

SERIES 'G' PUMP

OPERATOR'S MANUAL

AND PARTS LIST

for Self-Priming Centrifugal Pumps

with built-in basket strainer

Before reading or using this manual be certain of the materials of construction of your pump. Check the model number label on the pumps as follows: NORYL pumps have model numbers beginning with GNOK and price codes beginning with 60-6. NORYL pumps have a basket strainer molded of polypropylene. RYTON pumps have model numbers beginning with GRYK and price codes beginning with 60-8. RYTON pumps have a basket strainer and volute plate molded of ECTFE.

! SAFETY WARNING !

Verify the chemical compatibility of the materials of your pump with the liquid you want to pump. If you are uncertain regarding chemical compatibility contact your dealer for applications assistance and request a copy of our Corrosion Resistance Charts. Do not use a pump that is not chemically compatible with the liquid you intend to pump or serious bodily injury, death, fire, explosion or environmental damage could result.

OPERATORS MANUAL FOR SELF-PRIMING CENTRIFUGAL PUMPS

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PLEASE READ SECTIONS I, II AND III BEFORE OPERATING PUMP

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WARNING



- A. Never use these pumps for pumping flammable liquids such as gasoline. **An explosion and serious injury may result if this warning is ignored.**
- B. In pumping corrosive materials, extreme caution should be exercised. Provide safety guards, ventilation, and drains to protect people and property in case of a leak in the pump. Handling instructions from the manufacturer(s) of the liquids being pumped should be closely followed.
- C. Before starting the pump, follow all of the instructions in this manual and any supplemental instructions supplied with the pump.
- D. Any person operating this pump and its power unit should be fully aware of its safe operation before they start using it.
- E. Never operate an engine driven unit in an explosive atmosphere, near combustible liquids, or where insufficient ventilation exists unless specific provisions have been made regarding the power unit so as to prevent possible injury and damage. Be certain any other power unit is safe for the area in which it is to be operated.
- F. Always be sure that the unit is on a secure footing and keep the immediate pump and power unit area free of all unauthorized personnel. If the pump is sitting beside a pit, be sure it is well anchored so that it does not fall into the pit.
- G. Never operate the unit with any guards removed.
- H. With engine driven pumps:
 - 1. Observe all safety precautions for the handling of fuel.
 - 2. DO NOT remove fuel cap nor fill fuel tank while engine is hot or running. **Always allow engine to cool at least two minutes before refuelling.**
- I. Before working on this pump make sure that the power unit cannot inadvertently be started.
- J. Be sure that the power unit, pump, wiring and piping installations are suitable for the liquid being pumped, and comply with all applicable codes and regulations.
- K. Do not use torches or apply fire or flames to this pump for any reason.
- L. This pump must not be subjected to more than 40 pounds per square inch internal pressure. The pump itself, normally cannot develop more than 30 pounds per square inch pressure. The pump must *not* be used under any of the following unusual which can result in excessive pressure being developed.
 - 1. Pump shaft speed over 3600 RPM.
 - 2. Quick closing valves in suction or discharge line
- M. Do not overtighten the drain plugs. Hand tighten only. Excessive force may damage the threads or pump body. Do not use metal plugs.
- N. Use at least one foot of flexible hose to make plumbing connections to the body. Rigid piping may put stresses on the pump, causing damage. If rigid piping must be used, properly support it so as to eliminate stresses on the pump.
- O. Do not tighten inlet and discharge fittings more than one turn beyond hand tight. Excessive force will damage the pump fitting.
- P. Be sure strainer cover and drain plugs and their respective o-rings are securely in place prior to starting pump. **HAND TIGHTEN ONLY.**
- Q. Long suction and discharge hoses must be supported so that the weight of the hose filled with liquid does not damage the pump.
- R. Use replacement parts supplied by the manufacturer only.
- S. Do not run the pump dry. Always fill the pump body with the liquid to be pumped before starting the pump. It is not necessary to drain the pump body after use, *unless* there is danger of freezing, settling of solids, or crystallization.
- T. Do not restrict the flow through the pump such as with a closed discharge valve or "starved" suction line. Harmful heat build up will result. If it is necessary to restrict flow through the pump for longer than 5 minutes, either the pump must be stopped, or a discharge bypass line installed to keep liquid temperatures below the maximum recommended operating temperatures.
- U. Do not subject pump to solvents or extreme conditions of acidity or basicity. Consult factory for specific recommendations concerning chemicals and temperature.

II. PREPARING THE PUMP FOR OPERATION

A. Pump Preparation

- 1. Inspect the unit for shipping damage immediately upon receipt and before signing for merchandise. If any visible damage exists, note the damage on shipping of lading or receiving document(s) *before* signing.
- 2. Read these instructions and the power unit instructions until you are sure you can operate the pump safely and correctly.

Also notify your dealer or distributor immediately of any damage to the shipment.

B. Power Unit Preparation - Gasoline Engines

1. For complete operating and maintenance information consult the engine manufacturer's instructions included with the pump.
2. Before starting, fill crankcase with oil specified by the engine manufacturer. Use a high quality detergent oil classified for service SE, SF or SG. Do not add anything to the recommended oil.
3. Before starting, fill fuel tank with clean, fresh, unleaded automotive gasoline. *Do not* mix oil with gasoline. Refer to engine manufacturer's operating manual for further instruction.

CAUTION: Always remove spark plug wire before working on unit to prevent accidental starting.

CAUTION: The engine governor is set at the factory. Do not tamper with any part which may increase the governed engine speed. Pump may be damaged.

C. Power unit preparation - Electric motors:

1. Make certain the input power to your electric motor is proper, single phase or three phase, and is of the proper voltage according to the motor specification plate.

2. *Be sure of proper motor rotation.* Pump impeller should rotate counterclockwise, looking from the suction inlet side. For single phase motors consult the motor manufacturer's instructions for wiring for counterclockwise rotation. Three phase motor rotation may be reversed by interchanging any two of the three power leads.
3. Make certain that wiring for your electric motor and motor starter complies with all existing local codes.

D. Power unit preparation - Pneumatic motors:

Consult the separate instruction sheet supplied with each motor.

Power requirements:

NOTE: For liquids having specific gravities greater than 1.0, increase the rated horsepower (from catalog) by a factor equal to the specific gravity of the liquid being pumped. (Ex. Catalog HP X Specific gravity = Actual HP required.)

