

75/500FGX / MAX Series Fuel Filter / Water Separator for Diesel Engines

RACOR
Parker Hannifin Corporation
Racor Division
P.O. Box 3208, 3400 Finch Rd.
Modesto, CA 95353 USA
209/521-7860 800/344-3286
FAX 209/529-3278

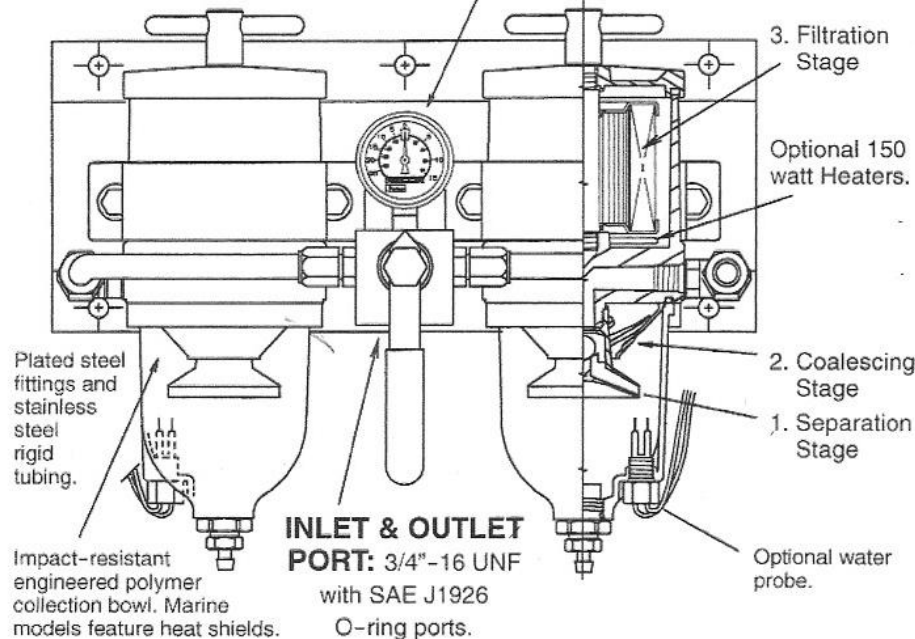


Filtration

Die-cast aluminum lid, body and steel brackets are coated with electrostatic epoxy paint for excellent corrosion protection.

Stainless steel vacuum / pressure gauge on anodized valve body.

T-handle for easy element access.



The Racor 75/500FGX and MAX Series Fuel Filter/ Water Separators protect the precision components of your engine from dirt, rust, algae, asphaltines, varnishes and especially water which is prevalent in engine fuels. Racor removes contaminants using a patented three stage process:

- 1. Separation:** Using the fuel flow, the turbine separates large solids and 'free' water through enhanced centrifugal force.
- 2. Coalescing:** Smaller water droplets and solids coalesce on the conical baffle and fall to the collection bowl.
- 3. Filtration:** Engines will benefit from near 100% water separation and fuel filtration with Racor's proprietary **Aquabloc™** water repelling media. The replaceable filter elements are available in 2, 10 and 30 micron ratings.

These units are designed for installation on the suction (vacuum) side of the fuel transfer pump for best efficiency.

The heart of the Racor FGX/MAX is the one handle control valve. This allows the operator to isolate one filter at a time for servicing, even during engine operation, if needed.

The see-thru contaminant collection bowl allows the operator to check water and solid contamination at a glance. A vacuum/ pressure gauge is standard to indicate when it is time to change the element(s).

The inlet / outlet fuel ports are 3/4"-16 UNF with the SAE J1926 O-ring boss type design located on the valve body bottom. Because of the great variety, adapter fittings are not supplied with this unit. *See Fittings Chart*

MAX/MAXM models are Underwriters Laboratories Marine Listed and U.S.C.G. Accepted and/or meet ASTM F1201-88.

OPTIONAL FEATURES See Accessories
Water probes* alert the operator when it's time to drain the see-thru bowls. (Must be used with a water detection kit).
150 watt diesel fuel heaters*† keep engines running even in the coldest climates.
Metal collection bowls are recommended for severe service or gasoline applications.

