

**REGISTRATION OF A PRESSURE FITTING DESIGN**

19-Jan-21

TSSA  
345 Carlingview Drive  
Toronto, Ontario  
M9W 6N9**Attention: Tanya Francis****File Number: 11857 [ 0 F ]****Re: Manufacturer: Parker Hannifin Corporation**  
**Item: Needle Valves**  
**Catalog or Drawing: Per Scope of Registration & Catalog 4110-NV**

TSASK Codes and Standards Compliance has registered the design listed above in accordance with The Boiler and Pressure Vessel Act and Regulations and CSA B51. The Canadian Registration Number (CRN) is:

**OC17175.53      Expiry Date: November 20, 2024**

Please note that every fitting shall be constructed in strict accordance with the registered design.

Fitting registrations are required to be resubmitted for validation after ten (10) years from the registration date in accordance with CSA B51, Clause 4.2.1.

Should you require anything further, please do not hesitate to contact the Codes and Standards Compliance Office at your convenience.

Yours truly,

Athan Syrgiannis, P.Eng.  
Codes and Standards Compliance**Remarks:**

A valid quality control program must be maintained at the production facility for the fitting registration to remain valid until the expiry date.

This registration includes the current scope of registration (addition of valve models) as well as the original registered design which was not previously registered in Saskatchewan.

Code of construction: MSS SP-99



Technical Standards and Safety Authority  
345 Carlingview Drive  
Toronto, Ontario M9W 6N9  
www.tssa.org

Show facsimile of manufacturer's logo or trademark, as it will appear on the fitting, in the space below

P

## STATUTORY DECLARATION Registration of Fittings

I, Craig Beckwith, Division General Manager

(Name and Position, e.g. President, Plant Manager, Chief Engineer)

of Parker Hannifin Corporation, Instrumentation Products Division

(Name of Manufacturer)

Located at 1005 A Cleaner Way, Huntsville, Alabama, USA 35805

(Plant Address)

256-881-2040

(Telephone No.)

(Fax No.)

☐ do solemnly declare that the fittings listed hereunder, which are subject to the **Technical Standards and Safety Act**, Boilers and Pressure Vessels Regulation, comply with all of the requirements of

(Title of recognized North American Standard)

which specifies the dimensions, materials of construction, pressure/temperature ratings, identification marking the fittings and service;

☒ or are not covered by the provisions of a recognized North American standard and are therefore manufactured to comply with MSS SP-99 as supported by the attached data which identifies the dimensions, material of construction, pressure/temperature ratings and the basis for such ratings, the marking of the fitting for identification and service.

I further declare that the manufacture of these fittings is controlled by a quality system meeting the requirements of ISO 9001:2015 which has been verified by the following authority, DNV-GL.

The items covered by this declaration, for which I seek registration, are category C type fittings. In support of this application, the following information and/or test data are attached as follows:

Scope of Registration with Attachments for the Addition of the U16 Union Bonnet Valve to 0C17175.5

(drawings, calculations, test reports, etc.)

Declared before me at Huntsville in the State of Alabama

the 6<sup>th</sup> day of May AD 2020.

Commissioner for Oaths:

Sheri Coggan  
(Printed name)

Sheri Coggan  
(Signature)

[Signature]  
(Signature of Declarer)

### FOR OFFICE USE ONLY

To the best of my knowledge and belief, the application meets the requirements of the **Technical Standards and Safety Act**, Boilers and Pressure Vessels Regulation, and CSA Standard B51 and is accepted for registration in Category \_\_\_\_\_.

CRN: \_\_\_\_\_

Registered by: \_\_\_\_\_

Dated: \_\_\_\_\_

 <b>Technical Safety Authority</b> of Saskatchewan	
Registration No.	<u>0C17175.53</u>
File No.	<u>11857</u>
<div>Registered</div>	
Date:	<u>January 19, 2021</u>
Expiry Date:	<u>November 20, 2024</u>
Codes & Standards Compliance Office	

**NOTE:** This registration expires on: \_\_\_\_\_

\*Information provided in this application is releasable under the Freedom of Information and Privacy Protection Act and may be disclosed upon request.