III. PUMP OPERATING INSTRUCTIONS

- A. Fill the pump body with liquid before starting. Do not run the pump dry; damage to the seal may result. There are no points on the pump which need lubrication. The shaft seal is self lubricating, and designed to handle clean liquids.
- B. Make certain that all hose and pipe connections are airtight. **IMPORTANT:** An air leak in the suction line may prevent priming, and will reduce the capacity of the pump.

- C. Always place the pump as close to the liquid to be pumped as possible. Keep all lines as short and straight as possible. Avoid sharp bends in hoses. Keep the pump on a level foundation.
- D. Drain the pump body whenever there is a danger of freezing.
- E. Always flush out the pump at the end of operation if the liquid being pumped may leave a solid or sticky residue in the pump. If this is not done, damage to the pump may result.

IV. PUMP TROUBLE SHOOTING AND REPAIR

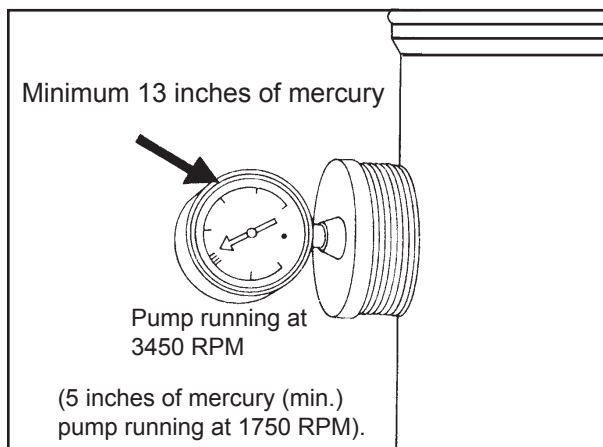
DIAGNOSIS:

A. Does not prime or does not pump

TREATMENT:

1. Fill the pump with clean liquid and try priming again.
2. Be certain that there are no kinks, closed valves or other blockage in the discharge and suction lines.
3. **SHUT OFF POWER SOURCE TO PUMP.** Shut off valves to and from pump. While observing all safety precautions for the liquid being pumped, disconnect suction and discharge lines and drain the pump completely. Fill the pump with water. Install a vacuum gauge in the suction port (see figure 4). Turn on power source. Vacuum should exceed 13" of mercury when pump shaft is rotating at 3450 RPM and should equal or exceed 5" of mercury with pump shaft at 1750 RPM. If vacuum is below these values, check the following:
 - a. Leak at suction.
 - b. Pump rotation. Impeller should rotate counterclockwise when viewing through suction end.
 - c. Pump speed. (Maximum vacuum performance drops off rapidly with decreasing RPM.
 - d. Check for worn impeller, volute plate, and/or volute. If necessary, replace these parts. (See items 8, 8.A & 8.B of section V).

A. Does not prime or does not pump (cont.)



- e. Loose strainer cover (item 9). **HAND TIGHTEN ONLY.**
- f. Damaged or missing strainer cover o-ring (item 10). Replace.
- g. Loose drain plug (item 26) on strainer housing. **HAND TIGHTEN ONLY.**
- h. Damaged or missing o-ring (item 27) on strainer housing drain plug. **REPLACE.**
- i. Loose housing screws and nuts (items 14 and 23). Tighten until housing halves meet. **DO NOT OVER-TIGHTEN.**
- j. Damaged, missing or pinched volute plate o-ring (item 15). Remove and re-insert. If leakage persists, replace per assembly instructions. See section V.
- k. Worn shaft seal. (See exploded view drawing for item # 29-31)
4. If pump suction tests ok, attach suction line and check suction at end of suction line. Failure to get suction here indicates leaking connections, leaking hoses, pipes or obstructions in the lines. Liners of suction hose will occasionally collapse inside the hose.

B. Pump has insufficient flow.

1. Check same items as in 1,2,3 and 4 above.
2. Replace any worn or broken components; check clearance between impeller vanes and volute face. (See Section V paragraph C.8).
3. Correct RPM is indicated on motor nameplate. Check as follows:
While the pump is running, *slowly* close off the discharge valve(s) so that there is no flow. A pressure gauge located between the pump and the valve(s) should give one of the following pressure readings, depending upon the HP of your pump and when RPM's are at 3450:

Impeller	Pressure	Impeller	Pressure
58-0617(A)	8 psi	58-0619(C)	24 psi
58-0618(B)	20 psi	58-0620(D)	30 psi
		58-0621(E)	30 psi

If you obtain the proper pressure reading for your pump, then the motor is operating at the correct RPM. If you do not obtain the proper pressure continue on:
Shut off power source. Open terminal access plate on motor and double check wiring for correctness and proper motor rotation. If wiring checks out OK, (with power still off) rotate the motor shaft while feeling and listening for rubbing or obstructions. If rubbing is evident in pump, re-shim per paragraph "C.8." of section V. Remove any obstructions. Check again by hand and re-start. If motor still seems slow, remove it and take it to a reputable motor repair shop for evaluation.

4. Check strainer for clogging.
5. Check for excessive suction lift or long suction pipe. Move pump closer to liquid source if necessary.

C. Low pressure and low flow rate.

1. See item #3 above.
2. Clean basket strainer
3. Check for obstruction in suction line

D. High pressure but low flow rate.

1. Check for obstruction or restriction in discharge line.

E. Pump operates but with steadily reduced capacity after long term use.

1. Worn impeller, volute plate or volute caused by vacuuming of abrasive materials, sand, or other small objects. Replace above components after inspection. Use the parts list in this manual for replacement part ordering. See section V, paragraph C.8.

F. Pump suddenly stops, fuse on panel blows or circuit breaker opens.

1. **Do not replace fuse or close breaker. Shut off power source to pump before proceeding further.** Shut off valves to and from pump and drain liquid. (Check for electric short circuit in motor power feed.) Remove strainer basket and look into impeller area for obstruction or damaged impeller. If no obstruction or damage is evident, check rotation of impeller. Fill pump with clean liquid, replace basket strainer and cover. Open valves. Only after the above procedure and any other necessary repairs should you replace the fuse or close the circuit breaker. When pump runs again, test for excessive heat build-up in motor. This would be an indication of impending failure requiring the attention of an experienced motor repair facility.

