Authorized Distributor
MONILEK OILFIELD

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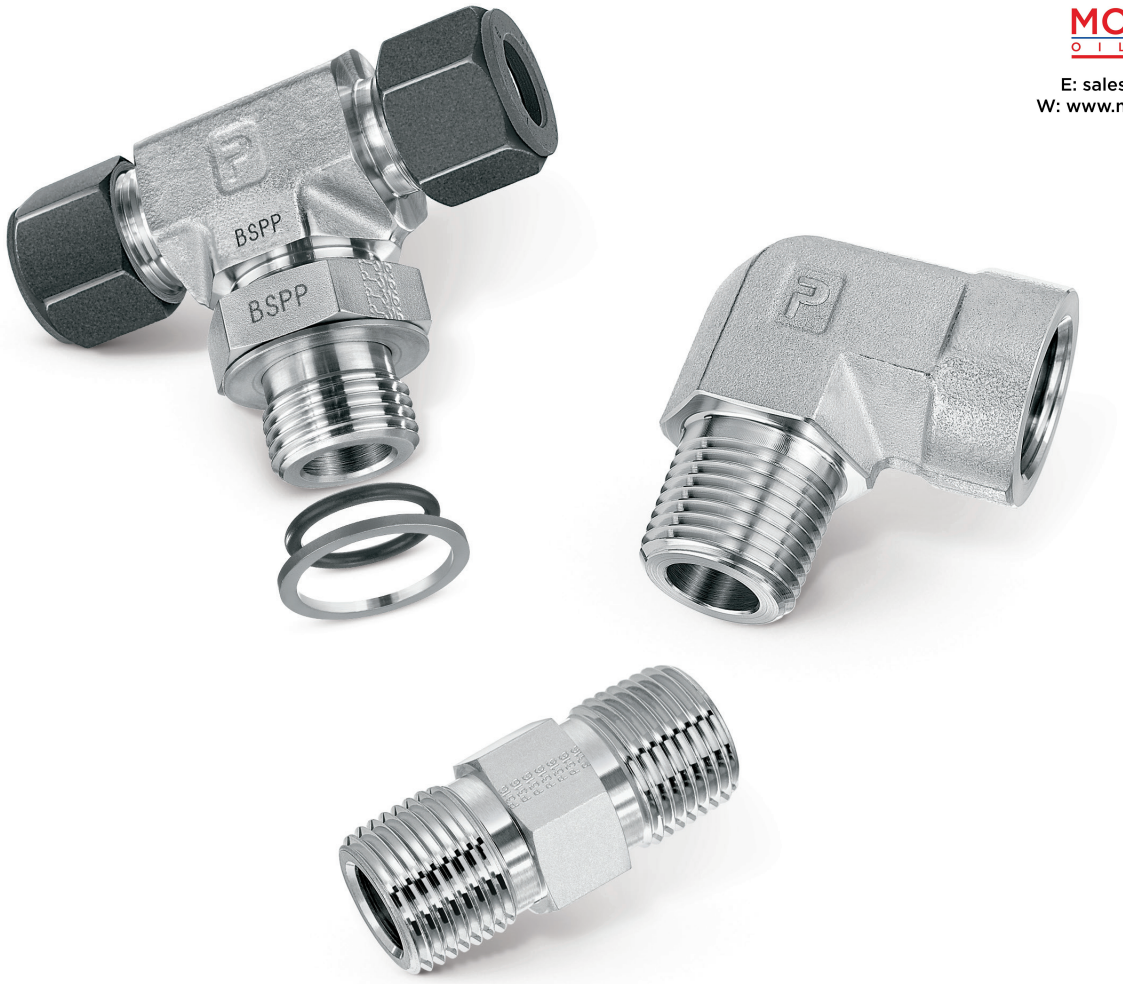

INSTRUMENT PIPE & ISO CONVERSION FITTINGS

Catalog 4260 | October 2025

Parker Instrumentation Products Division provides highly engineered pressure and temperature process control instrumentation and systems. These range from compression tube fittings, cone and thread fittings, needle valves, ball valves, compact stream switching valves to modular process to instrument valve packages. These items are all developed and manufactured to increase our customer's up-time, maintain safety, improve production and quality control.

Industries and Markets we serve:

- Down and Up-Stream Oil and Gas
- Power Generation
- Industrial Gas
- Clean Technologies
- Industrial Manufacturing
- Research Laboratories
- Space Exploration
- Transportation
- Mining

To learn more about our wide range of products visit us online at...

parker.com/ipd

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INSTRUMENT PIPE FITTINGS

Parker Instrumentation Pipe Fittings are designed as leak-free connections for process, power, instrumentation and general industrial applications. They are manufactured to the highest quality standards and are available in broad ranges of sizes, materials and configurations.

Parker Instrumentation Pipe fittings are made at the Instrumentation Products Division of Parker Hannifin in Huntsville, Alabama. These fittings are manufactured where strict adherence to quality control programs is maintained.

The Parker Quality Program is a measure of the efficiency with which Parker transforms materials, our employee efforts, machinery and information into customer-satisfying products and services.

Material

Parker Pipe Fittings are standard in steel and brass. Other materials may be special ordered within the Parker Quick Response Department. Straight fittings are manufactured from applicable ASTM bar stock specifications shaped fittings are manufactured from close grain forgings.

ISO CONVERSION FITTINGS

Parker ISO Conversion Fittings are designed to the highest quality standards to allow connections between components and systems which use both NPT and ISO Thread configurations. Conversion fittings are maintained under strict quality control programs.

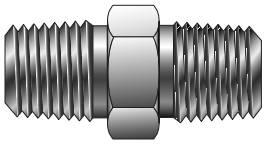
Design

Parker ISO Conversion Fittings are designed to the most commonly used ISO thread forms. These thread forms are used where pressure tight joints are either made on threads utilizing a thread sealant or where pressure tight joints utilize a peripheral seal on the face of the mating component.

Material

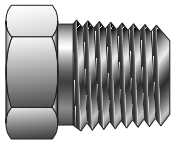
Parker ISO Conversion Fittings are standard in stainless steel and brass. Other materials may be special ordered within the Parker Quick Response Department. Straight fittings are manufactured from applicable ASTM bar stock specifications shaped fittings are manufactured from close grain forgings.

Visual Index: *Instrument Pipe Fittings*



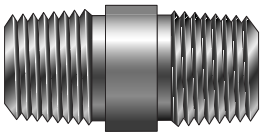
MHN
Male Hex Nipple

Page 14



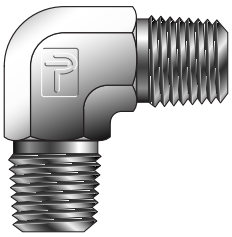
RB
Reducing Bushing

Page 16



MCN
Male Close Nipple

Page 14



ME
Male Elbow

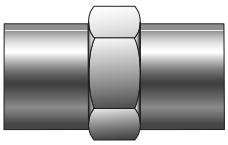
Page 17

MHLN
Male Hex Long Nipple

Page15

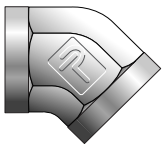
FE
Female Elbow

Page 17



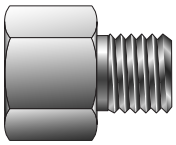
FHC
Female Hex Coupling

Page 15



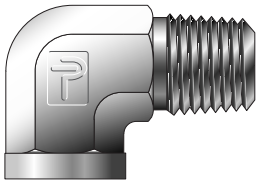
FVE
Female Elbow 45°

Page 18



RA
Adapter

Page 16



SE
Street Elbow

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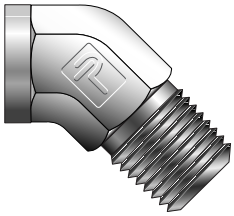
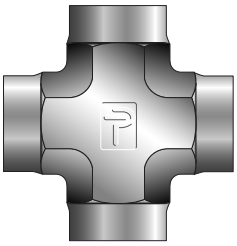
Visual Index: *Instrument Pipe Fittings - con't*



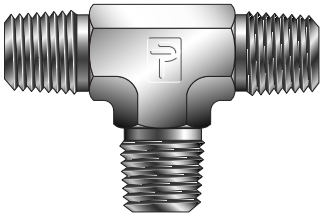
SVE
Street Elbow 45°

Page 19



FX
Female Cross

Page 21

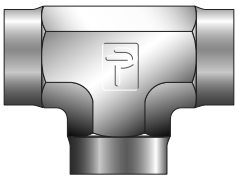


MT
Male Tee

Page 19

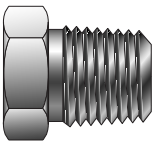
CP
Pipe Cap

Page 22



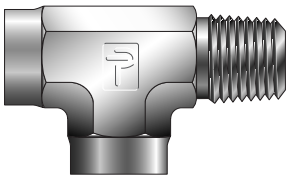
FT
Female Tee

Page 20



PH
Hex Head Plug

Page 22

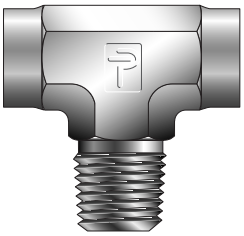


ST
Street Tee

Page 20

PHH
Hollow Hex Plug

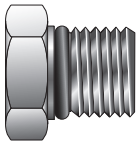
Page 22



MBT
Male Branch Tee

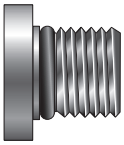
Page 21

Visual Index: *Straight Thread Adapters*



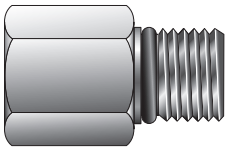
P5ON
Hex Head Plug

Page 24



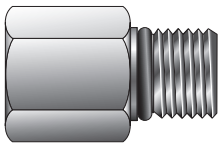
HP5ON
Hollow Hex Plug

Page 24



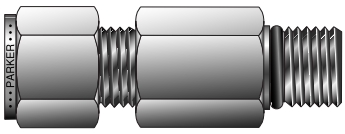
F50G5
Straight Thread
Reducer/Expander

Page 24



GOA
Male SAE Straight Thread
to Female NPT Thread

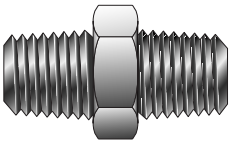
Page 25



ZH3BA
Male Connector to
SAE Straight Thread

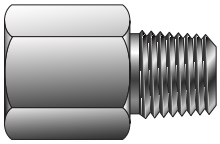
Page 25

Visual Index: *ISO Conversion Fittings*



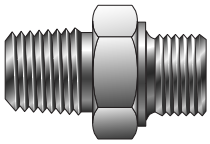
Male Hex Nipple NPT to BSP Taper

Page 30



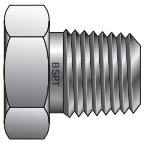
Female BSPP to Male NPT Adapter

Page 31



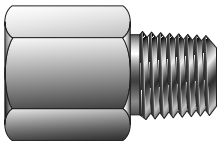
Male Hex Nipple NPT to BSPP

Page 30



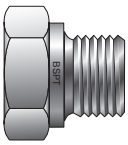
BSP Taper Male Hex to Pipe Plug

Page 32



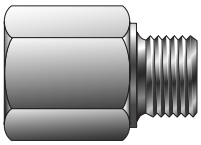
Female NPT to Male BSP Taper Adapter

Page 30



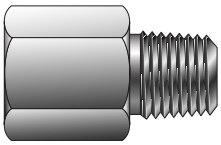
BSPP Parallel Male Hex Pipe Plug

Page 32



Female NPT to Male BSPP Adapter

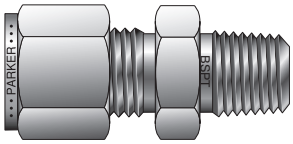
Page 31



Female BSP Taper to Male NPT Adapter

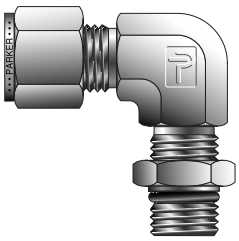
Page 31

Visual Index: *ISO Thread/Fractional Tube Connectors*



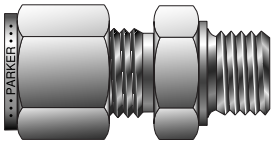
BSP Taper Male Connector

Page 33



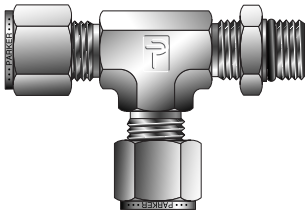
BSPP Male Elbow (Positionable)

Page 35



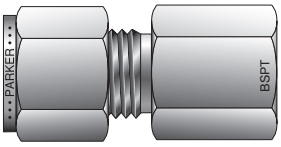
BSPP Male Connector

Page 33



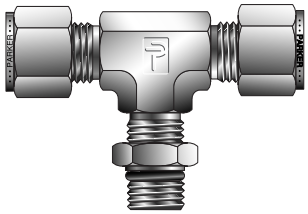
BSPP Male Run Tee (Positionable)

Page 35



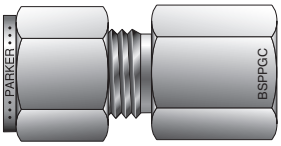
BSP Taper Female Connector

Page 34



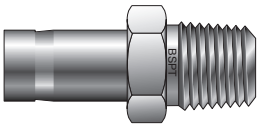
BSPP Male Branch Tee (Positionable)

Page 36



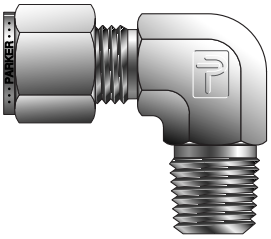
BSPP Female Gauge Connector

Page 34



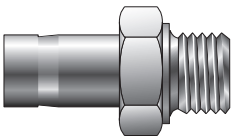
BSP Taper Male Adapter

Page 36



BSP Taper Male Elbow

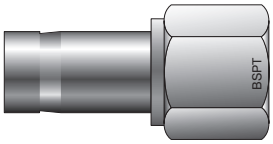
Page 34



BSPP Male Adapter

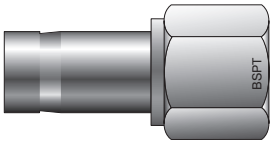
Page 37

Visual Index: *ISO Thread/Fractional Tube Connectors - con't*



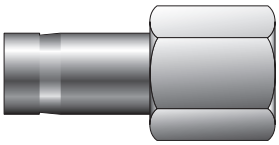
BSP Taper
Female Adapter

Page 37



BSPP
Female Adapter

Page 38



BSPP
Female Gauge Adapter

Page 38

Visual Index: *Sealing Washers*

Bonded Seals (Stainless)

Page 39

Copper Washers

Page 39

Instrumentation Pipe Fittings

Features and Technical Data

Parker Instrument Pipe Fittings are precision machined from forgings for elbows, tees and crosses and from bar stock for straight connectors. They are designed to be used for process control and instrumentation connections between pipe sizes and tube sizes.

