CPI™/A-LOK® Tube Fittings and Instrumentation Valves

Catalog 4200-PC

August 2023

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

Parker

ENGINEERING YOUR SUCCESS.

CPI™/A-LOK® Tube Fittings Pocket Catalog (Catalog 4200-PC)

This pocket catalog provides a representation of our imperial size products only. For more complete information on these products and our metric offerings, please refer to the appropriate full-line catalogs as shown on pages 20-21.

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FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

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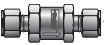

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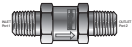

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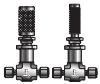

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For metric fittings and additional thread types, please see Catalog 4230/4233.

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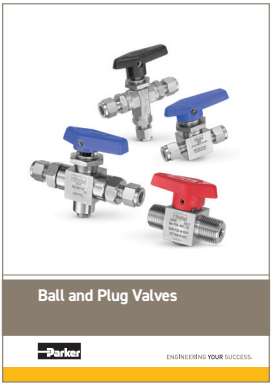

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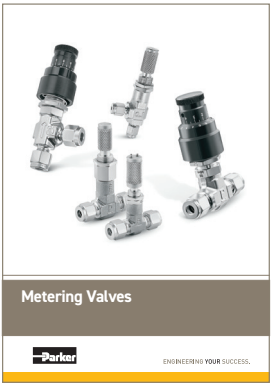

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For metric fittings and additional thread types, please see Catalog 4230/4233.

Introduction

Parker CPI™/A-LOK® Instrumentation Tube Fittings are designed as leak-free connections for process, power and instrumentation applications. These single and two ferrule fittings are manufactured to the highest quality standards and are available in a broad range of sizes, materials and configurations.

Features

The Parker CPI™/A-LOK® tube fitting has been specifically designed for use on instrumentation, process and control systems, analyzers and environmental equipment employed in chemical, petroleum, power generating and pulp and paper plants. CPI™/A-LOK® fittings have also been used extensively in other applications and industries wherever high reliability and quality are required.

Materials

Parker CPI™/A-LOK® fittings are available as standard in Heat Code Traceable, 316 stainless steel. Other materials include steel, brass, aluminum, nickel-copper, Hastelloy C®, Alloy 600, Titanium, 6Mo, Incoloy 625 and 825. The raw materials used fully conform to the chemical requirements listed in Table 3. For nuclear and other critical applications, stainless steel CPI™/A-LOK® fittings are readily available with documented heat code traceability.

Pipe Fittings/Adapters

Parker CPI™/A-LOK® tube fittings are available in combination with a variety of ISO and ANSI pipe thread configurations. For a full listing of these fittings, see Catalog 4260.

Tubing

Parker CPI™/A-LOK® tube fittings can be used with a wide variety of tubing materials and a broad range of tube wall thicknesses. CPI™/A-LOK® seals equally well on both thin wall and heavy wall tubing. Tubing and fitting materials should be selected to be compatible with the fluid media. Due to thermal expansion characteristics and chemical stability, the tubing should be of the same material as the fitting. (The exception is brass fittings and copper tubing.)

Torque

Parker CPI™/A-LOK® tube fittings do not twist the tubing during installation. CPI™/A-LOK® ferrule designs assure that all make and remake motion is transmitted axially to the tubing. Since no radial movement of the tubing occurs, the tubing is not stressed. The mechanical integrity of the tubing is maintained.

No Distortion

In make-up, there is no undue force in an outward direction to distort the fitting body or ferrules to cause interference between the ferrules and nut. This assures that the nut will back-off freely for disassembly and permits a greater number of easy remakes.

Sealing

Positive, reliable connections with Parker CPI™/A-LOK® fittings have been qualified by exhaustive tests and over four decades of experience in the manufacture of quality tube fittings.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Introduction

Nomenclature

Parker CPI™/A-LOK® fitting part numbers are constructed from symbols that identify the size and style of the fitting and material used.

Assembly, Remake, Gaugeability

Proper assembly is the key component to a leak-free system CPI™/A-LOK® tube fitting assembly, remake and gaugeability instructions found on pages 26-29 of this catalog.

Pressure Rating & Tubing Selection

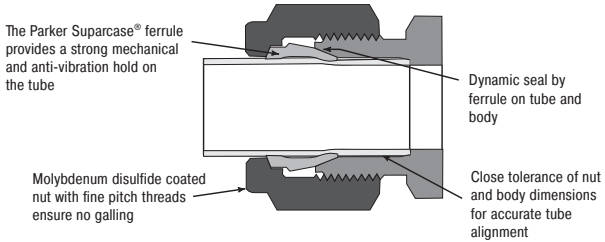
For working pressures of CPI™/A-LOK® tube connections, please see pages 33-37 of this catalog, the Instrument Tubing Selection Guide (4200-TS) found in the Technical Section of your Parker Instrumentation Products Process Binder, or the Parker Instrument Tube Fitting Installation Manual (Bulletin 4200-B4).

In cases where a male or female pipe thread is the second end of a Parker CPI™/A-LOK® fitting, such threads may be the pressure limiting factor of the tubing system. Pressure ratings for Pipe Ends are shown on pages 40-41.

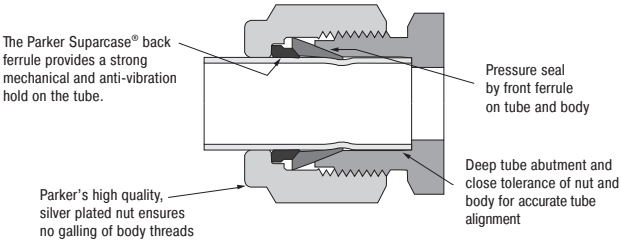
Instrumentation Products Division
Division Headquarters
Huntsville, Alabama, USA

The Parker CPI™/A-LOK® fittings consists of precision engineered parts designed to provide secure leak-proof joints capable of satisfying high pressure, vacuum and vibration applications.

CPI™ Single Ferrule Fitting



A-LOK® Double Ferrule Fitting



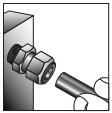
Parker Instrumentation Tube Fittings are supplied complete and ready to use. The ferrule(s) swage onto the tube as it moves down the body seat creating a pressure/vacuum-tight seal on both tube and body by the interface pressure and surface finish of mating components. The Parker Suparcase® ferrule (back-ferrule only on A-LOK®) creates a strong mechanical hold on the tube.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Assembly & Remake Instructions

Assembly

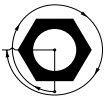
1. Parker instrument tube fittings are sold completely assembled and ready for immediate use. Simply insert the tube as illustrated below until it bottoms in the fitting body. (If the fitting is disassembled, note that the small tapered end of the ferrule(s) go into the fitting body.)



2. Tighten nut finger tight. Then tighten nut with wrench an additional 1/4 to 1-1/4 turns identified below and illustrated in Table 1. Hold fitting body with a second wrench to prevent body from turning. It is helpful to mark the nut to facilitate counting the number of turns.

For Sizes above 16 (1"), the Parker IPD Ferrule Presetting Tool must be used. Please see Bulletin 4200-B4 or Catalog 4290-INST for additional details.

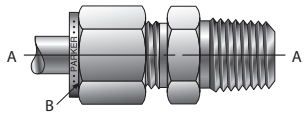
Table 1: Turns from Finger Tight

Description	Size	Wrench Tighten	Illustration
Tube Fittings	Inch Size 1 thru 3 (1/16" - 3/16") Metric Size 2 thru 4 (2-4mm)	3/4 turn from finger tight	
	Inch Size 4 thru 16 (1/4" - 1") Metric Size 6 thru 25 (6-25mm)	1-1/4 turns from finger tight	
Tube Plugs (FNZ/BLP)		1/4 turn from finger tight	
Port Connector (ZPC/PC)	Machined ferrule end only	1/4 turn from finger tight	

Remake

For maximum number of remakes, mark the fitting and nut before disassembly as indicated by "A" below. Before re-tightening, make sure the assembly has been inserted into the fitting until the ferrule seats in the fitting. Re-tighten the nut by hand. Rotate the nut with a wrench to the original position as indicated by the previous marks lining up. (A noticeable increase in mechanical resistance will be felt indicating the ferrule is being re-sprung into sealing position.)

Only after several remakes will it become necessary to advance the nut slightly past the original position. This advance (indicated by B in the illustration) need only be 10° - 20° (less than 1/3 of a hex flat).



Parker CPI™ / A-LOK® Fittings on Plastic Tubing

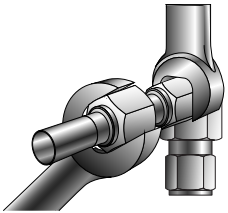
Parker CPI™ / A-LOK® Instrument Fittings can be successfully used on any of the following plastic tubing: nylon, polyethylene, polypropylene, PTFE, or vinyl. Normal make-up instructions should be followed, (1-1/4 turns from finger tight) sizes 4 thru 16 (3/4 turn from finger tight for size 3" or below) and a properly-sized insert should be used when required. (Please refer to *CPI™ /A-LOK® Catalog 4230/4233* for insert details). The use of the insert is dependent upon tubing O.D. Tubing 1/2" O.D. and above requires an insert. Softness of the tubing is another guideline for the use of an insert. Tubing that is soft enough to be easily pinched closed with your fingers will require an insert no matter what the O.D. may be.

For metric fittings and additional thread types, please see Catalog 4230/4233.

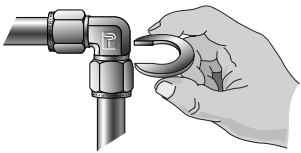
Assembly & Remake Instructions

Gaugeability Instructions*

1. From “finger tight” position, wrench 1-1/4 turns for 1/4” to 1” size fittings (6mm to 25mm) (1/16”, 1/8”, 3/16”, 2mm, 3mm and 4mm size tube fittings only wrench 3/4 turn from finger tight position). Hold fitting body hex with second wrench to prevent body from turning as you tighten. It is a good idea to mark the nut (scribe or ink) to help you count the turns.



2. Now select the proper size inspection gauge and try to place it, as shown, between the nut and the body hex. If gauge does not fit at any point between them, you have correctly tightened the nut. If you can slip the gauge into the space, the fitting is not properly made up, and you must repeat the assembly procedure.



** For initial make-up only.*

Gap Gauge

This compact C-Ring gauge is for inch and metric sizes. It effectively checks the gap dimensions for initial make-up. Can be combined on a key ring for easy handling.

Each gap gauge with the exception of the M10 is designed for an inch size with an equivalent metric size(s) as shown in Table 2.

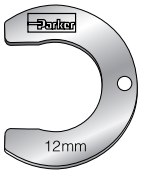


Table 2: Gap Gauges

Part Number	Tube Size	
	Inch	Metric
2 Gap Gauge	1/8	2-3
3 Gap Gauge	3/16	4
4 Gap Gauge	1/4	6
5 Gap Gauge	5/8	8
6 Gap Gauge	3/8	–
M10 Gap Gauge	–	10
8 Gap Gauge	1/2	12
10 Gap Gauge	5/8	14-15-16
12 Gap Gauge	3/4	18
14 Gap Gauge	7/8	20-22
16 Gap Gauge	1	25

For metric fittings and additional thread types, please see Catalog 4230/4233.

Instrument Tubing Selection Guide

Parker's instrument tube fittings have been designed to work in a wide variety of applications that demand the utmost in product performance. Although Parker's Instrument tube fittings have been engineered and manufactured to consistently provide this level of reliability, no systems integrity is complete without considering the critical link, tubing.

This section is intended to assist the designer to properly select and order quality tubing. Proper tube selection and installation, we believe, are key ingredients in building leak-free reliable tubing systems.

General Selection Criteria

The most important consideration in the selection of suitable tubing for any application is the compatibility of the tubing material with the media to be contained. Table 3 lists common materials and their associated general application. Table 3 also lists the maximum and minimum operating temperature for the various tubing materials.

In addition, Parker instrument fittings are designed to work on like materials. Stainless steel fittings should be used only with stainless steel tubing, aluminum fittings with aluminum tubing, etc. The practice of mixing materials is strongly discouraged. The only exception is brass fittings with copper tubing.

Dissimilar materials in contact may be susceptible to galvanic corrosion. Further, different materials have different levels of hardness, and can adversely affect the fitting's ability to seal on the tubing.

Table 3: Materials/ Application / Temperature		
Tubing Material	General Application	Recommended Temperature Range
Stainless Steel (Type 316)	High pressure, high temperature, generally corrosive media	-425°F to 1,200°F* (-255°C to 605°C)
Carbon Steel	High pressure, high temperature oil, air, some specialty chemicals	-20°F to 800°F** (-29°C to 425°C)
Copper	Low temperature, low pressure water, oil, air	-40°F to 400°F (-40°C to 205°C)
Aluminum	Low temperature, low pressure water, oil, air, some specialty chemicals	-40°F to 400°F (-40°C to 205°C)
Monel® 400	Recommended for sour gas applications; well suited for marine & general chemical processing applications	-325°F to 800°F (-198°C to 425°C)
Hastelloy® C-276	Excellent corrosion resistance to both oxidizing and reducing media and excellent resistance to localized corrosion attack	-325°F to 1,000°F (-198°C to 535°C)
Carpenter® 20	Applications requiring resistance to stress corrosion cracking in extreme conditions	-325°F to 800°F (-198°C to 425°C)
Inconel® Alloy 600	Recommended for high temperature applications with generally corrosive media	-205°F to 1,200°F (-130°C to 650°C)
Titanium	Resistant to many natural environments such as sea water, body fluids and salt solutions	-75°F to 600°F (-59°C to 315°C)

* For operating temperatures above 800°F (425°C), consideration should be given to media. 300 Series Stainless Steels are susceptible to carbide precipitation which may lead to inter-granular corrosion at elevated temperatures.

** Consideration should be given to maximum temperature ratings if fittings and/or tubing are coated or plated. All temperature ratings based on temperatures per ASME B31.3 Chemical Plant and Petroleum Refinery Piping Code, 1999 Edition.

The information listed in Table 3 is general in scope. For specific applications, please contact Parker's Instrumentation Products Division, Product Engineering Department (256) 881-2040.

NOTE: Hastelloy® is a registered trademark of Haynes International. Inconel®, and Monel® are registered trademarks of Special Metals Corporation. Carpenter® is a registered trademark of CRS Holdings Inc.

Gas Service

Special care must be taken when selecting tubing for gas service. In order to achieve a gas-tight seal, ferrules in instrument fittings must seal any surface imperfections. This is accomplished by the ferrules penetrating the surface of the tubing. Penetration can only be achieved if the tubing provides radial resistance and if the tubing material is softer than the ferrules.

Thick walled tubing helps to provide resistance. Tables 4 – 9 indicate the minimum acceptable wall thickness for various materials in gas service. The ratings in white indicate combination of diameter and wall thickness which are suitable for gas service. Acceptable tubing hardness for general application is listed in Table 11. These values are the maximum allowed by ASTM. For gas service, better results can be obtained by using tubing well below this maximum hardness. For example, a desirable hardness of 80 Rb is suitable for stainless steel. The maximum allowed by ASTM is 90 Rb.

System Pressure

The system operating pressure is another important factor in determining the type, and more importantly, the size of tubing to be used. In general, high pressure installations require strong materials such as steel or stainless steel. Heavy walled softer tubing such as copper may be used if chemical compatibility exists with the media. However, the higher strength of steel or stainless steel permits the use of thinner tubes without reducing the ultimate rating of the system. In any event, tube fitting assemblies should never be pressurized beyond the recommended working pressure.

The following tables (4 – 9) list by material the maximum suggested working pressure of various tubing sizes. Acceptable tubing diameters and wall thicknesses are those for which a rating is listed. Combinations, which do not have a pressure rating, are not recommended for use with instrument fittings.

*Notes for Tables 4 –9:

- All working pressures have been calculated using the maximum allowable stress levels in accordance with ASME B31.3, Chemical Plant and Petroleum Refinery Piping Code, 1999 Edition.
- All calculations are based on maximum outside diameter and minimum wall thickness.
- All working pressures are ambient (72°F or 22°C) temperature.

Maximum Allowable Working Pressure Tables

Ratings in gray not suitable for gas service.

Table 4A*: 316 or 304 STAINLESS STEEL (Seamless)

Tube O.D. Size	Wall Thickness							
	.010	.012	.014	.016	.020	.028	.035	.049
1/16	5600	6900	8200	9500	12100	16800		
1/8						8600	10900	
3/16						5500	7000	10300
1/4						4000	5100	7500
5/16							4100	5900
3/8							3300	4800
1/2							2600	3700
5/8								3000
3/4								2400
7/8								2100
1								
1-1/4								
1-1/2								
2								

For metric fittings and additional thread types, please see Catalog 4230/4233.

Maximum Allowable Working Pressure Tables

Ratings in gray not suitable for gas service.

Table 4B*: 316 or 304 STAINLESS STEEL (Seamless)								
Tube O.D. Size	Wall Thickness							
	.065	.083	.095	.109	.120	.134	.156	.188
1/16								
1/8								
3/16								
1/4	10300							
5/16	8100							
3/8	6600							
1/2	5100	6700						
5/8	4000	5200	6100					
3/4	3300	4300	5000	5800				
7/8	2800	3600	4200	4900				
1	2400	3200	3700	4200	4700			
1-1/4		2500	2900	3300	3700	4100	4900	
1-1/2			2400	2700	3000	3400	4000	4500
2				2000	2200	2500	2900	3200

*Please refer to the Notes listed on Page 33 for more specifications.

Maximum Allowable Working Pressure Tables

Ratings in gray not suitable for gas service.

Table 5A*: 316 or 304 STAINLESS STEEL (Welded)								
Tube O.D. Size	Wall Thickness							
	0.010	0.012	0.014	0.016	0.020	0.028	0.035	0.049
1/16	4800	5900	7000	8100	10300	14300		
1/8						7300	9300	
3/16						4700	6000	8700
1/4						3400	4400	6400
5/16							3400	5000
3/8							2800	4100
1/2							2200	3200
5/8								2500
3/4								2100
7/8								1800
1								
1-1/4								
1-1/2								
2								

Table 5B*: 316 or 304 STAINLESS STEEL (Welded)								
Tube O.D. Size	Wall Thickness							
	0.065	0.083	0.095	0.109	0.120	0.134	0.156	0.188
1/16								
1/8								
3/16								
1/4	8700							
5/16	6900							
3/8	5600							
1/2	4300	5700						
5/8	3400	4500	5200					
3/4	2800	3700	4200	4900				
7/8	2400	3100	3600	4200				
1	2100	2700	3100	3600	4000			
1-1/4		2100	2400	2800	3100	3500	4200	
1-1/2			2000	2300	2600	2900	3400	4200
2				1700	1900	2100	2500	3000

*Please refer to the Notes listed on Page 33 for more specifications.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Maximum Allowable Working Pressure Tables

Ratings in gray not suitable for gas service.

Table 6*: CARBON STEEL (Seamless)

Tube O.D. Size	Wall Thickness											
	.028	.035	.049	.065	.083	.095	.109	.120	.134	.148	.165	.180
1/8	8100	10300										
3/16	5200	6700	9700									
1/4	3800	4900	7100	9700								
5/16		3800	5500	7700								
3/8		3100	4500	6200								
1/2		2300	3300	4500	6000							
5/8		1800	2600	3500	4600	5400						
3/4			2200	2900	3800	4400	5100					
7/8			1800	2500	3200	3700	4300					
1			1600	2100	2800	3200	3700	4100				
1-1/4				1700	2200	2500	2900	3200	3700	3800		
1-1/2					1800	2100	2400	2700	3000	3400	3800	4000
2						1600	1800	2000	2200	2500	2800	3000

Table 7*: COPPER (Seamless)

Tube O.D. Size	Wall Thickness									
	.010	.020	.028	.035	.049	.065	.083	.095	.109	.120
1/16	1700	3800	5400							
1/8			2800	3600						
3/16			1800	2300	3500					
1/4			1300	1700	2600	3500				
5/16				1300	2000	2800				
3/8				1100	1600	2300				
1/2				800	1200	1600	2200			
5/8					900	1300	1700	2000		
3/4					800	1000	1400	1600	1900	
7/8					600	900	1100	1300	1600	
1					600	800	1000	1200	1400	1500
1-1/8					500	700	900	1000	1200	1300
1-1/4							800	900	1100	1200
1-1/2							650	750	850	950

* See Notes on Page 33

For metric fittings and additional thread types, please see Catalog 4230/4233.

Maximum Allowable Working Pressure Tables

Ratings in gray not suitable for gas service.

Table 8*: ALUMINUM (Seamless)

Tube O.D. Size	Wall Thickness				
	.035	.049	.065	.083	.095
1/8	8700				
3/16	5600	8100			
1/4	4100	5900			
5/16	3200	4600			
3/8	2600	3800			
1/2	1900	2800	3800		
5/8	1500	2200	2900		
3/4		1800	2400	3200	
7/8		1500	2100	2700	
1		1300	1800	2300	2700

Table 9*: MONEL 400 (Seamless)

Tube O.D. Size	Wall Thickness									
	.010	.020	.028	.035	.049	.065	.083	.095	.109	.120
1/16	5500	11800	16300							
1/8			8100	10400						
3/16			5100	6600	9600					
1/4			3800	4800	7000	9600				
5/16				3800	5500	7500				
3/8				3100	4500	6100				
1/2				2300	3300	4500	5900			
5/8					2700	3700	4900	5600		
3/4					2300	3100	4000	4600	5400	
1						2300	2900	3400	3900	4400

* See Notes on Page 33

For metric fittings and additional thread types, please see Catalog 4230/4233.

System Temperature

Operating temperature is another factor in determining the proper tubing material. Copper and aluminum tubing are suitable for low temperature media. Stainless steel and carbon steel tubing are suitable for higher temperature media. Special alloys such as Alloy 600 are recommended for extremely high temperatures (see Table 3). Table 10 lists derating factors which should be applied to the working pressures listed in Tables 4 – 9 for elevated temperature conditions. Simply locate the correct factor in Table 8 and multiply this by the appropriate value in Tables 4 – 9 for elevated temperature working pressure.

Table 10 – Temperature Derating Factors

Temperature		Copper	Aluminum	316 SS	304 SS	Steel	Monel 400
°F	(°C)						
100	(38)	1.00	1.00	1.00	1.00	1.00	1.00
200	(93)	.80	1.00	1.00	1.00	.96	.88
300	(149)	.78	.81	1.00	1.00	.90	.82
400	(204)	.50	.40	.97	.94	.86	.79
500	(260)			.90	.88	.82	.79
600	(316)			.85	.82	.77	.79
700	(371)			.82	.80	.73	.79
800	(427)			.80	.76	.59	.76
900	(486)			.78	.73		.43
1000	(538)			.77	.69		
1100	(593)			.62	.49		
1200	(649)			.37	.30		

EXAMPLE: 1/2" x .049 wall seamless 316 stainless steel tubing has a working pressure of 3700 PSI @ room temperature. If the system were to operate @ 800°F (425°C), a factor of 80% or (.80) would apply (see Table 10 above) and the "at temperature" system pressure would be 3700 PSI x .80 = 2960 PSI.

Tubing Order Guidelines

Tubing for use with Parker instrument fittings must be carefully ordered to insure adequate quality for good performance. Each purchase order must specify the material nominal outside diameter, and wall thickness. Ordering to ASTM specifications insures that the tubing will be dimensionally, physically, and chemically within strict limits. Also, more stringent requirements may be added by the user. All tubing should be ordered free of scratches and suitable for bending.

A purchase order meeting the above criteria would read as follows:

> "1/2 x .049 316 stainless steel, seamless, or welded and redrawn per ASTM A-249. Fully annealed, 80 Rb or less. Must be suitable for bending; surface scratches, and imperfections (incomplete weld seams) are not permissible."

Table 11 lists specific ordering information for each material.

Table 11 – Material Ordering Specifications

Material	Type	ASTM Tubing Spec.	Condition	Max. Recommended Hardness
Stainless Steel	304, 316, 316L	ASTM-A-269, A-249, A-213, A632	Fully Annealed	90 Rb
Copper	K or L	ASTM-B75 B68, B88 (K or L)*	Soft Annealed Temper 0	60 Max. Rockwell 15T
Carbon Steel	1010	SAE-J524b, J525b ASTM-A-179	Fully Annealed	72 Rb
Aluminum	Alloy 6061	ASTM B-210	T6 Temper	56 Rb
Monel® 400	400	ASTM B-165	Fully Annealed	75 Rb
Hastelloy® C-276	C-276	ASTM-B-622, B-626	Fully Annealed	90 Rb
Inconel® Alloy 600	600	ASTM B-167	Fully Annealed	90 Rb
Carpenter® 20	20CB-3	ASTM B-468	Fully Annealed	90 Rb
Titanium	Commercially Pure Grade 2	ASTM B-338	Fully Annealed	99 Rb 200 Brinell Typical

*B88 Copper Tube to be ordered non-engraved

NOTE: Hastelloy® is a registered trademark of Haynes International. Inconel®, and Monel® are registered trademarks of Special Metals Corporation. Carpenter® is a registered trademark of CRS Holdings Inc.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Pipe Pressure Ratings

Table 12 – Pipe Pressure Ratings

NPT / BSPT Pipe Size	BRASS			
	Male		Female	
	Straight[a]	Shape[b]	Straight[a]	Shape[b]
1/16	6000	5500	4500	3800
1/8	5600	5000	4000	2900
1/4	4100	4100	4300	3000
3/8	4000	4000	3500	2700
1/2	3900	3100	3600	2500
3/4	3800	3400	3000	2000
1	2700	2700	3100	2300
1-1/4	2000	2000	2300	1900
1-1/2	1800	1800	2100	1700
2	1600	1600	2000	1500

NPT / BSPT Pipe Size	STAINLESS STEEL			
	Male		Female	
	Straight[a]	Shape[b]	Straight[a]	Shape[b]
1/16	10000	9500	7500	7000
1/8	9100	9100	6400	5500
1/4	7500	7500	6600	5600
3/8	7200	7200	5300	5000
1/2	6600	5800	5200	4500
3/4	6400	6400	4300	3500
1	4600	4600	4500	3900
1-1/4	3500	3500	3500	3100
1-1/2	2900	2900	3200	2500
2	2600	2600	2700	2300

Pipe Pressure Ratings - cont'd

NPT / BSPT Pipe Size	CARBON STEEL			
	Male		Female	
	Straight[a]	Shape[b]	Straight[a]	Shape[b]
1/16	10500	10100	8000	7500
1/8	9700	9700	6800	5900
1/4	8000	8000	7000	6000
3/8	7600	7600	5600	5300
1/2	7000	6200	5500	4800
3/4	6800	6800	4600	3700
1	4900	4900	4800	4200
1-1/4	3700	3700	3700	3300
1-1/2	3100	3100	3400	2600
2	2800	2800	2800	2400

Notes:

a. Fittings manufactured from bar stock.

b. Fittings manufactured from forgings.

c. Material of construction in accordance with Table 3 on page 31.

d. Pressure ratings for fittings with both tube and pipe ends are rated to the lower pressure.

Tubing Selection Guide

Table 13 – Typical Raw Material Specifications

Basic Fitting Material	Material Designator	Straights	Shapes	Common Tubing Specification
Brass	B	CA-360 QQ-B 626 Alloy 360 ASTM-B16 Alloy 360 CA-345 ASTM-B-453 Alloy 345	CA-377 QQ-B 626 Alloy 377 ASTM-B-124 Alloy 377 BS2872 CZ122	ASTM-B75 ASME-SB75 (TEMPER "O")
Stainless Steel (Type 316)(1)	A-LOK® = 316 (1) (2) CPI™ = SS	ASME-SA-479 Type 316-SS BS970 316-S31 DIN 4401 ASTM A276 Type 316 ASTM/ASME-SA-182	ASME-SA-182 316 BS970 316-S31 DIN 4401	ASME-SA-213 ASTM-A-213 ASTM-A-249 ASTM-A-269(3) MIL T-8504 MIL T-8506
Steel	S	ASTM-A-108 QQ-S-637	ASTM-A-576	SAE J524b SAE J525b ASTM-A-179
Aluminum	A	2017-T4 or 2024-T4 ASTM-B211 QQ-A-225/5 or 6	2014T (as fabricated) ASTM-B-211 QQ-A-225/4	303, 6061T6 ASTM-B-210
Monel® 400 – Forgings Monel® 405 – Bar Stock	M	ASTM-B-164 QQ-N-281 BS3076 NA13	ASTM-B-164 QQ-N-281 BS3076 NA13	ASTM-B-165
Hastelloy C-276®	HC	ASTM-B-574 ASTMB575	ASTM-B-574	ASTM-B-622 ASTM-B-626
Inconel® Alloy 600	IN	ASTM B-166 ASME-SB-166	ASTM-B-564	ASTM-B-163 ASTM-B-167
Carpenter 20®	SS20	ASTM-B-473	ASTM-B-462 ASTM-B-472	ASTM-B-468
Titanium	TI	ASTM-B-348	ASTM-B-381	ASTM-B-338
Inconel® Alloy 625	625	BS3076 NA16 ASTMB425	BS3076 NA16 ASTMB425	ASTM-B-625 ASTM-B-444 ASTM-B-423 ASTM-B-829
Incoloy® Alloy 825	825			
6MO	6MO	UNS S31254 UNS N08367 ASTM A479	UNS S31254 UNS N08367 ASTM A 479	ASTM-A-269

(1) If more specific information, including heat code traceability, is required, your Parker Hannifin CPI™/A-LOK® distributor will provide details.

