

# *Brass Fittings and Valves*

*Catalog 3501E USA  
December 1999*



*The World Standard*

 **WARNING**

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

Before selecting or using any Parker hose or fittings or related accessories, it is important that you read and follow Parker Safety Guide for Selecting and Using Hose, Fittings, and Related Accessories (Parker Publication No. 4400-B.1).

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The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

**Offer of Sale**

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*Parker Brass Fittings and Valves Quick Index*

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*SAE 45° Flared Fittings, Inverted Flared Fittings*

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*Pipe Fittings, Manifold, Metric Adapters*

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*Compression Fittings*

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*Compress-Align® Fittings, Metru-Lok Fittings*

---

*Poly-Tite® Fittings*

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*Dubl-Barb® Fittings*

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*Prestolok Industrial Push-To-Connect Fittings*

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*Flow Control Valves*

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*Prestomatic Air Brake Push-To-Connect Fittings, Presto Cartridges*

---

*Air Brake-AB and NTA® Fittings, Transmission Fittings, Air Brake Hose Ends*

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*Vibra-Lok Fittings*

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*Hose Barb Fittings, Garden Hose Fittings*

---

*Ball Valves*

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*Mini Ball Valves, Plug Valves*

---

*Needle Valves, Truck Valves, Drain Cocks*

---

*Access Valves*

---

*Bottle Gas Fittings*

---

*Tube Fabricating Equipment*

---

*Accessories*

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*Fluid Compatibility Guide, Metric Conversions, Numerical Index, Offer of Sale*

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## Table of Contents

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SAE 45° Flared Fittings .....	11	Flow Control Blocking Valves .....	119
Inverted Flared Fittings .....	20	Metric Flow Control Blocking Valves .....	121
<hr/>		In-Line Flow Control Valves .....	123
Pipe Fittings .....	24	Metric In-Line Flow Control Valves .....	125
Brass Manifold .....	32	Metric Quick Exhaust Valves .....	127
Parker Brass Metric Adapters .....	33	Metric Combination Valves .....	128
<hr/>		Metric Pressure Sensor Valves .....	130
Compression Fittings .....	38	Metric Pressure Reducing Valves .....	132
<hr/>		Metric Silencer and Flow Control Valves .....	134
Compress-Align® Fittings .....	45	<hr/>	
Parker Metru-Lok Fittings .....	51	Prestomatic Air Brake Push-In Fittings .....	135
<hr/>		Prestomatic Diesel Fuel Push-In Fittings .....	144
Poly-Tite® Fittings .....	61	Presto Encapsulated Cartridges .....	146
<hr/>		Presto Manifold .....	150
Dubl-Barb® Fittings .....	69	Composite Prestomatic D.O.T. Fittings .....	151
<hr/>		Metric Prestomatic Air Brake Push-In Fittings .....	154
Prestolok/Prestolok II Fittings .....	74	<hr/>	
Parker Prestolok Metric Push-In Fittings .....	85	Air Brake-AB Fittings .....	157
Parker Prestolok 2 Metric Push-In Fittings .....	95	Air Brake-NTA® Fittings .....	161
<hr/>		Transmission Fittings .....	168
Right Angle Flow Control Valves .....	105	Air Brake Hose Ends .....	170
Metric Right Angle Flow Control Valves .....	110	<hr/>	
Slow Start Flow Control Valves .....	116	Vibra-Lok Fittings .....	174
Metric Slow Start Flow Control Valves .....	117	<hr/>	
<hr/>		Hose Barb Fittings .....	179
<hr/>		Garden Hose Fittings .....	183

