BARNES®

SERVICE MANUAL
OGP 2 HP Pump

omni GRIND™ plus
GRINDER PUMPS

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.***

CRANE®
A Crane Co. Company

PUMPS & SYSTEMS

420 Third Street
Piqua, Ohio 45356
Phone: (937) 778-8947
Fax: (937) 773-7157
www.cranepumps.com

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

Submersible Wastewater Pump Association SWPA MEMBER

Form No. SM115336-Rev. B

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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 orIndicates 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.


Hazardous voltage can shock, burn or cause death.

Only qualified personnel should install, operate and repair pump. Any wiring of pumps should be performed by a qualified electrician.

WARNING ! - To reduce risk of electrical shock, pumps and control panels must be properly grounded in accordance with the National Electric Code (NEC) or the Canadian Electrical Code (CEC) and all applicable state, province, local codes and ordinances.

WARNING! - To reduce risk of electrical shock, always disconnect the pump from the power source before handling or servicing. Lock out power and tag.

Prevent large articles of clothing, large amounts of chemicals, other materials or substances such as are uncommon in domestic sewage from entering the system.

During power black-outs, minimize water consumption at the home(s) to prevent sewage from backing up into the house.

Always keep the shut-off valve completely open when system is in operation (unless advised otherwise by the proper authorities). Before removing the pump from the basin, be sure to close the shut-off valve. (This prevents backflow from the pressure sewer.)

Keep the control panel locked or confined to prevent unauthorized access to it.

If the pump is idle for long periods of time, it is advisable to start the pump occasionally by adding water to the basin.

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.

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.

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

Secure the pump in its operating position so it can not tip over, fall or slide.

Cable should be protected at all times to avoid punctures, cut, bruises and abrasions - inspect frequently.

Never handle connected power cords with wet hands.

To reduce risk of electrical shock, all wiring and junction connections should be made per the NEC or CEC and applicable state or province and local codes. Requirements may vary depending on usage and location.

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.

Do not remove cord and strain relief. Do not connect conduit to pump.

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.

TOOL LIST

- Cresent Wrench
- Hammer
- Brass Flat Punch
- 1/2” Wrench Combination End
- 2 - 3/16” Flat Blade Screwdrivers
- 1/4” Nut Driver
- 1/8” Allen Wrench
- 5/16” Allen Wrench
- Needle-Nose Pliers
- 4” PVC Coupler
- 1/4-20 Bolt
- Seal Pushers - Part No: TL-21356
- “Bullets” - Thread Protectors - Part No: TL-21375
- Dielectric Cooling Oil 90oz.
- Blue 242, Green 609, Loctite
- Pressure Gauge Kit - Part No: 085343
- Megohmmeter & Multi-Meter w/Clamp
- Propane Torch

OGP 2HP DISASSEMBLY

Visual Inspection of Pump

Quick visual inspections can save time. A visual Examination of the pump for damage to cords, controls, or cutter, and a thorough electrical check should be performed to determine a pumps condition.

Cut Cords

Check the cord(s) for any cuts or gouges. If there is any noticeable damage, do not use the cord, remove, and install a new cord if applicable.

Megger the Pump Leads - (Megohmmeter)

This test is to determine the resistance of the cord and motor insulation. The meter will test zero Ω if the insulation is damaged or breaking down thus allowing current to flow through the insulation.

This test can best be performed if the pump leads are disconnected from the control panel, or the junction box. To perform this test, touch one lead to the green ground. Touch the other lead to the black wire. Repeat this test with ground to white. To pass this test, a pump set must have a reading of 5mΩ or higher on all leads. Note that a “0” reading indicates a dead short.

CAUTION: After performing a megger test ALWAYS discharge cord set leads to ground.

Dielectric Withstand Test (Hi-Pot Test)

This test ensures that the insulation and/or spacings between live and isolated parts is suitable for operating voltage. This test is especially useful in detecting inadequate insulation which may not be readily visible (such as between windings within a motor) or due to some other failure (eg. Pinched wire, stray strands, nicked motor insulation)

This test uses a very high potential (usually 1000 volts + twice the rated voltage) to stress the insulation system of the pump and motor to verify its integrity. Because it stresses the insulation, it is actually a destructive test and should only be used on a limited basis. Repeated testing will cause the insulation to break down and fail.Touch the green ground lead from the pump to one of the meter leads, and the other meter lead to one of the power leads. Repeat this test with all of the power leads.

CAUTION: After performing a Hi-Pot test, ALWAYS discharge cord set leads to ground.

Check the Resistance - (Multi-Meter)

CAUTION: Perform this test with the pump off.

This test is to check for open circuits or loose connections and also to determine if the motor windings are good.

To perform this test, touch one meter lead to the white pump lead, touch the other meter lead to the black pump lead, record the reading. Then compare the readings to the readings found on motor winding resistance charts (Table 1). Readings should be within ±5% of nameplate.

(If AUF PUMP - Tip on/off float up while measuring resistance.
(If AEU PUMP - Remove AUE level control and install test plug while performing this test.)

Readings should be as follows: Black to White = 1.06ohms.
(All figures are approximate, variances may occur as results of pump motor manufacturer specs, and or, direct burial cable of varying lengths.)

If these readings do not correlate, then the motor windings or wiring is faulty.

TABLE 1: Motor Winding Resistance

MODEL No.	HP	VOLT	PH	NEMA START CODE	FULL LOAD AMPS	LOCKED ROTOR AMPS	CORD SIZE	CORD TYPE	CORD O.D. ± .02 (.5) in (mm)	CORD LENGTH Ft. (m)	WINDING RESISTANCE MAIN-START
OGP2022L	2	240	1	H	16.5	53.8	12/3	SOW	.61 (15.5)	15 (4.6)	1.06-3.60
OGP2022AUF	2	240	1	H	16.5	53.8	12/5	SOW	.71 (15.5)	15 (4.6)	1.06-3.60
OGP2022AUE	2	240	1	H	16.5	53.8	12/5	SOW	.71 (15.5)	15 (4.6)	1.06-3.60

Winding Resistance ±5%. Pump Rated For Operation at ±10% Voltage at Motor.

Jammed or Worn Cutter

Check the cutter for freedom of movement, the cutter should move by hand. Also check for excessive wear, if there is evidence of this, then the worn piece(s) must be replaced.
NOTE: If the cutter is excessively worn, the shredding ring may be reversed.

CAUTION: CUTTER ASSEMBLY MAY BE SHARP!

Check Valve Evaluation

To check the performance of the check valve, perform a visual inspection of the valve to determine if the ball or flapper is pitted or distorted. In addition, look in the valve to make certain it is free of obstructions that may cause the valve to not seat properly.

Moveable Alignment

To prevent the moveable from leaking, make a visual check from the face of the moveable to the lower pump bracket. The face of the moveable needs to be parallel to the lower pump bracket. When assembled on the pump, the moveable face will be perpendicular to the centerline of the pump discharge.

