" HP Male	15,000 psi
HMJ8-HM4	1/2" JIC Male x 1/4" HP Male	15,000 psi
HMJ8-HM6	1/2" JIC Male x 3/8" HP Male	15,000 psi
HMJ8-HM9	1/2" JIC Male x 9/16" HP Male	15,000 psi



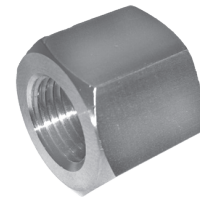
## JIC Male x Medium Pressure Male

Part Number	Description	Max Working Pressure
HMJ4-MM4	1/4" JIC Male x 1/4" MP Male	15,000 psi
HMJ4-MM6	1/4" JIC Male x 3/8" MP Male	15,000 psi
HMJ4-MM9	1/4" JIC Male x 9/16" MP Male	15,000 psi
HMJ6-MM4	3/8" JIC Male x 1/4" MP Male	15,000 psi
HMJ6-MM6	3/8" JIC Male x 3/8" MP Male	15,000 psi
HMJ6-MM9	3/8" JIC Male x 9/16" MP Male	15,000 psi
HMJ6-MM12	3/8" JIC Male x 3/4" MP Male	15,000 psi
HMJ8-MM4	1/2" JIC Male x 1/4" MP Male	15,000 psi
HMJ8-MM6	1/2" JIC Male x 3/8" MP Male	15,000 psi
HMJ8-MM9	1/2" JIC Male x 9/16" MP Male	15,000 psi
HMJ8-MM12	1/2" JIC Male x 3/4" MP Male	15,000 psi
HMJ8-MM16	1/2" JIC Male x 1" MP Male	15,000 psi
HMJ16-MM12	1" JIC Male x 3/4" MP Male	10,000 psi
HMJ16-MM16	1" JIC Male x 1" MP Male	10,000 psi



## JIC Caps

Part Number	Description	Max Working Pressure
HFJ4-CAP	1/4" JIC Female Cap	15,000 psi
HFJ6-CAP	3/8" JIC Female Cap	15,000 psi
HFJ8-CAP	1/2" JIC Female Cap	15,000 psi
HFJ12-CAP	3/4" JIC Female Cap	10,000 psi
HFJ16-CAP	1" JIC Female Cap	10,000 psi



## JIC Plugs

Part Number	Description	Max Working Pressure
HMJ4-PLUG	1/4" JIC Male Plug	15,000 psi
HMJ6-PLUG	3/8" JIC Male Plug	15,000 psi
HMJ8-PLUG	1/2" JIC Male Plug	15,000 psi
HMJ12-PLUG	3/4" JIC Male Plug	10,000 psi
HMJ16-PLUG	1" JIC Male Plug	10,000 psi



# Type M Adapters

SPiR STAR Type M fittings and adapters are for use with Type M swivel hose end fittings. These fittings and adapters seal with a 58 degree cone and are rated for working pressures up to 50,000 psi. Standard material is 316 stainless steel.

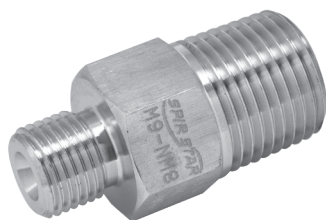
Common Description	Actual Thread Dimension
M9	9/16"-18 Thread
M12	3/4"-16 Thread
M14	7/8"-14 Thread
M16	1"-12 Thread
M18	1 1/8"-12 Thread
M21	1 5/16"-12 Thread

## Type M Male x Type M Male



Part Number	Description	Max Working Pressure
M9-M9	9/16"-18 Type M x 9/16"-18 Type M	50,000 psi
M12-M9	3/4"-16 Type M x 9/16"-18 Type M	30,000 psi
M12-M12	3/4"-16 Type M x 3/4"-16 Type M	30,000 psi
M14-M9	7/8"-14 Type M x 9/16"-18 Type M	50,000 psi
M14-M14	7/8"-14 Type M x 7/8"-14 Type M	50,000 psi
M16-M9	1"-12 Type M x 9/16"-18 Type M	30,000 psi
M16-M12	1"-12 Type M x 3/4"-16 Type M	30,000 psi
M16-M16	1"-12 Type M x 1"-12 Type M	30,000 psi
M16-M16-40K	1"-12 Type M x 1"-12 Type M	40,000 psi
M18-M9	1 1/8"-12 Type M x 9/16"-18 Type M	50,000 psi
M18-M14	1 1/8"-12 Type M x 7/8"-14 Type M	50,000 psi
M18-M18	1 1/8"-12 Type M x 1 1/8"-12 Type M	50,000 psi
M21-M16	1 5/16"-12 Type M x 1"-12 Type M	20,000 psi
M21-M21	1 5/16"-12 Type M x 1 5/16"-12 Type M	20,000 psi

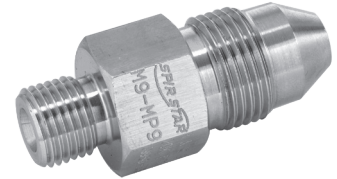
## Type M Male x NPT Male



Part Number	Description	Max Working Pressure
M9-NM4	9/16"-18 Type M x 1/4" NPT Male	15,000 psi
M9-NM6	9/16"-18 Type M x 3/8" NPT Male	15,000 psi
M9-NM8	9/16"-18 Type M x 1/2" NPT Male	15,000 psi
M9-NM12	9/16"-18 Type M x 3/4" NPT Male	10,000 psi
M9-NM16	9/16"-18 Type M x 1" NPT Male	10,000 psi
M12-NM4	3/4"-16 Type M x 1/4" NPT Male	15,000 psi
M12-NM6	3/4"-16 Type M x 3/8" NPT Male	15,000 psi
M12-NM8	3/4"-16 Type M x 1/2" NPT Male	15,000 psi
M12-NM12	3/4"-16 Type M x 3/4" NPT Male	10,000 psi
M12-NM16	3/4"-16 Type M x 1" NPT Male	10,000 psi
M16-NM6	1"-12 Type M x 3/8" NPT Male	15,000 psi
M16-NM8	1"-12 Type M x 1/2" NPT Male	15,000 psi
M16-NM12	1"-12 Type M x 3/4" NPT Male	10,000 psi
M16-NM16	1"-12 Type M x 1" NPT Male	10,000 psi
M21-NM8	1 5/16"-12 Type M x 1/2" NPT Male	15,000 psi
M21-NM12	1 5/16"-12 Type M x 3/4" NPT Male	10,000 psi
M21-NM16	1 5/16"-12 Type M x 1" NPT Male	10,000 psi

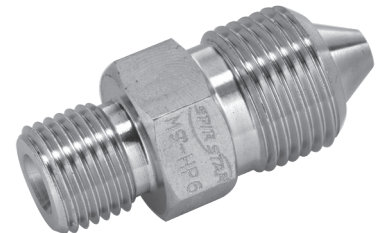
## Type M Male x Medium Pressure Male

Part Number	Description	Max Working Pressure
M9-MP4	9/16"-18 Type M x 1/4" MP Male	20,000 psi
M9-MP6	9/16"-18 Type M x 3/8" MP Male	20,000 psi
M9-MP9	9/16"-18 Type M x 9/16" MP Male	20,000 psi
M9-MP12	9/16"-18 Type M x 3/4" MP Male	20,000 psi
M9-MP16	9/16"-18 Type M x 1" MP Male	20,000 psi
M12-MP4	3/4"-16 Type M x 1/4" MP Male	20,000 psi
M12-MP6	3/4"-16 Type M x 3/8" MP Male	20,000 psi
M12-MP9	3/4"-16 Type M x 9/16" MP Male	20,000 psi
M12-MP12	3/4"-16 Type M x 3/4" MP Male	20,000 psi
M12-MP16	3/4"-16 Type M x 1" MP Male	20,000 psi
M16-MP6	1"-12 Type M x 3/8" MP Male	20,000 psi
M16-MP9	1"-12 Type M x 9/16" MP Male	20,000 psi
M16-MP12	1"-12 Type M x 3/4" MP Male	20,000 psi
M16-MP16	1"-12 Type M x 1" MP Male	20,000 psi
M21-MP9	1 5/16" Type M x 9/16" MP Male	20,000 psi
M21-MP12	1 5/16" Type M x 3/4" MP Male	20,000 psi
M21-MP16	1 5/16" Type M x 1" MP Male	20,000 psi



## Type M Male x High Pressure Male

Part Number	Description	Max Working Pressure
M9-HP4	9/16"-18 Type M x 1/4" HP Male	50,000 psi
M9-HP6	9/16"-18 Type M x 3/8" HP Male	50,000 psi
M9-HP9	9/16"-18 Type M x 9/16" HP Male	50,000 psi
M12-HP4	3/4"-16 Type M x 1/4" HP Male	30,000 psi
M12-HP6	3/4"-16 Type M x 3/8" HP Male	30,000 psi
M12-HP9	3/4"-16 Type M x 9/16" HP Male	30,000 psi
M14-HP6	7/8"-14 Type M x 3/8" HP Male	50,000 psi
M14-HP9	7/8"-14 Type M x 9/16" HP Male	50,000 psi
M14-HP9-40K	7/8"-14 Type M x 9/16" HP Male	40,000 psi
M16-HP6	1"-12 Type M x 3/8" HP Male	30,000 psi
M16-HP9	1"-12 Type M x 9/16" HP Male	30,000 psi
M16-HP16	1"-12 Type M x 1" HP Male	30,000 psi
M18-HP9	1 1/8"-12 Type M x 9/16" HP Male	50,000 psi
M21-HP9	1 5/16"-12 Type M x 9/16" HP Male	20,000 psi



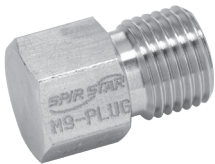
# Type M Adapters

## Type M Caps



Part Number	Description	Max Working Pressure
<i>M9-CAP</i>	9/16"-18 Type M Cap	50,000 psi
<i>M12-CAP</i>	3/4"-16 Type M Cap	30,000 psi
<i>M16-CAP</i>	1"-12 Type M Cap	30,000 psi
<i>M21-CAP</i>	1 5/16"-12 Type M Cap	20,000 psi

## Type M Plugs



Part Number	Description	Max Working Pressure
<i>M9-PLUG</i>	9/16"-18 Type M Plug	50,000 psi
<i>M12-PLUG</i>	3/4"-16 Type M Plug	30,000 psi
<i>M16-PLUG</i>	1"-12 Type M Plug	30,000 psi
<i>M21-PLUG</i>	1 5/16"-12 Type M Plug	20,000 psi

SPIR STAR BSPP fittings and adapters are available with both internal and external sealing cones. Standard material is 316 stainless steel.

Please note that when sealing BSPP adapters with bonded seals rather than on the cone, the working pressure of the fitting may be lower than the working pressure stated on the fitting.

Ext	120 degree external sealing cone
Int	60 degree internal sealing cone

## BSPP Adapters



Part Number	Description	Max Working Pressure
<i>HBM4-HM4-EXT</i>	1/4" MBSPP-Ext. x 1/4" HP Male	30,000 psi
<i>HBM4-MM4-EXT</i>	1/4" MBSPP-Ext. x 1/4" MP Male	20,000 psi
<i>M9-BM4-EXT</i>	1/4" MBSPP-Ext. x 9/16"-18 Type M Male	30,000 psi
<i>HBM4-BM4-EXT</i>	1/4" MBSPP-Ext. x 1/4" MBSPP-Ext.	30,000 psi
<i>HBM4-BM4-INTXEXT</i>	1/4" MBSPP-Ext. x 1/4" MBSPP-Int.	30,000 psi
<i>HBM4-BM4-INT</i>	1/4" MBSPP-Int. x 1/4" MBSPP-Int.	30,000 psi
<i>HBM4-NM4-INT</i>	1/4" MBSPP-Int. x 1/4" NPT Male	15,000 psi
<i>HBM4-NM8-INT</i>	1/4" MBSPP-Int. x 1/2" NPT Male	15,000 psi
<i>HBM4-NM4-EXT</i>	1/4" MBSPP-Ext. x 1/4" NPT Male	15,000 psi
<i>HCRFBSP4</i>	1/4" BSPP Female Cross	30,000 psi
<i>HTFBSP4</i>	1/4" BSPP Female Tee	30,000 psi
<i>HBM4-PLUG-EXT</i>	1/4" MBSPP-Ext. Plug	30,000 psi
<i>HBM4-SEAL-14.5K</i>	1/4" BSPP Bonded Seal	14,500 psi
<i>HBM4-SEAL-21K</i>	1/4" BSPP Bonded Seal	21,750 psi

# Quick Disconnect Couplings

SPIR STAR offers a variety of Quick Disconnect Couplings in multiple thread styles and working pressures up to 30,000 psi.