Brass Ball Valves Series 500 .....	187	Mini Ball Valves Series 200/608/609 .....	245
Male/Female Ball Valves Series 501 .....	191	Plug Valves Series PV .....	247
Brass Panel Mount Ball Valves Series 502 .....	194		
UL Ball Valves Series PUL .....	197		
Female/Female Straight Thread Brass Ball Valve Series 506 .....	199	Needle Valves, Truck Valves, Lanyard Valve .....	249
Solder End Ball Valves Series 509 .....	201	Drain Cocks/Ground Plug Shutoff .....	255
Male/Female Straight Thread Ball Valves Series 510 .....	203		
Brass Ball Valves Series 520 .....	206	Access Valves .....	259
90° Ball Valves Series 590/591 .....	208		
Brass Hose Barb Ball Valves Series 500HB .....	210		
Brass Ball Valves Series 600 Six Port Diversion .....	211	Bottle Gas Fittings .....	265
Carbon Steel Ball Valves Series 500CS/502CS .....	213		
Carbon Steel Ball Valves Series 506CS .....	217	Tube Fabricating Equipment .....	267
High Pressure Carbon Steel Ball Valves Series 500HP/506HP .....	219		
Stainless Steel Ball Valves Series 500SS/502SS .....	223	Accessories .....	281
Stainless Steel Ball Valves Series 501SS .....	227		
Stainless Steel Swing-Out Ball Valves Series 504SS .....	229	Fluid Compatibility Guide .....	282
Female/Female Straight Thread Stainless Steel Ball Valves Series 506SS .....	231	Metric Conversions .....	293
Rotary Actuator Ball Valves Series ACT .....	233	Numerical Index .....	295
Parker Metric Ball Valves Series BVGC .....	236	Offer of Sale .....	304
Parker Metric Ball Valves Series BVGL .....	238		
Parker Metric Ball Valves Series MBVG .....	240		
Replacement Componentry .....	242		
Ball Valve Stem Extensions Series STX .....	243		

# Fitting Selector Chart

## S.A.E. part number to page

PART NO.	PAGE	PART NO.	PAGE	PART NO.	PAGE	PART NO.	PAGE	PART NO.	PAGE
010101	11	010424	14	060101BA	31	100115	94	120203BA	91
010102	12	010425	13	060102BA	32	100201BA	96	120302BA	91
010103	12	010501	13	060103BA	32	100202BA	97	120401BA	90
010105	16	040101	18	060110	30	100203BA	97	120424BA	91
010106	16	040102	19	060111	30	100302BA	98	120425BA	91
010107	16	040103	18	060115	30	100401BA	96	130138	23
010110	10	040110	18	060201BA	33	100424BA	97	130139	26
010111	10	040201	20	060202BA	33	100425BA	98	130140	23
010165	9	040202	19	060203BA	34	120101BA	89	130238	26
010167	9	040203	20	060401BA	32,33	120102BA	90	130239	26
010201	15	040302	20	060425BA	34	120103BA	89	130339	28
010202	13, 14	040401	19	100101BA	94	120111	89	130424	27
010203	14	040424	20	100102BA	96	120115	89	130425	27
010302	15	040425	19	100103BA	95	120201BA	90	130438	27
010401	13	040427	20	100110	94	120202BA	90		

The FITTING SELECTOR CHARTS are intended as a quick reference guide and should help you choose the best fitting and tubing combination. The most common selections have been shown using the tube wall thickness indicated. It is not practical to consider all operating conditions in these charts. The appropriate data on both fittings and tubing applications should be referred to for more specific information. PAGE NUMBERS of each style fitting have been included for this purpose. If additional information is required please consult the Brass Products Division, Otsego, Michigan.

## Metal Tubing and Pipe

Material	Tube Wall	Fitting Size	Maximum (PSI)* Operating Pressure	Parker Brass Fitting	Page No.
Coppert Aluminum Tubing	.030	1/8	2,800	SAE 45° Flare	8
	.030	3/16	1,900		
	.030	1/4	1,400		
	.032	5/16	1,200	Inverted Flare	17
	.032	3/8	1,000		
	.032	1/2	750	Compress-Align®	36
	.035	5/8	650		
	.035	3/4	550		
	.035	7/8	450		
	.035	1	350		
Coppert Aluminum Tubing	.030	1/4	300	Poly-Tite® with Brass Sleeve	42
	.032	3/8	200		
	.032	1/2	200		
Coppert†	.032	1/4	400	Vibra-Lok**	101
	.032	3/8	400		
	.049	1/2	400	Air Brake	82
	.049	3/4	400		
Coppert Aluminum	.030	1/8	400	Vibra-Lok**	101
	.030	3/16	400		
	.030	1/4	300		
	.032	5/16	300		
	.032	3/8	200	Compression	29
	.032	1/2	200		
	.035	5/8	150		
	.035	3/4	100		
	.035	7/8	75		
Steel†† Tubing	.025	1/8	2,000	Vibra-Lok**	101
	.028	3/16	1,500		
	.035	1/4	1,500		
	.035	5/16	1,200	SAE 45° Flare	8
	.049	3/8	1,500		
	.049	1/2	1,000	Inverted Flare	17
	.049	5/8	900		
	.049	3/4	700		
	.065	7/8	600		