* Not for use with gasoline applications.
† Not for use with MAX marine models.

PART NUMBER IDENTIFICATION:

The example below illustrates how the part numbers are constructed.

75/500FGX (120 GPH)	P	12	10
75/500FGX: Standard Model	Water Probes.	Heaters. Specify	Filtration.
75/500MAX: Marine Model	Add: 'P'. Not	voltage: 12 or	Specify
75/500MAXM: Marine Model	for use with	24vdc. Not for	one:
with metal bowls.	gasoline.	Marine models.	2, 10 or 30
	Omit if not desired.	Omit if not desired.	(micron).

SPECIFICATIONS

75/500 Series

Fuel Ports (SAE J1926)	3/4"-16 UNF with O-ring Boss
Flow Rate, maximum	120 GPH / 454 LPH
Vacuum (Pump), max.	28.5 inHg. / 96.5 kPa
Pressure (Head), max.	15 PSIG / 103 kPa
Assembly Test Pressure	30 PSIG (MAX/M: 50) / 207 (345) kPa
Replacement Element	2010 Series
Overhead Space Required	4" / 101 mm, min.
Clean Pressure Drop	0.70 PSI / 4.83 kPa
Height	11.25" / 286 mm
Width	14.5" / 368 mm
Depth	9.5" / 241 mm
Weight, Dry	17 lbs. / 7.7 kgs
Temperature Rating	- 40° / +255° F / - 40° / +121° C

INSTALLATION INSTRUCTIONS

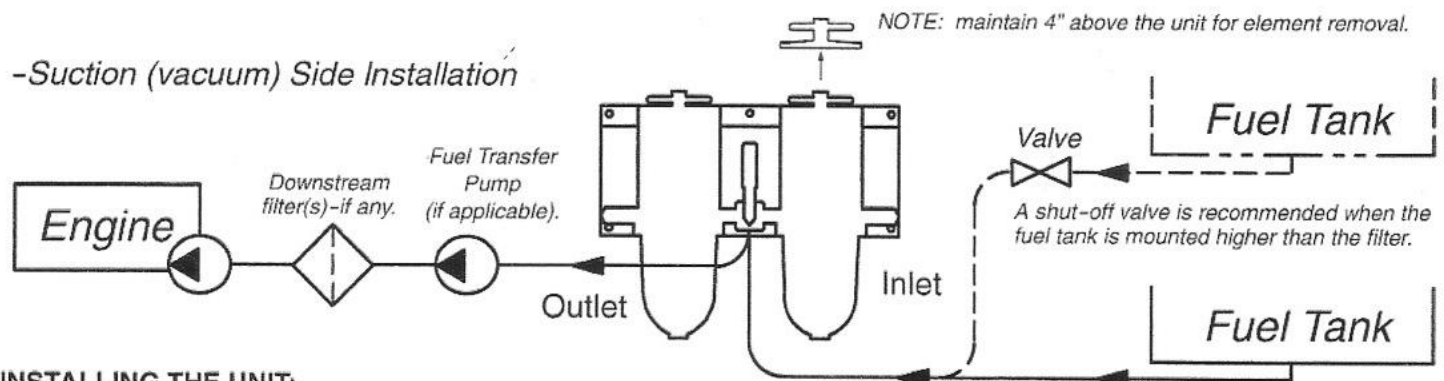
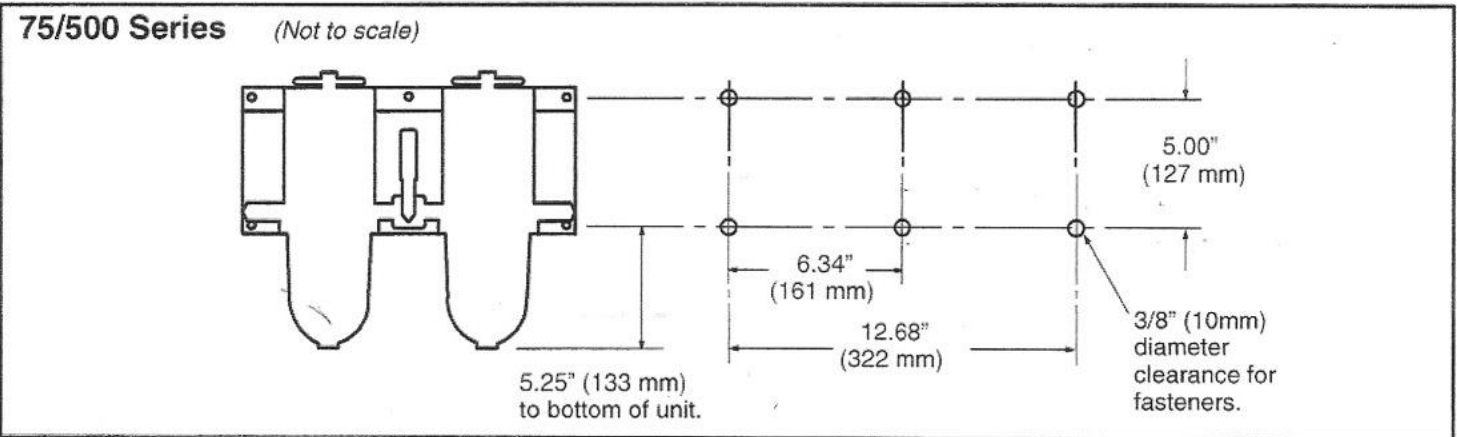
WHEN POSITIONING THE UNIT:

1. The Racor unit should be installed on the suction (vacuum) side of the fuel transfer pump for optimum water separating efficiency. See the illustration below.
2. To keep fuel line restriction to a minimum, locate the unit *between* the horizontal planes of the bottom of the fuel tank and the inlet of the fuel pump, if at all possible.
Note: If the Racor unit is mounted lower than the fuel tank, head pressure will be placed on the unit. Therefore, a valve should be installed at the fuel tank outlet.
3. Maintain 4" (101mm) clearance above the unit for element servicing.

BEFORE INSTALLING THE UNIT:

1. Ensure fuel port fittings are in hand along with fuel line and all needed installation tools and materials.
2. Maintain a safe working environment. Obtain good ventilation, lighting and **Do not** smoke or allow open flame near the installation. The engine must be off.

MOUNTING HOLE PATTERN: Use the dimensions below when drilling holes or positioning the unit.



INSTALLING THE UNIT:

1. Completely remove any suction side filter(s) in the fuel line between the fuel tank and fuel pump. This is where your Racor filter will mount. Leaving these filters in place will only add to fuel line restriction. Filter heads cast into the engine block or that are non-removable should be serviced with a new element and left in place.
2. The front valve port is the INLET and the back is the OUTLET. Use maximum size fuel line where possible to reduce potential fuel line restriction. Avoid making sharp bends with flexible fuel line as kinks may occur.
3. To keep fuel flow restriction values to a minimum, avoid the use of two 45° fittings where one 90° elbow fitting will work.
4. When routing fuel hose, avoid moving surfaces, sharp edges and hot surfaces such as exhaust piping.

FUEL SYSTEM PRIMING:

Remove the lid and T-handle by hand. Fill the unit with clean fuel and coat the lid seal with fuel as well. Replace the lid and snugly tighten the T-handle by hand only. If applicable, refer to the equipment operator's service manual to complete the fuel priming / bleeding procedure. Start the engine and check the installation for potential leaks.

TROUBLESHOOTING PROCEDURES:

A major cause of poor starting or power loss is the result of a clogged filter element or a fuel system air leak. If your unit will not prime, fails to hold a prime or if air bubbles are visible in the see-thru bowl, first check that the lid and drain plug are properly tightened. Next, check all fitting connections and ensure none of the fuel lines are pinched or clogged with contaminants. If your fuel tank is equipped with an in-tank strainer, check it for potential clogging. If problems persist and the filter element is new, call your Racor dealer or Racor Customer Service for assistance at 800/344-3286, PST.