V. PUMP DISASSEMBLY AND REPAIR

The following assembly and disassembly instructions are oriented toward close-coupled models for convenience. The same instructions apply to pedestal mounted models. **NOTE:** "Item #" refers to exploded view drawing on the last page. Basic pump maintenance should involve little more than cleaning the filter basket periodically and maintaining a clear dry area around the motor. Should a pump require service, the following procedure should be followed:

A. REMOVING THE PUMP FROM SERVICE

Shut off electric supply and disconnect motor. Shut off all valves to and from the pump (this is mandatory in all below liquid level installations). Remove **both** drain plugs and their o-rings (items 26 & 27). Disconnect suction and discharge fittings. Allow pump body to drain.

B. DISASSEMBLY AND REPAIR OF PUMP

(For motor repairs, disassemble pump from motor as below and consult motor repair facility.) Prepare a clean surface for disassembly and part layout.

1. Remove two nuts, washers and bolts (items 23, 24 & 25) holding pump to base. Remove motor strap (item # 18).
2. Remove ten strainer housing screws and nuts (items 14 & 22). Remove and protect strainer housing (item 13). Strainer cover and o-rings (items 12, 9 & 10) may remain assembled to prevent damage.
3. Remove volute plate (item 16) and the related o-ring (item 15), lubricate o-ring with vegetable oil only and store in protective container (plastic bag, etc.)... **KEEP CLEAN.**
4. Remove impeller screw (item 34) and the screw o-ring (item 35). Remove the impeller (item 33). The impeller is keyed onto the motor shaft, however, the key is molded into the impeller and is not a separate part. If the impeller does not pull off easily, insert two screw drivers - one on each side of and behind the impeller 180 degrees apart - and gently pry the impeller off the shaft. **NOTE:** Early models of the pump used a threaded impeller. These models are

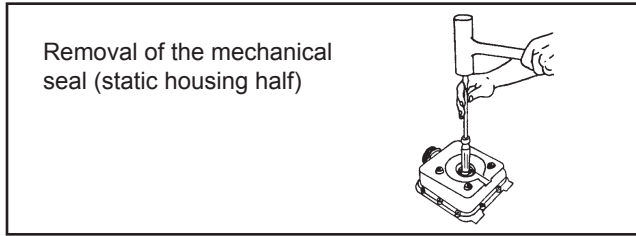
easily identified by the absence of an impeller screw (item 34) in the end of the impeller hub and its accompanying o-ring (item 35). These impellers may be screwed off the shaft in a counterclockwise rotation when viewing the front (vanes) of the impeller.

IMPORTANT

IMPELLER shims (item 6), ARE NOW EXPOSED AND MUST BE REMOVED, COUNTED AND STORED UNTIL RE-ASSEMBLY. SAME AMOUNT OF SHIMMING MUST BE REPLACED WHEN RE-ASSEMBLING PUMP. NOTE THAT SHIMS MAY BE OF VARIOUS THICKNESS.

5. Remove the two (2) volute o-ring segments (items 8A & 8B), wipe with vegetable oil and store in a safe place... **KEEP CLEAN.**
6. To remove volute (item 7), remove the four screws (item 32), and pull the volute straight out. The volute o-ring (item 28), should be wiped with vegetable oil only and protected as with all other o-rings. **NOTE:** If plugs (item 60) are installed over volute screws on your pump, remove the plugs with their o-ring by threading a housing screw (item 14) into hole in plug and carefully pull them out.
7. To disassemble the pump body (item 2), from the motor remove the 4 screw protector plugs (item 5) and their o-rings (item 4), and unscrew the 4 mounting screws (item 3). The pump body may now be removed. Note the orientation of the motor wiring and capacitor housing for correct re-assembly.
8. **REMOVAL OF THE MECHANICAL SEAL - STATIONARY (BODY) HALF, (item 31).**
If the seal is to be discarded (replace if the face is severely worn, or if it is scored at all), it may be removed by placing a screwdriver **handle** against the back of the seal (motor side) and tapping on the blade until the seal slips out. Avoid damage to the o-ring seat area. When it is desirable to save the seal, use a round wooden peg 1 3/8" in diameter and carefully **press** the

seal out straight, onto a soft cloth. Remove the o-ring (item 29) from around the shaft seal and wipe the o-ring and seal case clean. Place in protective bag.



9. **REMOVAL OF THE MECHANICAL SEAL, ROTATING (IMPELLER) HALF (item 30).**

This may be accomplished by placing plier jaws around the outside diameter and rotating, while lifting, the seal. This process may damage the seal which should be of no concern if replacement is the intent. **If you wish to retain the used seal, soften the plier jaw with cardboard or tape.**

C. REASSEMBLY OF THE PUMP

1. **INSTALLATION OF THE MECHANICAL SEAL - ROTATING (IMPELLER) HALF (item 30)**

Lubricate the rubber section of the seal (item 30) with vegetable oil. Insert the seal by pressing with a clean piece of 1" plastic pipe 1 1/4" long. Protect the smooth sealing surface from damage when pressing in the seal. Insure that the seal is fully seated in the impeller (item 33). The flat face of the seal should be completely exposed after installation.

2. **INSTALLATION OF THE MECHANICAL SEAL-STATIONARY (BODY) HALF (ITEM 31)**

Lubricate the seal o-ring (item 29) with vegetable oil. Slip the o-ring onto the seal case (item 31) and locate the seal within its seat area in the body (item 2). Using an arbor press, press the seal into place. Or, use a piece of pipe that will bear only on the flange of the seal case. Damage to the smooth carbon face will cause leakage. Be sure the seal is fully seated. **The seal should never be inserted by impact (e.g., hammering)**

3. Reassemble the pump body (item 2) to the motor (note the motor orientation). Seat the body over the circular flange on the motor mounting face. Align the holes. Place one o-ring (item 36) on each screw (item 3). Apply a drop of Loctite 242 thread sealant to each screw and torque to 20-25 foot lbs.

4. **INSTALLING THE SCREW PROTECTOR PLUGS**

You may find that the plugs (item 5) seem to "spring out" after insertion. This is caused by air trapped between the plug and the screw (the plug is sealed with an o-ring (item 4). Volute installation will press these into place. Rotate the rectangular standoff on the plug (item 5) to align with the ribs on the inside of the body.