\*Ratings are based upon static pressure conditions. \*\* RE: Page 95 for Pressure Ratings. † Seamless Copper Tubing ASTM-B-75 (30,000 PSI Tensile Strength). †† SAE J-525 Welded Tubing (Doubled Flared).

**Thermoplastic Tubing**

Material	Parflex Parflex® P/N	Tube Wall	Fitting Size	Maximum (PSI)* Operating Pressure	Parker Brass Fitting	Page No.			
Polyethylene Tubing	E-43-0500	.040	1/4	150	Dubl-Barb*	50			
	E-64-0500	.062	3/8	125					
	E-86-0250	.062	1/2	90					
	Polyethylene Tubing	E-43-0500	.040	1/4	150	Poly-Tite®	42		
		E-53-0500	.062	5/16	150				
		E-64-0500	.062	3/8	125				
		E-86-0500	.062	1/2	90				
		E-43-0500	.040	1/4	150			‡Compression †Compress-Align® Prestolok®	29 36 55
		E-53-0500	.062	5/16	150				
	E-64-0500	.062	3/8	125					
	Nylon	E-86-0500	.062	1/2	90	‡Compression †Compress-Align® Prestolok®	29 36 55		
		E-108-0100	.062	5/8	75				
NN-2-016		.016	1/8	250	‡Compression †Compress-Align® Prestolok®			29 36 55	
NN-3-025		.025	3/16	250					
NN-4-035		.035	1/4	250					
NN-5-040		.040	5/16	250					
NN-6-050	.050	3/8	250						
NN-8-062	.062	1/2	250						
Nylon (SAE J844) (Air Brake)	PFT-4A	.040	1/4	150	NTA®	92			
	PFT-6B	.062	3/8	150	Prestomatic	67			
	PFT-8B	.062	1/2	150					
	PFT-10B	.092	5/8	150					
	PFT-12B	.092	3/4	150					
Vinyl	PV-43-1	.040	1/4	55	Poly-Tite®	42			
	PV-53-1	.062	5/16	55					
	PV-64-1	.062	3/8	55					
	PV-86-1	.062	1/2	45					
Polypropylene	PP-21-1000	.023	1/8	300	†Compress-Align®	36 55			
	PP-32-0500	.034	3/16	300					
	PP-43-0500	.040	1/4	300					
	PP-53-0500	.062	5/16	300					
	PP-64-0500	.062	3/8	300					
	PP-86-0500	.062	1/2	300					
	PP-108-0100	.062	5/8	300					
Polyurethane	U-21-0250	.031	1/8	125	‡Compression Prestolok®	29 55			
	U-21-0500								
	U-21-1000								
	U-32-0250	.031	3/16	125					
	U-32-0500								
	U-42-0250	.063	1/4	125					
	U-42-0500								
	U-42-1000								
	U-64-0100	.063	3/8	125					
	U-64-0250								
	U-64-0500								
	U-85-0100	.086	1/2	125					
	U-85-0250								
U-86-0100	.063	1/2	85						
U-86-0250									
U-96-0100	.094	9/16	125						
U-128-0100	.125	3/4	125						

† Tube support no. 63PT is recommended. Not required for nylon tube size 1/8 & 3/16. \*Ratings are based on static pressure conditions

‡ Use 60PT sleeve on tube sizes 1/4" and above.