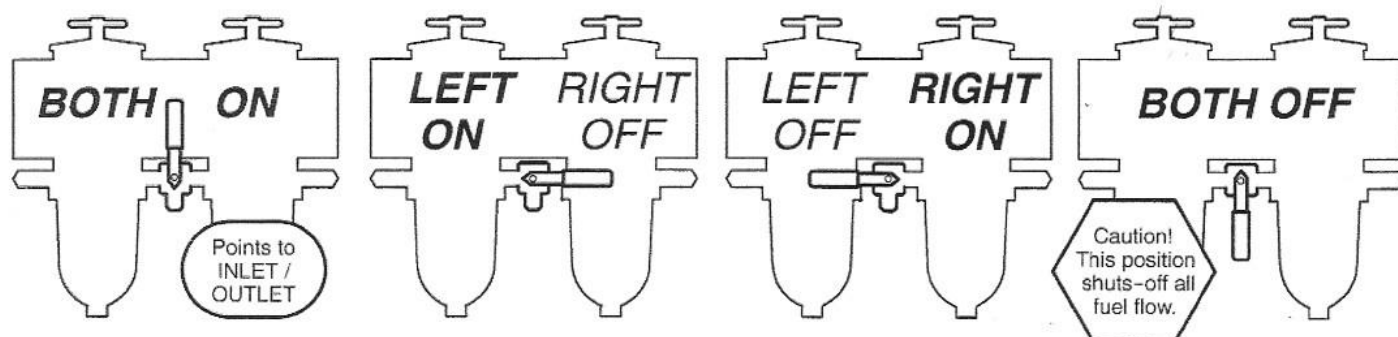
SERVICE

Frequency of water draining or element replacement is determined by the contamination level of the fuel.

SELECTOR VALVE:

The Racor FGX/MAX allows the operator to isolate one filter at a time for servicing *-even while the engine is running!*

The handle POINTER always indicates which unit is ON. To take one filter off-line for servicing while the engine is still running, **select the filter to stay on-line**, then begin servicing the other. Note: The handle can rotate 360° therefore avoid the 'BOTH OFF' position (arrow up) if the engine is running. See illustrations below.



TO DRAIN WATER:

Inspect or drain the collection bowl of water daily. The collection bowl must be drained before contaminants reach the bottom of the turbine or when the Water Detector (*optional*) indicates it's time to 'drain water'.

Note: If the engine must remain running, select the filter to stay on-line, then service the filter off-line.

This is a good practice even with the engine off.

1. Open the self-venting drain to evacuate contaminants with a suitable collection container in place. Note: On marine models it is necessary to remove the drain plug.
2. Prime the unit by removing the lid and filling the unit with clean fuel.
3. Replace the lid and snugly tighten the T-handle by hand ONLY.

TO REPLACE ELEMENT:

Replace the element at the interval which applies to you: Every 10,000 miles, 500 hours, every other oil change, annually or if a power loss is noticed, *whichever comes first*. A power loss is an indication that the element is becoming restrictive. As a rule, when the vacuum gauge reads between 6 to 10 inches of mercury (in.Hg) it may be time for service. *The actual measurement varies in different fuel systems.* Always carry extra elements as one tankful of excessively contaminated fuel can plug a filter. Use only genuine Racor water-repelling **Aquabloc™** replacement filter elements for maximum efficiency.

Note: If the engine must remain running, select the filter to stay on-line, then service the filter off-line.

This is a good practice even with the engine off.

1. Remove the lid. Remove the element by holding the molded handle and slowly pulling upward with a twisting motion.
2. Clean all sealing surfaces of dirt or debris with a shop cloth. Replace the lid gasket with the one supplied with the new element.
3. Apply a coating of clean fuel or motor oil to the lid seal prior to reassembly.
4. Insert the new element with a slow downward twisting motion.
5. Fill the unit with clean fuel, then replace the lid. Snugly tighten the T-handle by hand ONLY.
6. Start the engine and check for leaks. Correct any leaks with the engine off.

ACCESSORIES

NOTE: RACOR ELECTRICAL OPTIONS ARE RECOMMENDED FOR USE WITH DIESEL FUEL APPLICATIONS.

WATER PROBES. Racor units can be specified with a water probe in the collection bowls. The probe senses continuity values and **must** be used with a special electronic detector to function properly. These electronic detectors are sold separately and installation instructions are supplied with each kit. Order one of the below kits from your Racor Dealer.

