Procon Pumps

Pump Safety:

Learn to recognize safety information, and always follow recommended precautions and safe operating practices.

This catalog uses the following words to identify *hazards* and *potential problems*:

This Word	Means This
WARNING	**You MAY seriously hurt or kill yourself or someone else if you ignore the message.**
CAUTION	**You MAY hurt yourself or someone else or you may damage equipment if you ignore the message.**
NOTICE	**Pay Special Attention to this important installation, operation or maintenance information. If you ignore this information, you may damage your pump.**

When you see this safety alert symbol, be alert to the potential for causing personal injury or property damage.

Safety Warnings For Your Pumps

Read these safety warnings before you install or operate PROCON Pumps. Be sure to follow the instructions carefully.

Do not pump flammable or hazardous fluids through your pump.

Your pump was not designed to be used with flammable or otherwise hazardous fluids. If you use your pump with hazardous fluids and it leaks, it could create various hazards including fire, health, environmental, etc.

Do not use a pump that is leaking.

If a pump begins to leak, stop using it immediately. Disconnect the power to the pump motor and clean up the fluid. Leaking pumps should no longer be used; replace with new pump or have pump rebuilt.

Keep your pump from leaking by following these three rules:

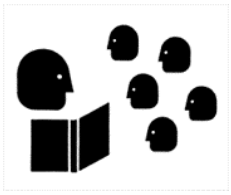
1. **Do not let the pump run dry.**
   Do not let the pump run dry for more than 2 minutes. The self lubricating, internal parts protect the pump only against very brief dry runs.
   Running the pump dry may score or wear out the internal parts, causing performance loss. It may also damage the mechanical seal, causing the pump to leak fluid.
2. **Do not run the pump against a closed discharge.**
   Running a pump against a closed or blocked discharge may cause pressure to build up to a dangerous level if there is no relief valve. Heat will build up in the pump and may cause the internal parts to wear out rapidly. It may also ruin the mechanical seal.
   PROCON's relief valves are designed to protect your pump against only short periods of over-pressure. PROCON's relief valves should not be used as flow control valves.
3. **Do not tamper with the setting of the relief valve.**
   The relief valve is set at the factory to your specifications.

Keep the floor around your pump dry. Make sure you keep the floor around your pump dry. If any liquid leaks onto the floor clean it up immediately.
Do not touch the pump when there is liquid on the floor. Serious injuries can occur if you slip. Your pump operates with an electric motor. You can be electrocuted if you touch the pump when you are standing in liquid.
You can increase your safety by using "ground fault interrupter (GFI)" type circuit breakers.

Protect Children
Keep children and other people who do not know how to operate the pump away from your pumps and the systems in which they are used. Children may not understand that equipment is sometimes dangerous to them and others. Never allow children to play with or operate your pumps.

Be prepared for emergencies.

Be prepared for fires, injuries, or other emergencies.
Keep a first aid kit and a fire extinguisher near the pumps and the systems in which they are used.
Keep emergency numbers for doctors, ambulance services, hospital, and the fire department near your phone.



A note to all employers

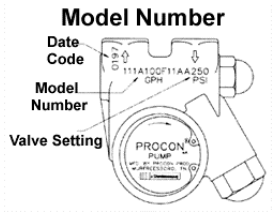
Know your responsibilities as an employer.
Make sure your employees know how to operate the pump safely.
Make sure your employees are aware of the safety warnings in this catalog.
Thoroughly train your employees about operating the pumps and other equipment safely.
Keep the pumps in proper working condition. If you make unauthorized modifications to the pump, you may reduce the function and safety of the pump.
Communicate all PROCON safety information to your customers.

PROCON Vane Pumps are ideally suited for handling many clean fluids.	**They have the unique ability to handle many liquids with low lubricating characteristics at relatively high pressures.** **Special Internal Materials and unique design eliminate metal-to-metal contact and make PROCON Pumps low in starting torque.** **Most PROCON Pumps are self-priming.** **PROCON Vane Pumps are quiet and have low vibration and pulsation characteristics.**
PROCON Vane Pumps combine advantages that are not usually found in other pumps.	**Flow remains constant over the entire pressure range.** **You can mount PROCON Pumps on NEMA 56C frame motors for a coupling drive or attach them to NEMA 48YZ motors with a V-band clamp.** **Procon Vane Pumps do not have to be lubricated and are virtually maintenance-free throughout their entire life except for cleaning the strainer.** **PROCON provides a quick and low cost factory rebuilding service.**

PROCON Pumps are available in a version, for use with potable water only, which is listed by NSF International. NSF develops standards and tests for the purpose of promoting public health. Because PROCON is concerned with public health, safety, and the environment, PROCON complies with these strict standards and maintains and NSF listing.

PROCON is extremely proud that as of January 21, 1997, we received a *Certificate of Registration of Quality System to I.S. EN ISO 9001:1994.*
Our Murfreesboro, Tennessee, and Mountmellick, Ireland operations are now ISO compliant.

Model Number & Location

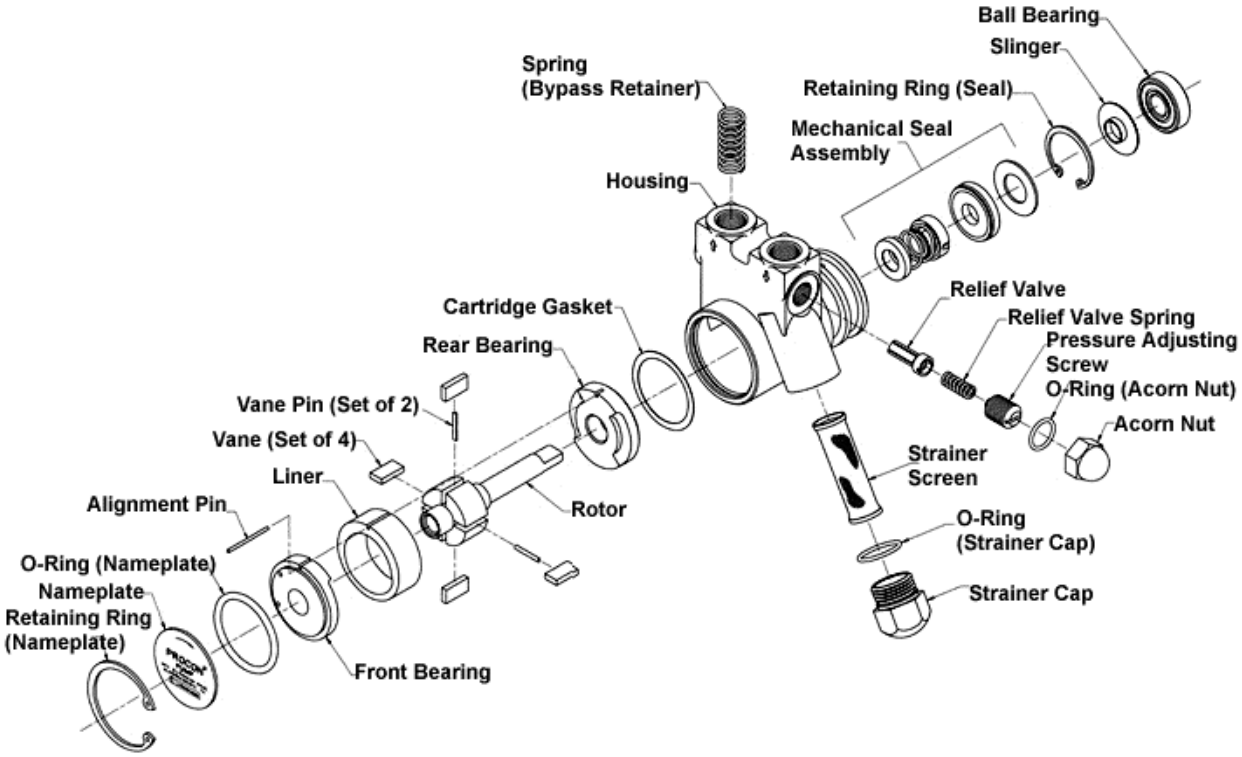


The Model Number identifies the pump and its configuration; it is stamped into the housing above the red name plate between the inlet and outlet ports. The date code is stamped into the housing to the left of the model number. It indicates the month and year that the pump was manufactured. In pumps manufactured after 1990, the relief valve setting in PSI has been added to the model number suffix. If the pump has been rebuilt, an additional date code will be located on the shaft side of the housing at the discharge port.

Components of the PROCON Pump	
Body	**Forged brass or cast stainless steel housings are rugged and long lasting.**
Rotor	**All pumps use stainless steel rotors.**
Bearings	**All PROCON vane pumps feature durable, dependable three-bearing construction to ensure top performance.** An external ball bearing plus two internal carbon graphite bearings contribute to the over-all rugged construction. The external ball bearing is located outside the liquid chamber and is pre-lubricated and sealed for long, maintenance-free life.
Seals	**The rotor shaft is sealed by a mechanical seal.** **Standard pumps contain BUNA-N O-rings. The standard mechanical seal is BUNA-N with a carbon graphite seal face and a ceramic seat.** **Other elastomers, such as ETHYLENE PROPYLENE, NEOPRENE and FLUOROCARBON are available.**
Strainer	**The PROCON Series 1 vane pump is designed with an integral 100 mesh strainer. The strainer requires periodic maintenance. See Page 28 "inlet is clogged or restricted for instructions".**