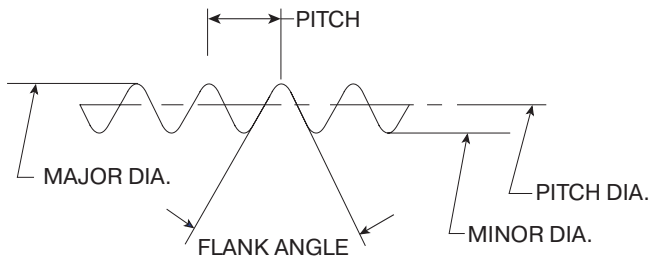
- Quality engineered for instrumentation applications
- Packaged in sealed, clear plastic shrink wrapped boxes for cleanliness
- Working pressures calculated in accordance with Power Piping Code ANSI B31.1 and Refiner Piping Code ANSI B31.3.
- All pipe threads are National Pipe Taper (NPT) and exceed the requirements of ANSI B1.20.1.
- Rolled male threads for extra strength
- Straight bodies machined from applicable ASTM bar stock specifications
- Shapes machined from close grain forgings
- Size ranges from 1/16" through 2" NPT
- Materials – 316 Stainless Steel, Brass and Steel. (Other materials by special order)
- All exposed threads protected to prevent damage

NPT Threads

The ***National Pipe Taper (NPT)*** thread has a thread flank angle of 60° inclusive, and is mainly used in the petrochemical and process industries.

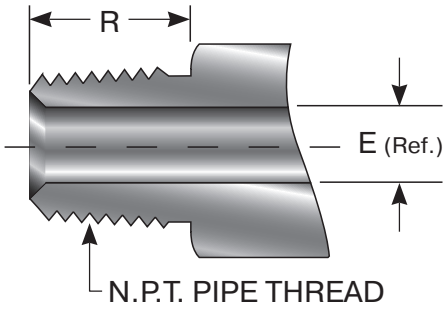
NPT – National Pipe Taper threads for connections where pressure-tight joints are made on the threads utilizing a thread sealant.

Generic Thread



Pipe Dimensions

Pipe Size.	Inches		
	NPT Pipe Thread	R	E (Ref.)
1/16	1/16 – 27	.38	.11
1/8	1/8 – 27	.38	.19
1/4	1/4 – 18	.56	.28
3/8	3/8 – 18	.56	.41
1/2	1/2 – 14	.75	.50
3/4	3/4 – 14	.75	.62
1	1 – 11 1/2	.94	.94
1 1/4	1 1/4 – 11 1/2	.97	1.25
1 1/2	1 1/2 – 11 1/2	1.00	1.50
2	2 – 11 1/2	1.03	1.94



How to Order: Instrument Pipe Fittings

Parker Instrument Pipe Fittings part numbers are constructed from symbols that identify the size and style of the fitting and material used.

The example shown below describes a male hex nipple for 3/8" NPT male pipe and 1/4" NPT male pipe in 316 stainless steel with CRN Number required.

Example: **6-4 MHN-SS-CRN**

(Part number is created based on customer selection of product parameters, see below for example)

6	-	4	MHN	-	SS	-	CRN
1st END		2nd END	Fitting Type		Body Material		Option
3/8" NPT Male Pipe		1/4" NPT Male Pipe	Male Hex Nipple		316 SS		See Below*

Parker Instrument Pipe Fittings are ordered by part number as listed in this catalog.

Size: Pipe thread sizes are designated by the number of sixteenths of an inch. (3/8 NPT pipe = 6/16 = 6)

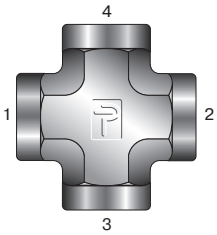
Thread Type: All pipe threads are National Pipe Taper (NPT) unless otherwise designated.

Straights and Elbows: Call out the largest pipe end first followed by the smaller pipe size. See MHN example on page 14.

Tees and Crosses: For tees that are the same pipe sizes on all ends the size designation is shown below:

Example: 6-6-6 FT-B would be a 3/8" NPT Female Tee in brass.

Example: 4 FX-SS would be a 1/4" NPT Female Cross in 316 SS.



If a reducing tee or cross were specified, each size must be in sequence. First size the largest run (1 to 2) and then the branch (3 to 4).

Example: 6-6-6-4 FX-SS

Material: Basic Material Type (**B** = Brass, **SS** = 316 Stainless Steel, **S** = Steel)

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.

Availability: Items priced in current Price List 4260 are carried in stock. Price and delivery for non-standard items quoted on request through the quick response department.

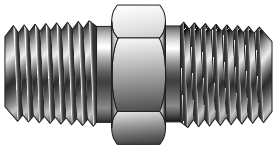
***OPTIONS:**

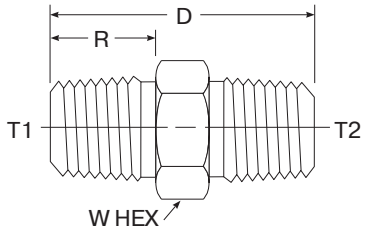
CRN If a Canadian Registration Number (**CRN**) is required, the -**CRN** suffix must be added to the part number suffix

10K High Pressure **10k** Pipe Fittings

MHN

Male Hex Nipple

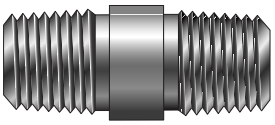


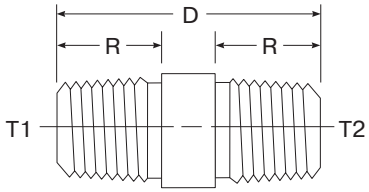


Parker Part No.	NPT Thread Male		W Hex	D (in)	R (in)	Working Pressure (psig)		
	T1	T2				Brass	Stainless Steel	Steel
1-1 MHN	1/16	1/16	7/16	1.06	.38	6000	10000	10500
2-1 MHN	1/8	1/16	7/16	1.06	.38	5600	9100	9700
2-2 MHN	1/8	1/8	7/16	1.06	.38	5600	9100	9700
4-1 MHN	1/4	1/16	5/8	1.25	.56/.38	4100	7500	8000
4-2 MHN	1/4	1/8	5/8	1.25	.56/.38	4100	7500	8000
4-4 MHN	1/4	1/4	5/8	1.45	.56	4100	7500	8000
6-1 MHN	3/8	1/16	3/4	1.27	.56/.38	4000	7200	7600
6-2 MHN	3/8	1/8	3/4	1.27	.56/.38	4000	7200	7600
6-4 MHN	3/8	1/4	3/4	1.45	.56	4000	7200	7600
6-6 MHN	3/8	3/8	3/4	1.45	.56	4000	7200	7600
8-2 MHN	1/2	1/8	7/8	1.52	.75/.38	3900	6600	7000
8-4 MHN	1/2	1/4	7/8	1.70	.75/.56	3900	6600	7000
8-6 MHN	1/2	3/8	7/8	1.70	.75/.56	3900	6600	7000
8-8 MHN	1/2	1/2	7/8	1.89	.75	3900	6600	7000
12-2 MHN	3/4	1/8	1-1/8	1.59	.75/.38	3800	6400	6800
12-4 MHN	3/4	1/4	1-1/8	1.78	.75/.56	3800	6400	6800
12-6 MHN	3/4	3/8	1-1/8	1.78	.75/.56	3800	6400	6800
12-8 MHN	3/4	1/2	1-1/8	1.97	.75	3800	6400	6800
12-12 MHN	3/4	3/4	1-1/8	1.97	.75	3800	6400	6800
16-2 MHN	1	1/8	1-3/8	1.78	.94/.38	2700	4600	4900
16-4 MHN	1	1/4	1-3/8	1.97	.94/.56	2700	4600	4900
16-6 MHN	1	3/8	1-3/8	1.97	.94/.56	2700	4600	4900
16-8 MHN	1	1/2	1-3/8	2.16	.94/.75	2700	4600	4900
16-12 MHN	1	3/4	1-3/8	2.09	.94/.75	2700	4600	4900
16-16 MHN	1	1	1-3/8	2.34	.94	2700	4600	4900
20-16 MHN	1-1/4	1	1-3/4	2.45	.97/.94	2000	3500	3700
20-20 MHN	1-1/4	1-1/4	1-3/4	2.48	.97	2000	3500	3700
24-24 MHN	1-1/2	1-1/2	2	2.61	1.00	1800	2900	3100

MCN

Male Close Nipple

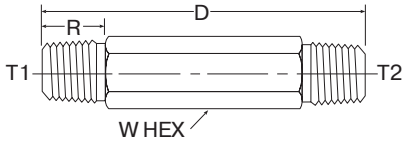




Parker Part No.	NPT Thread Male	D (in)	R (in)	Working Pressure (psig)		
				Brass	Stainless Steel	Steel
1-1 MCN	1/16	.75	.34	6000	10000	10500
2-2 MCN	1/8	.75	.34	5600	9100	9700
4-4 MCN	1/4	1.13	.49	4100	7500	8000
6-6 MCN	3/8	1.13	.48	4000	7200	7600
8-8 MCN	1/2	1.50	.66	3900	6600	7000
12-12 MCN	3/4	1.50	.66	3800	6400	6800
16-16 MCN	1	1.88	.84	2700	4600	4900

MHLN

Male Hex Long Nipple



Parker Part No.	NPT Thread Male T1	NPT Thread Male T2	W Hex	D (in)	R (in)	Working Pressure (psig) Brass	Working Pressure (psig) Stainless Steel	Working Pressure (psig) Steel
1-1 MHLN-# †	1/16	1/16	7/16	*	.38	6000	10000	10500
2-2 MHLN-# †	1/8	1/8	7/16	*	.38	5600	9100	9700
2-2 MHLN-# 1.5	1/8	1/8	7/16	1.50	.38	5600	9100	9700
2-2 MHLN-# 2.0	1/8	1/8	7/16	2.00	.38	5600	9100	9700
2-2 MHLN-# 2.5	1/8	1/8	7/16	2.50	.38	5600	9100	9700
4-4 MHLN-# †	1/4	1/4	5/8	*	.56	4100	7500	8000
4-4 MHLN-# 2.0	1/4	1/4	5/8	2.00	.56	4100	7500	8000
4-4 MHLN-# 2.5	1/4	1/4	5/8	2.50	.56	4100	7500	8000
4-4 MHLN-# 3.0	1/4	1/4	5/8	3.00	.56	4100	7500	8000
4-4 MHLN-# 4.0	1/4	1/4	5/8	4.00	.56	4100	7500	8000
6-6 MHLN-# †	3/8	3/8	3/4	*	.56	4000	7200	7600
8-8 MHLN-# †	1/2	1/2	7/8	*	.75	3900	6600	7000
8-8 MHLN-# 2.0	1/2	1/2	7/8	2.00	.75	3900	6600	7000
8-8 MHLN-# 3.0	1/2	1/2	7/8	3.00	.75	3900	6600	7000

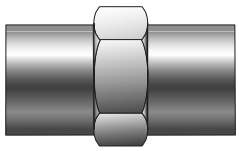
Insert material designator

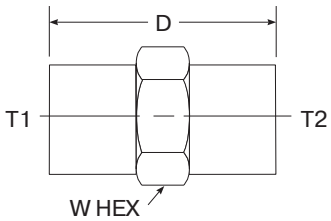
† Specify Length in 0.5 inch increments

*Part Number Example: 8-8 MHLN-SS 3.0

FHC

Female Hex Coupling

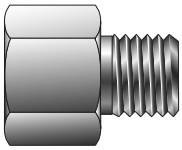


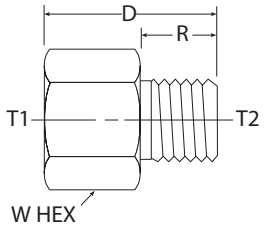


Parker Part No.	NPT Thread Male T1	NPT Thread Male T2	W Hex	D (in)	Working Pressure (psig) Brass	Working Pressure (psig) Stainless Steel	Working Pressure (psig) Steel
1-1 FHC	1/16	1/16	1/2	.75	4500	7500	8000
2-1 FHC	1/8	1/16	5/8	.75	4000	6400	6800
2-2 FHC	1/8	1/8	5/8	.75	4000	6400	6800
4-1 FHC	1/4	1/16	3/4	.92	4300	6600	7000
4-2 FHC	1/4	1/8	3/4	.94	4300	6600	7000
4-4 FHC	1/4	1/4	3/4	1.13	4300	6600	7000
6-1 FHC	3/8	1/16	7/8	.95	3500	5300	5600
6-2 FHC	3/8	1/8	7/8	1.03	3500	5300	5600
6-4 FHC	3/8	1/4	7/8	1.13	3500	5300	5600
6-6 FHC	3/8	3/8	7/8	1.13	3500	5300	5600
8-2 FHC	1/2	1/8	1-1/8	1.22	3600	5200	5500
8-4 FHC	1/2	1/4	1-1/8	1.38	3600	5200	5500
8-6 FHC	1/2	3/8	1-1/8	1.50	3600	5200	5500
8-8 FHC	1/2	1/2	1-1/8	1.50	3600	5200	5500
12-2 FHC	3/4	1/8	1-3/8	1.39	3000	4300	4600
12-4 FHC	3/4	1/4	1-3/8	1.55	3000	4300	4600
12-6 FHC	3/4	3/8	1-3/8	1.69	3000	4300	4600
12-8 FHC	3/4	1/2	1-3/8	1.88	3000	4300	4600
12-12 FHC	3/4	3/4	1-3/8	1.53	3000	4300	4600
16-2 FHC	1	1/8	1-5/8	1.44	3100	4500	4800
16-4 FHC	1	1/4	1-5/8	1.63	3100	4500	4800
16-6 FHC	1	3/8	1-5/8	1.63	3100	4500	4800
16-8 FHC	1	1/2	1-5/8	1.77	3100	4500	4800
16-12 FHC	1	3/4	1-5/8	1.72	3100	4500	4800
16-16 FHC	1	1	1-5/8	1.89	3100	4500	4800
20-16 FHC	1-1/4	1	2	1.94	2300	3500	3700
20-20 FHC	1-1/4	1-1/4	2	1.94	2300	3500	3700
24-24 FHC	1-1/2	1-1/2	2-3/8	1.94	2100	3200	3400