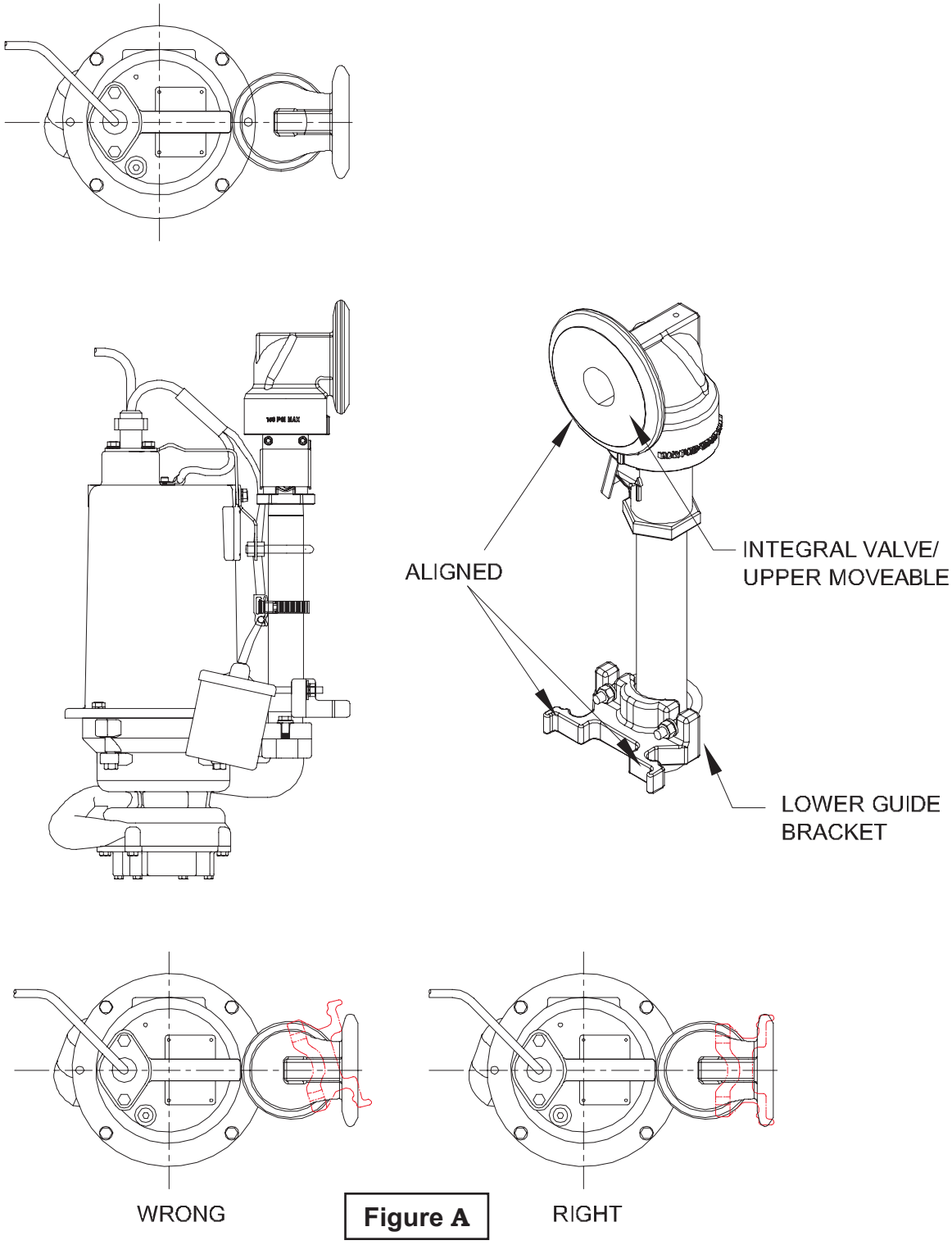


Figure A

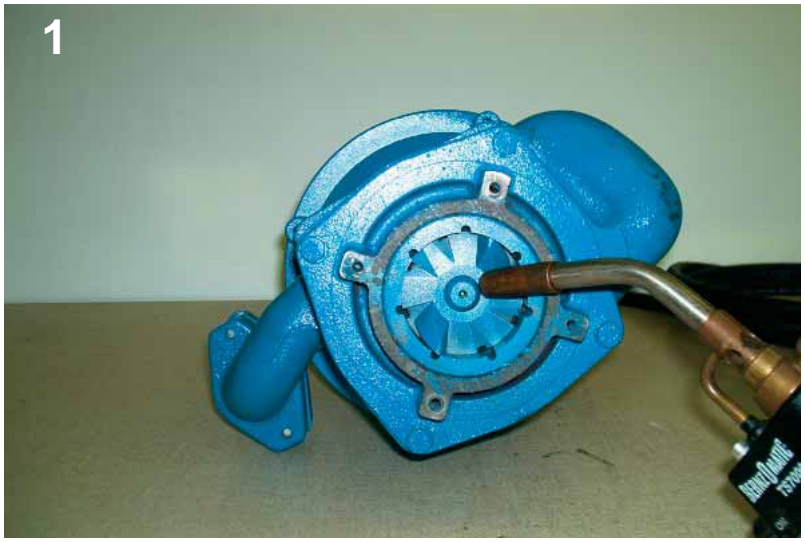
Cutter Removal

CAUTION: Sharp edges, use caution when removing cutter.

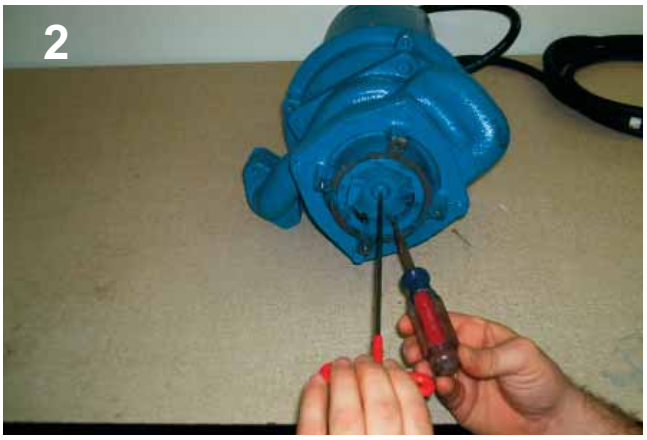
NOTE: Prior to disassembly, mark castings with a permanent marker on all joints to assist in realignment.

With the pump lying on its side, remove the cutter retaining screw and washer. The screw has green loctite so apply heat to the screw, wedge a flat blade screwdriver between cutter and shredding ring and remove screw. Using a flat punch and hammer, tap the cutter in the counterclockwise direction and remove.

Do not attempt to remove the volute before removing the radial cutter.



NOTE: DO NOT USE EXCESSIVE HEAT, IT WILL DAMAGE THE PUMP.



Suction Cover Removal

Loosen and remove the four 5/16 hex head bolts and lock washers from the rim of the suction cover. Remove suction cover and square-ring from bottom of volute.

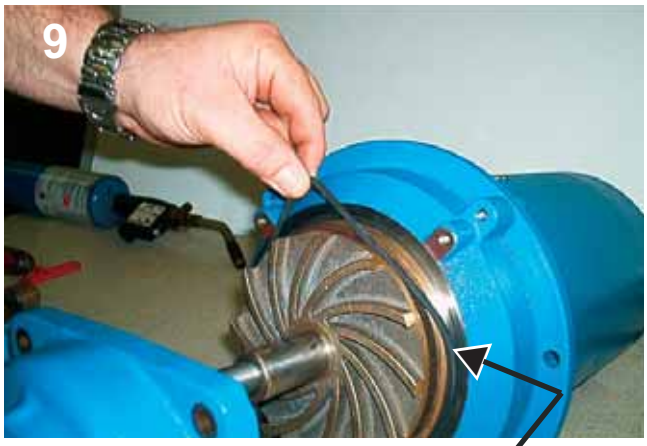
Inspect square-ring for signs of wear and abrasion.