Non-metal internal parts	**PROCON pumps are unique primarily because of the maintenance-free and self-lubricating carbon graphite parts.** **PROCON pumps have special carbon graphite internal vanes, bearings, and liners. These allow low starting torque and no metal-to-metal contact.** **PROCON pumps have a long life and operate quietly because the carbon graphite is self-lubricating and heat resistant.**
Relief Valves	**Most PROCON pumps are available with or without a built-in relief valve.** **The relief valve temporarily protects against dangerous over-pressure.** **All relief valves are preset at the factory to your specifications (60 to 250 psi range available, 30 to 250 psi range also available on certain models, consult factory for details). At the specified relief valve setting, the flow will fully by-pass from the outlet to the inlet through the relief valve chamber. The specified relief valve setting is an average; individual pumps will vary both above and below the specified setting. The relief valve actually cracks and begins to by-pass flow at approximately 50 psi below the relief valve setting. Be advised that due to the design of the relief valve, the relief valve reacts to the difference in pressure between the inlet and the outlet. As a result, the highest pressure which the pump can develop at its discharge port is the inlet pressure plus the specified relief valve setting.** **If you need the full 250 psi discharge pressure rating of the pump, we recommend that you use an external relief valve supplied by others.** **The standard relief valve is made of a special high temperature plastic. Brass pumps with internal relief valves incorporate a stainless steel relief valve seat to prevent erosion.**
***CAUTION:* Do not tamper with the relief valve on your pump. If you think the relief valve needs to be reset, contact your PROCON factory representative.**	
Options	**PROCON offers a wide range of options, so we can tailor-make a pump for most systems. Some of the options we offer include special seals, mounting flanges, rotations, and clearances.**

Series 1 Pump - Design Consistent Throughout All Series



Series 1 With Integral Strainer

Description, Standard Specifications, and Dimensions

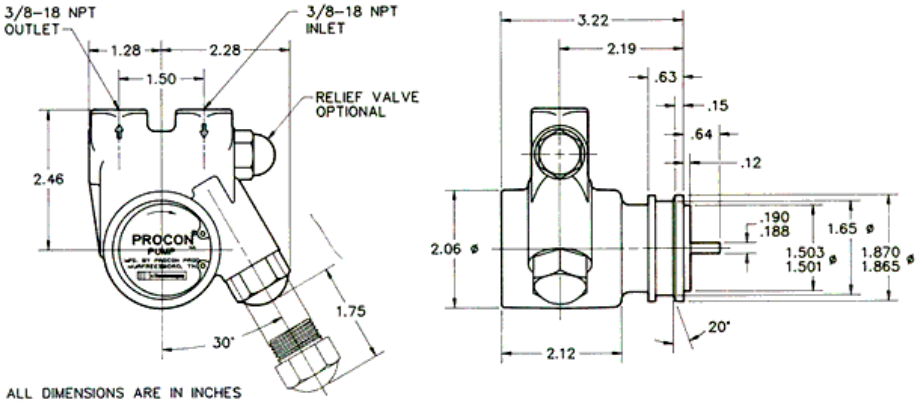
The clamp-in mounting style is shown in the photo; bolt on mounting is available.

PROCON Series 1 pumps have the protection of an integral inlet strainer. The standard strainer in a 100 mesh wire screen. It traps particles that can cause serious damage to the pump.

The strainer is equipped with a removable cap to allow periodic cleaning, every 4 months under normal conditions. More frequently with hard or turbid water.

Standard Specifications	
Body	Brass
Capacity	15 –140 gph
Nominal speed	1,725 rpm
Max. Discharge pressure	250 psi
Rotation	Clockwise
Dry Weight	Approx. 2.75 lbs.
Strainer area	3.25 sq in
Self-priming (water)	6 ft. max. lift

Dimensions of the Series 1 (Clamp-on mounting shown)



Series 2 Without Integral Strainer

Series 2 Description, Standard Specifications, and Dimensions

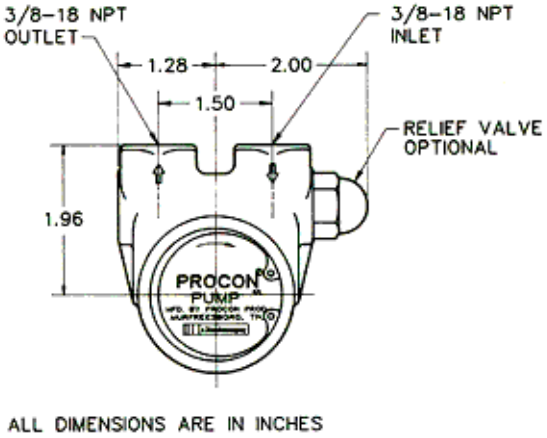
PROCON's Series 2 Pumps have the same features as the Series 1 except they do not have the integral strainer.

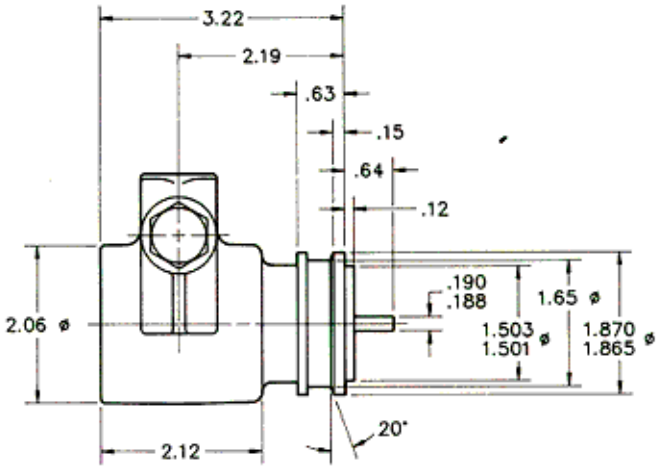
Series 1, 2, and 3 are available in 11 flow rates: 15, 25, 35, 50, 60, 70, 80, 100, 110, 125 and 140 gallons per hour at 250 psi.

Clamp-on mounting style is shown in the photo; bolt-on mounting is also available

Standard Specifications	
Body	Brass
Capacity	15 –140 gph
Nominal speed	1,725 rpm
Max. Discharge pressure	250 psi
Rotation	Clockwise
Dry Weight	Approx. 2.5 lbs.
Strainer area	3.25 sq in
Self-priming (water)	6 ft. max. lift

Dimensions of the Series 2 (Clamp-on mounting shown)





Series 3

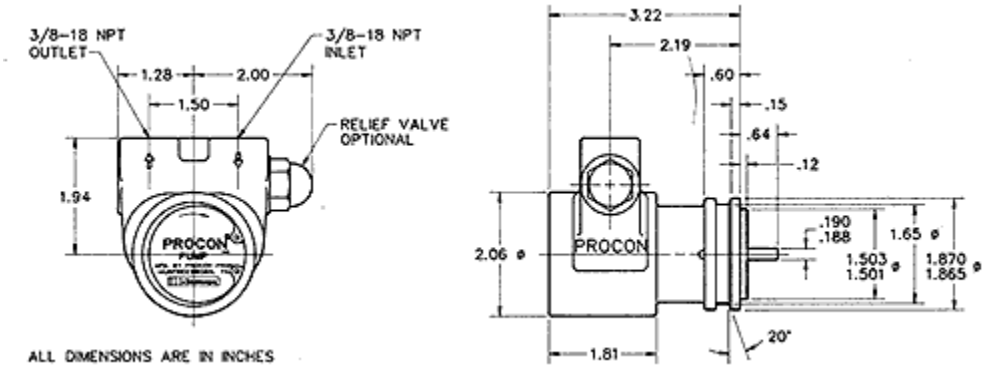
Description, Specifications, and Dimensions

Clamp-on mounting style shown in photo; bolt-on mounting is also available.

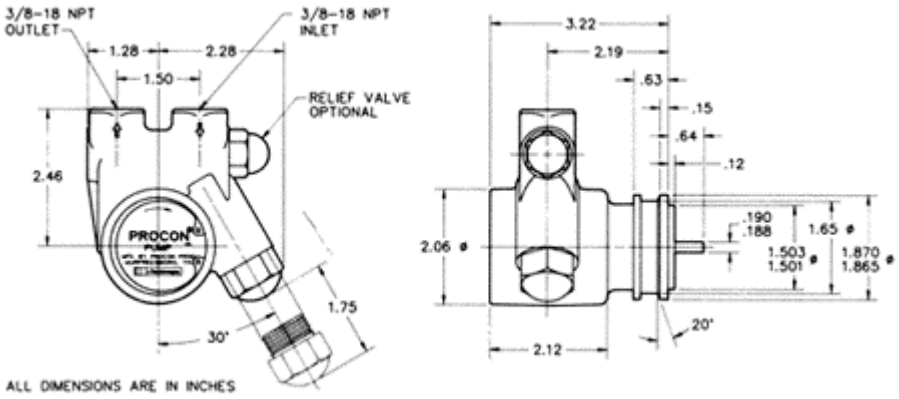
PROCON's Series 3 pumps boast all the unique features of other PROCON pumps. Because the pump body and all the metal parts are made from stainless steel, the Series 3 is well suited for pumping a variety of fluids not suitable with brass. Your PROCON factory representative can advise you on the correct pump for the fluids you intend to use.

Standard Specifications	
Body	stainless steal
Capacity	15 –140 gph
Nominal speed	1,725 rpm
Max. Discharge pressure	250 psi
Rotation	Clockwise
Dry Weight	Approx. 2.75 lbs.
Self-priming (water)	6 ft. max. lift

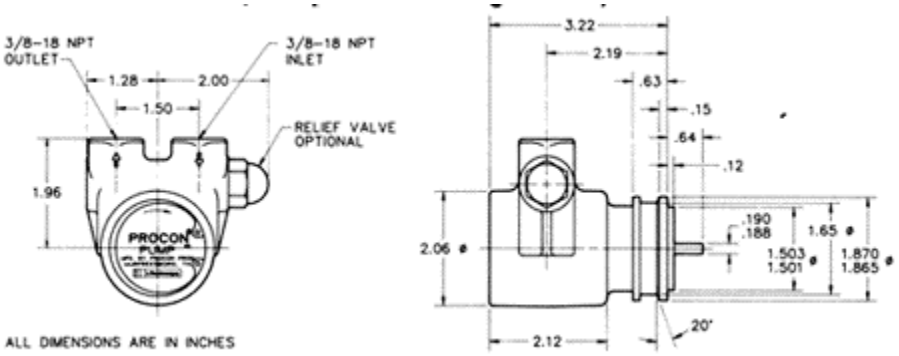
Dimensions of the Series 3
(clamp-on mounting with relief valve shown)



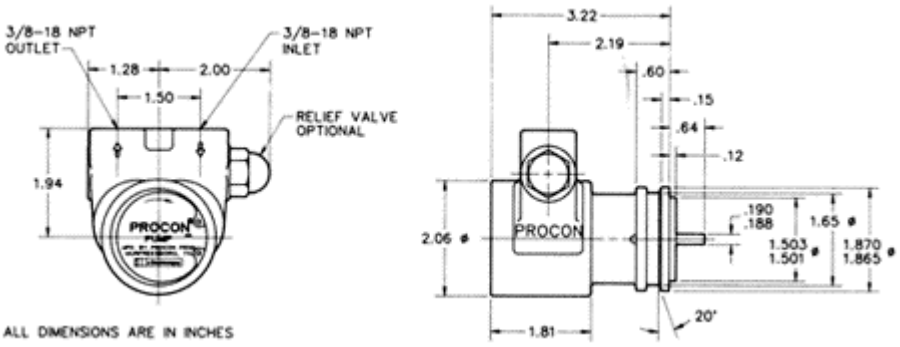
Dimensions of the Series 1 (Clamp-on mounting shown)



Dimensions of the Series 2 (Clamp-on mounting shown)



Dimensions of the Series 3 (Clamp-on mounting with relief valve shown)



Note: Specifications and dimensions are subject to change without notice.