RA

Adapter

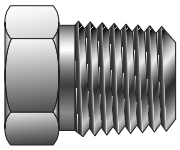


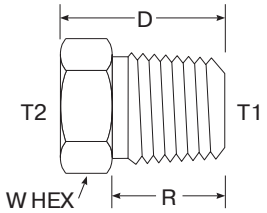


Parker Part No.	NPT Thread Male Female T1	NPT Thread Male Male T2	W Hex	D (in)	R (in)	Working Pressure (psig) Brass	Working Pressure (psig) Stainless Steel	Working Pressure (psig) Steel
2-1 RA	1/8	1/16	5/8	1.03	.38	4000	6400	6800
2-2 RA	1/8	1/8	5/8	1.03	.38	4000	6400	6800
4-1 RA	1/4	1/16	3/4	1.20	.38	4300	6600	7000
4-2 RA	1/4	1/8	3/4	1.20	.38	4300	6600	7000
4-4 RA	1/4	1/4	3/4	1.39	.56	4300	6600	7000
6-1 RA	3/8	1/16	7/8	1.25	.38	3500	5300	5600
6-2 RA	3/8	1/8	7/8	1.25	.38	3500	5300	5600
6-4 RA	3/8	1/4	7/8	1.44	.56	3500	5300	5600
6-6 RA	3/8	3/8	7/8	1.44	.56	3500	5300	5600
8-2 RA	1/2	1/8	1-1/8	1.50	.38	3600	5200	5500
8-4 RA	1/2	1/4	1-1/8	1.69	.56	3600	5200	5500
8-6 RA	1/2	3/8	1-1/8	1.69	.56	3600	5200	5500
8-8 RA	1/2	1/2	1-1/8	1.88	.75	3600	5200	5500
12-2 RA	3/4	1/8	1-3/8	1.56	.38	3000	4300	4600
12-4 RA	3/4	1/4	1-3/8	1.75	.56	3000	4300	4600
12-6 RA	3/4	3/8	1-3/8	1.75	.56	3000	4300	4600
12-8 RA	3/4	1/2	1-3/8	1.94	.75	3000	4300	4600
16-2 RA	1	1/8	1-5/8	1.81	.38	3100	4500	4800
16-4 RA	1	1/4	1-5/8	2.00	.56	3100	4500	4800
16-6 RA	1	3/8	1-5/8	2.00	.56	3100	4500	4800
16-8 RA	1	1/2	1-5/8	2.19	.75	3100	4500	4800
16-12 RA	1	3/4	1-5/8	2.19	.75	3100	4500	4800
16-16 RA	1	1	1-5/8	2.38	.94	2700	4500	4800
20-16 RA	1-1/4	1	2	2.47	.94	2300	3500	3700

RB

Reducing Bushing

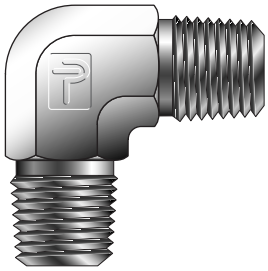


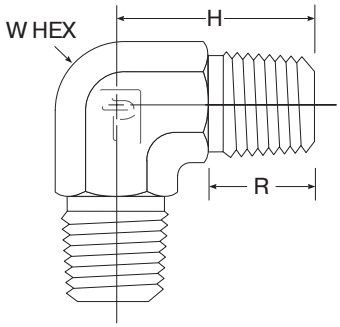


Parker Part No.	NPT Thread Male Male T1	NPT Thread Male Female T2	W Hex	D (in)	R (in)	Working Pressure (psig) Brass	Working Pressure (psig) Stainless Steel	Working Pressure (psig) Steel
2-1 RB	1/8	1/16	7/16	.63	.38	2900	6400	6800
4-1 RB	1/4	1/16	5/8	.86	.56	4100	7500	8000
4-2 RB	1/4	1/8	5/8	.86	.56	3600	6000	6400
6-1 RB	3/8	1/16	3/4	.86	.56	4000	7200	7600
6-2 RB	3/8	1/8	3/4	.86	.56	4000	6400	6800
6-4 RB	3/8	1/4	3/4	.86	.56	3000	5300	5600
8-2 RB	1/2	1/8	7/8	1.11	.75	3900	6600	6800
8-4 RB	1/2	1/4	7/8	1.11	.75	3900	6400	7000
8-6 RB	1/2	3/8	7/8	1.11	.75	2800	4600	4900
12-2 RB	3/4	1/8	1-1/8	1.17	.75	3800	6400	6800
12-4 RB	3/4	1/4	1-1/8	1.17	.75	3800	6400	6800
12-6 RB	3/4	3/8	1-1/8	1.17	.75	3500	5300	5600
12-8 RB	3/4	1/2	1-1/8	1.17	.75	2800	4900	5200
16-2 RB	1	1/8	1-3/8	1.36	.94	2700	4600	4900
16-4 RB	1	1/4	1-3/8	1.36	.94	2700	4600	4900
16-6 RB	1	3/8	1-3/8	1.36	.94	2700	4600	4900
16-8 RB	1	1/2	1-3/8	1.36	.94	2700	4600	4900
16-12 RB	1	3/4	1-3/8	1.36	.94	2500	4200	4500
20-12 RB	1-1/4	3/4	1-3/4	1.47	.97	2000	3500	3700
20-16 RB	1-1/4	1	1-3/4	1.47	.97	2000	3500	3700
24-16 RB	1-1/2	1	2	1.58	1.00	1800	2900	3100
24-20 RB	1-1/2	1-1/4	2	1.58	1.00	1700	2700	2800

ME

Male Elbow

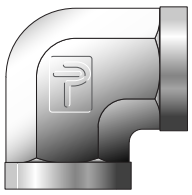


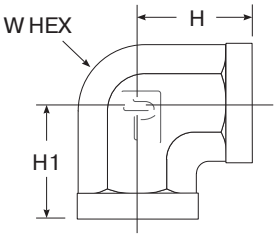


Parker Part No.	NPT Thread Male	W Hex	H (in)	R (in)	Working Pressure (psig)		
					Brass	Stainless Steel	Steel
1-1 ME	1/16	3/8	.66	.38	5500	9500	10100
2-2 ME	1/8	7/16	.76	.38	5000	9100	9700
4-4 ME	1/4	9/16	1.09	.56	4100	7500	8000
6-6 ME	3/8	3/4	1.22	.56	4000	7200	7600
8-8 ME	1/2	7/8	1.47	.75	3100	5800	6200
12-12 ME	3/4	1-1/16	1.59	.75	3400	6400	6800
16-16 ME	1	1-5/16	1.97	.94	2700	4600	4900

FE

Female Elbow

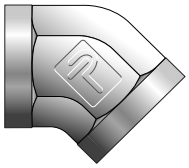


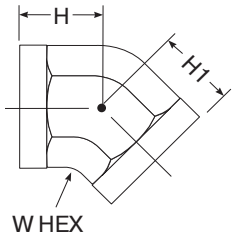


Parker Part No.	NPT Thread Male	W Hex	H (in)	R (in)	Working Pressure (psig)		
					Brass	Stainless Steel	Steel
1-1 FE	1/16	7/16	.50	.50	3800	7000	7500
2-1 FE	1/8 - 1/16	9/16	.66	.66	2900	5500	5900
2-2 FE	1/8	9/16	.66	.66	2900	5500	5900
4-2 FE	1/4 - 1/8	3/4	.88	.88	2900	5500	5900
4-4 FE	1/4	3/4	.88	.88	3000	5600	6000
6-6 FE	3/8	7/8	1.02	1.02	2700	5000	5300
8-8 FE	1/2	1-1/16	1.23	1.23	2500	4500	4800
12-12 FE	3/4	1-5/16	1.36	1.36	2000	3500	3700
16-16 FE	1	1-5/8	1.63	1.63	2300	3900	4200
20-20 FE	1-1/4	1-7/8	1.70	1.70	1900	3100	3300
24-24 FE	1-1/2	2-1/2	2.08	2.08	1700	2500	2600

FVE

Female Elbow 45°

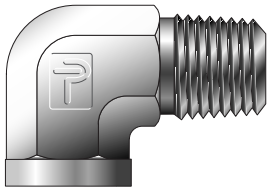


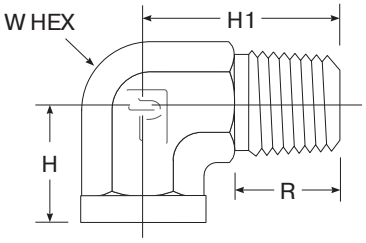


Parker Part No.	NPT Thread Male	W Hex	H (in)	H1 (in)	Working Pressure (psig)		
					Brass	Stainless Steel	Steel
1-1 FVE	1/16	7/16	.47	.47	3800	7000	7500
2-2 FVE	1/8	9/16	.47	.47	2900	5500	5900
4-4 FVE	1/4	3/4	.69	.69	3000	5600	6000
6-6 FVE	3/8	7/8	.75	.75	2700	5000	5300
8-8 FVE	1/2	1-1/16	.94	.94	2500	4500	4800
12-12 FVE	3/4	1-5/16	1.00	1.00	2000	3500	3700
16-16 FVE	1	1-5/8	1.19	1.19	2300	3900	4200

SE

Street Elbow

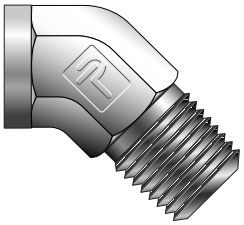


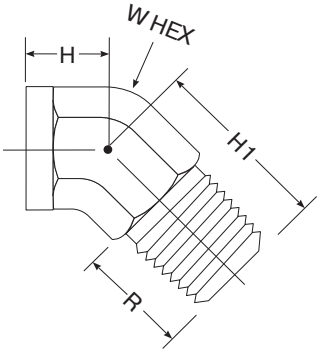


Parker Part No.	NPT Thread		W Hex	H (in)	H1 (in)	R (in)	Working Pressure (psig)		
	Male	Female					Brass	Stainless Steel	Steel
1-1 SE	1/16	1/16	9/16	.66	.72	.38	3800	7000	7500
2-1 SE	1/8	1/16	9/16	.66	.78	.38	3800	7000	7500
2-2 SE	1/8	1/8	9/16	.66	.78	.38	2900	5500	5900
4-1 SE	1/4	1/16	9/16	.66	1.09	.56	3800	7000	7500
4-2 SE	1/4	1/8	9/16	.66	1.09	.56	2900	5500	5900
4-4 SE	1/4	1/4	3/4	.88	1.09	.56	3000	5600	6000
6-1 SE	3/8	1/16	3/4	.88	1.09	.56	3800	7000	7500
6-2 SE	3/8	1/8	3/4	.88	1.22	.58	2900	5500	5900
6-4 SE	3/8	1/4	3/4	.88	1.22	.56	3000	5600	6000
6-6 SE	3/8	3/8	7/8	1.02	1.22	.56	2700	5000	5300
8-2 SE	1/2	1/8	7/8	.95	1.47	.75	2900	5500	5900
8-4 SE	1/2	1/4	7/8	.95	1.47	.75	3000	5600	6000
8-6 SE	1/2	3/8	7/8	1.23	1.47	.75	2700	5000	5300
8-8 SE	1/2	1/2	1-1/16	1.23	1.47	.75	2500	4500	4800
12-2 SE	3/4	1/8	1-1/16	1.00	1.59	.75	2900	5500	5900
12-4 SE	3/4	1/4	1-1/16	1.00	1.59	.75	3000	5600	6000
12-6 SE	3/4	3/8	1-1/16	1.23	1.59	.75	2700	5000	5300
12-8 SE	3/4	1/2	1-1/16	1.23	1.59	.75	2500	4500	4800
12-12 SE	3/4	3/4	1-5/16	1.36	1.59	.75	2000	3500	3700
16-2 SE	1	1/8	1-5/16	1.63	1.97	.94	2700	5500	5900
16-4 SE	1	1/4	1-5/16	1.63	1.97	.94	2700	5600	6000
16-6 SE	1	3/8	1-5/16	1.50	1.97	.94	2700	5000	5300
16-8 SE	1	1/2	1-5/16	1.63	1.97	.94	2500	4500	4800
16-12 SE	1	3/4	1-5/16	1.36	1.97	.94	2000	3500	3700
16-16 SE	1	1	1-5/8	1.63	1.97	.94	2300	3900	4200
20-20 SE	1-1/4	1-1/4	1-7/8	1.70	2.38	.97	1900	3100	3300

SVE

Street Elbow 45°

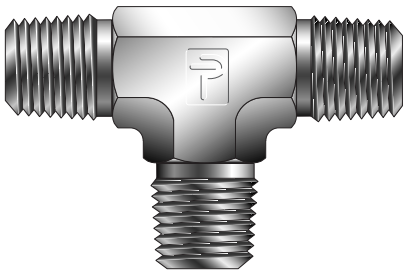


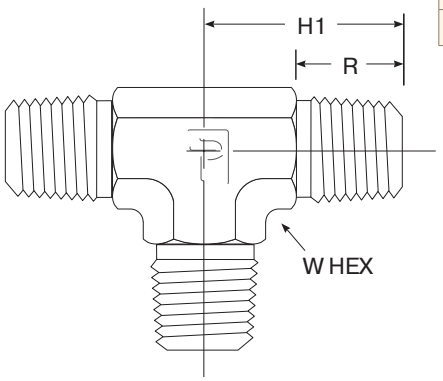


Parker Part No.	NPT Thread Male	NPT Thread Female	W Hex	H (in)	H1 (in)	R (in)	Working Pressure (psig) Brass	Working Pressure (psig) Stainless Steel	Working Pressure (psig) Steel
1-1 SVE	1/16	1/16	7/16	.47	.66	.38	3800	7000	7500
2-2 SVE	1/8	1/8	9/16	.47	.72	.38	2900	5500	5900
4-4 SVE	1/4	1/4	3/4	.63	1.05	.56	3000	5600	6000
6-6 SVE	3/8	3/8	7/8	.72	1.06	.56	2700	5000	5300
8-8 SVE	1/2	1/2	1-1/16	.91	1.34	.75	2500	4500	4800
12-12 SVE	3/4	3/4	1-5/16	.97	1.38	.75	2000	3500	3700
16-16 SVE	1	1	1-5/8	1.13	1.72	.94	2300	3900	4200

MT

Male Tee

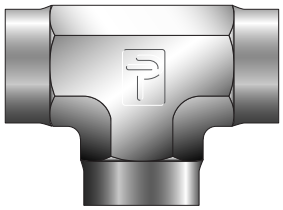


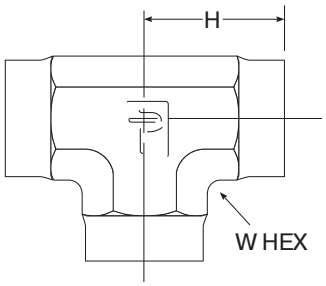


Parker Part No.	NPT Thread Male	W Hex	H (in)	R (in)	Working Pressure (psig) Brass	Working Pressure (psig) Stainless Steel	Working Pressure (psig) Steel
1-1-1 MT	1/16	5/16	.72	.38	5500	9500	10100
2-2-2 MT	1/8	7/16	.76	.38	5000	9100	9700
4-4-4 MT	1/4	9/16	1.09	.56	4100	7500	8000
6-6-6 MT	3/8	3/4	1.22	.56	4000	7200	7600
8-8-8 MT	1/2	7/8	1.47	.75	3100	5800	6200
12-12-12 MT	3/4	1-1/16	1.59	.75	3400	6400	6800
16-16-16 MT	1	1-5/16	1.97	.94	2700	4600	4900
20-20-20 MT	1-1/4	1-5/8	2.22	.97	2000	3500	3700
24-24-24 MT	1-1/2	1-7/8	2.64	1.00	1800	2900	3100