5. Place the volute o-ring (item 28) over the circular volute locating pilot. Install the volute, locating the protruding key in the slot of the housing. Using the 4 self-threading screws (item 32), fasten the volute to the pump body. Fasten two diagonally opposite until tight, then fasten the remaining two. **DO NOT OVERTIGHTEN.** If volute screw plugs and o-rings (item 60) are to be used with

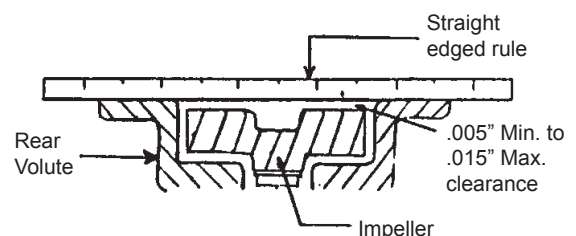
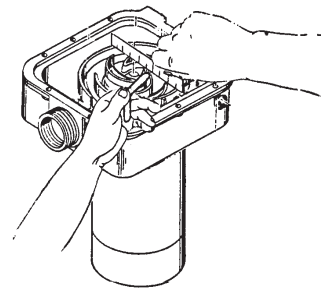
your pump, install them at this time with the plug hole facing out. Be certain the o-rings are clean and lightly wiped with vegetable oil.

6. Install the volute o-ring segments (item 8A and 8B). Match the o-ring segment length with the length of the groove into which it fits. Each segment should fill the molded groove in the volute vanes.

7. **INSTALLING THE IMPELLER**

Careful handling is required when installing the impeller (item 33). The seal face must be protected from contact with the motor shaft end. Even a hairline scratch will destroy the ability of the polished faces to seal. With the motor and pump assembly positioned vertically on the work surface, install the impeller shims (item 6) on the end of the shaft. If you are re-assembling the pump to the **original** motor, the shims, which were removed, will be of the correct height. If the pump is to be assembled to a replacement motor, it is suggested that the original shims be tried, but re-shimming may be required. If re-shimming is necessary see paragraph C8 for impeller clearance adjustment. Insert impeller screw and tighten hand tight so that the impeller is secure on shaft. Do not overtighten.

8. The pump will operate at its maximum efficiency with .005" to .015" final clearance between the impeller vanes and the volute plate face (item 6). To obtain this clearance, the assembler must shim the impeller to adjust for variances in the length of the motor shaft. The correct impeller setting can be obtained by measuring the distance between the front of the impeller vanes, and the front surfaces of the rear volute (item 7). To check, place a six inch steel rule or other suitable straight edge across the volute surfaces (see following illustrations), and using automotive type feeler gauges, measure the clearance between front of impeller vanes and straight edge. If this distance is less than .005", remove the impeller and add or subtract either .006" or .015" thick impeller shims to obtain clearance of .005" to .015".



9. Place the teflon gasket (item 61), Ryton pumps only, onto the inner lip of the pump body (item 2). Place the volute plate (item 16) - waffled side out - into the pump body (item 2). Orient it such that the impeller screw can be seen at the *center* of the hole in the volute plate. Lubricate the body o-ring (item 15) with vegetable oil only and press into place in the groove formed between the volute plate and body - *use fingers only*.
10. Assemble the strainer housing (item 13) to the pump body using the 10 screws (item 14) and ten nuts (item 22). IT IS RECOMMENDED THAT YOU PERIODICALLY CHECK THAT THE IMPELLER IS FREE TO ROTATE DURING THE PROCESS OF TIGHTENING THE BODY SCREWS. WITH ELECTRIC SUPPLY SHUT OFF AND THE MOTOR DISCONNECTED, ROTATE THE IMPELLER COUNTerclockwise. FLEXING OF THE PARTS DURING ASSEMBLY MAY BIND THE VOLUTE PLATE TO THE IMPELLER, REQUIRING THE REMOVAL OF ONE IMPELLER SHIM (ITEM 6). AFTER TIGHTENING ALL BODY SCREWS, CHECK AGAIN TO SEE THAT THE IMPELLER ROTATES FREELY IN A COUNTER-CLOCKWISE DIRECTION. IF THE IMPELLER DOES NOT SPIN FREELY, RE-SHIM PER PARAGRAPH "C8" ABOVE UNDER "ASSEMBLY INSTRUCTIONS".

A. FLEXIBLE COUPLED PUMPS: COUPLING ALIGNMENT

Measure the diameter of the pump shaft and power unit shaft. Choose the appropriate coupling for your pump and power unit. (See flexible couplings chart number VI-A). Proper shaft and coupling alignment reduces vibration and prevents premature coupling failure. The following 8 steps help in obtaining proper shaft alignment.

1. Make sure you use a rigid base plate large enough for the assembly of the pump and the drive unit. We offer kit 58-0028 for this purpose. (See base plate kit listed after couplings chart VI-A).**
2. Place the pump and drive unit on the base plate. Put 13/64" (.200") of shimming under all 4 mounting holes of the bearing pedestal.
3. Measure the distance between the centerline of the pump shaft and the base plate surface.
4. Measure the distance between the centerline of the drive unit shaft and base plate.
5. Compare measurements obtained from steps 3 and 4 and use spacer blocks under the motor for height adjustment to insure alignment of both shafts.
6. Place the coupling halves over each shaft, put the "spider" between the two halves and couple the two halves together.
7. To assure parallel alignment (figure 5) place a straight edge along the side of both coupling halves in two different locations, 90 degrees apart. The coupling is aligned when the straight edge rests squarely on the sides of both coupling halves.

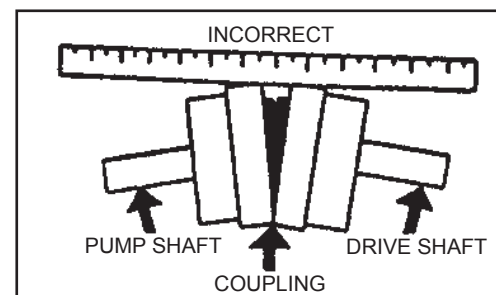
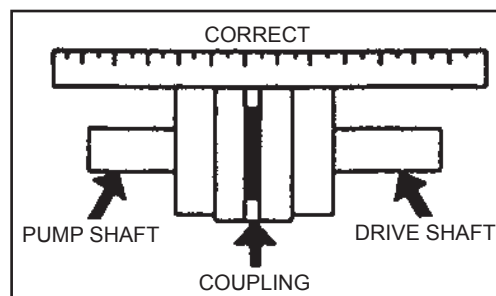


FIGURE 5

8. To avoid angular misalignment, insert a measuring device (taper gauge or feeler gauge) between the coupling faces at four locations 90 degrees apart (see arrows in figure 6) and measure the gap at each of the four locations. For proper alignment all four measurements should be equal. Re-shimming may be required to achieve this alignment.