Series 4 and 5

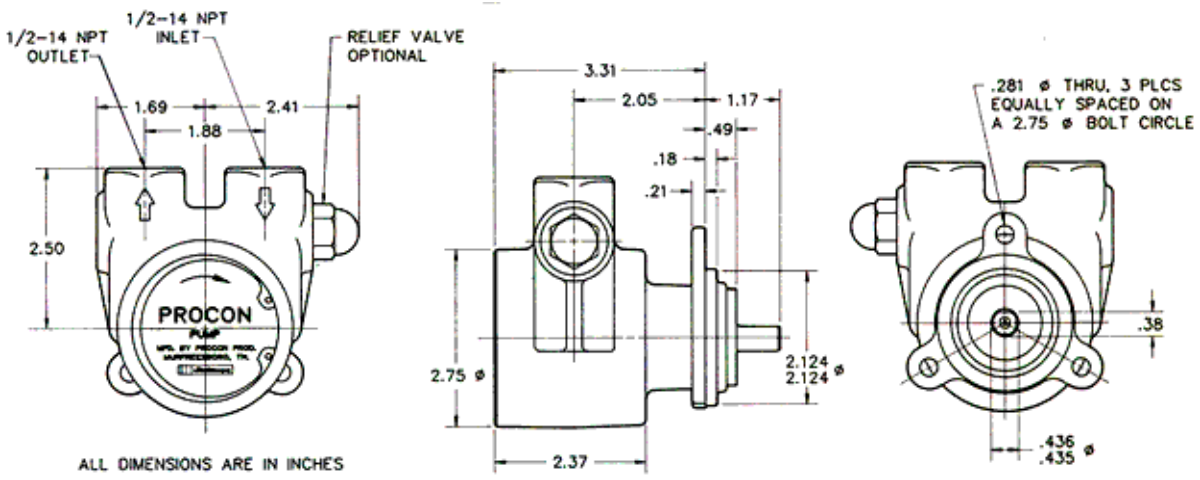
Description, Specifications, and Dimensions

PROCON Series 4 & 5 are designed and built to meet your needs for flow rates ranging from 115 - 330 gallons per hour at 250 psi. These PROCON pumps Maintain all the quality features and construction of our Series 1, 2, & 3 pumps.

Bolt-on mounting style shown (left) clamp-on style also available.

Standard Specifications	
Body (series 4)	brass
Body (series 5)	stainless steal
Capacity	115 – 330 gph
Nominal speed	1,725 rpm
Max. Discharge pressure	250 psi
Rotation	clockwise
Dry Weight	Approx. 4.5 lbs.
Self-priming (water)	6 ft. max. lift (330 gph model requires min 20 psi inlet pressure)

Dimensions of the Series 4 & 5 (bolt-on mounting shown)



Note: Specifications and dimensions are subject to change without notice.

Series 6

Description, Specifications, and Dimensions

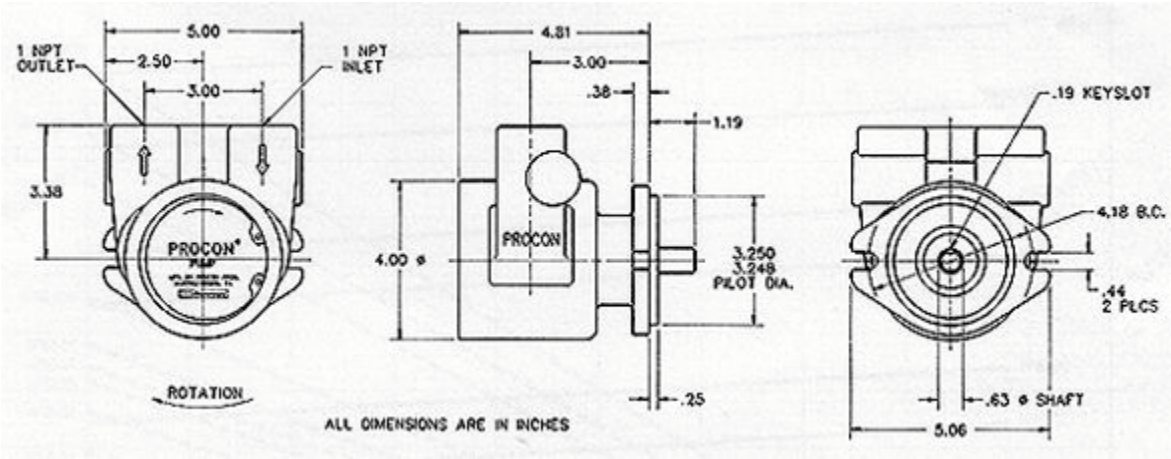
PROCON's Series 6 is designed and built to meet your needs for higher flows. The flow rate capacity for this pump ranges from 300 to 660 gallons per hour at 250 psi.

This series pump is available only in bolt-on style.

No integral relief valve is available**.**

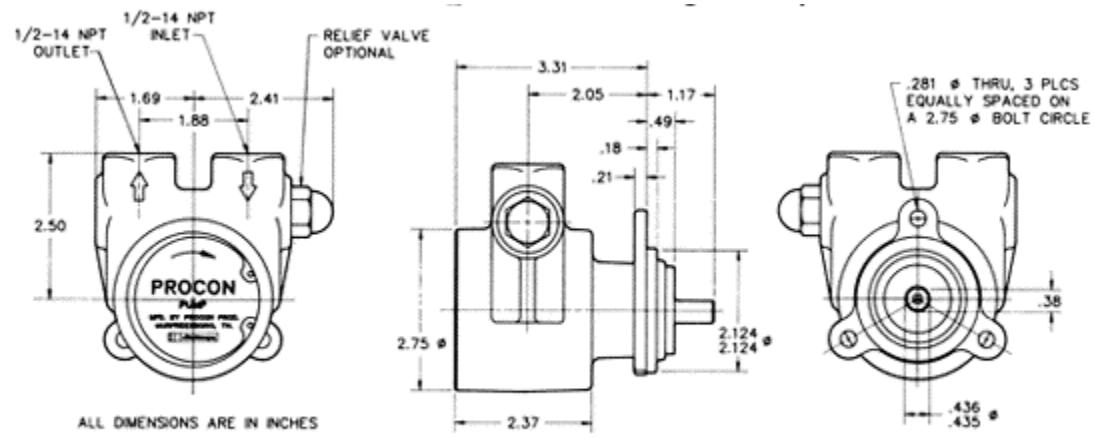
Standard Specifications	
Body	stainless steal
Capacity	300 – 650 gph
Nominal speed	1,725 rpm
Max. Discharge pressure	250 psi
Rotation	clockwise
Dry Weight	Approx. 15 lbs.
Minimum Inlet Pressure	flooded (no inlet suction lift allowed)

Dimensions of the Series 6 (bolt-on mounting only)

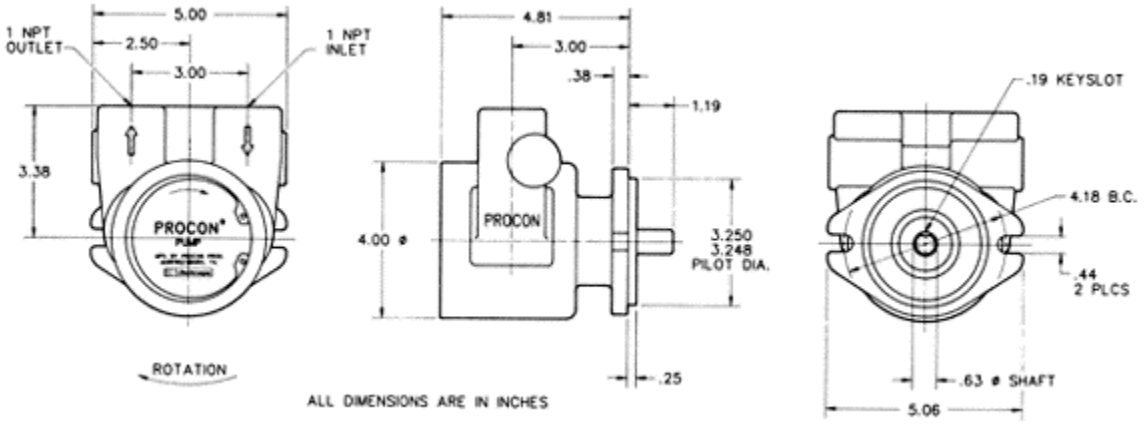


Note: Specifications and dimensions are subject to change without notice.