First Stage Impeller Removal

With the pump lying on its side, use a hammer and tap on the face of the impeller vanes. Then, using a flat punch and hammer, tap the impeller in a counterclockwise direction and remove. A large flat bladed screwdriver may be required to hold the motor shaft while unthreading the impeller.

Volute

Loosen and remove the four 5/16 hex head bolts and lock washers from the volute. Remove volute and square ring from pump.



Inspect square-ring for signs of wear and abrasion.

Loosen and remove the two 5/16 bolts and flat washers from the volute discharge. Remove volute discharge flange and o-ring. Inspect cross-over and discharge for signs of accumulation of solids and house hold items. Also, look for signs of excessive wear in the volute.

Inspect o-ring for signs of wear and abrasion.

Oil Removal, Pressure Check

Remove plug from motor housing and drain all oil from motor chamber by setting unit on its side.

If cooling oil is not going to be reused or recycled, it must be disposed of per local and environmental standars

CAUTION! Oil can be under pressure and hot!

Perform Pressure Check

CAUTION: Make certain the cord set is attached to pump. Performing the pressure check without the cord set on may cause the terminal block to blow out.

To check the pump for any seal leaks, attach the pressure gauge assembly using pipe sealant. Tighten the fitting into the hole. Pressurize the gauge to 8 to 10 psi. Use a soap solution around the sealed areas and inspect joints for air bubbles.

If, after 5 minutes the pressure is still holding constant, and no bubbles are observed, slowly bleed the pressure and remove the gauge assembly. Replace the pipe plug using sealant. If the pressure does not hold, then the leak must be located and repaired.

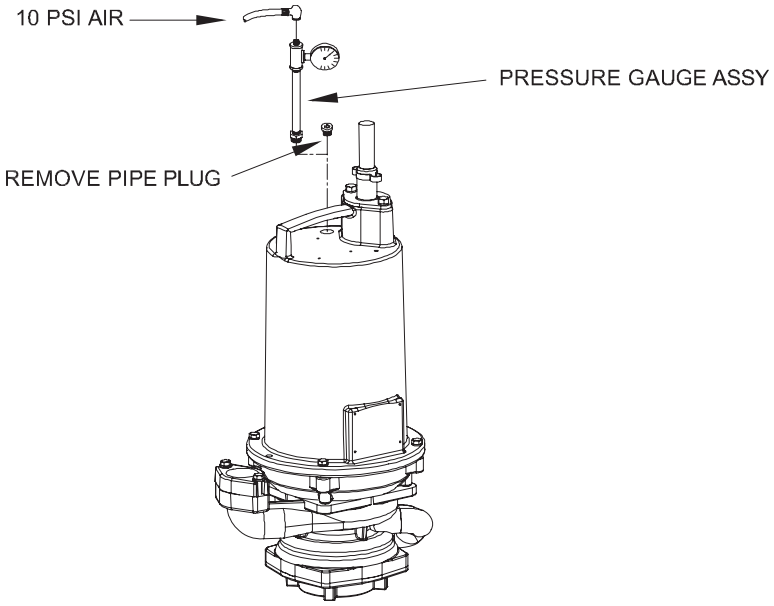
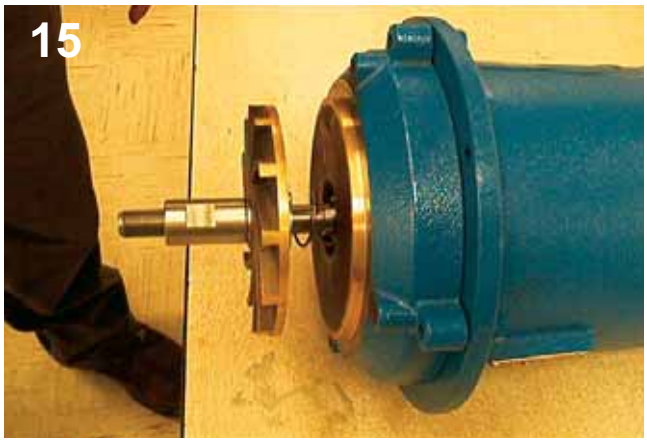


Figure B

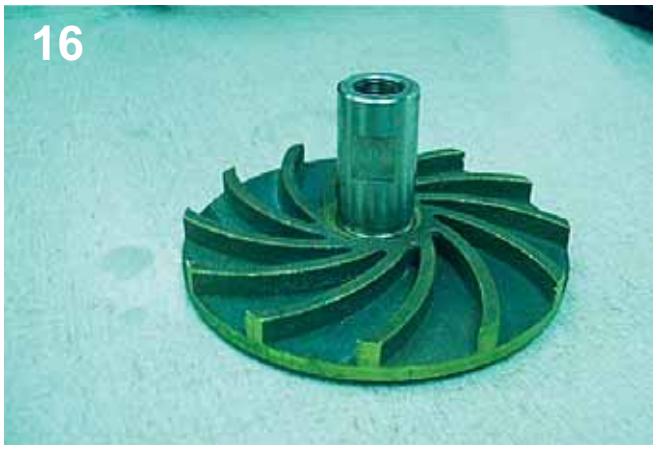
Second Stage Impeller Removal

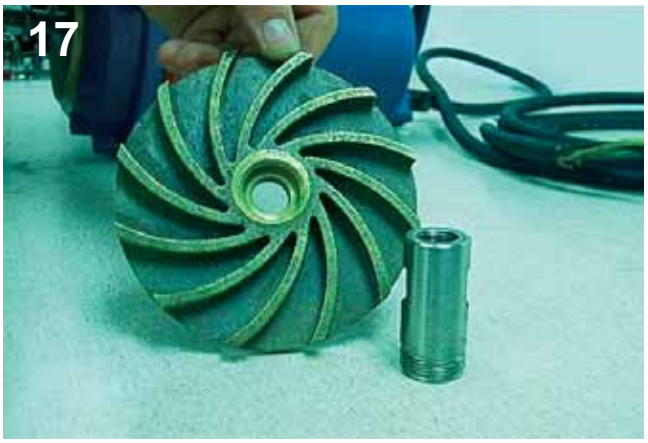
The impeller and spacer sleeve can be removed by using a 7/8” open end wrench or a cresent wrench and turning counterclockwise while holding the motor shaft stationary with a screwdriver.



CAUTION: Use Caution not to damage threads on shaft.

NOTE: With impeller removed, the seal spring is relaxed and some oil may seep from the motor housing. Do not store this pump without the impeller in place to hold pressure on the seal spring. ***Do not pressure check motor housing at this time.***





Inspect spacer sleeve for wear “OD”

The spacer sleeve can be removed by using a 7/8” open end wrench or a cresent wrench while holding impeller stationary. The spacer sleeve threads have green loctite so heat must be used to help remove it from the second stage impeller.

NOTE: DO NOT USE EXCESSIVE HEAT, IT COULD DAMAGE THE PARTS.

Shaft Seal

CAUTION: Handle seal parts and shaft with extreme care. Do not scratch or mar lapped or machined surfaces.

Remove spring and rotating member from shaft.

Examine all seal parts and especially contact faces. Inspect seal for signs of wear, such as uneven wear tracks on stationary members, chips, and scratches on either seal face.
DO NOT interchange seal components, replace the complete seal assembly if replacing seal.

