CPI™/A-LOK® Tube Fittings

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, analysers 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. Straight fittings are machined from cold finished bar stock and shaped bodies are machined from close grain forgings. The raw materials used fully conform to the chemical requirements listed in Specification Table 1 found on page 38. 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 pages 108-133.

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.

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 are found on page 107 of this catalog.

Pressure Rating & Tubing Selection
For working pressures of CPI™/A-LOK® tube connections, please see pages 20–23 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 page 19.

CPI™ / A-LOK® Tube Fittings

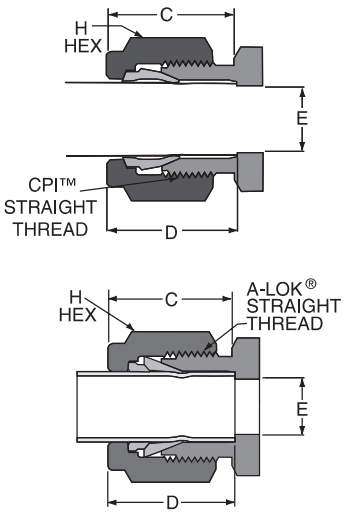
Table 1 – Typical Raw Material Specifications

BASIC FITTING MATERIAL	MATERIAL DESIGNATOR	BAR STOCK	FORGING	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	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	NNR	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.

Tube End Dimensional Data

SIZE NO.	INCHES					
	TUBE O.D.	STRAIGHT THREAD	†C	H HEX	E DIA.	†D TUBE INS. DEPTH
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	2.65



SIZE NO.	MILLIMETERS					
	TUBE O.D.	STRAIGHT THREAD	†C	H HEX	E DIA.	†D TUBE INS. DEPTH
2	2mm	5/16-20	15,3	12,0	1,7	12,9
3	3mm	5/16-20	15,3	12,0	2,4	12,9
4	4mm	3/8-20	16,1	12,0	2,4	13,7
6	6mm	7/16-20	17,7	14,0	4,8	15,3
8	8mm	1/2-20	18,6	15,0	6,4	16,2
10	10mm	5/8-20	19,5	18,0	7,9	17,2
12	12mm	3/4-20	22,0	22,0	9,5	22,8
14	14mm	7/8-20	22,0	24,0	11,1	24,4
15	15mm	7/8-20	22,0	24,0	11,9	24,4
16	16mm	7/8-20	22,0	24,0	12,7	24,4
18	18mm	1-20	22,0	27,0	15,1	24,4
20	20mm	1-1/8-20	22,0	30,0	15,9	26,0
22	22mm	1-1/8-20	22,0	30,0	18,3	26,0
25	25mm	1-5/16-20	26,5	35,0	21,8	31,3

NOTE: Dimensions C and D are shown in the finger-tight position.
† Average Value
Dimensions for reference only, subject to change.

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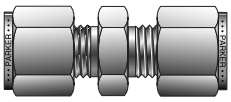
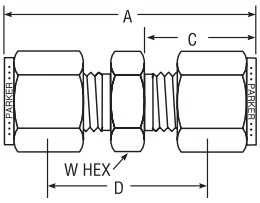
Tube to Tube Unions

Union
For fractional tube

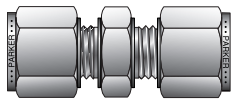


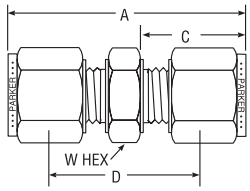


CPI™ PART NO.	A-LOK® PART NO.	INTER-CHANGES WITH	INCHES				
			TUBE O.D.	A	C	D	W HEX
1-1 HBZ	1SC1	100-6	1/16	0.99	0.43	0.69	5/16
2-2 HBZ	2SC2	200-6	1/8	1.39	0.60	0.88	7/16
3-3 HBZ	3SC3	300-6	3/16	1.48	0.64	0.95	7/16
4-4 HBZ	4SC4	400-6	1/4	1.62	0.70	1.03	1/2
5-5 HBZ	5SC5	500-6	5/16	1.70	0.73	1.11	9/16
6-6 HBZ	6SC6	600-6	3/8	1.77	0.76	1.17	5/8
8-8 HBZ	8SC8	810-6	1/2	2.02	0.87	1.22	13/16
10-10 HBZ	10SC10	1010-6	5/8	2.05	0.87	1.25	15/16
12-12 HBZ	12SC12	1210-6	3/4	2.11	0.87	1.31	1-1/16
14-14 HBZ	14SC14	1410-6	7/8	2.18	0.87	1.38	1-3/16
16-16 HBZ	16SC16	1610-6	1	2.57	1.05	1.59	1-3/8
20-20 HBZ	20SC20	2010-6	1-1/4	3.61	1.52	1.89	1-3/4
24-24 HBZ	24SC24	2410-6	1-1/2	4.23	1.77	2.11	2-1/8
32-32 HBZ	32SC32	3210-6	2	5.88	2.47	2.94	2-3/4

NOTE: A and C dimensions are typical finger-tight. Dimensions for reference only, subject to change.

Union
For metric tube





CPI™ PART NO.	A-LOK® PART NO.	INTER-CHANGES WITH	MILLIMETERS				
			TUBE O.D.	A	C	D	W HEX
HBZ 2-2	SCM2	2MO-6	2	35,6	15,3	22,4	12,0
HBZ 3-3	SCM3	3MO-6	3	35,3	15,3	22,1	12,0
HBZ 4-4	SCM4	4MO-4	4	37,4	16,1	24,2	12,0
HBZ 6-6	SCM6	6MO-6	6	41,2	17,7	26,2	14,0
HBZ 8-8	SCM8	8MO-6	8	43,2	18,6	28,2	15,0
HBZ 10-10	SCM10	10MO-6	10	46,2	19,5	31,0	18,0
HBZ 12-12	SCM12	12MO-6	12	51,2	22,0	31,0	22,0
HBZ 14-14	SCM14	14MO-6	14	52,0	22,0	31,8	24,0
HBZ 15-15	SCM15	15MO-6	15	52,0	22,0	31,8	24,0
HBZ 16-16	SCM16	16MO-6	16	52,0	22,0	31,8	24,0
HBZ 18-18	SCM18	18MO-6	18	53,5	22,0	33,3	27,0
HBZ 20-20	SCM20	20MO-6	20	55,0	22,0	34,8	30,0
HBZ 22-22	SCM22	22MO-6	22	55,0	22,0	34,8	30,0
HBZ 25-25	SCM25	25MO-6	25	65,1	26,5	40,5	35,0

NOTE: A and C dimensions are typical finger-tight. Dimensions for reference only, subject to change.

Color Coding

For easy reference, table column headings are color indicated as follows:

fractional

metric