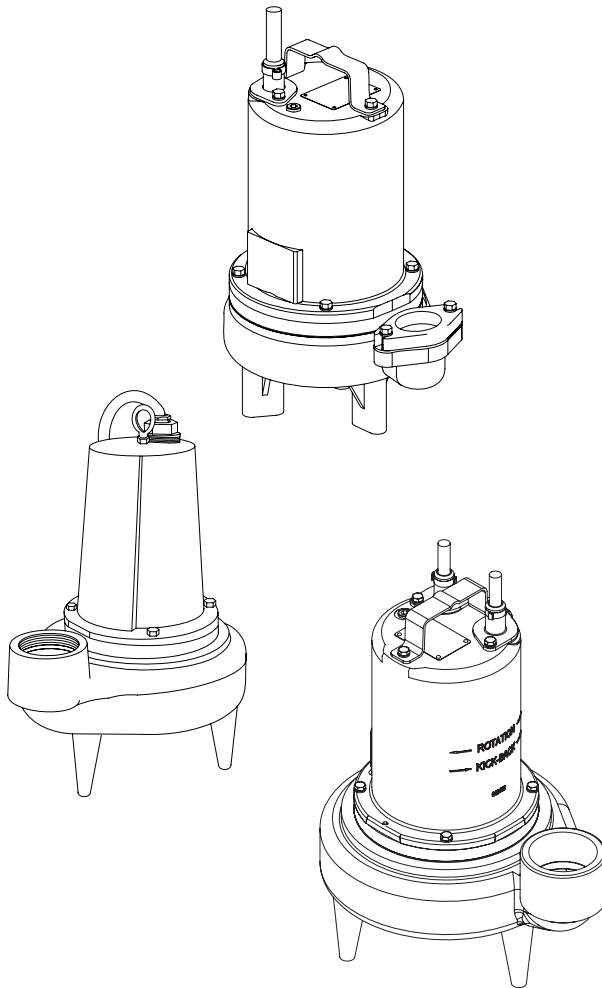


BARNES®

SEAL KIT P/N 130181 & 130177
SERVICE KIT P/N 130208 & 130173
Submersible Pump



Series: 2SEV & 3SEV, L & DS
1.5 & 2 HP, 3450 RPM, 60 Hz.

Single & Double Seal

Series: 3SE, L & DS
1.5 & 2 HP, 1750 RPM, 60 Hz.

Single & Double Seal

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

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Phone: (905) 457-6223
Fax: (905) 457-2650



Form No. 130184-Rev. C

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SPECIAL TOOLS AND EQUIPMENT

INSULATION TESTER (MEGGER)

DIELECTRIC TESTER

SEAL TOOL KIT

107271 - 2SEV, 3SEV, 1.5 & 2.0HP, 3450RPM

085443 - 3SE-L, 1.5 & 2.0HP, 3450RPM

TL-21360 - 3SE-L, 3SE-DS, 1.5 & 2.0HP, 1750RPM

PRESSURE GAUGE KIT (085343)

This manual covers the following models, there may be extra parts not needed for your specific model. If additional parts not included in this kit are required, please consult the explicit manual for your pump at:

http://www.cranepumps.com/downloadables/CATALOGS_OIPMs/PARTBOOK/BARNES.pdf

Series: 3SE-L & DS - Manual 088887, 088888, 088889, 132771, 132724, 132741
 Series: 2SEV & 3SEV, L & DS - Manual 115941

Seal Repair Kits:

Single Seal..... P/N - 130181 (+)

Double Seal P/N - 130177 (†)

Service Kits

Single Seal..... P/N - 130208 (◇)

Double Seal P/N - 130173 (◆)

PARTS INCLUDED IN KIT

QTY.	PART NO.		DESCRIPTION
1	069140	+†◆	Gasket
1 or 2	2-31051-224	+†◆	O-ring (2 for DS)
1 or 3	027269	+†◆	Square Ring
1 or 2	067562	+†◆	Mech Seal (2 for DS)
1 or 2	027344	+†◆	Gasket
1 or 2	105197	◆	Snap Ring
2	105111	◆	Ground Wire Assembly
1	105111A	◆	Ground Wire Assembly
1	061143	◆	Retaining Ring
1	039734	◆	Bearing
3	105149	◆	Wire Assembly
2	625-02117	◆	Sleeve, Fiberglass
1	038132	◆	Jam Nut
4	079318	◆	Terminal Connector
5	071363	◆	Terminal Connector
3	019212	◆	Wire Nut
1	2-27008-62	◆	Retaining Ring
3	105149A	◆	Wire Assembly
3	105150	◆	Wire Nut Connector
3	111951	◆	Terminals

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 1999, 2002, 11/03, 6/05, 4/06, 9/06, 2/07

Alteration Rights Reserved

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.



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.



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 ! Never operate a pump with a plug-in type power cord without a ground fault circuit interrupter.



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.



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



WARNING! Cable should be protected at all times to avoid punctures, cut, bruises and abrasions - inspect frequently. Never handle connected power cords with wet hands.



WARNING! 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.