## Registration Scope

Parker Hannifin  
Instrumentation Products Division

Catalog 4110-NV, May 2019, Pages 8-11  
U Series Needle Valves

Based on the following summary, we seek an addition to the existing registration (OC17175.5) for the attached scope (addition highlighted in yellow).

Series/Model	Size	Body Style	CWP	Body Material	Trim
U6A	3/8"	Angle	6000 psi	ASTM A182, Type F316	ASTM A479, Type 316
U6L	3/8"	Linear	6000 psi	ASTM A182, Type F316	ASTM A479, Type 316
U12A	3/4"	Angle	6000 psi	ASTM A182, Type F316	ASTM A479, Type 316
U12L	3/4"	Linear	6000 psi	ASTM A182, Type F316	ASTM A479, Type 316
U16A	1"	Angle	6000 psi	ASTM A182, Type F316	ASTM A479, Type 316
U16L	1"	Linear	6000 psi	ASTM A182, Type F316	ASTM A479, Type 316

## Summary

**Table 1: Summary Table for the LC Series Check Valves**

Main Pressure Bearing Component	Main Pressure Bearing Material (Standard)	Port Connections and Sizes	Pressure Rating	Design Code of Construction
Body (U16)	ASTM A182, Type F316	Refer to End Connection in Table 2 below	6,000 psi CWP	MSS-SP-99

Table 2 below shows the valve part number description from the catalog for the U series needle valves.

For this valve there are two valve bodies (U#A and U#L) available only in one material (ASTM A182 Type F316). The valve is available three sizes designated as U6, U12, and U16 in the part number. The minimum wall thickness for all valves in this line regardless of port connection is at the undercut of the bonnet thread on the valve body. The inlet and outlet port options all have wall thicknesses greater than the valve body minimum. The stem type and packing material do not affect the valve minimum wall.



**Technical  
Safety Authority  
of Saskatchewan**

Registration No. OC17175.53

File No. 11857

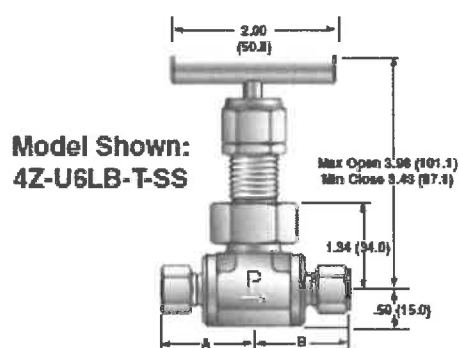
Registered

Date: January 19, 2021

Expiry Date: November 20, 2024

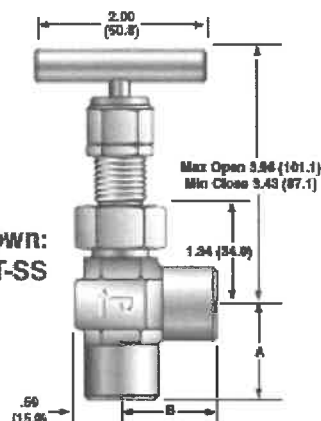
Codes & Standards Compliance Office

**Table 2: Dimensions and End Connections**



Panel Hole Diameter:  
0.55 (14.5)  
Max Panel Thickness:  
0.42 (10.7)