Water Detection Kit # RK20726

- *12 or 24 vdc gauge type module
- *Hermetically sealed face.
- *Corrosion resistant plastic case.
- *LED/ momentary horn at water detection.
- *Three #8-32 terminal attachment studs.
- *Fits 2 1/16" diameter panel openings.
- *Instructions & most hardware included.



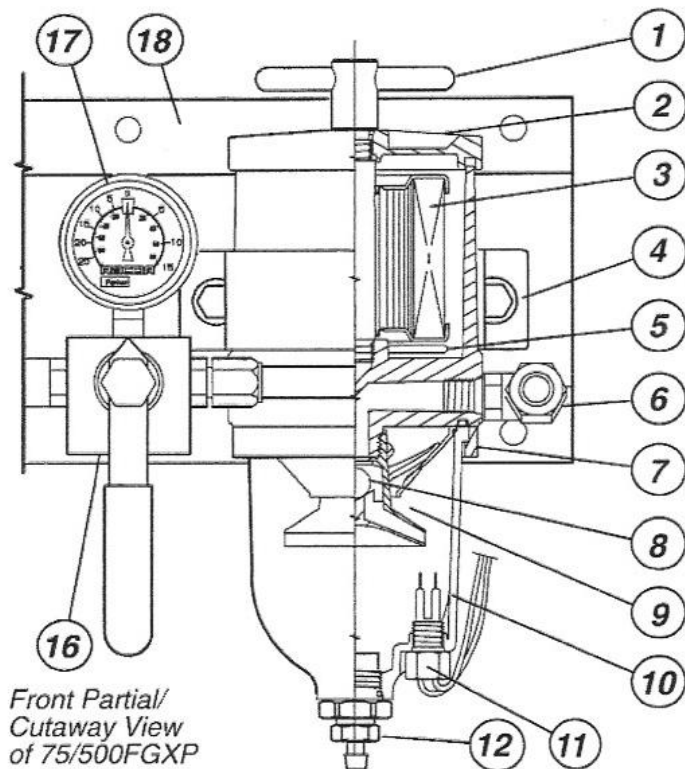
Water Detection and Element Restriction Kit # RK11-1570

- *12 or 24 vdc gauge type module.
- *LED/momentary horn upon detection.
- *Preset vacuum switch to 7 in.Hg.
- *Corrosion resistant construction.
- *Fits 2 1/16" diameter panel openings.
- *Instructions & hardware included.
- *Exiting wires are 24" long.



FUEL HEATERS. Racor non-marine units can be specified with 150 watt in-filter fuel heaters to keep diesel fuel flowing in cold weather applications. The wire harness exiting the filter bodies **must** be attached to a relay unit capable of handling up to a 25 ampere load. Racor Relay Kit #RK19490 is recommended. The under dash module measures 5 1/4" wide by 3" deep by 1 1/2" in height and includes an ON/OFF switch and integral circuit breaker. Most hardware and instructions included for proper installation and attachment to the FGX models. Specify 12 or 24 volt d.c.

75/500FGX/MAX SERIES PARTS LIST



Front Partial/
Cutaway View
of 75/500FGXP

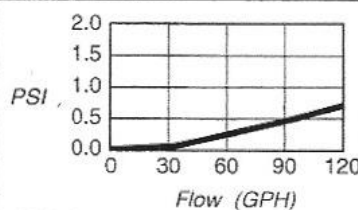


MAX / MAXM Models
are UL Marine Listed.
Cutaway View of 75/500MAX
Heat Deflector and drain plug assembly.