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: SERVICE AND REPAIR

1) Lubrication:

Anytime the pump is removed from operation, the cooling oil in the motor housing (6) should be checked visually for oil level and contamination.



WARNING! Pressure builds up due to heat.

1.1) Checking Oil:

Motor Housing - To check oil, set unit upright. Remove pipe plug (39) from motor housing (6). With a flashlight, visually inspect the oil in the motor housing (6) 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. Oil level should be just above the motor when pump is in vertical position.

1.2) Testing Oil:

- 1.) Place pump on it's side, remove pipe plug (39), from motor housing (6) and drain oil into a clean, dry container.
- 2.) Check oil for contamination using an oil tester with a range to 30 Kilovolts breakdown.
- 3.) If oil is found to be clean and uncontaminated (measuring above 15 KV. breakdown), refill the motor housing as per paragraph 1.4.
- 4.) If oil is found to be dirty or contaminated (or measures below 15 KV. breakdown), the pump must be carefully inspected for leaks at the shaft seal (28), cord assemblies (16) and (56 if used), square ring (27) and pipe plug (39), before refilling with oil. To locate the leak, perform a pressure test as per paragraph 1.3. After leak is repaired, dispose of old oil properly, and refill with new oil as per paragraph 1.4.

1.3) Pressure Test:

Pumps that have been disassembled, Motor Housing - If the pump has been disassembled, the oil should be drained before a pressure test, as described in paragraph 1.1. Remove pipe plug (39) from motor housing (6). Apply pipe sealant to pressure gauge assembly and tighten into hole (See Figure 3). Pressurize motor housing to 10 P.S.I. Use soap solution around these sealed areas and inspect joints for "air bubbles". If, after five minutes, the pressure is still holding constant, and no "bubbles" are observed, slowly bleed the pressure and remove the gauge assembly. Replace oil as described in paragraph 1.4. If the pressure does not hold, then the leak must be located and repaired.

Pumps that have NOT been disassembled, Motor Housing-

The pressure test may be done with the oil at its normal level. Remove pipe plug (39) from motor housing (6). Apply pipe sealant to pressure gauge assembly and tighten into hole (See Figure 3). Pressurize motor housing to 10 P.S.I. Use soap solution around the sealed areas above the oil level and inspect joints for "air bubbles".

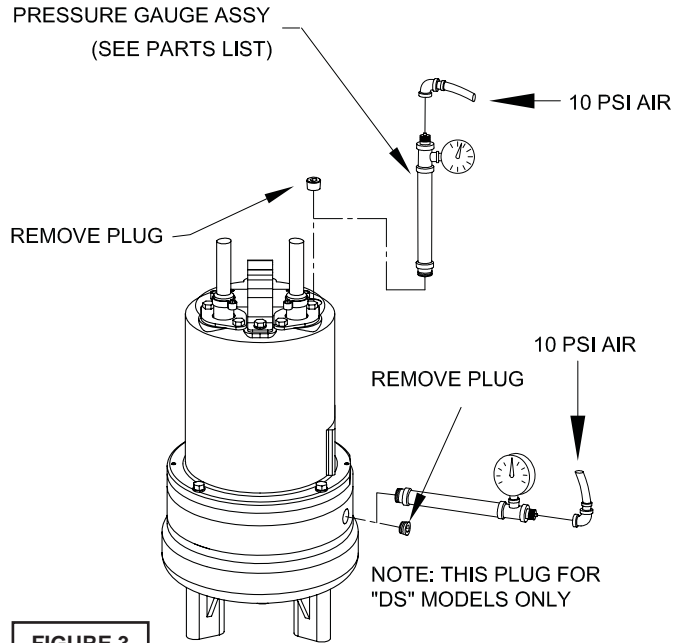


FIGURE 3

For sealed areas below the oil level, leaks will seep oil. If, after five minutes, the pressure is still holding constant, and no "bubbles"/oil seepage is observed, slowly bleed the pressure and remove the gauge assembly. If the pressure does not hold, then the leak must be located and repaired.

Seal Chamber (DS Units Only)- Set unit on its side with fill plug (44) downward, remove plug (44) and drain all oil from seal chamber. Apply pipe sealant to pressure gauge assembly and tighten into hole in outer seal plate (29) or spacer ring. Pressurize seal chamber to 10 P.S.I. and check for leaks as outlined above.



CAUTION ! Pressure builds up extremely fast, increase pressure by "tapping" air nozzle. Too much pressure will damage seal. DO NOT exceed 10 P.S.I.

1.4) Replacing Oil:

Motor Housing- Set unit upright and refill with new cooling oil as per Table 1. Fill to just above 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 (39) then assemble to motor housing (6).



Important ! - For single phase units, oil level should be below capacitor

Seal Chamber (DS Units Only)- Set unit on its side, with plug (44) upward, and refill with new oil as per Table 1. Apply pipe thread compound to threads of pipe plug (44) and assemble to outer seal plate (29) or spacer ring.



Warning ! - Do not overfill oil. Overfilling of motor housing with oil can create excessive and dangerous hydraulic pressure which can destroy the pump and create a hazard. Overfilling oil voids warranty.