FT

Female Tee

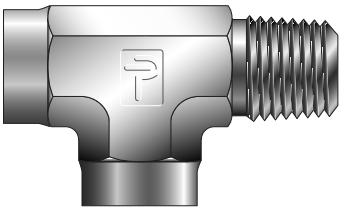


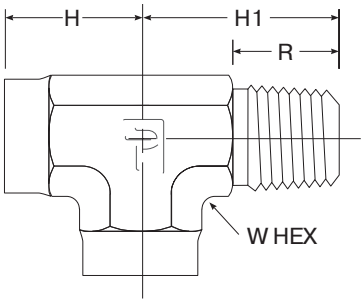


Parker Part No.	NPT Thread Male	W Hex	H (in)	Working Pressure (psig)		
				Brass	Stainless Steel	Steel
1-1-1 FT	1/16	7/16	.50	3800	7000	7500
2-2-2 FT	1/8	9/16	.66	2900	5500	5900
4-4-4 FT	1/4	3/4	.88	3000	5600	6000
6-6-6 FT	3/8	7/8	1.02	2700	5000	5300
8-8-8 FT	1/2	1-1/16	1.23	2500	4500	4800
12-12-12 FT	3/4	1-5/16	1.36	2000	3500	3700
16-16-16 FT	1	1-5/8	1.63	2300	3900	4200
20-20-20 FT	1-1/4	1-7/8	1.70	1900	3100	3300
24-24-24 FT	1-1/2	2-1/2	2.08	1700	2500	3600

ST

Street Tee

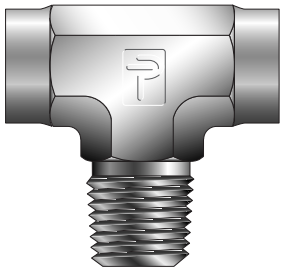


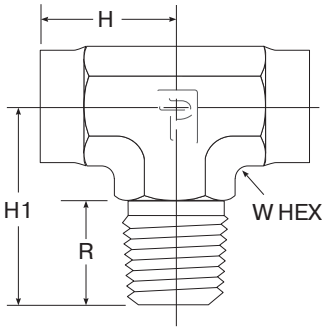


Parker Part No.	NPT Thread		W Hex	H (in)	H1 (in)	R (in)	Working Pressure (psig)		
	Male	Female					Brass	Stainless Steel	Steel
1-1-1 ST	1/16	1/16	7/16	.50	.72	.38	3800	7000	7500
2-2-2 ST	1/8	1/8	9/16	.66	.78	.38	2900	5500	5900
4-4-4 ST	1/4	1/4	3/4	.88	1.09	.56	3000	5600	6000
6-6-6 ST	3/8	3/8	7/8	1.02	1.22	.56	2700	5000	5300
8-8-8 ST	1/2	1/2	1-1/16	1.23	1.47	.75	2500	4500	4800
12-12-12 ST	3/4	3/4	1-5/16	1.36	1.59	.75	2000	3500	3700
16-16-16 ST	1	1	1-5/8	1.63	1.97	.94	2300	3900	4200

MBT

Male Branch Tee

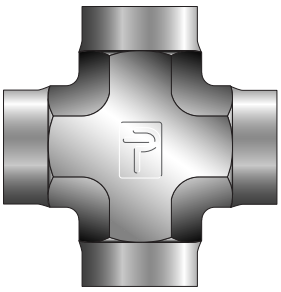


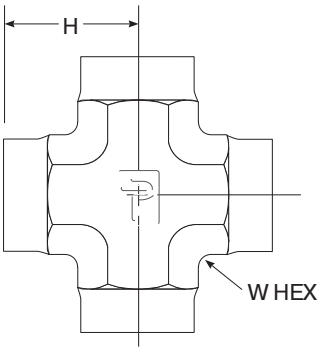


Parker Part No.	NPT Thread		W Hex	H (in)	H1 (in)	R (in)	Working Pressure (psig)		
	Male	Female					Brass	Stainless Steel	Steel
1-1-1 MBT	1/16	1/16	7/16	.50	.72	.38	3800	7000	7500
2-2-2 MBT	1/8	1/8	9/16	.66	.78	.38	2900	5500	5900
4-4-4 MBT	1/4	1/4	3/4	.88	1.09	.56	3000	5600	6000
6-6-6 MBT	3/8	3/8	7/8	1.02	1.22	.56	2700	5000	5300
8-8-8 MBT	1/2	1/2	1-1/16	1.23	1.47	.75	2500	4500	4800
12-12-12 MBT	3/4	3/4	1-5/16	1.36	1.59	.75	2000	3500	3700
16-16-16 MBT	1	1	1-5/8	1.63	1.97	.94	2300	3900	4200

FX

Female Cross

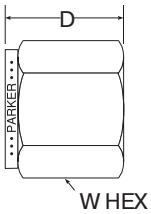




Parker Part No.	NPT Thread	W Hex	H (in)	Working Pressure (psig)		
	Female			Brass	Stainless Steel	Steel
1 FX	1/16	7/16	.50	3800	7000	7500
2 FX	1/8	9/16	.66	2900	5500	5900
4 FX	1/4	3/4	.88	3000	5600	6000
6 FX	3/8	7/8	1.06	2700	5000	5300
8 FX	1/2	1-1/16	1.23	2500	4500	4800
12 FX	3/4	1-5/16	1.36	2000	3500	3700
16 FX	1	1-5/8	1.63	2300	3900	4200

CP

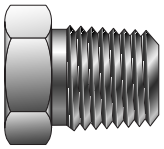
Pipe Cap

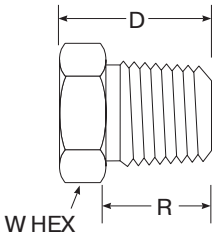


Parker Part No.	NPT Thread Female	W Hex	D (in)	Working Pressure (psig) Brass	Stainless Steel	Steel
1 CP	1/16	7/16	.50	4500	7500	8000
2 CP	1/8	9/16	.75	4000	6400	6800
4 CP	1/4	3/4	.91	4300	6600	7000
6 CP	3/8	7/8	1.03	3500	5300	5600
8 CP	1/2	1-1/16	1.34	3600	5200	5500
12 CP	3/4	1-1/4	1.44	3000	4300	4600
16 CP	1	1-5/8	1.63	3100	4500	4800

PH

Hex Head Plug



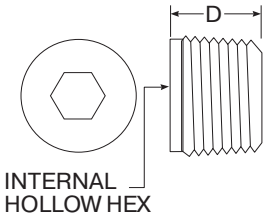


Parker Part No.	NPT Thread Male	W Hex	D (in)	R (in)	Working Pressure (psig) Brass	Stainless Steel	Steel
1 PH	1/16	3/8	.54	.38	6000	10000	10500
2 PH	1/8	7/16	.56	.38	5600	9100	9700
4 PH	1/4	9/16	.75	.56	4100	7500	8000
6 PH	3/8	11/16	.78	.56	4000	7200	7600
8 PH	1/2	7/8	1.06	.75	3900	6600	7000
12 PH	3/4	1-1/16	1.06	.75	3800	6400	6800
16 PH	1	1-5/16	1.25	.94	2700	4600	4900

Fittings of this group may be back-drilled at the pipe end.

PHH

Hollow Hex Plug

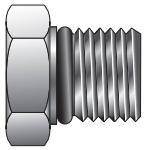


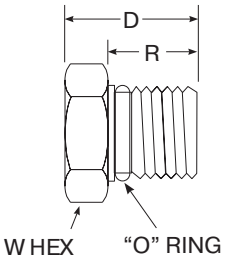
Parker Part No.	NPT Thread Male	W Internal Hex	D (in)	Working Pressure (psig) Brass	Stainless Steel	Steel
1 PHH	1/16	5/32	.30	6000	10000	10500
2 PHH	1/8	3/16	.30	5600	9100	9700
4 PHH	1/4	1/4	.47	4100	7500	8000
6 PHH	3/8	5/16	.47	4000	7200	7600
8 PHH	1/2	3/8	.61	3900	6600	7000
12 PHH	3/4	9/16	.62	3800	6400	6800
16 PHH	1	5/8	.77	2700	4600	4900

Intentionally Blank

P5ON

Hex Head Plug



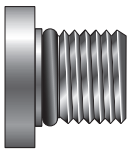


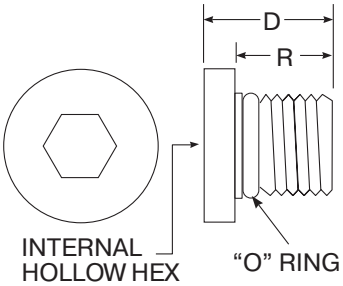
Parker Part No.	Interchanges with	Port Thread UN/UNF-2A	W Hex	D (in)	R (in)	*D2 Drill (in)	L2 (in)	O-Ring
4 P5ON	4 PST	7/16-20	9/16	0.67	0.36	0.203	0.41	3-904
6 P5ON	6 PST	9/16-18	11/16	0.73	0.39	0.297	0.44	3-906
8 P5ON	8 PST	3/4-16	7/8	0.80	0.44	0.422	0.44	3-908
12 P5ON	12 PST	1-1/16-12	1-1/4	1.09	0.59	0.656	0.59	3-912
16 P5ON	16 PST	1-5/16-12	1-1/2	1.13	0.59	0.875	0.50	3-916

*D2 drill and L2 depth are optional manufacturing method per SAE.

HP5ON

Hollow Hex Plug

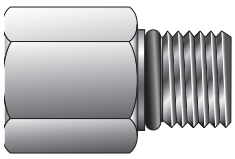


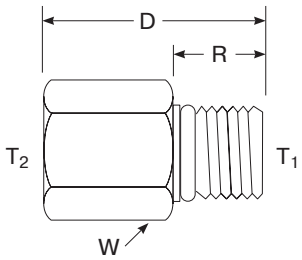


Parker Part No.	Interchanges with	Port Thread UN/UNF-2A	Internal Hex	D (in)	R (in)	X Dia. (in)	O-Ring
4 HP5ON	4 HPST	7/16-20	3/16	0.47	0.36	0.56	3-904
6 HP5ON	6 HPST	9/16-18	1/4	0.50	0.39	0.69	3-906
8 HP5ON	8 HPST	3/4-16	5/16	0.58	0.44	0.88	3-908
12 HP5ON	12 HPST	1-1/16-12	9/16	0.77	0.59	1.25	3-912
16 HP5ON	16 HPST	1-5/16-12	5/8	0.77	0.59	1.50	3-916

F5OG5

Hollow Hex Plug





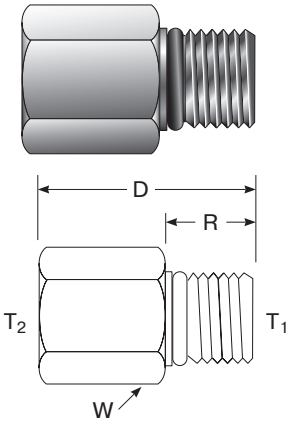
Parker Part No.	Interchanges with	T2 Port Thread UN/UNF-2B	T1 Port Thread UN/UNF-2A	W Hex	*D2 Drill (in)	D (in)	R (in)	O-Ring
6-4 F5OG5	6-RBST-4	7/16-20	9/16-18	11/16	.297	1.03	.36	3-904
8-4 F5OG5	8-RBST-4	7/16-20	3/4-16	7/8	.375	1.09	.36	3-904
12-8 F5OG5	12-RBST-8	3/4-16	1-1/16-12	1-1/4	.625	1.00	.44	3-908
16-12 F5OG5	16-RBST-12	1-1/16-12	1-5/16-12	1-1/2	.750	1.75	.59	3-912

O-Ring Seals

All standard O-Rings are Nitrile material, 70 Durameter hardness.
For other materials state material after part number.

GOA

Male SAE Straight Thread
to Female NPT Thread

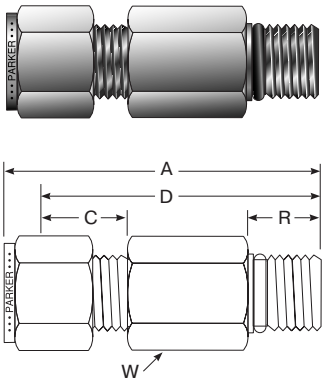


Parker Part No.	Inter-changes with	T2 Port Thread UN/UNF-2B	T1 Port Thread UN/UNF-2A	D (in)	R (in)	E Minimum Opening (in)	W Hex	ST O-Ring Uniform Size #
4-4 GOA	4SAE-7-4	7/16-20	1/4	1.19	.36	.20	3/4	3-904
6-6 GOA	6SAE-7-6	9/16-18	3/8	1.26	.39	.30	7/8	3-906
8-8 GOA	8-SAE-7-8	3/4-16	1/2	1.50	.44	.39	1-1/8	3-908
12-12 GOA	12-SAE-7-12	1-1/16-12	3/4	1.83	.59	.66	1-1/4	3-912
16-16 GOA	16-SAE-7-16	1-5/16-12	1	1.88	.59	.88	1-5/8	3-916

Includes O-ring.

ZH3BA

Male Connector
to SAE Straight Thread



Parker CPI™ Part No.	Parker A-LOKI® Part No.	Interchanges with	Tube O.D.	Straight Thread Size	W Hex	A† (in)	C† (in)	D (in)	R (in)	O-Ring Dash #
4-4 ZH3BA	4-4 ZH3LA	400-IL-4ST	1/4	7/16-20	9/16	2.26	.70	1.97	.36	3-904
5-5 ZH3BA	5-5 ZH3LA	500-IL-5ST	5/16	1/2-20	5/8	2.32	.73	2.03	.36	3-905
6-6 ZH3BA	6-6 ZH3LA	600-IL-6ST	3/8	9/16-18	11/16	2.48	.76	2.19	.39	3-906
8-8 ZH3BA	8-8 ZH3LA	810-IL-8ST	1/2	3/4-16	7/8	2.99	.87	2.58	.44	3-908
10-10 ZH3BA	10-10 ZH3LA	1010-IL-10ST	5/8	7/8-14	1	3.34	.87	2.94	.50	3-910
12-12 ZH3BA	12-12 ZH3LA	1210-IL-12ST	3/4	1-1/16-12	1-1/4	3.88	.87	3.48	.59	3-912
14-14 ZH3BA	14-14 ZH3LA	1410-IL-14ST	7/8	1-3/16-12	1-3/8	4.07	.87	3.67	.59	3-914
16-16 ZH3BA	16-16 ZH3LA	1610-IL-16ST	1	1-5/16-12	1-1/2	4.35	1.05	3.86	.59	3-916

Includes body, nut, ferrule and O-ring.
†Average value.

O-Ring Seals

All standard O-Rings are Nitrile material, 70 Durameter hardness.
For other materials state material after part number.

ISO Conversion Fittings

Typical Fastening Threads

BSP Threads

BSPP Parallel and BSP Taper threads have a thread flank angle of 55° inclusive.

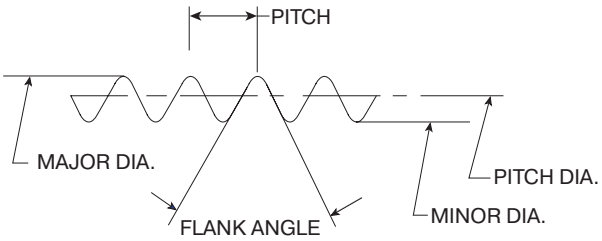
BSPP – British Standard Pipe Parallel threads for tubes and fittings where pressure-tight joints are not made on the thread, i.e., a peripheral seal is used.

