



# Food & Beverage Transfer

Hose • Tubing • Fittings



ENGINEERING YOUR SUCCESS.



# Hose, Tubing & Fitting Solutions

## Streamline food and beverage applications

### Hose & Tubing

From the field to the shelf, Parker Hannifin is helping the world put food on the table. Parflex hose and tubing products keep seeders, tractors and harvest equipment running as well as, keeping production and assembly lines moving in food and beverage processing facilities.



Handling the extreme is what our engineers focus on everyday. The products in this brochure operate in very high temperatures and inhibit contamination without compromising the integrity of the product. Many of the hoses offered are lined with a PTFE core and PAGE Flare-Seal hoses have the PTFE flared through the fitting to eliminate bacteria entrapment. PTFE is also non-leaching and very easy to clean.

Specialty hoses and tubing, designed for extreme flexibility, allow product to move through confined spaces without kinking or interrupting

flow. Other hoses are designed to handle steam or vibration, without increasing fatigue.



Lastly, Parflex engineers products to increase operator safety by making our products lighter and easier to handle. Compared to rubber, a Parflex hose is considerably lighter, up to 70%. Jackets and fire sleeves keep hoses cool to the touch and tubing is transparent so operators can view the media moving through the tubing.

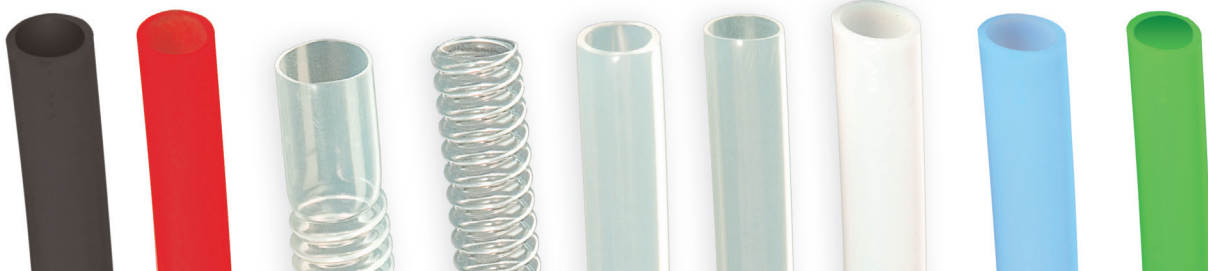
### Tube Fittings

Parflex tubing products utilize the fitting solutions provided by the Fluid System Connectors Division. Their technically superior push-to-connect fittings, valves, cartridges, tubing, and accessories have been designed to engineer your success, offering you new ways to create value. Our partnership approach allows us to work together to create the solutions you need to operate more efficiently and effectively.

### Hose • Tubing • Fittings Specifications

Products meet the following standards. Refer to the product details for exact compliance.

- FDA 21 CFR 177.1550, 177.2600
- USDA Standards
- 3A Standards
- NSF-51
- NSF-61
- RoHS



## "Smoothbore" Hose

### 919

Chemical transfer lines, hot oils, adhesive dispensing, medical and/or compressed air and gases. 625-3000 psi. -100°F to 450°F. Sizes 3/16" - 1-1/8" I.D. dependent on type. Compliant with FDA standards.

### 919J/919U

Same applications as 919 except with silicone jacket protection. 1200 - 3000 psi. -40°F to 450°F. Sizes 3/16" - 5/8" I.D. 919U - Same applications as 919 except with polyurethane jacket to protection. 1000 - 3000 psi. -40°F to 275°F. Sizes 3/16" - 7/8" I.D.

### S30

Nominal inside diameter. Smaller i.d. for increased bend radius. 1000-3000 psi. -100°F to 450°F. Sizes 1/8" - 7/8" I.D. Compliant with FDA 21 CFR 177.1550, 177.2600

### PAGE-flex® SBF™

Half the minimum bend radius of conventional smoothbore hose. Kink and vacuum resistant 200-300 psi. -65°F to 325°F. Sizes 3/8" - 1-1/2" I.D. Compliant with FDA, USP Class VI, European Pharmacopoeia 3.1.9., ISO 10993, USDA & 3A standards.

### STW

For chemical transfer lines, hot oils, adhesive dispensing, medical and/or compressed air and gases. 900-3000 psi. -100°F to 450°F. Sizes 1/8" - 1-1/2" I.D. Compliant with FDA, USP Class VI, European Pharmacopoeia 3.1.9., ISO 10993, USDA & 3A standards.