Motor Housing

NOTE: Position unit upright, using 4” PVC coupler to avoid resting unit on the lower shaft.

Loosen 5/16” hex bolts and lockwashers from cable clamp on motor housing. Remove cord from motor housing by pulling straight up while using a rocking motion.

Remove retaining snap ring with a medium flat tip screwdriver. Using a 1/4-20 bolt, thread it into the center of the terminal block. Pull straight up with a rocking motion to remove the terminal block. Disconnect all wire connections noting where each wire is connected. The bottom of the block has a number located next to each pin for reference. If pump is equipped with automatic level control, remove in same manner as the power cord.

Motor Housing (con't)

Remove 5/16" hex head bolts and lockwashers from motor housing and vertically lift motor housing from intermediate coupling. Remove square ring from intermediate coupling.

Motor

Remove the four long 1/4” hex head stator bolts and carefully remove the motor stator from the rotor. A pair of screwdrivers may be helpful in removing the motor stator.

CAUTION: USE CARE NOT TO DAMAGE MOTOR WINDINGS WHEN REMOVING MOTOR STATOR.

Motor rotor and lower bearing can be removed from the seal plate by using an arbor press and lightly pressing on the wet end of rotor shaft. Make sure to press straight down on shaft while protecting threads from damage. Lower pump end bearing should be a tight slip fit to the seal plate.

Bearings

Remove the bearing from the rotor shaft by removing snap rings from shaft and using a wheel puller or an arbor press. Upper rotor bearing may be removed from rotor shaft with a bearing puller.
NOTE: Pictures below show bearing markings on outside of rotor.

When replacing bearings, be careful not to damage the rotor or shaft threads. Clean the shaft thoroughly and press bearings on applying force to the inner race of bearings only. See drawing below for proper bearing orientation.

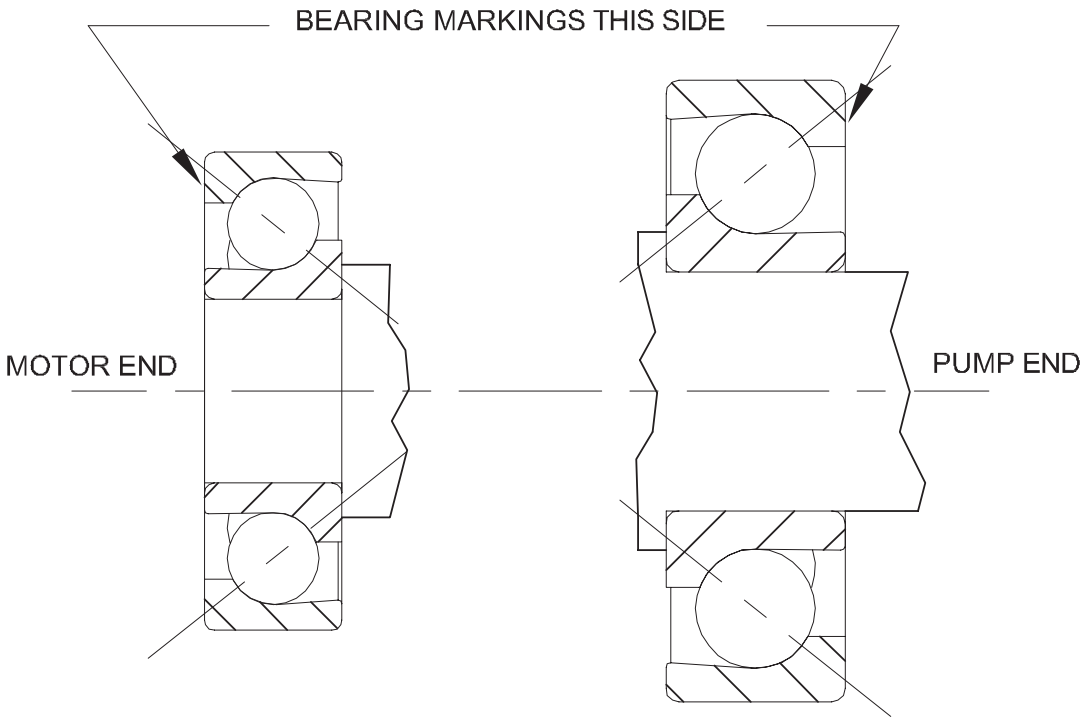


Figure C

Stationary Seal

Remove the stationary seal from the seal plate by pressing out with a flat tipped screwdriver. Examine all seal parts and especially contact faces.

OGP 2HP ASSEMBLY

Bearing to Pump Rotor

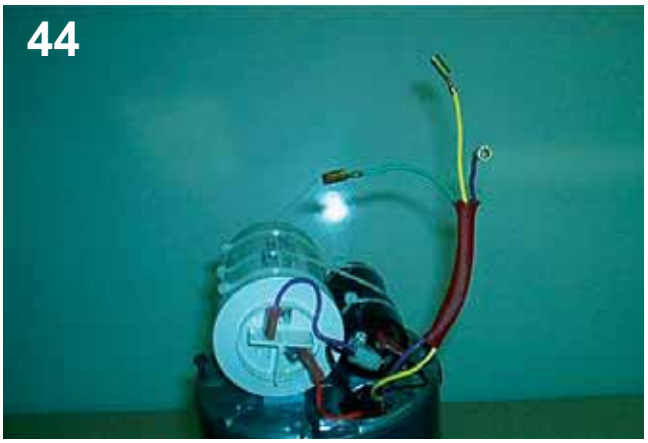
When replacing the bearing, be careful not to damage the rotor or shaft threads. Using an arbor press, hold the rotor and press the bearing on the rotor shaft, applying force to the inner race of the bearing only. Install top retaining ring on rotor shaft. Using an arbor press, hold the rotor and press the lower bearing on the rotor shaft, apply force to the inner race of the bearing only. Install bottom retaining ring on rotor shaft. The bearing will be positioned between the retaining rings.

NOTE: BEARING MARKINGS MUST BE ON OUTSIDE OF ROTOR.

Motor

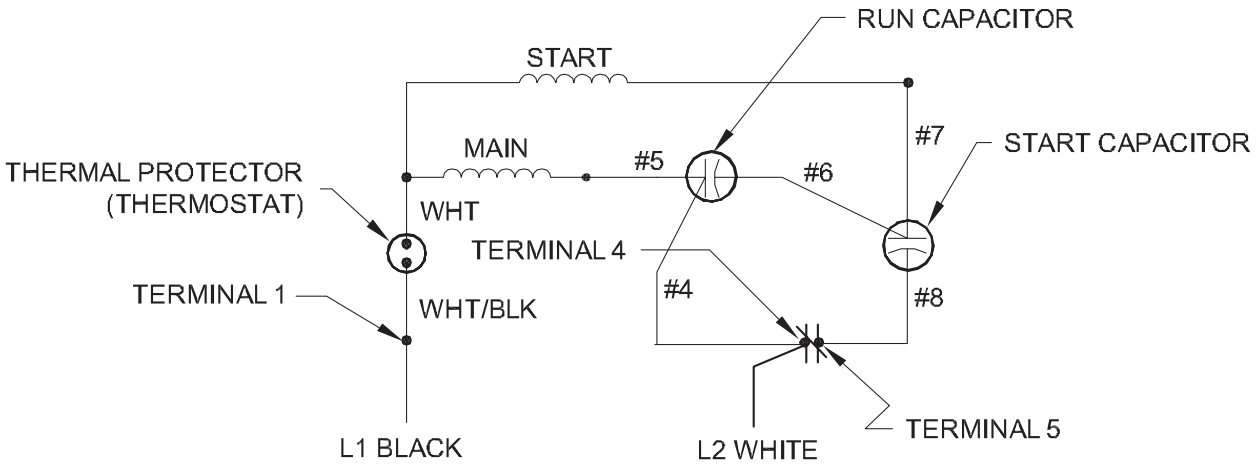
Slide motor rotor, with bearings into seal plate. Set wave spring on top of upper bearing, hold in place with small amount of grease.