(2) If an "L" appears in the A-LOK® fitting description, then the material designator will be "SS" (e.g., JLZ drop size tee).

(3) Stainless steel CPI™/A-LOK® tube fittings work reliably on both seamless and welded-redrawn, fully annealed type 304, 316 and 316L tubing.

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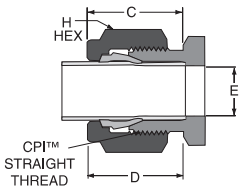
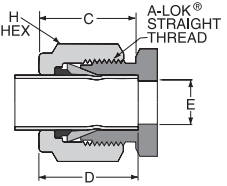
Table 14 – Tube End Dimensional Data

Size No.	Tube O.D.	Straight Thread	†C	H Hex	E Dia.	†D Tube Ins. Depth
	Inches					
1	1/16	10-32	.43	5/16	.052	.34
2	1/8	5/16-20	.60	7/16	.093	.50
3	3/16	3/8-20	.64	1/2	.125	.54
4	1/4	7/16-20	.70	9/16	.187	.60
5	5/16	1/2-20	.73	5/8	.250	.64
6	3/8	9/16-20	.76	11/16	.281	.67
8	1/2	3/4-20	.87	7/8	.406	.90
10	5/8	7/8-20	.87	1	.500	.96
12	3/4	1-20	.87	1-1/8	.625	.96
14	7/8	1-1/8-20	.87	1-1/4	.750	1.03
16	1	1-5/16-20	1.05	1-1/2	.875	1.24
20	1-1/4	1-5/8-20	1.52	1-7/8	1.09	1.61
24	1-1/2	1-15/16-20	1.77	2-1/4	1.34	1.96
32	2	2-5/8-20	2.47	2-3/4	1.81	2.6

NOTE: Dimensions C and D are shown in the finger-tight position.
† Average Value



CPI™ Single Ferrule Fitting



A-LOK® Double Ferrule Fitting

For metric fittings and additional thread types, please see Catalog 4230/4233.

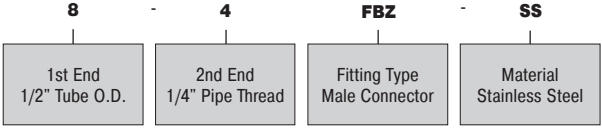
How to Order

Nomenclature

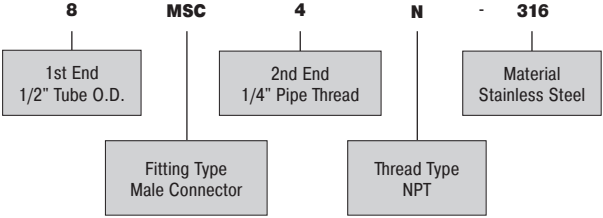
Parker CPI™/A-LOK® tube fittings part numbers are constructed from symbols that identify the size and style of the fitting and material used.

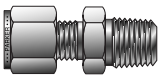
Example: The part number shown below is for a Parker CPI™/A-LOK® stainless steel male connector for 1/2" O.D. tube (–8) and 1/4" male pipe thread (–4).

How To Order CPI™ Inch Parts *(Example: 8-4FBZ-SS)*



How To Order A-LOK® Inch Parts *(Example: 8MSC4N-316)*





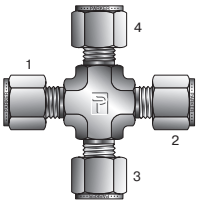
For metric fittings and additional thread types, please see Catalog 4230/4233.

Parker CPI™/A-LOK® Tube Fittings are ordered by part number as listed in this catalog.

Size: Tube and pipe thread sizes are designed by the number of sixteenths of an inch (1/2" tube = 8/16" = 8) (1/4" pipe thread = 4/16" = 4).

Straights & Elbows: Call out largest CPI™/A-LOK® tube end size first followed by the smaller CPI™/A-LOK® tube end or pipe thread size.

Tees & Crosses: For drop size tees – first size the run (1 to 2) and then branch (3). Example – the size designator for a male run tee for 3/8" O.D. tube and 1/4" male pipe thread would be 6-4-6. For crosses – first size the run (1 to 2) and then the branch (3 to 4). For tees with all ends the same, use the tube and size before and after the style designator; i.e. 4-4-4 JBZ (CPI™), 4ET4 (A-LOK®).



Type: A letter or combination of letters and numbers are used to designate the type of fitting. (i.e. SBZ or MBT = male branch tee, GBZ or FA = female adapter, etc.) See the visual index for fitting types.

Material: Basic material type (B = brass, SS or 316 = stainless steel, type 316; S = steel; A = aluminum; M = Alloy 400; HC = Hastelloy C-276®; IN = Alloy 600; SS20 = Carpenter 20®; 6MO = 6Mo; 625 =625; 825 = 825; T = Titanium). Parker CPI™/A-LOK® Tube fittings, for special applications, can be furnished in almost any material suitable for machining.

Special Fittings: If there is any question as to the fitting desired, particularly for special fitting configurations, it is suggested that a customer print be submitted with the fitting request for quote.

For metric fittings and additional thread types, please see Catalog 4230/4233.

How to Order

CPI™/A-LOK® Options

Parker CPI™/A-LOK® fittings may be ordered with the following options.

How to order

After the complete CPI™/A-LOK® number simply add a "dash" then the suffix for the option.

Example: 8MSC4N-316-C3 describes an A-LOK® male connector for 1/2" OD tube and 1/4" male pipe that has been cleaned for oxygen service. For additional options, please consult the factory.

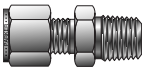
Suffix	Option	Additional Information
ZYF	Assembled with nylon ferrule(s)	
SPF	Silver plated ferrule(s)	
TF	PTFE ferrule(s)	
BP*	Bulk packed	* Indicates the quantity i.e BP50 for a fifty count package.
LWH	Lock wire hole	
BZP	Knurled nut	Replaces standard nut on CPI™/A-LOK® fittings for use on soft plastic tubing.
C	Silver plated nut	Replaces moly coated nut (BZ).
MI	Moly inside nut	
C1	Grade A Cleaning	Special cleaning, assembly, inspection and packaging for high purity applications.
C3	Cleaned for oxygen service	Meets the requirements of ASTM G93-88; Standard Practice for Cleaning Methods for Materials and Equipment used in Oxygen-Enriched Environments.
CNG	Compressed natural gas service	Assembled with a specific o-ring compound.
NIC	Nickel plated	
CRM	Chrome plated	
VO	Viton O-ring	
NC	NACE	MR0175-2002 or prior version
NACE	NACE	MR0175-2002 or prior version
-N03	NACE	MR0103-Latest Edition
DFARS	Defense Acquisition Regulations System	All components and raw material must be of US origin or from an approved country.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Male Pipe

NPT Male Connector

for Fractional Tube

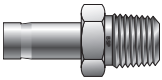


NOTE:
Sizes 20, 24 and 32 require additional lubrication prior to assembly.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
1-1 FBZ	1MSC1N	100-1-1	1/16	1/16
1-2 FBZ	1MSC2N	100-1-2	1/16	1/8
1-4 FBZ	1MSC4N	100-1-4	1/16	1/4
2-1 FBZ	2MSC1N	200-1-1	1/8	1/16
2-2 FBZ	2MSC2N	200-1-2	1/8	1/8
2-4 FBZ	2MSC4N	200-1-4	1/8	1/4
2-6 FBZ	2MSC6N	200-1-6	1/8	3/8
2-8 FBZ	2MSC8N	200-1-8	1/8	1/2
3-1 FBZ	3MSC1N	300-1-1	3/16	1/16
3-2 FBZ	3MSC2N	300-1-2	3/16	1/8
3-4 FBZ	3MSC4N	300-1-4	3/16	1/4
4-1 FBZ	4MSC1N	400-1-1	1/4	1/16
4-2 FBZ	4MSC2N	400-1-2	1/4	1/8
4-4 FBZ	4MSC4N	400-1-4	1/4	1/4
4-6 FBZ	4MSC6N	400-1-6	1/4	3/8
4-8 FBZ	4MSC8N	400-1-8	1/4	1/2
4-12 FBZ	4MSC12N	400-1-12	1/4	3/4
5-2 FBZ	5MSC2N	500-1-2	5/16	1/8
5-4 FBZ	5MSC4N	500-1-4	5/16	1/4
5-6 FBZ	5MSC6N	500-1-6	5/16	3/8
5-8 FBZ	5MSC8N	500-1-8	5/16	1/2
6-2 FBZ	6MSC2N	600-1-2	3/8	1/8
6-4 FBZ	6MSC4N	600-1-4	3/8	1/4
6-6 FBZ	6MSC6N	600-1-6	3/8	3/8
6-8 FBZ	6MSC8N	600-1-8	3/8	1/2
6-12 FBZ	6MSC12N	600-1-12	3/8	3/4
8-2 FBZ	8MSC2N	810-1-2	1/2	1/8
8-4 FBZ	8MSC4N	810-1-4	1/2	1/4
8-6 FBZ	8MSC6N	810-1-6	1/2	3/8
8-8 FBZ	8MSC8N	810-1-8	1/2	1/2
8-12 FBZ	8MSC12N	810-1-12	1/2	3/4
8-16 FBZ	8MSC16N	810-1-16	1/2	1
10-6 FBZ	10MSC6N	1010-1-6	5/8	3/8
10-8 FBZ	10MSC8N	1010-1-8	5/8	1/2
10-12 FBZ	10MSC12N	1010-1-12	5/8	3/4
12-8 FBZ	12MSC8N	1210-1-8	3/4	1/2
12-12 FBZ	12MSC12N	1210-1-12	3/4	3/4
12-16 FBZ	12MSC16N	1210-1-16	3/4	1
14-12 FBZ	14MSC12N	1410-1-12	7/8	3/4
14-16 FBZ	14MSC16N	1410-1-16	7/8	1
16-8 FBZ	16MSC8N	1610-1-8	1	1/2
16-12 FBZ	16MSC12N	1610-1-12	1	3/4
16-16 FBZ	16MSC16N	1610-1-16	1	1
20-20 FBZ	20MSC20N	2010-1-20	1-1/4	1-1/4
24-24 FBZ	24MSC24N	2410-1-24	1-1/2	1-1/2
32-32 FBZ	32MSC32N	3210-1-32	2	2

NPT Male Bulkhead Connector

for Fractional Tube



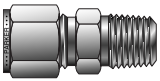
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
1-1 FH2BZ	1MBC1N	100-11-1	1/16	1/16
1-2 FH2BZ	1MBC2N	100-11-2	1/16	1/8
2-2 FH2BZ	2MBC2N	200-11-2	1/8	1/8
3-2 FH2BZ	3MBC2N	300-11-2	3/16	1/8
4-2 FH2BZ	4MBC2N	400-11-2	1/4	1/8
4-4 FH2BZ	4MBC4N	400-11-4	1/4	1/4
4-6 FH2BZ	4MBC6N	400-11-6	1/4	3/8
4-8 FH2BZ	4MBC8N	400-11-8	1/4	1/2
5-2 FH2BZ	5MBC2N	500-11-2	5/16	1/8
5-4 FH2BZ	5MBC4N	500-11-4	5/16	1/4
6-2 FH2BZ	6MBC2N	600-11-2	3/8	1/8
6-4 FH2BZ	6MBC4N	600-11-4	3/8	1/4
6-6 FH2BZ	6MBC6N	600-11-6	3/8	3/8
6-8 FH2BZ	6MBC8N	600-11-8	3/8	1/2
8-4 FH2BZ	8MBC4N	810-11-4	1/2	1/4
8-6 FH2BZ	8MBC6N	810-11-6	1/2	3/8
8-8 FH2BZ	8MBC8N	810-11-8	1/2	1/2
8-12 FH2BZ	8MBC12N	810-11-12	1/2	3/4
10-6 FH2BZ	10MBC6N	1010-11-6	5/8	3/8
10-8 FH2BZ	10MBC8N	1010-11-8	5/8	1/2
12-8 FH2BZ	12MBC8N	1210-11-8	3/4	1/2
12-12 FH2BZ	12MBC12N	1210-11-12	3/4	3/4
14-12 FH2BZ	14MBC12N	1410-11-12	7/8	3/4
16-12 FH2BZ	16MBC12N	1610-11-12	1	3/4
16-16 FH2BZ	16MBC16N	1610-11-16	1	1

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Male Pipe

Thermocouple Connector

for Fractional Tube

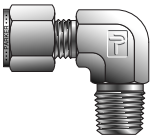


NOTE:
Tube stop drilled out to allow the thermocouple to pass-through.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
1-1 FH4BZ	1MTC1N	100-1-1BT	1/16	1/16
1-2 FH4BZ	1MTC2N	100-1-2BT	1/16	1/8
1-4 FH4BZ	1MTC4N	100-1-4BT	1/16	1/4
2-1 FH4BZ	2MTC1N	200-1-1BT	1/8	1/16
2-2 FH4BZ	2MTC2N	200-1-2BT	1/8	1/8
2-4 FH4BZ	2MTC4N	200-1-4BT	1/8	1/4
3-2 FH4BZ	3MTC2N	300-1-2BT	3/16	1/8
3-4 FH4BZ	3MTC4N	300-1-4BT	3/16	1/4
4-2 FH4BZ	4MTC2N	400-1-2BT	1/4	1/8
4-4 FH4BZ	4MTC4N	400-1-4BT	1/4	1/4
4-6 FH4BZ	4MTC6N	400-1-6BT	1/4	3/8
4-8 FH4BZ	4MTC8N	400-1-8BT	1/4	1/2
5-4 FH4BZ	5MTC4N	500-1-4BT	5/16	1/4
6-4 FH4BZ	6MTC4N	600-1-4BT	3/8	1/4
6-6 FH4BZ	6MTC6N	600-1-6BT	3/8	3/8
6-8 FH4BZ	6MTC8N	600-1-8BT	3/8	1/2
6-12 FH4BZ	6MTC12N	600-1-12BT	3/8	3/4
8-8 FH4BZ	8MTC8N	810-1-8BT	1/2	1/2
8-12 FH4BZ	8MTC12N	810-1-12BT	1/2	3/4
10-12 FH4BZ	10MTC12N	1010-1-12BT	5/8	3/4
12-12 FH4BZ	12MTC12N	1210-1-12BT	3/4	3/4
16-16 FH4BZ	16MTC16N	1610-1-16BT	1	1

NPT Male Elbow

for Fractional Tube



NOTE:
Sizes 20, 24 require additional lubrication prior to assembly.

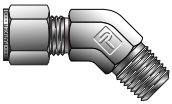
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
1-1 CBZ	1MSEL1N	100-2-1	1/16	1/16
1-2 CBZ	1MSEL2N	100-2-2	1/16	1/8
2-1 CBZ	2MSEL1N	200-2-1	1/8	1/16
2-2 CBZ	2MSEL2N	200-2-2	1/8	1/8
2-4 CBZ	2MSEL4N	200-2-4	1/8	1/4
3-2 CBZ	3MSEL2N	300-2-2	3/16	1/8
3-4 CBZ	3MSEL4N	300-2-4	3/16	1/4
4-1 CBZ	4MSEL1N	400-2-1	1/4	1/16
4-2 CBZ	4MSEL2N	400-2-2	1/4	1/8
4-4 CBZ	4MSEL4N	400-2-4	1/4	1/4
4-6 CBZ	4MSEL6N	400-2-6	1/4	3/8
4-8 CBZ	4MSEL8N	400-2-8	1/4	1/2
5-2 CBZ	5MSEL2N	500-2-2	5/16	1/8
5-4 CBZ	5MSEL4N	500-2-4	5/16	1/4
6-2 CBZ	6MSEL2N	600-2-2	3/8	1/8
6-4 CBZ	6MSEL4N	600-2-4	3/8	1/4
6-6 CBZ	6MSEL6N	600-2-6	3/8	3/8
6-8 CBZ	6MSEL8N	600-2-8	3/8	1/2
6-12 CBZ	6MSEL12N	600-2-12	3/8	3/4
8-4 CBZ	8MSEL4N	810-2-4	1/2	1/4
8-6 CBZ	8MSEL6N	810-2-6	1/2	3/8
8-8 CBZ	8MSEL8N	810-2-8	1/2	1/2
8-12 CBZ	8MSEL12N	810-2-12	1/2	3/4
10-6 CBZ	10MSEL6N	1010-2-6	5/8	3/8
10-8 CBZ	10MSEL8N	1010-2-8	5/8	1/2
10-12 CBZ	10MSEL12N	1010-2-12	5/8	3/4
12-8 CBZ	12MSEL8N	1210-2-8	3/4	1/2
12-12 CBZ	12MSEL12N	1210-2-12	3/4	3/4
14-12 CBZ	14MSEL12N	1410-2-12	7/8	3/4
16-12 CBZ	16MSEL12N	1610-2-12	1	3/4
16-16 CBZ	16MSEL16N	1610-2-16	1	1
20-20 CBZ	20MSEL20N	2010-2-20	1-1/4	1-1/4
24-24 CBZ	24MSEL24N	2410-2-24	1-1/2	1-1/2
32-32 CBZ	32MSEL32N	3200-2-32	2	2

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Male Pipe

NPT Male 45° Elbow

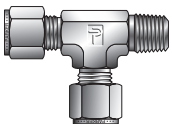
for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
1-1 VBZ	1MVEL1N	100-5-1	1/16	1/16
2-2 VBZ	2MVEL2N	200-5-2	1/8	1/8
3-2 VBZ	3MVEL2N	300-5-2	3/16	1/8
4-2 VBZ	4MVEL2N	400-5-2	1/4	1/8
4-4 VBZ	4MVEL4N	400-5-4	1/4	1/4
5-2 VBZ	5MVEL2N	500-5-2	5/16	1/8
6-2 VBZ	6MVEL2N	600-5-2	3/8	1/8
6-4 VBZ	6MVEL4N	600-5-4	3/8	1/4
6-6 VBZ	6MVEL6N	600-5-6	3/8	3/8
8-6 VBZ	8MVEL6N	810-5-6	1/2	3/8
10-8 VBZ	10MVEL8N	1010-5-8	5/8	1/2
12-12 VBZ	12MVEL12N	1210-5-12	3/4	3/4
14-12 VBZ	14MVEL12N	1410-5-12	7/8	3/4
16-16 VBZ	16MVEL16N	1610-5-16	1	1

NPT Male Run Tee

for Fractional Tube

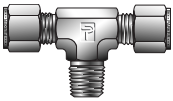


CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
2-2-2 RBZ	2MRT2N	200-3-2TMT	1/8	1/8
2-4-2 RBZ	2MRT4N	200-3-4TMT	1/8	1/4
3-2-3 RBZ	3MRT2N	300-3-2TMT	3/16	1/8
4-2-4 RBZ	4MRT2N	400-3-2TMT	1/4	1/8
4-4-4 RBZ	4MRT4N	400-3-4TMT	1/4	1/4
5-2-5 RBZ	5MRT2N	500-3-2TMT	5/16	1/8
5-4-5 RBZ	5MRT4N	500-3-4TMT	5/16	1/4
6-4-6 RBZ	6MRT4N	600-3-4TMT	3/8	1/4
6-6-6 RBZ	6MRT6N	600-3-6TMT	3/8	3/8
8-6-8 RBZ	8MRT6N	810-3-6TMT	1/2	3/8
8-8-8 RBZ	8MRT8N	810-3-8TMT	1/2	1/2
10-8-10 RBZ	10MRT8N	1010-3-8TMT	5/8	1/2
12-12-12 RBZ	12MRT12N	1210-3-12TMT	3/4	3/4
14-12-14 RBZ	14MRT12N	1410-3-12TMT	7/8	3/4
16-12-16 RBZ	16MRT12N	1610-3-12TMT	1	3/4
16-16-16 RBZ	16MRT16N	1610-3-16TMT	1	1

For metric fittings and additional thread types, please see Catalog 4230/4233.

NPT Male Branch Tee

for Fractional Tube



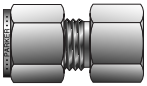
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
2-2-2 SBZ	2MBT2N	200-3TTM	1/8	1/8
2-2-4 SBZ	2MBT4N	200-3-4TTM	1/8	1/4
3-3-2 SBZ	3MBT2N	300-3TTM	3/16	1/8
4-4-2 SBZ	4MBT2N	400-3TTM	1/4	1/8
4-4-4 SBZ	4MBT4N	400-3-4TTM	1/4	1/4
5-5-2 SBZ	5MBT2N	500-3TTM	5/16	1/8
5-5-4 SBZ	5MBT4N	500-3-4TTM	5/16	1/4
6-6-4 SBZ	6MBT4N	600-3TTM	3/8	1/4
6-6-6 SBZ	6MBT6N	600-3-6TTM	3/8	3/8
8-8-6 SBZ	8MBT6N	810-3TTM	1/2	3/8
8-8-8 SBZ	8MBT8N	810-3-8TTM	1/2	1/2
10-10-8 SBZ	10MBT8N	1010-3TTM	5/8	1/2
12-12-12 SBZ	12MBT12N	1210-3TTM	3/4	3/4
14-14-12 SBZ	14MBT12N	1410-3-12TTM	7/8	3/4
16-16-12 SBZ	16MBT12N	1610-3TTM	1	3/4
16-16-16 SBZ	16MBT16N	1610-3-16TTM	1	1

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Female Pipe

NPT Female Connector

for Fractional Tube

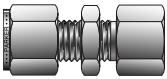


NOTE:
Sizes 20, 24 and 32 require additional lubrication prior to assembly.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
1-1 GBZ	1FSC1N	100-7-1	1/16	1/16
1-2 GBZ	1FSC2N	100-7-2	1/16	1/8
2-2 GBZ	2FSC2N	200-7-2	1/8	1/8
2-4 GBZ	2FSC4N	200-7-4	1/8	1/4
3-2 GBZ	3FSC2N	300-7-2	3/16	1/8
3-4 GBZ	3FSC4N	300-7-4	3/16	1/4
4-2 GBZ	4FSC2N	400-7-2	1/4	1/8
4-4 GBZ	4FSC4N	400-7-4	1/4	1/4
4-6 GBZ	4FSC6N	400-7-6	1/4	3/8
4-8 GBZ	4FSC8N	400-7-8	1/4	1/2
5-2 GBZ	5FSC2N	500-7-2	5/16	1/8
5-4 GBZ	5FSC4N	500-7-4	5/16	1/4
5-6 GBZ	5FSC6N	500-7-6	5/16	3/8
6-2 GBZ	6FSC2N	600-7-2	3/8	1/8
6-4 GBZ	6FSC4N	600-7-4	3/8	1/4
6-6 GBZ	6FSC6N	600-7-6	3/8	3/8
6-8 GBZ	6FSC8N	600-7-8	3/8	1/2
6-12 GBZ	6FSC12N	600-7-12	3/8	3/4
8-4 GBZ	8FSC4N	810-7-4	1/2	1/4
8-6 GBZ	8FSC6N	810-7-6	1/2	3/8
8-8 GBZ	8FSC8N	810-7-8	1/2	1/2
8-12 GBZ	8FSC12N	810-7-12	1/2	3/4
10-6 GBZ	10FSC6N	1010-7-6	5/8	3/8
10-8 GBZ	10FSC8N	1010-7-8	5/8	1/2
10-12 GBZ	10FSC12N	1010-7-12	5/8	3/4
12-8 GBZ	12FSC8N	1210-7-8	3/4	1/2
12-12 GBZ	12FSC12N	1210-7-12	3/4	3/4
14-12 GBZ	14FSC12N	1410-7-12	7/8	3/4
16-12 GBZ	16FSC12N	1610-7-12	1	3/4
16-16 GBZ	16FSC16N	1610-7-16	1	1
20-20 GBZ	20FSC20N	2010-7-20	1-1/4	1-1/4
24-24 GBZ	24FSC24N	2410-7-24	1-1/2	1-1/2
32-32 GBZ	32FSC32N	3210-7-32	2	2

NPT Female Bulkhead Connector

for Fractional Tube



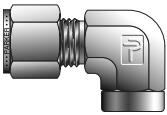
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
2-2 GH2BZ	2FBC2N	200-71-2	1/8	1/8
3-2 GH2BZ	3FBC2N	300-71-2	3/16	1/8
4-2 GH2BZ	4FBC2N	400-71-2	1/4	1/8
4-4 GH2BZ	4FBC4N	400-71-4	1/4	1/4
5-2 GH2BZ	5FBC2N	500-71-2	5/16	1/8
5-8 GH2BZ	5FBC8N	500-71-8	5/16	1/2
6-4 GH2BZ	6FBC4N	600-71-4	3/8	1/4
8-6 GH2BZ	8FBC6N	810-71-6	1/2	3/8
8-8 GH2BZ	8FBC8N	810-71-8	1/2	1/2
10-8 GH2BZ	10FBC8N	1010-71-8	5/8	1/2
12-12 GH2BZ	12FBC12N	1210-71-12	3/4	3/4
14-12 GH2BZ	14FBC12N	1410-71-12	7/8	3/4
16-16 GH2BZ	16FBC16N	1610-71-16	1	1
14-14-12 SBZ	14MBT12N	1410-3-12TTM	7/8	3/4
16-16-12 SBZ	16MBT12N	1610-3TTM	1	3/4
16-16-16 SBZ	16MBT16N	1610-3-16TTM	1	1

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Female Pipe

NPT Female Elbow

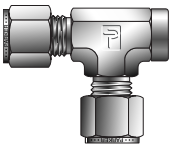
for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
1-1 DBZ	1FEL1N	100-8-1	1/16	1/16
1-2 DBZ	1FEL2N	100-8-2	1/16	1/8
2-2 DBZ	2FEL2N	200-8-2	1/8	1/8
2-4 DBZ	2FEL4N	200-8-4	1/8	1/4
3-2 DBZ	3FEL2N	300-8-2	3/16	1/8
4-2 DBZ	4FEL2N	400-8-2	1/4	1/8
4-4 DBZ	4FEL4N	400-8-4	1/4	1/4
4-6 DBZ	4FEL6N	400-8-6	1/4	3/8
4-8 DBZ	4FEL8N	400-8-8	1/4	1/2
5-2 DBZ	5FEL2N	500-8-2	5/16	1/8
5-4 DBZ	5FEL4N	500-8-4	5/16	1/4
6-2 DBZ	6FEL2N	600-8-2	3/8	1/8
6-4 DBZ	6FEL4N	600-8-4	3/8	1/4
6-6 DBZ	6FEL6N	600-8-6	3/8	3/8
6-8 DBZ	6FEL8N	600-8-8	3/8	1/2
8-4 DBZ	8FEL4N	810-8-4	1/2	1/4
8-6 DBZ	8FEL6N	810-8-6	1/2	3/8
8-8 DBZ	8FEL8N	810-8-8	1/2	1/2
10-6 DBZ	10FEL6N	1010-8-6	5/8	3/8
10-8 DBZ	10FEL8N	1010-8-8	5/8	1/2
12-8 DBZ	12FEL8N	1210-8-8	3/4	1/2
12-12 DBZ	12FEL12N	1210-8-12	3/4	3/4
14-12 DBZ	14FEL12N	1410-8-12	7/8	3/4
16-12 DBZ	16FEL12N	1610-8-12	1	3/4
16-16 DBZ	16FEL16N	1610-8-16	1	1

