345 Carlingview Drive
Toronto, Ontario M9W 6N9
Tel.: 416.734.3300
Fax: 416.231.1626
Toll Free: 1.877.682.8772

www.tssa.org

September 22, 2020

LAURA VEAL
PARKER HANNIFIN - INSTRUMENTATION PRODUCTS DIVISION
1005 A CLEANER WAY
HUNSTVILLE AL 35805
US

Service Request Type: BPV-Fitting Registration
Service Request No.: 2912998
Your Reference No.:
Registered to: PARKER HANNIFIN - INSTRUMENTATION PRODUCTS DIVISION

Dear LAURA VEAL,

Technical Standards and Safety Authority (TSSA) is pleased to inform you that your submission has been reviewed and registered as follows:

CRN No.: 0C17175.5ADD1
Main Design No.: Addition of U16 Union Bonet Valve (see Registration Scope attached to the Statutory Declaration)

Expiry Date: 20-Nov-2024

Please be advised that a valid quality control system must be maintained for the fitting registration to remain valid until the expiry date.

A stamped copy of the approved registration and invoice for engineering services will be sent to you shortly. Should you have any questions or require further assistance, however, please contact a Customer Service Advisor at 1.877.682.TSSA (8772) or e-mail customerservices@tssa.org. We will be happy to assist you. When contacting TSSA regarding this file, please refer to the Service Request number provided above.

Yours truly,

Zivko Gacevic P. Eng.
Mechanical Engineer, BPV
Tel.: 416-734-3429
Fax: 416-231-6183
Email: zgacevic@tssa.org

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 256-881-2040
(Plant Address) *(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 6th **day of** May **AD 2020**.

Commissioner for Oaths:

Sheri Coggan
(Printed name)

Sheri Coggan
(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 'C'.

CRN: _____

Registered by: _____

Dated: _____

This Document has been digitally signed and approved.
The stamp size has been optimized for 11 x 17 documents.

NOTE: This registration expires on: Nov, 20, 2024

Technical Standards and Safety Authority
Boilers and Pressure Vessels Safety Program

REGISTERED

C.R.N.: 0C17175.5ADD1
Signed: Jacinc Zuk
Date: September 22, 2020.

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

RV 09553 (04/17)

Note: See attached Registration Scope

Parker Hannifin Corporation
Instrumentation Products Division

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 (0C17175.5) 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

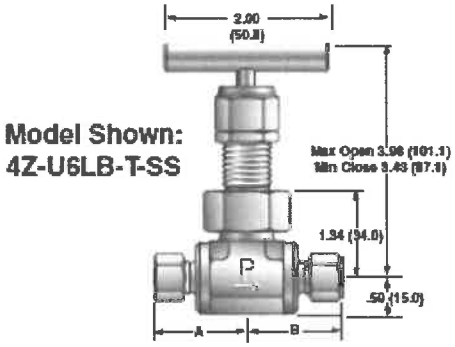
Table 1: Summary Table for the LC Series Check Valves

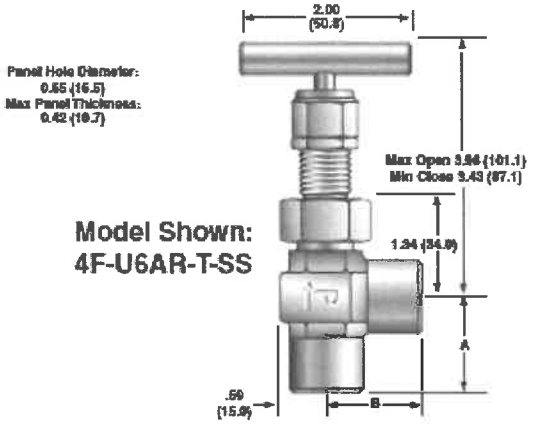
Main Pressure Bearing Component	Main Pressure Bearing Material (Standard)	Port Connections and Sizes	Pressure Rating	Design Code of Construction
Body (U16)	ASTM A182, Type F316	Refer to End Connection in Table 2 below	6,000 psi CWP	MSS-SP-99

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.

