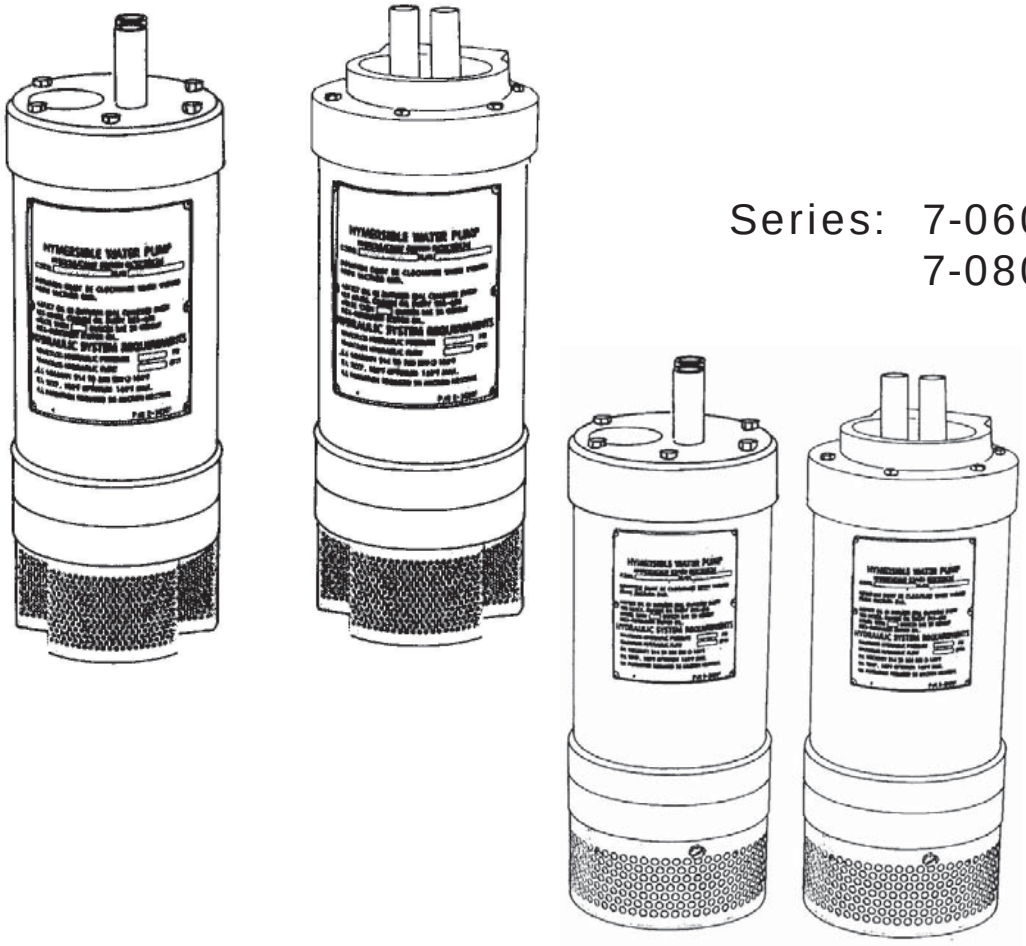
Manual Index

PROSSER®

INSTALLATION and OPERATION MANUAL
HYMERGIBLE® Hydraulically Driven
Submersible Dewatering Pumps



Series: 7-06000
7-08000

IMPORTANT! ***Read all instructions in this manual before operating pump. As a result of Crane Pumps & Systems, Inc., constant product improvement program, product changes may occur. As such Crane Pumps & Systems reserves the right to change product without prior written notification.***

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Form No. 096965-Rev. F

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SAFETY FIRST!

Please Read This Before Installing Or Operating Pump.
This information is provided for **SAFETY and to PREVENT EQUIPMENT PROBLEMS**. To help recognize this information, observe the following symbols:

IMPORTANT! Warns about hazards that can result in personal injury or Indicates factors concerned with assembly, installation, operation, or maintenance which could result in damage to the machine or equipment if ignored.

CAUTION ! Warns about hazards that can or will cause minor personal injury or property damage if ignored. Used with symbols below.

WARNING ! Warns about hazards that can or will cause serious personal injury, death, or major property damage if ignored. Used with symbols below.


Hazardous fluids can cause fire or explosions, burnes or death could result.


Extremely hot - Severe burnes can occur on contact.


Biohazard can cause serious personal injury.


Hazardous fluids can Hazardous pressure, eruptions or explosions could cause personal injury or property damage.


Rotating machinery Amputation or severe laceration can result.


Eye protection required

Only qualified personnel should install, operate and repair pump.


WARNING! Operation against a closed discharge valve will cause premature bearing and seal failure on any pump, and on end suction and self priming pump the heat build may cause the generation of steam with resulting dangerous pressures. It is recommended that a high case temperature switch or pressure relief valve be installed on the pump body.


CAUTION! Pumps build up heat and pressure during operation-allow time for pumps to cool before handling or servicing.

WARNING! - **DO NOT** pump hazardous materials (flammable, caustic, etc.) unless the pump is specifically designed and designated to handle them.

Do not block or restrict discharge hose, as discharge hose may whip under pressure.

WARNING! - DO NOT wear loose clothing that may become entangled in the impeller or other moving parts.

WARNING! - Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.

Always wear eye protection when working on pumps.

Make sure lifting handles are securely fastened each time before lifting. **DO NOT** operate pump without safety devices in place. Always replace safety devices that have been removed during service or repair. Secure the pump in its operating position so it can not tip over, fall or slide.

DO NOT exceed manufacturers recommendation for maximum performance, as this could cause the motor to overheat.

WARNING! Submersible Pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common.

WARNING! Products Returned Must Be Cleaned, Sanitized, Or Decontaminated As Necessary Prior To Shipment, To Insure That Employees Will Not Be Exposed To Health Hazards In Handling Said Material. All Applicable Laws And Regulations Shall Apply.

Bronze/brass and bronze/brass fitted pumps may contain lead levels higher than considered safe for potable water systems. Lead is known to cause cancer and birth defects or other reproductive harm. Various government agencies have determined that leaded copper alloys should not be used in potable water applications. For non-leaded copper alloy materials of construction, please contact factory.

IMPORTANT! - Crane Pumps & Systems, Inc. is not responsible for losses, injury, or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

SECTION: A - PUMP SPECIFICATIONS: SERIES 7-06000

LIQUID TEMP 140ºF (60ºC)
DISCHARGE CASE..... 356T6 Aluminum, Hard Anodized
DIFFUSER..... 356T6 Aluminum, Hard Anodized
SUCTION CASE ..... 356T6 Aluminum, Hard Anodized with wear resistant polyurethane liner
FRAME & OUTER CASE... 6063T6 Aluminum, Hard Anodized
PUMP SHAFT ..... Stainless Steel
IMPELLER ..... Stainless Steel
HARDWARE ..... Stainless Steel
O-RINGS..... Buna
SEAL: *Design* ..... Mechanical, Oil Lubricated
Material ..... Rotating Faces - Carbon
Stationary Faces - Ceramic
Elastomer - Buna-N
Hardware -300 Series Stainless
STRAINER..... 300 Series Stainless Steel
.25" (6.35mm) Holes

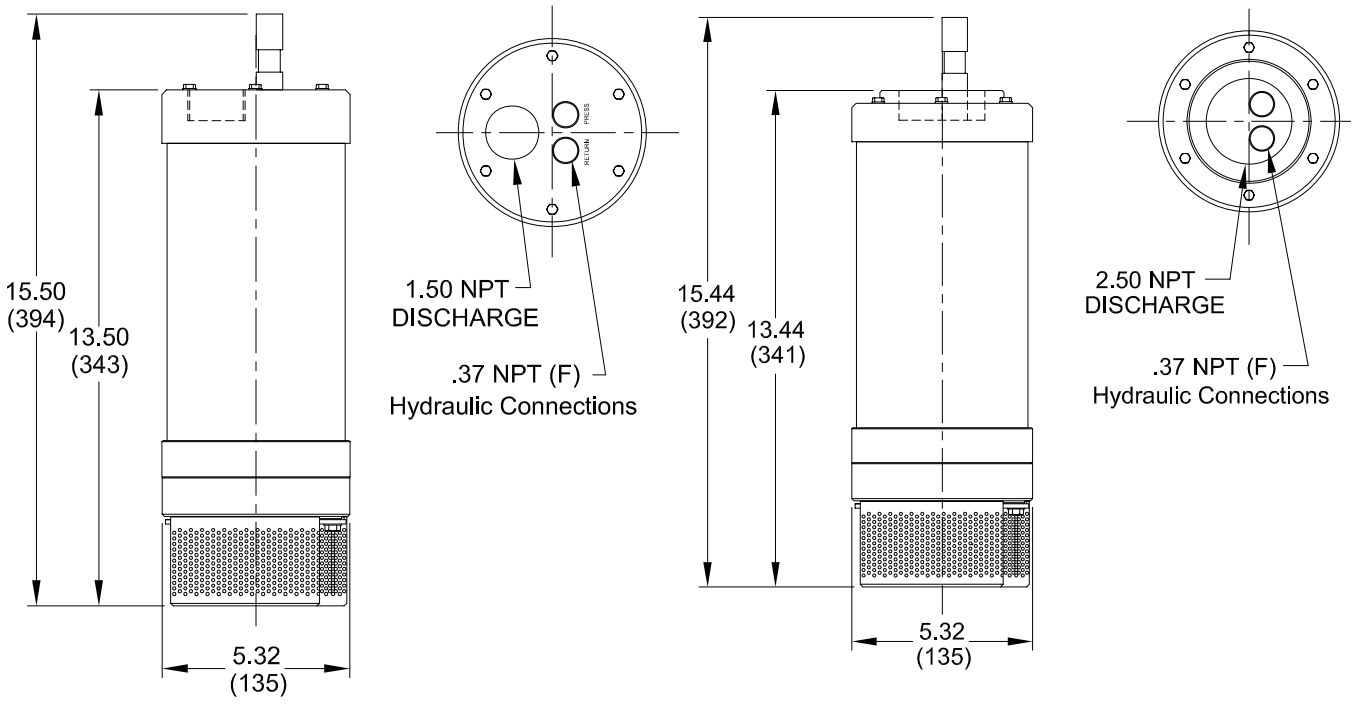
UPPER BEARING:
Design ..... Single Row, Ball
Lubrication .... Prelubricated high-temperature grease
Load ..... Radial
LOWER BEARING:
Design ..... Single Row, Ball
Lubrication .... Prelubricated high-temperature grease
Load..... Radial & Thrust
MOTOR: *Design* ..... Hydraulic, System should include 25 micron filtering

PUMP SERIES	WEIGHT	SHIPPING WT. / STD UNIT	
	PUMP	DOMESTIC	CUBES
7-06000	17lbs./7.7kg	23lbs./10.4kg	1.7Ft. /.05m

EXTERNAL CONNECTION

INTERNAL CONNECTION

inches
(mm)



IMPORTANT !