NPT Female Run Tee

for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
2-2-2 MBZ	2FRT2N	200-3-2TFT	1/8	1/8
3-2-3 MBZ	3FRT2N	300-3-2TFT	3/16	1/8
4-2-4 MBZ	4FRT2N	400-3-2TFT	1/4	1/8
4-4-4 MBZ	4FRT4N	400-3-4TFT	1/4	1/4
5-2-5 MBZ	5FRT2N	500-3-2TFT	5/16	1/8
6-4-6 MBZ	6FRT4N	600-3-4TFT	3/8	1/4
8-4-8 MBZ	8FRT4N	810-3-4TFT	1/2	1/4
8-6-8 MBZ	8FRT6N	810-3-6TFT	1/2	3/8
8-8-8 MBZ	8FRT8N	810-3-8TFT	1/2	1/2
10-8-10 MBZ	10FRT8N	1010-3-8TFT	5/8	1/2
12-12-12 MBZ	12FRT12N	1210-3-12TFT	3/4	3/4
14-8-14 MBZ	14FRT8N	1410-3-8TFT	7/8	1/2
14-12-14 MBZ	14FRT12N	1410-3-12TFT	7/8	3/4
16-12-16 MBZ	16FRT12N	1610-3-12TFT	1	3/4
16-16-16 MBZ	16FRT16N	1610-3-16TFT	1	1

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Female Pipe

NPT Female Branch Tee

for Fractional Tube

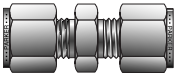
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	NPT Thread Size
2-2-2 OBZ	2FBT2N	200-3-2TTF	1/8	1/8
3-3-2 OBZ	3FBT2N	300-3-2TTF	3/16	1/8
4-4-2 OBZ	4FBT2N	400-3-2TTF	1/4	1/8
4-4-4 OBZ	4FBT4N	400-3-4TTF	1/4	1/4
5-5-2 OBZ	5FBT2N	500-3-2TTF	5/16	1/8
6-6-4 OBZ	6FBT4N	600-3-4TTF	3/8	1/4
8-8-4 OBZ	8FBT4N	810-3-4TTF	1/2	1/4
8-8-6 OBZ	8FBT6N	810-3-6TTF	1/2	3/8
8-8-8 OBZ	8FBT8N	810-3-8TTF	1/2	1/2
10-10-8 OBZ	10FBT8N	1010-3-8TTF	5/8	1/2
12-12-12 OBZ	12FBT12N	1210-3-12TTF	3/4	3/4
14-14-12 OBZ	14FBT12N	1410-3-12TTF	7/8	3/4
16-16-12 OBZ	16FBT12N	1610-3-12TTF	1	3/4
16-16-16 OBZ	16FBT16N	1610-3-16TTF	1	1

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Tube Unions

Union

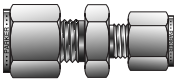
for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	Tube O.D.
1-1 HBZ	1SC1	100-6	1/16	1/16
2-2 HBZ	2SC2	200-6	1/8	1/8
3-3 HBZ	3SC3	300-6	3/16	1/8
4-4 HBZ	4SC4	400-6	1/4	1/4
5-5 HBZ	5SC5	500-6	5/16	1/8
6-6 HBZ	6SC6	600-6	3/8	1/8
8-8 HBZ	8SC8	810-6	1/2	1/4
10-10 HBZ	10SC10	1010-6	5/8	3/8
12-12 HBZ	12SC12	1210-6	3/4	1/2
14-14 HBZ	14SC14	1410-6	7/8	1/8
16-16 HBZ	16SC16	1610-6	1	1/4
20-20 HBZ	20SC20	2010-6	1-1/4	1/8
24-24 HBZ	24SC24	2410-6	1-1/2	1/4
32-32 HBZ	32SC32	3210-6	2	3/8

Reducing Union

for Fractional Tube



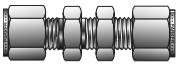
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches	
			Tube O.D.	Tube O.D.
2-1 HBZ	2RU1	200-6-1	1/8	1/16
3-1 HBZ	3RU1	300-6-1	3/16	1/16
3-2 HBZ	3RU2	300-6-2	3/16	1/8
4-1 HBZ	4RU1	400-6-1	1/4	1/16
4-2 HBZ	4RU2	400-6-2	1/4	1/8
4-3 HBZ	4RU3	400-6-3	1/4	3/16
5-2 HBZ	5RU2	500-6-2	5/16	1/8
5-4 HBZ	5RU4	500-6-4	5/16	1/4
6-1 HBZ	6RU1	600-6-1	3/8	1/16
6-2 HBZ	6RU2	600-6-2	3/8	1/8
6-4 HBZ	6RU4	600-6-4	3/8	1/4
6-5 HBZ	6RU5	600-6-5	3/8	5/16
8-2 HBZ	8RU2	810-6-2	1/2	1/8
8-4 HBZ	8RU4	810-6-4	1/2	1/4
8-6 HBZ	8RU6	810-6-6	1/2	3/8
10-6 HBZ	10RU6	1010-6-6	5/8	3/8
10-8 HBZ	10RU8	1010-6-8	5/8	1/2
12-4 HBZ	12RU4	1210-6-4	3/4	1/4
12-6 HBZ	12RU6	1210-6-6	3/4	3/8
12-8 HBZ	12RU8	1210-6-8	3/4	1/2
12-10 HBZ	12RU10	1210-6-10	3/4	5/8
16-8 HBZ	16RU8	1610-6-8	1	1/2
16-12 HBZ	16RU12	1610-6-12	1	3/4

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Tube Unions

Bulkhead Union

for Fractional Tube



NOTE:
- For reducer sizes call out short end first.

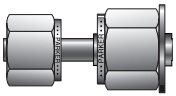
- For replacement bulkhead nuts, see page 104, part WLZ.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
1-1 WBZ	1BC1	100-61	1/16
2-2 WBZ	2BC2	200-61	1/8
2-4 WBZ	2BC4	400-61-2	1/8 - 1/4
3-3 WBZ	3BC3	300-61	3/16
4-2 WBZ	4BC2	200-61-4	1/4 - 1/8
4-4 WBZ	4BC4	400-61	1/4
5-5 WBZ	5BC5	500-61	5/16
6-6 WBZ	6BC6	600-61	3/8
8-8 WBZ	8BC8	810-61	1/2
10-10 WBZ	10BC10	1010-61	5/8
12-12 WBZ	12BC12	1210-61	3/4
14-14 WBZ	14BC14	1410-61	7/8
16-16 WBZ	16BC16	1610-61	1

Dielectric Union Adapter*

for Fractional Tube

CPI™ Adapter Part No.	A-LOK® Adapter Part No.	T_1 Tube End	T_2 Tube End
6-8 DEBTA-SS	6-8 DELTA	3/8	1/2
8-10 DEBTA-SS	N/A	1/2	5/8

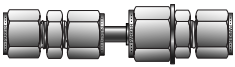


* Includes nuts, machined tube with molded PEEK[1)] insulator, preset ferrule, and dielectric identification ring

NOTE:
1) Polyetherether Ketone
- Other end connectors available upon request.
- Makeup instructions included with parts in box when ordered as an Adapter only.

Dielectric Assembly

for Fractional Tube

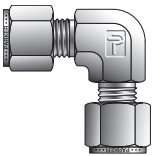


*includes dielectric union adapter with assembled tube fitting unions

CPI™ Assembly Part No.	A-LOK® Assembly Part No.
Compression	Compression
4H DEBTA	4H DELTA
6H DEBTA	6H DELTA
8H DEBTA	8H DELTA
Female Pipe	Female Pipe
4G DEBTA	4G DELTA
6G DEBTA	6G DELTA
8G DEBTA	8G DELTA
Male Pipe	Male Pipe
4F DEBTA	4F DELTA
6F DEBTA	6F DELTA
8F DEBTA	8F DELTA

Union Elbow

for Fractional Tube



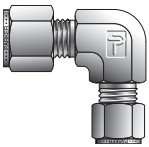
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
1-1 EBZ	1EE1	100-9	1/16
2-2 EBZ	2EE2	200-9	1/8
3-3 EBZ	3EE3	300-9	3/16
4-4 EBZ	4EE4	400-9	1/4
5-5 EBZ	5EE5	500-9	5/16
6-6 EBZ	6EE6	600-9	3/8
8-8 EBZ	8EE8	810-9	1/2
10-10 EBZ	10EE10	1010-9	5/8
12-12 EBZ	12EE12	1210-9	3/4
14-14 EBZ	14EE14	1410-9	7/8
16-16 EBZ	16EE16	1610-9	1
20-20 EBZ	20EE20	2010-9	1-1/4
24-24 EBZ	24EE24	2410-9	1-1/2
32-32 EBZ	32EE32	3210-9	2

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Tube Unions

Drop Size Elbows

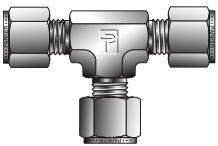
for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
3-2 EBZ	3-2 ELZ	300-9-2	3/16-1/8
4-2 EBZ	4-2 ELZ	400-9-2	1/4-1/8
5-2 EBZ	5-2 ELZ	500-9-2	5/16-1/8
5-4 EBZ	5-4 ELZ	500-9-4	5/16-1/4
6-2 EBZ	6-2 ELZ	600-9-2	3/8-1/8
6-4 EBZ	6-4 ELZ	600-9-4	3/8-1/4
6-5 EBZ	6-5 ELZ	600-9-5	3/8-5/16
8-4 EBZ	8-4 ELZ	810-9-4	1/2-1/4
8-5 EBZ	8-5 ELZ	810-9-5	1/2-5/16
8-6 EBZ	8-6 ELZ	810-9-6	1/2-3/8
10-6 EBZ	10-6 ELZ	1010-9-6	5/8-3/8
10-8 EBZ	10-8 ELZ	1010-9-8	5/8-1/2
12-4 EBZ	12-4 ELZ	1210-9-4	3/4-1/4
12-6 EBZ	12-6 ELZ	1210-9-6	3/4-3/8
12-8 EBZ	12-8 ELZ	1210-9-8	3/4-1/2
14-4 EBZ	14-4 ELZ	1410-9-4	7/8-1/4
16-8 EBZ	16-8 ELZ	1610-9-8	1-1/2
16-12 EBZ	16-12 ELZ	1610-9-12	1-3/4

Union Tee

for Fractional Tube



NOTE:
Sizes 20, 24, 32 require additional lubrication prior to assembly.

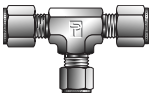
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
1-1-1 JBZ	1ET1	100-3	1/16
2-2-2 JBZ	2ET2	200-3	1/8
3-3-3 JBZ	3ET3	300-3	3/16
4-4-4 JBZ	4ET4	400-3	1/4
5-5-5 JBZ	5ET5	500-3	5/16
6-6-6 JBZ	6ET6	600-3	3/8
8-8-8 JBZ	8ET8	810-3	1/2
10-10-10 JBZ	10ET10	1010-3	5/8
12-12-12 JBZ	12ET12	1210-3	3/4
14-14-14 JBZ	14ET14	1410-3	7/8
16-16-16 JBZ	16ET16	1610-3	1
20-20-20 JBZ	20ET20	2010-3	1-1/4
24-24-24 JBZ	24ET24	2410-3	1-1/2
32-32-32 JBZ	32ET32	3210-3	2

For metric fittings and additional thread types, please see Catalog 4230/4233.

Drop Size Tees

for Fractional Tube

Eliminates the extra connection when adapting with a tube stub reducer



CPI™ Part No.	A-LOK® Part No.	Interchanges With	T1 Tube O.D.	T2 Tube O.D.	T3 Tube O.D.
4-4-2 JBZ	4-4-2 JLZ	400-3-4-2	1/4	1/4	1/8
6-6-4 JBZ	6-6-4 JLZ	600-3-6-4	3/8	3/8	1/4
6-4-6 JBZ	6-4-6 JLZ	600-3-4-6	3/8	1/4	3/8
6-4-4 JBZ	6-4-4 JLZ	600-3-4-4	3/8	1/4	1/4
8-8-6 JBZ	8-8-6 JLZ	810-3-8-6	1/2	1/2	3/8
8-8-4 JBZ	8-8-4 JLZ	810-3-8-4	1/2	1/2	1/4
8-6-8 JBZ	8-6-8 JLZ	810-3-6-8	1/2	3/8	1/2
8-4-8 JBZ	8-4-8 JLZ	810-3-4-8	1/2	1/4	1/2
8-6-6 JBZ	8-6-6 JLZ	810-3-6-6	1/2	3/8	3/8
8-4-4 JBZ	8-4-4 JLZ	810-3-4-4	1/2	1/4	1/4
10-10-8 JBZ	10-10-8 JLZ	1010-3-10-8	5/8	5/8	1/2
10-10-6 JBZ	10-10-6 JLZ	1010-3-10-6	5/8	5/8	3/8
10-8-8 JBZ	10-8-8 JLZ	1010-3-8-8	5/8	1/2	1/2
10-8-6 JBZ	10-8-6 JLZ	1010-3-8-6	5/8	1/2	3/8
10-6-6 JBZ	10-6-6 JLZ	1010-3-6-6	5/8	3/8	3/8
10-6-8 JBZ	10-6-8 JLZ	1010-3-6-8	5/8	3/8	1/2
12-12-10 JBZ	12-12-10 JLZ	1210-3-12-10	3/4	3/4	5/8
12-12-8 JBZ	12-12-8 JLZ	1210-3-12-8	3/4	3/4	1/2
12-12-6 JBZ	12-12-6 JLZ	1210-3-12-6	3/4	3/4	3/8
12-12-4 JBZ	12-12-4 JLZ	1210-3-12-4	3/4	3/4	1/4
12-10-10 JBZ	12-10-10 JLZ	1210-3-10-10	3/4	5/8	5/8
12-8-8 JBZ	12-8-8 JLZ	1210-3-8-8	3/4	1/2	1/2
12-6-6 JBZ	12-6-6 JLZ	1210-3-6-6	3/4	3/8	3/8
12-10-8 JBZ	12-10-8 JLZ	1210-3-10-8	3/4	5/8	1/2
12-10-6 JBZ	12-10-6 JLZ	1210-3-10-6	3/4	5/8	3/8
12-8-6 JBZ	12-8-6 JLZ	1210-3-8-6	3/4	1/2	3/8
14-14-6 JBZ	14-14-6 JLZ	1410-3-14-6	7/8	7/8	3/8
14-14-4 JBZ	14-14-4 JLZ	1410-3-14-4	7/8	7/8	1/4
14-12-12 JBZ	14-12-12 JLZ	1410-3-12-12	7/8	3/4	3/4
14-12-8 JBZ	14-12-8 JLZ	1410-3-12-8	7/8	3/4	1/2
14-12-6 JBZ	14-12-6 JLZ	1410-3-12-6	7/8	3/4	3/8
14-10-6 JBZ	14-10-6 JLZ	1410-3-10-6	7/8	5/8	3/8

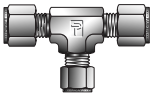
For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Tube Unions

Drop Size Tees - cont'd

for Fractional Tube

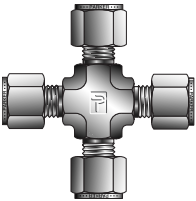
Eliminates the extra connection when adapting with a tube stub reducer



CPI™ Part No.	A-LOK® Part No.	Interchanges With	T_1 Tube O.D.	T_2 Tube O.D.	T_3 Tube O.D.
14-8-12 JBZ	14-8-12 JLZ	1410-3-8-12	7/8	1/2	3/4
16-16-12 JBZ	16-16-12 JLZ	1610-3-16-12	1	1	3/4
16-16-10 JBZ	16-16-10 JLZ	1610-3-16-10	1	1	5/8
16-16-8 JBZ	16-16-8 JLZ	1610-3-16-8	1	1	1/2
16-16-6 JBZ	16-16-6 JLZ	1610-3-16-6	1	1	3/8
16-16-4 JBZ	16-16-4 JLZ	1610-3-16-4	1	1	1/4
16-12-16 JBZ	16-12-16 JLZ	1610-3-12-16	1	3/4	1
16-14-14 JBZ	16-14-14 JLZ	1610-3-14-14	1	7/8	7/8
16-14-12 JBZ	16-14-12 JLZ	1610-3-14-12	1	7/8	3/4
16-14-8 JBZ	16-14-8 JLZ	1610-3-14-8	1	7/8	1/2
16-14-6 JBZ	16-14-6 JLZ	1610-3-14-6	1	7/8	3/8
16-14-4 JBZ	16-14-4 JLZ	1610-3-14-4	1	7/8	1/4
16-16-14 JBZ	16-16-14 JLZ	1610-3-16-14	1	1	7/8
16-12-10 JBZ	16-12-10 JLZ	1610-3-12-10	1	3/4	5/8
16-12-8 JBZ	16-12-8 JLZ	1610-3-12-8	1	3/4	1/2
16-10-6 JBZ	16-10-6 JLZ	1610-3-10-6	1	5/8	3/8
16-8-16 JBZ	16-8-16 JLZ	1610-3-8-16	1	1/2	1
16-8-8 JBZ	16-8-8 JLZ	1610-3-8-8	1	1/2	1/2
16-8-6 JBZ	16-8-6 JLZ	1610-3-8-6	1	1/2	3/8
16-8-4 JBZ	16-8-4 JLZ	1610-3-8-4	1	1/2	1/4
16-6-6 JBZ	16-6-6 JLZ	1610-3-6-6	1	3/8	3/8

Union Cross

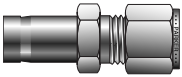
for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
2 KBZ	2ECR2	200-4	1/8
3 KBZ	3ECR3	300-4	3/16
4 KBZ	4ECR4	400-4	1/4
5 KBZ	5ECR5	500-4	5/16
6 KBZ	6ECR6	600-4	3/8
8 KBZ	8ECR8	810-4	1/2
10 KBZ	10ECR10	1010-4	5/8
12 KBZ	12ECR12	1210-4	3/4
14 KBZ	14ECR14	1410-4	7/8
16 KBZ	16ECR16	1610-4	1

Tube End Reducer

for Fractional Tube



NOTE:
- Sizes 1, 2, and 3 do not require a groove.

- Size 4 and above tube stub is pre-grooved as standard. Generic (non-grooved) can be ordered through Quick Response Department.

- Sizes 20, 24 require additional lubrication prior to assembly.

- Add -Z6 for assembly of nuts and ferrules on the tube stub end.

†All tube stubs over 1" come standard with nuts and ferrule(s) pre-assembled (-Z6 option).

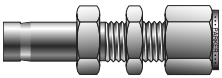
CPI™ Part No.	A-LOK® Part No.	Interchanges With	T_1 Turned EndTube O.D.	T_2 Machined End Tube O.D.
2-1 TRBZ	2TUR1	100-R-2	1/8	1/16
3-1 TRBZ	3TUR1	100-R-3	3/16	1/16
4-1 TRBZ	4TUR1	100-R-4	1/4	1/16
1-2 TRBZ	1TUR2	200-R-1	1/16	1/8
2-2 TRBZ	2TUR2	200-R-2	1/8	1/8
3-2 TRBZ	3TUR2	200-R-3	3/16	1/8
4-2 TRBZ	4TUR2	200-R-4	1/4	1/8
6-2 TRBZ	6TUR2	200-R-6	3/8	1/8
8-2 TRBZ	8TUR2	200-R-8	1/2	1/8
2-3 TRBZ	2TUR3	300-R-2	1/8	3/16
4-3 TRBZ	4TUR3	300-R-4	1/4	3/16
2-4 TRBZ	2TUR4	400-R-2	1/8	1/4
3-4 TRBZ	3TUR4	400-R-3	3/16	1/4
4-4 TRBZ	4TUR4	400-R-4	1/4	1/4
5-4 TRBZ	5TUR4	400-R-5	5/16	1/4
6-4 TRBZ	6TUR4	400-R-6	3/8	1/4
8-4 TRBZ	8TUR4	400-R-8	1/2	1/4
10-4 TRBZ	10TUR4	400-R-10	5/8	1/4
12-4 TRBZ	12TUR4	400-R-12	3/4	1/4
6-5 TRBZ	6TUR5	500-R-6	3/8	5/16
8-5 TRBZ	8TUR5	500-R-8	1/2	5/16
4-6 TRBZ	4TUR6	600-R-4	1/4	3/8
6-6 TRBZ	6TUR6	600-R-6	3/8	3/8
8-6 TRBZ	8TUR6	600-R-8	1/2	3/8
10-6 TRBZ	10TUR6	600-R-10	5/8	3/8
12-6 TRBZ	12TUR6	600-R-12	3/4	3/8
4-8 TRBZ	4TUR8	810-R-4	1/4	1/2
6-8 TRBZ	6TUR8	810-R-6	3/8	1/2
10-8 TRBZ	10TUR8	810-R-10	5/8	1/2
12-8 TRBZ	12TUR8	810-R-12	3/4	1/2
16-8 TRBZ	16TUR8	810-R-16	1	1/2
12-10 TRBZ	12TUR10	1010-R-12	3/4	5/8
14-10 TRBZ	14TUR10	1010-R-14	7/8	5/8
16-10 TRBZ	16TUR10	1010-R-16	1	5/8
8-12 TRBZ	8TUR12	1210-R-8	1/2	3/4
16-12 TRBZ	16TUR12	1210-R-16	1	3/4
24-16 TRBZ†	24TUR16	1610-R-24	1-1/2	1
24-20 TRBZ†	24TUR20	2010-R-24	1-1/2	1-1/4
32-24 TRBZ†	32TUR24	2410-R-32	2	1-1/2

For metric fittings and additional thread types, please see Catalog 4230/4233.

Port Connectors

Tube End Bulkhead Adapter

for Fractional Tube



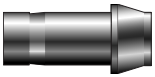
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
2-2 T2H2BZ	2TUBC2	200-R1-2	1/8
4-4 T2H2BZ	4TUBC4	400-R1-4	1/4
6-6 TH2HBZ	6TUBC6	600-R1-6	3/8
8-8 T2H2BZ	8TUBC8	810-R1-8	1/2

NOTE:
- Tube stub is pre-grooved as standard. Generic (non-grooved) can be ordered through Quick Response Department.

- Add -Z6 for assembly of nuts and ferrules on the tube stub end.

Port Connector

for Fractional Tube



NOTE:
- Tube stub is pre-grooved as standard. (Size 1, 2, and 3 not grooved). Generic (non-grooved 4-16) can be ordered through Quick Response Department.

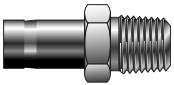
- The machined ferrule end (T2) requires only 1/4 turn from finger tight to assemble.

- Add -Z6 for assembly of nuts and ferrules on the tube stub end.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
1-1 ZPC	1PC1	101-PC	1/16
1-2 ZPC	1PC2	201-PC-1	1/16-1/8
1-4 ZPC	1PC4	401-PC-1	1/16-1/4
2-2 ZPC	2PC2	201-PC	1/8
2-4 ZPC	2PC4	401-PC-2	1/8-1/4
2-6 ZPC	2PC6	601-PC-2	1/8-3/8
3-3 ZPC	3PC3	301-PC	3/16
4-4 ZPC	4PC4	401-PC	1/4
4-6 ZPC	4PC6	601-PC-4	1/4-3/8
4-8 ZPC	4PC8	811-PC-4	1/4-1/2
6-6 ZPC	6PC6	601-PC	3/8
6-8 ZPC	6PC8	811-PC-6	3/8-1/2
8-8 ZPC	8PC8	811-PC	1/2
8-12 ZPC	8PC12	1211-PC-8	1/2-3/4
12-12 ZPC	12PC12	1211-PC	3/4
16-16 ZPC	16PC16	1611-PC	1

NPT Tube End Male Adapter

for Fractional Tube



NOTE:
- Add -Z6 for assembly of nuts and ferrules on the tube stub end.

- Tube stub is pre-grooved as standard. Generic (non-grooved) can be ordered through Quick Response Department.

- Inch sizes 1, 2, and 3 and metric sizes 2, 3, and 4mm do not have grooves.

- Sizes 20, 24, 32 require additional lubrication prior to assembly.

- † All tube stubs over 1" come standard with nuts and ferrule(s) pre-assembled (-Z6 option).

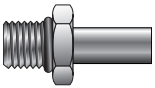
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	NPT Thread Size
1-2 T2HF	1MA2N	1-TA-1-1	1/16	1/8
2-2 T2HF	2MA2N	2-TA-1-2	1/8	1/8
2-4 T2HF	2MA4N	2-TA-1-4	1/8	1/4
3-2 T2HF	3MA2N	3-TA-1-2	3/16	1/8
3-4 T2HF	3MA4N	3-TA-1-4	3/16	1/4
4-2 T2HF	4MA2N	4-TA-1-2	1/4	1/8
4-4 T2HF	4MA4N	4-TA-1-4	1/4	1/4
4-6 T2HF	4MA6N	4-TA-1-6	1/4	3/8
4-8 T2HF	4MA8N	4-TA-1-8	1/4	1/2
5-2 T2HF	5MA2N	5-TA-1-2	5/16	1/8
5-4 T2HF	5MA4N	5-TA-1-4	5/16	1/4
5-6 T2HF	5MA6N	5-TA-1-6	5/16	3/8
5-8 T2HF	5MA8N	5-TA-1-8	5/16	1/2
6-2 T2HF	6MA2N	6-TA-1-2	3/8	1/8
6-4 T2HF	6MA4N	6-TA-1-4	3/8	1/4
6-6 T2HF	6MA6N	6-TA-1-6	3/8	3/8
6-8 T2HF	6MA8N	6-TA-1-8	3/8	1/2
8-4 T2HF	8MA4N	8-TA-1-4	1/2	1/4
8-6 T2HF	8MA6N	8-TA-1-6	1/2	3/8
8-8 T2HF	8MA8N	8-TA-1-8	1/2	1/2
10-8 T2HF	10MA8N	10-TA-1-8	5/8	1/2
12-8 T2HF	12MA8N	12-TA-1-8	3/4	1/2
12-12 T2HF	12MA12N	12-TA-1-12	3/4	3/4
12-16 T2HF	12MA16N	12-TA-1-16	3/4	1
16-12 T2HF †	16MA12N	16-TA-1-12	1	3/4
16-16 T2HF †	16MA16N	16-TA-1-16	1	1
20-20 T2HF †	20MA20N	20-TA-1-20	1-1/4	1-1/4
24-24 T2HF †	24MA24N	24-TA-1-24	1-1/2	1-1/2
32-32 T2HF †	32MA32N	32-TA-1-32	2	2

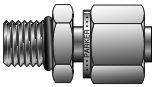
For metric fittings and additional thread types, please see Catalog 4230/4233.

Port Connectors

Tube End to SAE Straight Thread Adapter

for Fractional Tube





CPI™ Part No.	A-LOK® Part No.	Interchanges With	T Tube O.D.	Straight Thread Size	O-Ring Size
6-4 T2HOA	6TUHOA4	6-TA-1-4ST	3/8	7/16-20	3-904
6-8 T2HOA	6TUHOA8	6-TA-1-8ST	3/8	3/4-16	3-908
8-6 T2HOA	8TUHOA6	8-TA-1-6ST	1/2	9/16-18	3-906
10-10 T2HOA	10TUHOA10	10-TA-1-10ST	5/8	7/8-14	3-910
24-24 T2HOA†	24TUHOA24	24-TA-1-24ST	1-1/2	1-7/8-12	3-924

Add -Z6 for assembly of nuts and ferrules on the tube stub end.

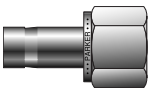
NOTE:
- Size 24 requires additional lubrication prior to assembly.

- Parts are supplied with nitrile o-rings as standard. For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

† Size 24 is preassembled with nut and ferrules.

Tube End NPT Female Adapter

for Fractional Tube



NOTE:
- Tube stub is pre-grooved as standard.

- Generic (non-grooved) can be ordered through Quick Response Department.

- Add -Z6 for assembly of nuts and ferrules on the tube stub end.

- † All tube stubs over 1" come standard with nuts and ferrule(s) pre-assembled (-Z6 option).