## Parker Extruded fittings

Hexagon, round and shaped bars are extruded in the configuration required, drawn to size, cut to length and straightened. First a solid round billet (8 to 12 inches in diameter) is heated to the pliable state and forced by pressure of approximately 80,000 pounds per square inch through a die. The resulting continuous length of bar is cooled and then drawn through dies to the desired external size. (The drawing process also controls the temper.) After straightening, the bar is ready for machining.

The process produces a dense, nonporous material somewhat stronger in the longitudinal direction due to an orientated flow of the grain.

## Material used for Parker Brass Fittings

(Reference SAE J461)

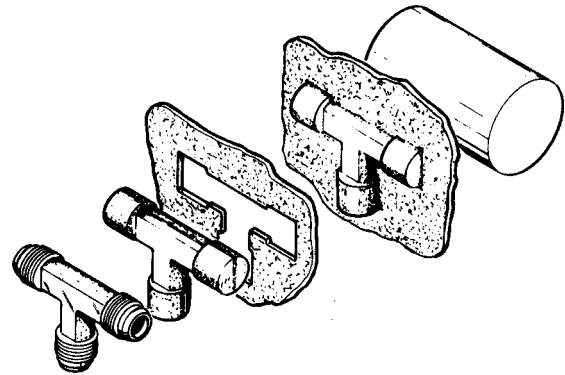
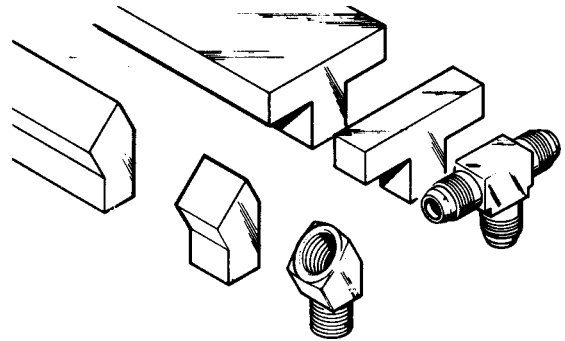
Straight bodies:	barstock CA 360 or CA 345
Shape bodies:	extruded barstock CA 360
Shape bodies:	forged CA 377
Nuts:	barstock CA 360
Nuts:	forged CA 377

## Parker Forged Fittings

Material for forgings is extruded in round bars, cut to length and straightened. (At this point in the process, forging rod differs from round extruded machinable bars only in temper and chemical properties.) After straightening, the bars are cut again into slugs (short lengths), reheated to the pliable state and pressed under a pressure of approximately 25,000 pounds per square inch between upper and lower die cavities. After cooling the flash is trimmed away and the forging blank is ready for machining.

This process of forming under extreme pressure produces a uniformly dense material of exceptional strength. Because grain flow follows the contour, the fitting has high impact strength and is more resistant to mechanical shock and vibration.

***Of the major brass fittings producers, only Parker offers elbows and tees machined from both extruded and forged shapes.***



## Thread Specifications

### Dryseal Pipe Threads

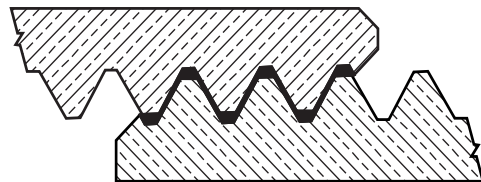
All dryseal pipe threads are manufactured in accordance with the American National Standards Institute (ANSI) B1.20.3 specification and designed to seal pressure tight joints. The threads may incorporate the NPTF (National Standard Pipe Taper Fuel and Oil), PTF-SAE Short, PTF-SPL Short or PTF-SPL Extra Short form. Dryseal threads are used on brass products found within this catalog. Use of a thread sealant is recommended.

### Non-Dryseal Pipe Threads

All non-dryseal pipe threads are manufactured in accordance with the American National Standards Institute (ANSI) B1.20.1 specification. These tapered pipe threads are used on our carbon and stainless steel products. Use of a thread sealant is recommended.