BSP Taper – British Standard Pipe Taper threads for tubes and fittings where pressure-tight joints are made on the threads.

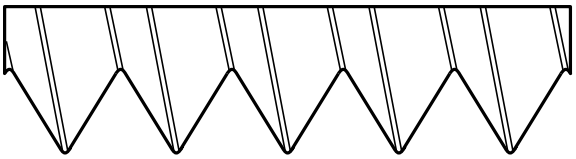
Comparison of Thread Forms

NPT Pipe Size.	Threads per inch	BSPP	BSPT	Threads per inch
		Thread Size		
1/8	27	1/8	1/8	28
1/4	18	1/4	1/4	19
3/8	18	3/8	3/8	19
1/2	14	1/2	1/2	14
3/4	14	3/4	3/4	14
1	11 1/2	1	1	11
1 1/4	11 1/2	1 1/4	1 1/4	11
1 1/2	11 1/2	1 1/2	1 1/2	11

Generic Thread

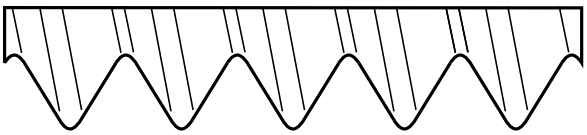


American Standard Pipe Thread (NPT)



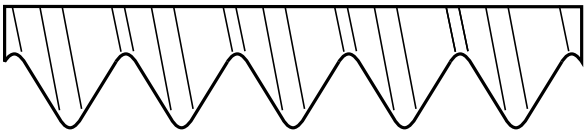
60° inclusive thread flank angle
- Pitch measured in inches
- Truncation of root and crest are flat
- Taper angle 1°47'

(ISO 7/1) **BSPT**



55° inclusive thread flank angle
- Pitch measured in inches
- Truncation of root and crest are round
- Taper angle 1°47'

(ISO 228/1) **BSPP**

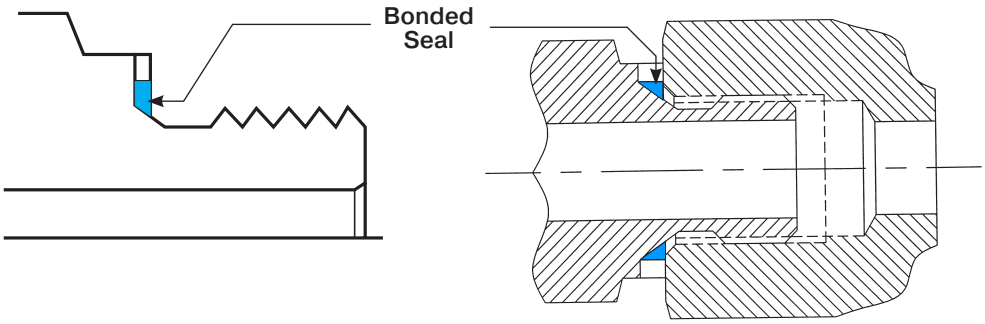


55° inclusive thread flank angle
- Pitch measured in inches
- Truncation of root and crest are round
- Diameter measured in inches

BSPP Thread Forms

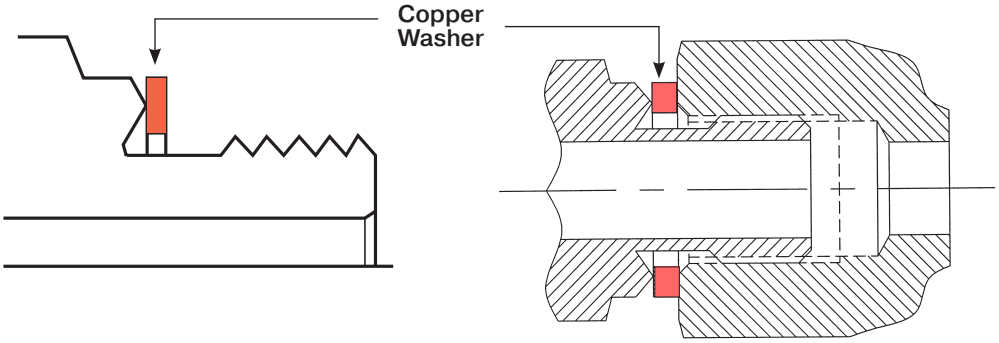
Form A

A self centering taper is used at the hex which centers a “bonded” washer (usually metal and elastomer) to seal to the surface surrounding the female thread.

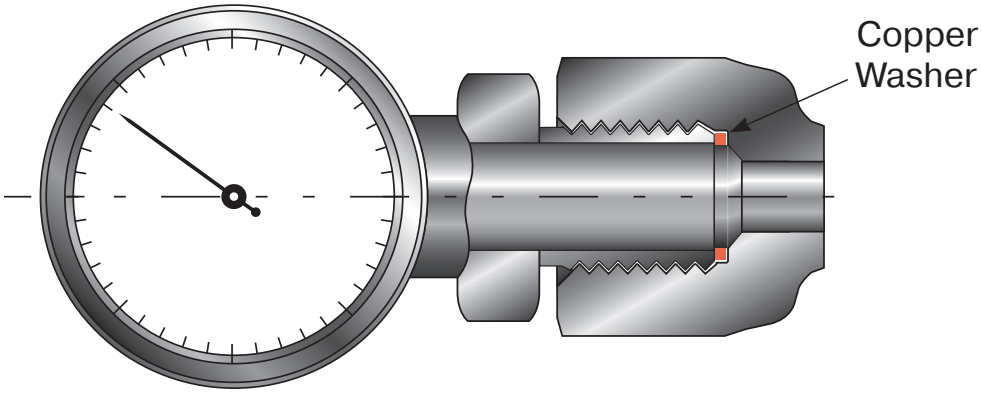


Form B

A metal gasket (usually copper) performs the seal between the face of the body and the face of the female threaded component. For Form “B” replace “R” in part number with “BR”.



Gauge Port BSPP (Female)



Parker ISO Fitting Nomenclature

Parker ISO Adapters utilize the same basic part numbering system that you are already familiar with from our CPI™ and A-LOK® Catalogs. To specify a Parker Instrumentation Connector with an ISO thread form, simply suffix the size designator with the thread form designator as illustrated.

Build a CPI™ or Pipe part number by filling in the following boxes:

(A) Port #1 Size Designator	(B) Thread Designator	-	(A) Port #2 Size Designator	(B) Thread Designator	-	(C) Shape Designator	-	(D) Material Designator

Build a A-LOK® part number by filling in the following boxes:

(A) Port #1 Size Designator	(C) Shape Designator	(A) Port #2 Size Designator	(B) Thread Designator	-	(D) Material Designator

(A) Port Size Designators:

Port sizes are incremented by 1/16" and only the numerator is required to specify a size in a part number.

1	1/6
2	1/8
3	3/16"
4	1/4"
5	5/16"

6	3/8"
8	1/2"
10	5/8"
12	3/4"
16	1" (larger sizes available)

(B) Thread Type Designators:

Blank	Fractional Tube Size
N*	NPT per ANSI B1.20.1
K	ISO Taper per; ISO 7/1, BS21, JIS B0203, DIN 2999
R	ISO Parallel per; ISO 228/1+2, DIN 3852 Form A, BS2779 (BSPP), JIS B0202
BR	ISO Parallel per; ISO 228/1+2, DIN 3852 Form B, BS2779 (BSPP), JIS B0202
R-ED	ISO Parallel per; ISO 228/1+2, DIN 3852 BS2779 with EOlastic sealing.
GC	ISO Parallel, Female Gauge connector
** N thread type designator is only required for A-LOK® nomenclature*	

(C) Body Shape Designators:

FBZ	CPI™ Male Connector
MSC	A-LOK® Male Connector
RA	Pipe Reducing Adapter
MHN	Pipe Male Hex Nipple
Note: See Catalog for further detail	

Parker ISO Fitting Nomenclature

(D) Material Designators:

SS	Stainless Steel for CPI™ and Pipe Fittings
316	Stainless Steel for A-LOK®
B	Brass

Material	Standard
Stainless Steel	ASTM A276
	ASME SA 479
Brass	ASTM B16
	ASTM B 453

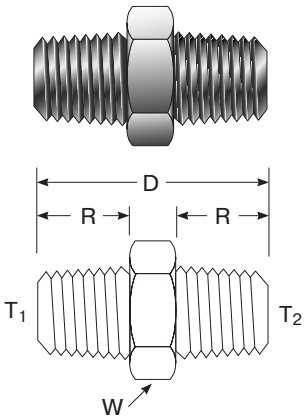
Sealing

BSP Taper threads require the use of a thread sealant. **BSPP** threads require a sealing washer. This washer may either be a metal gasket (copper is standard) or a "bonded seal" (elastomer bonded to a metal retaining washer). The **BSPP**, form "**A**" requires the use of a bonded seal (page 26). The **BSPP**, form "**B**" (cutting face) may be used with or without a sealing washer. For applications where the cutting face may not seal or where galling is a potential problem, the use of a washer is suggested.

Examples: The Thread Type Designators have been highlighted in the following examples for easy recognition:

4-4K FBZ-SS	1/4" CPI™ tube fitting by 1/4" BSPT pipe thread
6-4R RA-SS	3/8" female NPT by 1/4" BSPP (form A) reducing adapter. A bonded seal should be used with this fitting (page 39).
6MSC4BR-316	3/8" A-LOK® tube fitting by 1/4" BSPP (form B). A copper washer should be used with this fitting (page 39).

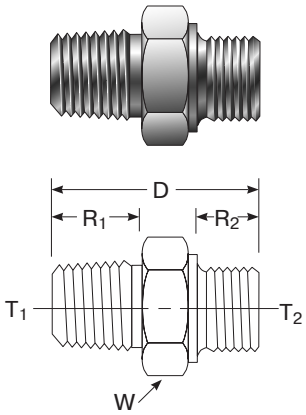
Male Hex Nipple NPT to BSP Taper



Parker Part No.	NPT Thread T1	BSPT Thread T2	W Hex	D (in)	R (in)	Working Pressure			
						Brass		Stainless Steel	
						PSI	Bar	PSI	Bar
2-2K MHN	1/8-27	1/8-28	7/16	1.06	.38	5600	390	9100	630
4-4K MHN	1/4-18	1/4-19	5/8	1.45	.56	4100	280	7500	520
6-6K MHN	3/8-18	3/8-19	3/4	1.45	.56	4000	280	7200	500
8-8K MHN	1/2-14	1/2-14	7/8	1.89	.75	3900	270	6600	460
12-12K MHN	3/4-14	3/4-14	1 1/8	1.97	.75	3800	260	6400	440
16-16K MHN	1-11 1/2	1-11	1 3/8	2.34	.94	2700	190	4600	320

Used to connect a female NPT and a female BSPT threaded component.

Male Hex Nipple NPT to BSPP



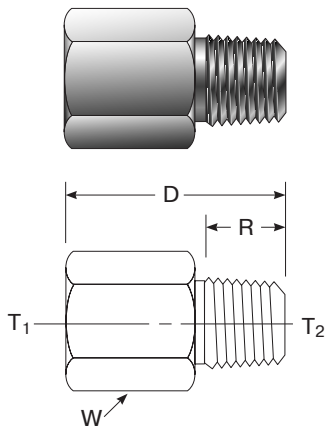
Parker Part No.	NPT Thread T1	BSPP Thread T2	W Hex	D (in)	R1 (in)	R2 (in)	Working Pressure			
							Brass		Stainless Steel	
							PSI	Bar	PSI	Bar
2-2R MHN	1/8-27	1/8-28	9/16	1.07	.38	.28	5000	340	9100	630
4-4R MHN	1/4-18	1/4-19	3/4	1.44	.56	.44	4000	280	7500	520
6-6R MHN	3/8-18	3/8-19	7/8	1.47	.56	.44	3900	270	7200	500
8-8R MHN	1/2-14	1/2-14	1 1/16	1.78	.75	.56	3800	260	6600	460
12-12R MHN	3/4-14	3/4-14	1 5/16	1.95	.75	.63	3600	250	6400	440
16-16R MHN	1-11 1/2	1-11	1 5/8	2.26	.94	.72	2600	180	4600	320

Used to connect a female NPT and a female BSPP threaded component.

Note: Bonded seal, page 39, must be used on BSPP end shown.

Please note the pressure ratings are based on taper threaded ends. The pressure rating for the BSPP ends are dependent on the type of sealing washer used.

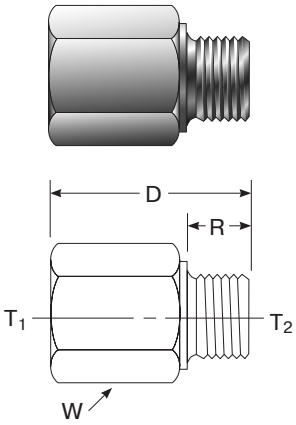
Female NPT to Male BSP Taper Adapter



Parker Part No.	NPT Thread T1	BSPT Thread T2	W Hex	D (in)	R (in)	Working Pressure			
						Brass		Stainless Steel	
						PSI	Bar	PSI	Bar
2-2K RA	1/8-27	1/8-28	9/16	1.09	.38	3200	220	6100	420
4-4K RA	1/4-18	1/4-19	3/4	1.42	.56	3300	230	6200	430
6-6K RA	3/8-18	3/8-19	7/8	1.49	.56	2600	180	5000	340
8-8K RA	1/2-14	1/2-14	1 1/16	1.94	.75	2400	160	4600	320
12-12K RA	3/4-14	3/4-14	1 5/16	2.00	.75	2300	160	4300	300
16-16K RA	1-11 1/2	1-11	1 5/8	2.28	.94	2200	150	4100	280

Used to connect a male NPT and a female BSPT threaded component.

Female NPT to Male BSPP Adapter

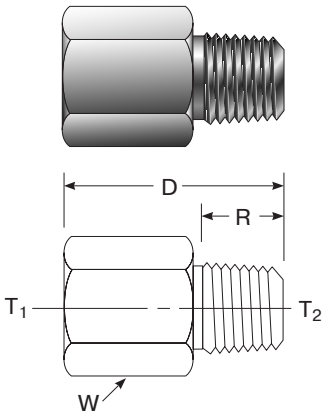


Parker Part No.	NPT Thread T1	BSPP Thread T2	W Hex	D (in)	R (in)	Working Pressure			
						Brass		Stainless Steel	
						PSI	Bar	PSI	Bar
2-2R RA	1/8-27	1/8-28	9/16	.99	.28	3200	220	6100	420
4-4R RA	1/4-18	1/4-19	3/4	1.31	.44	3300	230	6200	430
6-6R RA	3/8-18	3/8-19	7/8	1.41	.44	2600	180	5000	340
8-8R RA	1/2-14	1/2-14	1 1/8	1.74	.56	2400	160	4600	320
12-12R RA	3/4-14	3/4-14	1 5/16	2.00	.63	2300	160	4300	300
16-16R RA	1-11 1/2	1-11	1 5/8	2.10	.72	2200	150	4100	280

Used to connect a male NPT and a female BSPP threaded component.

Note: Bonded Seal, page 39, must be used with BSPP end shown.