Dimensions of the Series 4 and 5 (bolt-on mounting shown)



Dimensions of the Series 6 (bolt-on mounting shown)

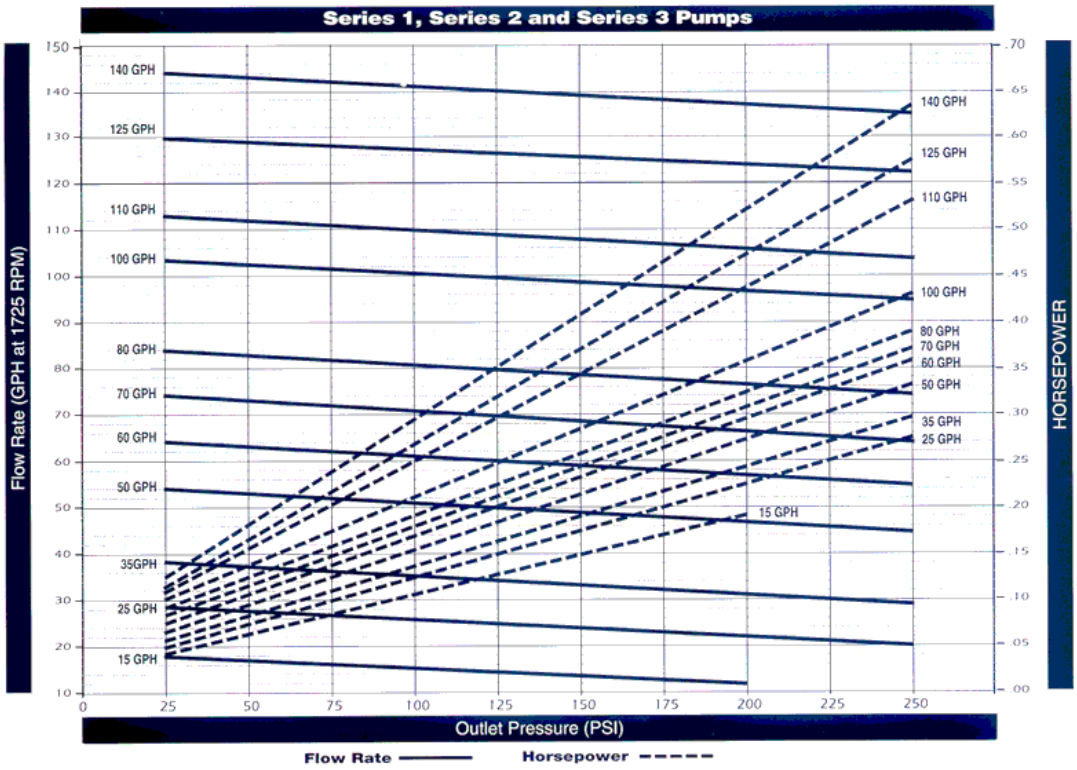


Capacities and Horsepower Series 1, 2 &3

Series 1, 2 & 3 Nominal Volume at 1725 RPM
See note at bottom

Flow Rate (gph)	Gallons Per Hour Pressure (psi)					Brake Horsepower Pressure (psi)				
	50	100	150	200	250	50	100	150	200	250
140	143	141	139	137	135	0.17	0.28	0.40	0.52	0.63
125	128	126	124	122	120	0.16	0.26	0.36	0.47	0.57
110	111	109	107	105	103	0.15	0.25	0.34	0.44	0.54
100	102	100	98	96	94	0.13	0.20	0.28	0.35	0.42
80	82	80	78	76	74	0.12	0.18	0.25	0.32	0.39
70	72	70	68	66	64	0.11	0.17	0.24	0.30	0.37
60	62	60	58	56	54	0.10	0.16	0.23	0.29	0.35
50	52	50	48	46	44	0.09	0.15	0.21	0.27	0.33
35	37	35	33	31	29	0.08	0.14	0.19	0.24	0.29
25	27	25	23	21	19	0.07	0.12	0.17	0.22	0.27
15	17	15	13	11	---	0.06	0.10	0.15	0.19	--

Capacities & Horsepower Graph

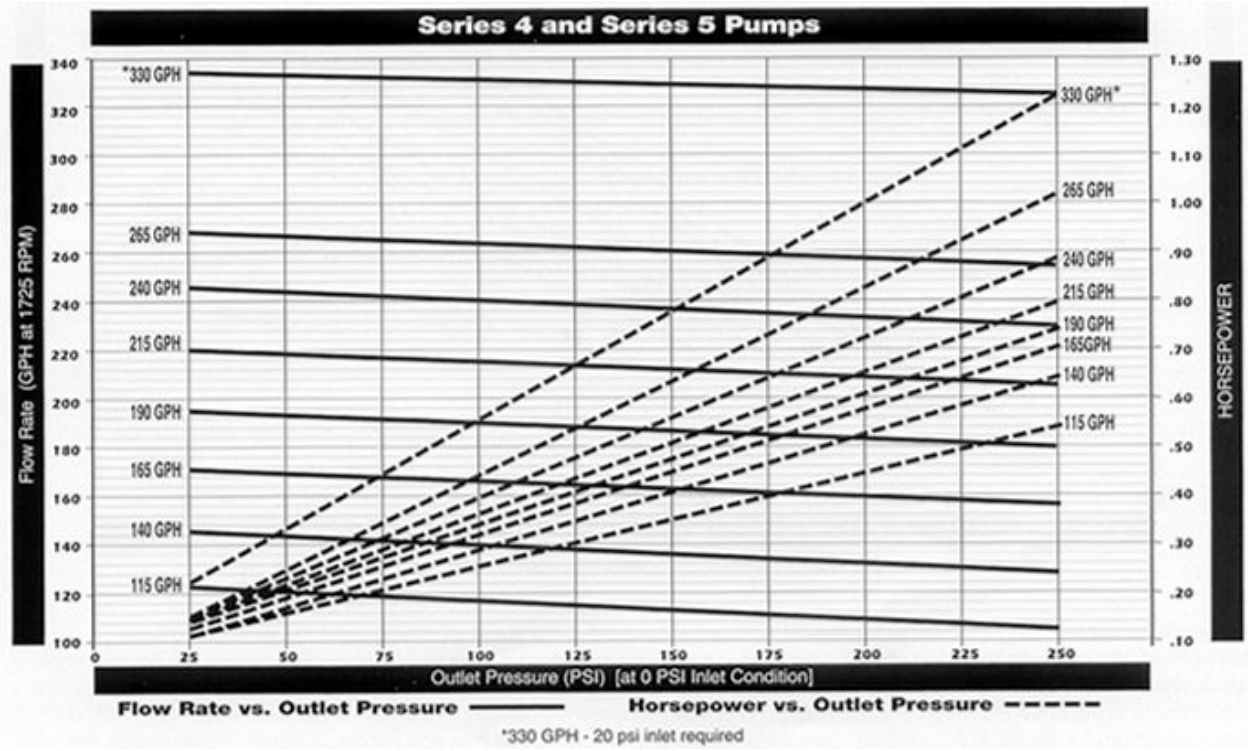


Note: Nominal flow rating for each pump is based on operating the pump at a speed of 1725 rpm, at a discharge pressure of 100 psi, with 70° F tap water as the fluid. The values are measured averages; individual pumps will deviate from these values. Because the pumps are positive displacement pumps, the discharge flow (in gallons per hour) is directly proportional to the speed at which the pump is being driven (800 rpm - minimum, 1725 rpm - maximum for series 6, 2300 rpm - maximum for Series 1, 2, 3, 4 & 5). Use these charts to find your actual flow and minimum power requirements. For more information about how to determine model numbers, see Ordering PROCON Pumps, on Page 17.

Series 4 & 5 Nominal Volume at 1725 RPM
See note at bottom

Flow Rate (gph)	Gallons Per Hour Pressure (psi)					Brake Horsepower Pressure (psi)				
	50	100	150	200	250	50	100	150	200	250
330	331	330	328	327	326	0.33	0.55	0.78	1.00	1.22
265	265	263	261	259	257	0.24	0.43	0.63	0.82	1.01
240	243	240	236	232	228	0.21	0.37	0.54	0.70	0.86
215	218	215	211	207	203	0.20	0.35	0.50	0.65	0.80
190	193	190	186	182	178	0.18	0.33	0.47	0.61	0.75
165	168	165	161	157	153	0.18	0.30	0.43	0.57	0.70
140	143	140	136	132	128	0.16	0.28	0.40	0.52	0.64
115	118	115	111	107	103	0.15	0.25	0.35	0.45	0.55

Capacities & Horsepower Graph

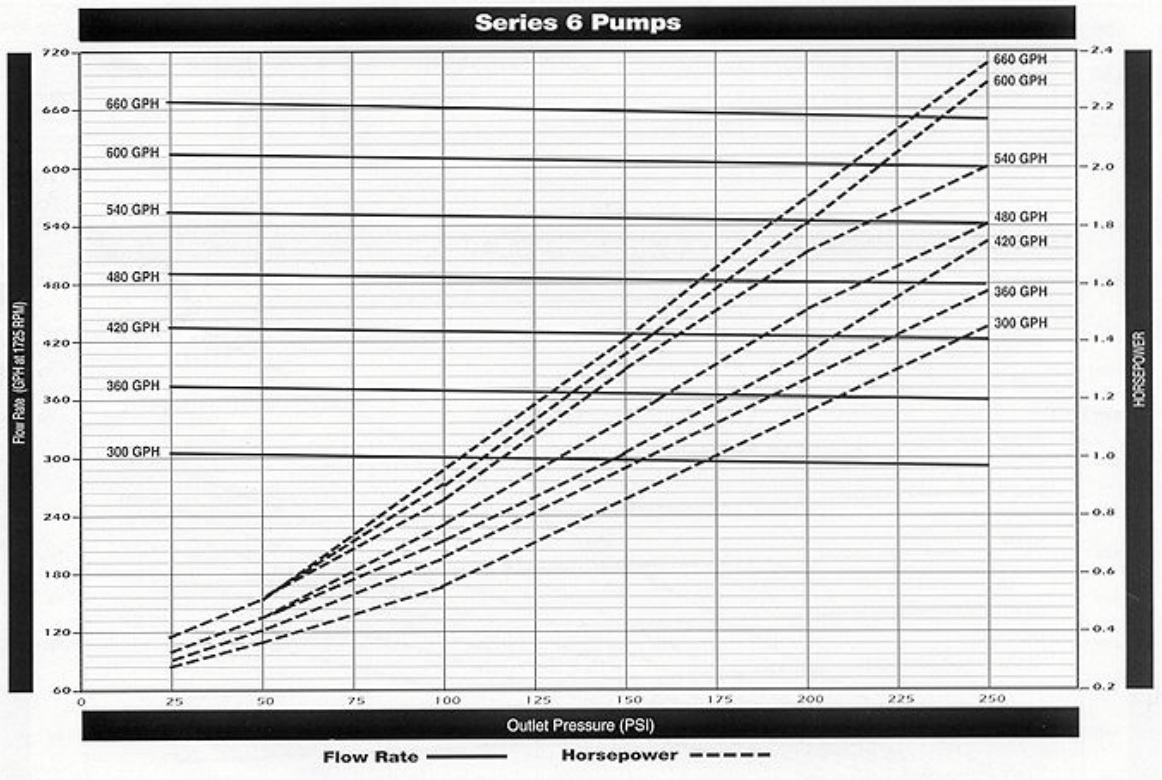


Note: Nominal flow rating for each pump is based on operating the pump at a speed of 1725 rpm, at a discharge pressure of 100 psi, with 70° F tap water as the fluid. The values are measured averages; individual pumps will deviate from these values. Because the pumps are positive displacement pumps, the discharge flow (in gallons per hour) is directly proportional to the speed at which the pump is being driven (800 rpm - minimum, 1725 rpm - maximum for series 6, 2300 rpm - maximum for Series 1, 2, 3, 4 & 5). Use these charts to find your actual flow and minimum power requirements. For more information about how to determine model numbers, see Ordering PROCON Pumps, on Page 17.