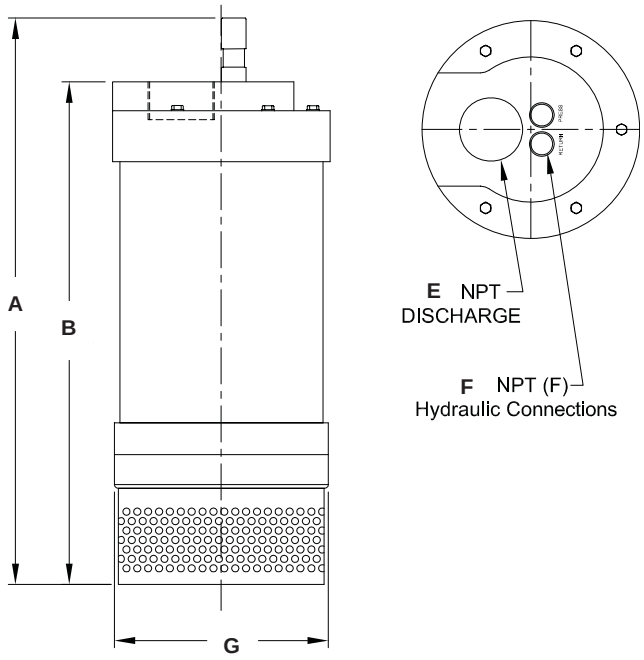
1.) PUMP MAY BE OPERATED “DRY” FOR EXTENDED PERIODS WITHOUT DAMAGE TO MOTOR AND/OR SEALS.
2.) THIS PUMP IS APPROPRIATE FOR THOSE APPLICATIONS SPECIFIED AS CLASS I DIVISION II HAZARDOUS LOCATIONS.
3.) THIS PUMP IS NOT APPROPRIATE FOR THOSE APPLICATIONS SPECIFIED AS CLASS I DIVISION I HAZARDOUS LOCATIONS.
4.) INSTALLATIONS SUCH AS DECORATIVE FOUNTAINS OR WATER FEATURES PROVIDED FOR VISUAL ENJOYMENT MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ANSI/NFPA 70 AND/OR THE AUTHORITY HAVING JURISDICTION. THIS PUMP IS NOT INTENDED FOR USE IN SWIMMING POOLS, RECREATIONAL WATER PARKS, OR INSTALLATIONS IN WHICH HUMAN CONTACT WITH PUMPED MEDIA IS A COMMON OCCURRENCE.

LIQUID TEMP 140ºF (60ºC)
DISCHARGE CASE..... 356T6 Aluminum, Hard Anodized
DIFFUSER..... 356T6 Aluminum, Hard Anodized
SUCTION CASE ..... 356T6 Aluminum, Hard Anodized w/wear resistant polyurethane liner
FRAME & OUTER CASE... 6063T6 Aluminum, Hard Anodized
WEAR PLATE..... Polyurethane
PUMP SHAFT ..... Stainless Steel
IMPELLER ..... Stainless Steel
HARDWARE ..... Stainless Steel
O-RINGS ..... Buna
SEAL: *Design* ..... Mechanical, Oil Lubricated
Material ..... Rotating Faces - Silicon Carbide
Stationary Faces - Silicon Carbide
Elastomer - Viton®
Hardware -300 Series Stainless
STRAINER ..... Series Stainless Steel .25" (6.35mm) Holes
UPPER BEARING:
Design ..... Single Row, Ball
Lubrication .... Prelubricated high-temperature grease
Load ..... Radial

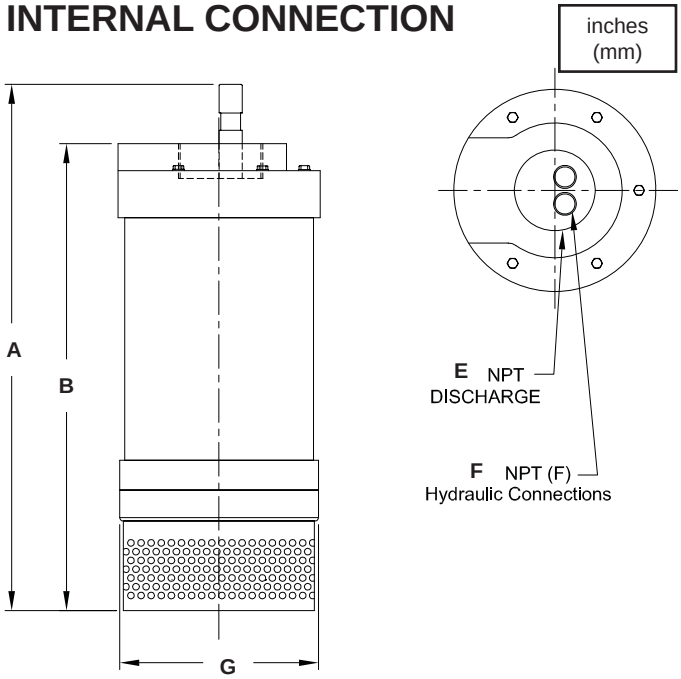
LOWER BEARING: **Single Stage**
Design ..... Single Row, Ball
Lubrication .... Prelubricated high-temperature grease
Load..... Radial & Thrust
LOWER BEARING: **Two Stage**
Design ..... Double Row, Ball, Angular Contact Tandem Mounting
Lubrication .... Prelubricated high-temperature grease
Load..... Radial & Thrust
MOTOR: *Design* ..... Hydraulic, System should include 25 micron filtering

PUMP SERIES	WEIGHT	SHIPPING WT. / STD UNIT	
	PUMP	DOMESTIC	CUBES
7-08306 & 7-08406	37lbs./16.9kg	42lbs./19.1kg	3.6Ft./.10m
7-08312 & 7-08412	41lbs./18.6kg	46lbs./20.9kg	3.6Ft./.10m
7-08312 & 7-08412 2 Stage	51lbs./24kg	56lbs./25.5kg	3.6Ft./.10m

EXTERNAL CONNECTION



INTERNAL CONNECTION



MODEL	A	B	C - EXT	D - EXT	E - INT	F - INT	G
7-08306-020	19.37 (492)	17.13 (435)	2.00 (51)	.37 (10)	-----	-----	7.50 (191)
7-08406-020	19.37 (492)	17.13 (435)	-----	-----	3.00 (76)	.37 (10)	7.50 (191)
7-08312-020	19.62 (498)	17.38 (442)	3.00 (76)	.50 (13)	-----	-----	7.50 (191)
7-08412-020	19.62 (498)	17.38 (442)	-----	-----	4.00 (102)	.50 (13)	7.50 (191)
7-08312-215	21.28 (541)	19.03 (483)	3.00 (76)	.50 (13)	-----	-----	7.38 (188)
7-08412-215	21.28 (541)	19.03 (483)	-----	-----	4.00 (102)	.50 (13)	7.38 (188)

SECTION B: GENERAL INFORMATION

B-1) To the Purchaser:
Congratulations! You are the owner of one of the finest pumps on the market today. These pumps are products engineered and manufactured of high quality components. Over one hundred years of pump building experience along with a continuing quality assurance program combine to produce a pump which will stand up to the toughest applications.

This manual will provide helpful information concerning installation, maintenance, and proper service guidelines.

B-2) Receiving:
Upon receiving the pump, it should be inspected for damage or shortages. If damage has occurred, file a claim immediately with the company that delivered the pump. If the manual is removed from the packaging, do not lose or misplace.

B-3) Storage:
Short Term - Prosser Pumps are manufactured for efficient performance following short inoperative periods in storage. For best results, pumps can be retained in storage, as factory assembled, in a dry atmosphere with constant temperatures for up to six (6) months.

Long Term - Any length of time exceeding six (6) months, but not more than twenty four (24) months. The units should be stored in a temperature controlled area, a roofed over walled enclosure that provides protection from the elements (rain, snow, wind-blown dust, etc.), and whose temperature can be maintained between +40 deg. F and +120 deg. F.
If extended high humidity is expected to be a problem, all exposed parts should be inspected before storage and all surfaces should then be sprayed with a rust-inhibiting oil.

Pump should be stored in its original shipping container. On initial start up, rotate impeller by hand to assure seal and impeller rotate freely. If it is required that the pump be installed and tested before the long term storage begins, such installation will be allowed provided:

1.) The pump is not installed under water for more than one (1) month.
2.) Immediately upon satisfactory completion of the test, the pump is removed, thoroughly dried, repacked in the original shipping container, and placed in a temperature controlled storage area.

B-4) Service Centers:
For the location of the nearest Prosser Service Center, check your Prosser representative or Crane Pumps & Systems, Inc., Service Department in Piqua, Ohio, telephone (937) 778-8947 or Crane Pumps & Systems Canada, Bramton, Ontario, (905) 457-6223.

SECTION C: INSTALLATION

C-1) Location:
These pumping units are designed for use with hydraulic systems in locations where electrical connections are unavailable or hazardous. Before pumping fluids other than water, consult the factory, giving fluid, fluid temperature, specific gravity, viscosity, capacity in USGPM and total head and/or pressure requirements, including friction loss through discharge line, fittings, valves, etc. Maximum fluid temperature for sustained operation is 140°F (60°C) at specific gravity 1.0. Pump may operate up to 10 minutes running dry (not pumping water) without damage. **DO NOT** allow pump to be buried in mud or sand.

IMPORTANT ! - Pump Should Have Strainer Affixed At All Times. Inspect And Clean The Pump Strainer Periodically For Maximum Efficiency And Performance.

C-2) Discharge:
Discharge hose is recommended. If rigid pipe is used, install so that there is no weight or strain on the pump. Install a short pipe nipple into the pump discharge to attach the discharge hose above the hydraulic connections at the top of the pump. Save and replace the plastic shipping plugs in the hydraulic line connection at the top of the pump whenever the hydraulic lines are disconnected. This is to protect against damage to the connections and entrance of dirt.