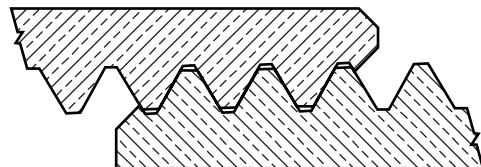
### Unified Threads

All threads in the columns headed "Straight Thread" found within this catalog are manufactured in accordance with the American National Standards Institute (ANSI) B1.1 specification.



#### Dryseal Pipe Thread

Metal to metal contact. Crests of thread are crushed by the roots when wrench-tightened to form seal.



#### Non-Dryseal Pipe Thread

Flanks are in contact with possible clearance between the roots and crests. Will not prevent spiral leakage

## British Standard Pipe Threads BSPT and BSPP

### Pressure Tight

The British pipe threaded products found within this catalog intended for use where pressure tight joints are made on the threads are manufactured in accordance with British Standard (BS) 21 and International Standards Organization (ISO) 7-1. The threads are designated as follows:

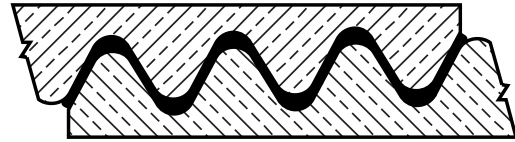
- Rp: Internal parallel
- Rc: Internal taper
- Rs: Special external parallel
- R: External taper

Use of a thread sealant is recommended with the R series thread. An elastomeric peripheral seal should be used with the Rs thread.

### Non-Pressure Tight

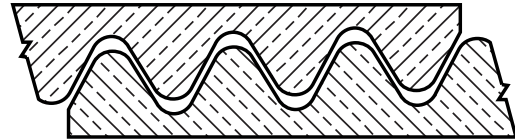
All British Standard parallel pipe threads manufactured in this catalog according to BS2779 and ISO 228-1 are intended for use where pressure tight joints are not made on the threads. An elastomeric peripheral seal should be used. These threads are designated as follows:

- G: Internal Thread
- GA, External thread, tight tolerance classification
- GB, External thread, general purpose and assumed if no classification designation is given



### BS21 British Standard Pipe Thread for Pressure Tight Joints

Metal to metal contact provides seal as tapered thread is wrench-tightened.



### BS2779 British Standard Pipe Thread for Non-Pressure Tight Joints

Thread tolerances allow for possible clearance between threads. Will not prevent leakage paths.

## Pipe Thread Assembly

The two British Standard pipe thread forms used for Parker's standard product are manufactured in a tighter tolerance range than required by the standards in order to facilitate the assembly and mating of fittings produced by the two different standards. In general, BS21 threads do not necessarily mate with BS2779 threads at tolerance overlap conditions, but fittings located within this catalog can be assembled as follows:

External Thread	Mating Internal Thread
G-BS2779 (parallel)	G-BS2779 (parallel) Rp-BS21* (parallel)
Rs-BS21 (parallel)	Rp-BS21 (parallel) G-BS2779 (parallel)
R-BS21 (taper)	Rp-BS21 (parallel) Rc-BS21 (taper) G-BS2779 (parallel)

\*This thread must be manufactured within a reduced tolerance range to always assemble with the G series external thread.

## British Standard ISO Metric Screw Threads

They are commonly used in miniature pneumatic applications because of the availability of small thread diameters and are also used extensively in the automotive industry. There are two forms of sealing on metric screw threads.

- O-ring sealing into a profiled port in accordance with ISO 6149.
- Peripheral sealing with a copper or bonded washer in accordance with ISO 261 and 262.

## Peripheral sealing of parallel threads

Pressure-tight joints of screwed connections with parallel threads are achieved by placing a seal between the two machined faces

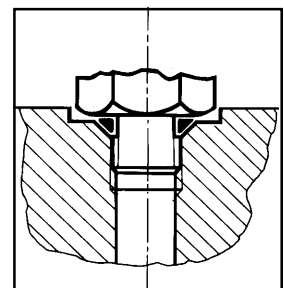
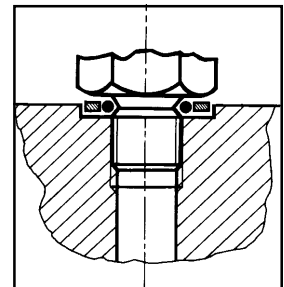
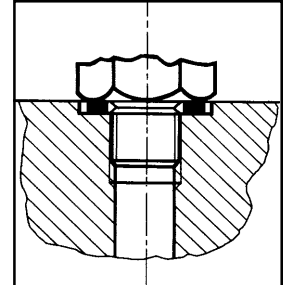
### Flat seals

Washers and rings are manufactured in many different materials including copper, aluminium, fiber, plastics, etc.