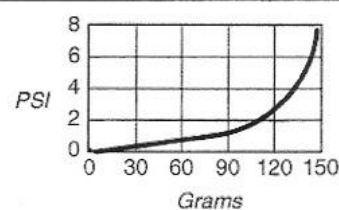
Item	Part No.	Description (quantity is one each)
1	RK11888	T-Handle Assembly
2	RK15078	Lid
3	2010SMOR	2 micron Replacement Element & O-rings
	2010TMOR	10 micron Replacement Element & O-rings
	2010PMOR	30 micron Replacement Element & O-rings
4	RK15378	One-piece Body Clamp Bracket
5	RK15310-01	12 vdc Heater w/ base feed-thru
	RK15310-02	24 vdc Heater w/ base feed-thru
6	RK15344	Rigid Tubing Assembly (includes valve ftg.)
7	RK15035	Bowl Ring, (for see-thru bowl only)
8	RK15010B	Check Ball and Rubber Seal
9	RK15013D	Turbine and Coalescing Centrifuge
10	RK15279	See-thru Bowl w/Water Sensor Port
	RK15279-01	See-thru Bowl w/Water Sensor Port (MAX)
	RK15301-01	Metal Bowl w/Water Sensor Port (MAXM)
11	RK21069	Water Probe (for see-thru bowl)*
12	RK30488	Self-venting Drain Valve
13	RK15104	Heat Deflector
14	RK20126	Water Probe Port Plug
15	RK11040	Drain Plug Fitting
16	RK15321	Valve Assembly
17	RK19476	Compound Gauge Assembly
18	RK15329	75/500 Main Bracket
19	RK15211	Seal Service Kit (all models)

* Must be used with Water Detection Module. See Accessories.

PERFORMANCE GRAPHS

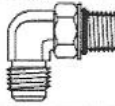
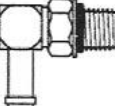





SAE J905 Fuel Flow Restriction



SAE J905 Clogging Capacity @ 10 mic.

3/4"-16 UNF, SAEJ1926 O-RING BOSS FITTINGS CHART

Suction & Head Pressure Fittings			Suction Fittings		
Description	T2	Racor Part No.	Description	Hose I.D. (R4)	Racor Part No.
SAE 37° Elbow 	9/16"-18 3/4"-16 7/8"-14	913-O8-J6 913-O8-J8 913-O8-J10	Barbed Elbow 	3/8" Hose 1/2" Hose 5/8" Hose	913-O8-H6 913-O8-H8 913-O8-H10
SAE 37° Straight 	9/16"-18 3/4"-16 7/8"-14	911-O8-J6 911-O8-J8 911-O8-J10	Barbed Straight 	3/8" Hose	911-O8-H6
NPT Female 	1/4"-NPT 3/8"-NPT 1/2"-NPT	911-O8-F4 911-O8-F6 911-O8-F8		1/2" Hose 5/8" Hose	911-O8-H8 911-O8-H10

WARNING The following statement is required pursuant to Proposition 65 applicable in the State of California: "This product may contain a chemical known to the State of California to cause cancer."
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. This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operation conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the applications are met. The products described herein, including with limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

RACOR LIMITED WARRANTIES STATEMENT

All products manufactured or distributed by Racor are subject to the following, and only the following, LIMITED EXPRESS WARRANTIES, and no others: For a period of one (1) year from and after the date of purchase of a new Racor product, Racor warrants and guarantees only to the original purchaser-user that such a product shall be free from defects of materials and workmanship in the manufacturing process. The warranty period for pumps and motors is specifically limited to ninety (90) days from date of purchase. A product claimed to be defective must be returned to the place of purchase. Racor, at its sole option, shall replace the defective product with a comparable new product or repair the defective product. This express warranty shall be inapplicable to any product not properly installed and properly used by the purchaser-user or to any product damaged or impaired by external forces. THIS IS THE EXTENT OF WARRANTIES AVAILABLE ON THIS PRODUCT. RACOR SHALL HAVE NO LIABILITY WHATSOEVER FOR CONSEQUENTIAL DAMAGES FLOWING FROM THE USE OF ANY DEFECTIVE PRODUCT OR BY REASON OF THE FAILURE OF ANY PRODUCT. RACOR SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ALL WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE (EXCEPT FOR THOSE WHICH APPLY TO PRODUCT OR PART THEREOF THAT IS USED OR BOUGHT FOR USE PRIMARILY FOR PERSONAL, FAMILY, OR HOUSEHOLD PURPOSES); WARRANTIES OF DESCRIPTION, WARRANTIES OF MERCHANTABILITY, TRADE USAGE OR WARRANTIES OR TRADE USAGE.

Racor's policy is one of continual improvement in design and manufacturing to insure still finer products; therefore, specifications, equipment and product information, while correct at the time of publication, is subject to change without notice.
 Copyright, PARKER HANNIFIN CORPORATION, 1997. Product Brochure PN. 15349 Rev. C