## Screw Type Quick Disconnects (no check valve) - Stainless Steel



Part Number	Description	Max Working Pressure
<i>CQD-04-SET</i>	1/4" NPT Female Screw Together Quick Disconnect Set	15,000 psi
<i>CQD-06-SET</i>	3/8" NPT Female Screw Together Quick Disconnect Set	15,000 psi
<i>CQD-08-SET</i>	1/2" NPT Female Screw Together Quick Disconnect Set	15,000 psi
<i>CQD-12-SET</i>	3/4" FNPT Female Screw Together Quick Disconnect Set	15,000 psi
<i>CQD-16-SET</i>	1" FNPT Female Screw Together Quick Disconnect Set	12,000 psi
<i>CQD-MP9-SET</i>	9/16" MP Female Screw Together Quick Disconnect Set	20,000 psi

Half sets also available upon request

## Screw Type Quick Disconnects (with check valve) - Hydraulic Service

Coupler



Nipple



Part Number	Description	Max Working Pressure
<i>CPVV-14-F</i>	1/4" NPT Male Screw Together Quick Disconnect Coupler	10,000 psi
<i>CPVV-14-M</i>	1/4" NPT Female Screw Together Quick Disconnect Nipple	10,000 psi
<i>CPVV-38-F</i>	3/8" NPT Male Screw Together Quick Disconnect Coupler	10,000 psi
<i>CPVV-38-M</i>	3/8" NPT Female Screw Together Quick Disconnect Nipple	10,000 psi



# Quick Disconnect Couplings

## Push/Pull Type Quick Disconnects (with check valve) - Hydraulic Service

Part Number	Description	Max Working Pressure
QRC-0-BF4-EX-21K	1/4" FBSPP Coupler	21,000 psi
QRC-2-BF4-EX-21K	1/4" FBSPP Nipple	21,000 psi
QRC-0-NF4	1/4" FNPT Coupler	15,000 psi
QRC-2-NF4	1/4" FNPT Nipple	15,000 psi
C10-125-1202	1/4" Female BSPP Coupler	29,000 psi
C10-125-6202	1/4" Female BSPP Nipple	29,000 psi

Coupler



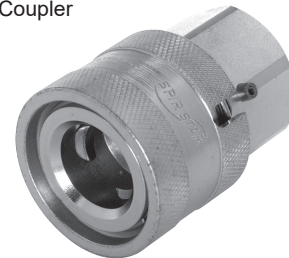
Nipple



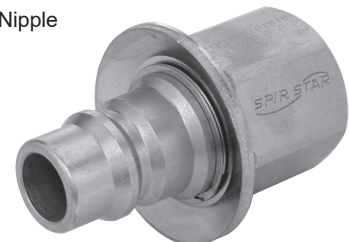
## Push/Pull Type Quick Disconnects (no check valve) - Waterblast Service

Part Number	Description	Max Working Pressure
CQD-08-FD-F	1/2" NPT Female Push/Pull Quick Disconnect Coupler	10,000 psi
CQD-08-FD-M	1/2" NPT Female Push/Pull Quick Disconnect Nipple	10,000 psi

Coupler



Nipple



# SPC Series Quick Disconnect Couplings

- 30,000 psi maximum working pressure
- Stainless steel construction
- 0.25" inner diameter (ID) port size
- Rated for full working pressure when disconnected

## Quick Disconnect Female Couplers with Check Valve



Part Number	Description	Max Working Pressure
SPC600-0-M9	Coupler with Check Valve x 9/16"-18 Type M	30,000 psi
SPC600-0-M12	Coupler with Check Valve x 3/4"-16 Type M	30,000 psi
SPC600-0-M16	Coupler with Check Valve x 1"-12 Type M	30,000 psi
SPC600-0-MJ4	Coupler with Check Valve x 1/4" JIC Male	15,000 psi
SPC600-0-MJ6	Coupler with Check Valve x 3/8" JIC Male	15,000 psi
SPC600-0-MJ8	Coupler with Check Valve x 1/2" JIC Male	15,000 psi
SPC600-0-NM4	Coupler with Check Valve x 1/4" NPT Male	15,000 psi
SPC600-0-NM6	Coupler with Check Valve x 3/8" NPT Male	15,000 psi
SPC600-0-NM8	Coupler with Check Valve x 1/2" NPT Male	15,000 psi
SPC600-0-NF4	Coupler with Check Valve x 1/4" NPT Female	15,000 psi
SPC600-0-NF6	Coupler with Check Valve x 3/8" NPT Female	15,000 psi
SPC600-0-NF8	Coupler with Check Valve x 1/2" NPT Female	15,000 psi
SPC600-0-MP4	Coupler with Check Valve x 1/4" MP Male	20,000 psi
SPC600-0-MP6	Coupler with Check Valve x 3/8" MP Male	20,000 psi
SPC600-0-MP9	Coupler with Check Valve x 9/16" MP Male	20,000 psi
SPC600-0-HP4	Coupler with Check Valve x 1/4" HP Male	30,000 psi
SPC600-0-HP6	Coupler with Check Valve x 3/8" HP Male	30,000 psi
SPC600-0-HP9	Coupler with Check Valve x 9/16" HP Male	30,000 psi
SPC600-0-X13	Coupler with Check Valve x Low Angle Male	30,000 psi

NOTE: All SPC Series Quick Disconnect Couplings are made in the U.S.A.

# SPC Series Quick Disconnect Couplings

## Quick Disconnect Male Nipples with Check Valve

Part Number	Description	Max Working Pressure
SPC600-2-M9	Nipple with Check Valve x 9/16"-18 Type M	30,000 psi
SPC600-2-M12	Nipple with Check Valve x 3/4"-16 Type M	30,000 psi
SPC600-2-M16	Nipple with Check Valve x 1"-12 Type M	30,000 psi
SPC600-2-MJ4	Nipple with Check Valve x 1/4" JIC Male	15,000 psi
SPC600-2-MJ6	Nipple with Check Valve x 3/8" JIC Male	15,000 psi
SPC600-2-MJ8	Nipple with Check Valve x 1/2" JIC Male	15,000 psi
SPC600-2-NM4	Nipple with Check Valve x 1/4" NPT Male	15,000 psi
SPC600-2-NM6	Nipple with Check Valve x 3/8" NPT Male	15,000 psi
SPC600-2-NM8	Nipple with Check Valve x 1/2" NPT Male	15,000 psi
SPC600-2-NF4	Nipple with Check Valve x 1/4" NPT Female	15,000 psi
SPC600-2-NF6	Nipple with Check Valve x 3/8" NPT Female	15,000 psi
SPC600-2-NF8	Nipple with Check Valve x 1/2" NPT Female	15,000 psi
SPC600-2-MP4	Nipple with Check Valve x 1/4" MP Male	20,000 psi
SPC600-2-MP6	Nipple with Check Valve x 3/8" MP Male	20,000 psi
SPC600-2-MP9	Nipple with Check Valve x 9/16" MP Male	20,000 psi
SPC600-2-HP4	Nipple with Check Valve x 1/4" HP Male	30,000 psi
SPC600-2-HP6	Nipple with Check Valve x 3/8" HP Male	30,000 psi
SPC600-2-HP9	Nipple with Check Valve x 9/16" HP Male	30,000 psi
SPC600-2-X13	Nipple with Check Valve x Low Angle Male	30,000 psi



## Quick Disconnect Male Nipples without Check Valve

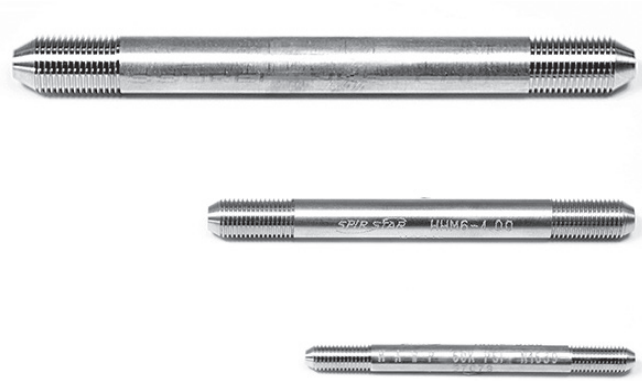
Part Number	Description	Max Working Pressure
SPC600-1-M9	Nipple without Check Valve x 9/16"-18 Type M	30,000 psi
SPC600-1-M12	Nipple without Check Valve x 3/4"-16 Type M	30,000 psi
SPC600-1-M16	Nipple without Check Valve x 1"-12 Type M	30,000 psi
SPC600-1-MJ4	Nipple without Check Valve x 1/4" JIC Male	15,000 psi
SPC600-1-MJ6	Nipple without Check Valve x 3/8" JIC Male	15,000 psi
SPC600-1-MJ8	Nipple without Check Valve x 1/2" JIC Male	15,000 psi
SPC600-1-NM4	Nipple without Check Valve x 1/4" NPT Male	15,000 psi
SPC600-1-NM6	Nipple without Check Valve x 3/8" NPT Male	15,000 psi
SPC600-1-NM8	Nipple without Check Valve x 1/2" NPT Male	15,000 psi
SPC600-1-NF4	Nipple without Check Valve x 1/4" NPT Female	15,000 psi
SPC600-1-NF6	Nipple without Check Valve x 3/8" NPT Female	15,000 psi
SPC600-1-NF8	Nipple without Check Valve x 1/2" NPT Female	15,000 psi
SPC600-1-MP4	Nipple without Check Valve x 1/4" MP Male	20,000 psi
SPC600-1-MP6	Nipple without Check Valve x 3/8" MP Male	20,000 psi
SPC600-1-MP9	Nipple without Check Valve x 9/16" MP Male	20,000 psi
SPC600-1-HP4	Nipple without Check Valve x 1/4" HP Male	30,000 psi
SPC600-1-HP6	Nipple without Check Valve x 3/8" HP Male	30,000 psi
SPC600-1-HP9	Nipple without Check Valve x 9/16" HP Male	30,000 psi
SPC600-1-X13	Nipple without Check Valve x Low Angle Male	30,000 psi



NOTE: All SPC Series Quick Disconnect Couplings are made in the U.S.A.

# Medium Pressure & High Pressure Tubing

SPIR STAR offers a complete line of stainless steel tubing available in sizes up to one inch outer diameter and up to 100,000 psi working pressure. SPIR STAR provides tubing in custom lengths up to twenty feet long that are coned, threaded and ready for use, as well as bulk tubing that can be cut and have the ends prepared on site. Standard material is 316 stainless steel.



## Specifications

- Size ranges from 1/4" OD to 1" OD
- MAWP up to 100,000 psi (6895 bar)

## Features

- Stocked in USA for short delivery times
- Tubing can be cut and shipped in shorter lengths upon request

## Materials

- Standard - 316 stainless steel
- Other materials available upon request

Part Number	Connection Type	Tube Material	Tube OD in. (mm)	Tube ID in. (mm)	Wall Thickness in. (mm)	Tolerance/OD in. (mm)	Pressure Rating
HMM4-Tubing-20K	MP	316SS/316L	1/4 (6.35)	0.109 / (2.77)	0.070 / (1.78)	0.248/0.243 (6.30/6.17)	20,000 psi
HMM6-Tubing-20K	MP	316SS/316L	3/8 (9.53)	0.203 / (5.16)	0.086 / (2.18)	0.370/0.365 (9.40/9.27)	20,000 psi
HMM9-Tubing-20K	MP	316SS/316L	9/16 (14.29)	0.312 / (7.93)	0.125 / (3.18)	0.557/0.552 (14.15/14.02)	20,000 psi
HMM12-Tubing-20K	MP	316SS/316L	3/4 (19.05)	0.438 / (11.13)	0.156 / (3.96)	0.745/0.740 (18.92/18.80)	20,000 psi
HMM16-Tubing-20K	MP	316SS/316L	1 (25.40)	0.562 / (14.28)	0.219 / (5.56)	0.995/0.990 (25.27/25.14)	20,000 psi
HMM4-Tubing-60K	HP	316SS/636L	1/4 (6.35)	0.083 / (2.11)	0.083 / (2.11)	0.248/0.243 (6.30/6.17)	60,000 psi
HMM6-Tubing-60K	HP	316SS/316L	3/8 (9.53)	0.125 / (3.18)	0.125 / (3.18)	0.370/0.365 (9.40/9.27)	60,000 psi
HMM9-Tubing-60K	HP	316SS/316L	9/16 (14.29)	0.188 / (4.78)	0.187 / (4.75)	0.557/0.552 (14.15/14.02)	60,000 psi

Dimensions, in inches (millimeters), are for reference only and are subject to change

## Valves | Actuators | Manifolds



SPIR STAR valves are trusted and proven products with a reputation for quality and durability. SPIR STAR offers a large variety of valves including needle, ball and check valves with working pressures up to 100,000 psi as well as offering air actuated, relief, double block & bleed and non-standard custom valves if required. SPIR STAR valves are used with confidence in industries such as oil & gas and high pressure water blasting in several different applications where quality and durability are critical components to the success of our customers.

<b>NPT Needle Valves *</b>	<b>42-44</b>
<b>NPT Check Valves *</b>	<b>45-46</b>
<b>Medium &amp; High Pressure Needle Valves</b>	<b>47-50</b>
<b>Medium &amp; High Pressure Check Valves</b>	<b>51-52</b>
<b>Air Actuators</b>	<b>53-54</b>
<b>Ball Valves *</b>	<b>55-58</b>
<b>Relief Valves</b>	<b>59</b>
<b>Double Block &amp; Bleed Valves</b>	<b>60</b>
<b>Multi Port / Valve Manifolds</b>	<b>61</b>
<i>* 10,000 psi version available upon request</i>	

# NPT Needle Valves up to 15,000 PSI

## Specifications

- MAWP up to 15,000 psi (1034 bar)
- Temperature ratings: -0°F to 400°F (-18°C to 204°C)
- Standard NPT end connections
- Standard vee type stem

## Features & Benefits

- Standard valve fully opens in as little as 4 1/2 turns
- Standard 3/4" and 1" valve fully opens in as little as 3 turns, compared to 9 turns for industry standard valves
- Robust stem-to-handle mount eliminating any slipping or loosening
- Two-piece, heavy-duty, non-rotating stem for a robust and reliable assembly
- Bi-directional flow capability simplifies system designs
- Innovative packing gland design resistant to vibration. Eliminates the need for an external locking device
- Double sided weep holes for easier leakage verification

## Quick Open Type Additional Features

- Valve fully opens in as little as 1-3/4 turns
- Stem lifts off of the seat minimum 2X faster than conventional valves reducing throttling and increasing seat life

## Options

- Solid stainless steel or aluminum handle
- Replaceable seat design for use in harsh environments
- Air actuators for remote valve operation
- Can be manufactured to meet NACE MR-01-75
- Extended stuffing box for temperatures as low as -423°F
- Variety of construction materials available
- Repair kits