**Model Shown:**  
**4F-U6AR-T-SS**



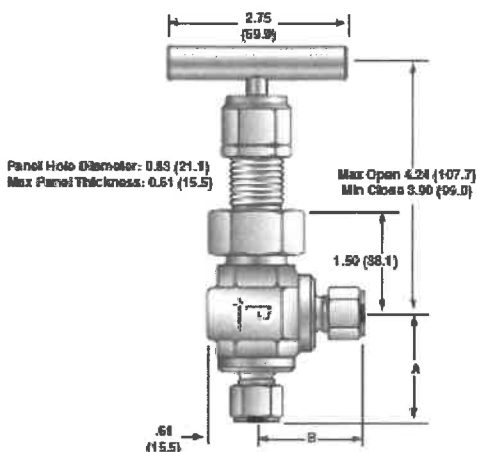
( ) Denotes dimensions in millimeters

Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions	
Inline	Angle	Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		At and B†	
					Inch	mm	$C_v$	$X_T^*$	$C_v$	$X_T^*$	Inch (mm)	
4A-U6LR-T-SS	4A-U6AR-T-SS	1/4" Compression A-LOK®		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	
4A-U6LB-T-SS	4A-U6AB-T-SS			Blunt			0.65	0.48	0.86	0.40	(35.1)	
4F-U6LR-T-SS	4F-U6AR-T-SS	1/4" Female NPT		Regulating	0.226	5.8	0.78	0.95	1.04	0.80	1.03	
4F-U6LB-T-SS	4F-U6AB-T-SS			Blunt			0.82	0.59	1.09	0.50	(26.2)	
4W-U6LR-T-SS	4W-U6AR-T-SS	1/4" Socket Weld		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	.91	
4W-U6LB-T-SS	4W-U6AB-T-SS			Blunt			0.65	0.48	0.86	0.40	(23.1)	
4Z-U6LR-T-SS	4Z-U6AR-T-SS	1/4" Compression CPI™		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	
4Z-U6LB-T-SS	4Z-U6AB-T-SS			Blunt			0.65	0.48	0.86	0.40	(35.1)	
M6A-U6LR-T-SS	M6A-U6AR-T-SS	6mm Compression A-LOK®		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	
M6A-U6LB-T-SS	M6A-U6AB-T-SS			Blunt			0.65	0.48	0.86	0.40	(35.1)	
M6Z-U6LR-T-SS	M6Z-U6AR-T-SS	6mm Compression CPI™		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	
M6Z-U6LB-T-SS	M6Z-U6AB-T-SS			Blunt			0.65	0.48	0.86	0.40	(35.1)	
M8A-U6LR-T-SS	M8A-U6AR-T-SS	8mm Compression A-LOK®		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	
M8A-U6LB-T-SS	M8A-U6AB-T-SS			Blunt			0.65	0.48	0.86	0.40	(35.1)	
M8Z-U6LR-T-SS	M8Z-U6AR-T-SS	8mm Compression CPI™		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	
M8Z-U6LB-T-SS	M8Z-U6AB-T-SS			Blunt			0.65	0.48	0.86	0.40	(35.1)	

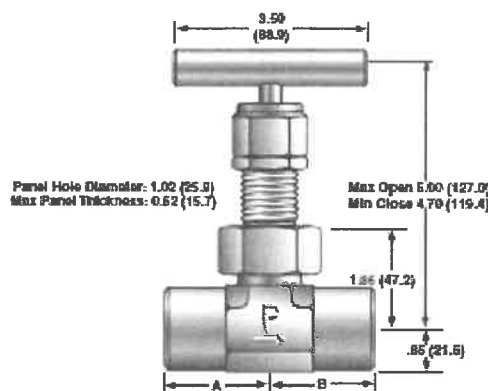
\* Tested in accordance with ISA S75.02. Gas flow will be choked when  $P_2 - P_1 / P_1 = X_T$ .

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Dimensions in inches/millimeters are for reference only, subject to change.