### 929

Tight bend radius. Increased wall thickness .040". General hydraulics, instrumentation lines, sampling/analyzing lines, etc. 1200 - 3000 psi. -100°F to 450°F. Sizes 3/16" - 7/8" I.D. Compliant with FDA standards.

### S40

Nominal inside diameter. Heavier wall, up to 33% more PTFE. 1000-3000 psi. -100°F to 450°F. Sizes 1/8" - 7/8" I.D. Compliant with FDA 21 CFR 177.1550, 177.2600

### Flare-Seal®

Continuous PTFE through fittings - no area for bacterial entrapment. Sizes 1/2" - 4" I.D. Compliant with FDA, USP Class VI, European Pharmacopoeia 3.1.9., ISO 10993, USDA & 3A standards. SCWV-FS - 150-500 psi. -65°F to 325°F. SS Braid. PCWV-FS 100-300 psi. 0°F to 212°F. Polypropylene Braid.

## "Convuluted" Hose

### 939

Exceptional kink resistance. Transfer lines for nearly all chemicals. 250 - 1500 psi. -100°F to 450°F. Sizes 3/8" - 2" I.D. Compliant with FDA standards.

### SCW/PCW

Transfer lines for nearly all food and beverages. Sizes 1/4" - 2" I.D. Compliant with FDA, USP Class VI, European Pharmacopoeia 3.1.9., ISO 10993, USDA & 3A standards. SCW 450 - 1500 psi. -100°F to 500°F. SS Braid. PCW 200 - 350 psi. 0°F to 212°F. PP Braid.

### SCWV/PCWV

Heavy Wall for extra flexibility. Transfer lines for nearly all food and beverages. Sizes 1/2" - 4" I.D. Compliant with FDA, USP Class VI, European Pharmacopoeia 3.1.9., ISO 10993, USDA & 3A standards. SCWV 150 - 1500 psi. -100°F to 500°F. SS Braid. PCWV 100 - 350 psi. 0°F to 212°F. PP Braid.

### 540P

540P - Specialty water hose. Non-leaching, low moisture permeability. 1250-2750 psi. -40°F to 150°F. Sizes 1/4" - 3/4" I.D. FDA compliant core tube.

Thermoplastic





# Food Grade Tubing

## Fluoropolymer

Parflex Fluoropolymer tubing is available from Parker TexLoc™ in Fort Worth, Texas. Tubing can be ordered directly from TexLoc or through the Parflex Division.

Fluoropolymer tubing features a low coefficient of friction and anti-stick properties, high temperature capabilities and the most corrosion and chemical resistance of all polymers. Within normal use temperatures, fluoropolymers are attacked by so few chemicals that it is easier to describe the exceptions rather than list the chemicals they are compatible with. These chemically inert tubes are non-wetting and non-leaching, making them ideal for a wide range of fluid and material handling applications.

Parker TexLoc fluoropolymer tubing is available in PTFE, FEP, PFA and PVDF with some materials operating at temperatures up to 500°F/260°C. Each material has specific dominant characteristics such as increased clarity, long lengths and increased mechanical strength.

### PTFE

*Offered in beading, smoothbore tubing, convoluted and heat shrinkable tubing. PTFE tubing features unmatched chemical resistance and a non-stick surface that facilitates flow and eliminates media buildup. Lowest coefficient of friction. Sizes from .010" I.D. up to 4" O.D.*

### FEP

*Offered in smoothbore tubing, convoluted, corrugated, retractable coils and heat shrinkable tubing. FEP tubing features the highest clarity and is a close second to PTFE in chemical resistance. Available in long, continuous lengths (1,000 feet and longer). Sizes from .010" I.D. up to 4" O.D.*

### PFA

*Offered in smoothbore tubing, convoluted, corrugated, retractable coils and heat shrinkable tubing. When temperature and clarity are both factors, PFA is the resin of choice. Offers the high-temperature attributes of PTFE, long continuous lengths, and almost as much clarity as FEP.*

### PVDF

*Offered in flexible and super flexible smoothbore tubing. Properties beneficial for use in many critical applications requiring chemical resistance with low permeability. Low extractable levels while providing high mechanical strength and abrasion resistance. Sizes from 1/8" O.D. up to 1" O.D.*

### High Purity PFA

*Offered in smoothbore tubing, convoluted, corrugated, retractable coils and heat shrinkable tubing. Highest molecular weight. Lowest level of extractables. Low permeation. Sizes from .010" I.D. up to 4" O.D.*

Parflex PTFE, FEP, PFA and PVDF tubing complies with European Standard RoHs and the tubing is also FDA compliant to FDA regulation 21 CFR 177.1550, making these products suitable for use in food and beverage applications.