Series 6 Nominal Volume at 1725 RPM
See note at bottom

Flow Rate (gph)	Gallons Per Hour Pressure (psi)					Brake Horsepower Pressure (psi)				
	50	100	150	200	250	50	100	150	200	250
660	663	660	657	654	651	0.50	0.95	1.40	1.85	2.35
600	612	609	606	603	600	0.50	0.90	1.35	1.80	2.30
540	552	549	546	543	540	0.50	0.85	1.30	1.70	2.00
480	489	486	483	480	477	0.45	0.75	1.15	1.50	1.80
420	435	432	429	426	423	0.45	0.70	1.00	1.35	1.75
360	372	369	366	363	360	0.40	0.65	0.95	1.25	1.55
300	303	300	297	294	291	0.35	0.55	0.85	1.15	1.45

Capacities & Horsepower Graph



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Options For PROCON Pumps

Relief Valves: PROCON offers two types of relief valves which are preset at the factory according to your specifications.

The *solid relief valve* protects against over-pressure and is made of a high temperature plastic. All brass pumps with a built-in relief valve are equipped with stainless steel relief valve seat. The addition of the stainless steel seat, begun in April 1997, will reduce erosion of the valve seat caused when the valve is unseated and flow is being recirculated.

The *by-pass valve* also protects against over-pressure, but permits fluid flow from the inlet to the discharge of the pump when the pump is not operating. This valve features a spring-loaded by-pass valve inside the relief valve for use in certain beverage applications.

The by-pass relief valve is available only on brass pumps - Series 1, 2 & 4.
Series 6 pumps are not available with built-in relief valves.

See Components Of The PROCON Pump for more information.

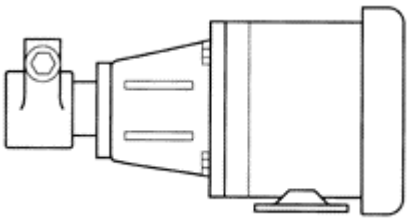
CAUTION Internal PROCON relief valves are designed for protection against transient over pressure only. *Do Not Use the internal relief valve as a flow or pressure control valve.*

Special Clearances: If you plan to pump fluids that are 150º F or higher (190º maximum), you will need special clearances and seals - Contact your PROCON factory representative for assistance.

Special Seals: Standard mechanical face seals feature BUNA-N elastomers. For fluids that are not compatible with BUNA-N or are pumped at temperatures above 150º F, FLUOROCARBON, NEOPRENE, and ETHYLENE PROPYLENE are available. If you need these special seals, contact your PROCON factory representative for assistance.

Mounting Styles

Mounting Styles for **Procon** Pumps



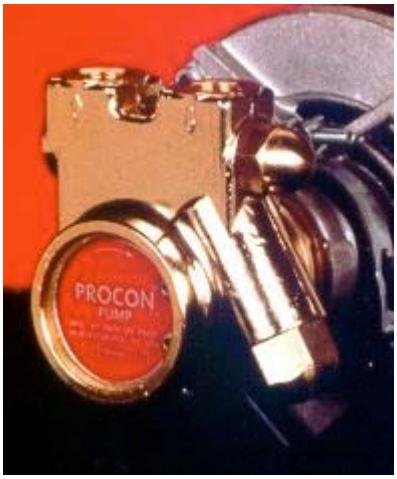
PROCON bolt-on style pump mounted to 56C-frame motor.

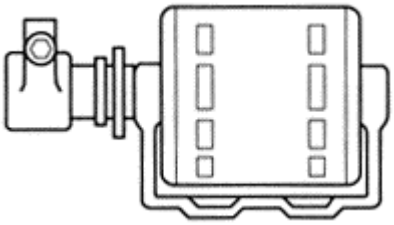
PROCON pumps can be mounted to two types of electric motors -- a carbonator style motor (NEMA 48YZ frame) and a C-frame motor (NEMA 56C frame). Pump applications that require a motor of up to 0.75 horsepower, open drip proof construction and single phase power can be close-coupled to NEMA 48YZ frame, carbonator style motors.

Use a V-band clamp to secure the mounting. You do not need to use any additional couplings or adapters. Pumps applications that require a motor greater than 0.75 horsepower, TEFC construction or 3 phase power can be mounted to NEMA 56C frame motors.

You will need an aluminum "C-face" adapter and shaft coupling to mount your pump to a NEMA 56C frame motor. The adapter and coupling are available from PROCON.

For more information about how to mount pumps to these two types of motors, see *Installing Your PROCON Pump*.





PROCON clamp-on style pump mounted to carbonator style motor.

For more information about ordering motors, couplings, adapters, clamps and accessories, see *Ordering PROCON Pumps*.

Besides PROCON, motors are available from your local electric motor distributor. NEMA 48YZ and NEMA 56C frame motors are available in 50 and 60 hertz as well as high and low voltage.

NEMA 56C frames are available in single and three-phase models as well as "open drip proof" (ODP), "totally enclosed fan cooled" (TEFC), and "explosion-proof" versions from 0.25 to 3 horsepower.

NEMA 48YZ frames are limited to single phase, open drip construction from 0.25 to 0.5 horsepower.

Pre-Order Questionaire

If you will furnish the following information, our sales engineers will be glad to recommend the model most suitable for your application.

Application of Pump

Fluid

If other than clean tap water give the following information:

Common Name

Viscosity (SSU)

pH

Temperature: Normal °F **Max °F** **Min °F**

Additives to fluid, if any

Capacity

Volume Required: **GPH or** **GPM @** **RPM**

Operating Pressure:

Discharge **Suction Lift of Head**

Options

Mounting Style: Clamp-on style 48YZ frame

Required Elastomer: Buna-N

Housing Material: Brass

Built-in Relief Valve (NOT AVAILABLE IN SERIES 6) Yes No

Built-in Strainer (SERIES 1 ONLY) Yes No

Name **Title**

Company

Address

City **State** **Zip**

Country

Phone **Fax** **E-Mail**

Please Quote On **Units**

*** IMPORTANT ***

Please E-Mail a scanned schematic of system the pump is to be used with. Indicate size of the smallest orifice in system (usually found in solenoid valve).

"QUALITY PRODUCTS - DELIVERED ON TIME"

Ordering PROCON Pumps

When you order a pump, you must include the following elements in your order number:

1. Product Classification
2. Food Grade Classification
3. Series
4. Mounting and Drive Classification
5. Flow Rate
6. Elastomer / Seal Configuration
7. Rotation / Slinger
8. Clearances
9. Valve Type and Configuration
10. Pressure Range (Relief Valve Spring) Configuration

Select the appropriate *Product and Food Grade Classification*

111A100F11AA

The ***first*** character position specifies the Product Category. All PROCON Rotary Vane model numbers will begin with the digit "1".

The ***second*** character position specifies if the pump is NSF Listed for use with potable water. The example model number shown on the left is an NSF Listed product. If it were not, the second digit would be a "0" rather than a "1 ". For more details regarding NSF Listed pumps, please contact the factory.

Select the appropriate *Series number*

11**1**A100F11AA

The third character position specifies the Series Number. There are six series offered within our Rotary Vane Product Line. They are discussed in detail on Pages 8, 9, 10 & 11. The example model number shown on the left is our Series 1 pump (brass housing; 3/8" NPT ports, with an integral strainer).

Select the appropriate *Mounting & Drive Configuration*

111**A**100F11AA

The fourth character position specifies the Mounting and Drive Configuration. The three most common mounting styles are "A", "B" and "C". These and other styles are referenced in detail on **Page 19**.

Select the desired *Flow Rate*

111A**100**F11AA

The fifth through the seventh character positions represent the Flow Rate of the pump. The example model number shown on the left is a 100 GPH pump. The flow rates available range from 15 to 660 gallons per hour.

Select the appropriate *Elastomer/Seal Configuration*

111A100**F**11AA

The eighth character position specifies the type of Elastomer used in the construction of the mechanical shaft seal assembly and o-rings. For most applications Nitrile is appropriate. This seal is appropriate for clean tap water at moderate temperatures. Other options available are Fluorocarbon, Ethylene Propylene and Neoprene

Applications which involve a fluid other than clean tap water at moderate temperatures should be discussed with a PROCON Sales Engineer.

Select the appropriate *Rotation and Slinger Configuration*

111A100F**1**1AA

The ninth character position specifies the Rotation and Slinger Configuration. The majority of pumps manufactured by PROCON operate in a clockwise manner when viewed from the nameplate. Pumps which are designed to operate in a counter clockwise manner are also available.

The slinger is standard in our Series 3 and Series 5 pumps, and is also available as an option in our Series 1, 2 and Series 4 pumps. The example model number shown on the left is a clockwise pump without a slinger. As a general rule slingers are not necessary. If you desire a brass pump with a slinger, please discuss your requirements with a PROCON Sales Engineer.