Model Shown: 8A-U12AB-T-SS



Model Shown: 16F-U16LB-G-SS-HT

( ) Denotes dimensions in millimeters

Basic Part Number		End Connections		Stem Type	Flow Data					Dimensions	
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle	At and B†	
Inline	Angle				Inch	mm	C <sub>v</sub>	X <sub>T</sub> *	C <sub>v</sub>	X <sub>T</sub> *	Inch (mm)
4F-U12LR-T-SS	4F-U12AR-T-SS	1/4" Female NPT		Regulating	0.250	6.4	0.94	0.65	1.25	0.55	1.13
4F-U12LB-T-SS	4F-U12AB-T-SS			Blunt			1.03	0.60	1.37	0.51	(28.7)
6A-U12LR-T-SS	6A-U12AR-T-SS	3/8" Compression A-LOK®		Regulating	0.187	4.7	0.69	0.61	0.92	0.52	1.60
6A-U12LB-T-SS	6A-U12AB-T-SS			Blunt			0.77	0.50	1.02	0.42	(40.6)
6F-U12LR-T-SS	6F-U12AR-T-SS	3/8" Female NPT		Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.30
6F-U12LB-T-SS	6F-U12AB-T-SS			Blunt			1.31	0.80	1.74	0.68	(33.0)
6W-U12LR-T-SS	6W-U12AR-T-SS	3/8" Tube Socket Weld		Regulating	0.228	5.8	0.85	0.64	1.13	0.54	1.13
6W-U12LB-T-SS	6W-U12AB-T-SS			Blunt			0.94	0.57	1.25	0.48	(28.7)
6Z-U12LR-T-SS	6Z-U12AR-T-SS	3/8" Compression CPI™		Regulating	0.187	4.7	0.69	0.61	0.92	0.52	1.60
6Z-U12LB-T-SS	6Z-U12AB-T-SS			Blunt			0.77	0.50	1.02	0.42	(40.6)
8A-U12LR-T-SS	8A-U12AR-T-SS	1/2" Compression A-LOK®		Regulating	0.250	6.4	0.94	0.65	1.25	0.55	1.49
8A-U12LB-T-SS	8A-U12AB-T-SS			Blunt			1.03	0.60	1.37	0.51	(37.8)
8F-U12LR-T-SS	8F-U12AR-T-SS	1/2" Female NPT		Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.50
8F-U12LB-T-SS	8F-U12AB-T-SS			Blunt			1.31	0.80	1.74	0.68	(38.1)
8W-U12LR-T-SS	8W-U12AR-T-SS	1/2" Tube Socket Weld		Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.25
8W-U12LB-T-SS	8W-U12AB-T-SS			Blunt			1.31	0.80	1.74	0.68	(31.8)
8Z-U12LR-T-SS	8Z-U12AR-T-SS	1/2" Compression CPI™		Regulating	0.250	6.4	0.94	0.65	1.25	0.55	1.49
8Z-U12LB-T-SS	8Z-U12AB-T-SS			Blunt			1.03	0.60	1.37	0.51	(37.8)
M10A-U12LR-T-SS	M10A-U12AR-T-SS	10mm Compression A-LOK®		Regulating	0.250	6.4	0.94	0.65	1.25	0.55	1.53
M10A-U12LB-T-SS	M10A-U12AB-T-SS			Blunt			1.03	0.60	1.37	0.51	(38.9)
M10Z-U12LR-T-SS	M10Z-U12AR-T-SS	10mm Compression CPI™		Regulating	0.250	6.4	0.94	0.65	1.25	0.55	1.53
M10Z-U12LB-T-SS	M10Z-U12AB-T-SS			Blunt			1.03	0.60	1.37	0.51	(38.9)
M12A-U12LR-T-SS	M12A-U12AR-T-SS	12mm Compression A-LOK®		Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.70
M12A-U12LB-T-SS	M12A-U12AB-T-SS			Blunt			1.31	0.80	1.74	0.68	(43.2)
M12Z-U12LR-T-SS	M12Z-U12AR-T-SS	12mm Compression CPI™		Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.70
M12Z-U12LB-T-SS	M12Z-U12AB-T-SS			Blunt			1.31	0.80	1.74	0.68	(43.2)

\* Tested in accordance with ISA S75.02. Gas flow will be choked when  $P_2 / P_1 = X_T$ .

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Dimensions in inches/millimeters are for reference only, subject to change.

Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions
Inline	Angle	Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A† and B†
					Inch	mm	Cv	X1*	Cv	X1*	Inch (mm)
8A-U16LR-T-SS	8A-U16AR-T-SS	1/2" Compression A-LOK*		Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.97
8A-U16LB-T-SS	8A-U16AB-T-SS			Blunt			1.90	0.95	2.53	0.81	(50.0)
8F-U16LR-T-SS	8F-U16AR-T-SS	1/2" Female NPT		Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.56
8F-U16LB-T-SS	8F-U16AB-T-SS			Blunt			2.67	0.80	3.55	0.68	(39.6)
8PSW-U16LR-T-SS	8PSW-U16AR-T-SS	1/2" Pipe Socket Weld		Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.56
8PSW-U16LB-T-SS	8PSW-U16AB-T-SS			Blunt			2.67	0.80	3.55	0.68	(39.6)
8W-U16LR-T-SS	8W-U16AR-T-SS	1/2" Tube Socket Weld		Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.69
8W-U16LB-T-SS	8W-U16AB-T-SS			Blunt			1.90	0.95	2.53	0.81	(42.9)
8Z-U16LR-T-SS	8Z-U16AR-T-SS	1/2" Compression CPI™		Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.97
8Z-U16LB-T-SS	8Z-U16AB-T-SS			Blunt			1.90	0.95	2.53	0.81	(50.0)
12A-U16LR-T-SS	12A-U16AR-T-SS	3/4" Compression A-LOK*		Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97
12A-U16LB-T-SS	12A-U16AB-T-SS			Blunt			2.67	0.80	3.55	0.68	(50.0)
12F-U16LR-T-SS	12F-U16AR-T-SS	3/4" Female NPT		Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.63
12F-U16LB-T-SS	12F-U16AB-T-SS			Blunt			2.67	0.80	3.55	0.68	(41.4)
12PSW-U16LR-T-SS	12PSW-U16AR-T-SS	3/4" Pipe Socket Weld		Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.56
12PSW-U16LB-T-SS	12PSW-U16AB-T-SS			Blunt			2.67	0.80	3.55	0.68	(39.6)
12W-U16LR-T-SS	12W-U16AR-T-SS	3/4" Tube Socket Weld		Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.56
12W-U16LB-T-SS	12W-U16AB-T-SS			Blunt			2.67	0.80	3.55	0.68	(39.6)
12Z-U16LR-T-SS	12Z-U16AR-T-SS	3/4" Compression CPI™		Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97
12Z-U16LB-T-SS	12Z-U16AB-T-SS			Blunt			2.67	0.80	3.55	0.68	(50.0)
16A-U16LR-T-SS	16A-U16AR-T-SS	1" Compression A-LOK*		Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97
16A-U16LB-T-SS	16A-U16AB-T-SS			Blunt			2.67	0.80	3.55	0.68	(50.0)
16F-U16LR-T-SS	16F-U16AR-T-SS	1" Female NPT		Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.81
16F-U16LB-T-SS	16F-U16AB-T-SS			Blunt			2.67	0.80	3.55	0.68	(46.0)
16Z-U16LR-T-SS	16Z-U16AR-T-SS	1" Compression CPI™		Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97
16Z-U16LB-T-SS	16Z-U16AB-T-SS			Blunt			2.67	0.80	3.55	0.68	(50.0)
M12A-U16LR-T-SS	M12A-U16AR-T-SS	12mm Compression A-LOK*		Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.97
M12A-U16LB-T-SS	M12A-U16AB-T-SS			Blunt			1.90	0.95	2.53	0.81	(50.0)
M12Z-U16LR-T-SS	M12Z-U16AR-T-SS	12mm Compression CPI™		Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.97
M12Z-U16LB-T-SS	M12Z-U16AB-T-SS			Blunt			1.90	0.95	2.53	0.81	(50.0)

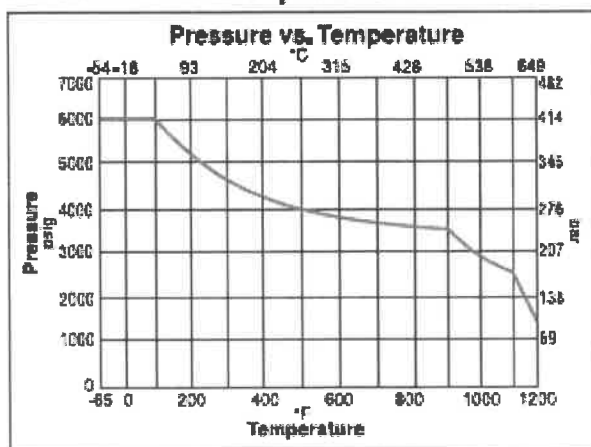
\* Tested in accordance with ISA S75.02. Gas flow will be choked when  $P_1 - P_2 / P_1 = X_T$ .