## Materials

- Body - 316 stainless steel
- Packing - glass filled Teflon
- Stem - 17-4 PH





# NPT Needle Valves up to 15,000 PSI

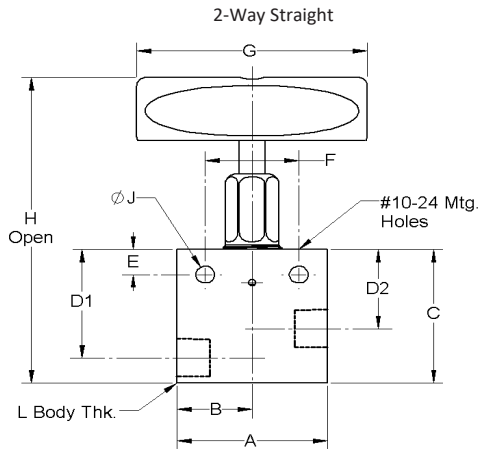


Figure 1

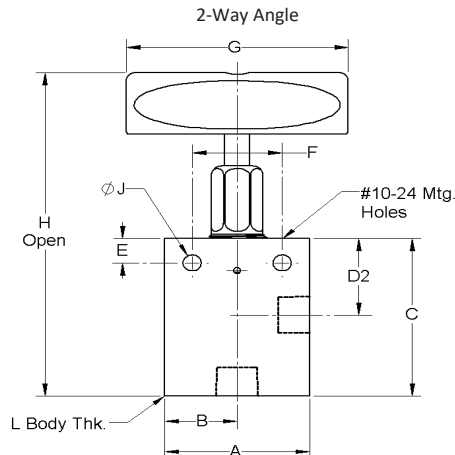


Figure 2

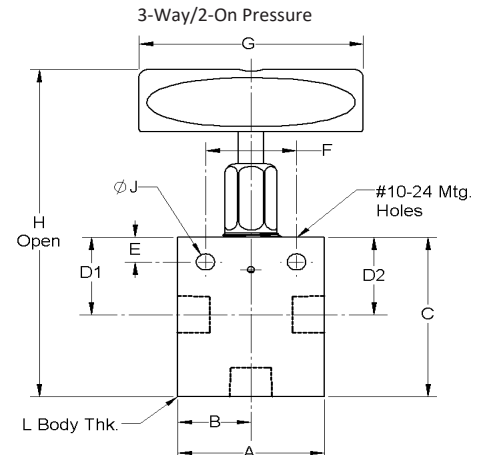


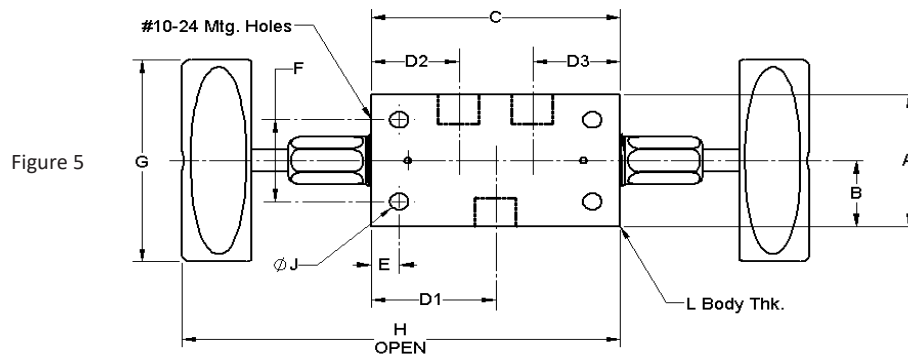
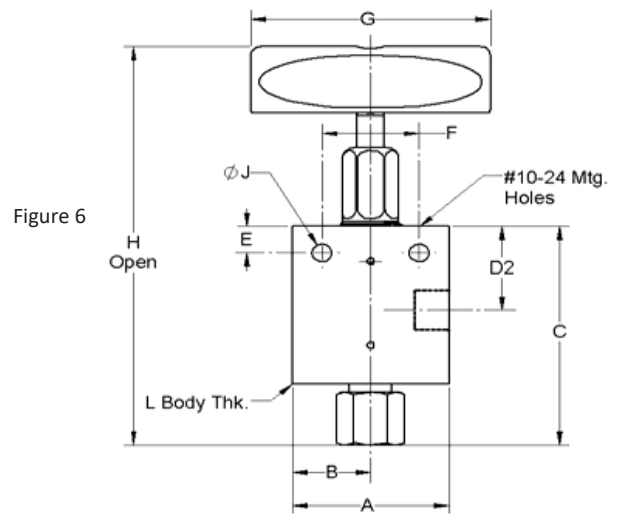
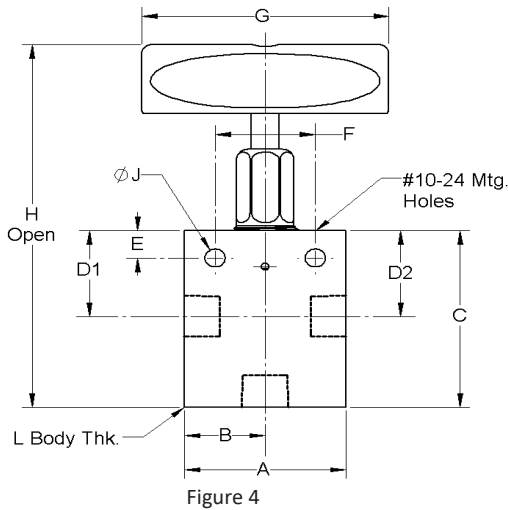
Figure 3

End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in. (mm)	Dimensions in. (mm)												Valve Dimensions
A	B	C	D1	D2	D3	E	F	G	H	J	L						
2-Way Straight																	
1/4	NPT-F	15,000 psi	SS-NVNF4-15K	0.250 6.350	2.00 50.80	1.00 25.40	2.00 50.80	1.63 41.40	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	4.84 122.94	0.25 6.35	1.00 25.40	See Figure 1
3/8			SS-NVNF6-15K	0.312 7.925	2.50 63.50	1.25 31.75	2.88 73.15	2.38 60.45	1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	5.46 138.68	0.34 8.64	1.00 25.40	
1/2			SS-NVNF8-15K	0.312 7.925	2.50 63.50	1.25 31.75	3.00 76.20	2.38 60.45	1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	5.58 141.73	0.34 8.64	1.25 31.75	
3/4		10,000 psi	SS-NVNF12-10K	0.438 11.125	3.00 76.20	1.50 38.10	3.75 95.25	3.00 76.20	2.25 57.15	-	0.62 15.75	1.75 44.45	8.07 204.98	7.07 179.58	0.44 11.18	1.38 35.05	
1			SS-NVNF16-10K	0.562 14.275	4.12 104.65	2.06 52.32	4.75 120.65	3.75 95.25	2.82 71.63	-	1.12 28.45	2.50 63.50	10.29 261.37	8.96 227.58	0.56 14.22	1.75 44.45	
2-Way Angle																	
1/4	NPT-F	15,000 psi	SS-NVNF4-12-15K	0.250 6.350	2.00 50.80	1.00 25.40	2.44 61.98		1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	5.28 134.11	0.25 6.35	1.00 25.40	See Figure 2
3/8			SS-NVNF6-12-15K	0.312 7.925	2.50 63.50	1.25 31.75	3.38 85.85		1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	5.96 151.38	0.34 8.64	1.00 25.40	
1/2			SS-NVNF8-12-15K	0.312 7.925	2.50 63.50	1.25 31.75	3.38 85.85		1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	5.96 151.38	0.34 8.64	1.25 31.75	
3/4		10,000 psi	SS-NVNF12-12-10K	0.438 11.125	3.00 76.20	1.50 38.10	4.25 107.95		2.25 57.15	-	0.62 15.75	1.75 44.45	8.07 204.98	7.57 192.28	0.44 11.18	1.38 35.05	
1			SS-NVNF16-12-10K	0.562 14.275	4.12 104.65	2.06 52.32	5.13 130.30		2.82 71.63	-	1.12 28.45	2.50 63.50	10.29 261.37	8.96 227.58	0.56 14.22	1.75 44.45	
3-Way / 2-On Pressure																	
1/4	NPT-F	15,000 psi	SS-NVNF4-13-15K	0.250 6.350	2.00 50.80	1.00 25.40	2.62 66.55	1.63 41.40	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	5.46 138.68	0.25 6.35	1.00 25.40	See Figure 3
3/8			SS-NVNF6-13-15K	0.312 7.925	2.50 63.50	1.25 31.75	3.62 91.95	2.38 60.45	1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	6.20 157.48	0.34 8.64	1.00 25.40	
1/2			SS-NVNF8-13-15K	0.312 7.925	2.50 63.50	1.25 31.75	3.62 91.95	2.38 60.45	1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	6.20 157.48	0.34 8.64	1.25 31.75	

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Repair kits available upon request

# NPT Needle Valves up to 15,000 PSI



End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in. (mm)	Dimensions in. (mm)												Valve Dimensions
					A	B	C	D1	D2	D3	E	F	G	H	J	L	
3-Way / 1-On Pressure																	
1/4	NPT-F	15,000 psi	SS-NVNF4-14-15K	0.250 6.350	2.00 50.80	1.00 25.40	2.44 61.98	1.19 30.23	-	-	0.38 9.65	1.24 31.50	3.00 76.20	5.28 134.11	0.25 6.35	1.00 25.40	See Figure 4
3/8			SS-NVNF6-14-15K	0.312 7.925	2.50 63.50	1.25 31.75	3.38 85.85	1.75 44.45	-	-	0.50 12.70	1.38 35.05	4.00 101.60	5.96 151.38	0.34 8.64	1.00 25.40	
1/2			SS-NVNF8-14-15K	0.312 7.925	2.50 63.50	1.25 31.75	3.38 85.85	1.75 44.45	-	-	0.50 12.70	1.38 35.05	4.00 101.60	5.96 151.38	0.34 8.64	1.25 31.75	
3-Way / 2-Stem Manifold																	
1/4	NPT-F	15,000 psi	SS-NVNF4-15-15K	0.250 6.350	2.00 50.80	1.00 25.40	3.38 85.85	1.69 42.93	1.19 30.23	1.19 30.23	0.38 9.65	1.24 31.50	3.00 76.20	9.06 230.12	0.25 6.35	1.00 25.40	See Figure 5
3/8			SS-NVNF6-15-15K	0.312 7.925	2.50 63.50	1.25 31.75	5.12 130.05	2.56 65.02	1.75 44.45	1.75 44.45	0.50 12.70	1.38 35.05	4.00 101.60	10.28 261.11	0.34 8.64	1.00 25.40	
1/2			SS-NVNF8-15-15K	0.312 7.925	2.50 63.50	1.25 31.75	5.12 130.05	2.56 65.02	1.75 44.45	1.75 44.45	0.50 12.70	1.38 35.05	4.00 101.60	10.28 261.11	0.34 8.64	1.25 31.75	
2-Way Angle / Replaceable Seat																	
1/4	NPT-F	15,000 psi	SS-NVNF4-16-15K	0.250 6.350	2.00 50.80	1.00 25.40	3.30 83.82	-	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	6.19 157.23	0.25 6.35	1.00 25.40	See Figure 6
3/8			SS-NVNF6-16-15K	0.312 7.925	2.50 63.50	1.25 31.75	4.51 114.55	-	1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	7.09 180.09	0.34 8.64	1.00 25.40	
1/2			SS-NVNF8-16-15K	0.312 7.925	2.50 63.50	1.25 31.75	4.62 117.35	-	1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	7.20 182.88	0.34 8.64	1.50 38.10	

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Repair kits available upon request

# NPT Check Valves up to 15,000 PSI

## Specifications

- MAWP up to 15,000 psi (1034 bar)
- Temperature ratings:
  - Metal Seat: 0°F to 400°F (-18°C to 204 °C)
  - Soft Seat: 0°F to 400°F (-18°C to 204°C)
- Nominal Cracking Pressure: 15 psi (1 bar)
- Standard PEEK seal material
- Standard NPT end connections

## Features

- Prevents reverse flow and potential damage to a pressure system
- Metal cone ring option offers metal-to-metal seat for high temperature applications
- Standard PEEK seat for optimal performance
- Complete material traceability
- Can be manufactured to meet NACE MR-01-75

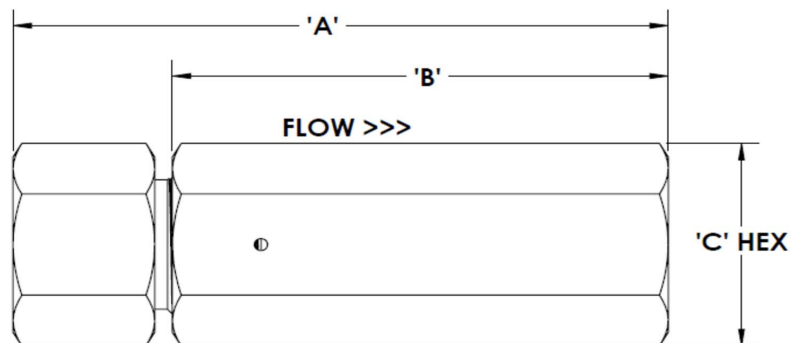
## Materials

- Standard - 316 stainless steel



# NPT Check Valves up to 15,000 PSI

Figure 1



End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in. (mm)	Dimensions in. (mm)			Valve Dimensions
					A	B	C	
NPT Ball Seat								
1/4	NPT-F	15,000 psi	SS-CVNF4-BS	0.188 4.775	3.20 81.28	2.50 63.50	1.00 25.40	See Figure 1
3/8			SS-CVNF6-BS	0.219 5.563	3.56 90.42	2.66 67.56	1.13 28.70	
1/2			SS-CVNF8-BS	0.359 9.119	4.63 117.60	3.50 88.90	1.38 35.05	
3/4		10,000 psi	SS-CVNF12-BS	0.516 13.106	5.63 143.00	4.38 111.25	1.75 44.45	
1			SS-CVNF16-BS	0.688 17.475	7.00 177.80	5.25 133.35	2.13 54.10	
NPT Soft Seat								
1/4	NPT-F	15,000 psi	SS-CVNF4-SS	0.188 4.775	3.20 81.28	2.50 63.50	1.00 25.40	See Figure 1
3/8			SS-CVNF6-SS	0.219 5.563	3.56 90.42	2.66 67.56	1.13 28.70	
1/2			SS-CVNF8-SS	0.359 9.119	4.63 117.60	3.50 88.90	1.38 35.05	
3/4		10,000 psi	SS-CVNF12-SS	0.516 13.106	5.63 143.00	4.38 111.25	1.75 44.45	
1			SS-CVNF16-SS	0.688 17.475	7.00 177.80	5.25 133.35	2.13 54.10	

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Repair kits available upon request

# Medium & High Pressure Needle Valves up to 100,000 PSI

## Specifications

- MAWP up to 100,000 psi (6895 bar)
- Temperature ratings: -0°F to 600°F (-17°C to 315°C)
- Standard MP & HP cone and thread end connections
- Standard vee type stem

## Features & Benefits

- Standard valve fully opens in as little as 3-1/2 turns
- Standard 3/4" and 1" valve fully opens in as little as 3 turns, compared to 9 turns for industry standard valves
- Robust stem-to-handle mount eliminating any slipping or loosening
- Two-piece, heavy-duty, non-rotating stem for a robust and reliable assembly
- Bi-directional flow capability simplifies system designs
- Innovative packing gland design resistant to vibration. Eliminates the need for an external locking device
- Double sided weep holes for improved leakage verification