C-3) Suction:
Completely submerge the suction strainer for maximum pumping efficiency. Avoid entrance of air into the suction of the pump. Strainer should always be installed on the pump while operating.

C-4) Liquid Level Controls: (If Applicable)
Attach “ON” float to discharge hose or pump cable at desired pump “ON” level. Attach “OFF” float to discharge hose or pump cable at desired pump “OFF” level. The “OFF” float must be below the “ON” float.

To attach the floats, thread the cable strap through the buckle with the ratchet pawl, cinch up tight, thread excess strapping through outer buckle slot. Be certain that the level controls cannot hang up or foul in its swing. It is recommended that the pump is completely submerged when the level control is in the “Off” mode.

C-5) Hydraulic System:
Figure 1 shows a schematic drawing of a typical hydraulic power system for driving a submersible pump.

WARNING ! - Hydraulic system has high-pressure capability. Exercise caution at all times.

CAUTION ! - Never block return (low pressure) line. It’s best to use by-pass valve to control flow of hydraulic fluid.

Maintain hydraulic fluid temperature at 100°F (38°C) for optimum performance. Maximum operating temperature is 180°F (82°C). See chart for viscosity of fluid. Lower viscosity fluids can be used, but will increase the wear rate within the hydraulic motor. A filter is required on the low pressure return hydraulic fluid line. Use filter elements rated at 25 micron absolute. Protect hydraulic hoses from cuts and abrasion. **ALWAYS USE A BACK-UP WRENCH WHEN CONNECTING AND DISCONNECTING THE HYDRAULIC LINES TO THE FITTINGS ON TOP OF THE PUMP.**

SECTION D: START-UP OPERATION

D-1) Check Pump Rotation:
Before putting pump into service for the first time, the motor rotation must be checked. To check the rotation, suspend the pump freely, momentarily apply power, rotation of the pump is clockwise when viewed from the suction end. To reverse rotation, switch the two hydraulic lines. Reverse rotation will not damage the pump, however, it will result in poor pump performance.

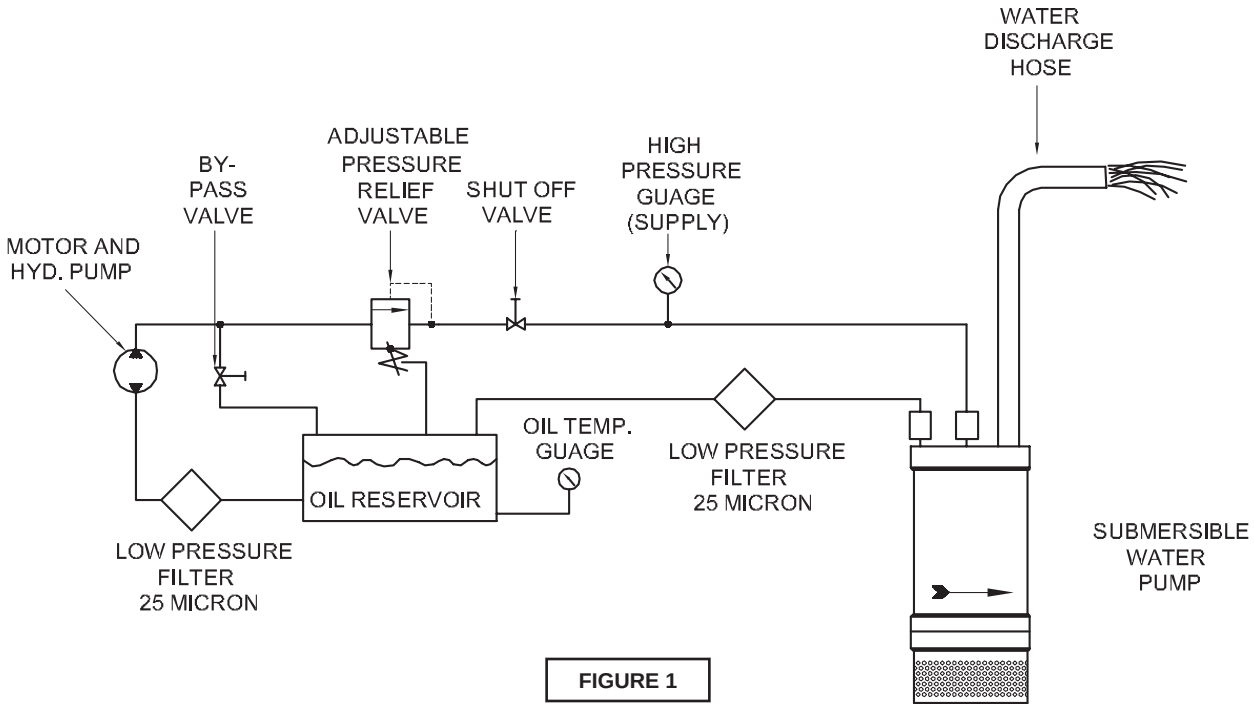


FIGURE 1

PUMP PART No.	HYDRAULIC FLUID DATA			
	PSI (Max)	FLOW -GPM	VISCOSITY	TEMPERATURE
7-06106-020	2000	7 (26.5 Liters)	214-320 SSU	100ºF (38ºC) - 180ºF (82ºC)
7-06206-020	2000	7 (26.5 Liters)	214-320 SSU	100ºF (38ºC) - 180ºF (82ºC)
7-08306-020	2000	7 (26.5 Liters)	214-320 SSU	100ºF (38ºC) - 180ºF (82ºC)
7-08406-020	2000	7 (26.5 Liters)	214-320 SSU	100ºF (38ºC) - 180ºF (82ºC)
7-08312-020	2000	12 (45.4 Liters)	214-320 SSU	100ºF (38ºC) - 180ºF (82ºC)
7-08412-020	2000	12 (45.4 Liters)	214-320 SSU	100ºF (38ºC) - 180ºF (82ºC)
7-08312-215	2000	12 (45.4 Liters)	214-320 SSU	100ºF (38ºC) - 180ºF (82ºC)
7-08412-215	2000	12 (45.4 Liters)	214-320 SSU	100ºF (38ºC) - 180ºF (82ºC)

D-2) Start-Up:
DO NOT attempt to start a frozen pump. Instead, submerge pump in water for twenty (20) minutes before starting. **DO NOT** attempt to thaw a frozen pump with a torch.

D-2.1) Report:
Included at the end of this manual are two start-up report sheets, these sheets are to be completed as applicable. Return one copy to the Crane Pumps & Systems, Inc. Service Department and store the second with the pump manual. It is important to record this data at initial start-up since it will be useful to refer to should servicing the pump be required in the future.

D-2.2) Identification Plate:
Record the numbers from the pump's identification plate on both START-UP REPORTS provided at the end of the manual for future reference.

SECTION E: PREVENTIVE MAINTENANCE:
The following procedure must be followed to assure proper pump operation.

1.) **Servicing:** Pump shall be restored to the state of original safety, following disassembly.

2.) **Renewals and Repairs:** Special care shall be taken in making renewals or repairs. Leave no parts off. Use replacement parts furnished by the manufacturer.

3.) **Fastenings:** All bolts, nuts, screws and other means of fastenings and also threaded covers, shall be in place, properly tightened and secured.

4.) **Shaft Seals:** The seals should be inspected every 100 operating hours for wear (more often if abrasives are present). To make a quick check of the seal's condition, drain and inspect the oil in the seal chamber (See Section F-1). If oil removed from the pump contains water or abrasives, replace seals. Change oil every 400 - 500 operating hours.

This pump is equipped with prelubricated bearings.

When a job is completed and before pumps are stored, drain the oil from the seal chamber (a must before freezing weather). If dirt or water are found in the oil, replace seals, bearings, lower "O" rings and oil.

SECTION F: SERVICE AND REPAIR
NOTE: All item numbers in ( ) refer to Figures 7 & 8 and 9 & 10 For 2 Stage Models.

WARNING ! - Hydraulic power to the pump must be disconnected to prevent personnel danger before any service work is done to the pump.

F-1) Lubrication:
F-1.1) Checking Oil:
To check oil, remove pipe plug (18) from diffuser (9). With a flashlight, visually inspect the oil in the seal cavity to make sure it is clean and clear, light amber in color and free from suspended particles. Milky white oil indicates the presence of water. If the the oil looks milky white, pour the oil out of the oil chamber and let it settle in a clean, dry container. If any water settles out in the bottom of the container or if the oil is white and thick (emulsified) replace rotary shaft seals (See Section F-4) and oil.

You can also check oil for contamination by using an oil tester with a range to 30 Kilovolts breakdown. If oil is found to be clean and uncontaminated (measure at or above 15 KV. breakdown), refill the seal cavity. If oil is found to be dirty or contaminated (or measures below 15 KV. breakdown), replace rotary seals and oil.

TABLE 1 - SEAL CHAMBER OIL	
SUPPLIER	**GRADE**
Gulf	(334206) Harmony 68
Texaco	URSA P-68

F-1.2) Replacing Oil:
Remove pipe plug (18) from diffuser (9), and drain oil from seal chamber and dispose of properly. Flush inside seal chamber of diffuser (9) thoroughly to be sure it is clean and free of abrasives. Refill oil chamber (See Parts List for amount), or about half full, of a 20W non-detergent turbine oil with rust and oxidation inhibitors, See Table 1. After replacing oil, replace pipe plug (18) using a sealant.

F-1.3) Seal Cavity Pressure Test:
Remove pipe plug (18) from diffuser (9) and check that the seal chamber is of the correct amount of oil (See Figure 2). Apply pipe sealant to pressure gauge assembly and tighten into hole in Intermediate diffuser (9). Pressurize seal chamber to 12 P.S.I. and check for leaks. If after five minutes, the pressure is still holding constant, and no leaks are observed, slowly bleed the pressure and remove the gauge assembly. Replace the pipe plug (18) using a sealant. If the pressure does not hold, then the leak must be located and repaired.

CAUTION ! - Always wear eye protection when working on pumps.

CAUTION ! - Pressure builds up extremely fast, increase pressure by "TAPPING" air nozzle. Too much pressure will damage seal. DO NOT exceed 12 P.S.I.