† For CPI™ and A-LOK\*, dimensions are measured with nuts in the finger tight position.

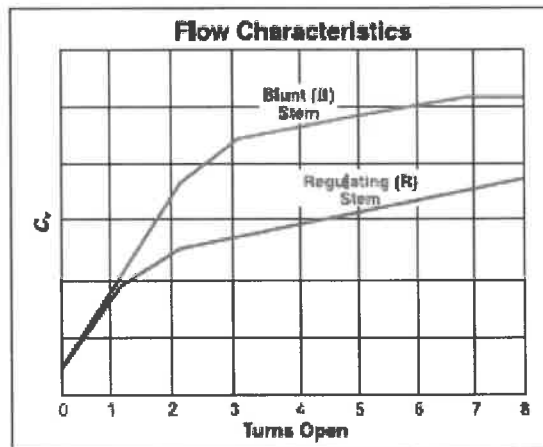
Dimensions in inches/millimeters are for reference only, subject to change.

The Pressure and Temperature curves are shown below.

### Pressure vs. Temperature



### Flow Characteristics



## Specifications

**Pressure Rating:**  
6000 psig (414 bar) CWP

**Temperature Rating:**  
PTFE packing:  
-65°F to 450°F (-54°C to 232°C)  
Grafoil® packing:  
-65°F to 700°F (-54°C to 371°C)  
Grafoil® packing with HT option:  
-65°F to 1200°F (-54°C to 649°C)

**Orifice:** .177" to .437" (4.5mm to 11.1mm)

**Cv:** .53 to 3.55

The Cold Working Pressure (CWP) is established by burst testing in accordance with MSS SP-105.

A diagram of the components and the materials of constructions are provided below.

### Exhibit 1: Diagram of the Components and the Materials of Construction

#### Materials of Construction

Item #	Description	Material
*1	Body	ASTM A 182, Type F316
2	Bonnet Nut	ASTM A 479, Type 316
*3	Bonnet	ASTM A 479, Type 316
*4	Lower Stem*	ASTM A 564, Type 630
5	Upper Stem	ASTM A 564, Type 630
6	Stem Guide	ASTM A 581, Type 416
7	Ball	440-C Stainless Steel
*8	Bonnet Seal**	Nickel-Chromium-Iron Alloy
9	Packing Nut	ASTM A 479, Type 316
*10	Packing***	Grafoil®
*11	Packing Washer	316 Stainless Steel
12	Handle****	Aluminum
13	Handle Screw	316 Stainless Steel
14	Dust Seal*****	Nylon 6/6
15	Locking Nut	Stainless Steel

\* Wetted parts

\* Lower Stem material is ASTM A 276 Type 316 with HT option

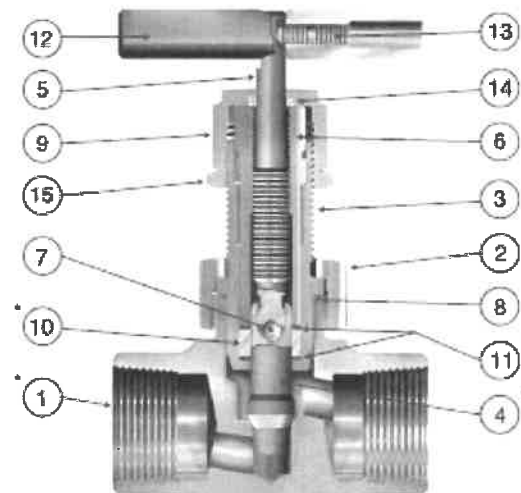
\*\* Not required on U6 and U12 Series which have metal-to-metal seals

\*\*\* Optional PTFE Packing is available

\*\*\*\* Handle material is stainless steel with HT option

\*\*\*\*\* Dust Seal not available with HT option

Lubrication: Molybdenum disulfide with soft metallic fillers



Model Shown: 16F-U16LR-G-SS

### Quality System

Parker Hannifin Instrumentation Products Division's quality management system complies with the requirements of ISO 9001:2015. A copy of the current DNV-GL certificate is included in this submission.