## Quick Open Type Additional Features

- Valve fully opens in as little as 1-3/4 turns
- Stem lifts off of the seat minimum 2X faster than conventional valves reducing throttling and increasing seat life

## Options

- Solid stainless steel or aluminum handle
- Replaceable seat design for use in harsh environments
- Air actuators for remote valve operation
- Can be manufactured to meet NACE MR-01-75
- Extended stuffing box for temperatures as low as -423°F
- Variety of construction materials available
- Repair kits

## Materials

- Body - 316 stainless steel
- Packing - glass filled Teflon
- Stem - 17-4 PH



# Medium & High Pressure Needle Valves up to 100,000 PSI

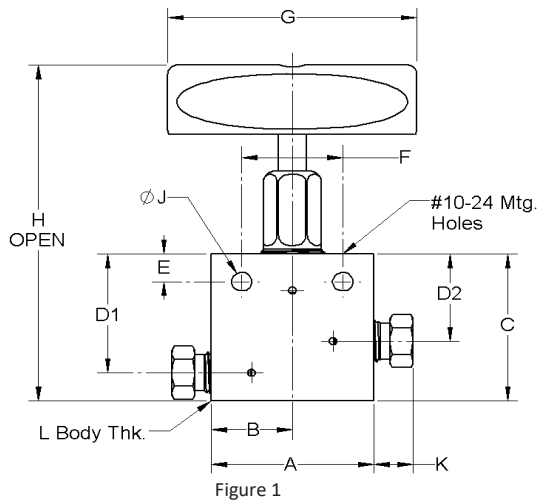


Figure 1

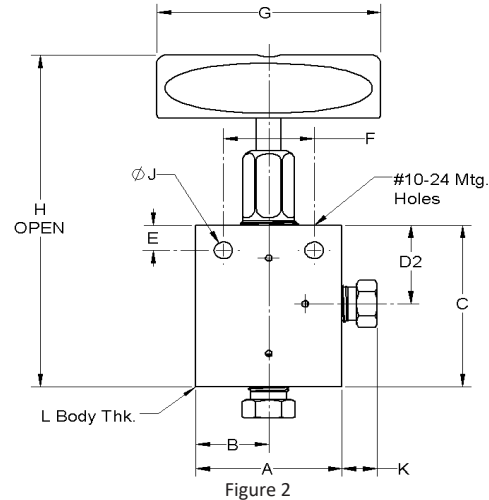


Figure 2

End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in. (mm)	A	B	C	D1	D2	Dimensions in. (mm)								Valve Dimensions	
2-Way Straight																			
1/4	MP-F	20,000 psi	SS-NVMF4-20K	0.125 3.175	2.00 50.80	1.00 25.40	2.00 50.80	1.63 41.40	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	4.84 122.94	0.25 6.35	0.38 9.65	1.00 25.40	See Figure 1	
3/8			SS-NVMF6-20K	0.200 5.080	2.00 50.80	1.00 25.40	2.00 50.80	1.63 41.40	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	4.84 122.94	0.25 6.35	0.48 12.19	1.00 25.40		
9/16			SS-NVMF9-20K	0.312 7.925	2.50 63.50	1.25 31.75	2.88 73.15	2.38 60.45	1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	5.46 138.68	0.34 8.64	0.68 17.27	1.00 25.40		
3/4			SS-NVMF12-20K	0.438 11.125	3.00 76.20	1.50 38.10	3.75 95.25	3.00 76.20	2.25 57.15	-	0.62 15.75	1.75 44.45	8.07 204.98	7.07 179.58	0.44 11.18	0.59 14.99	1.38 35.05		
1			SS-NVMF16-20K	0.562 14.275	4.12 104.65	2.06 52.32	4.75 120.65	3.75 95.25	2.82 71.63	-	1.12 28.45	2.50 63.50	10.29 261.37	8.96 227.58	0.56 14.22	0.74 18.80	1.75 44.45		
1/4	HP-F	30,000 psi	SS-NVHF4-30K	0.093 2.362	2.00 50.80	1.00 25.40	2.00 50.80	1.50 38.10	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	4.74 120.40	0.28 7.11	0.59 14.99	1.00 25.40		
3/8			SS-NVHF6-30K	0.125 3.175	2.00 50.80	1.00 25.40	2.00 50.80	1.50 38.10	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	4.74 120.40	0.28 7.11	0.72 18.29	1.00 25.40		
9/16			SS-NVHF9-30K	0.125 3.175	2.62 66.55	1.31 33.27	2.44 61.98	1.56 39.62	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	5.18 131.57	0.28 7.11	1.00 25.40	1.50 38.10		
1/4	HP-F	60,000 psi	SS-NVHF4-60K	0.062 1.575	2.00 50.80	1.00 25.40	2.12 53.85	1.69 42.93	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	4.89 124.21	0.28 7.11	0.59 14.99	1.00 25.40		
3/8			SS-NVHF6-60K	0.062 1.575	2.00 50.80	1.00 25.40	2.25 57.15	1.69 42.93	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	5.02 127.51	0.28 7.11	0.72 18.29	1.00 25.40		
9/16			SS-NVHF9-60K	0.012 0.305	2.62 66.55	1.31 33.27	2.50 63.50	1.75 44.45	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	5.27 133.86	0.28 7.11	1.00 25.40	1.50 38.10		
2-Way Angle																			
1/4	MP-F	20,000 psi	SS-NVMF4-12-20K	0.125 3.175	2.00 50.80	1.00 25.40	2.44 61.98		1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	5.28 134.11	0.25 6.35	0.38 9.65	1.00 25.40	See Figure 2	
3/8			SS-NVMF6-12-20K	0.200 5.080	2.00 50.80	1.00 25.40	2.44 61.98		1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	5.28 134.11	0.25 6.35	0.48 12.19	1.00 25.40		
9/16			SS-NVMF9-12-20K	0.312 7.925	2.50 63.50	1.25 31.75	3.38 85.85		1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	5.96 151.38	0.34 8.64	0.68 17.27	1.00 25.40		
3/4			SS-NVMF12-12-20K	0.438 11.125	3.00 76.20	1.50 38.10	4.25 107.95		2.25 57.15	-	0.62 15.75	1.75 44.45	8.07 204.98	7.56 192.02	0.44 11.18	0.59 14.99	1.38 35.05		
1			SS-NVMF16-12-20K	0.562 14.275	4.12 104.65	2.06 52.32	5.13 130.30		2.82 71.63	-	1.12 28.45	2.50 63.50	10.29 261.37	9.45 240.03	0.56 14.22	0.74 18.80	1.75 44.45		
1/4	HP-F	30,000 psi	SS-NVHF4-12-30K	0.093 2.362	2.00 50.80	1.00 25.40	2.00 50.80		1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	4.74 120.40	0.28 7.11	0.59 14.99	1.00 25.40		
3/8			SS-NVHF6-12-30K	0.125 3.175	2.00 50.80	1.00 25.40	2.12 53.85		1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	4.86 123.44	0.28 7.11	0.72 18.29	1.00 25.40		
9/16			SS-NVHF9-12-30K	0.125 3.175	2.62 66.55	1.31 33.27	2.44 61.98		1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	5.18 131.57	0.28 7.11	1.00 25.40	1.50 38.10		
1/4	HP-F	60,000 psi	SS-NVHF4-12-60K	0.062 1.575	2.00 50.80	1.00 25.40	2.38 60.45		1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	5.15 130.81	0.28 7.11	0.59 14.99	1.00 25.40		
3/8			SS-NVHF6-12-60K	0.062 1.575	2.00 50.80	1.00 25.40	2.62 66.55		1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	5.39 136.91	0.28 7.11	0.72 18.29	1.00 25.40		
9/16			SS-NVHF9-12-60K	0.012 0.305	2.62 66.55	1.31 33.27	2.81 71.37		1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	5.58 141.73	0.28 7.11	1.00 25.40	1.50 38.10		

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Repair kits available upon request



# Medium & High Pressure Needle Valves up to 100,000 PSI

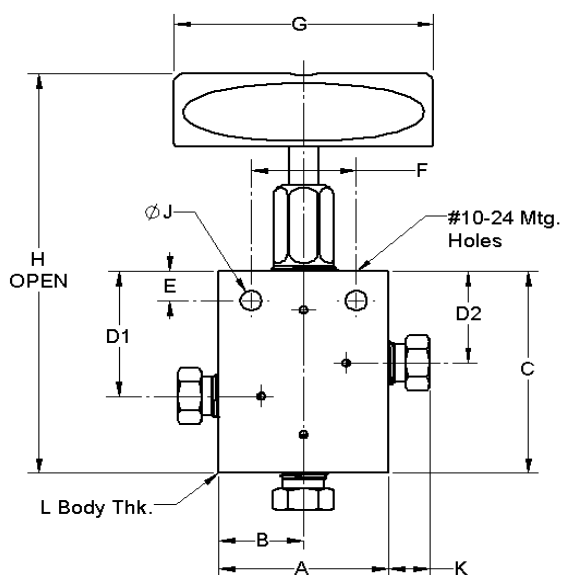


Figure 3

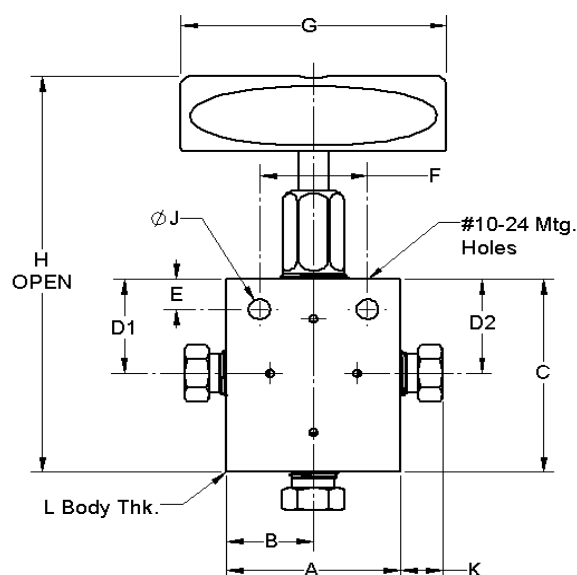


Figure 4

End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in.		Dimensions in. (mm)													Valve Dimensions
				(mm)		A	B	C	D1	D2	D3	E	F	G	H	J	K	L	
3-Way / 2-On Pressure																			See Figure 3
1/4	MP-F	20,000 psi	SS-NVMF4-13-20K	0.125 3.175	2.00 50.80	1.00 25.40	2.62 66.55	1.63 41.40	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	5.46 138.68	0.25 6.35	0.38 9.65	1.00 25.40		
3/8			SS-NVMF6-13-20K	0.200 5.080	2.00 50.80	1.00 25.40	2.62 66.55	1.63 41.40	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	5.46 138.68	0.25 6.35	0.48 12.19	1.00 25.40		
9/16			SS-NVMF9-13-20K	0.312 7.925	2.50 63.50	1.25 31.75	2.88 73.15	2.38 60.45	1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	5.46 138.68	0.34 8.64	0.68 17.27	1.00 25.40		
1/4	HP-F	30,000 psi	SS-NVHF4-13-30K	0.093 2.362	2.00 50.80	1.00 25.40	2.00 50.80	1.50 38.10	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	4.74 120.40	0.28 7.11	0.59 14.99	1.00 25.40		
3/8			SS-NVHF6-13-30K	0.125 3.175	2.00 50.80	1.00 25.40	2.00 50.80	1.50 38.10	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	4.74 120.40	0.28 7.11	0.72 18.29	1.00 25.40		
9/16			SS-NVHF9-13-30K	0.125 3.175	2.62 66.55	1.31 33.27	2.44 61.98	1.56 39.62	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	5.18 131.57	0.28 7.11	1.00 25.40	1.50 38.10		
1/4	HP-F	60,000 psi	SS-NVHF4-13-60K	0.062 1.575	2.00 50.80	1.00 25.40	2.12 53.85	1.69 42.93	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	4.89 124.21	0.28 7.11	0.59 14.99	1.00 25.40		
3/8			SS-NVHF6-13-60K	0.062 1.575	2.00 50.80	1.00 25.40	2.25 57.15	1.69 42.93	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	5.02 127.51	0.28 7.11	0.72 18.29	1.00 25.40		
9/16			SS-NVHF9-13-60K	0.012 0.305	2.62 66.55	1.31 33.27	2.50 63.50	1.75 44.45	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	5.27 133.86	0.28 7.11	1.00 25.40	1.50 38.10		
3-Way / 1-On Pressure																			See Figure 4
1/4	MP-F	20,000 psi	SS-NVMF4-14-20K	0.125 3.175	2.00 50.80	1.00 25.40	2.00 50.80	1.63 41.40	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	4.84 122.94	0.25 6.35	0.38 9.65	1.00 25.40		
3/8			SS-NVMF6-14-20K	0.200 5.080	2.00 50.80	1.00 25.40	2.00 50.80	1.63 41.40	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	4.84 122.94	0.25 6.35	0.48 12.19	1.00 25.40		
9/16			SS-NVMF9-14-20K	0.312 7.925	2.50 63.50	1.25 31.75	2.88 73.15	2.38 60.45	1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	5.46 138.68	0.34 8.64	0.68 17.27	1.00 25.40		
1/4	HP-F	30,000 psi	SS-NVHF4-14-30K	0.093 2.362	2.00 50.80	1.00 25.40	2.00 50.80	1.50 38.10	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	4.74 120.40	0.28 7.11	0.59 14.99	1.00 25.40		
3/8			SS-NVHF6-14-30K	0.125 3.175	2.00 50.80	1.00 25.40	2.00 50.80	1.50 38.10	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	4.74 120.40	0.28 7.11	0.72 18.29	1.00 25.40		
9/16			SS-NVHF9-14-30K	0.125 3.175	2.62 66.55	1.31 33.27	2.44 61.98	1.56 39.62	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	5.18 131.57	0.28 7.11	1.00 25.40	1.50 38.10		
1/4	HP-F	60,000 psi	SS-NVHF4-14-60K	0.062 1.575	2.00 50.80	1.00 25.40	2.12 53.85	1.69 42.93	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	4.89 124.21	0.28 7.11	0.59 14.99	1.00 25.40		
3/8			SS-NVHF6-14-60K	0.062 1.575	2.00 50.80	1.00 25.40	2.25 57.15	1.69 42.93	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	5.02 127.51	0.28 7.11	0.72 18.29	1.00 25.40		
9/16			SS-NVHF9-14-60K	0.012 0.305	2.62 66.55	1.31 33.27	2.50 63.50	1.75 44.45	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	5.27 133.86	0.28 7.11	1.00 25.40	1.50 38.10		