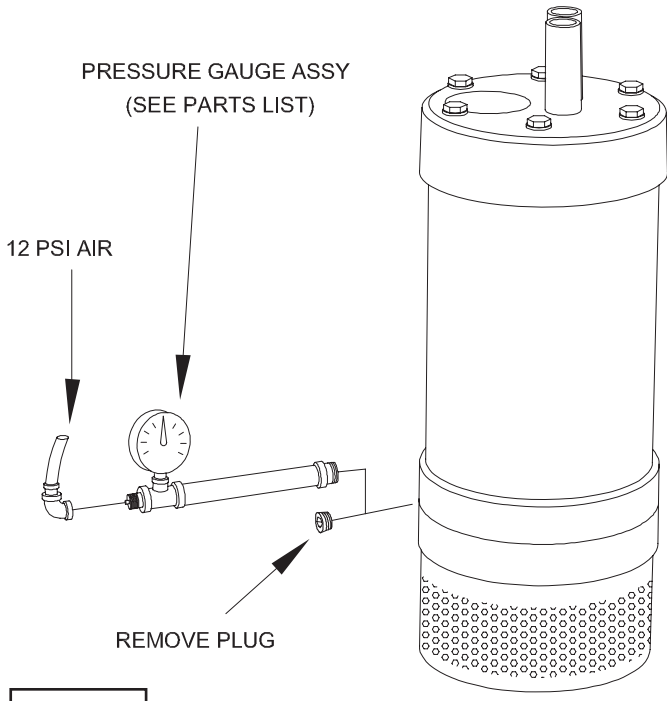


FIGURE 2

F-2) Impeller Service:
F-2.1) Disassembly: - (See Fig's 7 & 8)
On 7-08 single stage models, to inspect or replace impeller (3) and impeller o-ring (43), remove screws (40) and remove strainer (24). Remove capscrews (32), flatwashers (30) and brackets (41) then remove suction case (4). On 7-06 models, remove capscrews (32), flat washers (30) strainer (24) and suction case (4). Check the suction case (4) lining for wear, cuts, or defects and replace if necessary. Now remove locknuts (16) and washer (27) from shaft. The impeller (3) should slip off the shaft, if not, remove the o-ring (43) from the impeller groove and use a bearing puller. Inspect the impeller for wear or damage, also check shims (17a) & (17b) and replace if necessary. **NOTE:** Seal spring relaxes when impeller is removed and may cause oil to leak through.

2-STAGE MODELS: (See Fig's 9 & 10) To inspect or replace impellers (3) and impeller o-rings (43), remove screws (40) and remove strainer (24). Remove cap screws (32), flat washers (30) and brackets (41) then remove suction case (4). Check suction case (4) lining for wear, cuts, or defects and replace if necessary. Now remove locknut (16) and washer (27) from shaft. The outer impeller (3) should slip off the shaft, if not, remove the o-ring (43) from the impeller groove and use a bearing puller. Inspect the impeller for wear or damage, remove shims (17a), (17b), (17c), spacer (45), keys (15), lower diffuser (46), replace if necessary. The inner impeller (3) should slip off the shaft, if not, remove the o-ring (43) from the impeller groove and use a bearing puller. Inspect the impeller for wear or damage, remove shims (17a), (17b) and (17c). Seal spring relaxes when impeller is removed and may cause oil to leak through.

CAUTION ! - Clean all parts with solvent. DO NOT scrape, sand or file aluminum parts.

F-2.2) Reassembly:
To reassemble, insert key (15) into shaft (39), slide shims (17a), (17b) & (17c) onto shaft, then apply an anti-seize compound on the shaft area where the impeller fits. Insert o-ring (43) into groove on impeller (3) and slide the impeller (3) onto the shaft, replace washer (27) and two locknuts (16) as shown in Fig. 7 & 8, onto shaft and tighten to 37 ft lbs. Replace suction case (4) onto diffuser (9) and brackets (41- on 7-08 models), lining up holes and inserting cap screws (32) with flat washers (30) tightening to 5 Ft. lbs.

2-STAGE MODELS: To reassemble, insert keys (15) into shaft (39), slide inner shims (17a), (17b) & (17c) onto shaft, then apply an anti-seize compound on the shaft area where the impeller fits. Insert o-ring (43) into groove on inner impeller (3) and slide the impeller (3) onto the shaft. Place lower diffuser assembly (46) onto upper diffuser (9). Slide spacer (45) and outer shims (17a), (17b) & (17c) onto shaft, then apply an anti-seize compound on the shaft area where the outer impeller fits. Insert o-ring (43) into groove on outer impeller (3) and slide the impeller (3) onto the shaft, replace washer (27) and locknut (16) onto shaft and tighten to 30 ft lbs. Replace suction case (4) onto diffuser (9) and brackets (41), lining up holes and inserting cap screws (32) with flat washers (30) tightening to 5 Ft. lbs.

After assembly, check that the impeller rotates smoothly, but with a slight drag due to bearing and rotary seal friction. If the impeller turns roughly, the bearings should be replaced (See Section F-6), If impeller hangs up or is hard to turn, the gap between the impeller and suction case should be checked. To check the gap, a feeler gauge should be used. Check the gap between the suction case liner and the impeller vanes as shown in Figure 3. Determine the proper gap setting from Table 2 and adjust by adding or removing shims (17a), (17b) & (17c) behind the impeller.

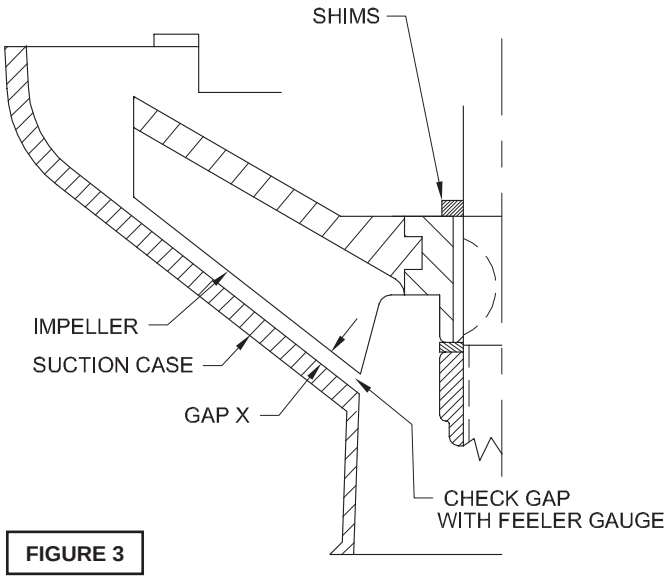


FIGURE 3

TABLE 2 - IMPELLER GAP		
PUMP MODEL	**HP, 60 CYCLE**	**GAP "X"**
7-06000	10.5	.020 to .030
7-08000	17	.020 to .030
7-08000 2 Stage	17	.020 to .030

Inspect strainer (24) and clean, making sure hole are not clogged to ensure unrestricted flow. Now position strainer (24) onto suction case (4). On 7-06 pump models insert the rest of cap screws (32) with flat washers (30) tightening to 5 Ft. lbs. On 7-08 models insert three screws (40) in holes and tightening.

F-3) Shaft Seal & Bearing Service:
F-3.1) Disassembly:
To replace shaft seal, drain oil per Section F-1.1 and remove impeller per Section F-2. Remove the lower end assembly from the frame and motor assembly by lightly tapping the diffuser (9) with a plastic hammer, until free. Now remove o-rings (19) and (20), replace o-rings showing any nicks, cuts cracks, or deformation. Slip the lower end out of the frame assembly being careful not to lose the motor shaft key (14). Remove the seal retaining ring (10a) seal spring (10b), and seal rotating member (10c) from shaft (39), See Figure 4.

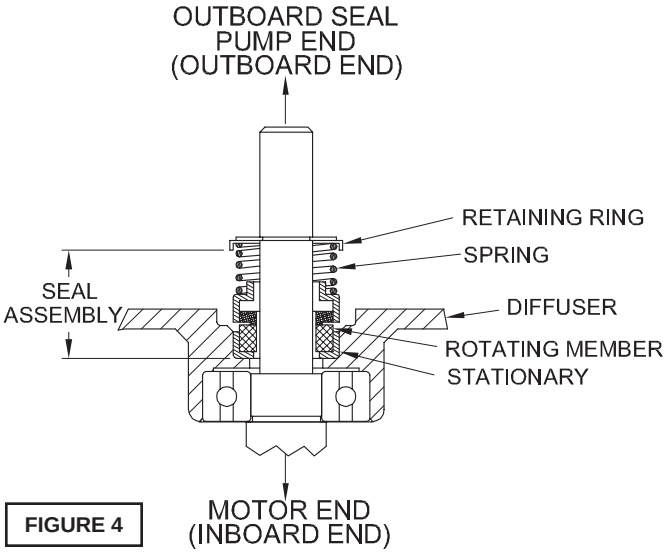


FIGURE 4

Examine all seal parts and specifically contact faces. Inspect seal for signs of uneven wear pattern on stationary members, chips and scratches on either seal face. **DO NOT** interchange seal components, replace the entire shaft seal (10). Disconnect lock wire (29) and remove sleeve nut (28) from sleeve (12), then push sleeve (12) out of diffuser (9). Using a pair of snap ring pliers, remove the retaining ring (42) from sleeve (12). Remove the stub shaft (39) assembly with bearings (7) and (8). This will allow the removal of stationary (10d) by pushing out from the back side of sleeve (12).

Bearings that feel rough, show wear or rust should be replaced. Using a press or bearing puller, remove bearings (7) & (8) if replacement is needed. When removing or installing bearings, always press on or off by the inner race. **DO NOT push on the outer race**.

F-3.2) Reassembly:
On 7-06 pump models, press bearings (7) and (8) onto shaft (39). On 7-08 pump models with angular contact bearing(s) (7), it is **IMPORTANT** that this bearing be installed as shown in Figure 5. The outer race of bearing (7) that is imprinted with the words **"SUPPORT HERE"** must be positioned toward the diffuser (9). Axial thrust after start up is in the direction towards the impeller. Inner race of bearing has more surface area on top side when installed correctly.

When installed correctly, there will be movement upward in shaft assembly. This is opposite of downward thrust which occurs when pump is running. “LOOSENESS” between inner and outer race is normal for angular contact bearing. Bearing failure will result in a short period of time if it is not installed as specified.