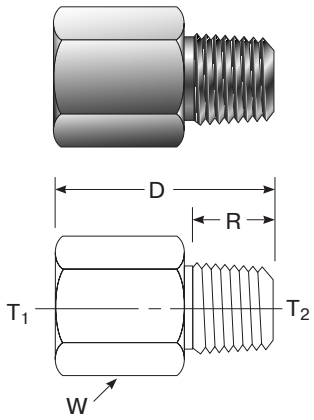
Female BSP Taper to Male NPT Adapter



Parker Part No.	BSPT Thread T1	NPT Thread T2	W Hex	D (in)	R (in)	Working Pressure			
						Brass		Stainless Steel	
						PSI	Bar	PSI	Bar
2K-2 RA	1/8-28	1/8-27	9/16	1.09	.38	3200	220	6100	420
4K-4 RA	1/4-19	1/4-18	3/4	1.42	.56	3300	230	6200	430
6K-6 RA	3/8-19	3/8-18	7/8	1.49	.56	2600	180	5000	340
8K-8 RA	1/2-14	1/2-14	1 1/8	1.94	.75	2400	160	4600	320
12K-12 RA	3/4-14	3/4-14	1 5/16	2.00	.75	2300	160	4300	300
16K-16 RA	1-11	1-11 1/2	1 5/8	2.28	.94	2200	150	4100	280

Used to connect a male BSPT and a female NPT threaded component.

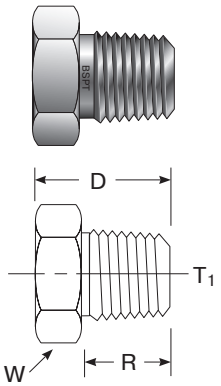
Female BSPP to Male NPT Adapter



Parker Part No.	BSPP Thread T1	NPT Thread T2	W Hex	D (in)	R (in)	Working Pressure			
						Brass		Stainless Steel	
						PSI	Bar	PSI	Bar
2R-2 RA	1/8-28	1/8-27	9/16	1.09	.38	3200	220	6100	420
4R-4 RA	1/4-19	1/4-18	3/4	1.50	.56	3300	230	6200	430
6R-6 RA	3/8-19	3/8-18	7/8	1.49	.56	2600	180	5000	340
8R-8 RA	1/2-14	1/2-14	1 1/8	1.88	.75	2400	160	4600	320
12R-12 RA	3/4-14	3/4-14	1 5/16	2.00	.75	2300	160	4300	300
16R-16 RA	1-11	1-11 1/2	1 5/8	2.28	.94	2200	150	4100	280

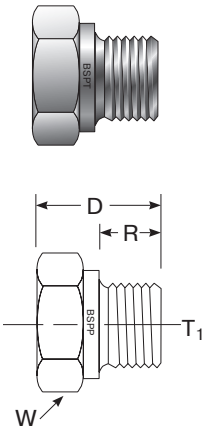
Used to connect a male BSPP and a female NPT threaded component.

BSP Taper Male Hex to Pipe Plug



Parker Part No.	BSPT Thread T1	W Hex	D (in)	R (in)	Working Pressure			
					Brass		Stainless Steel	
					PSI	Bar	PSI	Bar
2K PH	1/8-28	7/16	.59	.38	3200	220	6100	420
4K PH	1/4-19	5/8	.81	.56	3300	230	6200	430
6K PH	3/8-19	3/4	.81	.56	2600	180	5000	340
8K PH	1/2-14	7/8	1.06	.75	2400	160	3600	320
12K PH	3/4-14	1 1/8	1.13	.75	2300	160	4300	300
16K PH	1-11	1 3/8	1.31	.94	2200	150	4100	280

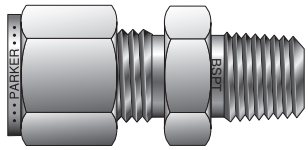
BSPP Parallel Male Hex Pipe Plug

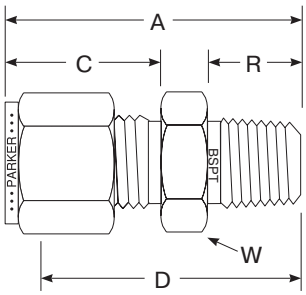


Parker Part No.	BSPP Thread T1	W Hex	D (in)	R (in)	Working Pressure			
					Brass		Stainless Steel	
					PSI	Bar	PSI	Bar
2R PH	1/8-28	9/16	.55	.28	5000	340	9100	630
4R PH	1/4-19	3/4	.78	.44	4000	280	7500	520
6R PH	3/8-19	7/8	.78	.44	3900	270	7200	500
8R PH	1/2-14	1-1/16	.99	.56	3800	260	6600	460
12R PH	3/4-14	1-5/16	1.13	.63	3600	250	6400	440
16R PH	1-11	1-5/8	1.21	.72	2600	180	4600	320

Note: Bonded seal page 39 must be used on BSPP end shown.
Please note the pressure ratings are based on taper threaded ends. The pressure rating for the BSPP ends are dependent on the type of sealing washer used.

BSP Taper Male Connector

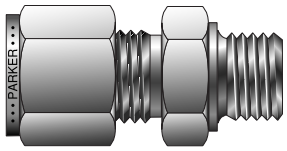


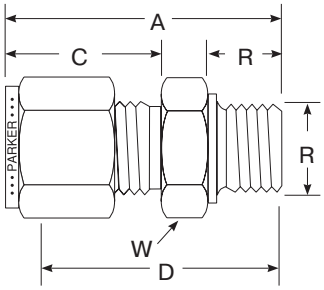


Tube O.D. (in)	BSP Thread	Parker CPI™ Part #	Parker A-LOK® Part #	A (in)	C (in)	D (in)	R (in)	W Hex
1/8	1/8-28	2-2K FBZ	2MSC2K	1.20	.60	.94	.38	7/16
1/8	1/4-19	2-4K FBZ	2MSC4K	1.40	.60	1.14	.56	9/16
1/4	1/8-28	4-2K FBZ	4MSC2K	1.30	.70	1.00	.38	1/2
1/4	1/4-19	4-4K FBZ	4MSC4K	1.50	.70	1.20	.56	9/16
1/4	3/8-19	4-6K FBZ	4MSC6K	1.52	.70	1.22	.56	11/16
1/4	1/2-14	4-8K FBZ	4MSC8K	1.76	.70	1.44	.75	7/8
5/16	1/8-28	5-2K FBZ	5MSC2K	1.34	.73	1.05	.38	9/16
5/16	1/4-19	5-4K FBZ	5MSC4K	1.53	.73	1.23	.56	9/16
3/8	1/8-28	6-2K FBZ	6MSC2K	1.39	.76	1.09	.38	5/8
3/8	1/4-19	6-4K FBZ	6MSC4K	1.59	.76	1.28	.56	5/8
3/8	3/8-19	6-6K FBZ	6MSC6K	1.59	.76	1.28	.56	11/16
3/8	1/2-14	6-8K FBZ	6MSC8K	1.82	.76	1.53	.75	7/8
1/2	1/4-19	8-4K FBZ	8MSC4K	1.75	.87	1.31	.56	13/16
1/2	3/8-19	8-6K FBZ	8MSC6K	1.75	.87	1.31	.56	13/16
1/2	1/2-14	8-8K FBZ	8MSC8K	1.93	.87	1.53	.75	7/8

Connects fractional tube to female ISO taper thread.

BSPP Male Connector



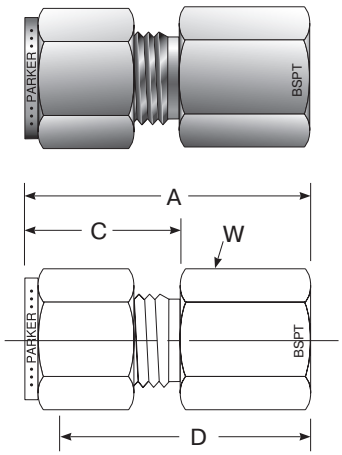


Tube O.D. (in)	BSP Thread	Parker CPI™ Part #	Parker A-LOK® Part #	A (in)	C (in)	D (in)	R (in)	W Hex
1/8	1/8-28	2-2R FBZ	2MSC2R	1.18	.60	0.92	.28	9/16
1/8	1/4-19	2-4R FBZ	2MSC4R	1.38	.60	1.13	.44	3/4
1/8	3/8-19	2-6R FBZ	2MSC6R	1.43	.60	1.17	.44	7/8
1/4	1/8-28	4-2R FBZ	4MSC2R	1.28	.70	0.98	.28	9/16
1/4	1/4-19	4-4R FBZ	4MSC4R	1.49	.70	1.19	.44	3/4
1/4	3/8-19	4-6R FBZ	4MSC6R	1.55	.70	1.25	.44	7/8
1/4	1/2-14	4-8R FBZ	4MSC8R	1.77	.70	1.47	.56	1 1/16
3/8	1/8-28	6-2R FBZ	6MSC2R	1.37	.76	1.06	.28	5/8
3/8	1/4-19	6-4R FBZ	6MSC4R	1.57	.76	1.25	.44	3/4
3/8	3/8-19	6-6R FBZ	6MSC6R	1.59	.76	1.30	.44	7/8
3/8	1/2-14	6-8R FBZ	6MSC8R	1.84	.76	1.53	.56	1 1/16
1/2	1/4-19	8-4R FBZ	8MSC4R	1.71	.87	1.28	.44	13/16
1/2	3/8-19	8-6R FBZ	8MSC6R	1.74	.87	1.30	.44	7/8
1/2	1/2-14	8-8R FBZ	8MSC8R	1.96	.87	1.53	.56	1 1/16
3/4	1/2-14	12-8R FBZ	12MSC8R	1.93	.87	1.53	.56	1 1/16
3/4	3/4-19	12-12R FBZ	12MSC12R	2.10	.87	1.69	.63	1 3/8
1	1/2-14	16-8R FBZ	16MSC8R	2.21	1.05	1.72	.56	1 3/8
1	1-11	16-16R FBZ	16MSC16R	2.37	1.05	1.88	.72	1 5/8

Connects fractional tube to female ISO parallel thread.

Note: Bonded Seal, page 26, must be used with BSPP end shown.

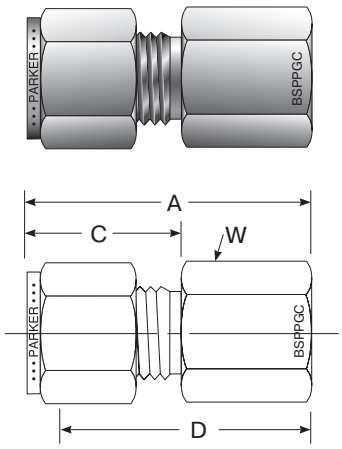
BSP Taper Female Connector



Tube O.D. (in)	BSPT Thread	Parker CPI™ Part #	Parker A-LOK® Part #	A (in)	C (in)	D (in)	W Hex
1/4	1/8-28	4-2K GBZ	4FSC2K	1.23	.70	.94	9/16
1/4	1/4-19	4-4K GBZ	4FSC4K	1.42	.70	1.13	3/4
1/4	3/8-19	4-6K GBZ	4FSC6K	1.48	.70	1.19	7/8
1/4	1/2-14	4-8K GBZ	4FSC8K	1.67	.70	1.38	1 1/16
3/8	1/4-19	6-4K GBZ	6FSC4K	1.48	.76	1.19	3/4
3/8	3/8-19	6-6K GBZ	6FSC6K	1.54	.76	1.25	7/8
3/8	1/2-14	6-8K GBZ	6FSC8K	1.73	.76	1.44	1 1/16
1/2	1/4-19	8-4K GBZ	8FSC4K	1.59	.87	1.19	13/16
1/2	3/8-19	8-6K GBZ	8FSC6K	1.65	.87	1.25	7/8
1/2	1/2-14	8-8K GBZ	8FSC8K	1.84	.87	1.44	1 1/16

Connects fractional tube to female ISO taper thread.

BSPP Female Gauge Connector

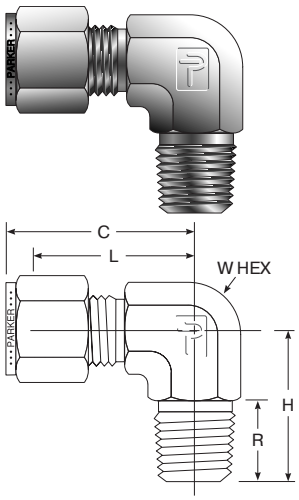


Tube O.D. (in)	BSPT Thread	Parker CPI™ Part #	Parker A-LOK® Part #	A (in)	C (in)	D (in)	W Hex
1/4	1/4-19	4-4GC GBZ	4FSC4GC	1.48	.70	1.19	3/4
1/4	3/8-19	4-6GC GBZ	4FSC6GC	1.48	.70	1.19	7/8
1/4	1/2-14	4-8GC GBZ	4FSC8GC	1.72	.70	1.42	1 1/16
5/16	1/4-19	5-4GC GBZ	5FSC4GC	1.51	.73	1.22	3/4
5/16	1/2-14	5-8GC GBZ	5FSC8GC	1.61	.73	1.32	1 1/16
3/8	1/4-19	6-4GC GBZ	6FSC4GC	1.54	.76	1.25	3/4
3/8	3/8-19	6-6GC GBZ	6FSC6GC	1.53	.76	1.23	7/8
3/8	1/2-14	6-8GC GBZ	6FSC8GC	1.65	.76	1.36	1 1/16
1/2	3/8-19	8-6GC GBZ	8FSC6GC	1.75	.87	1.35	7/8
1/2	1/2-14	8-8GC GBZ	8FSC8GC	1.90	.87	1.50	1 1/16

Connects fractional tube to male ISO parallel (gauge).

Note: Copper Washer, page 39, for female thread sealing, must be used on BSPP female end shown.

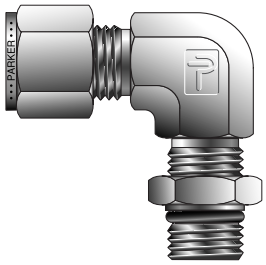
BSP Taper Male Elbow

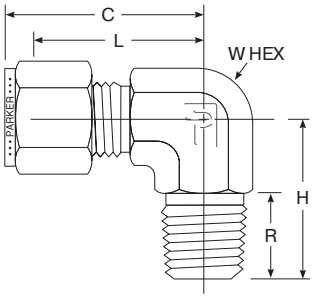


Tube O.D. (in)	BSPT Thread	Parker CPI™ Part #	Parker A-LOK® Part #	C (in)	H (in)	L (in)	R (in)	W Hex
1/4	1/8-28	4-2K CBZ	4MSEL2K	1.06	.74	.77	.38	1/2
1/4	1/4-19	4-4K CBZ	4MSEL4K	1.08	1.00	.78	.56	9/16
1/4	3/8-19	4-6K CBZ	4MSEL6K	1.17	1.13	.88	.56	3/4
1/4	1/2-14	4-8K CBZ	4MSEL8K	1.26	1.31	.97	.75	7/8
5/16	1/4-19	5-4K CBZ	5MSEL4K	1.11	1.00	.81	.56	5/8
3/8	1/8-28	6-2K CBZ	6MSEL2K	1.20	.82	.91	.38	5/8
3/8	1/4-19	6-4K CBZ	6MSEL4K	1.20	1.01	.91	.56	5/8
3/8	3/8-19	6-6K CBZ	6MSEL6K	1.26	1.13	.97	.56	3/4
1/2	3/8-19	8-6K CBZ	8MSEL6K	1.42	1.15	1.02	.56	13/16
1/2	1/2-14	8-8K CBZ	8MSEL8K	1.42	1.30	1.02	.75	7/8

Connects fractional tube to female ISO taper thread.