Select the appropriate *Clearances*

111A100F1**1**AA

The tenth character position specifies the internal Clearances. For pumps operating with fluid temperatures less than 150°F, standard clearances are appropriate so a "1" would be used in this position. Applications which require pumping a fluid between 150°F and 190°F require special clearances (and special seals) so a "2" would be used in this position. Applications requiring elevated temperature capabilities should be discussed with a PROCON Sales Engineer.

Select the appropriate *Valve Type & Configuration:*

111A100F11**A**A

The eleventh character position specifies the Valve Type & Configuration. The operation of the relief valve is discussed in detail on **Page 7** and the different valve types are referenced on **page 19**. The example model number shown on the left has the "A" valve type, which is a by-pass style plastic relief valve. This configuration is commonly used in the beverage industry. The "B" valve type, which is a solid plastic relief valve is appropriate for use in most non-beverage applications.

Select the appropriate *Pressure Range and Pressure Setting:*

111A100F11A**A**250

The twelfth and final character position specifies the Pressure Range. In the example, the spring selected has a possible setting range of 150 to 250 PSI.

Although not officially part of the model number, the three italicized digits following the model number specify the desired relief valve setting. This number will be stamped into the housing for identification purposes. A pump with no relief valve is designated by an "X" in the eleventh and twelfth character positions. (In this instance no setting would be referenced.)

PROCON Model Number Matrix

1 1 1 A 1 0 0 F 1 1 A A 2 5 0

111A100F11AA250 **P**roduct **C**lassification:

1 - Rotary Vane Pump

1**1**1A100F11AA250 **F**ood **G**rade **C**lassification:
1 - NSF Listed
0 - Non Food Grade

***Note**: Brass Pumps are NSF listed for potable water only. Stainless steel pumps are NSF listed for potable water and carbonated water.*

11**1**A100F11AA250 **S**eries**:**

1 - Brass, 3/8" NPT Ports w/Strainer
(Formerly 1300 Series)
2 - Brass, 3/8" NPT Ports (Formerly 1500 Series)
3 - ST STL, 3/8" NPT Ports (Formerly 1600 Series)
4 - Brass, 1/2" NPT Ports (Formerly 2500 Series)
5 - ST STL, 1/2" NPT Ports (Formerly 2600 Series)
6 - ST STL, 1" NPT Ports (Formerly 3600 Series)

111**A**100F11AA250 **M**ounting & **D**rive **C**onfiguration:

A - Clamp-on with .188" Double Flat Drive
(Formerly "CO" prefix)
B - Clamp-on with 1143 Bronze Coupling
(Formerly "CB" prefix)
C - Clamp-on with 1143-2 Plastic Coupling
(formerly "CN" prefix)
E - Bolt-on with single flat drive
(Formerly no prefix all series except 3600)
N - Bolt-on with key slot drive
(Formerly no prefix for 3600 series)

111A**100**F11AA250 **F**low **R**ate:

Series 1, 2, & 3	**Series 4 & 5**	**Series 6**
015 – 15 gph (Formerly “21”)	**115** – 115 gph (Formerly “02”)	**300** – 300 gph (Formerly “05”)
025 – 25 gph (Formerly “22”)	**140** – 140 gph (Formerly “03”)	**360** – 360 gph (Formerly “06”)
035 – 15 gph (Formerly “05”)	**165** – 165 gph (Formerly “04”)	**420** – 420 gph (Formerly “07”)
050 – 50 gph (Formerly “10”)	**190** – 190 gph (Formerly “05”)	**420** – 480 gph (Formerly “08”)
060 – 60 gph (Formerly “09”)	**215** – 215 gph (Formerly “06”)	**540** – 540 gph (Formerly “09”)
070 – 70 gph (Formerly “08”)	**240** – 240 gph (Formerly “07”)	**600** – 600 gph (Formerly “10”)
080 – 80 gph (Formerly “07”)	**265** – 265 gph (Formerly “08”)	**660** – 660 gph (Formerly “11”)
100 – 100 gph (Formerly “04”)	**330** – 330 gph (Formerly “39”)	
110 – 110 gph (Formerly “32”)		
125– 125 gph (Formerly “33”)		
140 – 140 gph (Formerly “34”)		

111A100**F**11AA250 **E**lastomer / **S**eal **C**onfiguration**:**

F NITRILE / TYPE 21 SEAL
(Formerly No Suffix)

G ETHYLENE PROPYLENE / TYPE 21 SEAL
(Formerly "E" Suffix)

R FLUOROCARBON / TYPE 21 SEAL
(Formerly "V" Suffix)

S NEOPRENE / TYPE 21 SEAL
(Formerly "Z" Suffix)

111A100F**1**1AA250 **Rotation / Slinger:**

Counterclockwise rotation cannot be obtained in Series 1 Pumps (Integral Strainer)

1 – Clockwise
(Formerly No Suffix for 1300, 1500, 2500, & 3600 Series)

2 - Counterclockwise
(Formerly "R" Suffix for 1500 & 2500 Series)

3 - Clockwise / Slinger
(Formerly No Suffix for 1600 & 2600 or "K" Suffix)

4 - Counterclockwise / Slinger
(Formerly "R" Suffix for 1600 & 2600 Series or "KR" Suffix)

111A100F1**1**AA250 **Clearances:**

1 - Standard Clearance

2 - Special Clearance (Formerly "F" Suffix)

111A100F11**A**A250 **Valve Type & Configuration:**

A Plastic, bypass (SS HSG Seat)
(Formerly No Suffix or "M" Suffix)

B Plastic, Solid (SS HSG Seat)
(Formerly "X" or "XM" Suffix)

C Plastic, Balanced Bypass (SS HSG Seat)
(Formerly "B" Suffix)

D Plastic, Balanced Solid (SS HSG Seat)
(Formerly "BX" Suffix)

F Plastic, EXT ADJ Bypass (SS HSG Seat)
(Formerly "P" or "PM" Suffix)

G Plastic, EXT ADJ Solid (SS HSG Seat)
(Formerly "PX" or "PXM" Suffix)

X No Relief Valve
(Formerly "A" Suffix)

111A100F11A**A**250 **P**ressure **R**ange (Relief Valve Spring):

For the beverage industry, the default relief valve pressure setting is 250 psi.

A 151 - 250 psi, Default Setting 170 psi
(Formerly no Suffix)

B 100 - 150 psi, Default Setting 130 psi
(Formerly "L" Suffix)

C 60 - 99 psi, Default Setting 99 psi
(Formerly "H" Suffix)

D 30 - 59 psi, Default Setting 50 psi
(Formerly "D" Suffix)

X No Setting

111A100F11AA**250** **P**ressure **S**etting (**R**elief **V**alve):

Setting For Relief Valve Pressure in PSI (Pounds Per Square Inch).

Note: *The Relief Valve Pressure Setting is not part of the Model Number. This number is for customer reference.*

Mounting Accessories Series 1, 2, 3, 4 & 5

Mounting Accessories – Series 1, 2, 3, 4 & 5 Pumps

If you are using a NEMA 48YZ motor, you should order clamp-on pumps. Order these parts to mount your pump to the motor. The parts that are indicated as "service parts" come standard with new pumps and are also available as replacement parts.

To Order This Part	Use This Number
PROCON 100 mesh strainer (service part, Series 1)	1138
PROCON metal coupling (service part for "B" Mounting Config.)	1143
PROCON plastic coupling (service part "C" mounting Config.)	1143-2
PROCON V-band clamp	1113

If you are using a NEMA 56C frame motor, you should order bolt-on pumps. Order these parts to mount your NEMA 56C motor. PROCON does not supply fasteners for Series 1, 2, 3, 4, & 5.

To Order This Part	Use This Number
PROCON three piece drive shaft coupling	3045
PROCON pump / motor adapter	1048-1C

Mounting Accessories - Series 6 Pumps
Series 6 pumps work only with a NEMA 56C frame motor.

To Order This Part	Use This Number
PROCON three piece drive shaft coupling	3206-1
PROCON pump/motor adapter	3207
PROCON shaft key	3208
fasteners for adapter and pump	3216

Motor Applications

NEMA 48YZ FRAME

clamp-on carbonator motor, single phase, open drip proof

To Order This Part	Use This Number
1/4 hp, 60/50 hertz, 220-240 volts	859
1/4 hp, 60/50 hertz, 115 volts	803
1/3 hp, 60/50 hertz, 100-120/200-240 volts	828
1/3 hp, 60 hertz, 115 volts	806
1/2 hp, 60/50 hertz, 100-120/200-240 volts	871
3/4 hp, 60/50 hertz, 115/230 volts	872

NEMA 56C FRAME

frame bolt-on motor, 60/50 hertz, TEFC

To Order This Part	Use This Number
1 hp, single phase, 115/208-230 volts	849
1.5 hp, single phase, 115/208-230 volts	850
2 hp, single phase 115/208-230 volts	851
1 hp, three phase, 208-230/460 volts	844
1.5 hp, three phase, 208-230/460 volts	845
2 hp, three phase, 208-230/460 volts	846

Piping Layout

Suggested Piping Layout For PROCON Pumps

Notice

Your pump can be ruined or its service life shortened if it does not meet these operating conditions at all times.

See Intake (A)

Pumps must have a fluid supply to the pump inlet greater than the pump's flow rating.

Fluid must be compatible with the pump materials.

Fluid must not contain any particles.

Pump must not operate above its rated discharge pressure.

Fluid flow should not stop suddenly while the pump is running.

Operating pressure should be 50 psi below PROCON's relief valve setting.

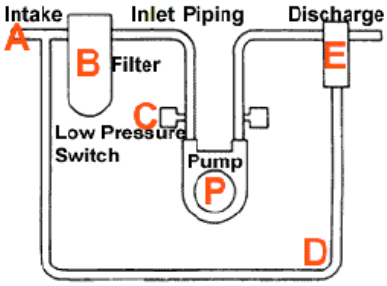
Applications with operating temperatures above 150° F require oversized inlet piping.

If using compressed air to purge the pump of fluid, install a coalescing filter in the air system to prevent contaminated air from entering the pump.