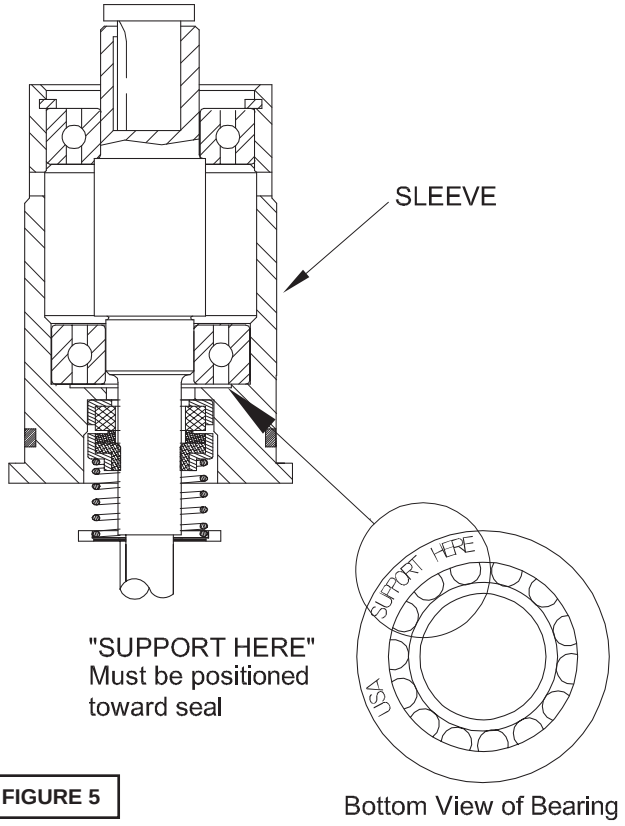


FIGURE 5

Clean oil cavity in sleeve (12). Lightly oil **(DO NOT use grease)** outer surface of stationary member (10d). Press stationary member (10d) firmly into sleeve (12), using a seal pusher (see Parts List - seal tool kit). Nothing but the seal pusher is to come in contact with the seal face. Make sure the stationary member is in straight. (See Figure 6A). Slide sleeve (12) over shaft and bearing assembly. Insert retaining ring (42) into sleeve (12). Check o-ring (13) on sleeve (12) and replace if damaged. Assemble sleeve nut (28) onto sleeve (12) and tighten. Now connect lock wire (29) to sleeve and nut. Slide sleeve and bearing assembly into diffuser (9) being careful not to damage o-ring (13).

CAUTION ! - Handle seal parts with extreme care. DO NOT scratch or mar lapped surfaces.

IMPORTANT ! - DO NOT hammer on the seal pusher- it will damage the seal face.

Slide a bullet (see parts list-seal tool kit) over stub shaft (39). Lightly oil **(DO NOT use grease)** shaft, bullet and inner surface of bellows on rotating member (10c). With lapped surface of rotating member (10c) facing inward toward stationary member (10d), slide rotating member (10c) over bullet and onto shaft, using seal pusher, until lapped faces of (10d) and (10c) are together (see Figure 6B).

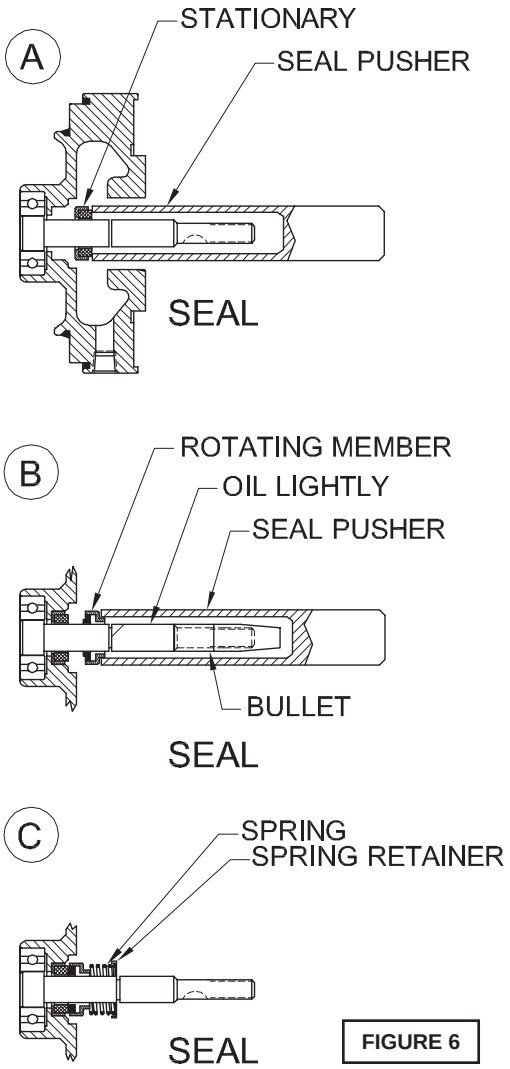


FIGURE 6

IMPORTANT ! - It is extremely important to keep seal faces clean during assembly. Dirt particles lodged between these faces will cause the seal to leak.

Place spring (10b) over shaft and in place on rotating member (10c), making sure it is seated on retainer and not cocked or resting on bellows tail. Slide retaining ring (10a) over shaft and let rest on spring (10b). (See Figure 6C). **NOTE:** When installing the seal retainer over shaft, do not scratch the shaft or seal seat face. Assemble impeller, suction case and screen per Section F-3.2. Replace oil as outlined in paragraph F-2.2.

F-4) Discharge and Motor Service:
F-4.1) Disassembly:
Refer to Section F-1 before disassembly. Check for indications of water leaks before the pump has a chance to dry out. Disassemble suction end of pump per Sections F-2 & F-3. Remove cap screws (31) and washers (30), hydraulic fittings (2) and o-rings (25) and (26) from discharge head (22). Use care to avoid damaging the metal surface. Use the flats provided on the hydraulic fittings for removal. Carefully, using a plastic hammer, tap the discharge case (22) free from the frame assembly and remove. Now remove o-rings (19) and (20), replace o-rings showing any nicks, cuts, cracks, or deformation. Visually check the area around the hydraulic motor (6) for oil or water.

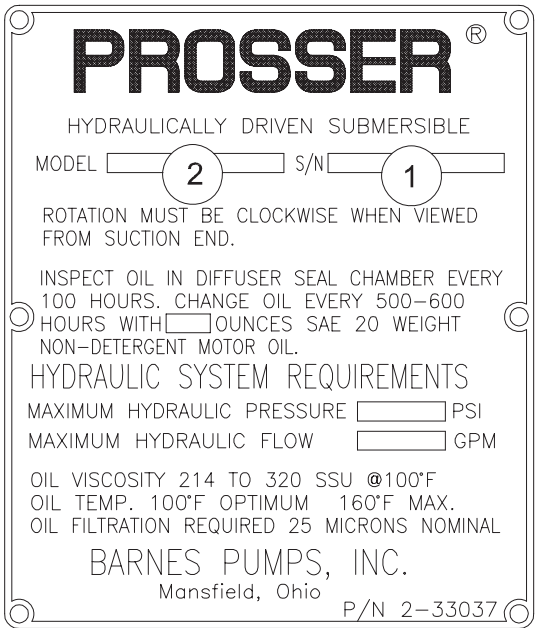
The three recessed head cap screws (33) can now be removed from the motor mounting plate (34). Remove the mounting plate (34), hydraulic motor (6) and retainer (23). If motor (6) is being replaced, remove mounting plate (34) by removing screws (35).

F-4.2) Reassembly:
Assemble motor (6) to mounting plate (34) by inserting screws (35) into the inner two holes and tightening. Insert motor and mounting plate into frame (5). Place retainer (23) onto mounting plate from the opposite end of frame (5) and insert three screws (33) in the outer holes and tighten. To assemble discharge case (22) to frame (5), set the assembly in the upright position. Apply a grease to o-rings (19) and (20) and place discharge case (22) onto the frame assembly lining up the holes. Insert cap screws (31) with washers (30), into holes and torque to 75 In Lbs. Place o-rings (25) and (26) in the appropriate locations (see Fig,s 7 or 9, for internal or external operation), on the hydraulic fittings (2). Insert hydraulic fittings (2), through discharge case (22) and into motor (6) and tighten, by placing wrench on the flats located on fitting. Assemble lower end of pump per Sections F-3 and F-2.

SECTION: G REPLACEMENT PARTS

G-1 ORDERING REPLACEMENT PARTS:
Your local Prosser distributor can supply parts and repair service. When ordering parts, ALWAYS furnish the following information: Specify pump model number as shown on nameplate, serial number, part number, item number and part name.

1. Pump serial number. (G-1)
2. Pump model number. (G-2)
3. Part description.
4. Item part number.
5. Quantity required.
6. Shipping instructions.
7. Billing Instructions.



G-1 SERIAL NUMBER:
The Serial Number block will consists of a six digit number, which is specific to each pump and may be preceded by a alpha character, which indicates the plant location. This number will also be suffixed with a three or four digit number, which indicates the date the unit was built (Date Code).
EXAMPLE: A012345 495

Reference the six digit portion (Serial Number) of the number when referring to the product.

G-2 MODEL NUMBER:
This designation consist of numbers which represent, Pump Line, Horsepower, Motor phase, Voltage and Variations (as shown below). This Number is used for ordering and obtaining information.

TROUBLE SHOOTING

CAUTION ! Always disconnect the pump from the electrical power source before handling.
If the system fails to operate properly, carefully read instructions and perform maintenance recommendations.
If operating problems persist, the following chart may be of assistance in identifying and correcting them:
MATCH "CAUSE" NUMBER WITH CORRELATING "CORRECTION" NUMBER.

NOTE: Not all problems and corrections will apply to each pump model.

PROBLEM	CAUSE	CORRECTION
Pump delivers insufficient capacity	1. Supply pressure flow too low. 2. Excessive inflow or pump not properly sized for application. 3. Discharge restricted 4. Check valve stuck closed or installed backwards 5. Shut-off valve closed 6. Impeller jammed or loose on shaft, worn or damaged, impeller cavity or inlet plugged 7. Pump may be airlocked 8. Pump running backwards 9. Piping is leaking	1. Check supply pressure / flow. 2. Recheck all sizing calculations to determine proper pump size. 3. Check discharge line for restrictions, including ice if line passes through or into cold areas. 4. Remove and examine check valve for proper installation and freedom of operation. 5. Open valve. 6. Check impeller for freedom of operation, security and condition. Clean impeller and inlet of any obstruction. 7. Loosen union slightly to allow trapped air to escape. Clean vent hole. 8. Check rotation. Hydraulic lines may be backwards. 9. Repair fixtures as required to eliminate leakage. 10. Replace portion of discharge pipe with flexible connector. 11. Repair pump, replace damaged bearings and/or shaft.
Pump will not run	6. Impeller jammed or loose on shaft, worn or damaged, impeller cavity or inlet plugged.	
Pump operates noisily or vibrates excessively	6. Debris in impeller cavity or broken impeller 8. Pump running backwards 10. Piping attachments to buiding structure too rigid or too loose. 11. Worn bearings, motor shaft bent.	