Set motor stator over rotor being sure that stator drops flat against boss in coupling. Place end bell on top of motor and insert the hex stator bolts in motor and torque to 17 in/lbs.



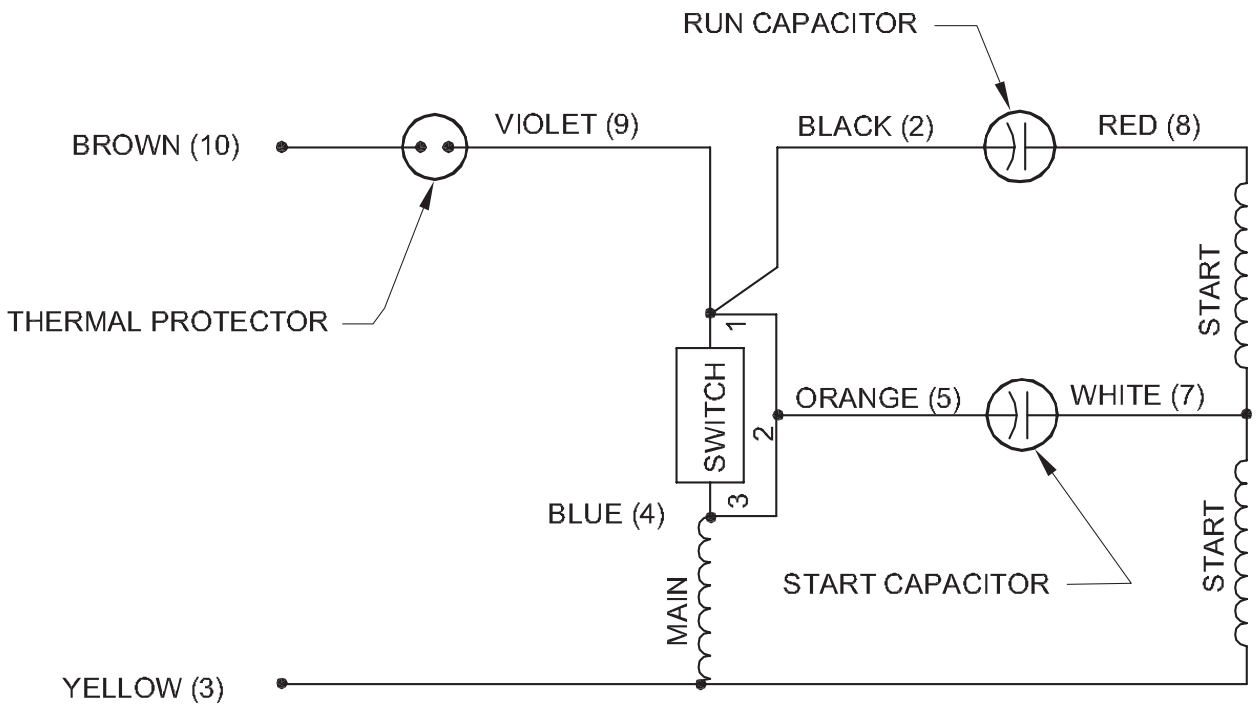
NOTE: SEE WIRING DIAGRAM ON THE FOLLOWING PAGE IF NEW CAPACITORS ARE BEING INSTALLED.

Wiring Diagram



Wiring Diagram For Emerson Electric Motor

Figure D



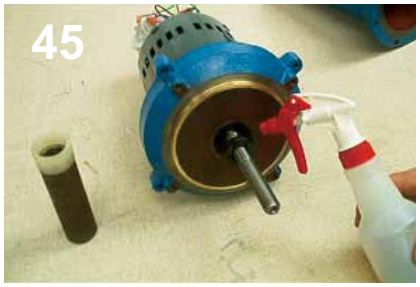
Wiring Diagram For Franklin Electric Motor

Figure E

Seal

Clean and oil stationary seal cavity in seal plate. Slide seal guide (see parts list - Seal Tool Kit) over motor shaft. Lightly oil **(DO NOt grease)** outer surface of stationary seal. Press stationary seal firmly into seal plate using a seal pusher. Make sure the stationary member is in straight. Nothing but the seal pusher is to come in contact with seal face.

CAUTION: DO NOT HAMMER ON THE SEAL PUSHER - IT WILL DAMAGE THE SEAL FACE.



With seal guide over motor shaft, lightly oil **(DO NOT grease)** guide, shaft, and inner surface of bellows on rotating seal. With lapped surface of rotating member facing inward toward stationary member, slide rotating member over guide and onto shaft, using seal pusher, until lapped faces of the stationary and rotating seal are together. Place spring over shaft and the rotating member. Make sure it is seated on the retainer and not cocked or resting on bellows tail.

NOTE: DISCARD SEAL SPRING CAP (INCLUDED IN REBUILD KIT)

Impeller

Assemble spacer sleeve to second stage impeller by applying green loctite to 1” threads on spacer sleeve and thread onto impeller. Assemble impeller and spacer sleeve assembly onto motor shaft with machined step fitting inside I.D. of seal spring by turning clockwise while holding shaft stationary with a screwdriver.

Tap impeller with a flat punch and hammer in a clockwise direction while holding the shaft stationary with a screwdriver. This will snug the impeller on the shaft.

CAUTION: USE CAUTION NOT TO DAMAGE THE THREADS ON THE SHAFT.

Volute

Lubricate square ring and place on groove in bottom seal plate. Place volute on seal plate being careful not to damage square ring. Place four 5/16” bolts and washers on and tighten equally to 11 ft/lbs.

NOTE: Volute discharge must line up 180 degrees from motor leads.

First Stage Impeller

Check and make sure spacer sleeve extends through second stage and into first stage of volute. Visually check first stage impeller mating surface and make sure that it is smooth and flat around the 5/8 threads. Then install impeller onto shaft by threading impeller clockwise until it stops against spacer sleeve. Use a flat punch and hammer to snug impeller against spacer sleeve. Use a large screwdriver to hold shaft.

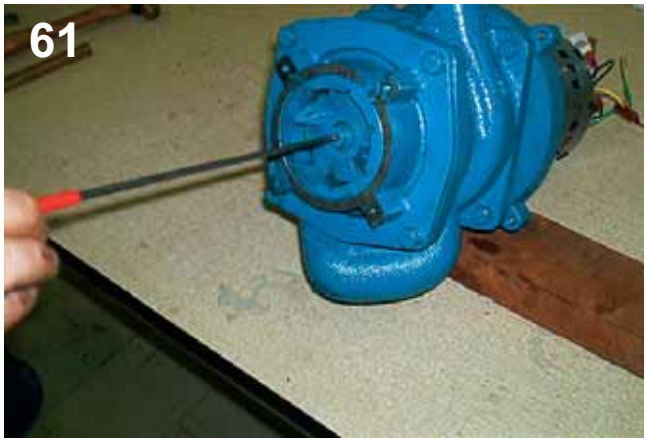
Suction Cover

Lubricate and set square ring onto pilot bore of the suction cover. Place suction cover onto volute while lining up the marks. Install the four 5/16” hex head bolts and lockwashers and torque them evenly in a cross pattern to 11 ft/lbs.