The tightening torque at assembly must be carefully selected so as to avoid compressing the seal to the point of extrusion. As a general rule, the fitting should be tightened with an additional 1/4 wrench turn from the fingertight position.

### O-rings

Depending upon the configuration of the female port or male thread, O-Ring seals are fitted with or without back-up washers, and can be fully retained in a captive seal.



## U.L. Listed Fittings

### U.L. LISTED FITTINGS

Many of the Brass Products Division's fittings have been listed by the Underwriter's Laboratory. The listings fall under 1 of 5 categories, depending upon application. Underwriter's requires that the smallest unit package carry the U.L. symbol and each carton be printed in accordance with the specification of each category. Fittings requiring gas listing must be stamped with the identification symbol **G** and our trademark.

### FLAMMABLE LIQUID APPLICATION MARINE APPLICATION

All cartons containing U.L. approved fittings for flammable liquid and marine applications will be labeled with the appropriate U.L. listing at no extra charge. The fitting will not be stamped with the UL or **G** symbols.

### GAS – MANUFACTURED, NATURAL AND L.P. (LIQUEFIED PETROLEUM) REFRIGERATION APPLICATION

U.L. listed fittings for gas or refrigeration application will be furnished only when specified on purchase order. Fittings will be stamped with the **G** symbol and cartons will be labeled with the appropriate U.L. listing.

### ORDERING INSTRUCTIONS FOR U.L. LISTINGS

The Brass Division labels all cartons with the appropriate U.L. listing. The gas identification symbol **G** will be stamped on each fitting only when the listing is required and specified on the purchase order.

## List of U.L. Fittings

### No **G** Marking Required

FITTINGS, FLAMMABLE LIQUID				
1F	60C	150F	172CA	264C
2GF	61C	151F	176C	264CA
3GF	61CA	155F	176CA	265C
14FL	61CL	159F	177C	265CA
14FSV	61NCA	164C	177CA	269C
14FSX	62C	164CA	244F	269CA
41FL	62CA	165C	244IFHD	270C
41FS	62CABH	165CA	245IFHD	270CA
41FX	62CBH	168C	249F	639C
41F	66C	168CA	249IF	639CA
41IFS	66CA	169C	249IFHD	639F
42F	68C	169CA	250IFHD	640F
42IFHD	68CA	170C	251IFHD	660FHD
46F	144F	170CA	252IFHD	661FHD
46IFHD	145F	171C	255IFHD	664FHD
48F	147F	171CA	256IF	
48IFHD	149F	172C	259IFHD	
FITTINGS, FUEL EQUIPMENT, MARINE				
2GF	46F	147F	155F	660FHD
3GF	48F	149F	159F	661FHD
14FL	144F	150F	639F	664FHD
42F	145F	151F	640F	
SHUT-OFF VALVES, FLAMMABLE LIQUIDS, LP GAS AND COMPRESS GAS				
V500PUL-4				
V500PUL-6				
V500PUL-8				
V500PUL-12				
V500PUL-16				

### **G** Marking Required

FITTINGS, REFRIGERATION		
1F	144F	244F
2GF	145F	249F
3GF	147F	639F
14FL	149F	640F
14FSV	150F	660FHD
42F	151F	661FHD
46F	155F	664FHD
48F	159F	
FITTINGS, GAS		
1F	48F	249IFHD
2GF	48IFHD	250IFHD
3GF	144F	251IFHD
14FL	147F	252IFHD
14FS	149F	255IFHD
14FSV	150F	259IFHD
14FSX	151F	639F
41F	151F	640F
41IFS	155F	660FHD
42F	159F	661FHD
42IFHD	244F	664FHD
46F	244IFHD	
46IFHD	249F	
FITTINGS AND TEE CHECKS, LP GAS		
2000	2002ABLH	2007
2001	2004	2008
2001S	2005	2014
2002AB	2006	

In order to properly flare copping tubing for use with Parker 45° Flared Fittings and Inverted Flared Fittings, the following procedures and specifications should be met in preparation and make-up of flares.

