DAI
Artículos Industriales

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

Catalog 4200-PC

June 2011

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

Parker

ENGINEERING YOUR SUCCESS.

Tubing Ordering 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	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.

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

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 19.
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
Carpenter 20®	SS20	ASTM-B-473	ASTM-B-462 ASTM-B-472	ASTM-B-468
Titanium	T	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.

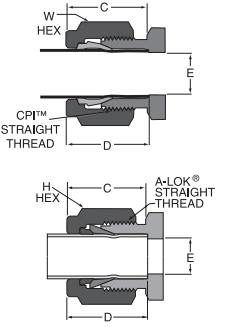
(2) If an "L" appears in the A-LOK® fitting description, then the material designator will be "SS" (e.g., JLZ drop size tee).

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

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

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

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.

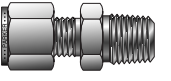
Example: The part number shown below is for a Parker CPI™/A-LOK® stainless steel male connector for 1/2" O.D. tube (–8) and 1/4" male pipe thread (–4).

How To Order CPI™ Inch Parts

8	-	4	FBZ	-	SS
1st End 1/2" Tube O.D.		2nd End 1/4" Pipe Thread	Fitting Type Male Connector		Material Stainless Steel

How To Order A-LOK® Inch Parts

8	MSC	4	N	-	316
1st End 1/2" Tube O.D.	Fitting Type Male Connector	2nd End 1/4" Pipe Thread	Thread Type NPT		Material Stainless Steel



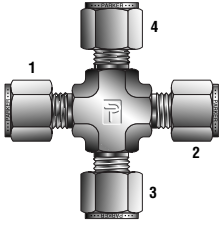
How to Order

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.

Back Ferrule

For fractional tube

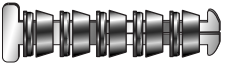
For stainless steel, sizes 4-32 are Suparcase ferrules.

Parker Part No.	Inter-changes 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

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

Ferrule Holder

Package simplifies ordering, stocking, and assembling



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

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

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.	Inter-changes With	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

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