PUMP SERIES: 7-06000 & 7-08000

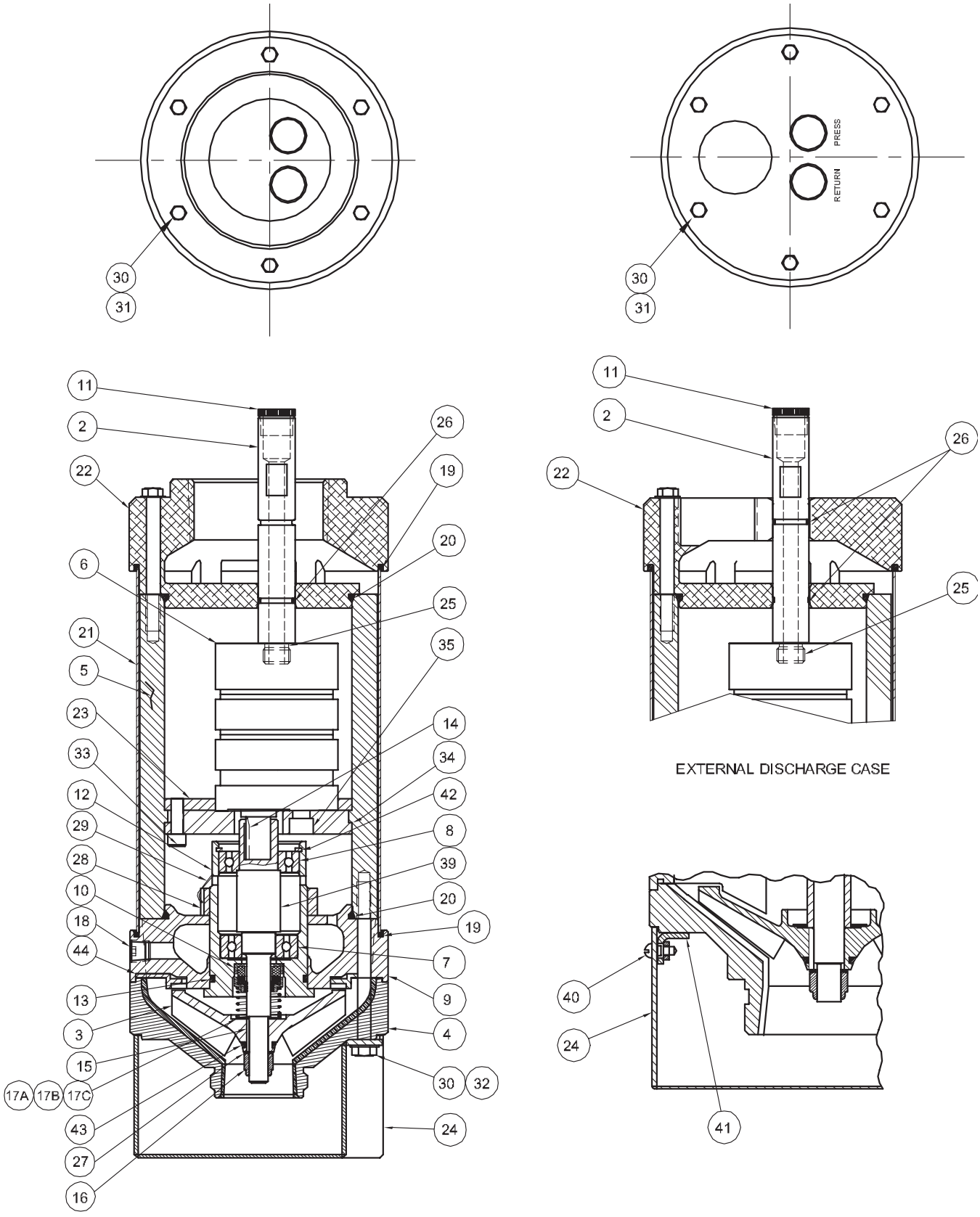


FIGURE 7

PUMP SERIES: 7-06000 & 7-08000

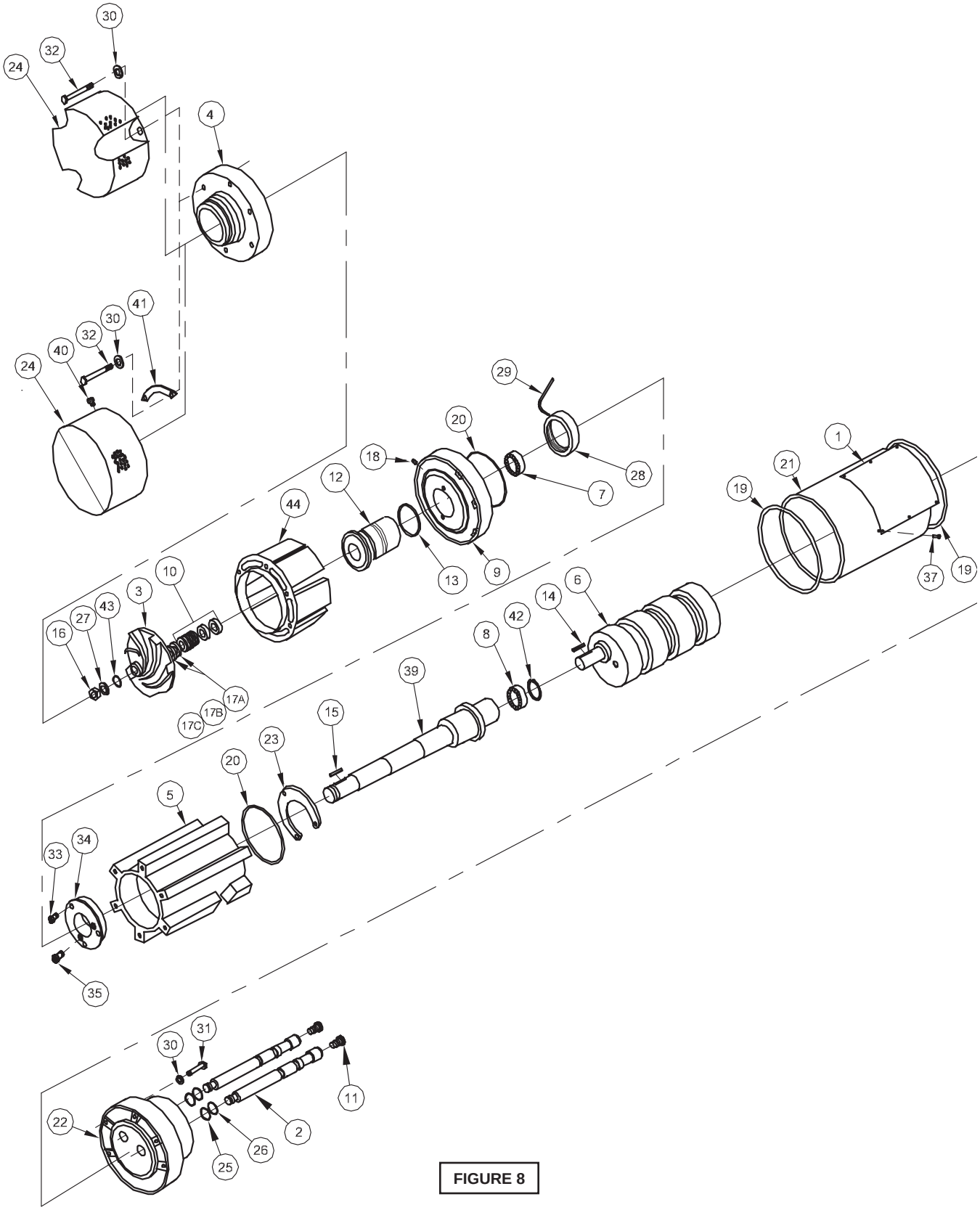


FIGURE 8

PUMP SERIES: 7-06000

PARTS KITS

Seal Tool Kit.....T/L - 21355

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION	
1	1	2-33037	Name Plate	
2	2	7-060811	Hydraulic Fitting	
3	1	615026B-5	Impeller, Stainless, 3.56” Dia.	
4	1	615170	Suction Case, Aluminum	
5	1	7-060500	Frame, Aluminum	
6	1	7-060600	Hydraulic Motor	10.5HP, 2000PSI
7	1	2-34010	Ball Bearing, Lower	
8	1	2-34011	Ball Bearing, Upper	
9	1	7-060300	Diffuser	
10	1	2-31036	Shaft Seal	C/CE/B
11	2	2-32043-3	Pipe Plug, Poly.	3/8 NPT
12	1	7-060303	Sleeve	
13	1	2-31003-133	O-Ring	Buna-N, 1.799” ID
14	1	625-00677	Key	.13 x .13 x .75
15	1	7-060410	Key	.09 x .13 x .625
16	1	2-12015-2	Lock Nut, Impeller	3/8-24, Stainless
17a	A/R	2-21002-64	Flat Washer, (.016)	3/8” Stainless
17b	A/R	2-21002-65	Flat Washer, (.032)	3/8” Stainless
17c	A/R	2-21012-1	Flat Washer, (.005)	3/8” Stainless
18	1	2-32004-8	Pipe Plug	.125 NPT. Stainless
19	2	2-31003-158	O-Ring	Buna-N, 4.737” ID
20	2	2-31003-239	O-Ring	Buna-N, 3.609” ID
21	1	615017	Outer Shell	
22	1	7-061700	Discharge Case, External	7-06106-020 / 1.5”
	1	7-062700	Discharge Case, Internal	7-06206-020 / 2.5”
23	1	7-060502	Retainer Mounting Plate	
24	1	9-100000-4	Strainer	Stainless Steel
25	2	2-31015-6	O-Ring	Buna-N, .078” ID
26	4	2-31003-016	O-Ring	Buna-N, .614” ID
27	1	550048	Lock Washer, Impeller	3/8” Stainless
28	1	7-060311	Sleeve Nut	#2-16, Steel
29	1	MS20995-C32	Lock Wire	Stainless
30	12	2-21002-11	Flat Washer	1/4”, ZP
31	6	2-23007-10	Hex Hd Cap Screw	1/4-20 x 2.50”, ZP
32	6	2-23013-28	Hex Hd Cap Screw	1/4-20 x 3.00”, ZP
33	3	2-23025-25	Socket Hd Screw	1/4-20 x .75
34	1	7-060501	Mounting Plate	
35	2	2-23025-18	Socket Hd Screw	5/16-18 x .625
37	6	2-28002-3	Rivet	
38	8 oz.	A3195AB	Oil, Navy	7-06106-020
39	1	7-060403	Stub Shaft	Stainless
42	1	2-27006-165	Retainer Ring	1.650” OD
43	1	2-31003-113	O-Ring, Impeller	Buna-N, .549” ID