# Thermoplastic

## Polyethylene

- Parflex polyethylene tubing meets FDA, NSF Standard 51 for food contact applications and NSF-61 for potable water applications.
- E-Series tubing is made of 100% virgin resin material.
- Polyethylene tubing meets ASTM D-1693 (10% IGEPAL) for stress crack resistance.
- Parflex also offers special PE tubing: PEFR (flame retardant) and HDPE (high density).

## Polypropylene

- Polypropylene tubing meets FDA, NSF Standard 51 for food contact applications.
- Polypropylene tubing exhibits excellent chemical resistance to chlorinated water applications.
- Black Polypropylene tubing is commonly used in outdoor applications where UV light stabilization is required.

## Polyvinyl Chloride (PVC)

- PVC tubing is made from 100% virgin resin material and meets FDA specifications for materials in contact with food and drugs.
- PVC tubing is a very flexible, 70 durometer tubing. It is crystal-clear and ideal for situations where visible fluid flow is necessary (i.e. sight gauges for tank identification).

### Polyethylene Tubing

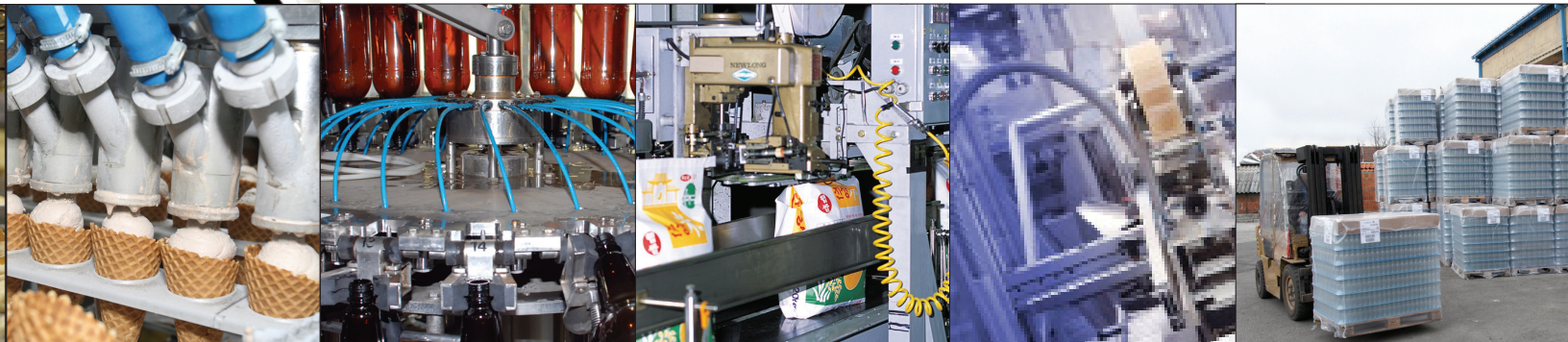
*Series E, Instrument Grade; Series EB, Ultraviolet Light Resistant - Chemically resistant, flexible, high-dimensional stability and long-term strength. Working pressure up to 145 psi. -80°F to 150°F. Sizes 1/4" - 5/8" O.D.; 6mm-12mm. FDA compliant. NSF-51 & NSF-61 listed.*

### Polypropylene Tubing

*Series PP, Laboratory Grade-FDA, NSF Listed; Flexible tubing for high temperatures and pressures. Excellent resistance to hot water and stress cracking. Working pressure up to 350 psi. 0°F to 200°F. Sizes 1/8" - 5/8" O.D. White PP Series meets FDA and NSF-51 specifications. Black and white.*

### Clear Vinyl Tubing

*Series PV - PVC tubing with exceptional purity, clarity and flexibility. Ideal for use in contact with food and drugs for human consumption. Working pressure up to 75 psi. Sizes 1/8" - 2-1/2" O.D. -40°F to 150°F. FDA Compliant. Clear.*





# FOOD PROCESSING

Meeting Stringent Sanitary and Aseptic Standards

## Prestolok® Metal Fittings for Pneumatic Automation Applications in Food Processing

Silicone Free push-to-connect fitting with FKM seal offering excellent resistance to aggressive wash-down environments. The smooth surface design reduces retention zones for safe and easy cleaning. Available in NPT, BSPT, BSPP and Metric threads.