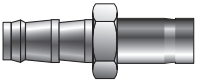
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	NPT Thread Size
1-2 T2HG	1FA2N	1-TA-7-2	1/16	1/8
2-2 T2HG	2FA2N	2-TA-7-2	1/8	1/8
2-4 T2HG	2FA4N	2-TA-7-4	1/8	1/4
3-2 T2HG	3FA2N	3-TA-7-2	3/16	1/8
3-4 T2HG	3FA4N	3-TA-7-4	3/16	1/4
4-2 T2HG	4FA2N	4-TA-7-2	1/4	1/8
4-4 T2HG	4FA4N	4-TA-7-4	1/4	1/4
4-6 T2HG	4FA6N	4-TA-7-6	1/4	3/8
4-8 T2HG	4FA8N	4-TA-7-8	1/4	1/2
5-2 T2HG	5FA2N	5-TA-7-2	5/16	1/8
5-4 T2HG	5FA4N	5-TA-7-4	5/16	1/4
5-6 T2HG	5FA6N	5-TA-7-6	5/16	3/8
6-2 T2HG	6FA2N	6-TA-7-2	3/8	1/8
6-4 T2HG	6FA4N	6-TA-7-4	3/8	1/4
6-6 T2HG	6FA6N	6-TA-7-6	3/8	3/8
6-8 T2HG	6FA8N	6-TA-7-8	3/8	1/2
8-4 T2HG	8FA4N	8-TA-7-4	1/2	1/4
8-6 T2HG	8FA6N	8-TA-7-6	1/2	3/8
8-8 T2HG	8FA8N	8-TA-7-8	1/2	1/2
10-6 T2HG	10FA6N	10-TA-7-6	5/8	3/8
10-8 T2HG	10FA8N	10-TA-7-8	5/8	1/2
12-8 T2HG	12FA8N	12-TA-7-8	3/4	1/2
12-12 T2HG	12FA12N	12-TA-7-12	3/4	3/4
12-16 T2HG	12FA16N	12-TA-7-16	3/4	1
14-12 T2HG	14FA12N	14-TA-7-12	7/8	3/4
16-12 T2HG	16FA12N	16-TA-7-12	1	3/4
16-16 T2HG	16FA16N	16-TA-7-16	1	1
20-20 T2HG †	20FA20N	20-TA-7-20	1-1/4	1-1/4
24-24 T2HG †	24FA24N	24-TA-7-24	1-1/2	1-1/2
32-32 T2HG †	32FA32N	32-TA-7-32	2	2

For metric fittings and additional thread types, please see Catalog 4230/4233.

Port Connectors

Push-Lok to Tube Adapter

for Fractional Tube



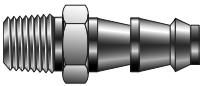
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Hose Size
4-4 P2T2	4P2TU4	PB4-TA4	1/4	–4
6-6 P2T2	6P2TU6	PB6-TA6	3/8	–6
8-8 P2T2	8P2TU8	PB8-TA8	1/2	–8

NOTE:

- Drawing does not show Push-Lok collar.
- Tube stub is pre-grooved as standard. Generic (non-grooved) can be ordered through Quick Response Department.
- Add -Z6 for assembly of nuts and ferrules on the tube stub end.

Push-Lok to Male Adapter

for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Hose Size
4-4 P2HF	4-4 P2HF	PB4-PM4	1/4	-4
6-6 P2HF	6-6 P2HF	PB6-PM6	3/8	-6
8-8 P2HF	8-8 P2HF	PB8-PM8	1/2	-8

NOTE:

- Drawing does not show Push-Lok collar.

Push-Lok to CPI™/A-LOK®

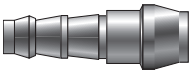
for Fractional Tube

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Hose Size
4-4 P2BZ6	4-4 P2LZ6	PB4-TA4	1/4	–4
6-6 P2BZ6	6-6 P2LZ6	PB6-TA6	3/8	–6
8-8 P2BZ6	8-8 P2LZ6	PB8-TA8	1/2	–8

NOTE:
- Drawing does not show Push-Lok collar. Assembly includes nut and ferrules

Push-Lok to Port Connector

for Fractional Tube



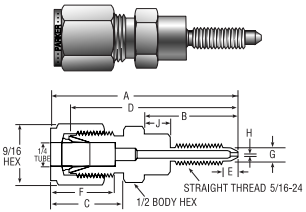
CPI™ Part No.	A-LOK® Part No.	Hose Size	Port Size
4-6 ZPB2	4-6 ZPC2	–4	3/8

NOTE:
- Drawing does not show Push-Lok collar and size 6 A-LOK® nut.

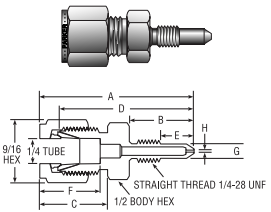
DP Transmitter Calibration Adapters

for Fractional Tube

Parker CPI™ / A-LOK® adapters connect directly to the bleed port of a differential pressure transmitter so that the calibration process can be simplified. Two sizes of adapters (1/4-28 Thd., 5/16-24 Thd.) are available to fit the vent ports of Rosemount, Honeywell, and Foxboro DP transmitters. Both adapters are available in 316SS.



Calibration Adapter for
Rosemount/Foxboro DP Transmitters



Calibration Adapter for
Honeywell DP Transmitters

Transmitter Type	Parker Part No.	Interchanges With
(1) Rosemount/Foxboro	4-2 ZH2LX-SS-D950373	–
(2) Honeywell	4-2 ZH2LX-SS-D940336	SS-400-1-0257
(3) Rosemount/Yokogawa	4-2 ZH2LX-SS-D030297	SS-400-1-0253
(4) ABB	4-2 ZH2LX-SS-D030249	–

Straight Thread	Inches									
	A	B	C	D	E	F	G	H	J	Hex
(1) 5/16-24	2.32	1.41	.70	2.03	.24	.60	.25	.06	.41	1/2
(2) 1/4-28	1.75	.80	.70	1.46	.47	.60	.20	.03	–	1/2
(3) 5/16-24	2.32	1.41	.70	2.03	.40	.60	.25	.05	.41	1/2
(4) 1/4-28	1.74	.74	.70	1.44	.30	.60	.18	.05	–	1/2

Dimensions for reference only, subject to change.

For metric fittings and additional thread types, please see Catalog 4230/4233.

37° Flare to A-LOK®

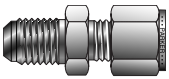
37° Flare (AN) to CPI™/A-LOK®

for Fractional Tube

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
2-2 X6HBZ6	2X6TU2	200-A-2 ANF	1/8
4-4 X6HBZ6	4X6TU4	400-A-4 ANF	1/4
6-6 X6HBZ6	6X6TU6	600-A-6 ANF	3/8
8-8 X6HBZ6	8X6TU8	810-A-8 ANF	1/2
12-12 X6HBZ6	12X6TU12	1210-A-12ANF	3/4
16-16 X6HBZ6	16X6TU16	1610-A-16ANF	1

37° Flare Connector

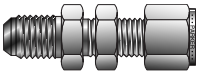
for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Flare End	Tube O.D.
2-1 XHBZ	2XASC1	100-6-2 AN	1/8	1/16
2-2 XHBZ	2XASC2	200-6-2 AN	1/8	1/8
4-2 XHBZ	4XASC2	200-6-4 AN	1/4	1/8
3-3 XHBZ	3XASC3	300-6-3 AN	3/16	3/16
4-4 XHBZ	4XASC4	400-6-4 AN	1/4	1/4
5-5 XHBZ	5XASC5	500-6-5 AN	5/16	5/16
4-6 XHBZ	4XASC6	600-6-4 AN	1/4	3/8
6-6 XHBZ	6XASC6	600-6-6 AN	3/8	3/8
8-8 XHBZ	8XASC8	810-6-8 AN	1/2	1/2
10-10 XHBZ	10XASC10	1010-6-10 AN	5/8	5/8
12-12 XHBZ	12XASC12	1210-6-12 AN	3/4	3/4
16-16 XHBZ	16XASC16	1610-6-16 AN	1	1

37° Flare Bulkhead Connector

for Fractional Tube



NOTE:
For bulkhead hole drill size and maximum bulkhead thickness, please see Catalog 4230/2433.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Flare End	Tube O.D.
2-2 XH2BZ	2XABC2	200-61-2 AN	1/8	1/8
3-3 XH2BZ	3XABC3	300-61-3 AN	3/16	3/16
4-2 XH2BZ	4XABC2	200-61-4 AN	1/4	1/8
4-4 XH2BZ	4XABC4	400-61-4 AN	1/4	1/4
5-5 XH2BZ	5XABC5	500-61-5 AN	5/16	5/16
4-6 XH2BZ	4XABC6	600-61-4 AN	1/4	3/8
6-6 XH2BZ	6XABC6	600-61-6 AN	3/8	3/8
8-8 XH2BZ	8XABC8	810-61-8 AN	1/2	1/2
10-10 XH2BZ	10XABC10	1010-61-10 AN	5/8	5/8
12-12 XH2BZ	12XABC12	1210-61-12 AN	3/4	3/4
16-16 XH2BZ	16XABC16	1610-61-16 AN	1	1

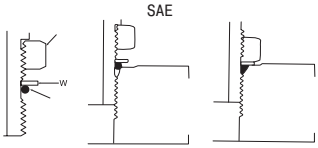
For metric fittings and additional thread types, please see Catalog 4230/4233.

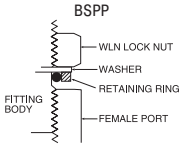
Tube to O-Ring Seal

BSPP / SAE Straight Thread Fittings Installation Procedure

1. Lubricate O-ring with a lubricant that is compatible with the system.
2. Screw fitting into the straight thread port until the metal back-up washer contacts the face of the port.
3. Position the fitting by backing it out no more than one turn.
4. Hold the fitting in position and tighten the locknut until the washer contacts the face of the port. (See torque chart.)

NOTE: WLN Lock Nuts are ordered separately by size and part number. Refer to page 104.





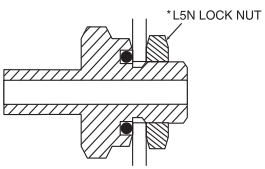
SIZE	Straight Port		Adjustable Port	
	Torque (in-lbs)	(F.F.F.T	Torque (in-lbs)	(F.F.F.T
4	245 ± 10	1.0 ± .25	200 ± 10	1.5 ± .25
6	630 ± 25	1.5 ± .25	400 ± 10	1.5 ± .25
8	1150 ± 50	1.5 ± .25	640 ± 10	1.5 ± .25
10	1550 ± 50	1.5 ± .25	1125 ± 50	1.5 ± .25
12	2050 ± 50	1.5 ± .25	1450 ± 50	1.5 ± .25
16	3000 ± 50	1.5 ± .25	2150 ± 50	1.5 ± .25
20	3400 ± 100	1.5 ± .25	2800 ± 100	2.0 ± .25
24	4500 ± 100	1.5 ± .25	3450 ± 100	2.0 ± .25

NOTE:
- Restrain fitting body on adjustables if necessary in installation.
- Values in charts are for assemblies with O-ring lubricated.
- Use upper limits of torque ranges for stainless steel fittings.

Face Seal O-Ring Fittings Installation Procedure

The O-ring requires a smooth, flat seating surface.This surface must be perpendicular to the axis of the threads.

1. Turn the O-ring seal fitting in the port until finger tight.
2. The “squeezing” effect on the O-ring can be felt during the last 1/4 turn.
3. Snug lightly with a wrench.



*Typical Application

The fitting can be adapted as a bulkhead fitting on thin wall tanks or vessels, eliminating welding, brazing or threading. Simply order the L5N locknut to take advantage of this option.

NOTE: Standard O-rings are nitrile material. For other O-rings, state material after the part number.

L5N locknuts are ordered separately by size and part number. Refer to page 105.

O-rings used with SAE/MS straight threads are nitrile. Other O-ring materials are available on request. Lubricate O-ring with a lubricant compatible with the system fluid, environment and O-ring material.

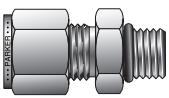
Port Size	Straight Thread Machine Length	L5N Locknut Thickness	Maximum Tank Wall Thickness
2	.297	.219	.078 = 5/64
3	.297	.219	.078 = 5/64
4	.360	.250	.109 = 7/65
5	.360	.250	.109 = 7/64
6	.391	.265	.125 = 1/8
8	.438	.312	.125 = 1/8
10	.500	.360	.140 = 9/64
12	.594	.406	.188 = 3/16
14	.594	.406	.188 = 3/16
16	.594	.406	.188 = 3/16

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to O-Ring Seal

Male Connector to SAE Straight Thread

for Fractional Tube

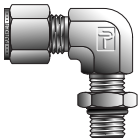


CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size	O-Ring Size
1-2 ZHBA	1M1SC2	100-1-2 ST	1/16	5/16-24	3-902
2-2 ZHBA	2M1SC2	200-1-2 ST	1/8	5/16-24	3-902
2-6 ZHBA	2M1SC6	200-1-6 ST	1/8	9/16-18	3-906
3-3 ZHBA	3M1SC3	300-1-3 ST	3/16	3/8-24	3-903
4-4 ZHBA	4M1SC4	400-1-4 ST	1/4	7/16-20	3-904
4-6 ZHBA	4M1SC6	400-1-6 ST	1/4	9/16-18	3-906
4-8 ZHBA	4M1SC8	400-1-8 ST	1/4	3/4-16	3-908
4-10 ZHBA	4M1SC10	400-1-10 ST	1/4	7/8-14	3-910
5-5 ZHBA	5M1SC5	500-1-5 ST	5/16	1/2-20	3-905
6-4 ZHBA	6M1SC4	600-1-4 ST	3/8	7/16-20	3-904
6-6 ZHBA	6M1SC6	600-1-6 ST	3/8	9/16-18	3-906
6-8 ZHBA	6M1SC8	600-1-8 ST	3/8	3/4-16	3-908
6-10 ZHBA	6M1SC10	600-1-10 ST	3/8	7/8-14	3-910
8-6 ZHBA	8M1SC6	810-1-6 ST	1/2	9/16-18	3-906
8-8 ZHBA	8M1SC8	810-1-8 ST	1/2	3/4-16	3-908
8-12 ZHBA	8M1SC12	810-1-12 ST	1/2	1-1/16-12	3-912
10-10 ZHBA	10M1SC10	1010-1-10 ST	5/8	7/8-14	3-910
12-10 ZHBA	12M1SC10	1210-1-10 ST	3/4	7/8-14	3-910
12-12 ZHBA	12M1SC12	1210-1-12 ST	3/4	1-1/16-12	3-912
12-14 ZHBA	14M1SC14	1410-1-14 ST	7/8	1-3/16-12	3-914
16-12 ZHBA	16M1SC12	1610-1-12 ST	1	1-1/16-12	3-912
16-16 ZHBA	16M1SC16	1610-1-16 ST	1	1-5/16-12	3-916
20-20 ZHBA	20M1SC20	2010-1-20 ST	1-1/4	1-5/8-12	3-920
24-24 ZHBA	24M1SC24	2410-1-24 ST	1-1/2	1-7/8-12	3-924
32-32 ZHBA	32M1SC32	3210-1-32 ST	2	2-1/2-12	3-932

NOTE: For use with SAE J.1926/1 port can also be used with MS-16142 port.
Sizes 20, 24, 32 require additional lubrication prior to assembly.
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

Male SAE Straight Thread Elbow

for Fractional Tube

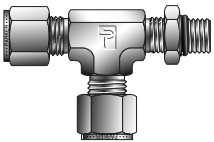


CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size	O-Ring Size
4-4 C5BZ	4M5SEL4	400-2-4ST	1/4	7/16-20	3-904
6-6 C5BZ	6M5SEL6	600-2-6ST	3/8	9/16-18	3-906
8-8 C5BZ	8M5SEL8	810-2-8ST	1/2	3/4-16	3-908
12-12 C5BZ	12M5SEL12	1210-2-12ST	3/4	1-1/16-12	3-912
16-16 C5BZ	16M5SEL16	1610-2-16ST	1	1-5/16-12	3-916
24-24 C5BZ	24M5SEL24	2410-2-24ST	1-1/2	1-7/8-12	3-924

NOTE:
Size 24 requires additional lubrication prior to assembly.
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

Male Run Tee SAE Straight Thread

for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size	O-Ring Size
4-4-4 R5BZ	4M5RT4	400-3TST	1/4	7/16-20	3-904
6-6-6 R5BZ	6M5RT6	600-3TST	3/8	9/16-18	3-906
8-8-8 R5BZ	8M5RT8	810-3TST	1/2	3/4-16	3-908
12-12-12 R5BZ	12M5RT12	1210-3TST	3/4	1-1/16-12	3-912
16-16-16 R5BZ	16M5RT16	1610-3TST	1	1-5/16-12	3-916

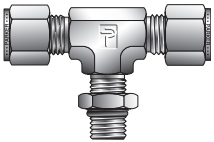
NOTE:
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to O-Ring Seal

Male Branch Tee
SAE Straight Thread

for Fractional Tube

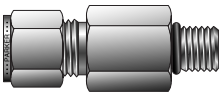


CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size	O-Ring Size
4-4-4 S5BZ	4M5BT4	400-3TTS	1/4	7/16-20	3-904
6-6-6 S5BZ	6M5BT6	600-3TTS	3/8	9/16-18	3-906
8-8-8 S5BZ	8M5BT8	810-3TTS	1/2	3/4-16	3-908
12-12-12 S5BZ	12M5BT12	1210-3TTS	3/4	1-1/16-12	3-912
16-16-16 S5BZ	16M5BT16	1610-3TTS	1	1-5/16-12	3-916

NOTE:
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

Long Male Connector
SAE/MS Straight Thread

for Fractional Tube

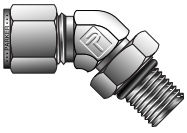


CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size	O-Ring Size
4-4 ZH3BA	4-4 ZH3LA	400-1L-4ST	1/4	7/16-20	-904
6-6 ZH3BA	6-6 ZH3LA	600-1L-6ST	3/8	9/16-18	-906
8-8 ZH3BA	8-8 ZH3LA	810-1L-8ST	1/2	3/4-16	-908
12-12 ZH3BA	12-12 ZH3LA	1210-1L-12ST	3/4	1-1/16-12	-912
16-16 ZH3BA	16-16 ZH3LA	1610-1L-16ST	1	1-5/16-12	-916

NOTE:
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

45° Positionable Male Elbow SAE/MS Straight Thread

for Fractional Tube

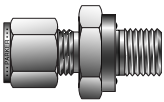


CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size	O-Ring Size
4-4 V5BZ	4M5VEL4	400-5-4ST	1/4	7/16-20	3-904
6-6 V5BZ	6M5VEL6	600-5-6ST	3/8	9/16-18	3-906
8-8 V5BZ	8M5VEL8	810-5-8ST	1/2	3/4-16	3-908
12-12 V5BZ	12M5VEL12	1210-5-12ST	3/4	1-1/16-12	3-912
16-16 V5BZ	16M5VEL16	1610-5-16ST	1	1-5/16-12	3-916

NOTE:
Adapts to SAE J1926 straight thread boss and MS16142 boss.
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

Male Connector to O-Ring Straight Thread

for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size	O-Ring Size
1-2 ZHBA5	1M2SC2	100-1-OR	1/16	5/16-24	2-011
2-2 ZHBA5	2M2SC2	200-1-OR	1/8	5/16-24	2-011
3-3 ZHBA5	3M2SC3	300-1-OR	3/16	3/8-24	2-012
4-4 ZHBA5	4M2SC4	400-1-OR	1/4	7/16-20	2-111
5-5 ZHBA5	5M2SC5	500-1-OR	5/16	1/2-20	2-112
6-6 ZHBA5	6M2SC6	600-1-OR	3/8	9/16-18	2-113
8-8 ZHBA5	8M2SC8	810-1-OR	1/2	3/4-16	2-116
10-10 ZHBA5	10M2SC10	1010-1-OR	5/8	7/8-14	2-212
12-12 ZHBA5	12M2SC12	1210-1-OR	3/4	1-1/16-12	2-215
14-12 ZHBA5	14M2SC12	1410-1-OR	7/8	1-1/16-12	2-215
16-16 ZHBA5	16M2SC16	1610-1-OR	1	1-5/16-12	2-219

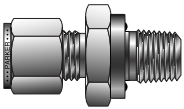
NOTE:
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to O-Ring Seal

Male Connector to O-Ring Pipe Thread

for Fractional Tube

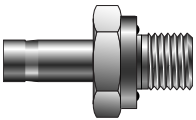


CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size	O-Ring Size
1-2 ZHBF5	1M3SC2	100-1-2-OR	1/16	1/8	2-111
2-2 ZHBF5	2M3SC2	200-1-2-OR	1/8	1/8	2-111
2-4 ZHBF5	2M3SC4	200-1-4-OR	1/8	1/4	2-113
3-2 ZHBF5	3M3SC2	300-1-2-OR	3/16	1/8	2-111
3-4 ZHBF5	3M3SC4	300-1-4-OR	3/16	1/4	2-113
4-2 ZHBF5	4M3SC2	400-1-2-OR	1/4	1/8	2-111
4-4 ZHBF5	4M3SC4	400-1-4-OR	1/4	1/4	2-113
4-6 ZHBF5	4M3SC6	400-1-6-OR	1/4	3/8	2-116
5-2 ZHBF5	5M3SC2	500-1-2-OR	5/16	1/8	2-111
5-4 ZHBF5	5M3SC4	500-1-4-OR	5/16	1/4	2-113
6-2 ZHBF5	6M3SC2	600-1-2-OR	3/8	1/8	2-111
6-4 ZHBF5	6M3SC4	600-1-4-OR	3/8	1/4	2-113
6-6 ZHBF5	6M3SC6	600-1-6-OR	3/8	3/8	2-116
6-8 ZHBF5	6M3SC8	600-1-8-OR	3/8	1/2	2-212
8-4 ZHBF5	8M3SC4	810-1-4-OR	1/2	1/4	2-113
8-6 ZHBF5	8M3SC6	810-1-6-OR	1/2	3/8	2-116
8-8 ZHBF5	8M3SC8	810-1-8-OR	1/2	1/2	2-212
10-8 ZHBF5	10M3SC8	1010-1-8-OR	5/8	1/2	2-212
10-12 ZHBF5	10M3SC12	1010-1-8-OR	5/8	3/4	2-215
12-8 ZHBF5	12M3SC8	1210-1-8-OR	3/4	1/2	2-212
12-12 ZHBF5	12M3SC12	1210-1-12-OR	3/4	3/4	2-215
16-12 ZHBF5	16M3SC12	1610-1-12-OR	1	3/4	2-215
16-16 ZHBF5	16M3SC16	1610-1-16-OR	1	1	2-219

NOTE:
Adapts to SAE J1926 straight thread boss and MS16142 boss.
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

Tube End to O-Ring Straight Thread

for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size	O-Ring Size
2-2 T2HOA5	2M2TU2	2-TA-OR-ST	1/8	5/16-24	2-011
3-3 T2HOA5	3M2TU3	3-TA-OR-ST	3/16	3/8-24	2-012
4-4 T2HOA5	4M2TU4	4-TA-OR-ST	1/4	7/16-20	2-111
5-5 T2HOA5	5M2TU5	5-TA-OR-ST	5/16	1/2-20	2-112
6-6 T2HOA5	6M2TU6	6-TA-OR-ST	3/8	9/16-18	2-113
8-8 T2HOA5	8M2TU8	8-TA-OR-ST	1/2	3/4-16	2-116
10-10 T2HOA5	10M2TU10	10-TA-OR-ST	5/8	7/8-14	2-212
12-12 T2HOA5	12M2TU12	12-TA-OR-ST	3/4	1-1/16-12	2-215
16-16 T2HOA5	16M2TU16	16-TA-OR-ST	1	1-5/16-12	2-219

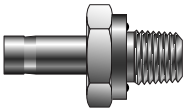
NOTE:
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to O-Ring Seal

Tube End to O-Ring Pipe Thread

for Fractional Tube

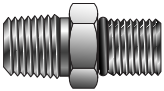


CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size	O-Ring Size
1-2 T2HOF5	1M3TU2	1-TA-1-2OR	1/16	1/8	2-111
4-2 T2HOF5	4M3TU2	4-TA-1-2OR	1/4	1/8	2-111
4-4 T2HOF5	4M3TU4	4-TA-1-4OR	1/4	1/4	2-113
4-6 T2HOF5	4M3TU6	4-TA-1-6OR	1/4	3/8	2-116
5-2 T2HOF5	5M3TU2	5-TA-1-2OR	5/16	1/8	2-111
5-4 T2HOF5	5M3TU4	5-TA-1-4OR	5/16	1/4	2-113
6-2 T2HOF5	6M3TU2	6-TA-1-2OR	3/8	1/8	2-111
6-4 T2HOF5	6M3TU4	6-TA-1-4OR	3/8	1/4	2-113
6-6 T2HOF5	6M3TU6	6-TA-1-6OR	3/8	3/8	2-116
8-6 T2HOF5	8M3TU6	8-TA-1-6OR	1/2	3/8	2-116
10-8 T2HOF5	10M3TU8	10-TA-1-8OR	5/8	1/2	2-212
12-12 T2HOF5	12M3TU12	12-TA-1-12OR	3/4	3/4	2-215
16-16 T2HOF5	16M3TU16	16-TA-1-16OR	1	1	2-219

NOTE:
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO". Other o-rings available upon request.

NPT Thread to SAE Straight Thread Adapter

for Fractional Tube

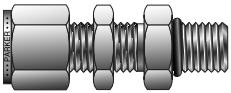


CPI™ Part No.	A-LOK® Part No.	Interchanges With	NPT Thread Size	Straight Thread Size	O-Ring Size
4-4 FHOA	4-4 FHOA	4-SAE-1-4	1/4-18	7/16-20	3-904
6-6 FHOA	6-6 FHOA	6-SAE-1-6	3/8-18	9/16-18	3-906
8-8 FHOA	8-8 FHOA	8-SAE-1-8	1/2-14	3/4- 16	3-908
12-12 FHOA	12-12 FHOA	12-SAE-1-12	3/4-14	1-1/16-12	3-912
16-16 FHOA	16-16 FHOA	16-SAE-1-16	1-11-1/2	1-5/16-12	3-916

See Note below

Bulkhead to Conversion Adapter

for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Straight Thread Size
4-6 AH2BZ	4-6 AH2LZ	400-61-6ST	1/4	9/16-18
6-6 AH2BZ	6-6 AH2LZ	600-61-6ST	3/8	9/16-18

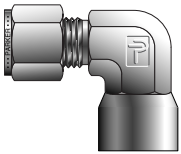
NOTE:
For use with SAE J.1926/1 port can also be used with MS-16142 port.
Parts are supplied with nitrile o-rings as standard.
For Fluorocarbon o-rings, add the suffix "-VO".
Other o-rings available upon request.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Tube to Welded Systems

Socket Weld Elbow

for Fractional Tube

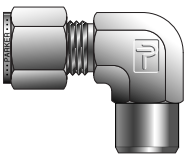


NOTE:
- For CPI™/A-LOK® to tubing socket weld connection.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
2-2 ZEBW	2-2 ZELW	200-9-2 W	1/8
3-3 ZEBW	3-3 ZELW	300-9-3 W	3/16
4-4 ZEBW	4-4 ZELW	400-9-4 W	1/4
6-6 ZEBW	6-6 ZELW	600-9-6 W	3/8
8-8 ZEBW	8-8 ZELW	810-9-8 W	1/2
10-10 ZEBW	10-10 ZELW	1010-9-10 W	5/8
12-12 ZEBW	12-12 ZELW	1210-9-12 W	3/4
16-16 ZEBW	16-16 ZELW	1610-9-16 W	1

Buttweld Elbow

for Fractional Tube



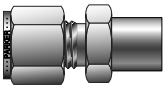
NOTE:
- For CPI™/A-LOK® to tubing socket weld connection

- Pipe buttweld end will conform to Schedule 80 unless otherwise noted.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Buttweld Pipe Size
2-1/8 ZEBW2	2-1/8 ZELW2	200-2-2 W	1/8	1/8
3-1/8 ZEBW2	3-1/8 ZELW2	300-2-2 W	3/16	1/8
4-1/8 ZEBW2	4-1/8 ZELW2	400-2-2 W	1/4	1/8
4-1/4 ZEBW2	4-1/4 ZELW2	400-2-4 W	1/4	1/4
6-1/4 ZEBW2	6-1/4 ZELW2	600-2-4 W	3/8	1/4
8-3/8 ZEBW2	8-3/8 ZELW2	810-2-6 W	1/2	3/8
8-1/2 ZEBW2	8-1/2 ZELW2	810-2-8 W	1/2	1/2
10-1/2 ZEBW2	10-1/2 ZELW2	1010-2-8 W	5/8	1/2
12-3/4 ZEBW2	12-3/4 ZELW2	1210-2-12 W	3/4	3/4
16-3/4 ZEBW2	16-3/4 ZELW2	1610-2-12 W	1	3/4
16-1 ZEBW2	16-1 ZELW2	1610-2-16 W	1	1

Socket Weld Connector

for Fractional Tube



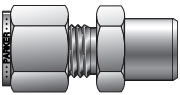
NOTE:
- For CPI™/A-LOK® to tubing socket weld connection.