PUMP SERIES: 7-08000

PARTS KITS

Seal Tool Kit.....T/L - 21355

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION		
1	1	2-33037	Name Plate		
2	2	7-080810	Hydraulic Fitting		7-08306/08406
	2	7-080811	Hydraulic Fitting		7-08312/08412
3	1	9-603200-1	Impeller, 5.31” Dia., Stainless		7-08306/08406
	1	9-605200-1	Impeller, 5.31” Dia., Stainless		7-08312/08412
4	1	9-2501000-1	Suction Case, Aluminum		7-08306/08406
	1	9-500100-1	Suction Case, Aluminum		7-08312/08412
5	1	7-080500	Frame, Aluminum		
6	1	7-060600	Hydraulic Motor, 7-08306/08406		10.5HP, 2000PSI
	1	7-080600	Hydraulic Motor, 7-08312/08412		17HP, 2000PSI
7	1	2-34008	Ball Bearing, Lower		
8	1	2-34009	Ball Bearing, Upper		
9	1	7-080300-2	Diffuser		
10	1	9-605350	Shaft Seal		Silicon/Silicon/Viton®
11	2	2-32043-3	Pipe Plug, Poly. 3/8” NPT		
12	1	7-080303	Sleeve		
13	1	2-31003-149	O-Ring Buna-N, 2.80” ID		
14	1	625-00677	Key, 7-08306/08406		.13 x .13 x .75
	1	7-080409	Key, 7-08312/08412		.19 x .19 x 1.0
15	1	9-500407	Key		.09 x .13 x .688
16	1	2-20002-38	Lock Nut, Impeller		1/2-20 Stainless
17a	A/R	2-21003-34	Flat Washer, (.016)		5/8” Stainless
17b	A/R	2-21003-35	Flat Washer, (.032)		5/8” Stainless
17c	A/R	2-21012-2	Flat Washer, (.005)		.632” Stainless
18	1	2-32004-12	Pipe Plug		.25” NPT, Stainless
19	2	2-31003-260	O-Ring Buna-N, 6.484” ID		
20	2	2-31003-246	O-Ring Buna-N, 4.484” ID		
21	1	9-250555	Outer Shell		
22	1	7-081700	Discharge Case, External	7-08306	
	1	7-081710		7-08312	
	1	7-082710	Discharge Case, Internal	7-08406	
	1	7-082700		7-08412	
23	1	7-080504	Retainer Mounting Plate		
24	1	9-500000-1	Strainer Stainless Steel		
25	2	2-31015-6	O-Ring, 7-08306/08406	Buna-N, .078” ID	
	2	2-31015-8	O-Ring, 7-08312/08412	Buna-N, .064” ID	
26	4	2-31003-016	O-Ring, 7-08306/08406	Buna-N, .614” ID	
		2-31003-117	O-Ring, 7-08312/08412	Buna-N, .799” ID	
27	1	9-815211	Lock Washer, Impeller	.51 x 1.20 Stainless	
28	1	7-080311	Sleeve Nut	#3-12 Steel	
29	1	MS20995-C32	Lock Wire	Stainless	
30	11	2-21002-14	Flat Washer	5/16”, ZP	
31	5	2-23007-11	Hex Hd Cap Screw	5/16-18 x 2.50”, ZP	
32	6	1-172-1	Hex Hd Cap Screw,	7-08306/08406	5/16-18 x 3.25”, Stainless
	6	2-23007-47	Hex Hd Cap Screw,	7-08312/08412	5/16-18 x 3.50”, ZP
33	3	2-23025-25	Socket Hd Screw	1/4-20 x .750”, Stainless	
34	1	7-080501	Mounting Plate,	7-08306/08406	
	1	7-080502	Mounting Plate,	7-08312/08412	
35	2	2-23025-18	Socket Hd Screw	5/16-18 x .625 Stainless	
37	6	2-28002-3	Rivet		
38	12 oz.	A3195AB	Oil, Navy		
39	1	7-080403	Stub Shaft, 7-08306/08406		Stainless
	1	7-080404	Stub Shaft, 7-08312/08412		Stainless
40	3	2-23010-54	Pan Hd Screw	1/4-20 x .50 CAD	
41	3	9-50003	Strainer Bracket		
42	1	2-27006-244	Retainer Ring		
43	1	2-31003-117	O-Ring, Impeller	Buna-N, .799” ID	
44	1	9-501305	Wear Plate	Polyurethane	