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Repair kits available upon request

# Medium & High Pressure Needle Valves up to 100,000 PSI

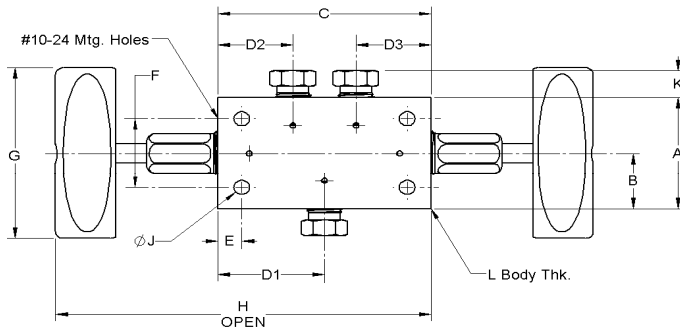


Figure 5

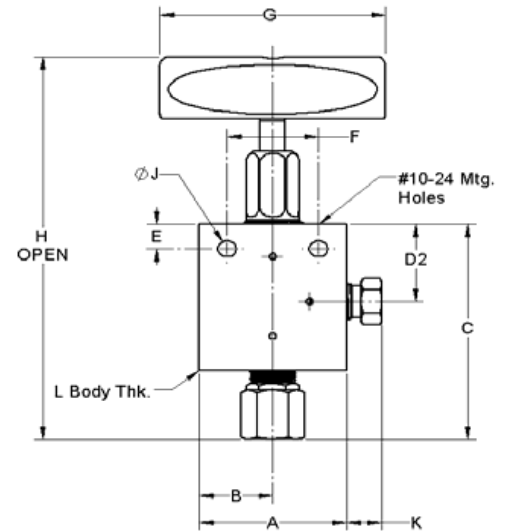


Figure 6

End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in. (mm)	Dimensions in. (mm)												Valve Dimensions	
					A	B	C	D1	D2	D3	E	F	G	H	J	K		L
3-Way / 2-Stem Manifold																		
1/4	MP-F	20,000 psi	SS-NVMF4-15-20K	0.125 3.175	2.00 50.80	1.00 25.40	3.38 85.85	1.69 42.93	1.19 30.23	1.19 30.23	0.38 9.65	1.24 31.50	3.00 76.20	9.06 230.12	0.25 6.35	0.38 9.65	1.00 25.40	See Figure 5
3/8			SS-NVMF6-15-20K	0.200 5.080	2.00 50.80	1.00 25.40	3.38 85.85	2.56 65.02	1.75 44.45	1.75 44.45	0.38 9.65	1.24 31.50	3.00 76.20	9.06 230.12	0.25 6.35	0.48 12.19	1.00 25.40	
9/16			SS-NVMF9-15-20K	0.312 7.925	2.50 63.50	1.25 31.75	5.12 130.05	2.56 65.02	1.75 44.45	1.75 44.45	0.50 12.70	1.38 35.05	4.00 101.60	10.28 261.11	0.34 8.64	0.68 17.27	1.00 25.40	
1/4	HP-F	30,000 psi	SS-NVHF4-15-30K	0.093 2.362	2.00 50.80	1.00 25.40	3.06 77.72	1.53 38.86	1.12 28.45	1.12 28.45	0.38 9.65	1.38 35.05	3.00 76.20	8.54 216.92	0.28 7.11	0.59 14.99	1.00 25.40	
3/8			SS-NVHF6-15-30K	0.125 3.175	2.00 50.80	1.00 25.40	3.25 82.55	1.62 41.15	1.12 28.45	1.12 28.45	0.38 9.65	1.38 35.05	3.00 76.20	8.73 221.74	0.28 7.11	0.72 18.29	1.00 25.40	
9/16			SS-NVHF9-15-30K	0.125 3.175	2.62 66.55	1.31 33.27	3.75 95.25	1.88 47.75	1.12 28.45	1.12 28.45	0.38 9.65	1.38 35.05	3.00 76.20	9.23 234.44	0.28 7.11	1.00 25.40	1.50 38.10	
1/4	HP-F	60,000 psi	SS-NVHF4-15-60K	0.062 1.575	2.00 50.80	1.00 25.40	3.44 87.38	1.72 43.69	1.31 33.27	1.31 33.27	0.38 9.65	1.38 35.05	3.00 76.20	8.98 228.09	0.28 7.11	0.59 14.99	1.00 25.40	
3/8			SS-NVHF6-15-60K	0.062 1.575	2.00 50.80	1.00 25.40	3.75 95.25	1.88 47.75	1.31 33.27	1.31 33.27	0.38 9.65	1.38 35.05	3.00 76.20	9.29 235.97	0.28 7.11	0.72 18.29	1.00 25.40	
9/16			SS-NVHF9-15-60K	0.012 0.305	2.62 66.55	1.31 33.27	4.12 104.65	2.06 52.32	1.31 33.27	1.31 33.27	0.38 9.65	1.38 35.05	3.00 76.20	9.66 245.36	0.28 7.11	1.00 25.40	1.50 38.10	
2-Way Angle / Replaceable Seat																		
1/4	MP-F	20,000 psi	SS-NVMF4-16-20K	0.125 3.175	2.00 50.80	1.00 25.40	3.30 83.82	-	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	6.04 153.42	0.25 6.35	0.38 9.65	1.00 25.40	See Figure 6
3/8			SS-NVMF6-16-20K	0.200 5.080	2.00 50.80	1.00 25.40	3.30 83.82	-	1.19 30.23	-	0.38 9.65	1.24 31.50	3.00 76.20	6.04 153.42	0.25 6.35	0.48 12.19	1.00 25.40	
9/16			SS-NVMF9-16-20K	0.312 7.925	2.50 63.50	1.25 31.75	4.63 117.60	-	1.75 44.45	-	0.50 12.70	1.38 35.05	4.00 101.60	7.21 183.13	0.34 8.64	0.68 17.27	1.00 25.40	
1/4	HP-F	30,000 psi	SS-NVHF4-16-30K	0.093 2.362	2.00 50.80	1.00 25.40	3.12 79.25	-	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	5.83 148.08	0.28 7.11	0.59 14.99	1.00 25.40	
3/8			SS-NVHF6-16-30K	0.125 3.175	2.00 50.80	1.00 25.40	3.39 86.11	-	1.12 28.45	-	0.38 9.65	1.38 35.05	3.00 76.20	6.09 154.69	0.28 7.11	0.72 18.29	1.00 25.40	
9/16			SS-NVHF9-16-30K	0.125 3.175	2.62 66.55	1.31 33.27	3.82 97.03	-	1.19 30.23	-	0.38 9.65	1.38 35.05	3.00 76.20	6.52 165.61	0.28 7.11	1.00 25.40	1.50 38.10	
1/4	HP-F	60,000 psi	SS-NVHF4-16-60K	0.062 1.575	2.00 50.80	1.00 25.40	3.45 87.63	-	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	6.19 157.23	0.28 7.11	0.59 14.99	1.00 25.40	
3/8			SS-NVHF6-16-60K	0.062 1.575	2.00 50.80	1.00 25.40	3.75 95.25	-	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	6.49 164.85	0.28 7.11	0.72 18.29	1.00 25.40	
9/16			SS-NVHF9-16-60K	0.012 0.305	2.62 66.55	1.31 33.27	4.00 101.60	-	1.31 33.27	-	0.38 9.65	1.38 35.05	3.00 76.20	6.74 171.20	0.28 7.11	1.00 25.40	1.50 38.10	

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Repair kits available upon request

# Medium & High Pressure Check Valves up to 60,000 PSI

## Specifications

- MAWP up to 60,000 psi (4136 bar)
- Temperature ratings:
  - Metal Seat: -110°F to 500°F (-80°C to 260°C) \*
  - Soft Seat: -50°F to 400°F (-45°C to 204°C)
- Nominal Cracking Pressure: 15 psi (1 bar)
- Standard PEEK seal material
- Standard MP & HP cone and thread end connections

## Features

- Prevents reverse flow and potential damage to a pressure system
- Metal cone ring option offers metal-to-metal seat for high temperature applications
- Standard PEEK seat for optimal performance
- Complete material traceability
- Can be manufactured to meet NACE MR-01-75
- Repair kits available

## Materials

- Standard - 316 stainless steel



\* Consult the factory for metal seat options for temperatures -423°F to 1200°F (-252°C to 650°C)

# Medium & High Pressure Check Valves up to 60,000 PSI

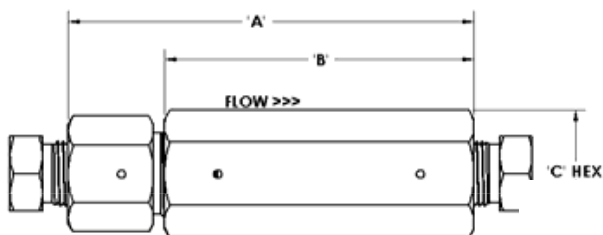


Figure 1

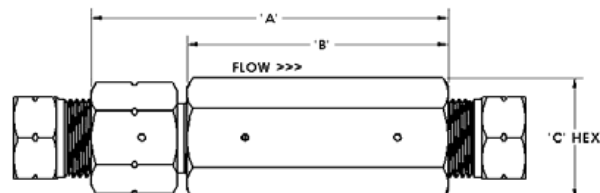


Figure 2

End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in. (mm)	Dimensions in. (mm)			Valve Dimensions
					A	B	C	
Medium Pressure Ball Seat								
1/4	MP-F	20,000 psi	SS-CVMF4-BS	0.125 3.175	3.07 77.98	2.50 63.50	1.00 25.40	See Figure 1
3/8			SS-CVMF6-BS	0.219 5.563	3.48 88.39	2.66 67.56	1.13 28.70	
9/16			SS-CVMF9-BS	0.359 9.119	4.76 120.90	3.50 88.90	1.38 35.05	
3/4			SS-CVMF12-BS	0.516 13.106	5.63 143.00	4.38 111.25	1.75 44.45	
1			SS-CVMF16-BS	0.688 17.475	7.00 177.80	5.25 133.35	2.13 54.10	

<b>Medium Pressure Soft Seat</b>								
1/4	MP-F	20,000 psi	SS-CVMF4-SS	0.125 3.175	3.07 77.98	2.50 63.50	1.00 25.40	See Figure 1
3/8			SS-CVMF6-SS	0.219 5.563	3.48 88.39	2.66 67.56	1.13 28.70	
9/16			SS-CVMF9-SS	0.359 9.119	4.76 120.90	3.50 88.90	1.38 35.05	
3/4			SS-CVMF12-SS	0.516 13.106	5.63 143.00	4.38 111.25	1.75 44.45	
1			SS-CVMF16-SS	0.688 17.475	7.00 177.80	5.25 133.35	2.13 54.10	

Dimensions, in inches (millimeters), are for reference only and are subject to change.

End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in. (mm)	Dimensions in. (mm)			Valve Dimensions
					A	B	C	
High Pressure Ball Seat								
1/4	HP-F	60,000 psi	SS-CVHF4-BS	0.094 2.388	3.26 82.80	2.50 63.50	1.25 31.75	See Figure 2
3/8			SS-CVHF6-BS	0.125 3.175	3.75 95.25	2.75 69.85	1.25 31.75	
9/16			SS-CVHF9-BS	0.188 4.775	4.63 117.60	3.38 85.85	1.50 38.10	

<b>High Pressure Soft Seat</b>								
1/4	HP-F	60,000 psi	SS-CVHF4-SS	0.094 2.388	3.26 82.80	2.50 63.50	1.25 31.75	See Figure 2
3/8			SS-CVHF6-SS	0.125 3.175	3.75 95.25	2.75 69.85	1.25 31.75	
9/16			SS-CVHF9-SS	0.188 4.775	4.63 117.60	3.38 85.85	1.50 38.10	

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Repair kits available upon request

# Air Actuators for Remote Valve Operation

## Types

- Normally Closed - Air to Open
- Normally Open - Air to Close
- Double Action - Air to Open or Close

## Features

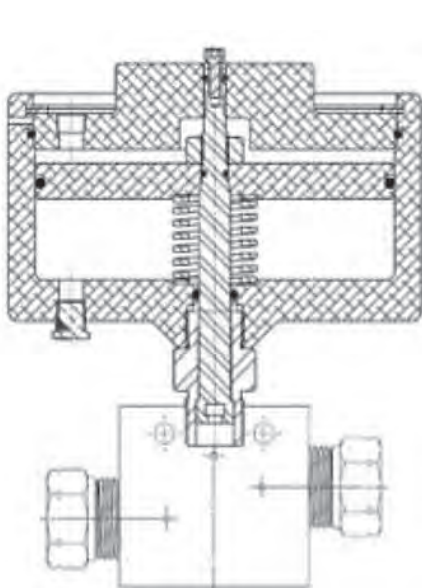
- Easily visible open/close position indicator
- Aluminum housing for reduced weight
- Position adjustable air supply inlet
- Actuator-to-valve direct mount technology for simplified installation

## Options

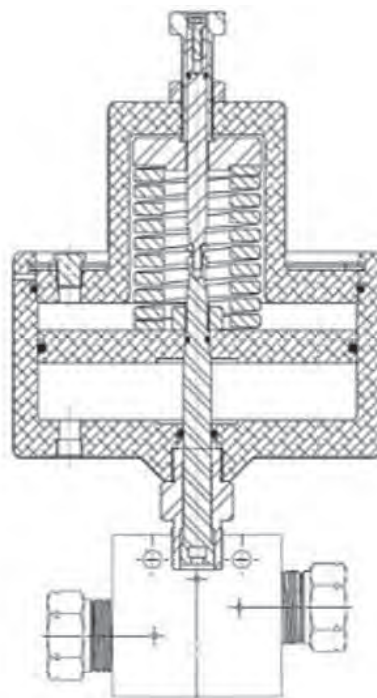
- Electronic switch for remote open/close position indication
- Stainless steel housing