Cutter

Screw radial cutter on shaft turning clockwise, holding motor shaft stationary with a screwdriver. Radial cutter should be flush with shredding ring on suction side to within ±.020. Replace counter sunk washer and 1/4” allen screw and tighten to 6.5 ft/lbs. Use green loctite on threads.

CAUTION: CUTTING SURFACES ARE SHARP!

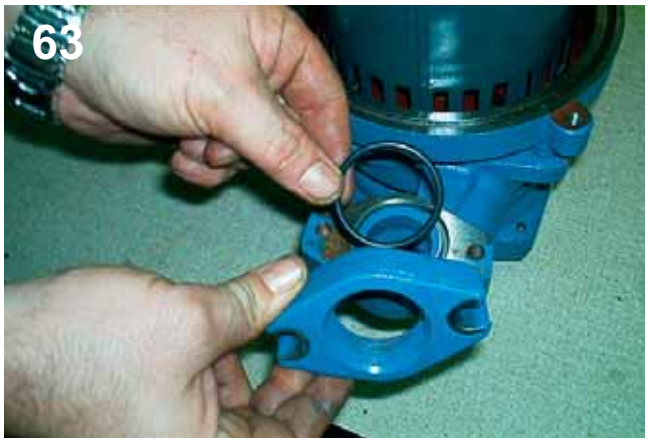


NOTE: Tap the cutter tooth with a flat punch to snug the cutter on the shaft.

Discharge Flange

Install o-ring and mount volute discharge flange with 5/16” hex head bolts and flat washers.

NOTE: Check the 1-1/4” NPT threads on the mounting flange and make sure they face the correct direction. The chamfered side of the NPT tapped hole should be facing up.



Motor Housing

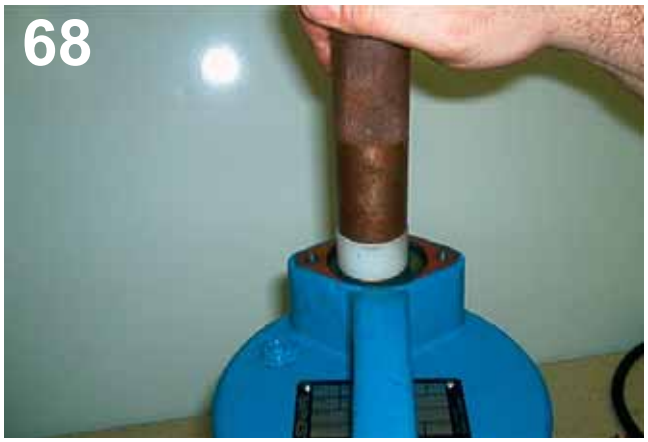
Lubricate and set square ring into bore on intermediate coupling.

Install ground wire in end bell if removed **(Use proper bolt to secure ground lug)**. Place fiberglass sleeve over motor and ground leads if removed. Pull wires through opening in top of motor housing while lowering motor housing onto seal plate. Connect wires to pins on the bottom of the terminal block.

NOTE: See wiring diagram on page 30.

Motor Housing (con't)

Lubricate o-ring and slide terminal block back into housing. Make sure terminal block is engaged and install snap ring to retain terminal block. Tighten bolts and lock washers into motor housing.



If there were optional pump features such as a float, re-install those at this time also. Tighten 5/16" hex head bolts and lockwashers into motor housing.

Pin Placement Diagram

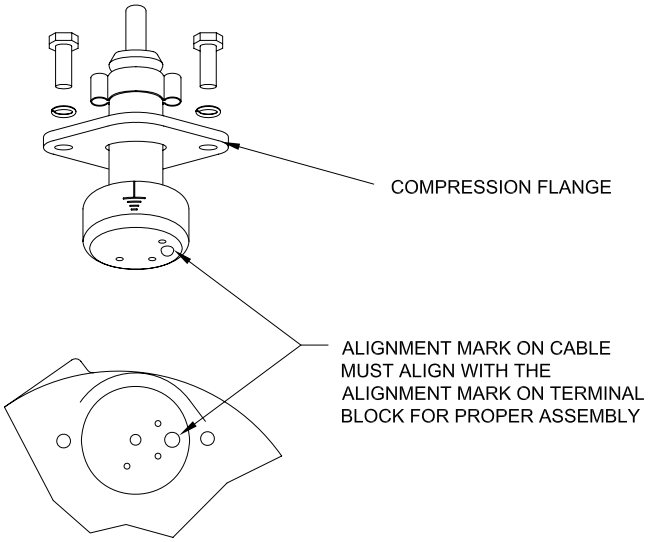
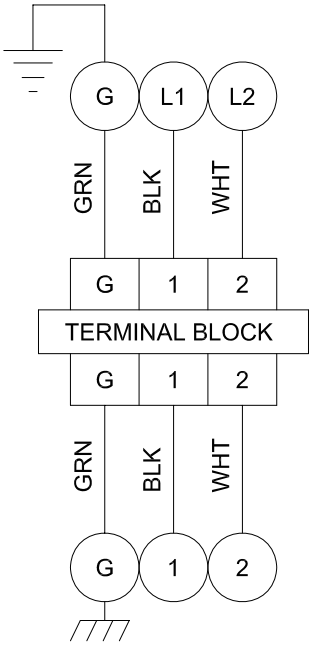
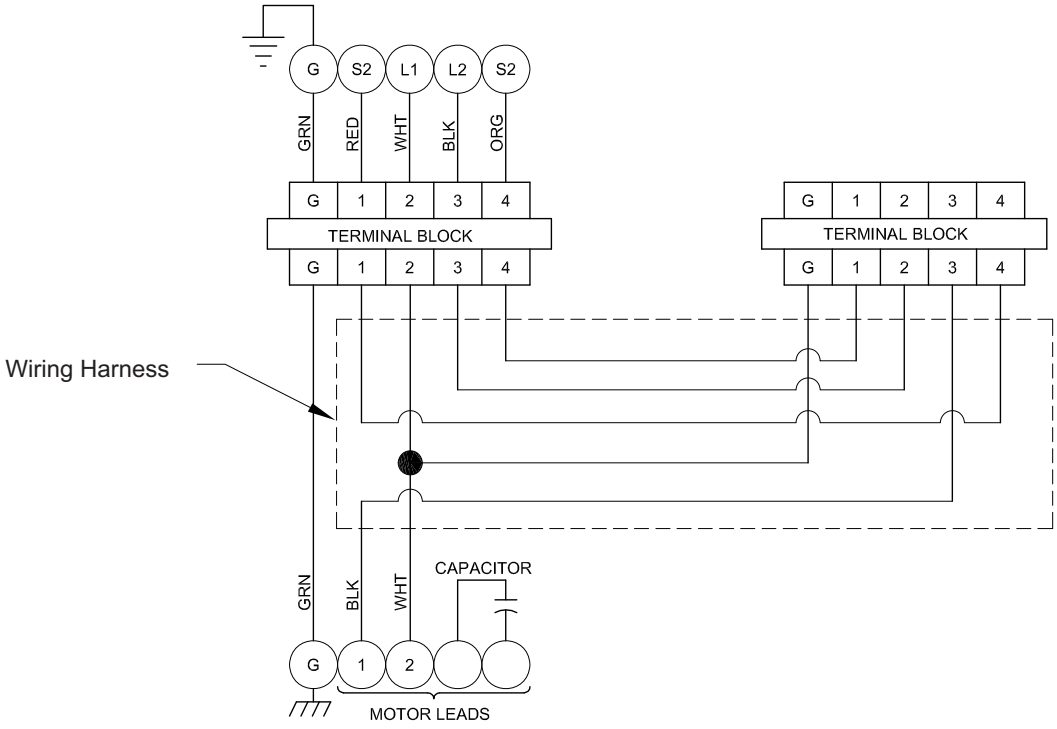


Figure F



SINGLE PHASE - 240 VOLT AC

Figure G



SINGLE PHASE - 240 VOLT AC
AUF and AUE SERIES

Figure H

Perform Pressure Check

NOTE: This is to be performed with no oil in housing.