- See Catalog 4280, Welded Fittings, for additional sizes.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
2-2 ZHBW	2-2 ZHLW	200-6-2 W	1/8
3-3 ZHBW	3-3 ZHLW	300-6-3 W	3/16
4-4 ZHBW	4-4 ZHLW	400-6-4 W	1/4
6-6 ZHBW	6-6 ZHLW	600-6-6 W	3/8
8-8 ZHBW	8-8 ZHLW	810-6-8 W	1/2
10-10 ZHBW	10-10 ZHLW	1010-6-10 W	5/8
12-12 ZHBW	12-12 ZHLW	1210-6-12 W	3/4
16-16 ZHBW	16-16 ZHLW	1610-6-16 W	1

Buttweld Connector

for Fractional Tube



NOTE:
- For CPI™/A-LOK® to tubing socket weld connection

- Pipe buttweld end will conform to Schedule 80 unless otherwise noted.

- See Catalog 4280, Welded Fittings, for additional sizes.

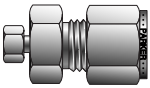
- For metric fittings and additional thread types, please see Catalog 4230/4233.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Buttweld Pipe Size
2-1/8 ZHBW2	2-1/8 ZHLW2	200-1-2 W	1/8	1/8
3-1/8 ZHBW2	3-1/8 ZHLW2	300-1-2 W	3/16	1/8
4-1/8 ZHBW2	4-1/8 ZHLW2	400-1-2 W	1/4	1/8
4-1/4 ZHBW2	4-1/4 ZHLW2	400-1-4 W	1/4	1/4
5-1/8 ZHBW2	5-1/8 ZHLW2	500-1-2 W	5/16	1/8
5-1/4 ZHBW2	5-1/4-ZHLW2	500-1-4-W	5/16	1/4
6-1/4 ZHBW2	6-1/4 ZHLW2	600-1-4 W	3/8	1/4
6-3/8 ZHBW2	6-3/8 ZHLW2	600-1-6 W	3/8	3/8
6-1/2 ZHBW2	6-1/2 ZHLW2	600-1-8 W	3/8	1/2
6-3/4 ZHBW2	6-3/4 ZHLW2	600-1-12 W	3/8	3/4
8-3/8 ZHBW2	8-3/8 ZHLW2	810-1-6 W	1/2	3/8
8-1/2 ZHBW2	8-1/2 ZHLW2	810-1-8 W	1/2	1/2
8-3/4 ZHBW2	8-3/4 ZHLW2	810-1-12 W	1/2	3/4
10-1/2 ZHBW2	10-1/2 ZHLW2	1010-1-8 W	5/8	1/2
12-3/4 ZHBW2	12-3/4 ZHLW2	1210-1-12 W	3/4	3/4
16-1 ZHBW2	16-1 ZHLW2	1610-1-16 W	1	1

For metric fittings and additional thread types, please see Catalog 4230/4233.

Column End Fitting - Low Internal Volume with Frit

for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	T_1 Tube O.D.	T_2 Tube O.D.	Internal Volume
2-1 Z2HCZ7	2-1 Z2HLZ7	1/8	1/16	5.4 x 10^{-4}cc
4-1 Z2HCZ7	4-1 Z2HLZ7	1/4	1/16	1.2 x 10^{-3}cc
6-1 Z2HCZ7	6-1 Z2HLZ7	3/8	1/16	3.8 x 10^{-3}cc

FEATURES:

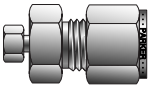
- Inverted 1/16" end substantially reduces internal volume
- Flow stream contacts entire frit surface reducing plugging and eliminating unswept volume
- Can be used as a low volume final filter

Frit Designator	
*Micron Dash No.	Micron Size
–1	0.5 µ
–2	2 µ
–3	5 µ
–4	10 µ

How to Order
EXAMPLE: 4-1Z2HLZ7-2*-SS To order with 2µ frit for 1/4" O.D. column

Column End Fitting - Low Internal Volume

for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	T_1 Tube O.D.	T_2 Tube O.D.	Internal Volume
4-1 Z3HCZ7	4-1 Z3HLZ7	1/4	1/16	6.1×10^{-4}cc
6-1 Z3HCZ7	6-1 Z3HLZ7	3/8	1/16	8.1×10^{-4}cc
8-1 Z3HCZ7	8-1 Z3HLZ7	1/2	1/16	2.8×10^{-3}cc
16-1 Z3HCZ7	16-1 Z3HLZ7	1	1/16	2×10^{-2}cc

FEATURES:

- Inverted 1/16" end substantially reduces internal volume

- Drop in frit for use with L.C. * columns or G.C.* columns

- Conical angle below frit directs flow over more frit surface

- Available for up to 1" columns

*G.C. = Gas Chromatagraph
L.C. = Liquid Chromatagraph

For metric fittings and additional thread types, please see Catalog 4230/4233.

Analytical Fittings

Di-Frit (drop in)

for Fractional Tube

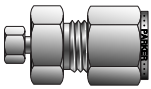
NOTES

Replaceable frit for preparatory column end fitting Z3HLZ7. Frits are available in 2, 5 and 10 micron sizes.

CPI™ / A-LOK® Part No.	Micron Size	Column O.D.
4 DI FRIT-5MIC-SS	5	1/4"
4 DI FRIT-10MIC-SS	10	1/4"
6 DI FRIT-2MIC-SS	2	3/8"
6 DI FRIT-5MIC-SS	5	3/8"
6 DI FRIT-10MIC-SS	10	3/8"
8 DI FRIT-5MIC-SS	5	1/2"
8 DI FRIT-10MIC-SS	10	1/2"
16 DI FRIT-2MIC-SS	2	1"
16 DI FRIT-5MIC-SS	5	1"
16 DI FRIT-10MIC-SS	10	1"

Column End Fitting - Low Internal Volume without Frit

for Fractional Tube



FEATURES:

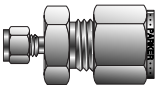
- Inverted 1/16" end substantially
- No frit for use with G.C.* columns or L.C .* columns with screens
- Can be used as a low volume reducing union

*G.C. = Gas Chromatograph, L.C. = Liquid Chromatograph

CPI™ Part No.	A-LOK® Part No.	Interchanges With	T_1 Tube O.D.	T_2 Tube O.D.	Internal Volume
2-1 ZHCZ7	2-1 ZHLZ7	-200-6-1-FGC	1/8	1/16	1.0 x 10^{-4}cc
4-1 ZHCZ7	4-1 ZHLZ7	-400-6-1-FGC	1/4	1/16	1.1 x 10^{-4}cc
6-1 ZHCZ7	6-1 ZHLZ7	-600-6-1-FGC	3/8	1/16	1.3 x 10^{-4}cc

Column End Fitting with Frit

for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	T_1 Tube O.D.	T_2 Tube O.D.	Internal Volume
2-1 Z2HCZ	2-1 Z2HLZ	1/8	1/16	2.1 x 10^{-3}cc
4-1 Z2HCZ	4-1 Z2HLZ	1/4	1/16	1.8 x 10^{-3}cc
6-1 Z2HCZ	6-1 Z2HLZ	3/8	1/16	5.4 x 10^{-3}cc

FEATURES:

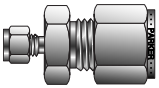
- Size 1 not silver plated
- Flow stream contacts entire frit surface reducing plugging and eliminating unswept volume
- Can be used as a low volume final filter

Frit Designator	
*Micron Dash No.	Micron Size
–1	0.5 µ
–2	2.0 µ
–3	5.0 µ
–4	10.0 µ

How to Order
EXAMPLE: 4-1Z2HLZ7-2*-SS To order with 2µ frit for 1/4" O.D. column

Column End Fitting without Frit

for Fractional Tube



NOTE:

- Size 1 not silver plated

CPI™ Part No.	A-LOK® Part No.	Interchanges With	T_1 Tube O.D.	T_2 Tube O.D.	Internal Volume
2-1 ZHCZ	2-1 ZHLZ	200-6-1LV	1/8	1/16	2.1 x 10^{-3}cc
4-1 ZHCZ	4-1 ZHLZ	400-6-1LV	1/4	1/16	2.1 x 10^{-3}cc
6-1 ZHCZ	6-1 ZHLZ	600-6-1LV	3/8	1/16	2.3 x 10^{-3}cc

For metric fittings and additional thread types, please see Catalog 4230/4233.

Analytical Fittings

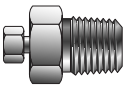
Union Connector - Low Dead Volume

for Fractional Tube

CPI™ Part No.	A-LOK® Part No.	Interchanges With	T_1 Tube O.D.	T_2 Tube O.D.	Internal Volume
1-1 Z7HBZ7-SS	1-1 Z7HLZ7	IFO-6GC	1/16	1/16	8.7×10^{-5}cc
2-1 Z7HBZ7-SS	2-1 Z7HLZ7	–	1/8	1/16	8.7×10^{-5}cc
2-2 Z7HBZ7-SS	2-2 Z7HLZ7	–	1/8	1/8	9.7×10^{-2}cc

Male Connector - Low Dead Volume

for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Internal Volume
1-1 FBZ7	1-1 FLZ7	1/16	1/16	3.1×10^{-4}cc
1-2 FBZ7	1-2 FLZ7	1/16	1/8	4.4×10^{-4}cc
1-4 FBZ7	1-4 FLZ7	1/16	1/4	8.8×10^{-4}cc

Sanitary Flange Fitting

for Fractional Tube

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.	Sanitary Flange
4-8 ZHBS	4-8 ZHLS-SS	SS-400-SC-8	1/4	1/2
4-12 ZHBS	4-12 ZHLS-SS	SS-400-SC-12	1/4	3/4
4-16 ZHBS	4-16 ZHLS-SS	SS-400-SC-16	1/4	1
4-24 ZHBS	4-24 ZHLS-SS	SS-400-SC-24	1/4	1-1/2
6-8 ZHBS	6-8 ZHLS-SS	SS-600-SC-8	3/8	1/2
6-12 ZHBS	6-12 ZHLS-SS	SS-600-SC-12	3/8	3/4
6-16 ZHBS	6-16 ZHLS-SS	SS-600-SC-16	3/8	1
6-24 ZHBS	6-24 ZHLS-SS	SS-600-SC-24	3/8	1-1/2
8-8 ZHBS	8-8 ZHLS-SS	SS-810-SC-8	1/2	1/2
8-12 ZHBS	8-12 ZHLS-SS	SS-810-SC12	1/2	3/4
8-16 ZHBS	8-16 ZHLS-SS	SS-810-SC-16	1/2	1
8-24 ZHBS	8-24 ZHLS-SS	SS-810-SC-24	1/2	1-1/2

NOTES:

All CPI™ fittings should be ordered with the "-C" option for silver plated fittings.

Sanitary flange fittings combine the reliability and versatility of Parker tube fittings with conventional sanitary flanges. The fittings permit direct downstream connections for hookups and sampling.

Flange sizes are 1/2, 3/4, 1, and 1-1/2 in.

Parker tube fitting ends are available in 1/4, 3/8, and 1/2 in. Parker tube fittings allow use of a variety of tubing materials including metal, hard plastic, and soft plastic.

For a Thermocouple/"Bored-Thru" version of the above Sanitary Adapter fittings, add a "4" to the part number. Example: A 4-12 ZHLS-SS becomes a 4-12 ZH4LS-SS for a 3/4" Sanitary Flange with a 1/4" diameter bored through on the A-LOK® fitting end.

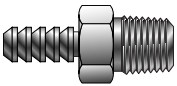
For the full line of Sanitary Fittings and Flow Components, see Catalog 4270-Sanitary/ASME-BPE Fittings.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Barbed Fittings

Barbed Connector to Male Pipe

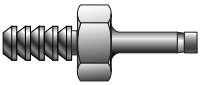
for Fractional Tube



CPI™ Part No.	A-LOK® Part No.	Interchanges With	Hose O.D.	Male Thread Size
2-2 B2HF	2-2 B2HF	2-HC-1-2	1/8	1/8
2-4 B2HF	2-4 B2HF	2-HC-1-4	1/8	1/4
4-2 B2HF	4-2 B2HF	4-HC-1-2	1/4	1/8
4-4 B2HF	4-4 B2HF	4-HC-1-4	1/4	1/4
5-2 B2HF	5-2 B2HF	5-HC-1-2	5/16	1/8
5-4 B2HF	5-4 B2HF	5-HC-1-4	5/16	1/4
6-4 B2HF	6-4 B2HF	6-HC-1-4	3/8	1/4
6-6 B2HF	6-6 B2HF	6-HC-1-6	3/8	3/8
8-6 B2HF	8-6 B2HF	8-HC-1-6	1/2	3/8
8-8 B2HF	8-8 B2HF	8-HC-1-8	1/2	1/2
12-12 B2HF	12-12 B2HF	12-HC-1-12	3/4	3/4

Barbed Connector to Tube Adapter

for Fractional Tube



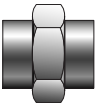
CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube I.D.	Tube O.D.
2-2 B2HT2	2B2TU2	2-HC-A-201	1/8	1/8
2-4 B2HT2	2B2TU4	2-HC-A-401	1/8	1/4
4-4 B2HT2	4B2TU4	4-HC-A-401	1/4	1/4
6-6 B2HT2	6B2TU6	6-HC-A-601	3/8	3/8

NOTES:
Tube adapter end is designed for use with Parker fittings or valves. Simply insert the tube adapter end until it bottoms and tighten the Parker nut 3/4 turns for sizes 3 and below, for sizes 4 and above 1-1/4 turns from finger tight.

Add -Z6 for assembly of nuts and ferrules on the tube stub end.

Hose Connector Sleeve

for Fractional Tube



Parker Part No.	Hose I.D.	Hose O.D.
HCS 2-4	1/8	1/4
HCS 4-6	1/4	3/8
HCS 4-7	1/4	7/16
HCS 4-8	1/4	1/2
HCS 4-9	1/4	9/16
HCS 5-7	5/16	7/16
HCS 6-8	3/8	1/2
HCS 6-9	3/8	9/16
HCS 8-11	1/2	11/16
HCS 12-16	3/4	1

For metric fittings and additional thread types, please see Catalog 4230/4233.

Insert

for Fractional Tube

NOTE:
Tubing wall thickness and corresponding minimum I.D. flow paths are listed so the system designer can properly match the insert to the tubing.

Example: 4 TIZ .125 is used with tubing having a wall thickness of .062 and I.D. of .125.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Hose O.D.	Male Thread Size
3 TIZ .125	305-2	3/16	.125	.031
4 TIZ .125	405-2	1/4	.125	.062
4 TIZ .170	405-170	1/4	.170	.040
4 TIZ .188	405-3	1/4	.188	.031
5 TIZ .125	505-2	5/16	.125	.094
5 TIZ .188	505-3	5/16	.188	.062
5 TIZ .250	505-4	5/16	.250	.031
6 TIZ .188	605-3	3/8	.188	.094
6 TIZ .250	605-4	3/8	.250	.062
8 TIZ .250	815-4	1/2	.250	.125
8 TIZ .375	815-6	1/2	.375	.062
10 TIZ .375	1015-6	5/8	.375	.125
10 TIZ .500	1015-8	5/8	.500	.062
12 TIZ .500	1215-8	3/4	.500	.125
12 TIZ .625	1215-10	3/4	.625	.062
16 TIZ .750	1615-12	1	.750	.125
16 TIZ .875	1615-14	1	.875	.062

Inverted Tube Nut

for Fractional Tube

Parker Part No.	Interchanges With	Tube O.D.
1 BZI	102-1K	1/16
2 BZI	2F2-1GC	1/8

Table Nut

for Fractional Tube

NOTE:
All size 20, 24 and 32 silver plated nuts should have a system compatible lube (Permatex Anti-seize – Parker Catalog 4290-INST) or equivalent applied to the fitting body threads and the inside back of nuts. This will minimize the effort required to assemble the fitting properly.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Hose O.D.
1 BZ	1NU1	102-1	1/16
2 BZ	2NU2	202-1	1/8
3 BZ	3NU3	302-1	3/16
4 BZ	4NU4	402-1	1/4
5 BZ	5NU5	502-1	5/16
6 BZ	6NU6	602-1	3/8
8 BZ	8NU8	812-1	1/2
10 BZ	10NU10	1012-1	5/8
12 BZ	12NU12	1212-1	3/4
14 BZ	14NU14	1412-1	7/8
16 BZ	16NU16	1612-1	1
20 BZ	20NU20	2012-1	1-1/4
24 BZ	24NU24	2412-1	1-1/2
32 BZ	32NU32	3212-1	2

Knurled Nut

for Fractional Tube

HOW TO ASSEMBLE BZP

1. Replaces BZ/NU nuts on Parker CPI™/A-LOK® fitting bodies.
2. Insert plastic tubing until it bottoms in fitting body.
3. Tighten finger tight.

The knurled nut is designed for use with soft plastic tubing on low pressure applications where a finger tight assembly procedure is satisfactory.

Parker Part No.	Interchanges With	Tube O.D.
1 BZP	102-1K	1/16
2 BZP	202-1K	1/8
3 BZP	302-1K	3/16
4 BZP	402-1K	1/4
5 BZP	502-1K	5/16
6 BZP	602-1K	3/8
8 BZP	812-1K	1/2
10 BZP	1012-1K	5/8

Example: Laboratory test hook-ups. Nylon or PTFE ferrules are frequently used instead of metal ferrules in this type of application.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Components

Ferrules

for Fractional Tube

NOTE:
Tubing wall thickness and corresponding minimum I.D. flow paths are listed so the system designer can properly match the insert to the tubing.

Example: 4 TIZ .125 is used with tubing having a wall thickness of .062 and I.D. of .125.

Parker Part No.	Inches Tube O.D.
1 TZ	1/16
2 TZ	1/8
3 TZ	3/16
4 TZ	1/4
5 TZ	5/16
6 TZ	3/8
8 TZ	1/2
10 TZ	5/8
12 TZ	3/4
14 TZ	7/8
16 TZ	1
20 TZ	1-1/4
24 TZ	1-1/2
32 TZ	2

Parker Part No.	MM Tube O.D.
TZ 3	3
TZ 6	6
TZ 8	8
TZ 10	10
TZ 12	12
TZ 16	16
TZ 20	20
TZ 25	25

Front Ferrules

for Fractional Tube

Parker Part No.	Interchanges With	Inches Tube O.D.
1FF1	103-1	1/16
2FF2	203-1	1/8
3FF3	303-1	3/16
4FF4	403-1	1/4
5FF5	503-1	5/16
6FF6	603-1	3/8
8FF8	813-1	1/2
10FF10	1013-1	5/8
12FF12	1213-1	3/4
14FF14	1413-1	7/8
16FF16	1613-1	1
20FF20	2013-1	1-1/4
24FF24	2413-1	1-1/2
32FF32	3213-1	2

Back Ferrules

for Fractional Tube

For stainless steel, sizes 4-32 are Suparcase ferrules.

NOTE:
Ferrules are available in standard metal materials as well as standard plastics like PTFE and nylon. Please consult the factory for availability.

Parker Part No.	Interchanges With	Inches Tube O.D.
1BF1	104-1	1/16
2BF2	204-1	1/8
3BF3	304-1	3/16
4BF4	404-1	1/4
5BF5	504-1	5/16
6BF6	604-1	3/8
8BF8	814-1	1/2
10BF10	1014-1	5/8
12BF12	1214-1	3/4
14BF14	1414-1	7/8
16BF16	1614-1	1
20BF20	2014-1	1-1/4
24BF24	2414-1	1-1/2
32BF32	3214-1	2

Ferrule Holder

for Fractional Tube

Package simplifies ordering, stocking, and assembling

*Material designator:
316-SS, B-Brass, S-Steel

CPI™ Part No.	A-LOK® Part No.	Inches Tube O.D.
2 CPI-*-SET	2 ALOK-*-SET	1/8
4 CPI-*-SET	4 ALOK-*-SET	1/4
6 CPI-*-SET	6 ALOK-*-SET	3/8
8 CPI-*-SET	8 ALOK-*-SET	1/2
12 CPI-*-SET	12 ALOK-*-SET	3/4
16 CPI-*-SET	16 ALOK-*-SET	1

For metric fittings and additional thread types, please see Catalog 4230/4233.

Components

Plug

for Fractional Tube

For plugging open ended CPI™/A-LOK® fitting ends

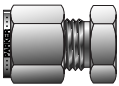
How to Assemble

Wrench tighten only 1/4 turn from finger tight position. Assembly includes machined ferrule with lock ring.

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches Tube O.D.	Thread
1 FNZ	1BLP1	100-P	1/16	10-32
2 FNZ	2BLP2	200-P	1/8	5/16-20
3 FNZ	3BLP3	300-P	3/16	3/8-20
4 FNZ	4BLP4	400-P	1/4	7/16-20
5 FNZ	5BLP5	500-P	5/16	1/2-20
6 FNZ	6BLP6	600-P	3/8	9/16-20
8 FNZ	8BLP8	810-P	1/2	3/4-20
10 FNZ	10BLP10	1010-P	5/8	7/8-20
12 FNZ	12BLP12	1210-P	3/4	1-20
14 FNZ	14BLP14	1410-P	7/8	1-1/8-20
16 FNZ	16BLP16	1610-P	1	1-5/16-20
20 FNZ	20BLP20	2010-P	1-1/4	1-5/8-20
24 FNZ	24BLP24	2410-P	1-1/2	1-15/16-20
32 FNZ	32BLP32	3210-P	2	2-5/8-20

Cap

for Fractional Tube



For capping open ended tubing

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Tube O.D.
1 PNBZ	1BLEN1	100-C	1/16
2 PNBZ	2BLEN2	200-C	1/8
3 PNBZ	3BLEN3	300-C	3/16
4 PNBZ	4BLEN4	400-C	1/4
5 PNBZ	5BLEN5	500-C	5/16
6 PNBZ	6BLEN6	600-C	3/8
8 PNBZ	8BLEN8	810-C	1/2
10 PNBZ	10BLEN10	1010-C	5/8
12 PNBZ	12BLEN12	1210-C	3/4
14 PNBZ	14BLEN14	1410-C	7/8
16 PNBZ	16BLEN16	1610-C	1
20 PNBZ	20BLEN20	2010-C	1-1/4
24 PNBZ	24BLEN24	2410-C	1-1/2
32 PNBZ	32BLEN32	3210-C	2

Vent Protector NPT Male Pipe Thread

for Fractional Tube

CPI™ Part No.	A-LOK® Part No.	Interchanges With	Inches Tube O.D.	Thread
1 FNZ	1BLP1	100-P	1/16	10-32
2 FNZ	2BLP2	200-P	1/8	5/16-20
3 FNZ	3BLP3	300-P	3/16	3/8-20
4 FNZ	4BLP4	400-P	1/4	7/16-20
5 FNZ	5BLP5	500-P	5/16	1/2-20
6 FNZ	6BLP6	600-P	3/8	9/16-20
8 FNZ	8BLP8	810-P	1/2	3/4-20
10 FNZ	10BLP10	1010-P	5/8	7/8-20
12 FNZ	12BLP12	1210-P	3/4	1-20
14 FNZ	14BLP14	1410-P	7/8	1-1/8-20
16 FNZ	16BLP16	1610-P	1	1-5/16-20
20 FNZ	20BLP20	2010-P	1-1/4	1-5/8-20
24 FNZ	24BLP24	2410-P	1-1/2	1-15/16-20
32 FNZ	32BLP32	3210-P	2	2-5/8-20

Parker Instrumentation vent protectors (mud dauber fittings) protect open ends of instruments, tubing, outlet vents, etc.

The mesh wire screen prevents foreign bodies such as insects or debris from entering and clogging various systems and causing damage.

- Pipe plug, bored-thru design
- 40 x 40 mesh, .010 diameter wire screen
- Designed to vent female pipe, straights, elbows or tees

For metric fittings and additional thread types, please see Catalog 4230/4233.

Bulkhead Locknut

for Fractional Tube

Parker Part No.	Interchanges With	A-LOK® Part No.	Tube O.D
1 WLZ	102-61	10-32	1/16
2 WLZ	202-61	5/16-20	1/8
3 WLZ	302-61	3/8-20	3/16
4 WLZ	402-61	7/16-20	1/4
5 WLZ	502-61	1/2-20	5/16
6 WLZ	602-61	9/16-20	3/8
8 WLZ	812-61	3/4-20	1/2
10 WLZ	1012-61	7/8-20	5/8
12 WLZ	1212-61	1"-20	3/4
14 WLZ	1412-61	1-1/8-20	7/8
16 WLZ	1612-61	1-5/16-20	1

Bulkhead Locknut

for Fractional Tube

Parker Part No.	SAE Adj. Straight Thread	Tube O.D
4 WLN	7/16-20	1/4
6 WLN	9/16-18	3/8
8 WLN	3/4-16	1/2
12 WLN	1-1/16-12	3/4
16 WLN	1-5/16-12	1

Accessory Locknut

for Fractional Tube

NOTE:
For use with M2SC and M2TU fittings on pages 83 and 85.

Parker Part No.	Straight Thread
2 L5N	5/16-24
3 L5N	3/8-24
4 L5N	7/16-20
5 L5N	1/2-20
6 L5N	9/16-18
8 L5N	3/4-16
10 L5N	7/8-14
12 L5N	1-1/16-12
14 L5N	1-3/16-12
16 L5N	1-5/16-12

For metric fittings and additional thread types, please see Catalog 4230/4233.

Valve Options with Integral Tube Connections CPI™/A-LOK® or Pipe Threads (NPT)

VALVES

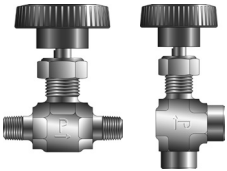
Valve Options with Integral Tube Connections CPI™/A-LOK® or Pipe Threads (NPT)

VALVES

For metric fittings and additional thread types, please see Catalog 4230/4233.

V Series Needle Valves

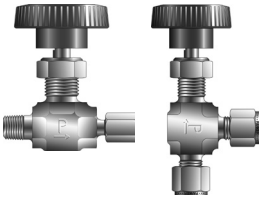
V2 Series



Model Shown:
2M-V2LN-B

Model Shown:
2F-V2AR-V-SS

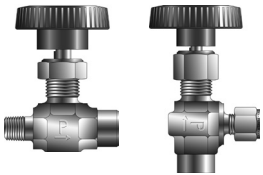
V4 Series



Model Shown:
4M4Z-V4LK-SS

Model Shown:
6A-V4AN-BN-B

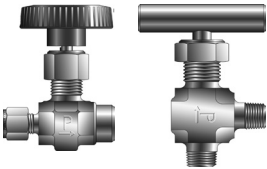
V6 Series



Model Shown:
6M4F-V6LR-V-SS

Model Shown:
4F6Z-V6AK-SS

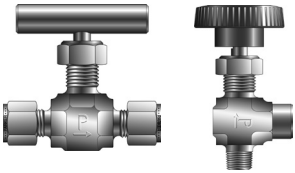
V8 Series



Model Shown:
8Z6F-V8LK-SS

Model Shown:
8M-V8AN-EPR-SS

V12 Series



Model Shown:
10Z-V12LN-B

Model Shown:
8M8F-V12AK-BN-SS

Specifications

Pressure Ratings	
316 Stainless Steel	5000 psig (345 bar) CWP
Brass, Steel and Monel® Alloy 400	3000 psig (207 bar) CWP
Temperature Ratings	
Stainless Steel and Monel® Alloy 400	65°F to 450°F (-54°C to 232°C)
Brass	-65°F to 400°F (-54°C to 204°C)
Steel	-20°F to 350°F (-29°C to 177°C)
PTFE Packing	-65°F to 450°F (-54°C to 232°C)
PCTFE Stem Tip	-65°F to 350°F (-54°C to 177°C)
Nitrile Rubber Stem Seal	-30°F to 250°F (-34°C to 121°C)
Fluorocarbon Rubber Stem Seal	-15°F to 400°F (-26°C to 204°C)
Ethylene Propylene Rubber Stem Seal	-70°F to 275°F (-57°C to 135°C)
Flow Data	
Orifice	0.078" to 0.312" (2.0mm to 7.9mm)
C_V	0.12 to 1.90
Port Size	1/8" to 3/4" (3mm to 12mm)

Note: When combining body, seat and seal materials, the most restrictive temperature rating becomes the limiting factor on temperature range. Monel® Alloy 400 is the registered trademark of Special Metals Corporation.