## Ordering Information

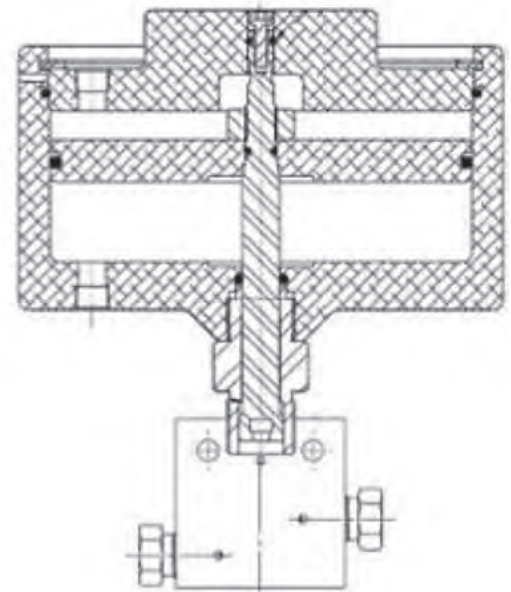
- Normally Open (Air-to-Close) -NO
  - Normally Closed (Air-to-Open) -NC
  - Double Acting: -DA
- Example: SS-NVNF4-15K-NO or SS-NVNF4-15K-NC



**Normally Open  
(Air-to-Close)**



**Normally Close  
(Air-to-Open)**



**Double Acting**

# Air Actuators for Remote Valve Operation

Valve Type and Size	Air Actuator Type					
	NC5 (Air-to-Open)		NO5 (Air-to-Close)		DA5 (Double Acting)	
	Air Pressure to Full Travel	MAWP psi @ 100 F	Air Pressure to Full Travel	MAWP psi @ 100 F	Air Pressure to Full Travel	MAWP psi @ 100 F
SS-NVNF4-15K-	80	15,000	65	15,000	50	15,000
SS-NVNF6-15K-	100	15,000	100	15,000	95	15,000
SS-NVNF8-15K-	100	10,000	100	15,000	95	15,000
SS-NVMF4-20K-	80	20,000	65	20,000	50	20,000
SS-NVMF6-20K-	80	20,000	65	20,000	50	20,000
SS-NVMF9-20K-	100	10,000	100	17,000	95	20,000
SS-NVHF4-30K-	85	30,000	70	30,000	55	30,000
SS-NVHF6-30K-	85	30,000	70	30,000	55	30,000
SS-NVHF9-30K-	85	30,000	70	30,000	55	30,000
SS-NVHF4-60K-	100	60,000	95	60,000	75	60,000
SS-NVHF6-60K-	100	60,000	95	60,000	75	60,000
SS-NVHF9-60K-	100	60,000	95	60,000	75	60,000



# Ball Valves up to 20,000 PSI

## Specifications

- MAWP up to 20,000 psi (1380 bar)
- Temperature ratings: -20°F to 400°F (-28°C to 204 °C)
- Port Sizes: 3/16", 1/4", 3/8" or 1/2"
- Flow Patterns: 2-way, 3-way Switching/Diverting

## Connection Types

- NPT
- MP and HP cone & thread

## Features & Benefits

- Bi directional trunnion style for optimal performance
- Two standard mounting options

## Materials

- Body / Side Adapter / Trunnion - 316 stainless steel
- Packing - O-ring with PEEK backup ring
- Seats - PEEK
- Seals - Viton
- Bearings - PEEK

## Options:

- Available with air actuators
- Repair kits



### 2-Way Trunnion

End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in. (mm)
1/4" Orifice				
1/4	NPT-F	15,000 psi	SS-BVNF4-4-15K	0.250 (6.35)
3/8			SS-BVNF6-4-15K	
1/2			SS-BVNF8-4-15K	
1/4	MP-F	20,000 psi	SS-BVMF4-4-20K	
3/8			SS-BVMF6-4-20K	
9/16			SS-BVMF9-4-20K	
1/4	HP-F		SS-BVHF4-4-20K	
3/8			SS-BVHF6-4-20K	
9/16			SS-BVHF9-4-20K	

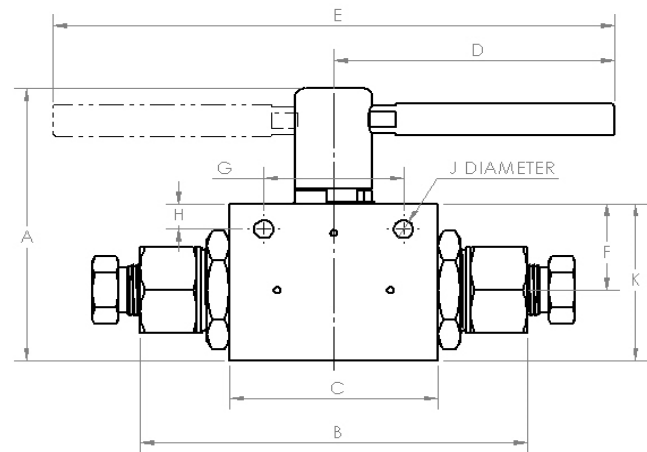


Figure 1

Dimensions, in. (mm)											Valve Dimensions
A	B	C	D	E	F	G	H	J	K	Thickness	See Figure 1
3.83	4.35	2.00	3.98	-	1.13	1.50	0.44	0.28	2.00	1.00	
(97.3)	(110.5)	(50.8)	(101.1)	-	(28.7)	(38.1)	(11.2)	(7.1)	(50.8)	(25.4)	

Dimensions, in inches (millimeters), are for reference only and are subject to change.  
Repair kits available upon request

# Ball Valves up to 20,000 PSI

## 2-Way Trunnion

End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in. (mm)
<b>3/8" Orifice</b>				
1/4	NPT-F	15,000 psi	SS-BVNF4-6-15K	0.375 (9.53)
3/8			SS-BVNF6-6-15K	
1/2			SS-BVNF8-6-15K	
3/8	MP-F	20,000 psi	SS-BVMF6-6-20K	
9/16			SS-BVMF9-6-20K	
3/4			SS-BVMF12-6-20K	

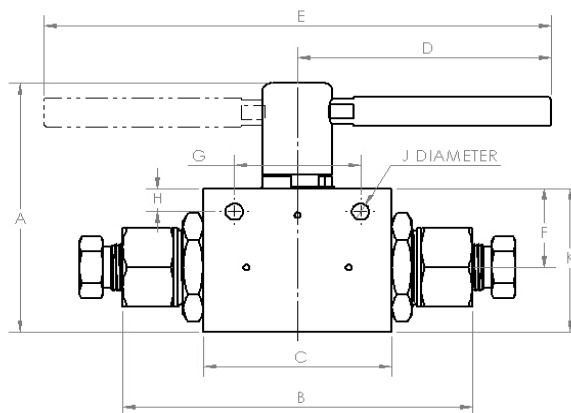


Figure 1

Dimensions, in. (mm)											Valve Dimensions
A	B	C	D	E	F	G	H	J	K	Thickness	See Figure 1
4.34	5.54	3.00	4.02	-	1.38	2.00	0.41	0.28	2.50	1.38	
(110.2)	(140.7)	(76.2)	(102.1)	-	(35.1)	(50.8)	(10.4)	(7.1)	(63.5)	(35.1)	

Dimensions, in inches (millimeters), are for reference only and are subject to change.

End Connection Size in.	Connection Type	Pressure Rating	Part Number	Orifice in. (mm)
<b>1/2" Orifice</b>				
1/2	NPT-F	15,000 psi	SS-BVNF8-8-15K	0.500 (12.7)
3/4		10,000 psi	SS-BVNF12-8-10K	
1			SS-BVNF16-8-10K	
3/4	MP-F	15,000 psi	SS-BVMF12-8-15K	
1			SS-BVMF16-8-15K	

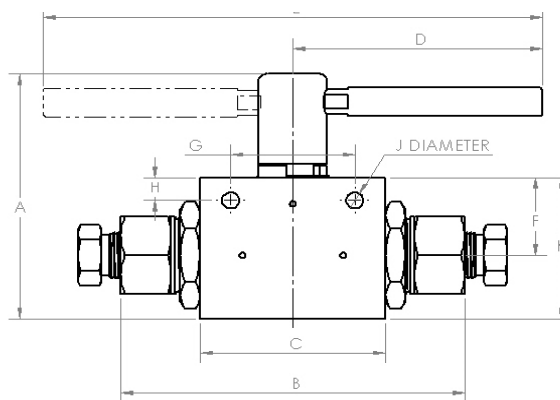


Figure 1

Dimensions, in. (mm)											Valve Dimensions
A	B	C	D	E	F	G	H	J	K	Thickness	See Figure 1
5.57	7.69	4.13	5.13	10.26	1.76	3.00	0.50	0.28	3.09	1.75	
(141.5)	(195.3)	(104.9)	(130.3)	(260.6)	(44.7)	(76.2)	(12.7)	(7.1)	(78.5)	(44.5)	

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Repair kits available upon request

# Ball Valves up to 20,000 PSI

## 3-Way Trunnion

End Connection Size in.	Connection Type	Pressure Rating	Part Number		Orifice in. (mm)
			90° Diverting	180° Switching	

### 3/16" Orifice

1/4	NPT-F	15,000 psi	SS-BVNF4-3D-15K	SS-BVNF4-3S-15K	0.188 (4.78)
3/8			SS-BVNF6-3D-15K	SS-BVNF6-3S-15K	
1/2			SS-BVNF8-3D-15K	SS-BVNF8-3S-15K	
1/4	MP-F	20,000 psi	SS-BVMF4-3D-20K	SS-BVMF4-3S-20K	
3/8			SS-BVMF6-3D-20K	SS-BVMF6-3S-20K	
9/16			SS-BVMF9-3D-20K	SS-BVMF9-3S-20K	
1/4	HP-F		SS-BVHF4-3D-20K	SS-BVHF4-3S-20K	
3/8			SS-BVHF6-3D-20K	SS-BVHF6-3S-20K	
9/16			SS-BVHF9-3D-20K	SS-BVHF9-3S-20K	

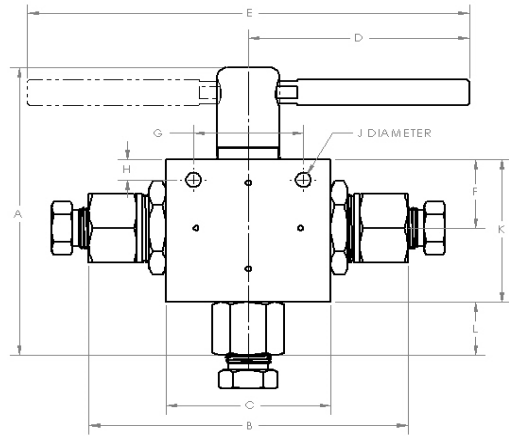


Figure 2

Dimensions, in. (mm)													Valve Dimensions
A	B	C	D	E	F	G	H	J	K	L	Thickness		
5.78	5.80	3.00	4.02	-	1.38	2.00	0.41	0.28	2.88	1.06	1.38		See Figure 2
(146.8)	(147.3)	(76.2)	(102.1)	-	(35.1)	(50.8)	(10.4)	(7.1)	(73.2)	(26.9)	(35.1)		

Dimensions, in inches (millimeters), are for reference only and are subject to change.

End Connection Size in.	Connection Type	Pressure Rating	Part Number		Orifice in. (mm)
			90° Diverting	180° Switching	

### 3/8" Orifice

1/4	NPT-F	15,000 psi	SS-BVNF4-6D-15K	SS-BVNF4-6S-15K	0.375 (9.53)
3/8			SS-BVNF6-6D-15K	SS-BVNF6-6S-15K	
1/2			SS-BVNF8-6D-15K	SS-BVNF8-6S-15K	
3/8	MP-F		SS-BVMF6-6D-15K	SS-BVMF6-6S-15K	
9/16			SS-BVMF9-6D-15K	SS-BVMF9-6S-15K	
3/4			SS-BVMF12-6D-15K	SS-BVMF12-6S-15K	

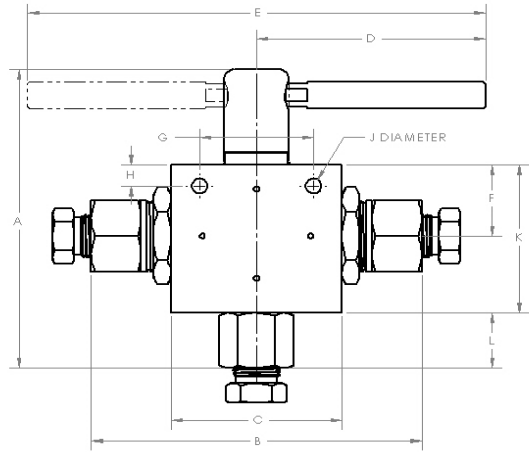


Figure 2

Dimensions, in. (mm)													Valve Dimensions
A	B	C	D	E	F	G	H	J	K	L	Thickness		
5.78	5.80	3.00	4.02	-	1.38	2.00	0.41	0.28	2.88	1.06	1.38		See Figure 2
(146.8)	(147.3)	(76.2)	(102.1)	-	(35.1)	(50.8)	(10.4)	(7.1)	(73.2)	(26.9)	(35.1)		

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Repair kits available upon request

# Ball Valves up to 20,000 PSI

### 3-Way Trunnion

End Connection Size in.	Connection Type	Pressure Rating	Part Number		Orifice in. (mm)
			90° Diverting	180° Switching	
1/2" Orifice					
1/2	NPT-F	10,000 psi	SS-BVNF8-8D-10K	SS-BVNF8-8S-10K	0.500 (12.7)
3/4			SS-BVNF12-8D-10K	SS-BVNF12-8S-10K	
1			SS-BVNF16-8D-10K	SS-BVNF16-8S-10K	
3/4	MP-F		SS-BVMF12-8D-10K	SS-BVMF12-8S-10K	
1			SS-BVMF16-8D-10K	SS-BVMF16-8S-10K	