We suggest that you use the precautionary measures and piping layout that follow. This layout promotes a long, trouble-free life for your pumps.

Filters

If particles may contaminate the fluid, use a particle filter (B) that is capable of filtering particles larger than 125 microns. If the particles are abrasive, use a filter that is capable of removing virtually all of the particles.



(See: Low Pressure Switch (C)
If the pump may possibly experience insufficient fluid supply (low flow rate), install a pressure suction switch to prevent cavitation. This switch should be mounted or ported close to the pump inlet. Series 1, 2, 3, 4 & 5 pumps may operate with as much as 6 feet of suction lift, with the exception of the 330 GPH models, which require a minimum of 20 PSI inlet pressure. Series 6 pumps must have positive inlet pressure.
If the inlet pressure falls too low while the pump is operating, the switch will shut the pump motor off. By shutting the motor off, this switch helps protect the pump from cavitation due to insufficient fluid supply or a plugged filter.

Inlet Piping

The inlet piping (A) should have a minimum interior diameter of:

(See Diagram)

3/8 inch for Series 1,2, & 3 pumps.

1/2 inch for Series 4 & 5 pumps.

1 inch for Series 6 pumps.

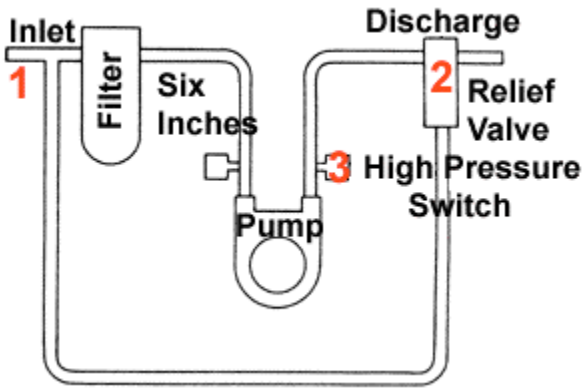
As shown in the diagram to the left, by-pass flow (D) is directed to the inlet feed line (A). However, if your system is operating from a feed reservoir, we recommend by-passing any flow of the relief valve (E) directly back into the reservoir, rather than back into the inlet feed line. If the inlet feed line is used, introduce the by-pass flow at least 12 inches upstream of the pump inlet port.

See Diagram below

1 Make sure there is at least 6 inches of piping between the pump inlet and any "T-fitting," elbow, or system component to minimize turbulence. The piping should be made from a material that does not corrode or shed particles. A flexible hose of plastic, copper or stainless steel are good choices, among others. Be sure no joint compound or tape falls into the inlet of the pump.

2 If it is possible that the pump in your system may experience a sudden blockage of the discharge, then a customer supplied external relief valve should be installed on the discharge line and set to a maximum of 250 psi.

At a setting of 250 psi or less, the relief valve should prevent sudden over-pressurization. If the discharge becomes blocked, the relief valve will bypass the fluid from the discharge line back to the reservoir or inlet line. Piping length should be long enough to allow heat dissipation and prevent the pump from overheating.



SOLENOID VALVES

If you use solenoid valves in conjunction with PROCON pumps, take the following precautions to prevent serious over / under pressurization.

If you can incorporate a time delay into the control circuit to turn of the pump motor and allow it to stop prior to the closing of the solenoid valve, then you can put the solenoid valve on either the inlet or the discharge of the pump. Also, the time delay should allow time for the solenoid valve to fully open prior to starting the pump motor.

If a time delay is not possible, locate the solenoid valve on the discharge side of the pump downstream of the relief valve.

3 If it is possible that the pump in your system may experience too much discharge back pressure, install a pressure switch set to 250 psi.

Mount or port this pressure switch close to the pump outlet. If the outlet pressure rises too high while the pump is operating, the switch will shut the pump motor off. By shutting the motor off, this switch will help protect the pump from over-pressurization.

Installing Your PROCON Pump

Your **PROCON** Pump is a precision-built piece of equipment. Handle it carefully. **PROCON** Pumps should be installed only by qualified technicians.

NOTICE

When you install your pump, follow these guidelines:

- Do not hammer or mishandle your pump.
- Keep all foreign materials out of your pump.
- Never vise or grip the round body portion of the pump housing. Grip only the square inlet/outlet bosses when you install fittings. Always support the pump when you install fittings to avoid bending the V-clamp even if the pump is already mounted on the motor.
- Make sure the power is off before working with an electric motor. If possible, lock out the power at a disconnect.
- Make sure you have an adequate, well-lit work space and use the correct tools.
- Do not use any components that are damaged or deformed. You should not have to force any parts together. If you receive parts that are damaged or deformed, call your **PROCON** factory representative.

We test every **PROCON** Pump at the factory for pressure and flow. If the pump has a relief valve, we set it to your specifications.

CAUTION

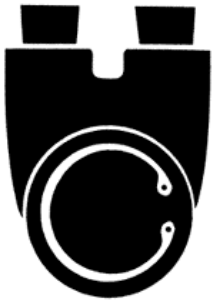
Do not tamper with the relief valve on your pump. If you think the relief valve needs to be reset, contact your PROCON factory representative.

We make every effort to ensure your pump is of the highest quality. To get the most out of your pump, READ AND FOLLOW THESE INSTRUCTIONS CAREFULLY.

Examining Your Pump

For All Motors - examine your pump before starting

Before you install your pump, you must carefully unpack the pump and examine and prepare it to be installed. Follow these steps for all types of motors.



Do not remove the shipping plugs from the ports at the top of the pump until time to install fittings.

NOTICE

Do not exchange one pump model for another. Pumps are carefully engineered to meet specific requirements and flow rates.

All pumps within a series have the same housing. They look alike, but they perform differently. Check the model number to make sure you have the correct pump before you install it.

Using the wrong pump may damage your pump, your system, or your electric motor

1. **Take the pump out of its shipping container.**

- DO NOT remove the shipping plugs from the port until the fittings are ready to be installed. This will keep debris out of the pump.

- If the pump has a shaft coupling, remove the coupling and discard the foam shipping strip. Reinsert the coupling.

- Be careful when handling the pump; do not drop it or bang it. If you mishandle the pump, especially the shaft end, you can disrupt or damage internal clearances and impair performance of your pump.

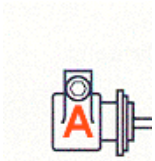
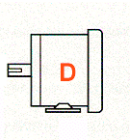
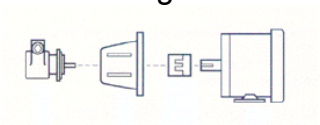
2. Examine the mounting surfaces.

Carefully remove any burrs or raised metal which may have occurred during unpacking and handling to make sure the pump will sit and be aligned properly.

Now you are ready to mount the pump to a motor. PROCON Pumps work with two types of electric motors - - a carbonator style motor (NEMA 48YZ frame) and a C-frame motor (NEMA 56C frame).

Mounting 56C

Mounting Your Pump On A 56C Frame Motor

You should have these Parts:	Correctly assembling the coupling and the mounting pump is a trial and error process. You may have to try several times before you get it right. Follow these steps after you have examined your pump.
 **Bolt-on PROCON Pump**  PROCON Motor Adapter  3-piece drive shaft coupling  56C Frame Motor Mounting Order 	1. Mount the drive shaft coupling. a. Make sure the motor is electrically disconnected and cannot accidentally turn on. b. Mount the half of the coupling for the motor onto the motor shaft and tighten the set screw. c. insert the elastomer piece onto the motor piece. d. Mount the half of the coupling for the pump onto the pump shaft, but do not tighten the set screw. Make sure the coupling (C) slides easily onto the pump (A) and the motor shaft - do not force it. Make sure the shaft does not protrude into the space occupied by the elastomer piece. Series 6 pumps require a shaft key. 2. Mount the motor adapter (B) onto the motor using four 3/8" dia. by 1 inch long bolts (16 threads/inch) and lock washers. Rotate the pump to orient the inlet / outlet ports as desired. 3. Trial mount the pump (A) onto the motor adapter (B) while simultaneously engaging the coupling pieces (C). 4. Check to make sure the coupling (C) is properly engaged.

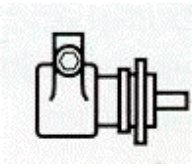
	5. Tighten the set screw on the pump coupling half. 6. Check your assembly. The elastomer coupling piece should have 1/16 inch of play between the two metal pieces. If it does, go to Step 7. If it does not, repeat steps 1 through 5, until the assembly is correct. 7. Fasten the pump (A) to the adapter (B) using three 1/4 inch dia. by 3/4 inch bolts (20 threads/inch) and lock washers. For Series 6 pumps, use two 3/8 inch dia. by 1 inch bolts (16 threads /inch). 8. Check to make sure your motor rotates correctly. Motor rotation must correspond to the arrow on the nameplate of the pump.

Mounting 48YZ

Mounting Your Pump On A 48YZ Frame Motor

You Should Have These

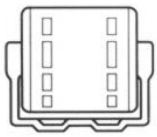
Clamp-On PROCON Pump



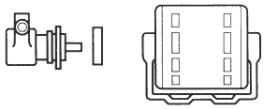
V-Band Clamp

48YZ

Frame Motor



Mounting Order



1. Make sure motor is electrically disconnected and cannot accidentally turn on.

2. Slip the V-band onto the motor ring flange.

3. Mount the pump to the motor by inserting the tang (shaft) of the pump into the slot on the motor.

4. Rotate the pump to orient the inlet / outlet ports as desired.

6. Make sure the clamp is fully seated around the entire circumference of the pump and motor flanges.

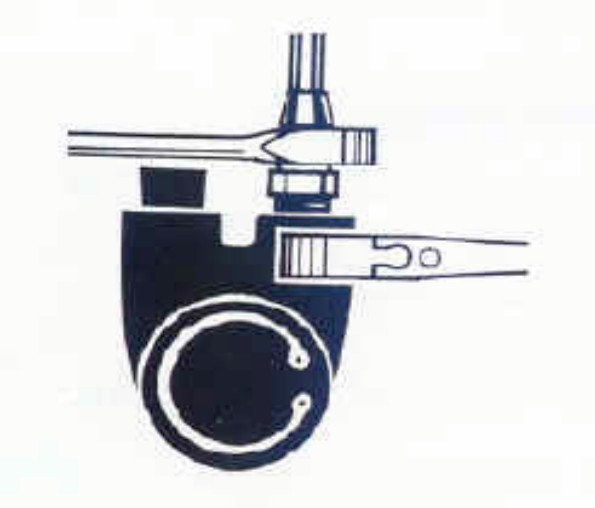
7. Tighten the V-band clamp using 15 to 30 inch-pounds of torque.