CAUTION: MAKE CERTAIN THAT CORD SET IS ATTACHED TO PUMP. PERFORMING THE PRESSURE CHECK WITHOUT THE CORD SET ON MAY CAUSE THE TERMINAL BLOCK TO BLOW OUT.

To check the pump for any seal leaks, attach the pressure gauge assembly using pipe sealant. Tighten the fitting into the hole. Pressurize the gauge to 8 to 10 psi. Use a soap solution around the sealed areas and inspect joints for air bubbles.

If after 5 minutes the pressure is still holding constant, and no bubbles are observed, slowly bleed the pressure and remove the gauge assembly. Replace the pipe plug using sealant. If the pressure does not hold, then the leak must be located and repaired.

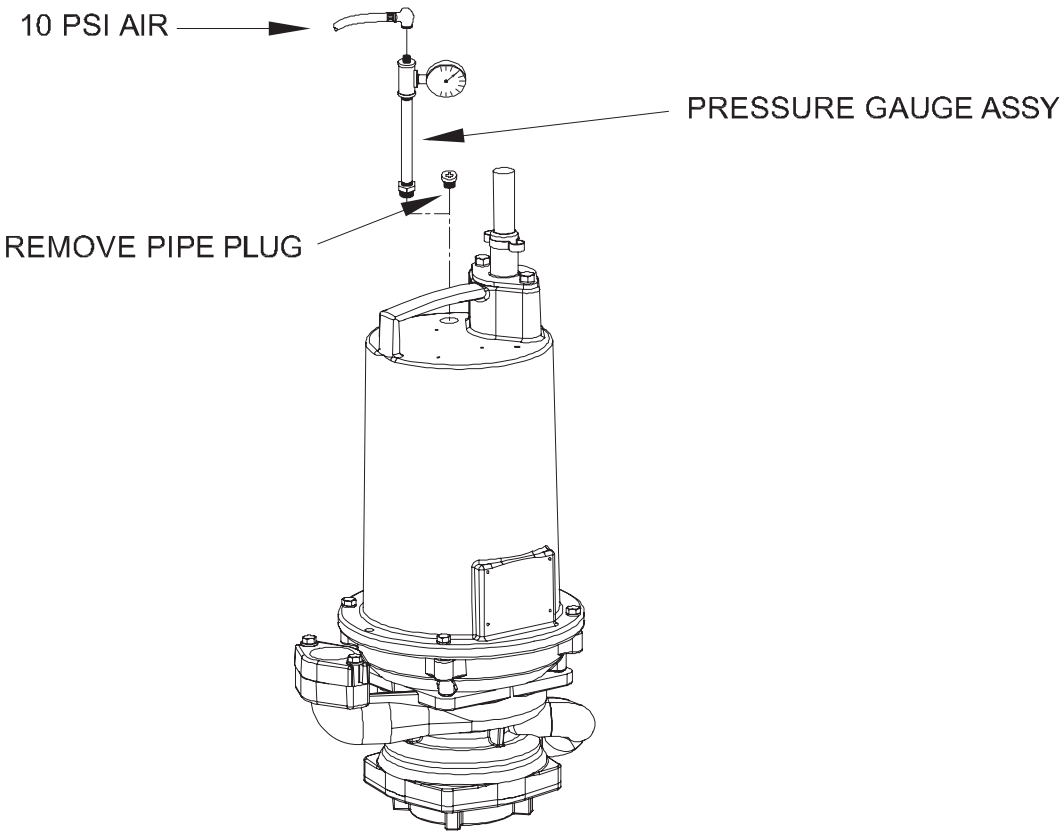


Figure I

Replacing Oil

Motor housing - Set unit upright and refill with (see chart for type and amount) new cooling oil. Fill to just above the end bell, (top), of the motor, as an air space must remain in the top of the motor housing to compensate for oil expansion. Apply pipe thread compound to threads of pipe plug and assemble to motor housing.

NOTE: Reference oil chart for suitable replacement oils.

SUPPLIER	GRADE	OUNCES
BP	Enerpar SE100	96
Conoco	Pale Paraffin 22	96
Mobile	D.T.E. Oil Light	96
G & G Oil	Circulating 22	96
Imperial Oil	Voltesso-35	96
Shell Canada	Transformer-10	96
Texaco	Diala-Oil-AX	96

**CONTACT CRANE PUMPS & SYSTEMS FOR A TYPICAL MSDS SHEET IF REQIIRED.*

CAUTION: DO NOT OVERFILL OIL. OVERFILLING OF MOTOR HOUSING WITH OIL CAN CREATE EXCESSIVE AND DANGEROUS HYDRAULIC PRESSURE THAT WILL DESTROY THE PUMP AND CREATE A HAZARD.
OVERFILLING OIL VOIDS WARRANTY.