BSPP Male Elbow (Positionable)

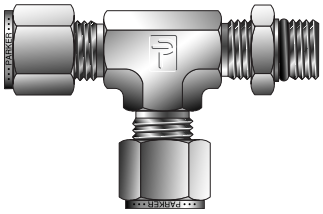


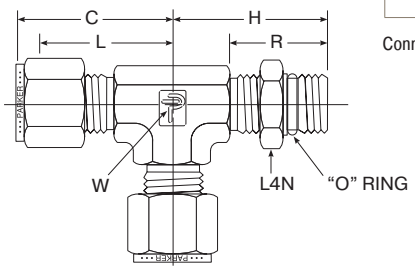


Tube O.D. (in)	BSPP Thread	Parker CPI™ Part #	Parker A-LOK® Part #	C (in)	H (in)	L (in)	R (in)	W Hex
1/4	1/8-28	4-2R CBZ	4MSEL2R	1.06	1.04	.77	.63	9/16
1/4	1/4-19	4-4R CBZ	4MSEL4R	1.14	1.27	.85	.79	9/16
3/8	1/4-19	6-4R CBZ	6MSEL4R	1.14	1.27	.85	.79	9/16
3/8	3/8-19	6-6R CBZ	6MSEL6R	1.50	1.46	1.02	.79	3/4
1/2	1/4-19	8-4R CBZ	8MSEL4R	1.50	1.38	1.10	.79	7/8
1/2	3/8-19	8-6R CBZ	8MSEL6R	1.50	1.46	1.10	.79	7/8
1/2	1/2-14	8-8R CBZ	8MSEL8R	1.50	1.71	1.10	1.03	7/8
5/8	1/2-14	10-8R CBZ	10MSEL8R	1.50	1.81	1.10	1.03	1 1/16
3/4	1/2-14	12-8R CBZ	12MSEL8R	1.57	1.81	1.17	1.03	1 1/16
3/4	3/4-14	12-12R CBZ	12MSEL12R	1.57	1.92	1.17	1.03	1 1/16
1	3/4-14	16-12R CBZ	16MSEL12R	1.94	2.11	1.45	1.03	1 5/16
1	1-11	16-16R CBZ	16MSEL16R	1.94	2.11	1.45	1.20	1 5/16

Connects fractional tube to female ISO taper thread.

BSPP Male Run Tee (Positionable)

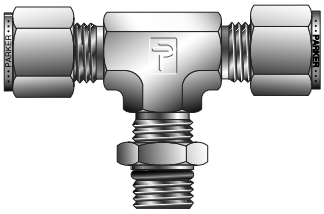


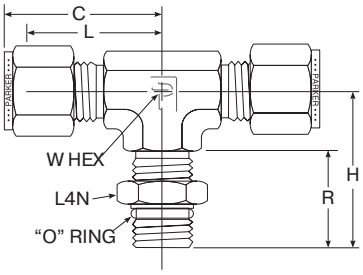


Tube O.D. (in)	BSPP Thread	Parker CPI™ Part #	Parker A-LOK® Part #	C (in)	H (in)	L (in)	R (in)	W Hex
1/4	1/8-28	4-2R-4 RBZ	4MRT2R	1.06	1.04	.77	.63	9/16
1/4	1/4-19	4-4R-4 RBZ	4MRT4R	1.14	1.27	.85	.79	9/16
3/8	1/4-19	6-4R-6 RBZ	6MRT6R	1.20	1.27	.91	.79	9/16
1/2	3/8-19	8-6R-8 RBZ	8MRT8R	1.50	1.46	1.10	.79	7/8
1/2	1/2-14	8-8R-8 RBZ	8MRT8R	1.50	1.71	1.10	1.03	7/8
5/8	1/2-14	10-8R-10 RBZ	10MRT8R	1.50	1.81	1.10	1.03	1 1/16
3/4	1/2-14	12-8R-12 RBZ	12MRT8R	1.57	1.81	1.17	1.03	1 1/16
3/4	3/4-14	12-12R-12 RBZ	12MRT12R	1.57	1.92	1.17	1.03	1 1/16
1	1-11	16-16R-16 RBZ	16MRT16R	1.94	2.11	1.45	1.20	1 5/16

Connects fractional tube to female ISO taper thread.

BSPP Male Branch Tee (Positionable)

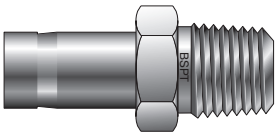


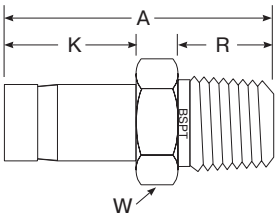


Tube O.D. (in)	BSPP Thread	Parker CPI™ Part #	Parker A-LOK® Part #	C (in)	H (in)	L (in)	R (in)	W Hex
1/4	1/8-28	4-4-2R SBZ	4MBT2R	1.06	1.04	.77	.63	9/16
1/4	1/4-19	4-4-4R SBZ	4MBT4R	1.14	1.27	.85	.79	9/16
3/8	1/4-19	6-6-4R SBZ	6MBT4R	1.14	1.27	.85	.79	9/16
1/2	3/8-19	8-8-6R SBZ	8MBT6R	1.50	1.46	1.10	.79	7/8
1/2	1/2-14	8-8-8R SBZ	8MBT8R	1.50	1.71	1.10	1.03	7/8
5/8	1/2-14	10-10-8R SBZ	10MBT8R	1.50	1.81	1.10	1.03	1 1/16
3/4	1/2-14	12-12-8R SBZ	12MBT8R	1.57	1.81	1.17	1.03	1 1/16
3/4	3/4-14	12-12-12R SBZ	12MBT12R	1.57	1.92	1.17	1.03	1 1/16
1	1-11	16-16-16R SBZ	16MBT16R	1.94	2.11	1.45	1.20	1 5/16

Connects fractional tube to female ISO parallel thread.

BSP Taper Male Adapter

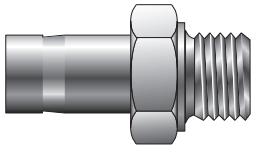


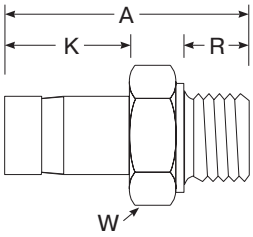


Tube O.D. (in)	BSPT Thread	Parker CPI™ Part #	Parker A-LOK® Part #	CPI™		A-LOK®		R (in)	W Hex	Min. Bore (in)
				A (in)	K (in)	A (in)	K (in)			
1/8	1/8-28	2-2K T2HF	2MA2K	1.16	0.54	1.16	.54	.38	7/16	.078
1/8	1/4-19	2-4K T2HF	2MA4K	1.39	0.54	1.39	.54	.56	9/16	.281
1/4	1/8-28	4-2K T2HF	4MA2K	1.27	0.64	1.25	.63	.38	7/16	.156
1/4	1/4-19	4-4K T2HF	4MA4K	1.49	0.64	1.46	.63	.56	9/16	.078
5/16	1/8-28	5-2K T2HF	5MA2K	1.32	0.68	1.28	.66	.38	7/16	.219
5/16	1/4-19	5-4K T2HF	5MA4K	1.53	0.68	1.49	.66	.56	9/16	.219
3/8	1/4-19	6-4K T2HF	6MA4K	1.57	0.72	1.53	.69	.56	9/16	.281
3/8	3/8-19	6-6K T2HF	6MA6K	1.61	0.72	1.56	.69	.56	11/16	.281
3/8	1/2-14	6-8K T2HF	6MA8K	1.82	0.72	1.78	.69	.75	7/8	.281
1/2	1/4-19	8-4K T2HF	8MA4K	1.84	0.98	1.75	.91	.75	9/16	.281
1/2	3/8-19	8-6K T2HF	8MA6K	1.87	0.98	1.78	.91	.56	11/16	.375
1/2	1/2-14	8-8K T2HF	8MA8K	2.09	0.98	2.00	.91	.75	7/8	.375
5/8	3/8-19	10-6K T2HF	10MA6K	1.91	1.03	1.84	.97	.56	11/16	.469
5/8	1/2-14	10-8K T2HF	10MA8K	2.14	1.03	2.06	.97	.75	7/8	.469
3/4	3/4-14	12-12K T2HF	12MA12K	2.14	1.03	2.06	.97	.75	1 1/16	.594
1	1-11	16-16K T2HF	16MA16K	2.68	1.30	2.60	1.22	.94	1 3/8	.813

Connects fractional tube to female ISO taper thread.
Generic, annealed tube stub for effective ferrule sealing.

BSPP Male Adapter

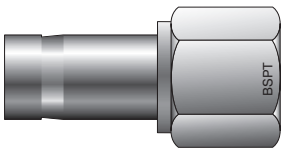


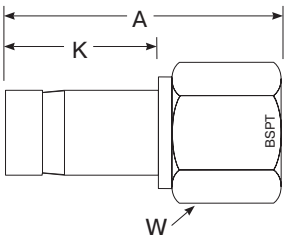


Tube O.D. (in)	BSPP Thread	Parker CPI™ Part #	Parker A-LOK® Part #	CPI™		A-LOK®		R (in)	W Hex	Min. Bore (in)
				A (in)	K (in)	A (in)	K (in)			
1/8	1/8-28	2-2R T2HF	2MA2R	1.16	.54	1.16	.54	.28	9/16	.078
1/8	1/4-19	2-4R T2HF	2MA4R	1.37	.54	1.37	.54	.44	3/4	.078
1/4	1/8-28	4-2R T2HF	4MA2R	1.26	.64	1.31	.63	.28	9/16	.156
1/4	1/4-19	4-4R T2HF	4MA4R	1.48	.64	1.50	.63	.44	3/4	.156
3/8	1/4-19	6-4R T2HF	6MA4R	1.56	.72	1.57	.69	.44	3/4	.281
3/8	3/8-19	6-6R T2HF	6MA6R	1.59	.72	1.60	.69	.44	7/8	.281
1/2	1/4-19	8-4R T2HF	8MA4R	1.81	.98	1.79	.91	.44	3/4	.375
1/2	3/8-19	8-6R T2HF	8MA6R	1.85	.98	1.82	.91	.44	7/8	.375
1/2	1/2-14	8-8R T2HF	8MA8R	2.10	.98	1.94	.91	.44	1-1/8	.375
3/4	3/4-14	12-12R T2HF	12MA12R	2.22	1.03	2.16	.97	.63	1-3/8	.594
1	1-11	16-16R T2HF	16MA16R	2.67	1.30	2.54	1.22	.72	1-3/4	.813
5/8	1/2-14	10-8K T2HF	10MA8K	2.14	1.03	2.06	.97	.75	7/8	.469
3/4	3/4-14	12-12K T2HF	12MA12K	2.14	1.03	2.06	.97	.75	1 1/16	.594
1	1-11	16-16K T2HF	16MA16K	2.68	1.30	2.60	1.22	.94	1 3/8	.813

Connects fractional tube end to female ISO parallel thread.
Note: Bonded Seal, page 39 must be used on BSPP end shown.
Generic, annealed tube stub for effective sealing.

BSP Taper Female Adapter

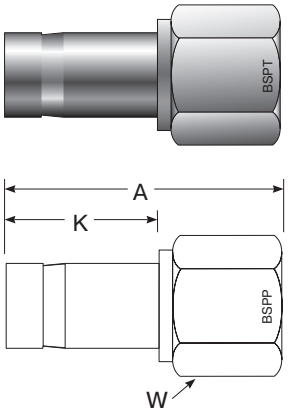




Tube O.D. (in)	BSPT Thread	Parker CPI™ Part #	Parker A-LOK® Part #	CPI™		A-LOK®		W Hex	Min. Bore (in)
				A (in)	K (in)	A (in)	K (in)		
1/4	1/8-28	4-2K T2HG	4FA2K	1.31	.64	1.30	.63	9/16	.156
1/4	1/4-19	4-4K T2HG	4FA4K	1.48	.64	1.45	.63	3/4	.156
3/8	1/4-19	6-4K T2HG	6FA4K	1.56	.72	1.50	.69	3/4	.281
3/8	3/8-19	6-6K T2HG	6FA6K	1.63	.72	1.59	.69	7/8	.281
1/2	1/4-19	8-4K T2HG	8FA4K	1.83	.98	1.71	.91	3/4	.375
1/2	3/8-19	8-6K T2HG	8FA6K	1.89	.98	1.80	.91	7/8	.375
1/2	1/2-14	8-8K T2HG	8FA8K	2.14	.98	2.05	.91	1-1/16	.375

Connects fractional tube end to male ISO taper thread.
Note: Tube stub is pre-grooved as standard. Generic (non-grooved) can be ordered through Quick Response.

BSPP Female Adapter

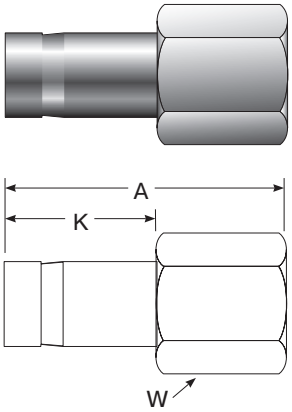


Tube O.D. (in)	BSPP Thread	Parker CPI™ Part #	Parker A-LOK® Part #	CPI™		A-LOK®		W Hex	Min. Bore (in)
				A (in)	K (in)	A (in)	K (in)		
1/8	1/8-28	2-2R T2HG	2FA2R	1.21	.54	1.21	.54	9/16	.078
1/4	1/8-28	4-2R T2HG	4FA2R	1.31	.64	1.25	.63	9/16	.156
1/4	1/4-19	4-4R T2HG	4FA4R	1.48	.64	1.50	.63	3/4	.156
3/8	1/4-19	6-4R T2HG	6FA4R	1.56	.72	1.55	.69	3/4	.281
3/8	3/8-19	6-6R T2HG	6FA6R	1.63	.72	1.57	.69	7/8	.281
1/2	3/8-19	8-6R T2HG	8FA6R	1.89	.98	1.78	.91	7/8	.375
1/2	1/2-14	8-8R T2HG	8FA8R	2.14	.98	1.95	.91	1-1/16	.375

Connects fractional tube end to male ISO parallel thread.

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

BSPP Female Gauge Adapter



Tube O.D. (in)	BSPP Thread	Parker CPI™ Part #	Parker A-LOK® Part #	CPI™		A-LOK®		W Hex	Min. Bore (in)
				A (in)	K (in)	A (in)	K (in)		
1/4	1/4-19	4-4GC T2HG	4FA4GC	1.48	.64	1.34	.63	3/4	.156
3/8	3/8-19	6-6GC T2HG	6FA6GC	1.63	.72	1.55	.69	7/8	.281
1/2	1/2-14	8-8GC T2HG	8FA8GC	2.14	.98	1.92	.91	1 1/16	.375

Connects fractional tube end to male ISO parallel thread (gauge).