Prestolok® PLM  
Electroless Nickel Plated



Prestolok® PLS  
Stainless Steel



FC-705

Complete offering of metal flow controls and function fittings



### Tubing Compatibility

Compatible  
MG Metal Gripper Collet

TS Tube Support Recommended

Product Line	Parflex Thermoplastic Tubing												Parflex/TexLoc				
	Industrial Tubing Series												Fluoropolymer				
	Polyethylene E & EB	Polyethylene PE	Polyethylene FRPE	Polyethylene HDPE	Nylon N	Nylon PAT	Nylon NR	Polypropylene PP & PPB	Polyurethane U (90-95 Shore A)	Polyurethane HU & HUM (>95 Shore A)	Polyurethane LU (<90 Shore A)	Polyurethane FR (Weld Tubing)	Clear Vinyl	PFA Fluoropolymer	FEP Fluoropolymer	PTFE Fluoropolymer	PVDF Fluoropolymer
PLM	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
PLS	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
LIQUIfit™	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
TrueSeal™	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	MG	TS	TS	Compatible	Compatible	TS	Compatible	Compatible	Compatible	Compatible







# Tubing Properties - Quick Reference

## Fluoropolymers

### PTFE (Polytetrafluoroethylene)

Working Temperature: 500°F (260°C)

Color: Opaque to translucent

- Chemically inert
- Lowest coefficient of friction
- Superior dielectric strength
- Exceptional heat resistance
- Self extinguishing
- Nonwetting
- Excellent flexlife
- Laser markable

### PFA (Perfluoroalkoxy)

Working Temperature: 500°F (260°C)

Color: Clear with light blue or tint

- *High purity resins available*
- Low permeation resins available
- Use when you need the temperature range of PTFE and the clarity of FEP
- Exceptional heat resistance
- Self extinguishing
- Nonwetting
- Good flexlife

### FEP (Fluorinated Ethylene Propylene)

Working Temperature: 400°F (204°C)

Color: Clear

- Excellent chemical resistance
- Nonwetting
- Weldable
- Tubes can be sealed by melting
- Long continuous lengths
- Low refractive index
- Improved clarity over PFA
- Lower cost alternative to PFA

### PVDF (Polyvinylidene Fluoride)

Working Temperature: 265°F (130°C)

Color: Varies

- Very good chemical resistance
- Excellent resistance to creep and fatigue
- UV Resistant
- Weldable
- Exceptional corrosion resistance for chlorine, fluorine, or bromine environments

## Fluoropolymer Chemical Resistance Summary

Within normal use temperatures, Fluoropolymers are attacked by so few chemicals that it is easier to describe the exceptions rather than list the chemicals with which Fluoropolymers are compatible.

## Thermoplastics

### PP (Polypropylene)

Working Temperature: 200°F (93°C)

Color: White or Black

- Acid and chemically resistant
- Excellent compatibility with high temperature water
- Low water absorption (less than .01%)
- Good compatibility with vegetable oils
- Excellent resistance to environmental stress cracking

### PE (Polyethylene)

Working Temperature: 150°F (65°C)

Color: Wide range of colors

- 100% virgin resin
- Flexible
- Chemical resistant
- High molecular weight resin provides increased dimensional stability, uniformity and long-term strength

### PV (Vinyl)

Working Temperature: 150°F (65°C)

Color: Clear

- Made from a virgin clear PVC (polyvinyl chloride) resin; specifically formulated for exceptional purity, clarity and flexibility
- 70 durometer for soft, easy handling and bending without tubing collapse

For chemical compatibility of thermoplastic tubing, please consult Parflex Catalog 4660, available online at [www.parker.com/pfd](http://www.parker.com/pfd)



## DO NOT USE FLUOROPOLYMERS WITH THE FOLLOWING:

- Alkali metals such as elemental sodium, potassium, lithium, etc. The alkali metals remove fluorine from the polymer molecule.
- Extremely potent oxidizers, fluorine (F<sub>2</sub>) and related compounds (e.g., chlorine trifluoride, ClF<sub>3</sub>). These can be handled by TexFluor™, but only with great care, as fluorine is absorbed into the resins, and the mixture becomes sensitive to a source of ignition such as impact.
- 80% NaOH (Sodium Hydroxide) or KOH (Potassium Hydroxide), metal hydrides such as Boranes (e.g., B<sub>2</sub>H<sub>6</sub>), Aluminum Chloride, Ammonia (NH<sub>3</sub>), certain Amines (R-NH<sub>2</sub>) and imines (R=NH) and 70% Nitric Acid at temperatures near the suggested service limit.

