



Needle Valves

Catalog 4110-NV

June 2019

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



ENGINEERING YOUR SUCCESS.

Introduction

Parker U Series Union Bonnet Valves have been engineered for use at pressures up to 6,000 (414 bar) and temperatures as high as 1,200°F (649°C). A non-rotating lower stem helps to extend packing life by removing rotation from the packing area. Stem packing below the threads isolates the thread lubricant from the flow, ensuring adequate lubrication regardless of the media.

Features

- ▶ Union bonnet design ensures high integrity seal under severe service applications
- ▶ Packing below the power threads protects thread lubricants from media and isolates the lubricants from the media
- ▶ Dust seal in the packing nut protects stem threads from external contamination
- ▶ Stem swivel above the packing eliminates entrapment area and increases packing life
- ▶ Choice of Grafoil® or PTFE packing
- ▶ Choice of Regulating or Blunt stem types. Blunt stem type helps combat wire draw which may occur when two phase flow is present (i.e. steam service)
- ▶ 316 stainless steel construction
- ▶ Wide variety of US Customary and SI ports
- ▶ Panel mountable
- ▶ 100% factory tested

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

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)

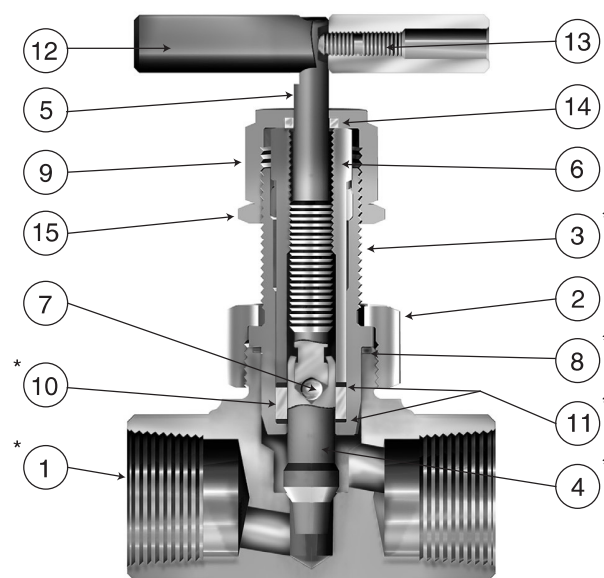
Orifice: .177" to .437" (4.5mm to 11.1mm)

Cv: .53 to 3.55

Pressure Rating and Tubing Selection:

For working pressures of A-LOK® and CPI™ tube connections, please see the Instrument Tubing Selection Guide (Bulletin 4200-TS), found in the Technical Section of the Parker Instrumentation Products Master Binder, or the Parker Instrument Tube Fitting Installation Manual (Bulletin 4200-B4).

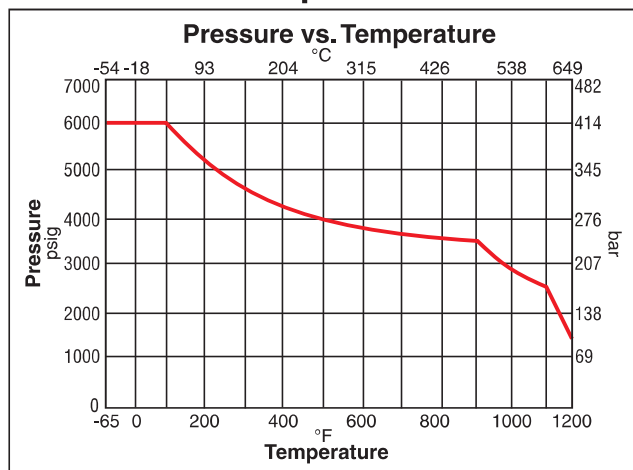
For working pressures of valves with external or internal pipe threads, please see Catalog 4260, Instrumentation Pipe Fittings.



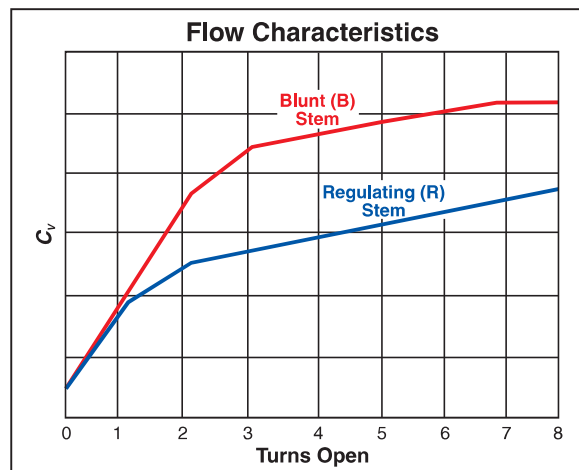
Model Shown: 16F-U16LR-G-SS

Grafoil® is a registered trademark GrafTech International Holdings, Inc.