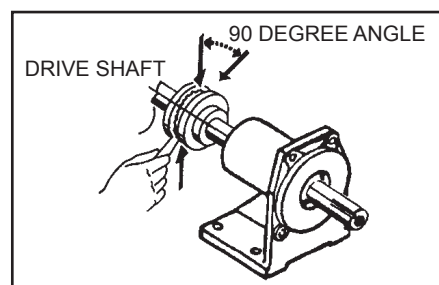


FIGURE 6

FLEXIBLE COUPLINGS CHART

COUPLING PART NUMBER	POWER UNIT SHAFT* DIAMETER	ELECTRIC MOTOR FRAME SIZES
58-0785	.625"	56
58-0786	.875"	143T-145T 182-184
58-0875	1"	----
58-0876	.75"	----

FLEXIBLE-COUPPLINGS CHART VI-A

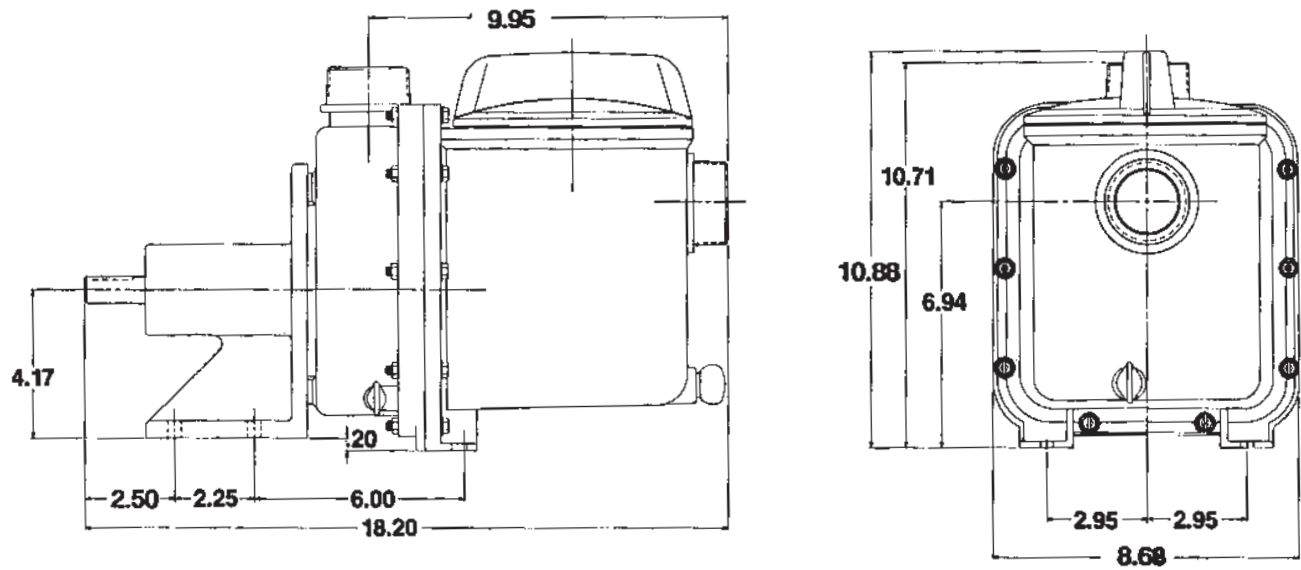
* One-half of each coupling has a .750" diameter bore to fit the pedestal pump shaft.

**BASEPLATE KITS

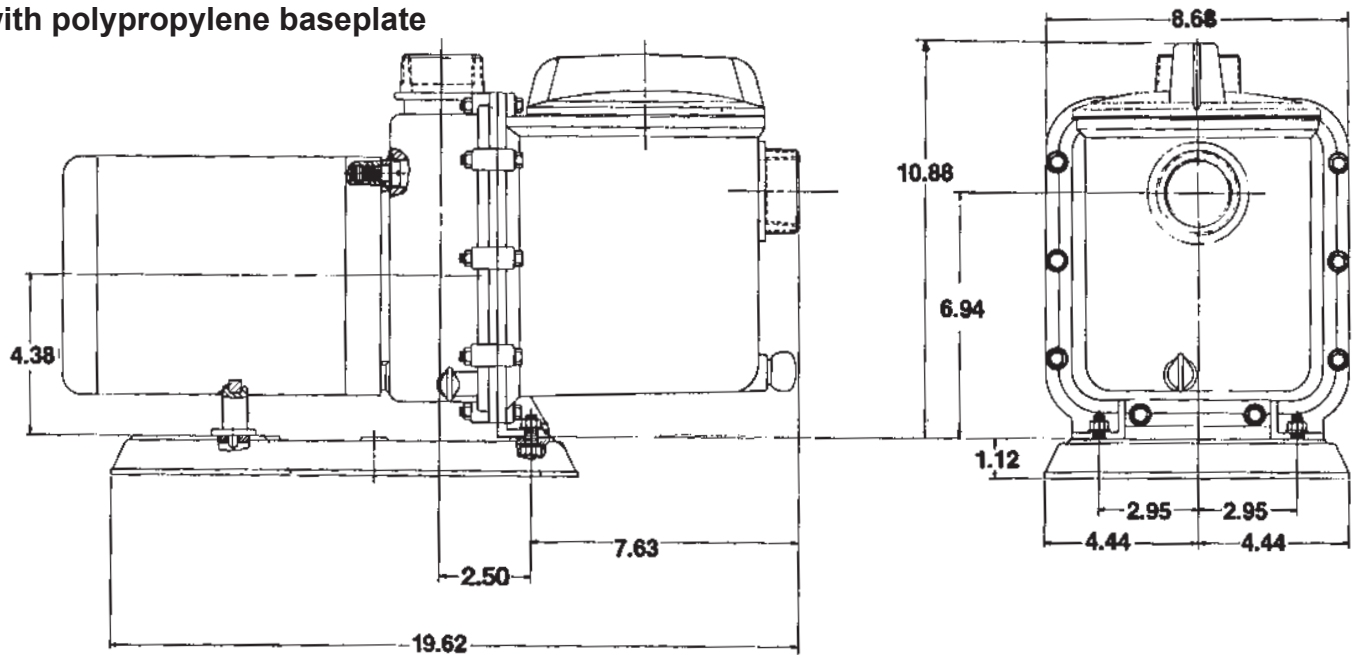
These kits contain a baseplate, coupling guard, shims and hardware for mounting a pedestal pump to the power units listed.