# Fluoropolymer Material Overview

General Property Comparisons of Fluoropolymer Tubing

Properties	ASTM or Unit	Fluoropolymers			
		PTFE	FEP	PFA	PVDF
<b>MECHANICAL PROPERTIES</b>					
Specific Gravity	D792	2.13-2.20	2.12-2.17	2.12-2.17	1.76-1.78
Elongation %	D638	200-450	250-330	280-400	300-450
Tensile Strength (psi)	D638	2000-7000	2800-5000	4000-4500	4500-6200
Flexural Strength (psi)	D790	no break	no break	no break	8600-9500
Compressive Strength (psi)	D695	3500	2200		11,600
Tensile Elastic Modulus (Young's Modulus) (psi)	D638	57,000	50,000	72,500-87,000	160,000
Flexural Modulus	D790 (psi) D790 103MPa (103kgf/cm <sup>2</sup> )	71,000-85,000 0.5-0.6 (5.0-6.0)	78,000-92,000 0.5-0.6 (5.5-6.5)	94,000-99,000 0.6-0.7 (6.6-7.0)	90,000-168,000 na
Flex Life MIT cycles)	D2176	>1,000,000	5,000-80,000	10,000-500,000	na
Hardness Durometer Shore D	D636	D50-65	D55	D55-60	D75-D85
Coefficient of Friction (on steel)		0.02	0.05	0.2	0.4
Abrasion Resistance 1000 revs.	Taber	12	14-20	9-17	5-15
Impact Strength IZ0.D. 73°F/23°C notched ft/lbs/in	D256	3	no break	no break	4
<b>THERMAL PROPERTIES</b>					
Melting Point	°C	327	260	305	171
	°F	621	500	582	340
Upper Service Temperature(20000h)	°C	260	204	260	130
	°F	500	400	500	260
Flammability	UL 94	V-0	V-0	V-0	V-0
Thermal Conductivity BTU/hr/sq ft/deg F in		1.7	1.4	1.3	1.3
Thermal Conductivity Cal-cm/s-cm <sup>2</sup> , °C		6 x 10 <sup>-4</sup>	6 x 10 <sup>-4</sup>	6 x 10 <sup>-6</sup>	3.0 x 10 <sup>-4</sup>
Linear Coefficient of Thermal Expansion	D696 10-5°C	>11.6	8.3-10.5	13	4.2
Heat of Fusion	BTU/LB	29-37	11	13	na
Heat of Combustion	BTU/LB	2200	2200	2300	na
Low Temperature Embrittlement	°C	-268	-268	-268	-62
	°F	-450	-450	-450	-80
<b>ELECTRICAL PROPERTIES</b>					
Dielectric Constant	D150/103Hz	2.1	2.1	2.1	7.72
	D150/106Hz	2.1	2.1	2.1	6.43
Dielectric Strength	D149/125 MIL	500	500	500	na
	D149/10 MIL	≥1400	>1400	≥1400	>1080
Volume Resistivity	D257/ohm-cm	>10 <sup>18</sup>	>10 <sup>18</sup>	>10 <sup>18</sup>	2 x 10 <sup>14</sup>
Surface Resistivity	D257/ohm-cm	>10 <sup>17</sup>	>10 <sup>17</sup>	>10 <sup>17</sup>	5 x 10 <sup>14</sup>
<b>GENERAL PROPERTIES</b>					
Chemical/Solvent Resistance	D543	Excellent	Excellent	Excellent	Very Good
Water Absorption 24h,%	D570	<0.01	<0.01	<0.03	<0.04
Deformation Under Load	*D621 100°C	5	5	2.4	2.4
	**D621 25°C	7	3	2.7	0.7
Refractive Index		1.35	1.338	1.34	1.42
Limiting Oxygen Index, %	D2863	>95	>95	>95	43