PUMP SERIES: 7-08000 2 Stage

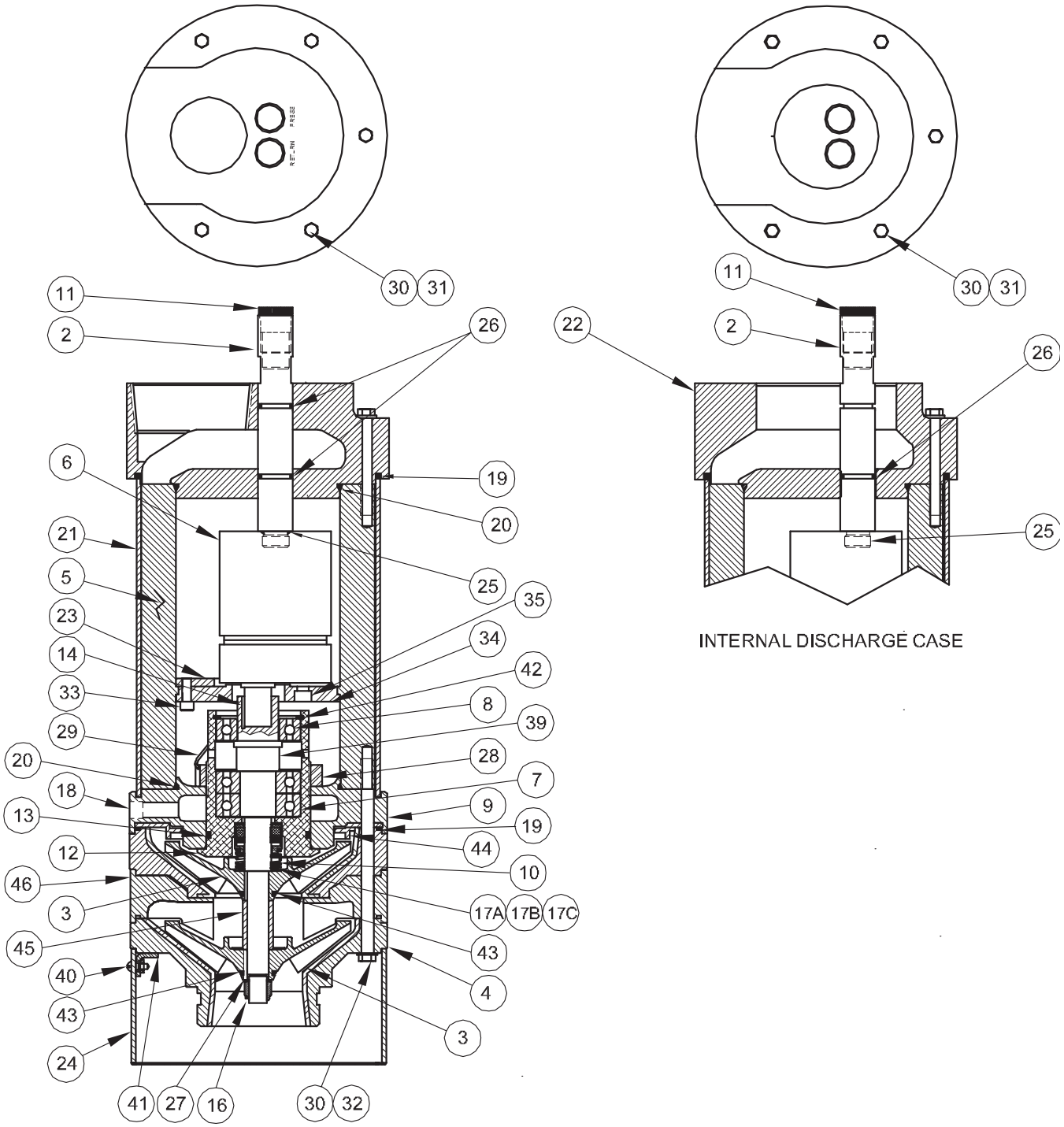


FIGURE 9

PUMP SERIES: 7-08000 2 Stage

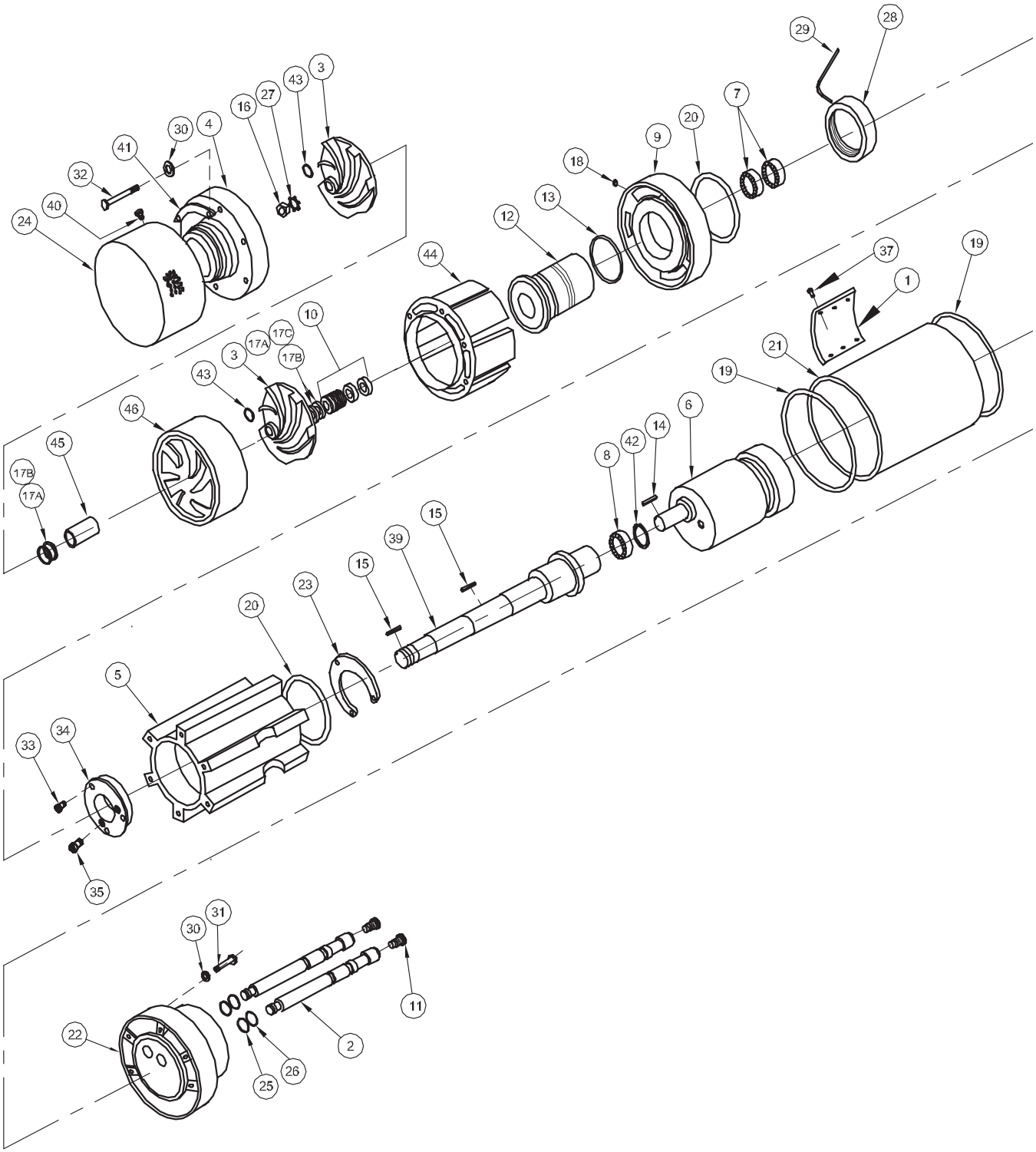


FIGURE 10

PUMP SERIES: 7-08000 2 Stage

PARTS KITS

Seal Tool Kit.....T/L - 21355

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION	
1	1	2-33037	Name Plate	
2	2	7-080811	Hydraulic Fitting	
3	2	9-550200	Impeller, 5.31” Dia., Stainless	
4	1	9-550100	Suction Case, Aluminum	
5	1	7-080500	Frame, Aluminum	
6	1	7-080600	Hydraulic Motor,	17HP, 2000PSI
7	1	2-34020	Ball Bearing, Lower, Angular Contact, Duplex, Tandem Mounting	
8	1	2-34009	Ball Bearing, Upper	
9	1	7-080300-2	Diffuser, Upper	
10	1	9-605350	Shaft Seal	Silicon/Silicon/Viton®
11	2	2-32043-4	Pipe Plug, Poly.	1/2” NPT
12	1	7-080304	Sleeve	
13	1	2-31003-149	O-Ring	Buna-N, 2.80” ID
14	1	7-080409	Key	.19 x .19 x 1.0
15	2	9-500407	Key, Impeller	.09 x .13 x .688
16	1	2-20002-38	Lock Nut, Impeller	1/2-20 Stainless
17a	A/R	2-21003-34	Flat Washer, (.016)	5/8” Stainless
17b	A/R	2-21003-35	Flat Washer, (.032)	5/8” Stainless
17c	A/R	2-21012-2	Flat Washer, (.005)	.632” Stainless
18	1	2-32004-12	Pipe Plug	.25” NPT, Stainless
19	2	2-31003-260	O-Ring	Buna-N, 6.484” ID
20	2	2-31003-246	O-Ring	Buna-N, 4.484” ID
21	1	9-250555	Outer Shell	
22	1	7-081710	Discharge Case,	External 7-08312
	1	7-082700	Discharge Case, Internal	7-08412
23	1	7-080504	Retainer Mounting Plate	
24	1	9-500000-1	Strainer	Stainless Steel
25	2	2-31015-8	O-Ring	Buna-N, .064” ID
26	4	2-31003-117	O-Ring	Buna-N, .799” ID
27	1	9-815211	Lock Washer, Impeller	.51 x 1.20 Stainless
28	1	7-080311	Sleeve Nut	#3-12 Steel
29	1	MS20995-C32	Lock Wire	Stainless
30	11	2-21002-14	Flat Washer	5/16”, ZP
31	5	2-23007-11	Hex Hd Cap Screw	5/16-18 x 2.50”, ZP
32	6	2-23013-92	Hex Hd Cap Screw	5/16-18 x 5.50”, ZP
33	3	2-23025-25	Socket Hd Screw	1/4-20 x .750”, Stainless
34	1	7-080502	Mounting Plate	
35	2	2-23025-18	Socket Hd Screw	5/16-18 x .625 Stainless
37	6	2-28002-3	Rivet	
38	12 oz.	A3195AB	Oil, Navy	
39	1	7-080405	Stub Shaft	Stainless
40	3	2-23010-54	Pan Hd Screw	1/4-20 x .50 CAD
41	3	9-500003	Strainer Bracket	
42	1	2-27006-244	Retainer Ring	
43	2	2-31003-117	O-Ring, Impeller	Buna-N, .799” ID
44	1	9-501305	Wear Plate	Polyurethane
45	1	9-550209	Spacer	Stainless
46	1	7-080305	Diffuser, Lower	

BARNES® BARNES PRESSURE SYSTEMS CROWN

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Limited 24 Month Warranty

Crane Pumps & Systems warrants that products of our manufacture will be free of defects in material and workmanship under normal use and service for twenty-four (24) months after manufacture date, when installed and maintained in accordance with our instructions.This warranty gives you specific legal rights, and there may also be other rights which vary from state to state. In the event the product is covered by the Federal Consumer Product Warranties Law (1) the duration of any implied warranties associated with the product by virtue of said law is limited to the same duration as stated herein, (2) this warranty is a LIMITED WARRANTY, and (3) no claims of any nature whatsoever shall be made against us, until the ultimate consumer, his successor, or assigns, notifies us in writing of the defect, and delivers the product and/or defective part(s) freight prepaid to our factory or nearest authorized service station. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. **THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY AND ALL WARRANTIES WITH RESPECT TO ANY PRODUCT SHALL BE TO REPLACE OR REPAIR AT OUR ELECTION, F.O.B. POINT OF MANUFACTURE OR AUTHORIZED REPAIR STATION, SUCH PRODUCTS AND/OR PARTS AS PROVEN DEFECTIVE. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLIGENCE OR OTHERWISE.** Unless expressly stated otherwise, guarantees in the nature of performance specifications furnished in addition to the foregoing material and workmanship warranties on a product manufactured by us, if any, are subject to laboratory tests corrected for field performance. Any additional guarantees, in the nature of performance specifications must be in writing and such writing must be signed by our authorized representative. Due to inaccuracies in field testing if a conflict arises between the results of field testing conducted by or for user, and laboratory tests corrected for field performance, the latter shall control. **RECOMMENDATIONS FOR SPECIAL APPLICATIONS OR THOSE RESULTING FROM SYSTEMS ANALYSES AND EVALUATIONS WE CONDUCT WILL BE BASED ON OUR BEST AVAILABLE EXPERIENCE AND PUBLISHED INDUSTRY INFORMATION. SUCH RECOMMENDATIONS DO NOT CONSTITUTE A WARRANTY OF SATISFACTORY PERFORMANCE AND NO SUCH WARRANTY IS GIVEN.**

This warranty shall not apply when damage is caused by (a) improper installation, (b) improper voltage (c) lightning (d) excessive sand or other abrasive material (e) scale or corrosion build-up due to excessive chemical content. Any modification of the original equipment will also void the warranty. We will not be responsible for loss, damage or labor cost due to interruption of service caused by defective parts. Neither will we accept charges incurred by others without our prior written approval.

This warranty is void if our inspection reveals the product was used in a manner inconsistent with normal industry practice and\or our specific recommendations. The purchaser is responsible for communication of all necessary information regarding the application and use of the product. **UNDER NO CIRCUMSTANCES WILL WE BE RESPONSIBLE FOR ANY OTHER DIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO TRAVEL EXPENSES, RENTED EQUIPMENT, OUTSIDE CONTRACTOR FEES, UNAUTHORIZED REPAIR SHOP EXPENSES, LOST PROFITS, LOST INCOME, LABOR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, WHICH DAMAGES ARE CAUSED BY ANY DEFECTS IN MATERIAL AND\OR WORKMANSHIP AND\OR DAMAGE OR DELAYS IN SHIPMENT. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE**.

No rights extended under this warranty shall be assigned to any other person, whether by operation of law or otherwise, without our prior written approval.

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Ontario, Canada L6T 2J6
Phone: (905) 457-6223
Fax: (905) 457-2650

IMPORTANT!
WARRANTY REGISTRATION

Your product is covered by the enclosed Warranty.
To complete the Warranty Registration Form go to:

http://www.cranepumps.com/ProductRegistration/

If you have a claim under the provision of the warranty, contact your local Crane Pumps & Systems, Inc. Distributor.

RETURNED GOODS
RETURN OF MERCHANDISE REQUIRES A "RETURNED GOODS AUTHORIZATION".
CONTACT YOUR LOCAL CRANE PUMPS & SYSTEMS, INC. DISTRIBUTOR.

Products Returned <u>Must</u> Be Cleaned, Sanitized,
Or Decontaminated As Necessary Prior To Shipment,
To Insure That Employees Will Not Be Exposed To Health
Hazards In Handling Said Material. All Applicable Laws
And Regulations Shall Apply.

Notes