How to Order: V Series Needle Valves

Inlet Port	Outlet Port		Valve Series	Stem Type	Stem Seal	Body Material
2A 2F	2M 2Z	4A 4Z	V2	R Blunt (30°) N Needle (2-1/2°) K PCTFE	Blank PTFE BN Nitrile Rubber EPR Ethylene Propylene Rubber V Fluorocarbon Rubber	SS Stainless Steel S Steel M Monel® Alloy 400 B Brass
2A 2F 2M	2Z 4A 4M	42 4A 6A 6Z	V4			
4A 4F 4M	4Z 6A 6M	TZ 8A 8Z	V6			
4F 6A	6F 6Z	8A 8M 8Z	V8			
8F	10A 10Z	12A 12Z	V12			

Note: If the inlet and outlet ports are the same, eliminate the outlet port designator.

Examples:

4Z-V4AK-BN-SS describes an angle pattern V4 Series needle valve equipped with 1/4" CPI™ compression inlet and outlet ports, a PCTFE tipped stem, Nitrile seals, and stainless steel construction.

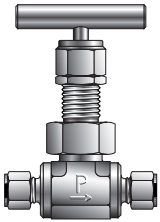
4M4F-V6LN-B describes an inline pattern V6 Series needle valve equipped with 1/4" male NPT inlet port, 1/4" female NPT outlet port, a needle stem type, PTFE stem seal, brass construction.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Needle Valves: U Series

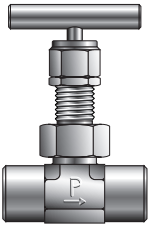
U Series Needle Valves

U6 Series



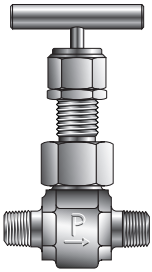
Model Shown:
4Z-U6LB-T-SS

U12 Series

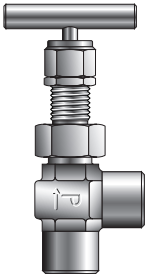


Model Shown:
6F-U12LB-G-SS-HT

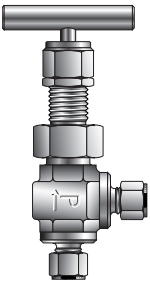
U16 Series



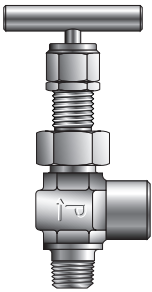
Model Shown:
16M-U16LR-G-SS



Model Shown:
4F-U6AR-T-SS



Model Shown:
M12A-U12AB-T-SS



Model Shown:
16M16F-U16AB-T-SS

Specifications

Pressure Rating*	6000 psig (414 bar) CWP
Temperature Ratings	
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)
Flow Data	
Orifice	.177" to .437" (4.5mm to 11.1mm)
C_V	.53 to 3.55

*Pressure Rating and Tubing Selection: For working pressures of CPI™/ A-LOK® tube connections, please see pages 33-37 of this catalog, the Instrument Tubing Selection Guide (4200-TS) found in the Technical Section of your Parker Instrumentation Products Process Binder, or the Parker Instrument Tube Fitting Installation Manual (Bulletin 4200-B4).

How to Order: U Series Needle Valves

Inlet Port	Outlet Port		Valve Series	Stem Type	Packing	Body Material
2F 4A	4F 4M	4W 4Z	U6A U6L	B Blunt R Regulating	T PTFE G Grafoil®	SS Stainless Steel
4A 4F 4Z 6A 6F	6W 6Z 8A 8F 8W	10A 10Z 12A 12Z	U12A U12L			
8A 8F 8M 8PSW 8W 8Z	12A 12F 12M 12PSW 12W	12Z 16A 16F 16M 16Z	U16A U16L			

Note: If the inlet and outlet ports are the same, eliminate the outlet port designator.

Example: 4Z-U6AR-G-SS describes an angle pattern U6 Series needle valve equipped with 1/4" CPI™ compression inlet and outlet ports, a regulating stem type, Grafoil® packing, stainless steel construction.

For metric fittings and additional thread types, please see Catalog 4230/4233.

VQ Series Manual Toggle Valves

Model Shown:
4M-V4LQ-SSP

Model Shown:
4M-V4AQ-EPR-SSP

Specifications

Pressure Rating	300 psig (21 bar) CWP at all temperatures
Temperature Ratings	
PTFE Stem Tip	-20°F to 200°F (-29°C to 93°C)
PCTFE Stem Tip	-65°F to 200°F (-54°C to 93°C)

How to Order: VQ Series Manual Toggle Valves

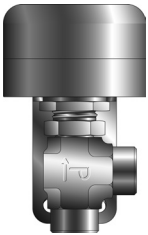
Inlet Port	Outlet Port	Valve Series	Stem Tip	Stem Seal	Body Material
2A 2F 2M 2Z 4A	4M 4Z 6A 6Z	V4LQ V4AQ	Blank PTFE K PCTFE	Blank Fluorocarbon Rubber BN Nitrile Rubber EPR Ethylene Propylene Rubber KZ Highly Fluorinated Fluorocarbon Rubber	SSP Stainless Steel with Panel Nut BP Brass
4F 6A 6Z	8A 8Z	V6LQ V6AQ			

Note: If the inlet and outlet ports are the same, eliminate the outlet port designator.

Example: 4Z-V4LQK-BN-SSP describes a VQ4 Series inline pattern toggle valve equipped with 1/4" CPI™ compression inlet and outlet ports, PCTFE stem tip, Nitrile rubber stem seal, and stainless steel construction with panel mounting nut.

For metric fittings and additional thread types, please see Catalog 4230/4233.

VQ Series Actuated Valves



Model Shown:
4F-V6AQ-11AO-B

Specifications

Pressure Ratings at All Temperatures	
Size VQ4 Normally Closed	600 psig (41 bar) CWP
Size VQ6 Normally Closed	500 psig (35 bar) CWP
Normally Open	450 psig (31 bar) CWP
Double Acting	450 psig (31 bar) CWP
Temperature Ratings	
PTFE Stem Tip	-20°F to 200°F (-29°C to 93°C)
PCTFE Stem Tip	-65°F to 200°F (-54°C to 93°C)

How to Order: VQ Series Actuated Valves

Inlet Port	Outlet Port	Valve Series	Stem Tip	Stem Seal	Actuator Type	Body Material
2A 2F 2M 2Z 4A	4M 4Z 6A 6Z	V4LQ V4AQ	Blank PTFE K PCTFE	Blank Fluoro-carbon Rubber BN Nitrile Rubber EPR Ethylene Propylene Rubber KZ Highly Fluorinated Fluoro-carbon Rubber	11AC Normally Closed 11AO Normally Opened 11AD Double Acting	SS Stainless Steel BP Brass
4F 6A 6Z	8A 8Z	V6LQ V6AQ				

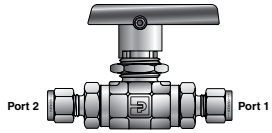
Note: If the inlet and outlet ports are the same, eliminate the outlet port designator.

Example: 4M4A-V4AQ-11AC-B describes a VQ4 Series pneumatically actuated (normally closed) angle pattern valve equipped with a 1/4" Male NPT inlet port, a 1/4" A-LOK® compression outlet port, PTFE stem tip, Fluorocarbon rubber stem seal, brass construction with mounting bracket.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Ball Valves: B Series

2-Way, B Series Ball Valve



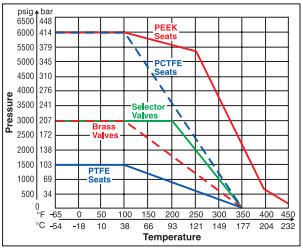
Model Shown: 6A-B6LJ2-SSP

2-Way Specifications:

Pressure Ratings		
Material	Pressure Rating	With PTFE Seats
316 Stainless Steel	6000 psig (414 bar)*	1500 psig (103 bar)
Brass	3000 psig (207 bar)	1500 psig (103 bar)
Monel® Alloy 400	3000 psig (207 bar)	1500 psig (103 bar)
Hastelloy® C-276	4000 psig (276 bar)	1500 psig (103 bar)

* B6 Series: 6000 psig rating or 4400 psig (303 bar) CWP
B8 Series: 6000 psig rating or 4000 psig (276 bar) CWP

Pressure vs. Temperature – 2 and 3-Way



Note:
This Pressure versus Temperature chart reflects the maximum temperature range of indicated materials.

When combining seat and seal materials, the most restrictive temperature rating of the seats or seals becomes the limiting factor on valve temperature range.

Elastomeric stem packing and seals are recommended if the application subjects the valve to thermal cycling.

Please see pressure rating charts for maximum pressure ratings.

Temperature Ratings:

PTFE: -65°F to 350°F (-54°C to 177°C)

PCTFE: -65°F to 350°F (-54°C to 177°C)

PEEK: -65°F to 450°F (-54°C to 232°C)

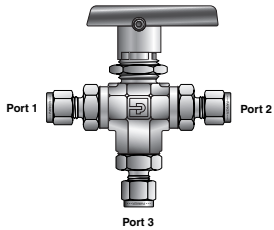
Nitrile Rubber: -40°F to 250°F (-40°C to 121°C)

Fluorocarbon Rubber: -15°F to 450°F (-26°C to 232°C)

Ethylene Propylene Rubber: -65°F to 300°F (-54°C to 149°C)

Highly Fluorinated Fluorocarbon Rubber: -15°F to 200°F (-26°C to 93°C)

3-Way, B Series Ball Valve



Model Shown: 6A-B6XJ2-SSP

Diverter Valve Specifications:

Pressure Ratings		
Material	Pressure Rating	With PTFE Seats
316 Stainless Steel	6000 psig (414 bar)*	1500 psig (103 bar)
Brass	3000 psig (207 bar)	1500 psig (103 bar)
Monel® Alloy 400	3000 psig (207 bar)	1500 psig (103 bar)
Hastelloy® C-276	43000 psig (276 bar)	1500 psig (103 bar)

* B6 Series: 6000 psig rating or 4400 psig (303 bar) CWP
B8 Series: 6000 psig rating or 4000 psig (276 bar) CWP

With Side Ports as Inlet: 150 psig (10 bar)

Selector Valve Specifications: (Spring Loaded - B6 and B8 models only)

Pressure Ratings:

Material	CWP
316 Stainless Steel	6000 psig (414 bar)*
Brass	3000 psig (207 bar)

With Side Ports as Inlet:

Material	CWP
316 Stainless Steel	3000 psig (207 bar)*

For metric fittings and additional thread types, please see Catalog 4230/4233.

How to Order: 2-Way and 3-Way

Continued >>

Port 1	Port 2	Port 3	-	Valve Series	Seat Material	
8A			**-**	**B8L**	**J**	
1A	1/16" A-LOK®			B2L B2X	J	PTFE
1Z	1/16" CPI™					
2A	1/8" A-LOK®					
2Z	1/8" CPI™					
2F	1/8" Female NPT				J2	PCTFE
2M	1/8" Male NPT					
4A	1/4" A-LOK®					
4Z	1/16" CPI™					
4M	1/4" Male NPT					
4A	1/4" A-LOK®			B6L B6X	J	PTFE
4Z	1/4" CPI™					
4F	1/4" Female NPT					
4M	1/4" Male NPT				J2	PCTFE
4V	1/4" VacuSeal					
6A	3/8" A-LOK®					
6Z	3/8" CPI™					
6M	3/8" Male NPT					
6F	3/8" Female NPT			B8L B8X	S2	Spring-Loaded PCTFE
8A	1/2" A-LOK®					
8Z	1/2" CPI™					
8F	1/2" Female NPT				PKR	PTFE Lubricated PEEK
8M	1/2" Male NPT					
8V	1/2" VacuSeal					
12A	3/4" A-LOK®				SPKR	Spring-Loaded PTFE Lubricated PEEK
12Z	3/4" CPI™					
12F	3/4" Female NPT					

Note: If ports 1 and 2 are the same, eliminate the port 2 designator.

Examples:

8A-B8LJ-BN-SSP (see above) describes a B8L two-way ball valve with a 1/2" A-LOK® end connections for ports 1 and 2, PTFE seats, Nitrile rubber stem and body seals, stainless steel construction, with a panel mounting nut.

For metric fittings and additional thread types, please see Catalog 4230/4233.

<< Continued

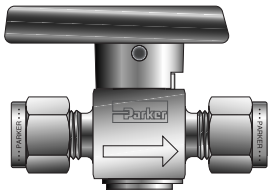
-	Seal Material		-	Body Material	
-	**BN**		-	**SSP**	
	(Blank)	PTFE		SSP	316 Stainless Steel
	V	Fluorocarbon Rubber			
	EPR	Ethylene Propylene Rubber			
	BN	Nitrile Rubber		BP	Brass
	KZ	Highly Fluorinated Fluorocarbon Rubber			
	LT	Live-Loaded PTFE Packing with PTFE Seals			
	VLT	Live-Loaded PTFE Packing with Fluorocarbon		MP	Monel® Alloy 400
	EPRLT	Live-Loaded PTFE Packing with Ethylene Propylene Rubber Seals			
	BNLT	Live-Loaded PTFE Packing with Nitrile Rubber Seals		HCP	Hastelloy® C-276
	KZLT	Live-Loaded PTFE Packing with Highly Fluorinated Fluorocarbon Rubber Seals			

Notes:
1. Panel Mounting Nut supplied with each valve. Various port combinations are available.
2. VacuSeal is not available in Brass.
3. 12F (3/4" Female NPT) not panel mountable.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Ball Valves: PR Series

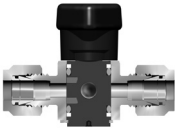
PR Rotary Plug Valve



Model Shown: 4A-PR4-VT-B

Open

Closed



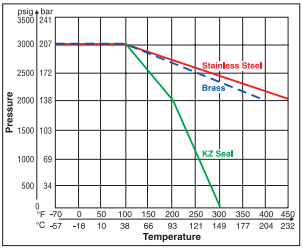
Model Shown: 4A-PR4-VT-SS

U.S. Patent 5,234,193

Temperature Ratings

Pressure Ratings	
Normal Flow Direction	3000 psig (207 bar) CWP
Reverse Flow Direction	150 psig (10 bar)
Downstream Vent Option	150 psig (10 bar)
Temperature Rating	
Nitrile Rubber	-30°F to 225°F (-34°C to 107°C)
Fluorocarbon Rubber	-10°F to 450°F (-23°C to 232°C)
Highly Fluorinated Fluorocarbon Rubber	-10°F to 300°F (-23°C to 149°C)
Ethylene Propylene Rubber	-70°F to 275°F (-57°C to 135°C)

Pressure vs. Temperature



Note:
This Pressure versus Temperature chart reflects the maximum temperature range of indicated body materials.

The temperature rating of the elastomer seals become the limiting factor on temperature range.

Flow Calculations with 1000 psig (69 bar) Inlet Pressure

Valve Series	Max. C_v	Pressure Drop ΔP		Water @ 60°F (16°C)		Air @ 60°F (16°C)	
		psig	bar	gpm	m^3/hr	scfm	m^3/hr
PR4	1.24	10	0.7	3.9	0.9	123.1	209.6
		50	3.4	8.8	2.0	265.9	446.3
		100	6.9	12.4	2.8	359.6	607.0
PR6	3.19	10	0.7	10.1	2.3	315.7	533.5
		50	3.4	22.6	5.1	672.3	1128.2
		100	6.9	31.9	7.2	891.6	1504.1

For metric fittings and additional thread types, please see Catalog 4230/4233.

Ball Valves: PR Series

How to Order: PR Series Rotary Plug Valve

Continued >>

Inlet Port / Outlet Port		-	Valve Series	Seal Material	
4Z		**-**	**PR4**	**BN**	
2A	1/8" A-LOK®		PR4	V	Fluorocarbon Rubber
2Z	1/8" CPI™			KZ	Highly Fluorinated Fluorocarbon Rubber
2F	1/8" Female NPT			EPR	Ethylene Propylene Rubber
2M	1/8" Male NPT			PKR	PTFE Lubricated PEEK
4A	1/4" A-LOK®			BN	Nitrile Rubber
4Z	1/4" CPI™				
4F	1/4" Female NPT				
4M	1/4" Male NPT				
4V	1/4" VacuSeal				
6M	3/8" Male NPT				
6A	3/8" A-LOK®				
6Z	3/8" CPI™				
4F	1/4" Female NPT		PR6	J	PTFE
6A	3/8" A-LOK®			J2	PCTFE
6Z	3/8" CPI™			S2	Spring-Loaded PCTFE
8A	1/2" A-LOK®			PKR	PTFE Lubricated PEEK
8Z	1/2" CPI™			SPKR	Spring-Loaded PTFE Lubricated PEEK
8F	1/2" Female NPT				
8M	1/2" Male NPT				

NOTE: If the inlet and outlet ports are the same, eliminate the outlet port designator.

Example: **4Z-PR4-BNT-SS** describes a PR Series rotary plug valve equipped with 1/4" CPI™ compression inlet and outlet ports, Nitrile seals, PTFE back-up rings, and stainless steel construction.

<< Continued

Back-Up Rings		-	Body Material	
T		**-**	**SS**	
T	PTFE		SS	Stainless Steel
			B	Brass

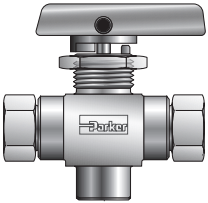
NOTE: If the inlet and outlet ports are the same, eliminate the outlet port designator.

Example: **4Z-PR4-BNT-SS** describes a PR Series rotary plug valve equipped with 1/4" CPI™ compression inlet and outlet ports, Nitrile seals, PTFE back-up rings, and stainless steel construction.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Ball Valves: HB Series

HB Series Ball Valves

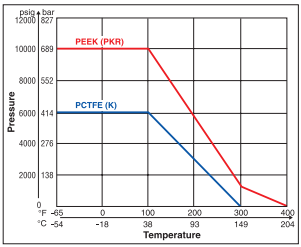


Model shown:
4F-HB4XPKR-SSP

Specifications

Pressure Rating	10,000 psig (689 bar) CWP with PEEK (PKR) Seats 6,000 psig (414 bar) CWP with PCTFE (K) Seats
Temperature Rating	Nitrile Rubber 40°F to 250°F (-40°C to 121°C) Ethylene Propylene Rubber -65°F to 300°F (-54°C to 149°C) Fluorocarbon Rubber -15°F to 400°F (-26°C to 204°C)
Body Materials	Stainless steel
Body Configurations	Two-way and three-way
Port Connections	Tube compression (CPI™/A-LOK®) Short and long female NPT
Port Size	1/8" – 1/2"

Pressure vs. Temperature



Note: This pressure versus temperature chart reflects the maximum temperature range of indicated materials.

When combining seat and seal materials, the most restrictive temperature rating of the seats or seals becomes the limiting factor on valve temperature range.

Note: To determine MPa, multiply bar by 0.1

2-Way and 3-Way

2-Way HB4L Design

3-Way HB4X Design

How to Order: HB Series Ball Valve

Port 1 - Port 2		-	Valve Series	Seat Material	-	Seal Material	-	Body Material
4Z		**-**	**HB4X**	**PKR**	**-**		**-**	**SSP**
2F	1/8" Female NPT		HB4L 2-Way	**PKR** PEEK Polyethereth-erketone		**Blank** Fluoro-carbon Rubber		**SSP** Stainless Steel (Stainless Steel with Stainless Steel Panel Nut)
4F	1/4" Female NPT							
4FL	1/4" Female NPT (Long)							
4A	1/4" A-LOK®					BN Nitrile Rubber		
4Z	1/4" CPI™							
4MP7	1/4" MPI™ Compression		**HB4X** 3-Way	K PCTFE Polychlorotri-fluoroethylene		EPR Ethylene Propylene Rubber		
6A	3/8" A-LOK®							
6Z	3/8" CPI™							
6MP7	3/8" MPI™ Compression							
8A	1/2" A-LOK®							
8Z	1/2" CPI™							

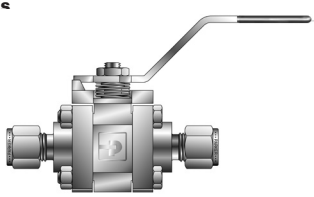
Examples:

4Z-HB4XPKR-SSP describes a HB4X, three-way ball valve with 1/4" CPI™ compression end connections for ports 1 and 2, PEEK seats and fluorocarbon rubber seals, stainless steel body construction, and a panel mounting nut. Port 3 is always a 1/4" Female NPT port. *Note: If ports 1 and 2 are the same, eliminate the port 2 designator.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Ball Valves: SWB Series

SWB Series Ball Valves

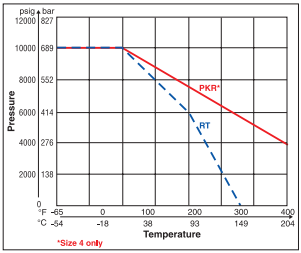


Model Shown:
8Z-SWB8L-RT-BN-SS

Specifications

Body Materials	Stainless Steel
Seat Materials	Reinforced PTFE PEEK (size 4, 8, 16)
Seal Materials	Nitrile Rubber Ethylene Propylene Rubber Fluorocarbon Rubber PTFE Grafoil® (size 4, 8, 16)
Flow Data	C_V: 1.1 to 35.0
Pressure Ratings	2500 psig (172 bar)
Temperature Ratings – Seats	
Reinforced PTFE Seats	-65°F to 450°F (-54°C to 232°C)
PEEK Seats	-65°F to 600°F (-54°C to 316°C)
Temperature Ratings – Seals	
Nitrile Rubber Seals	-40°F to 250°F (-40°C to 121°C)
Ethylene Propylene Rubber Seals	-65°F to 300°F (-54°C to 149°C)
Fluorocarbon Rubber Seals	-15°F to 400°F (-26°C to 204°C)
PTFE Seals	-65°F to 350°F (-54°C to 177°C)
Grafoil® Seals	-65°F to 600°F (-54°C to 316°C)

Pressure vs. Temperature



Note: This Pressure versus Temperature chart reflects the use of indicated seat materials in Stainless Steel valves without consideration of seal materials.

When combining seat and seal materials, the most restrictive temperature rating of the seats or seals becomes the limiting factor on temperature range. Please refer to page 126 for seal temperature ranges.

How to Order

See the following two pages for ordering chart schematic.

Ball Valves: SWB Series

How to Order: SWB Ball Valve

Continued >>

Port Size	Port 1 - Port 2	-	Valve Series	Valve Configuration	-
8	**A**	**-**	**SWB8**	**L**	**-**
4	Z - CPI™ Tube 1/8" Female NPT				
6	A - A-LOK® Tube		SWB4		
8	F - Female NPT		SWB8		
12	W - Tube Socket Weld		SWB12	L	
16	PSW - Pipe Socket Weld PBW1 - Pipe Buttweld (Schedule 10)		SWb16	2-Way	

*Note: If ports 1 and 2 are the same, eliminate the port 2 designator.
Upper and Lower PTFE packing is replaced with PEEK when valves are ordered with Grafoil® Seals.

Examples:
8A"-SWB8L-RT-BN-SS describes a SWB8L Two-Way Ball Valve with 1/2" A-LOK® end connections for ports 1 and 2, reinforced PTFE seats, Nitrile rubber body seals, and stainless steel construction.

<< Continued

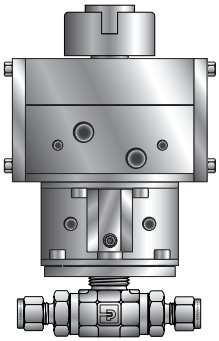
Seat Material	-	Seal Material	-	Body Material
RT	**-**	**BN**	**-**	**SS**
PKR PTFE Lubricated PEEK (size 4, 8, 16) RT Glass Reinforced PTFE		T - PTFE BN - Nitrile Rubber EPR - Ethylene Propylene Rubber V - Fluorocarbon Rubber G - Grafoil® Gasket (Size 4 only)		SS Stainless Steel

*Note: If ports 1 and 2 are the same, eliminate the port 2 designator.
Upper and Lower PTFE packing is replaced with PEEK when valves are ordered with Grafoil® Seals.

Examples:
8A"-SWB8L-RT-BN-SS describes a SWB8L Two-Way Ball Valve with 1/2" A-LOK® end connections for ports 1 and 2, reinforced PTFE seats, Nitrile rubber body seals, and stainless steel construction.

Ball Valves: Pneumatic Actuators

Pneumatic Actuators



Model Shown:
4Z-B6LJ-V-SS-61AD

Specifications

Temperature Range	-4°F to 175°F (-20°C to 79°C) Optional high and low temperature ranges available
Operating Pressure	
90° Models	40 to 120 psig (2.8 to 8.3 bar) maximum AC – Normally Closed Spring Return AD – Double Acting AO – Normally Open Spring Return
180° Models	80 psig (5.5 bar) maximum ACX – Spring Return ADX – Double Acting

Recommended Actuators

Valve Series	Double Acting AD	Spring Return AO	Spring Return AC
B2LJ B2LJ2	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
B2XJ B2XJ2	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
B6LJ B6LJ2 B6LS2 B6LPKR B6LSPKR	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
B6XJ B6XJ2 B6XS2 B6XPKR B6XSPKR	61ADX or 61SADX	61ACX2 or 61SACX	61ACX-2 or 61SACX
B8LJ	61AD	61AO-2	61AC-2
B8LJ2 B8LS2 B8LPKR	61AD	62AO-3	62AC-3
B8XJ	61ADX	61ACX-2	61ACX-2
B8XJ2 B8XS2 B8XPKR	61ADX	ACX64-3	ACX64-3
HB4LPKR	61AD	62AO-3	62AC-3
HB4LK	61AD	61AO-2	61AC-2
HB4XPKR	61ADX	ACX62-3	ACX62-3
HB4XK	61ADX	61ACX-2	61ACX-2
MB2A MB2L	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
MB2X	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX

Valve Series	Double Acting AD	Spring Return AO	Spring Return AC
MB4A MB4L	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
MB4X	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
MB6A MB6L	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
MB6X	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
SWB4	61AD	61AO-2	61AC-2
SWB8 SWB12	61AD	62AO-3	62AC-3
SWB16	62AD	63AO-3	63AC-3

* With 60 psig (4.1 bar) actuation pressure.

Options

- Solenoid valve
- Rotary limit switch with valve position indicator
- Breather block
- Dual mount actuator

61S Option

- Compact single piston design
- Available for MB, HB, B2, and B6 Series Valves

For metric fittings and additional thread types, please see Catalog 4230/4233.

Ball Valves: Pneumatic Actuators

How to Order Actuators

Factory Assembled – Add the actuator model designation as a suffix to the ball valve part number.
Example: 4Z-B6LJ2-SS-61AC-2. Describes a B6 ball valve with a normally closed actuator.

For Field Assembly – Simply specify the actuator.
Example: 65AC-3. Mounting bracket kits are required when mounting actuators to valves.

With Mounting Brackets – Specify the ball valve series and seat material followed by the actuator. *Examples: B6LJ-61AO-2, MB6XPFA-61ACX, SWB12LRT-62AC-3*

NOTE: Parker pneumatically actuated B Series Ball Valves should be ordered with elastometric stem packing and seals or the optional live-loaded PTFE packing. This reduces the need for any further packing adjustment after receipt from the factory.

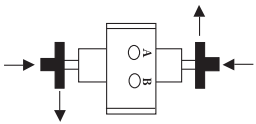
How to Order Options

High Temperature Seals – Add the suffix –HT to the end of the part number for service up to 250˚F (121˚C). Add the suffix –HT4 to the end of the part number for service up to 400˚F (204˚C). NOTE: The –HT4 option is only available on series 62 and 63 90˚ models. *Example: 2F-HB4LK-BN-SS-61AD-HT*

Low Temperature Seals – Add the suffix –LT to the end of the part number.
Example: 4A-MB4LPFA-SS-61AC-2-LT

Accessories – Add one suffix to the end of the part number to identify the accessory option. The suffixes are identified in the "Accessory Options" table on the following page. *Example: 16F-SWB16L-RT-T-SS-63AC-3-2D*

Dual Mount Actuator – Add –DVM as a suffix to the end of the part number.
Example: 6A-B6LPKR-SS-61AC-2-DVM
With DVM dual mount valve options, the following are standard arrangements: Two-way valves are provided in their failed position (in their closed position with AD actuators). Three-way valves are provided as shown below. Contact the factory for details on other available options.



For metric fittings and additional thread types, please see Catalog 4230/4233.

How to Order Mounting Bracket Kits

Add the valve series and actuator model designation as a suffix to MK-.
Example: MK-MB4L-61S
Describes a mounting kit for a MB Series ball valve with a 61S Series actuator.