**FLARING INSTRUCTIONS**

**1) CUT TUBE WITH TUBE CUTTER:**

To minimize the burr and workhardening, use a light feed on the cutting wheel and make several revolutions.

**2) REAM THE TUBING:**

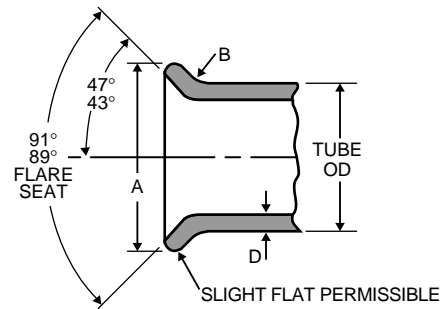
Cutting with a tube cutter will always create a burr. The burr must be removed to obtain maximum sealing surface. Remove only the burr, do not remove material from the original wall thickness. Also clean the tube end thoroughly to remove burrs.

**3) FLARE TUBING:**

Flare with a compression or generating type flaring tool. Follow tool manufacturer's instructions for: (A) positioning the tube in tool and (B) for the correct number of turns on the feed handle.

**4) INSPECT TUBING:**

The flare cone should be checked for a smooth surface on the I.D. of the cone and measure with micrometer over largest O.D. for proper size. (See dimensions below for flare size for each tubing size.)



Nominal Tube	A Single Flare Diameter		B Single Flare Radius	D Single Flare Wall Thickness
	in		in	in
in	Max.	Min.	±0.01	Max.
1/8	0.0181	0.171	0.02	0.035
3/16	0.0249	0.239	0.02	0.035
1/4	0.325	0.315	0.02	0.049
5/16	0.404	0.388	0.02	0.049
3/8	0.487	0.471	0.02	0.065
7/16	0.561	0.545	0.02	0.065
1/2	0.623	0.607	0.02	0.083
9/16	0.676	0.660	0.02	0.083
5/8	0.748	0.732	0.02	0.095
3/4	0.916	0.900	0.02	0.109
7/8	1.041	1.025	0.02	0.109
1	1.157	1.141	0.02	0.120

**Straight Thread Size Comparison Chart**

	Tube O.D.										
	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
<b>SAE 45° Flared</b>	5/16 -24	3/8 -24	7/16 -20	1/2 -20	5/8 -18	11/16 -16	3/4 -16	7/8 -14	1-1/16 -14	1-1/4 -12	-
<b>Inverted Flared</b>	5/16 -28	3/8 -24	7/16 -24	1/2 -20	5/8 -18	11/16 -18	3/4 -18	7/8 -18	1-1/16 -16	1-3/16 -16	-
<b>Air Brake/NTA</b>	-	-	7/16 -24	-	17/32 -24	-	11/16 -20	13/16 -18	1 -18	-	1 1/4 -16
<b>Std. Comp./Compress-Align</b>	5/16 -24	3/8 -24	7/16 -24	1/2 -24	9/16 -24	5/8 -24	11/16 -20	13/16 -18	1 -18	1-1/8 -18	1 1/4 -18
<b>Poly-Tite</b>	5/16 -24	3/8 -24	3/8 -24	7/16 -24	1/2 -24	-	11/16 -20	-	-	-	-
<b>Vibra-Lok</b>	3/8 -24	7/16 -24	1/2 -24	9/16 -24	5/8 -24	-	13/16 -18	1 -18	1-1/8 -18	-	-
<b>V510 Ball Valves</b>	-	-	7/16 -20	-	9/16 -18	-	3/4 -16	7/8 -14	1-1/16 -12	-	1-5/16 -12

# Metric Fitting Nomenclature

Parker fitting part numbers are constructed from symbols that identify the size, shape or style, type and material of the fitting.