**ENGINEERING YOUR SUCCESS.**



Government & Agency Compliance	
Agency and Specifications	Approved Parflex Products
<b>Dry Food Contact:</b>	
FDA, CFR21 Part 177	E, PP, PV, 540P, 919, 919J, 919U, 929, 939, S30, S40, STW, SBFW, SCW, PCW, SCWV, PCWV, SCWV, PCWV-FS, SCWV-FS, RCTW
<b>HOSE</b>	
Fluoropolymer	
Smoothbore PTFE Hose	919
	919J
	919U
	929
	S30
	S40
	STW
	SBFW
Convolute PTFE Hose	939
	PCW
	SCW
	SCWV
	PCWV
Flare-Seal PTFE Hoses	PCWV-FS
	SCWV-FS
Rubber Covered Hose	RCTW
Thermoplastic	
Specialty Water	540P
<b>TUBING</b>	
Fluoropolymer Tubing	
PTFE Tubing	Series 101, 201
FEP Tubing	Series 103, 203
PFA Tubing	Series 104, 204
Thermoplastic Tubing	
Polyethylene Tubing	Series E
Polypropylene Tubing	Series PP
Vinyl Tubing	Series PV
<b>Potable Water, Liquid Foods:</b>	
NSF Standard 51*	E, PP, NT Series Tubing
NSF Standard 61*	E Series Tubing
*Indicates that products shown have been tested and certified by NSF International to the requirements of NSF Standards 51 and 61. NSF does not express or imply an approval on any product.	



**Parker Safety Guide for Selecting and Using  
Hose, Tubing, Fittings and Related Accessories  
Publication No. 4400-B.1**

**WARNING:** Failure or improper selection or improper use of hose, tubing, assemblies, fittings, quick action couplings or related accessories ("Products") can cause death, personal injury and property damage. Possible consequences of failure or improper selection or improper use of these Products include but are not limited to:

- Fittings thrown off at high speed.
- High velocity fluid discharge.
- Explosion or burning of the conveyed fluid.
- Electrocutation from high voltage electric power lines.
- Contact with suddenly moving or falling objects that are controlled by the conveyed fluid.
- Injections by high-pressure fluid discharge.
- Dangerously whipping hose.
- Contact with conveyed fluids that may be hot, cold, toxic, or otherwise injurious.
- Sparking or explosion caused by static electricity buildup or other sources of electricity.
- Sparking or explosion while spraying paint or flammable liquids.
- Injuries resulting from inhalation, ingestion or exposure to fluids.

Before selecting or using any of these Products, it is important that you read and follow the "Terms and Conditions - Parker as Seller" located at [www.parker.com](http://www.parker.com). Only Hose from Parker's Stratoflex Products Division is approved for in-flight aerospace applications.



# Parker Fluid Connectors Group

## North American Divisions & Distribution Service Centers

**Your complete source** for quality tube fittings, hose & hose fittings, brass & composite fittings, quick-disconnect couplings, valves and assembly tools, locally available from a worldwide network of authorized distributors.

### **Fittings:**

Available in inch and metric sizes covering SAE, BSP, DIN, GAZ, JIS and ISO thread configurations, manufactured from steel, stainless steel, brass, aluminum, nylon and thermoplastic.

### **Hose, Tubing and Bundles:**

Available in a wide variety of sizes and materials including rubber, wire-reinforced, thermoplastic, hybrid and custom compounds.

### **Worldwide Availability:**

Parker operates Fluid Connectors manufacturing locations and sales offices throughout North America, South America, Europe and Asia-Pacific.

**For information,** call toll free...

**1-800-C-PARKER**  
**(1-800-272-7537)**

## **North American Divisions**

### **Energy Products Division**

Stafford, TX  
phone 281 566 4500  
fax 281 530 5353

### **Fluid System Connectors Division**

Otsego, MI  
phone 269 694 9411  
fax 269 694 4614

### **Hose Products Division**

Wickliffe, OH  
phone 440 943 5700  
fax 440 943 3129

### **Industrial Hose Division**

Strongsville, OH  
phone 440 268 2120  
fax 440 268 2230

### **Parflex Division**

Ravenna, OH  
phone 330 296 2871  
fax 330 296 8433

### **Quick Coupling Division**

Minneapolis, MN  
phone 763 544 7781  
fax 763 544 3418

### **Tube Fittings Division**

Columbus, OH  
phone 614 279 7070  
fax 614 279 7685

## **Distribution Service Centers**

### **Buena Park, CA**

phone 714 522 8840  
fax 714 994 1183

### **Conyers, GA**

phone 770 929 0330  
fax 770 929 0230

### **Louisville, KY**

phone 502 937 1322  
fax 502 937 4180

### **Portland, OR**

phone 503 283 1020  
fax 503 283 2201

### **Toledo, OH**

phone 419 878 7000  
fax 419 878 7001  
fax 419 878 7420  
(FCG Kit Operations)

### **Canada**

#### **Grimsby, ONT**

phone 905 945 2274  
fax 905 945 3945  
(Contact Grimsby for other Service Center locations.)

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