Table 2: Dimensions and End Connections



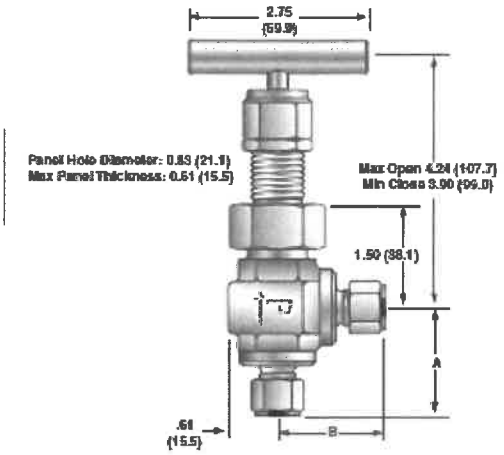


( ) Denotes dimensions in millimeters

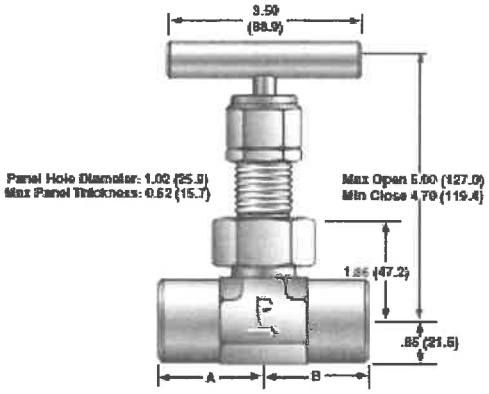
Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions
					Orifice		Inline		Angle		At and Bt
Inline	Angle	Inlet (Port 1)	Outlet (Port 2)		inch	mm	C_V	X_T*	C_V	X_T*	inch (mm)
4A-U6LR-T-SS	4A-U6AR-T-SS	1/4" Compression A-LOK®		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38
4A-U6LB-T-SS	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	0.228	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 $P_3 - P_2 / P_1 = X_T$.
† 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.



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
					Orifice		Inline		Angle		A† and B†
Inline	Angle	Inlet (Port 1)	Outlet (Port 2)		Inch	mm	C_V	X_T*	C_V	X_T*	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 $P_1 - P_2 / P_1 = X_T$.
† 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.

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Boilers and Pressure Vessels Safety Program

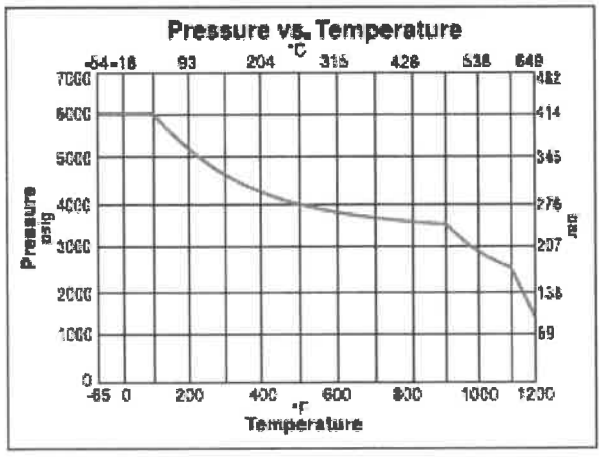
Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions
					Orifice		Inline		Angle		A† and B†
Inline	Angle	Inlet (Port 1)	Outlet (Port 2)		Inch	mm	C_V	X_T*	C_V	X_T*	Inch (mm)
8A-U16LR-T-SS	8A-U16AR-T-SS	1/2" Compression A-LOK®		Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.97
8A-U16LB-T-SS	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.

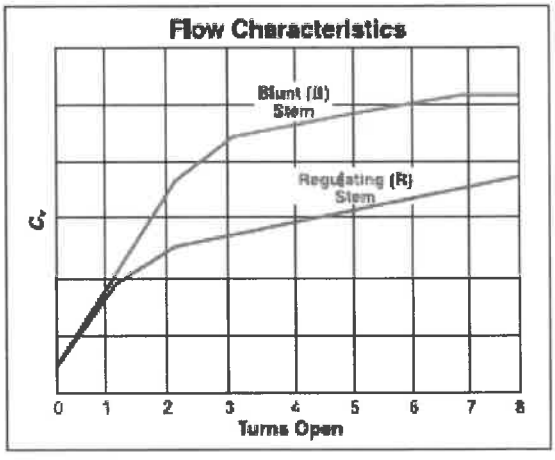
Dimensions in inches/millimeters are for reference only, subject to change.

The Pressure and Temperature curves are shown below.

Pressure vs. Temperature



Flow Characteristics



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Boilers and Pressure Vessels Safety Program

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)

C_V: .53 to 3.55

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

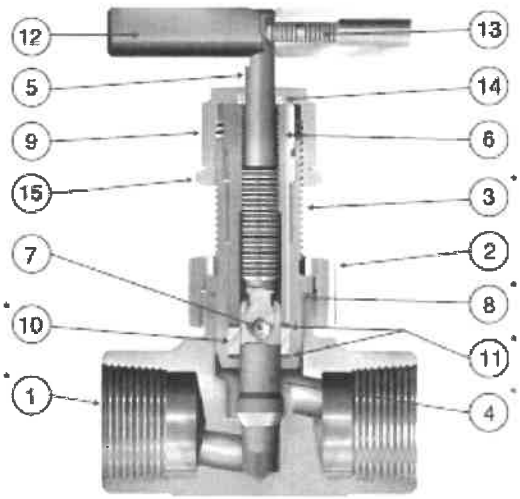
A diagram of the components and the materials of constructions are provided below.

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.