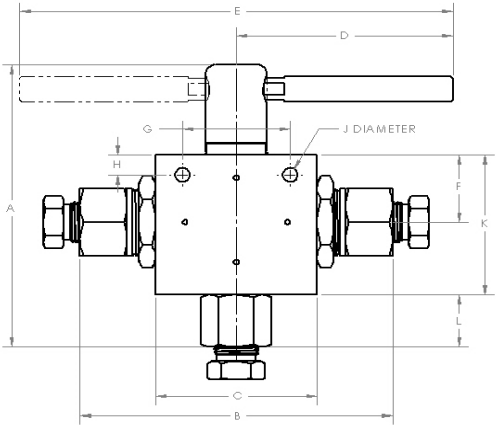
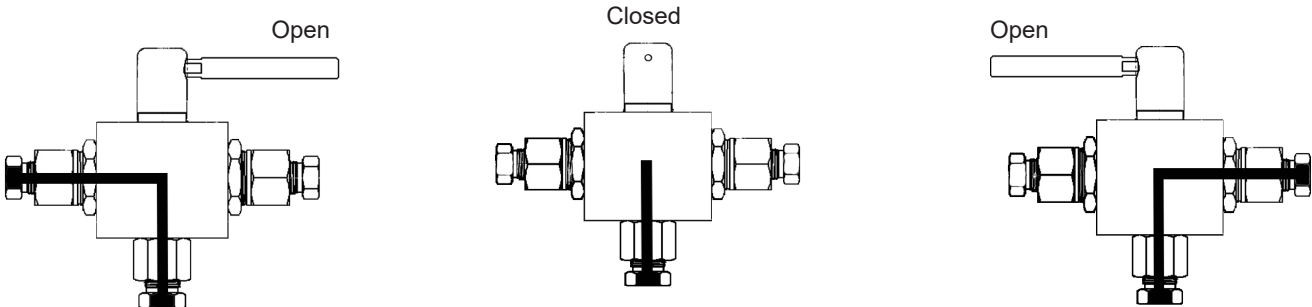


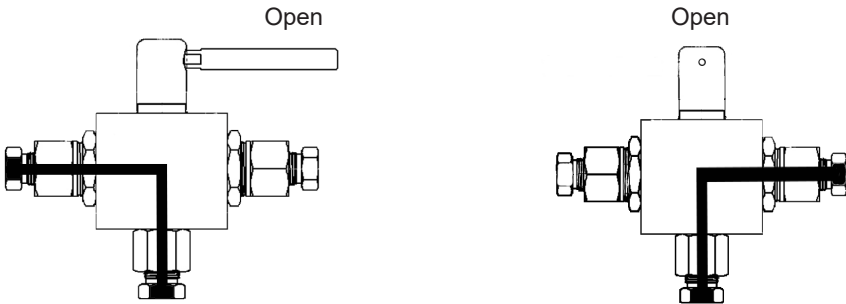
Figure 2

Dimensions, in. (mm)													Valve Dimensions
A	B	C	D	E	F	G	H	J	K	L	Thickness		
7.83 (198.9)	7.77 (197.4)	4.13 (104.9)	5.12 (130.0)	10.25 (260.35)	1.66 (42.2)	3.00 (76.2)	0.50 (12.7)	0.28 (7.1)	3.34 (84.8)	1.70 (43.2)	1.75 (44.5)		See Figure 2

Dimensions, in inches (millimeters), are for reference only and are subject to change.  
Repair kits available upon request



180 ° Switching Ball Valve



90 ° Diverting Ball Valve

# Field Adjustable Relief Valves

## Specifications

- Compatible with liquid or gas applications
- Temperature ratings: -50°F to 302°F (-45°C to 150 °C)

## Features

- Field adjustable set pressure
- Fast and reliable response time
- Repair kits available upon request

## Materials

- Body - 316 Stainless Steel



Part Number	Inlet Connection	Outlet Connection	Design / Set Pressure
SS-10RV-FA	1/4" FNPT	1/4" FNPT	1,000 - 10,000 PSI
SS-20RV-FA	1/4" HP FEMALE	1/4" FNPT	10,000 - 20,000 PSI

# Double Block & Bleed Valves

## Specifications

- MAWP up to 20,000 psi (1380 bar)
- Temperature ratings: -20°F to 600°F (-28°C to 315 °C)

## Connection Types

- NPT
- MP and HP cone & thread

## Features & Benefits

- Standard needle valve internals

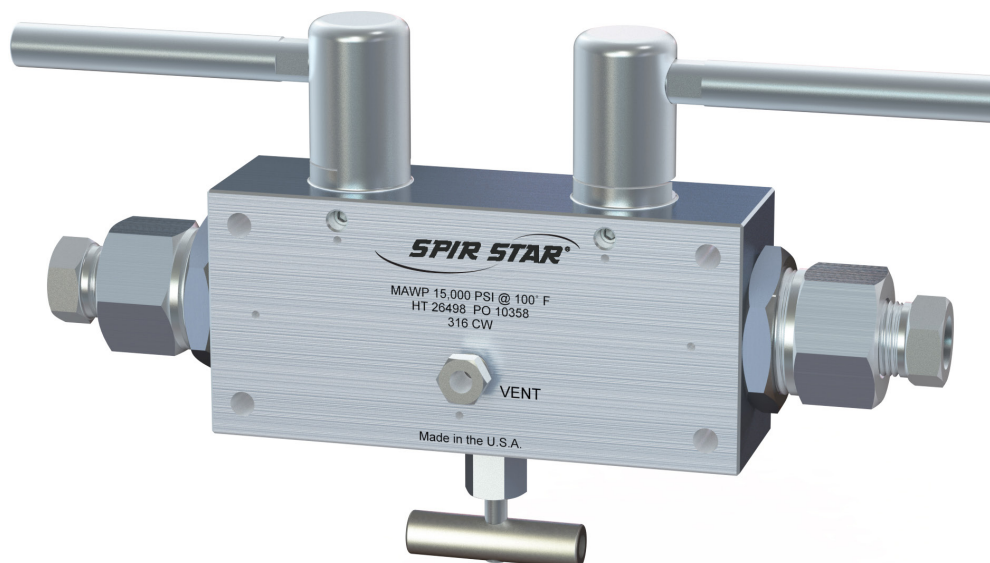
## Configurations:

- Ball x Needle x Ball
- Needle x Needle x Needle

## Materials

- Body - 316 Stainless Steel
- Packing - O-ring with PEEK backup ring
- Seats - PEEK
- Stem - 17-4 PH

Double Block and Bleed valves are custom designed to meet customers' specifications. Contact us to discuss your requirements.





## Specifications

- MAWP up to 60,000 psi (4137 bar)
- Temperature ratings: -0°F to 600°F (-17°C to 315°C)
- Available in various connection sizes and types including NPT, MP and HP cone & thread
- Lengths up to 45" available

## Features & Benefits

- Designed to reduce installation time, minimize potential leak ports, and reduce space requirements
- Multi-Port configuration for efficient fluid distribution
- Multi-Valve configuration for optimal distribution flow control
- Standard and Quick-Open valve assemblies available
- Replaceable seat(s) configuration available for ease of repair and sustained use

## Materials

- Standard - 316 stainless steel
- Other materials available by request

Contact us for additional details and availability



# Hose Care and Use

The following is **SPIR STAR's** list of Do's and Don'ts for proper and safe handling of high pressure hose. The improper use of high pressure hose can cause **serious injury or property damage. NEVER handle a leaking hose assembly. Treat any injury from high pressure fluid seriously and seek immediate medical attention.**

## Do

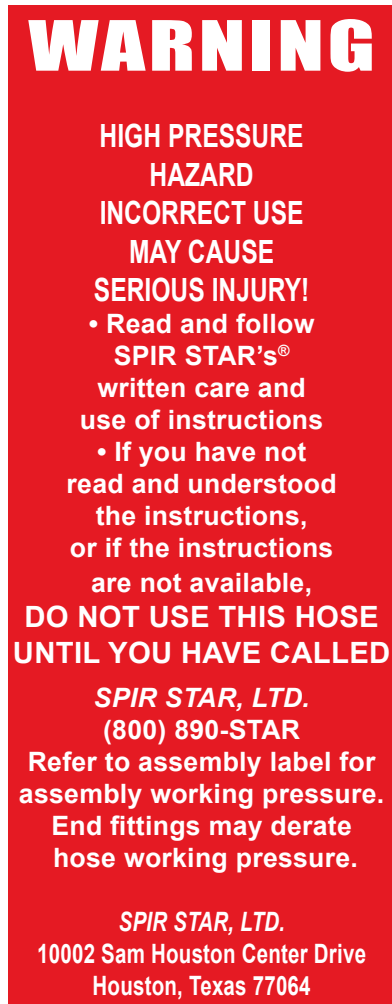
- Treat high pressure hose with extreme caution. **SPIR STAR** hoses are wire reinforced hoses, not garden hoses, and they should be treated with the same care as a high pressure containment vessel.
- When using hoses for waterjetting, read and understand Recommended Practices for the Use of Manually Operated High Pressure Waterjet Equipment (WaterJet Technology Association, 314-241-1445, [www.wjta.org](http://www.wjta.org)) prior to use.
- Always visually inspect the hose for damage, cuts, or wear spots before using.
- Check the hose end connections and threads for wear, rust, cracks, mechanical abuse, or other deterioration which could produce a dangerous projectile.
- Know the working and burst pressures of the hose before putting it in service.
- Always use clean, filtered water to prolong hose life. Some chemical plants' water sources are high in sulfur, which attacks stainless steel.
- Always clean, drain, and coil hoses after use. Soap and water usually provide an excellent cleaning agent.
- Always wear protective gloves, eyewear, and garments when handling high pressure hose and waterjet lances.

## Don't

- Don't use a hose that has cuts, damage, or wires showing through the outer cover.
- Don't use a hose that has been kinked.
- Don't use a hose that has bubbles or blisters in the outer cover.
- Don't exceed the bend radius or pressure rating for each hose.
- Don't run over or crush the hose with heavy vehicles.
- Don't use a hose with corroded or leaking end connections. Take them out of service immediately.
- Don't use hose that has been exposed to chemical attack or over temperature.
- Don't bend the hose over scaffolding or pull heavy equipment with the hose.
- Don't apply torque to the hose assembly.
- Don't let hose support its own weight off towers or buildings.
- Don't expect water jetting or hydraulic hose to last forever.
- Avoid using dirty water or water with sulfur compounds in it. Tests have documented that hoses fail more rapidly when using water sources from chemical plants and refineries.

*Be Safe - Replace*

## Look for Warning Labels



Be sure to read and understand all warning labels that are associated with High Pressure Hose and related equipment.

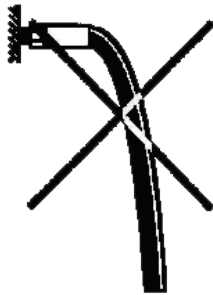
## Installation Requirements

Do not kink the hose near the fitting.

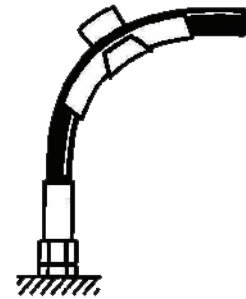
**WRONG**



**WRONG**



**RIGHT**



Do not twist the hose.

**WRONG**

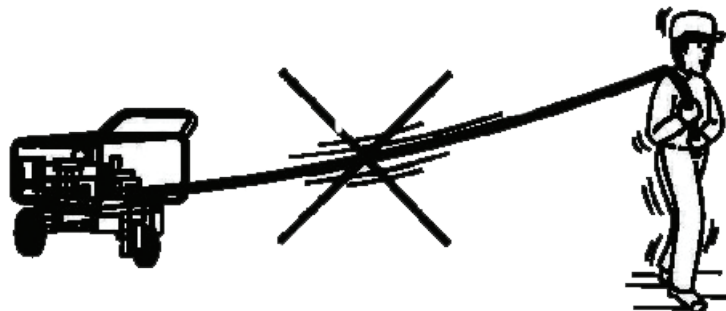


**RIGHT**



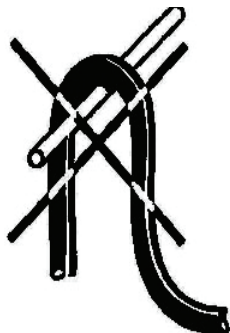
Do not pull equipment with the hose.

**WRONG**

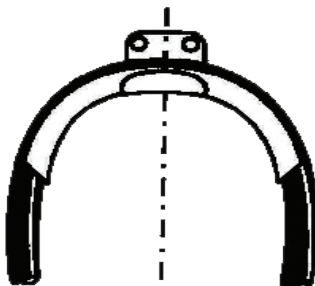


Do not exceed the hose's minimum bend radius.

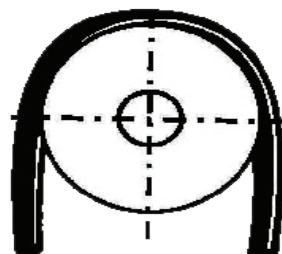
**WRONG**



**RIGHT**

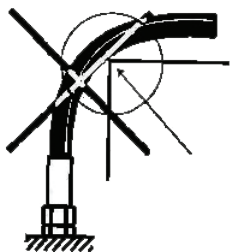


**RIGHT**

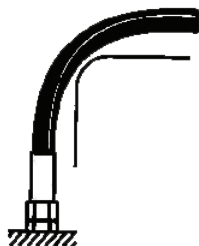


Do not bend the hose over sharp edges.

**WRONG**



**RIGHT**



**WRONG**

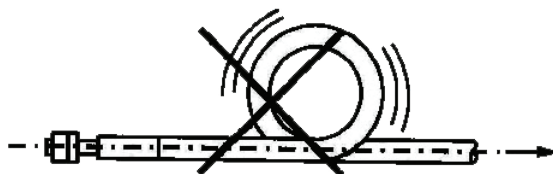


**RIGHT**



Do not pull on hose loops, this can kink the hose.

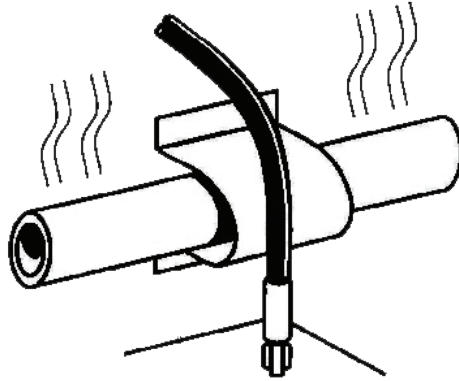
**WRONG**



# Hose Care and Use

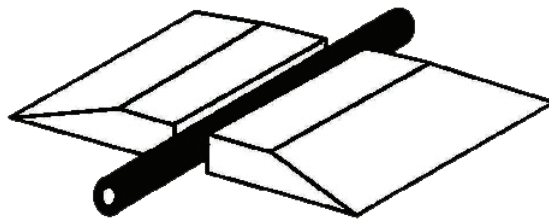
Protect the hose against hot objects.