Pressure vs. Temperature

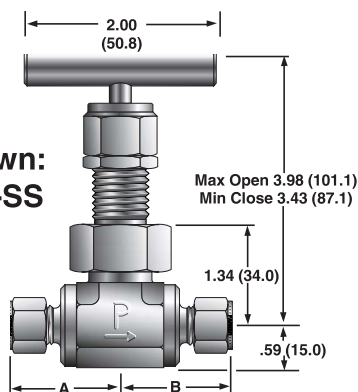


Flow Characteristics



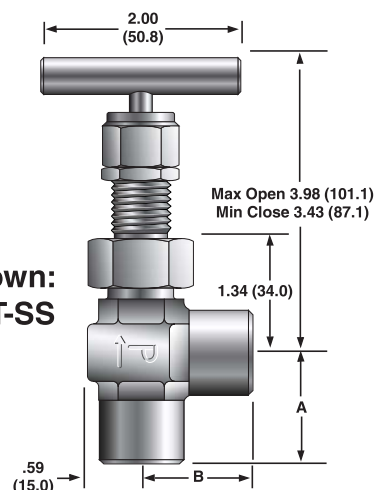
Dimensions / Flow Data

Model Shown:
4Z-U6LB-T-SS



Panel Hole Diameter:
0.65 (16.5)
Max Panel Thickness:
0.42 (10.7)

Model Shown:
4F-U6AR-T-SS



() Denotes dimensions in millimeters

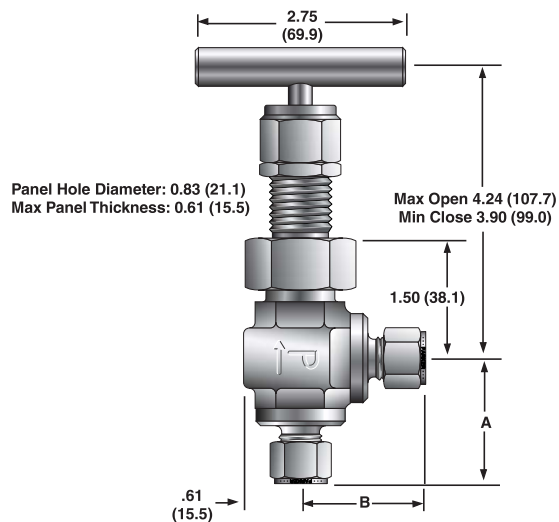
Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A† and B†
Inline	Angle				Inch	mm	C _V	X _T *	C _V	X _T *	Inch (mm)
4A-U6LR-T-SS	4A-U6AR-T-SS	1/4" Compression A-LOK®	Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	
4A-U6LB-T-SS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

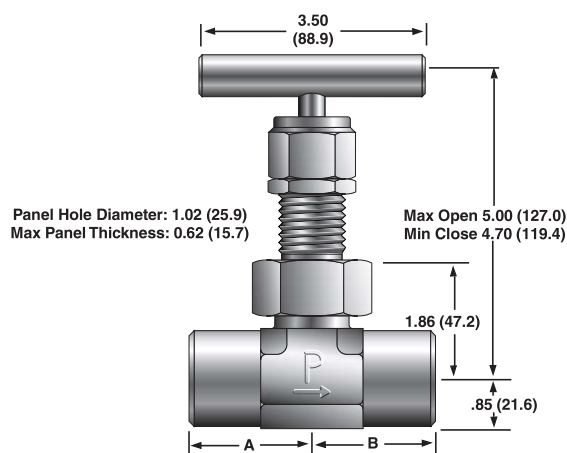
† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

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

Dimensions / Flow Data



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	
Inline	Angle	Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A† and B†
					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.

Dimensions / Flow Data

Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A† and B†
Inline	Angle				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.

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How to Order Options

Grafoil™ Packing - replace -T with -G for 700°F Temperature capability.

High Temperature - Add the suffix -HT for 1200°F Temperature capability. **Example** : 4M-U6LB-G-SS-HT

Oxygen Cleaning - Add the suffix -C3. **Example**: 8A-U12LR-T-SS-C3.

ASME B31.1 Compliant Valves – Add the suffix -QC311. **Example**: 8F-U12LR-G-SS-QC311

How to Order Maintenance Kits

Stainless Steel T-Bar Handles with Handle Screw – **Examples**: U16-BAR-HANDLE-SS

Aluminum T-Bar Handles with Handle Screw – **Examples**: U12-BAR-HANDLE-AL

Panel Mounting Nuts – **Examples**: U6-LOCKNUT

PTFE Packing Kits – **Example**: KIT-U12-T

Grafoil® Packing Kits – **Example**: KIT-U16-G

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