58-0028 - Baseplate kit for these electric motor frame sizes: 56, 143T, 145T, also can be mounted to a 4HP to 5.5 HP engine.

B. PEDESTAL DIMENSIONS (in inches)
with cast iron bearing housing



C. CLOSE-COUPLED ELECTRIC DRIVE DIMENSIONS (in inches)
with polypropylene baseplate



VII. "G" PUMP PARTS LIST

ITEM #	PART #	GROUP	PART DESCRIPTION	QTY./PUMP
2	58-1801 20		BODY, Pump, gray Noryl, 1½" female x 2" male, NPT	1
	58-1821 20		BODY, Pump, gray Noryl, 1½" female x 2" male, BSP	1
	58-1801 60		BODY, Pump, black Ryton, 1-1/2" female x 2" male, NPT	
3	58-1838 10		SCREW, body to motor or pedestal, 3/8-16 x 7/8", stainless steel	4
	58-1838 91		SCREW, body to motor or pedestal, 3/8-16 x 7/8", Hastelloy C	4
	58-1838 93		SCREW, body to motor or pedestal, 3/8-16 x 7/8", Titanium	4
4	58-1245 71		O-RING, Screw plug, Buna-N	4
	58-1245 72		O-RING, Screw plug, EPDM	4
	58-1245 73		O-RING, Screw plug, Viton	4
5	58-1833 20		PLUG, Screw protector, gray Noryl, Noryl pumps only	4
	58-1833 90		PLUG, Screw protector, white ECTFE, Ryton pumps only	4
6	58-1841 11		SHIM, Impeller, .006"	as required
	58-1841 12		SHIM, Impeller, .015"	as required
	58-1841 13		SHIM, Impeller, .030"	as required
7	58-1804 20	C	VOLUTE, Noryl, for 619 impeller	1
	58-2104 20	A	VOLUTE, Noryl, for 617 impeller	1
	58-2109 20	B	VOLUTE, Noryl, for 618 impeller	1
	58-1802 20	D	VOLUTE, Noryl, for 620 impeller	1
	58-2110 20	E	VOLUTE, Noryl, for 621 impeller	1
	58-1804 60	C	VOLUTE, Ryton, for 619 impeller	1
	58-2104 60	A	VOLUTE, Ryton, for 617 impeller	1
	58-2109 60	B	VOLUTE, Ryton, for 618 impeller	1
	58-1802 60	D	VOLUTE, Ryton, for 620 impeller	1
	58-2110 60	E	VOLUTE, Ryton, for 621 impeller	1
8A	58-1812 71	A,B,C,D,E	O-RING SEGMENT, Buna-N, left	1
	58-1812 72	A,B,C,D,E	O-RING SEGMENT, EPDM, left	1
	58-1812 73	A,B,C,D,E	O-RING SEGMENT, Viton, left	1
8B	58-1813 71	A,B,C	O-RING SEGMENT, Buna-N, right	1
	58-1813 72	A,B,C	O-RING SEGMENT, EPDM, right	1
	58-1813 73	A,B,C	O-RING SEGMENT, Viton, right	1
	58-1814 71	D,E	O-RING SEGMENT, Buna-N, right	1
	58-1814 72	D,E	O-RING SEGMENT, EPDM, right	1
	58-1814 73	D,E	O-RING SEGMENT, Viton, Right	1
9	58-1818 20		STRAINER COVER, gray Noryl	1
	58-1818 60		STRAINER COVER, black Ryton	1
	58-1818 90		STRAINER COVER, clear Polycarb	1
10	58-1820 71		O-RING, strainer cover, Buna-N	1
	58-1820 72		O-RING, strainer cover, EPDM	1
	58-1820 73		O-RING, strainer cover, Viton	1
11	58-1819 10		HANDLE, basket strainer, stainless steel	1
	58-1819 90		HANDLE, basket strainer, Teflon coated stainless steel	1
12	58-1809 40		BASKET STRAINER, Polypropylene, Noryl pumps only	1
	58-1809 90		BASKET STRAINER, ECTFE, Ryton pumps only	1
13	58-1816 20		HOUSING, basket strainer, gray Noryl, 1½" female x 2" male NPT	1
	58-1817 20		HOUSING, basket strainer, gray Noryl, 1½" female x 2" male BSP	1
	58-1816 60		HOUSING, basket strainer, black Ryton, 1½" female x 2" male NPT	1
14	58-1039 10		SCREW, strainer housing, 1/4"-20 x 1-5/8", stainless steel	10
15	58-1858 71		O-RING, Volute Plate, Buna-N	1
	58-1858 72		O-RING, Volute Plate, EPDM	1
	58-1858 73		O-RING, Volute Plate, Viton	1
16	58-1831 20		VOLUTE PLATE, gray Noryl, flat	1
	58-1803 21		VOLUTE PLATE, rubber lined, Buna-N, gray Noryl	1
	58-1803 22		VOLUTE PLATE, rubber lined, EPDM, gray Noryl	1
	58-1831 90		VOLUTE PLATE, white ECTFE, flat, Ryton pumps only	1
17	58-1846 40		BASEPLATE, Polypropylene	1
18	58-0934 10		STRAP, stainless steel, motor retaining	1
19	58-1825 90		SADDLE, for 5-1/2" diameter electric motor, molded plastic	1
	58-1828 90		SADDLE, for 6-5/8" diameter electric motor, molded plastic	1
20	58-1847 71		PAD, Saddle, rubber	1
21	58-1834 71		SLINGER, Buna-N	1
22	58-0721 10		NUT, Hex, body, 1/4-20, stainless steel	10
23	58-0745		NUT, Keps, 5/16-18, plated steel	2
24	58-0730		WASHER, flat, 5/16, plated steel	2
25	58-0729		SCREW, 5/16-18 x 1", plated steel	2
26	58-0723 20		PLUG, drain, gray Noryl	2
	58-0723 60		PLUG, drain, brown Ryton	2
27	58-1009 71		O-RING, drain plug, Buna-N	2
	58-1009 72		O-RING, drain plug, EPDM	2