FITTING TYPE	
M	Metru-Lok
P	Presto-Lok

FITTING MATERIAL	
B	Brass
K	Plastic



FITTING STYLE	
B	Nut
C	90° male elbow connector
C6	90° male elbow connector, swivel
CD	90° male/female elbow adapter
CD43	90° male/female BSPT/BSPP adapter
D	90° female elbow connector
DD	90° female elbow adapter
DD44	90° female BSPP elbow adapter (DD4 in USA)
E	90° elbow union connector
F	Straight thread stud connector (male connector)
FF	Straight thread long connector or male straight adapter
FG	Male to female adapter, straight
FF33	Male BSPT straight adapter
FF44	Male BSPP straight connector
FG	Male/female jump size adapter
FG43	Male/female BSPT/BSPP jump size adapter (F3G4 in USA)
FN	Cap
G	Female straight connector
GG44	Female BSPP straight adapter (GG4 in USA)
H	Straight union connector
HHP	Hollow hex head plug
HHP3	BSPT hollow hex head plug
HP3	BSPT hollow hex head plug
J	Union tee connector
K	Union cross connector
KMM00	Female cross adapter
KMM004	Female BSPP cross adapter
MMO	Female tee adapter
MMO444	Female BSPP tee adapter
MMS	Female/female/male tee adapter
MMS443	Female/female/male BSPP/BSPP/BSPT tee adapter
PN	Plug
PTR34	Male/female BSPT/BSPP reducing adapter
PTR44	Male/female BSPP reducing adapter (PTR4 in USA)
R	Male stud run tee connector
R6	Male run tee connector, swivel
S	Male stud branch tee connector
S6	Male branch tee connector, swivel
T	Sleeve
T2HF	Standpipe to male
T2HG	Standpipe to female
T23	Insert (for thin walled or plastic tube)
T23HF	Standpipe to male BSPT
T24HG	Standpipe to female
T28HF	Standpipe to metric straight thread
TE	Tube end size jumper
TR	Tube end reducer
W	Straight bulkhead union connector
WE	90° bulkhead union elbow connector
WGG	Straight female bulkhead adapter
WGG44	Straight female BSPP bulkhead adapter (WGG4 in USA)

ASSEMBLED FITTING	
Without	Unassembled fitting. i.e. fitting adapter for use with hose fittings, etc.
B	Assembled fitting except for Prestolok upgraded versions (plastic and brass)

TUBE SIZE	
DASH NO.	TUBE O.D.
4	4mm
6	6mm
8	8mm
10	10mm
12	12mm
14	14mm
16	16mm
18	18mm
20	20mm
22	22mm

PORT END THREAD SIZE RANGES			
	"3"	"4"	"8" METRIC STRAIGHT THREAD
	NPT	BSPT	BSPP
	1/16	1/8	1/8
	1/8	1/4	1/4
	1/4	3/8	3/8
	3/8	1/2	1/2
	1/2	3/4	3/4
			1
			1.1/4
			1.1/2
			2
			M3X0.5
			M5X0.8
			M10X1
			M12X1,5
			M14X1,5
			M16X1,5
			M18X1,5
			M22X1,5

THREAD TYPE (PORT END)	
Without	NPT (brass, stainless) - NPTF (steel)
2	NPTF
3	BSPT (male only)
4	BSPP (male or female)
40	BSPP O-Ring and retaining ring (male) only
41	BSPP cutting seal (male only)
6	Swivel nut (swivel end)
63	Adjustable swivel connector with BSPT thread
64	Adjustable swivel connector with BSPP thread
68	Adjustable swivel connector with metric parallel thread
69	Adjustable swivel connector with metric taper thread (Metric taper in USA)
7	Metric parallel
8	Metric parallel O-Ring and retaining ring (male only)
80	Metric parallel cutting seal (male only)
81	Metric parallel Eolastic seal (male only)
85	Metric parallel Eolastic seal (male only)
0	With O-Ring