Note: Copper Washer, on page 39 is for female thread sealing, must be used on BSPP female end shown.

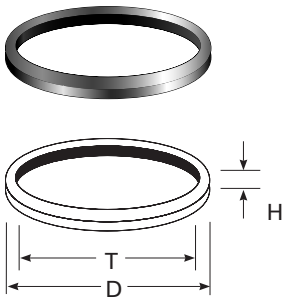
Note: Tube stub is pre-grooved as standard. Generic (non-grooved) can be ordered through Quick Response.

Sealing Washers

Bonded Seals

For BSPP female thread sealing.

Consists of an outer stainless steel ring with a bonded Viton® inner ring used to seal a male ISO parallel thread.



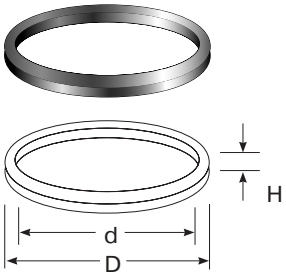
Part Number	T BSPP Thread	D (in)	H (in)
M30201-SS	1/8	.63	.08
M30202-SS	1/4	.81	.08
M30203-SS	3/8	.94	.08
M30204-SS	1/2	1.12	.10
M30206-SS	3/4	1.38	.10
M30208-SS	1	1.69	.10

Pressure Rating for Sealing Washers		
Thread Size	PSI	Bar
1/8	5300	370
1/4	5500	380
3/8	4400	300
1/2	4000	280
3/4	3700	260
1	2800	190

These seals are also available in steel with a Nitrile inner ring.
Simply replace Suffix SS with **S**.

Copper Washers

For BSPP male thread sealing

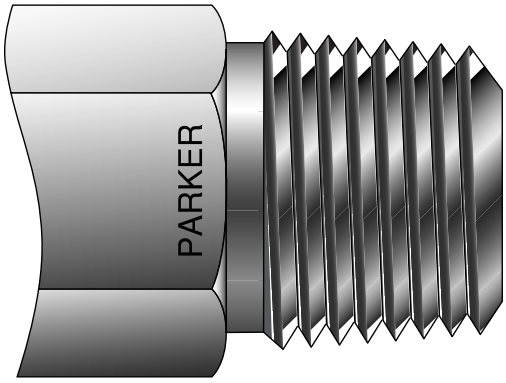
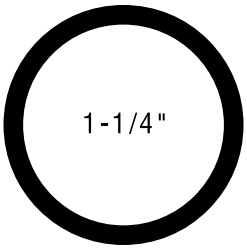
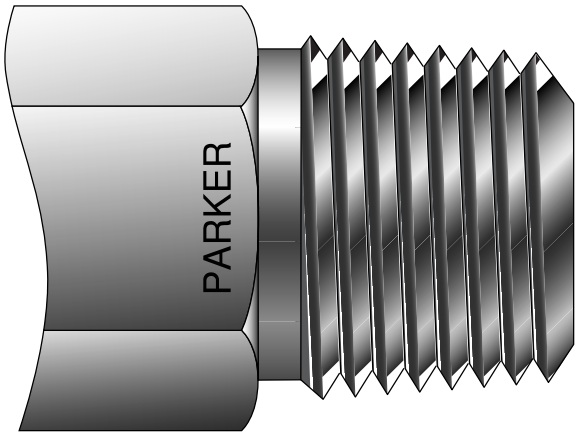
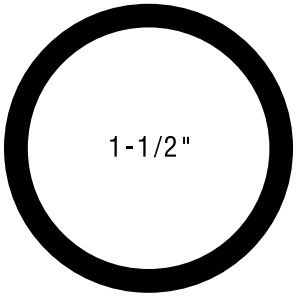
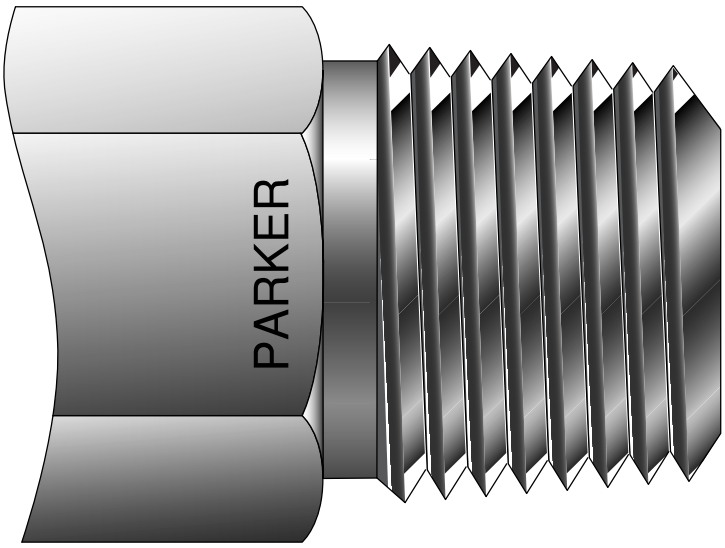
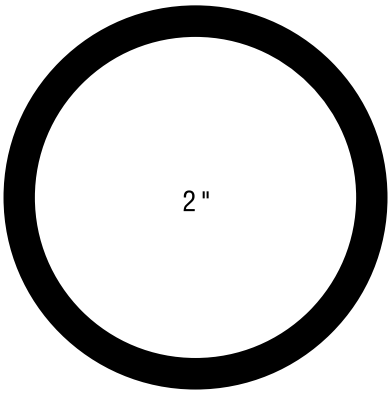


Part Number	Thread	D (in)	d (in)	H (in)
M28329	1/8	.71	.39	.09
M28330	1/4	.87	.55	.09
M28331	3/8	.94	.67	.09
M28332	1/2	1.18	.87	.10
M28334	3/4	1.38	1.06	.09
M28336	1	1.65	1.34	.09
M25179	1/8	0.322	0.188	0.062
M25180	1/4	0.436	0.250	0.062
M25181	3/8	0.574	0.375	0.062
M25182	1/2	0.719	0.500	0.062
M25184	3/4	0.935	0.719	0.062
M25186	1	1.178	0.969	0.093

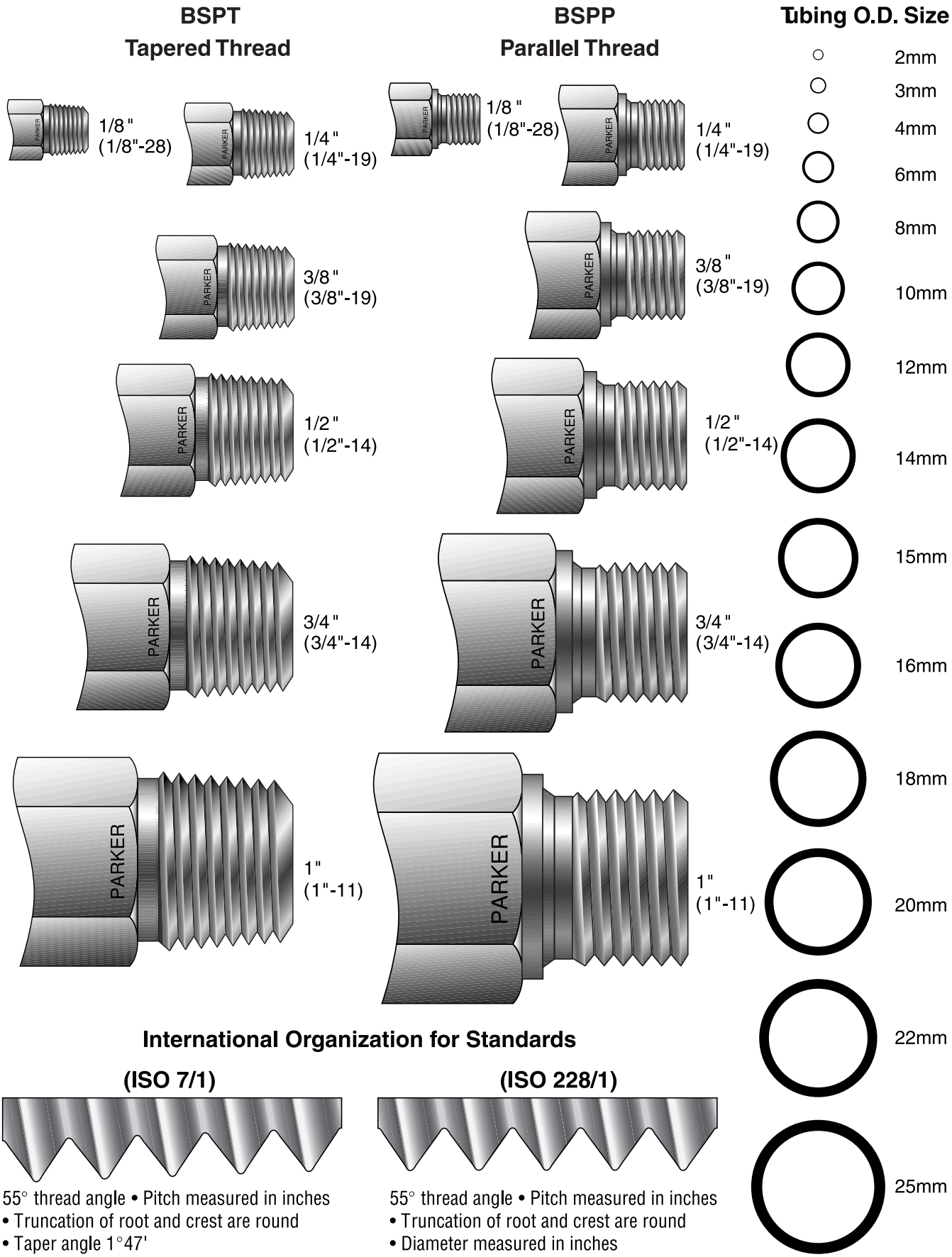
Used to provide a seal with male or female parallel ISO threads.
* Gasket fits ISO 1179-1 type G/H port.

Note: The pressure ratings are based on taper threaded ends.
The pressure rating for the BSPP ends are dependent on the type of sealing washer used.

Pipe & Tube End Size Chart (USA)

NPT Thread	Tubing O.D. Size
 1-1/4" (1-1/4" - 11-1/2")	
 1-1/2" (1-1/2" - 11-1/2")	
 2" (2" - 11-1/2")	

Pipe & Tube End Size Chart (International)



International Organization for Standards

(ISO 7/1)

55° thread angle • Pitch measured in inches
• Truncation of root and crest are round
• Taper angle 1°47'

(ISO 228/1)

55° thread angle • Pitch measured in inches
• Truncation of root and crest are round
• Diameter measured in inches

Pipe Data and Dimensions

Pipe Size (Inches)	Schedule Number	Iron Pipe Size	Dimensions		
			Outside Diameter (Inches)	Inside Diameter (Inches)	Wall Thickness (Inches)
1/8	–	–	0.405	0.307	0.049
	40	STD		0.269	0.068
	80	XS		0.215	0.095
1/4	–	–	0.540	0.410	0.065
	40	STD		0.364	0.088
	80	XS		0.302	0.119
3/8	–	–	0.675	0.545	0.065
	40	STD		0.493	0.091
	80	XS		0.423	0.126
1/2	–	–	0.840	0.710	0.065
	–	–		0.674	0.083
	40	STD		0.622	0.109
	80	XS		0.546	0.147
	160	–		0.466	0.187
	–	XXS		0.252	0.294
3/4	–	–	1.050	0.920	0.065
	–	–		0.884	0.083
	40	STD		0.824	0.113
	80	XS		0.742	0.154
	160	–		0.612	0.219
	–	XXS		0.434	0.308
1	–	–	1.315	1.185	0.065
	–	–		1.097	0.109
	40	STD		1.049	0.133
	80	XS		0.957	0.179
	160	–		0.815	0.25
	–	XXS		0.599	0.358
1-1/4	–	–	1.660	1.530	0.065
	–	–		1.442	0.109
	40	STD		1.38	0.140
	80	XS		1.278	0.191
	160	–		1.160	0.250
	–	XXS		0.896	0.382
1-1/2	–	–	1.900	1.770	0.065
	–	–		1.682	0.109
	40	STD		1.610	0.145
	80	XS		1.500	0.200
	160	–		1.338	0.281
	–	XXS		1.100	0.400
2	–	–	2.375	2.245	0.065
	–	–		2.157	0.109
	40	STD		2.067	0.154
	80	XS		1.939	0.218
	160	–		1.687	0.344
	–	XXS		1.503	0.436

Heat Code Traceability

Parker Hannifin's Instrumentation Connectors Division offers Heat Code Traceability (**HCT**) on CPI™, A-LOK®, Instrumentation Pipe, and Weld-Lok fittings.

HCT refers to the fact that a specific part can be traced back to the original mill heat of metal from which it was made. Beginning with the original melt, a package of documents is created which completely describes the metal in physical and chemical terms. The end result is that a number, which is permanently stamped to the part, refers back to the document package.

The HCT number is stamped on the material (bar stock or forging) prior to manufacturing. The concept is useful because it provides a method for complete material accountability for the manufacturer and end customer.

HCT offers these advantages:

- Raw materials for manufacture must meet code requirements. This can be verified through documentation so that the customer is certain that what is ordered is received.
- HCT provides a record of chemical analysis with the raw material. Thus, in areas requiring welding, the correct welding technique is applied.
- HCT relieves the user of Parker instrumentation tube fittings of any doubts. It acts as an assurance for today and for tomorrow.

The material used in Parker Hannifin instrumentation fitting components is 316 or 316L (welded products) stainless steel as specified and referenced in Section III of the ASME Boiler and Pressure Vessel code.

The American Society of Mechanical Engineers (ASME) Boiler and Vessel Code, Section III, latest issue, entitled Rules for Construction of Nuclear Power Plant Components, is the principal document covering this type of fitting in the nuclear field. ANSI Standard B.31.1.0, Power Piping, and ANSI Standard B.31.7, Nuclear Power Piping, are also important documents in the field.

In addition to the documentation of chemical and physical properties, great care is taken throughout the manufacture of Parker's tube fittings to ensure that potential stress corrosion will not be a problem in normal usage of the parts. Manufacturing processes avoid exposure of the parts to mercury or halogens, and control of thermal treatment avoids the condition known as continuous grain boundary carbide precipitation.

For additional information please contact your local authorized Parker Instrumentation distributor or call Parker Instrumentation Products Division and ask for Bulletin 4230-B15.

PARKER-HANNIFIN CORPORATION
OFFER OF SALE

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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 acknowledgement 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 notbe 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 theQuote, 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:
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6. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reportedto Seller within ten (10) days of delivery. Buyer shall notify Seller of any alleged breach of warrantywithin thirty (30) days after the date the nonconformance 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 Toolinghas 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 bySeller'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 anylosses, 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, ofBuyer; (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'scontrol 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 againstBuyer 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, 'clickwrap' 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 webpage 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. Buyeragrees 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 applicableprovisions 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 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.

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