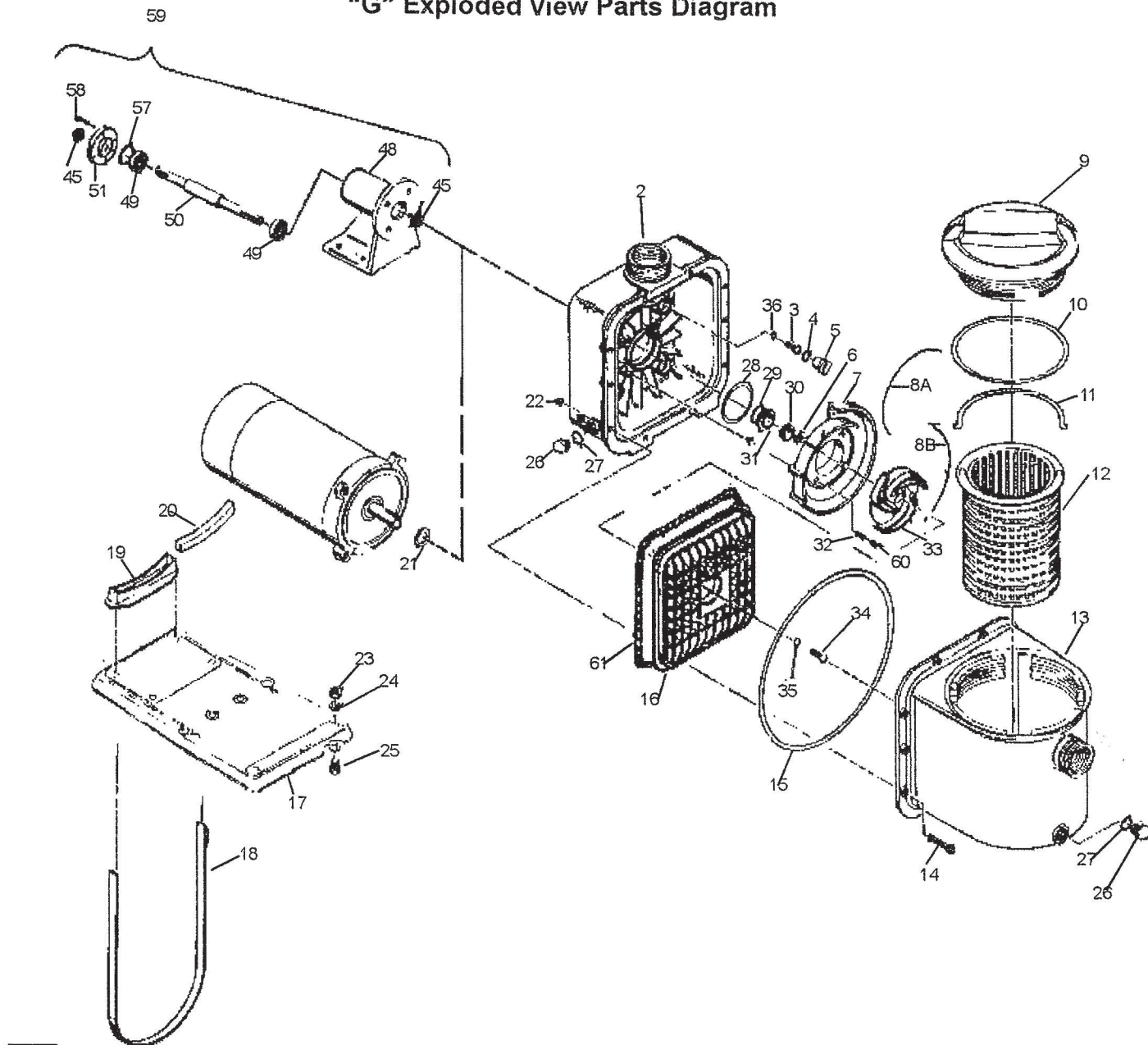
VII. "G" PUMP PARTS LIST

ITEM #	PART #	GROUP	PART DESCRIPTION	QTY./PUMP
28	58-1009 73		O-RING, drain plug, Viton	2
	58-1822 71		O-RING, volute, Buna-N	1
	58-1822 72		O-RING, volute, EPDM	1
29	58-1822 73		O-RING, volute, Viton	1
	58-0976 71		O-RING, seal, Buna-N	1
	58-0976 72		O-RING, seal, EPDM	1
29,30,31	58-0976 73		O-RING, seal, Viton	1
	58-0714 11		SEAL, shaft, Buna-N, 316 stainless steel, carbon ceramic	1
	58-0714 12		SEAL, shaft, EPDM, 316 stainless steel, carbon ceramic	1
	58-0714 14		SEAL, shaft, Viton, 316 stainless steel, carbon ceramic	1
	58-0714 15		SEAL, shaft, Hastelloy C/Teflon/silicon carbide	1
	58-0714 92SG		SEAL, shaft, non-metallic, ECTFE, EPDM, siliconized graphite	1
	58-0714 94SG		SEAL, shaft, non-metallic, ECTFE, Viton, siliconized graphite	1
	58-46250 11		SEAL, 316 stainless steel/Buna-N/siliconized graphite	1
	58-46250 12		SEAL, 316 stainless steel/EPDM/siliconized graphite	1
	58-46250 13		SEAL, 316 stainless steel/Viton, siliconized graphite	1
32	58-1835 10		SCREW, volute, #10-16 x 3/4", stainless steel	4
	58-1348 91		SCREW, volute, #10-16 x 3/4", Hastelloy C	4
	58-1348 93		SCREW, volute, #10-16 x 3/4", Titanium	4
33	58-0617 20	A	IMPELLER, Noryl, (number on part), keyed shaft	1
	58-0618 20	B	IMPELLER, Noryl (number on part), keyed shaft	1
	58-0619 20	C	IMPELLER, Noryl (number on part), keyed shaft	1
	58-0620 20	D	IMPELLER, Noryl (number on part), keyed shaft	1
	58-0621 20	E	IMPELLER, Noryl (number on part), keyed shaft	1
	58-0617 60	A	IMPELLER, Ryton, (number on part), keyed shaft	1
	58-0618 60	B	IMPELLER, Ryton, (number on part), keyed shaft	1
	58-0619 60	C	IMPELLER, Ryton, (number on part), keyed shaft	1
	58-0620 60	D	IMPELLER, Ryton, (number on part), keyed shaft	1
	58-0621 60	E	IMPELLER, Ryton, (number on part), keyed shaft	1
34	58-1888 10		SCREW, impeller, stainless steel, 1/4-28 x 5/8"	1
	58-1888 61		SCREW, impeller, Ryton encapsulated, 1/4-28 x 5/8"	1
	58-1888 91		SCREW, impeller, Hastelloy C, 1/4-28 x 5/8"	1
	58-1888 93		SCREW, impeller, Titanium, 1/4-28 x 5/8"	1
35	58-1845 71		O-RING, impeller screw, Buna-N	1
	58-1845 72		O-RING, impeller screw, EPDM	1
	58-1845 73		O-RING, impeller screw, Viton	1
36	58-1824 71		O-RING, body screw, Buna-N	4
	58-1824 72		O-RING, body screw, EPDM	4
	58-1824 73		O-RING, body screw, Viton	4
45	58-1955 71		SEAL LIP, Buna-N, .710" ID	2
	58-1955 73		SEAL LIP, Viton, .170" ID	2
48	58-1951 90		PEDESTAL, bearing, cast iron	1
49	58-1954 90		BEARING, ball, .787" ID	2
50	58-1957 10		SHAFT, 5/8" x 3/4", keyed, stainless steel	1
	58-1957 91		SHAFT, 5/8" x 3/4", keyed, Hastelloy C	1
	58-1957 93		SHAFT, 5/8" x 3/4", keyed, Titanium	1
51	58-1953 10		PLATE, end, stainless steel	1
57	58-1956 10		SHIM, stainless steel	as required
58	58-2525 10		SCREW, hex, 1/4"-20 x 3/4", stainless steel	4
59	58-1950 02		PEDESTAL, assy., incl. items 45,48,49,50,51,57 & 58	1
	58-1950 02H		PEDESTAL, assy., w/Hastelloy shaft, incl. items 45,48,49,50,51,57 & 58	1
	58-1950 02T		PEDESTAL, assy., w/Titanium shaft, incl. items 45,48,49,50,51,57 & 58	1
60	58-2108 90B		VOLUTE SCREW PLUG, Teflon w/Buna-N o-ring, for pumps with non-metallic solution contact only.	4
	58-2108 90 L		VOLUTE SCREW PLUG, Teflon w/EPDM o-ring, for pumps with non-metallic solution contact only.	4
	58-2108 90V		VOLUTE SCREW PLUG, Teflon w/Viton o-ring, for pumps with non-metallic solution contact only.	4
61	58-1283 90		TEFLON GOR-TEX GASKET, Ryton pumps only	1