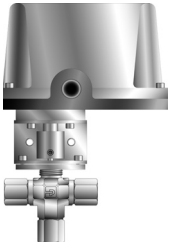
Accessory Options

Suffix	Accessory
	Single Option
-1A	Breather Block
-1B	Solenoid Valve, (NEMA 4, 120 VAC)
-1C	Solenoid Valve, (NEMA 7, 120 VAC)
-1D	Solenoid Valve, (NEMA 4, 24 VDC)
-1E	Solenoid Valve, (NEMA 7, 24 VDC)
-1F	Solenoid Valve, (NEMA 4, 240 VAC)
-1G	Solenoid Valve, (NEMA 7, 240 VAC)
-1H	Limit Switch – Two SPDT switches with mounting kit
	Double Option
-2A	Breather Block, Solenoid Valve, (NEMA 4, 120 VAC)
-2B	Breather Block, Solenoid Valve, (NEMA 7, 120 VAC)
-2C	Breather Block, Solenoid Valve, (NEMA 4, 24 VDC)
-2D	Breather Block, Solenoid Valve, (NEMA 7, 24 VDC)
-2E	Breather Block, Solenoid Valve, (NEMA 4, 240 VAC)
-2F	Breather Block, Solenoid Valve, (NEMA 7, 240 VAC)
-5G	Limit Switch, Solenoid Valve, (NEMA 4, 120 VAC)
-5H	Limit Switch, Solenoid Valve, (NEMA 7, 120 VAC)
-5J	Limit Switch, Solenoid Valve, (NEMA 4, 24 VDC)
-5K	Limit Switch, Solenoid Valve, (NEMA 7, 24 VDC)
-5L	Limit Switch, Solenoid Valve, (NEMA 4, 240 VAC)
-5M	Limit Switch, Solenoid Valve, (NEMA 7, 240 VAC)
	Triple Option
-6A	Breather Block, Limit Switch, Solenoid Valve, (NEMA 4, 120 VAC)
-6B	Breather Block, Limit Switch, Solenoid Valve, (NEMA 7, 120 VAC)
-6C	Breather Block, Limit Switch, Solenoid Valve, (NEMA 4, 24 VDC)
-6D	Breather Block, Limit Switch, Solenoid Valve, (NEMA 7, 24 VDC)
-6E	Breather Block, Limit Switch, Solenoid Valve, (NEMA 4, 240 VAC)
-6F	Breather Block, Limit Switch, Solenoid Valve, (NEMA 7, 240 VAC)

For metric fittings and additional thread types, please see Catalog 4230/4233.

Ball Valves: Electric Actuators

Electric Actuators



Model Shown:
4F-B6XJ-SS-71XA

Model Shown:
8W-SWB8L-RT-V-SS-81CS2

Specifications

Characteristic	70 Series, 70R Series	80 Series	90 Series
Voltage	24, 115 or 230 VAC (50/60 Hz); 12 or 24 VDC	115 or 230 VAC (50/60 Hz)	24 VAC (50/60 Hz); 12 or 24 VDC
Torque	150, 300, 600 in lb (17, 34, 68 Nm)		
Enclosure	PVC composite	Epoxy coated cast aluminum	
Duty Cycle	25% (VAC models) 100% (VDC models)	75%	Continuous (after 1 hour duty cycle is reduced to 80%)
Actuator Bolt Pattern	ISO standard (5211)		
Conduit Connection	1/2" NPT	1/2" NPT (2 places)	3/4" NPT (3/4" to 1/2" reducing bushings included)
Output Shaft/ Drive	Shaft: Male, zinc plated steel	Drive: ISO compatible female drive output	Drive: Square female drive output
Temperature Limits	32°F to 150°F (0°C to 66°C) -40°F (-40°C) minimum with heater and thermostat		32°F to 130°F (0°C to 54°C) -40°F (-40°C) minimum with heater and thermostat

For metric fittings and additional thread types, please see Catalog 4230/4233.

Materials of Construction

Part	Material		
	70 Series	80 Series	90 Series
Cover	Composite, PVC	Diecast aluminum alloy	
Base	Diecast zinc alloy	Diecast aluminum alloy	
Gear Train	Hardened steel		
Output Shaft	Zinc plated steel	N/A	
Finish	Powder coated epoxy		

Actuator Selection Tables

Valve Series	Flow Pattern	Seat Material	Suggested Actuator									
			70 Series					80 Series		90 Series		
			115 VAC	230 VAC	24 VAC	12 VDC	24 VDC	115 VAC	230 VAC	24 VAC	12 VDC	24 VDC
B	2-Way	All	71	71	71	73	72	81	81	91	91	91
B	3-Way	All	71X	71X	71X	73X	72X	81X	81X	91X	91X	91X
MB	2-Way	All	71	71	71	73	72	81	81	91	91	91
MB	3-Way	All	71X	71X	71X	73X	72X	81X	81X	91X	91X	91X
HB	2-Way	All	71	71	71	73	72	81	81	91	91	91
HB	3-Way	All	71X	71X	71X	73X	72X	81X	81X	91X	91X	91X
SWB4	2-Way	All	71	71	71	73	72	81	81	91	91	91
SWB8	2-Way	RT	71	71	71	73	72	81	81	91	91	91
SWB12	2-Way	RT	71	71	71	73	72	81	81	91	91	91
SWB16	2-Way	RT	71	71	71	73	72	81	81	91	91	91

For metric fittings and additional thread types, please see Catalog 4230/4233.

Ball Valves: Electric Actuators

How to Order: Electric Actuators (Factory and Field Assembly)

Valve Part Number	Actuator Model	Flow Pattern	Voltage	-	Options
For Factory Assembly Only	71 71R 72 72R 73 73R	Blank 2-Way X 3-Way	Blank 115 VAC A 230 VAC B 24 VAC C 12 VDC D[2] 24 VDC		T Heater and Thermostat S# Additional Limit Switch: # = number of limit switches required CSA[3] Canadian Standard
See the "How to Order" section in the applicable catalog for the desired valve series	81 83 82		Blank 115 VAC A 230 VAC		
	91 92 93		B 24 VAC C 12 VDC D 24 VDC		T Heater and Thermostat S2 Two Additional Limit Switches L2 Battery Back-Up for 2-Way L4 Battery Back-Up for 3-Way

NOTES: 1) Required for factory assembly only.
2) Not available in 71 Series
3) For field assembly only; CSA - Standard on 70 Series, optional on 80 Series, not available on 90 Series.

- Mounting bracket kits are required when ordering actuators for field assembly.
- Parker electrically actuated, B Series Ball Valves should be ordered with elastometric stem packing and seals or the optional live-loaded PTFE packing. This reduces the need for any further packing adjustment after receipt from the factory.

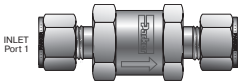
Field Assembly
Examples: 71- T describes an electric actuator for field assembly, Model 71, 2-Way electric actuator unit with a NEMA 4 and 4X rating, a 115 VAC motor with optional heater and thermostat. 91C-T describes a Model 91, two-way electric actuator unit with 12 VDC power supply and on/off Control Board with optional heater and thermostat.

Factory Assembly
Example: 4Z-MB6XPFA-SS-81XA describes a factory assembled electric actuator, Model 81, 3-Way electric actuator unit with a NEMA 4, 4X, 7 and 9 rating, a 230 VAC motor and no options, mounted on an MB Series ball valve.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Check Valves: C Series

C Series Check Valve



Model Shown: 4Z-C4L-1-SS

Specifications

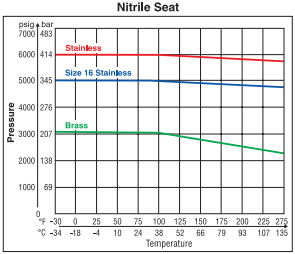
Orifice	078" to .656"
C_V:	.18 to 6.56
Pressure Ratings*	
316 SS – 1/8" to 3/4"	6000 psig (414 bar) CWP
316 SS – 1"	5000 psig (345 bar) CWP
PTFE Seats – all sizes	4000 psig (276 bar) CWP
Brass – 1/8" to 1"	3000 psig (207 bar) CWP
Temperature Ratings	
Fluorocarbon Rubber Seals	-15°F to +400°F (-26°C to +204°C)
Nitrile	-30°F to +275°F (-34°C to +135°C)
Ethylene Propylene Rubber Seals	-70°F to +275°F (-57°C to +135°C)
Neoprene Rubber	-45°F to +250°F (-43°C to +121°C)
PTFE	-65°F to +400°F (-54°C to +204°C)
Highly Fluorinated Fluorocarbon Rubber	-15°F to +200°F (-26°C to +93°C)

*Pressure Rating and Tubing Selection:

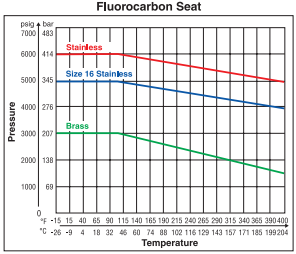
For working pressures of CPI™ / A-LOK® tube connections, please see pages 33-37 of this catalog, the Instrument Tubing Selection Guide (4200-TS) found in the Technical Section of your Parker Instrumentation Products Process Binder, or the Parker Instrument Tube Fitting Installation Manual (Bulletin 4200-B4).

Pressure vs. Temperature

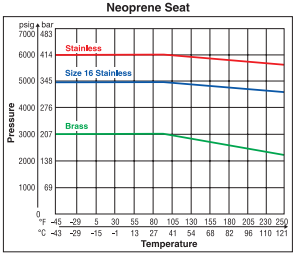
Nitrile Seat



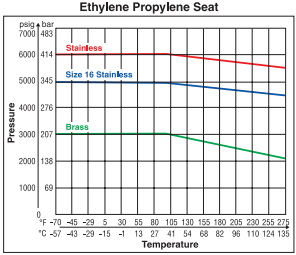
Fluorocarbon Seat



Neoprene Seat



Ethylene Propylene Seat



For metric fittings and additional thread types, please see Catalog 4230/4233.

Check Valves: C Series

How to Order: C Series Check Valves

Inlet Port / Outlet Port				-	Body Size	-	Crack Pressure	-	Seal Material		-	Body Material	
2A 2F	2KF	2KM 2M	2Z		C2L		1/3 psi 1 psi 10 psi 25 psi		Blank	Fluorocarbon Rubber		B	Brass
4A 4F 4F5	4G5 4KF 4KM	4M	4V 4Z		C4L				BN	Nitrile		SS	316 Stainless Steel
6A 6F 6F5	6G5	6M	6Z		C6L				EPR	Ethylene Propylene Rubber			
8A 8F 8F5	8G5 8KF 8KM	8M	8V 8Z		C8L				NE	Neoprene Rubber			
12A 12F 12F5	12G5 12KF 12KM	12M	12V 12Z		C12L				*T	PTFE			
16A 16F 16F5	16G5 16KF 16KM	16M	16Z		C16L				**KZ	Highly Fluorinated Fluorocarbon Rubber			

Note: If the inlet and outlet ports are the same, eliminate the outlet port designator.

* Only available with stainless steel valves.

** Not available on C2 series.

Examples: 12Z-C12L-1-BN-B describes a C Series Check Valve with 3/4" CPI™ compression inlet and outlet ports, a 1 psi cracking pressure, nitrile seal and brass body construction.

Example:16M16A-C16L-10-NE-SS describes a C Series Check Valve with a 1" male NPT inlet port and a 1" A-LOK® outlet port, a 10 psi cracking pressure, neoprene seal and stainless steel body construction.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Check Valves: CB / CBF Series

CB Series Check Valve

CBF Series Check Valve

Specifications

Shell Pressure Rating	3000 psi CWP
Standard Crack Pressures	1, 5, 10, 15, 50, 100, 120
Seat Materials, Back Pressure and Temperature Ratings	
Parkerfill*	1000 psi @ 100°F 300 psi @ 450°F
Parker Carbon**	2500 psi @ 100°F 1250 psi @ 450°F

* Parkerfill is a PTFE copolymer reinforced with carbon and graphite.

** Parker Carbon is a PTFE copolymer reinforced with carbon.

How to Order: CB and CBF Series Filter Check Valve

Inlet Port / Outlet Port	Body Size	Crack Pressure	Seat Material	Body Material	Filter Rating
6A 8Z 8M 6Z 8A	CB6L	1 psi 5 psi	PF Parkerfill PC Parker Carbon	SS 316 Stainless Steel	Filter Rating applies TO CBF Only
8A 10A 8M 8G5 8Z 10Z 8X	CB8L	10 psi 25 psi 50 psi 75 psi			
12A 12X 12G5 12Z 12M	CB12L				
8A 10Z 8M 12G5 8Z 12A 8G5 12M 8X 12Z 10A 12X	CBF8L	100 psi 120 psi			75 Microns 200 Microns 380 Microns 500 Microns

Note: If the inlet and outlet ports are the same, eliminate the outlet port designator. Add hyphens between each valve component, see examples below.

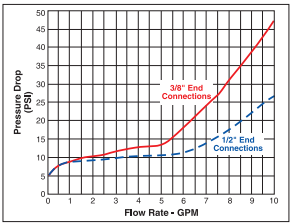
Examples: 12Z-CB12L-120-PF-SS describes a CB Series Check Valve with 3/4" CPI™ compression inlet and outlet ports, a 120 psi crack pressure, Parkerfill seat and stainless steel body construction.

Example: 8Z8M-CBF8L-1-PF-SS-380 describes a CBF Series Check Valve with a 3/4" CPI™ compression inlet and a 3/4" male NPT outlet, a 1 psi crack pressure, Parkerfill seat material, stainless steel body construction and a 380 Micron filter rating.

Flow Curves

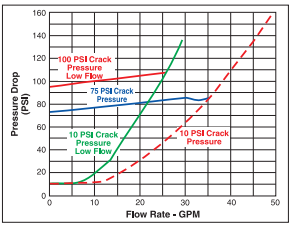
CB6 Check Valve

Flow Rate vs. Pressure Drop
CB-Series Check Valve – Size CB6
5 PSI Crack Pressure



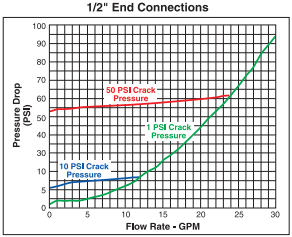
CB8 Check Valve

Flow Rate vs. Pressure Drop
CB-Series Check Valve – Size CB12
3/4" End Connections



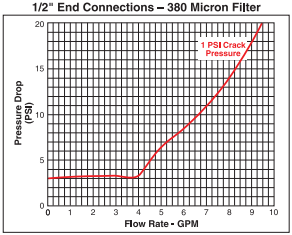
CB12 Check Valve

Flow Rate vs. Pressure Drop
CB-Series Check Valve – Size CB8
1/2" End Connections



CBF8 Filter Check Valve

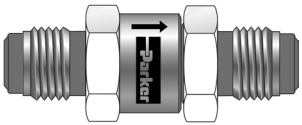
Flow Rate vs. Pressure Drop
CB-Series Check Valve – Size CBF8
1/2" End Connections – 380 Micron Filter



For metric fittings and additional thread types, please see Catalog 4230/4233.

Check Valves: CO Series

CO Series Check Valves



Specifications

Orifice	156" to .406"
C_v	.43 to 2.65
Pressure Rating	6000 psig (414 bar) CWP
Temperature Ratings	
Fluorocarbon Rubber Seals	-15°F to +400°F (-26°C to +204°C)
Nitrile	-30°F to +250°F (-34°C to +121°C)
Ethylene Propylene Rubber	-70°F to +275°F (-57°C to +135°C)
Highly Fluorinated Fluorocarbon Rubber	-15°F to +200°F (-26°C to +93°C)

How to Order: CO Series Check Valves

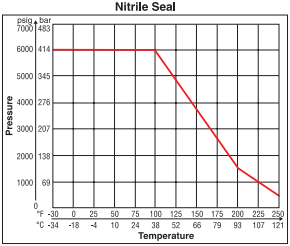
Inlet / Outlet Port	Body Size	Crack Pressure	Seat/Seal Material	Body Material
4A 4V 4Z 4F 4M	CO4L	1/3 psi 1 psi 5 psi 10 psi 25 psi	V Fluorocarbon Rubber BN Nitrile Rubber EPR Ethylene Propylene Rubber KZ Highly Fluorinated Fluorocarbon Rubber	SS 316 Stainless Steel
6A 6Z 8V 6F 6M	CO6L			
8A 8V 8Z 8F 8M	CO8L			

Note: If the inlet and outlet ports are the same, eliminate the outlet port designator. Add hyphens between each valve component, see example below.

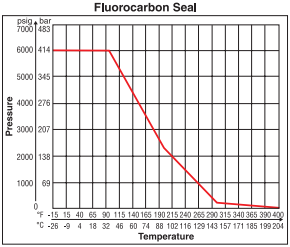
Example: 4M4F-CO4L-1-V-SS describes a CO Series Check Valve with 1/4" male NPT inlet and a 1/4" female NPT outlet, 1 psig cracking pressure, fluorocarbon rubber seals, and stainless steel body construction.

Pressure vs. Temperature

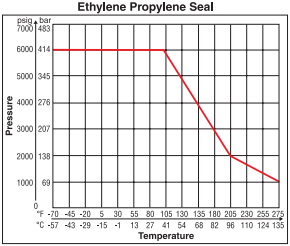
Nitrile Seal



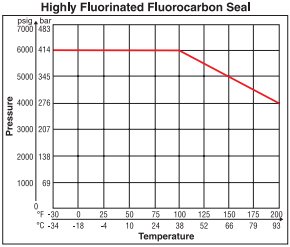
Fluorocarbon Seal



Ethylene Propylene Seal



Highly Fluorinated Fluorocarbon Seal

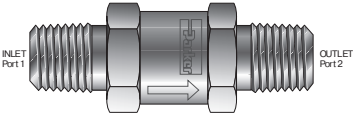


Note: To determine MPa, multiply bar by 0.1

For metric fittings and additional thread types, please see Catalog 4230/4233.

Filters: F Series

F Series Inline Filter



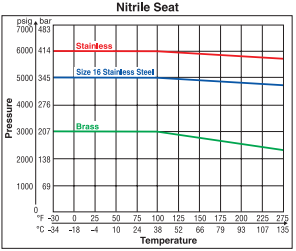
Model shown:
4M-F4L-100-BN-SS

Specifications

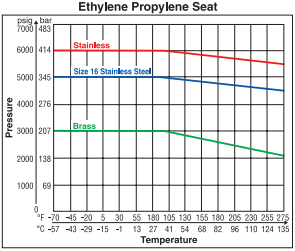
Pressure Ratings	
316 SS – 1/8" to 3/4"	6000 psig (414 bar) CWP
316 SS – 1"	5000 psig (345 bar) CWP
PTFE Seals – all sizes	4000 psig (276 bar) CWP
Brass – 1/8" to 1"	3000 psig (207 bar) CWP
Temperature Ratings	
Fluorocarbon Rubber	-15°F to +400°F (-26°C to +204°C)
Nitrile Rubber	-30°F to +275°F (-34°C to +135°C)
Ethylene Propylene Rubber	-70°F to +275°F (-57°C to +135°C)
Neoprene Rubber	-45°F to +250°F (-43°C to +121°C)
PTFE	-65°F to +400°F (-54°C to +204°C)
Highly Fluorinated Fluorocarbon Rubber	-15°F to +200°F (-26°C to +93°C)

Pressure vs. Temperature

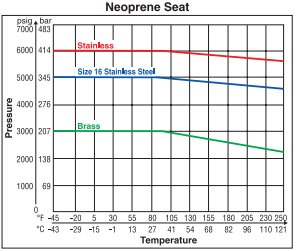
Nitrile Seat



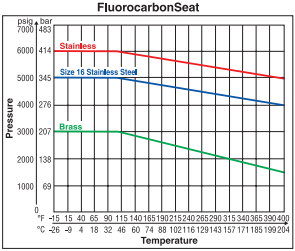
Ethylene Propylene Seat



Neoprene Seat



FluorocarbonSeat



For metric fittings and additional thread types, please see Catalog 4230/4233.

Filters: F Series

How to Order: F Series Inline Filter

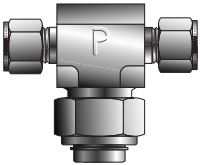
Inlet / Outlet Ports			Body Size	Micron Rating	Seal Material	Body Material
2A 2F		2M 2Z	F2L	1 micron 5 micron 10 micron 50 micron 100 micron 120 micron 250 micron 450 micron	Blank Fluorocarbon Rubber BN Nitrile Rubber EPR Ethylene Propylene Rubber NE Neoprene Rubber *T PTFE KZ Highly Fluorinated Fluorocarbon Rubber	B Brass SS 316 Stainless Steel
4A 4F	4M	4V 4Z	F4L			
6A 6F	6M	6Z	F6L			
8A 8F	8M	8V 8Z	F8L			
12A 12F	12M	12V 12Z	F12L			
16A 16F		16M 16Z	F16L			

*Only available with Stainless Steel filters.
Note: If the inlet and outlet ports are the same eliminate the outlet port designator. When creating part number add hyphens between valve components, see below example.

Examples: 4M-F4L-5-BN-B describes an F Series Inline Filter with 1/4" male NPT inlet and outlet ports, a 5 micron element, Nitrile seal and brass body construction.

For metric fittings and additional thread types, please see Catalog 4230/4233.

FT Series Tee Filter



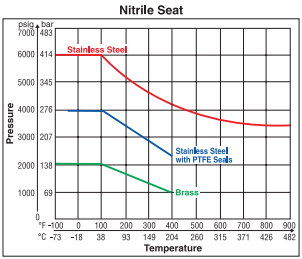
Model Shown:
4Z-FT4-10-BN-SS

Specifications

Pressure Ratings*	
With Elastomeric and Metallic Seals	
Stainless Steel	6000 psig (414 bar) CWP
Brass	2000 psig(138 bar) CWP
With PTFE Seals	
Stainless Steel	4000 psig (276 bar) CWP
Brass	2000 psig (138 bar) CWP
Temperature Ratings	
Fluorocarbon Rubber	-40°F to +400°F (-40°C to 204°C)
Nitrile Rubber	-40°F to +275°F (-40°C to +135°C)
Ethylene Propylene Rubber	-70°F to +300°F (-57°C to +149°C)
Neoprene Rubber	-65°F to +300°F (-54°C to +149°C)
PTFE	-70°F to +400°F (-56°C to +204°C)
Highly Fluorinated Fluorocarbon Rubber	-20°F to +500°F (-29°C to +260°C)
Silver Plated Nickel Alloy Gasket (C-ring)	-100°F to +900°F (-73°C to +482°C)

*Pressure Rating and Tubing Selection: For working pressures of CPI™ / A-LOK® tube connections, please see pages 33-37 of this catalog, the Instrument Tubing Selection Guide (4200-TS) found in the Technical Section of your Parker Instrumentation Products Process Binder, or the Parker Instrument Tube Fitting Installation Manual (Bulletin 4200-B4).

Pressure vs. Temperature



How to Order: FT Series Tee Filter

Inlet Port	Outlet Port	Valve Series	Micron Rating	Seal Material	Body Material
2A 2F 2M 2Z 4A 4F	4M 4V 4W 4Z	FT4	1 micron 5 micron 10 micron 50 micron	Blank Fluorocarbon Rubber BN Nitrile Rubber EPR Ethylene Propylene Rubber NE Neoprene Rubber KZ Highly Fluorinated Fluorocarbon Rubber HT Silver Plated Nickel Alloy C-Ring T PTFE	SS 316 Stainless Steel B Brass
6A 6M 8A	8M 8V 8Z	FT8	100 micron 250 micron 450 micron		

Note: If the inlet and outlet ports are the same eliminate the outlet port designator. When creating part number add hyphens between valve components, see below example.

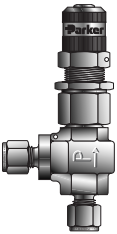
Example: 4M-FT4-5-BN-B describes an FT Series Filter with 1/4" male NPT inlet and outlet ports, a 5 micron element, Nitrile seal and brass body construction.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Relief Valves: RH4 Series

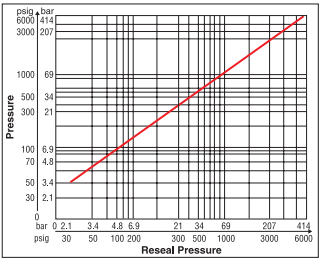
RH4 Series Relief Valve

Model Shown:
4M4F-RH4A-VT-SS-MN-K2



Model Shown:
4A-RH4A-BNT-SS-K1

Crack Pressure vs. Reseal



Note: Valves which are not actuated for a period of time may initially crack at higher than set crack pressures.

Note: To determine MPa, multiply bar by 0.1

Specifications

Pressure Ratings			
Working Pressure	• Up to 6000 psig (414 bar) CWP • Up to 8000 psig (552 bar) during relief with no internal seal damage		
Cracking Pressures	Eight springs, from 50 psig to 6000 psig in the following ranges:		
	50-350 psig (3.4-24.1 bar)	350-750 psig (24.1-51.7 bar)	750-1500 psig (51.7-103.4 bar)
	1500-2250 psig (103.4-155.1 bar)	2250-3000 psig (155.1-206.8 bar)	3000-4000 psig (206.8-275.8 bar)
	4000-5000 psig (275.8-344.7 bar)	5000-6000 psig (344.7-413.7 bar)	
Temperature Ratings			
Fluorocarbon Rubber	-10°F to +400°F (-23°C to 204°C)		
Nitrile Rubber	-30°F to +225°F (-34°C to +107°C)		
Ethylene Propylene Rubber	-70°F to +275°F (-57°C to +135°C)		
Neoprene Rubber	-45°F to +250°F (-43°C to +121°C)		
Highly Fluorinated Fluorocarbon Rubber	-20°F to +200°F (-29°C to +93°C)		

For metric fittings and additional thread types, please see Catalog 4230/4233.

How to Order: RH4 Series Relief Valve

Continued >>

Inlet & Outlet Ports	Valve Series	Seal Material	Backup Rings	Body Material
4M Male NPT 4F Female NPT 4A A-LOK® Compression 4Z CPI™ Compression 4KF Female BSP/ISO 4KM Male BSP/ISO	RH4A	V Fluorocarbon Rubber BN Nitrile Rubber EPR Ethylene Propylene Rubber NE Neoprene Rubber KZ Highly Fluorinated Fluorocarbon Rubber	T PTFE	SS 316 Stainless Steel

* To order valve with an elastomer back-up ring, eliminate Back-Up Rings code.
** To order only the valve without a spring kit, eliminate Spring Kit code.

Note: If the inlet and outlet ports are the same eliminate the outlet port designator. When creating part number add hyphens between valve components, see below example.

Examples: 4Z-RH4A-BNT-SS-K6 describes an RH4A Series externally adjustable relief valve equipped with 1/4" CPI™ compression inlet and outlet ports, Nitrile seals, PTFE back-up ring, stainless steel construction, and a 3000 to 4000 psig (206.8 to 275.8 bar) spring kit.

How to Order: RH4 Series Relief Valve - cont'd

<< Continued

Actuation		Spring Kit**	
Blank	Standard	K1	50 - 350 psig
MN	Manual Overdrive	K2	350 - 750 psig
		K3	750 - 1500 psig
		K4	1500 - 2250 psig
		K5	2250 - 3000 psig
		K6	3000 - 4000 psig
		K7	4000 - 5000 psig
		K8	5000 - 6000 psig

* To order valve with an elastomer back-up ring, eliminate Back-Up Rings code.
** To order only the valve without a spring kit, eliminate Spring Kit code.

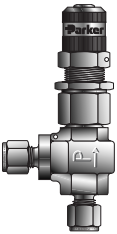
Note: If the inlet and outlet ports are the same eliminate the outlet port designator. When creating part number add hyphens between valve components, see below example.

Examples: 4Z-RH4A-BNT-SS-K6 describes an RH4A Series externally adjustable relief valve equipped with 1/4" CPI™ compression inlet and outlet ports, Nitrile seals, PTFE back-up ring, stainless steel construction, and a 3000 to 4000 psig (206.8 to 275.8 bar) spring kit.

Relief Valves: RL4 Series

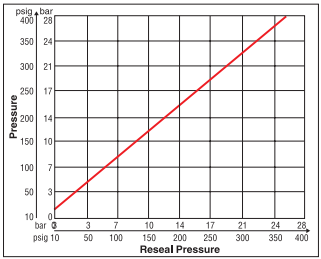
RL4 Series Relief Valve

Model Shown:
4M4F-RL4A-VT-SS-MN-KD



Model Shown:
4A-RL4A-BNT-SS-KC

Crack Pressure vs. Reseal



Note: Valves which are not actuated for a period of time may initially crack at higher than set crack pressures.