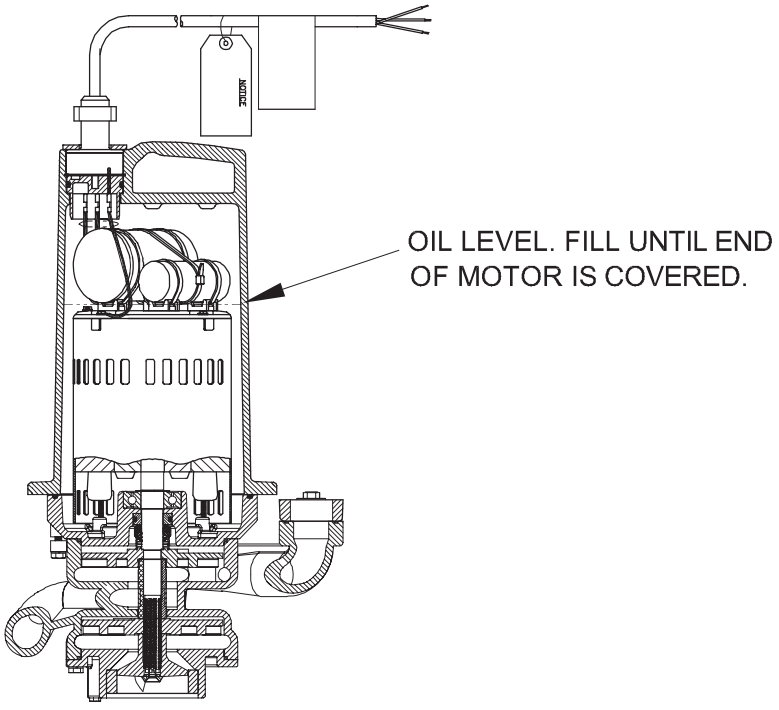


Figure J

OGP 2HP Exploded View

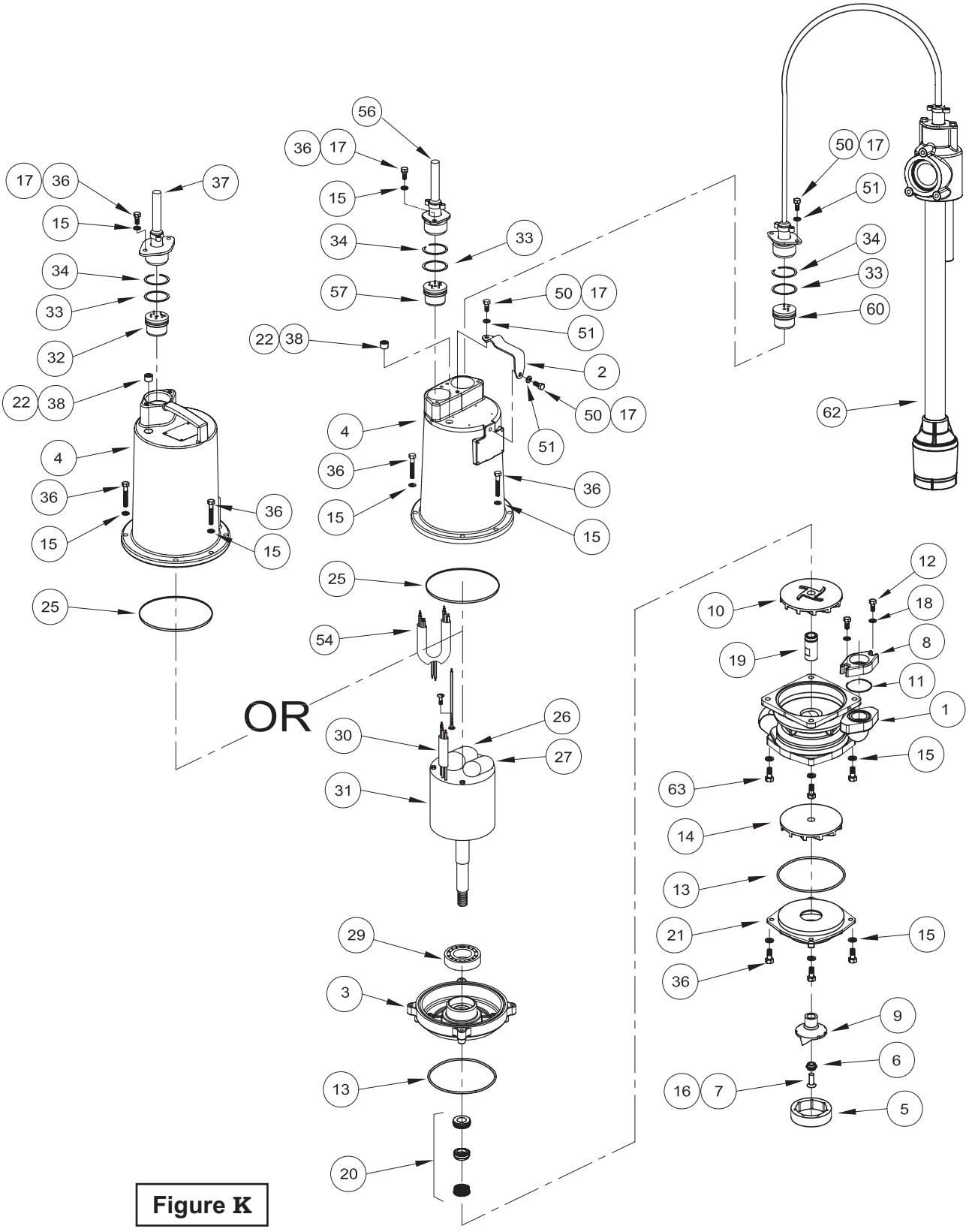


Figure K

PARTS KITS

Seal Repair Kit .....P/N: 116664 Item #'s: 6, 7, 13, 15, 20, 25, 33, 36, 38

Overhaul Kit ..... P/N: 116665 Item #'s: 3, 5, 6, 7, 9, 13, 15, 20, 25, 28, 29, 33, 36, 38

Cutter Kit .....P/N: 116666 Item #'s: 5, 6, 7, 9, 13, 15, 36

PARTS LIST

ITEM	QTY	PART NO.	DESCRITION
1	1	115321	Volute
2	1	110331	Handle (AU series)
3	1	115322	Seal Plate
4	1	108342 110328	Motor Housing (L) Motor Housing (AU series)
5	1	082085B	Shredding Ring
6	1	067556	Washer
7	1	070704	Skhd Screw, 1/4-20 x .75" SS
8	1	108369	Discharge Flange 1-1/4" NPT
9	1	082088	Radial Cutter
10	1	115324	Impeller, Second Stage
11	1	625-01558	O-Ring (-223)
12	2	1-131-1	Screw, 5/16-18 x 1.25" SS
13	2	067567	Square Ring
14	1	115323	Impeller, First Stage
15	14	026322	Lockwasher, 5/16" SS
16	A/R	---------	LOCTITE™ RC609
17	A/R	---------	LOCTITE 242
18	2	062941	5/16" Flatwasher
19	1	115325	Spacer Sleeve
20	1	110395SD	Seal, Silicon-Carbide (STD)
21	1	115326	Suction Cover
22	A/R	---------	Permatex Sealent 2C
24	90 oz	029034	Cooling Oil - Mtr. Housing
25	1	095368	Square Ring
26	1	036391	Capacitor, Run
27	1	099198	Capacitor, Start
28	1	116658	Ball Bearing, Upper (Not Shown)
29	1	116659	Ball Bearing, Lower
30	1 or 2	625-02117	Sleeve
31	1	115327	Motor, 2HP, 240 Volt, 1 Phase (Includes items 26 thru 29)
32	1	103760	Terminal Block, Power, Manual
33	1 or 2	2-31051-224	O-Ring
34	1 or 2	105197	Retaining Ring
36	14	1-156-1	Screw, 5/16-18 x 1.00" SS
37	1	109498	12/3 Cord Set, 15Ft (STD)
38	1	014270	Pipe Plug, C'sunk, 3/8" NPT

ITEM	QTY	PART NO.	DESCRITION
"AU" Models with Level Control			
49	1	116667	Float Switch, (AUF)
50	4	1-156-1	Screw, 5/16-18 x .1" SS
51	4	026322	Lockwasher, 5/16" SS
52	1	090516	Lined cord clip (AUF)
53	1	20-12-1	Washer (AUF)
54	2	113287	Wiring Harness Assy (Fig. 5)
55	1	11-17-1	RdHd Screw #10-32 x .37" SS (AUF)
56	1	113274	12/5 Cord Set 15 Ft.
57	1	113271	Terminal Block, Power (AU)
58	1	111311	Cable mounting clamp
59	1	099212	Hose clamp, 5/16
60	1	113272	Terminal Block, Level Control (AU - series)
61	2	105150	Wire Connector
62	1	121676-M	ESPS-150 Level Control (AUE)

Contact your local Distributor or the Factory for other cord lengths and other optional equipment.

Notes

CRANE PUMPS & SYSTEMS, INC.
420 THIRD STREET
PIQUA, OHIO
45356 - U.S.A.