*GROUP: Three item numbers are listed with a letter in the "GROUP" column. The parts listed under each item number are very similar but differ in detail. Only certain combinations of these parts are suitable for proper operation of the pump. Thus, it is important that only parts with GROUP "A" be used in a pump, only parts with GROUP "B", be used in a pump, etc. Do not mix GROUPS. A simplified chart follows. START WITH THE IMPELLER AND THEN MATCH THE OTHER PARTS TO IT.

Group	Impeller	Volute	O-Ring Segment (2 per pump)
A	58-0617	58-2104	58-1812 and 58-1813
B	58-0618	58-2109	58-1812 and 58-1813
C	58-0619	58-1804	58-1812 and 58-1813
D	58-0620	58-1802	58-1812 and 58-1814
E	58-0621	58-2110	58-1812 and 58-1814

"G" Exploded View Parts Diagram



LIMITED 1 YEAR WARRANTY

Pacer Pumps warrants its products to be free from defects of material and workmanship for a period of one year (12 months) of service, if the one year of service falls within 24 months from date of manufacture. The company warrants that its products, at the time of shipment, will be free of defects of material and workmanship for normal use and service. This warranty will not apply or be extended to products subjected to misuse, neglect, accident, or improper installation, or to maintenance of products which have been altered or repaired by anyone except PACER PUMPS or its authorized representatives. The Buyer, or any person receiving such a product during the duration of the warranty, shall contact his PACER PUMPS dealer as soon as any defect occurs. Contact PACER PUMPS for the name and address of your nearest dealer.

Certain components, such as mechanical seals, ceramic liners, impellers, impeller magnet assemblies, pistons, hose, diaphragms, etc. may be subject to wear and therefore wear should not be misconstrued as to the existence of a defect and as such would not be included in a warranty claim, nor should it be implied that items such as this will last a year without occasional, or even frequent replacement depending upon the severity of the application.

Pacer Pumps' sole obligation under the foregoing warranty shall be limited to: (at its option)

repair and replacement (and reship to the Buyer with transportation charges collect to any place in the U.S.) of defective goods provided that if the company is unable to correct a defective component part or product, the Buyer shall be entitled to elect a credit at the original Buyer's purchase price. To return a DEFECTIVE PUMP, to return any parts for credit, or to obtain service information, contact the Service Department. After receiving permission to return merchandise, the Buyer is authorized to return the product to Pacer Pumps, freight prepaid. If the company determines that the warranty has not been breached, product will be repaired or replaced free of charge.

The company will not be responsible for any damage or losses, direct or indirect, arising from any cause whatsoever, nor for damage to equipment caused by outside influences including improper installation or modification, improper voltage supply, lightning, corrosive liquids, abrasive liquids, or careless handling; nor for labor, transportation or other damages incurred in the replacement or repair of defective parts. In these cases, repair will be subject to reconditioning charges in effect at the time.

Purchased merchandise, either as a complete product for resale, or components used in conjunction with PACER PUMPS manufactured products, carries the warranty of the respective manufacturer of such product or components.

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"G" Exploded View Parts Diagram