Note: To determine MPa, multiply bar by 0.1

Specifications

Pressure Ratings	
Working Pressure	• Up to 400 psig (28 bar) CWP • Up to 600 psig (41 bar) during relief with no internal seal damage
Cracking Pressures	Seven springs, with the following ranges: 10-25 psig (0.7-1.7 bar) 25-50 psig (1.7-3.4 bar) 50-100 psig (3.4-6.9 bar) 100-150 psig (6.9-10.3 bar) 150-225 psig (10.3-15.5 bar) 225-400 psig (15.5-27.6 bar) 10-225 psig (0.7-15.5 bar)
Temperature Ratings	
Fluorocarbon Rubber	-10°F to +400°F (-23°C to 204°C)
Nitrile Rubber	-30°F to +225°F (-34°C to +107°C)
Ethylene Propylene Rubber	-70°F to +275°F (-57°C to +135°C)
Neoprene Rubber	-45°F to +250°F (-43°C to +121°C)
Highly Fluorinated Fluorocarbon Rubber	-20°F to +200°F (-29°C to +93°C)

For metric fittings and additional thread types, please see Catalog 4230/4233.

How to Order: RL4 Series Relief Valve

Continued >>

Inlet & Outlet Ports	Valve Series	Seal Material	Backup Rings	Body Material
4M Male NPT 4F Female NPT 4A A-LOK® Compression 4Z CPI™ Compression 4KF Female BSP/ISO 4KM Male BSP/ISO	RL4A	V Fluorocarbon Rubber BN Nitrile Rubber EPR Ethylene Propylene Rubber NE Neoprene Rubber KZ Highly Fluorinated Fluorocarbon Rubber	T PTFE	SS 316 Stainless Steel

* To order valve with an elastomer back-up ring, eliminate Back-Up Rings code.
** To order only the valve without a spring kit, eliminate Spring Kit code.

Note: If the inlet and outlet ports are the same eliminate the outlet port designator. When creating part number add hyphens between valve components, see below example.

Examples: 4Z-RL4A-BNT-SS-KD describes an RL4A Series externally adjustable relief valve equipped with 1/4" CPI™ compression inlet and outlet ports, Nitrile seals, PTFE back-up ring, stainless steel construction, and a 100 to 150 psig (6.9 to 10.3 bar) spring kit.

How to Order: RL4 Series Relief Valve - cont'd

<< Continued

Actuation		Spring Kit**
Blank	Standard	KA 10 - 25 psig (0.7 - 1.7 bar)
		KB 25 - 50 psig (1.7 - 3.4 bar)
		KC 50 - 100 psig (3.4 - 6.9 bar)
MN	Manual Overdrive	KD 100 - 150 psig (6.9 - 10.3 bar)
		KE 150 - 225 psig (10.3 - 15.5 bar)
		KF 10 - 225 psig (0.7 - 15.5 bar)
		KG 225 - 400 psig (15.5 - 27.6 bar)

* To order valve with an elastomer back-up ring, eliminate Back-Up Rings code.
** To order only the valve without a spring kit, eliminate Spring Kit code.

Note: If the inlet and outlet ports are the same eliminate the outlet port designator. When creating part number add hyphens between valve components, see below example.

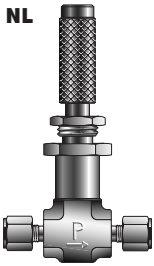
Examples: 4Z-RL4A-BNT-SS-KD describes an RL4A Series externally adjustable relief valve equipped with 1/4" CPI™ compression inlet and outlet ports, Nitrile seals, PTFE back-up ring, stainless steel construction, and a 100 to 150 psig (6.9 to 10.3 bar) spring kit.

Metering Valves: N Series

NS Series

Model Shown:
2A-NSL-BN-SS-F

NM and NL Series



Model Shown:
M3A-NML-V-SS-K

Specifications

Characteristic	NS Series	NM Series	NL Series
Pressure Rating	2000 psig (138 bar) CWP at all temperatures	1000 psig (69 bar) CWP at all temperatures	
Stem Taper	1°	3°	5°
Turns to Open	13 ± 1	9 ± 1	10 ± 1
Valve/Seal Temperature Ratings			
Fluorocarbon Rubber	-10°F to 400°F (-23°C to 204°C)		
Nitrile Rubber	-10°F to 250°F (-23°C to 121°C)		
Ethylene Propylene Rubber	-40°F to 250°F (-40°C to 121°C)		
Neoprene Rubber	-40°F to 250°F (-40°C to 121°C)		
Highly Fluorinated Fluorocarbon Rubber	-25°F to 200°F (-32°C to 93°C)		
Flow Data*			
Orifice	0.03" (0.76mm)	0.06" (1.5mm)	0.13" (3.3mm)
In-line Pattern	C_V = 0.004; X_T = 0.64	C_V = 0.055; X_T = 0.41	C_V = 0.207; X_T = 0.71
Angle Pattern	C_V = 0.042; X_T = 0.53	C_V = 0.057; X_T = 0.38	C_V = 0.299; X_T = 0.60

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

Note: These products are not intended for use as shut-off valves. For metering valves with shut-off capabilities, please refer to HR Series valves.

How to Order: N Series Metering Valves

Inlet Port	Outlet Port	–	Valve Series	–	Seal Material	–	Body Material	–	Handle Type
1A 1Z 2A 2M	2Z 4A 4V 4Z		NSA NSL		BN Nitrile Rubber EPR Ethylene Propylene Rubber NE Neoprene Rubber V Fluorocarbon Rubber KZ Highly Fluorinated Fluorocarbon Rubber		SS Stainless Steel B Brass		K Knurled KS Knurled with Slot V Vernier F Precision Adjustment*
2A 2F 2Z 4A	4M 4V 4Z		NMA NML						
2F 4A 4M 4V	4Z 6A 6Z		NLA NLL						

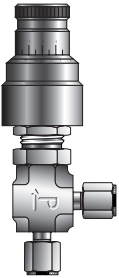
*F Handle available only on NS Series.
Note: If the inlet and outlet ports are the same eliminate the outlet port designator.

Example: 4Z-NLL-V-SS-V describes a stainless steel in-line NLL series valve with 1/4" CPI™ compression ends, fluorocarbon seals and vernier handles.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Metering Valves: HR Series

HR Series
Metering Valves



Model Shown:
2A-H0A-NE-SS-TC

Specifications

Pressure Rating	250 psig (17 bar) CWP
Turns to Open	15 ± 1
Valve/Seal Temperature Ratings	
Fluorocarbon Rubber	-10°F to 400°F (-23°C to 204°C)
Nitrile Rubber	-10°F to 250°F (-23°C to 121°C)
Ethylene Propylene Rubber	-40°F to 250°F (-40°C to 121°C)
Neoprene Rubber	-40°F to 250°F (-40°C to 121°C)
Highly Fluorinated Fluorocarbon Rubber	-25°F to 200°F (-32°C to 93°C)

Flow Data

Model	Orifice	In-Line Pattern	Angle Pattern
H0	0.000002 in^2	$C_V = 0.0004$; $X_T = 0.85$	$C_V = 0.0004$; $X_T = 0.66$
H1	0.000083 in^2	$C_V = 0.0070$; $X_T = 0.85$	$C_V = 0.0070$; $X_T = 0.66$
H2	0.000168 in^2	$C_V = 0.0140$; $X_T = 0.85$	$C_V = 0.0140$; $X_T = 0.66$
H3	0.000241 in^2	$C_V = 0.0200$; $X_T = 0.85$	$C_V = 0.0210$; $X_T = 0.66$
H4	0.000674 in^2	$C_V = 0.0300$; $X_T = 0.85$	$C_V = 0.0320$; $X_T = 0.66$
H5	0.002325 in^2	$C_V = 0.0470$; $X_T = 0.85$	$C_V = 0.0490$; $X_T = 0.66$
H6	0.006227 in^2	$C_V = 0.1180$; $X_T = 0.85$	$C_V = 0.1550$; $X_T = 0.66$

*Flow tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.
**The Turns Counter Handle (TC) requires the HT option for use at temperatures above 300°F (149°C).

How to Order: HR Series Metering Valves

Inlet Port	Outlet Port	Valve/Stem Series*	Seal Material	Body Material	Handle Type
1A	1Z	H#A	BN Nitrile Rubber EPR Ethylene Propylene Rubber NE Neoprene Rubber V Fluorocarbon Rubber KZ Highly Fluorinated Fluorocarbon Rubber	SS Stainless Steel B Brass	K Knurled TC Turns Counter NS No Handle (Slotted Stem)
2A 2F 2Z 4A	4F 4M 4Z	H#A H#L			

*See flow data specifications on previous page to fully identify the valve/stem series properly.
Note: If the inlet and outlet ports are the same, eliminate the outlet port designator.

Example: 4Z-H3L-V-SS-TC describes a stainless steel H3L in-line series valve with 1/4" CPI compression ends, fluorocarbon seals and vernier handle. "3" indicates a C_V of 0.0200 per page 162.

For metric fittings and additional thread types, please see Catalog 4230/4233.

Offer of Sale

1. Definitions. As used herein, the following terms have the meanings indicated."Buyer" means any customer receiving a Quote for Products."Buyer's Property" means any tools, patterns, plans, drawings, designs, specifications materials, equipment, or information furnished by Buyer, or which are or become Buyer's property. "Confidential Information" means any technical, commercial, or other proprietary information of Seller, including, without limitation, pricing, technical drawings or prints and/or part lists, which has been or will be disclosed, delivered, or made available, whether directly or indirectly, to Buyer. "Goods" means any tangible part, system or component to be supplied by Seller. "Intellectual Property Rights" means any patents, trademarks, copyrights, trade dress, trade secrets or similar rights. "Products" means the Goods, Services and/or Software as described in a Quote. "Quote" means the offer or proposal made by Seller to Buyer for the supply of Products. "Seller" means Parker-Hannifin Corporation, including all divisions, subsidiaries and businesses selling Products under these Terms. "Seller's IP" means patents, trademarks, copyrights, or other intellectual property rights relating to the Products, including without limitation, names, designs, images, drawings, models, software, templates, information, any improvements or creations or other intellectual property developed prior to or during the relationship contemplated herein. "Services" means any services to be provided by Seller."Software" means any software related to the Goods, whether embedded or separately downloaded."Special Tooling" means equipment acquired by Seller or otherwise owned by Seller necessary to manufacture Goods, including but not limited to tools, jigs, and fixtures. "Terms" means the terms and conditions of this Offer of Sale.

2. Terms. All sales of Products by Seller will be governed by, and are expressly conditioned upon Buyer's assent to, these Terms. These Terms are incorporated into any Quote provided by Seller to Buyer. Buyer's order for any Products whether communicated to Seller verbally, in writing, by electronic data interface or other electronic commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller's order acknowledgment to Buyer's purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer's terms or conditions of purchase. Any Quote made by Seller to Buyer shall be considered a firm and definite offer and shall not be deemed to be otherwise despite any language on the face of the Quote. Seller reserves all rights to accept or reject any purported acceptance by Buyer to Seller's Quote if such purported acceptance attempts to vary the terms of the Quote. If Seller ships Products after Buyer issues an acceptance to the Quote, any additional or different terms proposed by Buyer will not become part of the parties' business relationship unless agreed to in a writing that is signed by an authorized representative of Seller, excluding email correspondence. If the transaction proceeds without such agreement on the part of Seller, the business relationship will be governed solely by these Terms and the specific terms in Seller's Quote.

3. Price; Payment. The Products set forth in the Quote are offered for sale at the prices indicated in the Quote. Unless otherwise specifically stated in the Quote, prices are valid for thirty (30) days and do not include any sales, use, or other taxes or duties. Seller reserves the right to modify prices for any reason and at any time by giving ten (10) days prior written notice. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2020). All sales are contingent upon credit approval and full payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified in the Quote). Under any circumstances, Buyer as a deduction, set-off or recoupment of any amount, claim or dispute with Seller. Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law. Seller reserves the right to require advance payment or

provision of securities for first and subsequent deliveries if there is any doubt, in Seller's sole determination, regarding the Buyer's creditworthiness or for other business reasons.
If the requested advance payment or securities are not provided to Seller's satisfaction, Seller reserves the right to suspend performance or reject the purchase order, in whole or in part, without prejudice to Seller's other rights or remedies, including the right to full compensation. Seller may revoke or shorten any payment periods previously granted in Seller's sole determination. The rights and remedies herein reserved to Seller are cumulative and in addition to any other or further rights and remedies available at law or in equity. No waiver by Seller of any breach by Buyer of any provision of these terms will constitute a waiver by Seller of any other breach of such provision.

4. Shipment; Delivery; Title and Risk of Loss. All delivery dates are approximate, and Seller is not responsible for damages or additional costs resulting from any delay. All deliveries are subject to our ability to procure materials from our suppliers. Regardless of the manner of shipment, delivery occurs and title and risk of loss or damage pass to Buyer, upon placement of the Products with the carrier at Seller's facility. Unless otherwise agreed prior to shipment and for domestic delivery locations only, Seller will select and arrange, at Buyer's sole expense, the carrier and means of delivery. When Seller selects and arranges the carrier and means of delivery, freight and insurance costs for shipment to the designated delivery location will be prepaid by Seller and added as a separate line item to the invoice. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions. Buyer shall not return or repackage any Products without the prior written authorization from Seller, and any return shall be at the sole cost and expense of Buyer.

5. Warranty. The warranty for the Products is as follows: (i) Goods are warranted against defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of use, whichever occurs first; (ii) Services shall be performed in accordance with generally accepted practices and using the degree of care and skill that is ordinarily exercised and customary in the field to which the Services pertain and are warranted for a period of six (6) months from the date of completion of the Services; and (iii) Software is only warranted to perform in accordance with applicable specifications provided by Seller to Buyer for ninety (90) days from the date of delivery or, when downloaded by a Buyer or end-user, from the date of the initial download. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer:

EXEMPTION CLAUSE; DISCLAIMER OF WARRANTY, CONDITIONS, REPRESENTATIONS: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY, CONDITION, AND REPRESENTATION, PERTAINING TO PRODUCTS. SELLER DISCLAIMS ALL OTHER WARRANTIES, CONDITIONS, AND REPRESENTATIONS, WHETHER STATUTORY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE RELATING TO DESIGN, NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. SELLER DOES NOT WARRANT THAT THE SOFTWARE IS ERROR-FREE OR FAULT TOLERANT, OR THAT BUYER'S USE THEREOF WILL BE SECURE OR UNINTERRUPTED, UNLESS OTHERWISE AUTHORIZED IN WRITING BY SELLER, THE SOFTWARE SHALL NOT BE USED IN CONNECTION WITH HAZARDOUS OR HIGH-RISK ACTIVITIES OR ENVIRONMENTS. EXCEPT AS EXPRESSLY STATED HEREIN, ALL PRODUCTS ARE PROVIDED "AS IS".

Offer of Sale

6. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to Seller within ten (10) days of delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the non conformance is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

7. LIMITATION OF LIABILITY. IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE THE NON-CONFORMING PRODUCTS, RE-PERFORM THE SERVICES, OR REFUND THE PURCHASE PRICE PAID WITHIN A REASONABLE PERIOD OF TIME. IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING ANY LOSS OF REVENUE OR PROFITS, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCTS.

8. Confidential Information. Buyer acknowledges and agrees that Confidential Information has been and will be received in confidence and will remain the property of Seller. Buyer further agrees that it will not use Seller's Confidential Information for any purpose other than for the benefit of Seller and shall return all such Confidential Information to Seller within thirty (30) days upon request.

9. Loss to Buyer's Property. Buyer's Property will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the Products manufactured using Buyer's Property. Also, Seller shall not be responsible for any loss or damage to Buyer's Property while it is in Seller's possession or control.

10. Special Tooling. Seller may impose a tooling charge for any Special Tooling. Special Tooling shall be and remain Seller's property. In no event will Buyer acquire any interest in the Special Tooling, even if such Special Tooling has been specially converted or adapted for manufacture of Goods for Buyer and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any Special Tooling or other property owned by Seller in its sole determination at any time.

11. Security Interest. To secure payment of all sums due from Buyer, Seller retains a security interest in all Products delivered to Buyer and, Buyer's acceptance of these Terms is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect Seller's security interest.

12. User Responsibility. Buyer, through its own analysis and testing, is solely responsible for making the final selection of the Products and assuring that all performance, endurance, maintenance, safety and warning requirements of the application of the Products are met. Buyer must analyze all aspects of the application and follow applicable industry standards, specifications, and any technical information provided with the Quote or the Products, such as Seller's instructions, guides and specifications. If Seller provides options of or for Products based upon data or specifications provided by Buyer, Buyer is responsible for

determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products. In the event Buyer is not the end-user of the Products, Buyer will ensure such end-user complies with this paragraph.

13. Use of Products, Indemnity by Buyer. Buyer shall comply with all instructions, guides and specifications provided by Seller with the Quote or the Products. If Buyer uses or resells the Products in any way prohibited by Seller's instructions, guides or specifications, or Buyer otherwise fails to comply with Seller's instructions, guides and specifications, Buyer acknowledges that any such use, resale, or non-compliance is at Buyer's sole risk. Further, Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, intellectual property infringement or any other claim, arising out of or in connection with: (a) improper selection, design, specification, application, or any misuse of Products; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of Buyer's Property; (d) damage to the Products from an external cause, repair or attempted repair by anyone other than Seller, failure to follow instructions, guides and specifications provided by Seller, use with goods not provided by Seller, or opening, modifying, deconstructing, tampering with or repackaging the Products; or (e) Buyer's failure to comply with these Terms, including any legal or administrative proceedings, collection efforts, or other actions arising from or relating to such failure to comply. Seller shall not indemnify Buyer under any circumstance except as otherwise provided in these Terms.

14. Cancellations and Changes. Buyer may not cancel or modify, including but not limited to movement of delivery dates for the Products, any order for any reason except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage and any additional expense. Seller, at any time, may change features, specifications, designs and availability of Products.

15. Assignment. Buyer may not assign its rights or obligations without the prior written consent of Seller.

16. Force Majeure. Seller is not liable for delay or failure to perform any of its obligations by reason of any events or circumstances beyond its reasonable control. Such circumstances include without limitation: accidents, labor disputes or stoppages, government acts or orders, acts of nature, pandemics, epidemics, other widespread illness, or public health emergency, cyber related disruptions, cyber-attacks, ransomware sabotage, delays or failures in delivery from carriers or suppliers, shortages of materials, sudden increases in the price of raw material or components, shutdowns or slowdowns affecting the supply of raw materials or components, or the transportation thereof, oil shortages or oil price increases, energy crisis, energy or fuel interruption, war (whether declared or not) or the serious threat of same, riots, rebellions, acts of terrorism, embargoes, fire or any reason whether similar to the foregoing or otherwise. Seller will resume performance as soon as practicable after the event of force majeure has been removed. All delivery dates affected by an event of force majeure shall be tolled for the duration of such event of force majeure and rescheduled for mutually agreed dates as soon as practicable after the event of force majeure ceases to exist. The right to allocate capacity is in the Seller's sole discretion. An event of force majeure shall not include financial distress, insolvency, bankruptcy, or other similar conditions affecting one of the parties, affiliates and/or subcontractors. An event of force majeure in the meaning of these Terms means any circumstances beyond

Seller's control that permanently or temporarily hinders performance, even where that circumstance was already foreseen. Buyer shall not be entitled to cancel any orders following its claim of an event of force majeure.

17. Waiver and Severability. Failure to enforce any provision of these Terms will not invalidate that provision; nor will any such failure prejudice either party's right to enforce that provision in the future. Invalidation of any provision of these Terms shall not invalidate any other provision herein and, the remaining provisions will remain in full force and effect.

18. Duration. Unless otherwise stated in the Quote, any agreement governed by or arising from these Terms shall: (a) be for an initial duration of one (1) year; and (b) shall automatically renew for successive one-year terms unless terminated by Buyer with at least 180-days written notice to Seller or if Seller terminates the agreement pursuant to Section 19 of these Terms.

19. Termination. Seller may, without liability to Buyer, terminate any agreement governed by or arising from these Terms for any reason and at anytime by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate, in writing, if Buyer: (a) breaches any provision of these Terms, (b) becomes or is deemed insolvent, (c) appoints or has appointed a trustee, receiver or custodian for all or any part of Buyer's property,(d) files a petition for relief in bankruptcy on its own behalf, or one is filed against Buyer by a third party, (e) makes an assignment for the benefit of creditors; or (f) dissolves its business or liquidates all or a majority of its assets.

20. Ownership of Rights. Buyer agrees that (a) Seller (and/or its affiliates) owns or is the valid licensee of Seller's IP and (b) the furnishing of information, related documents or other materials by Seller to Buyer does not grant or transfer any ownership interest or license in or to Seller's IP to Buyer, unless expressly agreed in writing. Without limiting the foregoing, Seller retains ownership of all Software supplied to Buyer. In no event shall Buyer obtain any greater right in and to the Software than a right in a license limited to the use thereof and subject to compliance with any other terms provided with the Software. Buyer further agrees that it will not, directly or through intermediaries, reverse engineer, decompile, or disassemble any Software (including firmware) comprising or contained within a Product, except and only to the extent that such activity may be expressly permitted, either by applicable law or, in the case of open source software, the applicable open source license.

21. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any Intellectual Property Rights except as provided in this Section. Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on a third-party claim that one or more of the Products infringes the Intellectual Property Rights of a third party in the country of delivery of the Products by Seller to Buyer. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of any such claim, and Seller having sole control over the defense of the claim including all negotiations for settlement or compromise. If one or more Products is subject to such a claim, Seller may, at its sole expense and option, procure for

Buyer the right to continue using the Products, replace or modify the Products to render them non-infringing, or offer to accept return of the Products and refund the purchase price less a reasonable allowance for depreciation. Seller has no obligation or liability for any claim of infringement: (i) arising from information provided by Buyer (including Seller's use of Buyer's Property); or (ii) directed to any Products for which the designs are specified in whole or part by Buyer; or (iii) resulting from the modification, combination or use in a system of any Products. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for claims of infringement of Intellectual Property Rights.

22. Governing Law. These Terms, the terms of any Quote, and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to the sale and delivery of the Products.

23. Entire Agreement. These Terms, along with the terms set forth in the Quote, forms the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale and purchase. In the event of a conflict between any term set forth in the Quote and these Terms, the terms set forth in the Quote shall prevail. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter shall have no effect. No modification to these Terms will be binding on Seller unless agreed to in a writing that is signed by an authorized representative of Seller, excluding email correspondence, 'click wrap' or other purported electronic assent to different or additional terms. Sections 2-25 of these Terms shall survive termination or cancellation of any agreement governed by or arising from these Terms.

24. No 'Wrap' Agreements/No Authority to Bind. Seller's clicking any buttons or any similar action, such as clicking "I Agree" or "Confirm," to utilize Buyer's software or web page for the placement of orders, is NOT an agreement to Buyer's Terms and Conditions. NO EMPLOYEE, AGENT OR REPRESENTATIVE OF SELLER HAS THE AUTHORITY TO BIND SELLER BY THE ACT OF CLICKING ANY BUTTON OR SIMILAR ACTION ON BUYER'S WEBSITE OR PORTAL.

25. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards, including those of the United States of America, and the country or countries in which Buyer may operate, including without limitation the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act"), U.S. and E.U. export control and sanctions laws ("Export Laws"), the U.S. Food Drug and Cosmetic Act ("FDCA"), and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), each as currently amended. Buyer agrees to indemnify, defend, and hold harmless Seller from the consequences of any violation of such laws, regulations and standards by Buyer, its employees or agents. Buyer represents that it is familiar with all applicable provisions of the FCPA, the Anti-Kickback Act, Export Laws, the FDCA and the FDA and certifies that Buyer will adhere to the requirements thereof and not take any action that would make Seller violate such requirements. Buyer

Offer of Sale

represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly, to any governmental official, foreign political party or official thereof, candidate for foreign political office, or commercial entity or person, for any improper purpose, including **the purpose of influencing such person to** purchase Products or otherwise benefit the business of Seller. Buyer further represents and agrees that it will not receive, use, service, transfer or ship any Products from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws. Buyer agrees to promptly and reliably provide Seller all requested information or documents, including end-user statements and other written assurances, concerning Buyer's ongoing compliance with Export Law.

09/2022

For metric fittings and additional thread types, please see Catalog 4230/4233.

Parker Overview

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker.
For further info call 1-800-C-Parker.

AEROSPACE

Key Markets

- Aircraft engines
- Business & general aviation
- Commercial transports
- Land-based weapons systems
- Military aircraft
- Missiles & launch vehicles
- Regional transports
- Unmanned aerial vehicles

Key Products

- Flight control systems & Components
- Fluid conveyance systems
- Fluid metering delivery & atomization devices
- Fuel systems & components
- Hydraulic systems & components
- Inert nitrogen generating systems
- Pneumatic systems & components
- Wheels & brakes

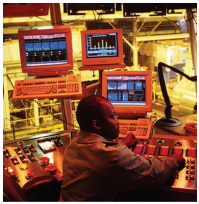
CLIMATE CONTROL

Key Markets

- Agriculture
- Air conditioning
- Food, beverage & dairy
- Life sciences & medical
- Precision cooling
- Processing
- Transportation

Key Products

- CO^2 controls
- Electronic controllers
- Filter driers
- Hand shut-off valves
- Hose & fittings
- Pressure regulating valves
- Refrigerant distributors
- Safety relief valves
- Solenoid valves
- Thermostatic expansion valves



ELECTROMECHANICAL

Key Markets

- Aerospace
- Factory automation
- Life science & medical
- Machine tools
- Packaging machinery
- Paper machinery
- Plastics machinery & converting
- Primary metals
- Semiconductor & electronics
- Textile
- Wire & cable

Key Products

- AC/DC drives & systems
- Electric actuators, gantry robots & slides
- Electrohydrostatic actuation systems
- Electromechanical actuation systems
- Human machine interface
- Linear motors
- Stepper motors, servo motors, drives & controls
- Structural extrusions

FILTRATION

Key Markets

- Food & beverage
- Industrial machinery
- Life sciences
- Marine
- Mobile equipment
- Oil & gas
- Power generation
- Process
- Transportation

Key Products

- Analytical gas generators
- Compressed air & gas filters
- Condition monitoring
- Engine air, fuel & oil filtration & systems
- Hydraulic, lubrication & coolant filters
- Process, chemical, water & microfiltration filters
- Nitrogen, hydrogen & zero air generators

HYDRAULICS

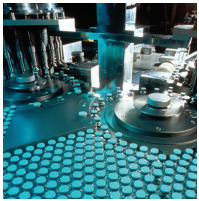
Key Markets

- Aerospace
- Aerial lift
- Agriculture
- Construction machinery
- Forestry
- Industrial machinery
- Mining
- Oil & gas
- Power generation & energy
- Truck hydraulics

Key Products

- Diagnostic equipment
- Hydraulic cylinders & accumulators
- Hydraulic motors & pumps
- Hydraulic systems
- Hydraulic valves & controls
- Power take-offs
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects

For metric fittings and additional thread types, please see Catalog 4230/4233.



PNEUMATICS

Key Markets

- Aerospace
- Conveyor & material handling
- Factory automation
- Life science & medical
- Machine tools
- Packaging machinery
- Transportation & automotive

Key Products

- Air preparation
- Brass fittings & valves
- Manifolds
- Pneumatic accessories
- Pneumatic actuators & grippers
- Pneumatic valves & controls
- Quick disconnects
- Rotary actuators
- Rubber & thermoplastic hose & couplings
- Structural extrusions
- Thermoplastic tubing & fittings
- Vacuum generators, cups & sensors

PROCESS CONTROL

Key Markets

- Chemical & refining
- Food, beverage & dairy
- Medical & dental
- Microelectronics
- Oil & gas
- Power generation

Key Products

- Analytical sample conditioning products & systems
- Fluoropolymer chemical delivery fittings, valves & pumps
- High purity gas delivery fittings, valves & regulators
- Instrumentation fittings, valves & regulators
- Medium pressure fittings & valves
- Process control manifolds

SEALING & SHIELDING

Key Markets

- Aerospace
- Chemical processing
- Consumer
- Energy, oil & gas
- Fluid power
- General industrial
- Information technology
- Life sciences
- Military
- Semiconductor
- Telecommunications
- Transportation

Key Products

- Dynamic seals
- Elastomeric o-rings
- EMI shielding
- Extruded & precision-cut, fabricated elastomeric seals
- Homogeneous & inserted elastomeric shapes
- High temperature metal seals
- Metal & plastic retained composite seals
- Thermal management

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