**RIGHT**



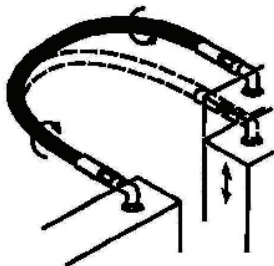
Protect the hose from being run over in traffic areas.

**RIGHT**

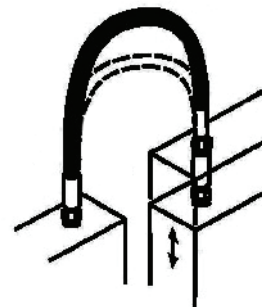


Avoid torsion.

**WRONG**



**RIGHT**





Connection	Thread Sizes	*Tightening Torque (ft. lb.)
High Pressure		
1/4"	9/16" - 18	25-30
3/8"	3/4" - 16	40-50
9/16"	1 1/8" - 12	75-80
Medium Pressure		
1/4"	7/16" - 20	20 - 25
3/8"	9/16" - 18	25 - 30
9/16"	13/16" - 16	55 - 60
3/4"	3/4" NPSM	85 - 90
1"	1 3/8" - 12	120 - 125
Type M Swivel		
M9	9/16" - 18	25 - 30
M12	3/4" - 16	40 - 50
M14	7/8" - 14	50 - 60
M16	1" - 12	75 - 85
M21	1 5/16" - 12	100 - 120
JIC		
-4	7/16" - 20	10 - 15
-6	9/16" - 18	15 - 20
-8	3/4" - 16	35 - 40
-12	1 1/16" - 12	80 - 90
-16	1 5/16" - 12	100 - 110
NPT		
1/16"	3/4" - 1 1/2	4 - 5
1/8"	3/4" - 1 3/4	10 - 15
1/4"	1/4" - 18	20 - 25
3/8"	3/8" - 18	20 - 25
1/2"	1/2" - 14	40 - 50
3/4"	3/4" - 14	75 - 80
1"	1" - 1 1/2	100 - 115
BSPP (cone to cone seat)		
1/4"	1/4" - 19	25 - 30

\*Torque values are approximate and are based on new and properly installed fittings.

# Terms and Conditions

The sale of **SPIR STAR, Ltd.** ("**SPIR STAR**") products is governed by the following terms and conditions ("Terms"). All references to "Customer" mean the customer (including its subsidiaries and affiliates) whose name appears on **SPIR STAR**'s credit application, sales order or acceptance, or invoice.

- 1. Terms and Conditions of Sale:** All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of **SPIR STAR**'s products are subject to and shall be governed exclusively by these Terms, which shall constitute a contract between Customer and **SPIR STAR**. Any terms or conditions proposed by Customer that are in addition to, or inconsistent with those stated herein, are hereby rejected. No such additional different or inconsistent terms and conditions shall become part of the sale between Customer and **SPIR STAR** unless expressly accepted in advance, in writing, by an officer of **SPIR STAR**. **SPIR STAR**'s acceptance of any offer to purchase by Customer is expressly conditioned upon Customer's assent to all the Terms stated herein. Acceptance of **SPIR STAR**'s products by Customer shall, in any event, constitute assent to the Terms.
- 2. Payment:** Payment shall be made by Customer net 30 days from the date of delivery of the products. Any claims by Customer for omissions or shortages in a shipment shall be deemed to be waived unless **SPIR STAR** receives notice thereof within 30 days after Customer's receipt of the shipment.
- 3. Delivery:** Unless otherwise provided on the face of the order, as accepted, delivery shall be made F.O.B. **SPIR STAR**'s facility. Regardless of the method of delivery, however, risk or loss shall pass to Customer upon **SPIR STAR**'s delivery to a carrier. Any delivery dates shown are approximate and **SPIR STAR** shall have no liability for delays in delivery.
- 4. Changes, Reschedules and Cancellations:** No change, rescheduling or cancellation of an order requested by Customer shall be valid unless accepted by **SPIR STAR** in writing. Acceptance of any such requested change, rescheduling or cancellation shall be upon such terms and conditions as **SPIR STAR** requires.
- 5. Force Majeure:** **SPIR STAR** does not assume the risk of, and shall not be liable for, delay or failure to perform any of **SPIR STAR**'s obligations by reason of circumstances beyond the reasonable control of **SPIR STAR**. Such circumstances include, but are limited to: accidents; acts of God; strikes or other labor disputes; acts, laws, rules, or regulations of any governmental or quasi-governmental agency; fires, floods, war or acts of terrorism; delays or failures in delivery of carriers or suppliers; or shortages of materials.
- 6. Documents and Notices:** All documents passing between **SPIR STAR** and customer may be delivered according to the rules set forth below. Documents include, but are not limited to, the following: offers, acceptances, orders, invoices, statements, notices, letters, shop drawings, specifications, and change orders. Any Document required or permitted to be delivered shall be in writing and may be delivered: (a) personally; or (b) by United States Mail, postage prepaid, registered or certified mail, return receipt requested, addressed to the parties at their respective addresses indicated on this credit application or a sales order, or at such other addresses as may be specified by written notice delivered or sent in accordance herewith; or (c) by facsimile or electronic mail ("email"), at the respective numbers or email addresses indicated on the front page of this credit application, or at such other numbers or addresses as may be specified by written notice delivered or sent in accordance herewith. Where delivery has been made personally, a receipt must be obtained from the persons signing this credit application or another member of upper management. Where delivery is by facsimile or email, the sender must use equipment that produces an authentication of transmission in printable format and must retain a copy thereof. Commencement of time limitations dependent on notice are: (a) by personal delivery, at the time of delivery; (b) by mail, 12:01 a.m. on the day that is 3 days from the date on the registered or certified mail receipt or the date of the last attempted delivery; or (c) by fax or email, 24 hours from the time of authenticated transmission.
- 7. Limited Warranty:** **SPIR STAR** PROVIDES THE FOLLOWING LIMITED WARRANTY. THE TERM "HOSE" AS USED IN THIS LIMITED WARRANTY SHALL INCLUDE COUPLERS AND END FITTING ASSEMBLIES ("EFAs"), IF AND ONLY IF, THEY ARE ATTACHED OR ASSEMBLED ON THE HOSE BY **SPIR STAR**. **SPIR STAR** PROVIDES NO WARRANTY FOR THE COUPLERS OR EFAs AS INDIVIDUAL COMPONENTS.

**HIGH PRESSURE HOSE ("HPH") LIMITED WARRANTY:** HPH is warranted to be free from defects in material and workmanship for 30 days from the date of receipt by the Customer. Due to the variation in performance of certain pumps and related equipment and the potential for failure due to mishandling, abuse, misuse, accident, or alteration of the HPH, **SPIR STAR** reserves the right to evaluate HPH that is claimed to have failed during the warranty period. Items that will void the warranty include, but are not limited to:

- exceeding minimum bend radius;
- exceeding pressure rating;
- excessive temperatures;
- excessive torquing of COUPLERS OR EFAs;
- introduction of foreign particles into the HPH;
- flexing near the COUPLER OR EFA of the HPH, and;
- dragging or hauling equipment or other objects with the HPH.

If a failure occurs within the warranty period, Customer must submit the HPH for a warranty evaluation by contacting *SPIR STAR* at 800-890-7827. Please have the part number of the HPH, the serial number, and the purchase date or sales order number. If the information for the HPH meets the criteria for evaluation, *SPIR STAR* will issue a Returned Goods Authorization ("RGA") number. The HPH may then be returned to *SPIR STAR*, freight prepaid (*SPIR STAR* to choose carrier and type of service). The RGA number must be clearly written on the shipping label and on all documentation submitted by the Customer. Upon receipt of the HPH by *SPIR STAR*, it will be inspected and evaluated to determine the cause of the failure. Upon completion of this evaluation, *SPIR STAR* will decide whether the failure was covered by the Limited Warranty. Please allow approximately 2 weeks for the evaluation. If the failure is covered by the Limited Warranty, *SPIR STAR* will, at its discretion, either replace or repair the HPH at no cost to the Customer or will apportion the cost, on a prorated basis, between itself and the Company.

**ULTRA HIGH PRESSURE HOSE ("UHP") LIMITED WARRANTY:** UHP is warranted to be free from defects in material and workmanship for a period of 60 days of field use. Due to the variance in performance of certain pumps and related equipment and the potential for failure due to mishandling, abuse, misuse, accident, or alteration of the UHP, *SPIR STAR* reserves the right to evaluate UHP that is claimed to have failed during the warranty period. Items that will void the warranty include, but are not limited to:

- exceeding minimum bend radius;
- exceeding pressure rating;
- excessive temperatures;
- excessive torquing of COUPLERS OR EFAs;
- introduction of foreign particles into the UHP;
- flexing near the COUPLER OR EFA of the UHP, and;
- dragging or hauling equipment or other objects with the UHP.

If a failure occurs within the warranty period, Customer must submit the UHP for a warranty evaluation, by contacting *SPIR STAR* at 800-890-7827. Please have the part number of the UHP, the serial number, and the purchase date or sales order number. If the information for the UHP meets the criteria for evaluation, *SPIR STAR* will issue a Returned Goods Authorization ("RGA") number. The UHP may then be returned to *SPIR STAR*, freight prepaid (*SPIR STAR* to choose carrier and type of service). The RGA number must be clearly written on the shipping label and on all documentation submitted by the Customer. Upon receipt of the UHP by *SPIR STAR*, it will be inspected and evaluated to determine the cause of the failure. Upon completion of this evaluation, *SPIR STAR* will decide whether the failure was covered by the Limited Warranty. Please allow approximately 2 weeks for the evaluation. If the failure is covered by the Limited Warranty, *SPIR STAR* will, at its discretion, either replace or repair the UHP at no cost to the Customer or will apportion the cost, on a prorated basis, between itself and the Customer.

**THIS LIMITED WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY TO THE CUSTOMER. *SPIR STAR* MAKES NO OTHER REPRESENTATIONS OR WARRANTIES BY COURSE OF DEALING, USES OF TRADE, OR OTHERWISE, EXPRESSED OR IMPLIED. EXCEPT AS EXPRESSLY STATED BELOW, CUSTOMER HEREBY WAIVES ALL OTHER WARRANTIES, GUARANTEES, CONDITIONS OR LIABILITIES, EXPRESSED OR IMPLIED, ARISING BY LAW OR OTHERWISE, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE UNDER THE UNIFORM COMMERCIAL CODE. ANY WARRANTY CONTAINED HEREIN SHALL NOT BE EXTENDED, ALTERED, OR VARIED EXCEPT BY A WRITTEN INSTRUMENT SIGNED BY *SPIR STAR* AND CUSTOMER.**

8. **Limitation of Remedy:** *SPIR STAR*'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE PRODUCTS SHALL BE LIMITED EXCLUSIVELY TO REPAIR, PRORATION OF THE COST, OR REPLACEMENT, AS DECIDED BY *SPIR STAR*. IN NO EVENT SHALL *SPIR STAR* BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO, LOST PROFITS, CLAIMS FOR BREACH OF WARRANTY, WHETHER EXPRESSED OR IMPLIED, BREACH OF CONTRACT, CLAIMS IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN, STRICT LIABILITY OR DECEPTIVE TRADE PRACTICES ACT VIOLATIONS.

**SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE FOREGOING LIMITATIONS MAY NOT APPLY. THIS LIMITED WARRANTY GIVES THE CUSTOMER SPECIFIC LEGAL RIGHTS AND THE CUSTOMER MAY HAVE OTHER RIGHTS THAT VARY FROM JURISDICTION TO JURISDICTION.**

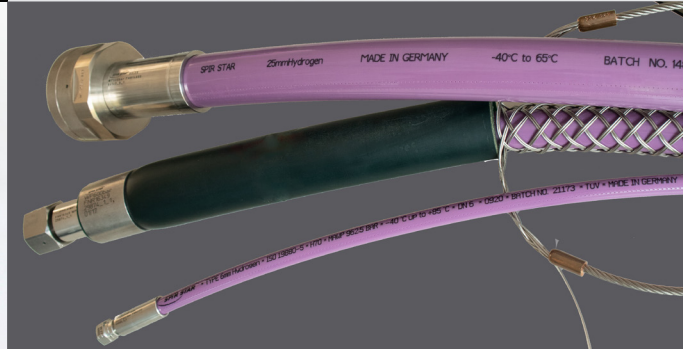
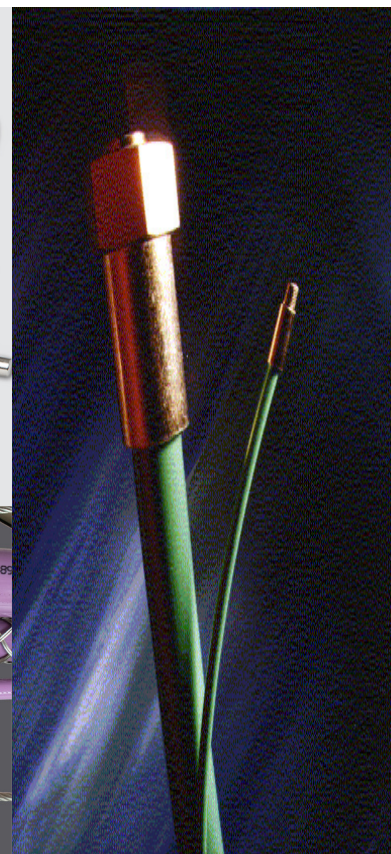
9. **Entire Agreement/Governing Law:** The Terms set forth herein together with any amendments, modifications and any different terms or conditions expressly accepted by *SPIR STAR* in writing, shall constitute the entire agreement concerning the products sold to Customer, and there are no oral or other representations or agreements which pertain thereto. This agreement shall be governed in all respects by the law of the State of Texas.

**SPiR STAR®**

10002 Sam Houston Center Drive  
Houston, Texas 77064

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

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



**High Pressure Performance**  
**Hose | Fittings | Adapters | Quick Disconnects | Valves**  
**Up to 60,000 PSI**

Phone: (281) 664-7800 | Fax: (281) 664-7850  
Toll Free: (800) 890-7827 | Fax: (888) 893-1255

ISO 9001:2015 Certified  
ISO 45001: 2018 Certified