NOTE: Do not over tighten the clamp. The V-band clamp is designed to support the pump and fittings only. Loads caused by rigid plumbing or heavy attachments may result in misalignment.

Install The Plumbing

For ALL MOTORS - Installing The Plumbing

When you finish mounting your pump on a motor, you must install the plumbing for the pump. Follow these steps after you have mounted your pump.



Use a backup wrench on the square port boss to support the pump.

1. Install the inlet and outlet fittings.

Support the pump by using a backup wrench on the square port bosses. Do not put any strain on the V-band clamp.

Use brass fittings or plastic fittings on a brass pump. Use stainless steel or plastic fittings on a stainless steel pump. Using dissimilar metals can cause corrosion, which may get into the pump and cause damage.

Use Teflon thread tape to install the fittings. Do not let any thread tape get into the pump and do not over-tighten the fittings.

2. Check the inlet line.

Make sure that the inlet line is big enough to allow adequate flow to the inlet port of the pump (3/8 inch internal diameter for Series 1, 2, 3; 1/2 inch internal diameter for Series 4&5; 1 inch internal diameter for Series 6; all elevated temperature applications above 150º F must have oversized inlet piping).

Make sure the inlet line is clean and properly flushed out. Protect the pump with a 100 mesh or finer strainer or filter.

3. Connect the inlet line to the fitting on the pump.

4. Connect the outlet line to the fitting on the pump.

Troubleshooting Tips

WARNING: Before you try to work on the pump or the system, turn the motor off and disconnect the power to the motor.

Possible Cause	Possible Solution
Pump Is Working Below Capacity	
Inlet is clogged or restricted	Clean out the inlet line. If you have an inlet filter or internal strainer, clean it (replace it if more than 20% clogged). Do not allow debris to fall into pump from filter.
Internal strainer is clogged or restricted	
Pump is rotating in the wrong direction	Change motor rotation by properly rewiring it.
Low motor RPM	Check your motor to make sure it is working properly and that it is wired for the voltage and frequency (50 or 60 HZ) that you are using. (See motor specifications plate.)
Inside the pump is wearing out, caused by foreign or abrasive materials getting into the pump.	Have the pump rebuilt by PROCON. To prevent future failures, make sure you have an adequate filter on the inlet line.
Relief valve setting is incorrect	Contact your PROCON representative about having the relief valve reset.
Pump Is Leaking	
Mechanical shaft seal or rubber O-ring is failing	Have the pump rebuilt by PROCON
Relief valve cap or strainer cap is loose	Tighten the cap on the relief valve or strainer**.**
Relief valve cap or strainer cap O-ring or gasket are damaged	Relief valve cap or strainer cap O-ring or gasket are damaged
Inlet or outlet port fittings are loose or sealant failed.	Apply joint compound or tape and reinstall the fittings. Do not allow sealant to fall into the pump.
Pump Is Noisy	
Inlet is clogged or restricted - internal strainer is clogged or restricted	Clean out the inlet line. If you have an inlet filter or internal strainer, clean it (replace it if more than 20% clogged). Do not allow debris to fall into pump from filter.
Acorn nut on relief valve or strainer cap is loose.	Tighten the acorn nut on the relief valve or the strainer cap.
Gasket or O-ring on the acorn nut or strainer cap is defective.	Replace the gasket or the O-ring on the acorn nut or the strainer cap. Do not tamper with the relief valve setting. Contact PROCON for parts.

WARNING: Before you try to work on the pump or the system, turn the motor off and disconnect the power to the motor.

Possible Cause	Possible Solution
Pump Is Leaking (Continued)	
Coupling, mounting bolt, or V-clamp is loose	Turn off the motor and disconnect the power to the motor. Remove the pump from the motor. Then, remount the pump onto the motor, making sure you align it properly.
The pump and motor are misaligned.	Turn off the motor and disconnect the power from the motor. Remove the pump from the motor. Then remount the pump onto the motor, making sure you align it properly.
Motor is stalling or overloads are tripping out	
The pump and the motor are misaligned.	Turn off the motor and disconnect the power to the motor. Remove the pump from the motor. Then remount the pump onto the motor, making sure you align it properly.
Lime and mineral deposits in the pump are causing internal binding	Have the pump rebuilt by PROCON
Motor may be defective	Contact your motor supplier.
Motor may be wired for wrong voltage	Check wiring against wiring diagram supplied with the motor.

Doing Business With Procon

PROCON is a factory direct manufacturing company that provides new pumps and remanufactured pumps with a core exchange. We do not sell remanufactured pumps without a core exchange. We require a minimum order of $25.

Payment Terms

Before we can approve an open credit account for you, you must fill out a credit application. We will verify your payment history from several sorces. This process usually takes 4 to 6 weeks. If you want open credit, please contact PROCON early to start the process.

Within approved credit limits, you must pay within 30 days after you buy a new pump and within 10 days after we rebuild a pump for you.

We offer other options for paying, including:

- wire transfer
- cash in advance
- cash on delivery (COD)
- confirmed irrevocable letter of credit, and
- sight draft.

Contact your PROCON factory representative for more information about these options.

Sales Tax

If you are not obligated to pay sales tax to PROCON, please mail or fax an executed resale form to PROCON, as required by your state. Otherwise, we may have to collect your state's sales tax or delay shipment of your order.

Buying New Pumps

You may buy our pumps, motors, and accessories directly from the factory. Pricing is based on quantity discounts. We build all pumps to order and normally ship small orders within 5 to 9 working days. You can place orders individually or combined as part of a 12-month blanket order in keeping with PROCON's blanket order policy. Contact your PROCON factory representative for more information about the blanket order policy.

Order By

Mail & Shipping:

Procon Products
910 Ridgely Road
Murfreesboro, TN 37129-2790
USA
Phone (615) 890-5710
Fax (615) 896-7729
mail@proconpump.com

PROCON will acknowledge every order in writing. Please carefully review the Acknowledgement Form. The terms and conditions of sale on the Acknowledgement Form supersede any terms and conditions you may have on your purchase order.

Returning Pumps

PROCON may accept unused pumps returned for credit subject to a 15% restocking charge within 6 months of invoice date, a 40% restocking charge within 7 to 12 months of invoice date, and a 70% restocking charge within 13 to 36 months of invoice date. No credit will be given on merchandise after 36 months. Returns must be received in good condition. Contact PROCON sales staff prior to returning pumps.

Rebuilding Used Pumps

PROCON provides fast, low-cost rebuilding service for your pumps. PROCON also offers the alternative of using an Authorized Factory Rebuilt Exchange Center Rebuilt pump performance is similar to new pump performance. PROCON provides a 12 - month limited warranty for rebuilt pumps.

Send Only The Pumps

When you return pumps for rebuilding, please send only the pumps. Do not send us any gauges, fittings, motors, or couplings. PROCON is not responsible for returning these accessory items to you.

Pack Them Carefully

Pack the pumps carefully and individually to prevent them from abrading, rubbing, or hitting against each other during shipment. Improper packaging can damage the pump housing so seriously that we may be unable to rebuild the pump.

Check Your Acknowledgement Form

When we receive your pumps, we will send you an Acknowledgement Form. Make sure you agree with what we write on the form. We use the information on this form to bill you. Because our rebuilding charges are based on quantity as well as the model number and because we cannot determine which pumps can be rebuilt before we inspect them, we cannot compute your charges in advance. Any advance quotes we give are only our best estimates and are subject to correction

Some Pumps Cannot Be Rebuilt

Most pumps are rebuilt and shipped in 5 to 9 working days after we receive them. Housings that are too damaged to be rebuilt will be returned to you marked as "damaged beyond rebuilding", as they are not acceptable as a core exchange.

We Can Do Rush Jobs

If you have a special circumstance and are willing to pay for next day air shipment, we will rebuild your pumps quickly. When you send us your pumps, attach a note telling us that you will pay for next day air shipment.

PROCON maintains complete rebuilding facilities at our Murfreesboro factory and at our sister plants in Krefeld, West Germany; Mountmellick, Ireland; Melbourne, Australia; and Tokyo, Japan.

See locations for address information.

Exchange Centers

To help you get the pumps that you need, we have established PROCON Pump Exchange Centers throughout the United States. While PROCON does not own these centers, we work with them to maintain stocks of factory-rebuilt pumps in the more popular models. The centers can offer you immediate exchange on an inoperative pump or a rebuilt pump of a similar model. Series 1, 2, and 3 pumps are usually available. You can deal directly with the factory, if you prefer.

Service Life Of PROCON Pumps

PROCON pumps are designed to provide long, trouble-free service. You need to rebuild or replace your pump if it leaks or does not build pressure or flow. In fact, as long as the pump housing is not damaged, it can be used as a core exchange, and you may purchase a remanufactured pump. The Service Life of a rebuilt pump is similar to that of a new PROCON pump.

Summary Of Warranty

New and factory-rebuilt PROCON Pumps are warranted to be free of defects in workmanship and materials for one year from the date we ship them to you. PROCON will rebuild or replace the pump free of charge if failure is due to defects in material or workmanship within the warranty period. New pumps manufactured after November 1993 are warranted to be free of defects in workmanship and materials for two years from the date that we ship them to you. Please read your *Complete Warranty Document* carefully because it is a legal document and a limited warranty. Final judgement of warranty claims is made by PROCON. We will rebuild or replace inoperative pumps if they are returned intact, freight prepaid, and our inspection substantiates the claim. If anyone other than PROCON personnel opens the pump for any reason, the warranty is void.

Please note that our warranty does not cover damage caused if you operate the pump improperly. For information about specific operating limitations see:

Suggested Piping Layout for PROCON Pumps
Installing your PROCON Pump

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