TABLE 1 - COOLING OIL - Dielectric	
SUPPLIER	GRADE
Sohio / Standard	SE 40, Energol HL22 or HL32
Shell	Turbo Oil 32
Texaco	Rando HD32, 522
Sun Petroleum	Supar 110, Sunvis 816WR, 911 or 916
Mobile	D.T.E. Oil Light or Rubrex 200
G&G	Circu Oil 22
Allegheny Petroleum	Altrapar 22
Woco	Premium 100

2) Impeller and Volute Service: SE, SEV, EH

2.1) Disassembly and Inspection:

To clean out volute (1) or replace impeller (33), disconnect power, remove hex bolts (26), and lockwashers (12), vertically lift motor and seal plate assembly from volute (1) and spacer ring (31), see Figure 4. Clean out body if necessary. Clean and examine impeller (33), for pitting or wear and replace if required, inspect gasket (36) and replace if cut or damaged. If the impeller (33) needs replacing, place a flat screwdriver in the slot of the end of the shaft to hold the shaft stationary while unscrewing the jam nut (66) and impeller (33).

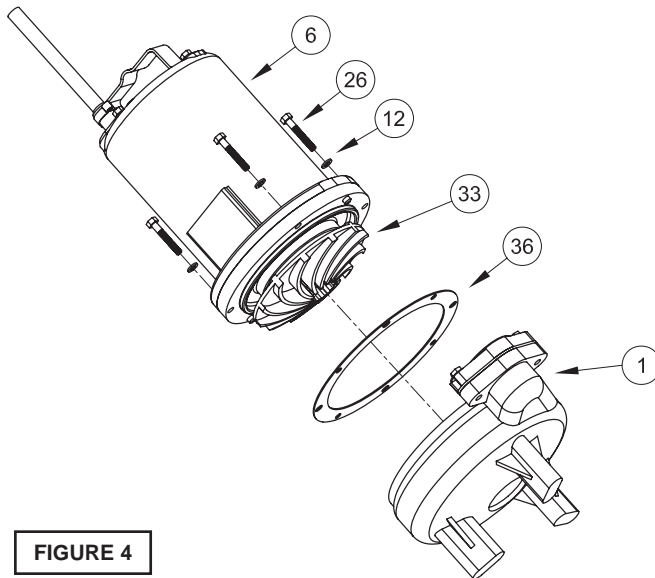


FIGURE 4

2.2) Reassembly:

To install impeller (33), clean the threads with thread locking compound cleaner. Apply removable Loctite® 603 or equivalent to shaft threads. Screw impeller onto the shaft hand tight while using a screwdriver in the slot at the end of the shaft to hold it stationary. Apply thread locking compound (57) to shaft threads then install jam nut (66) and torque to 40 ft. lbs. It is important that the spring of the lower shaft seal (28) seats in the hub of the impeller (33). Rotate impeller to check for binding. Position gasket (36) on volute flange and place spacer ring (31) over it. Place another gasket (36) on spacer ring and position impeller and motor housing on spacer ring (31). Position lockwashers (12) on cap screws (26) and screw into volute (1). Torque to 100 in-lbs. Check for free rotation of motor and impeller.

2a) Impeller and Volute Service: STEP

2.1a) Disassembly and Inspection:

To clean out volute (1) or replace impeller (33) or U-cup (57), disconnect power, remove hex bolts (26), and lockwasher (12), vertically lift motor and seal plate assembly from volute (1), see Figure 4. Clean out body if necessary.

3) Shaft Seal Service:



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

3.1) Disassembly and Inspection:

Outer Seal (All Units) - To expose shaft seal (28) for examination, disassemble volute and impeller as outlined in paragraph 2.1. If further repair is required, remove retaining ring (28d), spring (28c) and rotating member (28b) from shaft (see Figures 5 & 6). Examine all seal parts and especially contact faces. Inspect seal for signs of wear such as uneven wear pattern on stationary members, chips and scratches on either seal face. **DO NOT** interchange seal components, replace the entire shaft seal (28). If replacing seal, remove stationary (28a) by prying out with flat screwdriver.

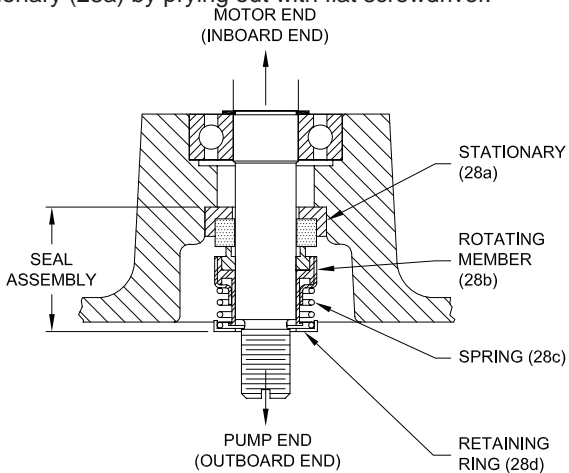


FIGURE 5 - SINGLE SEAL

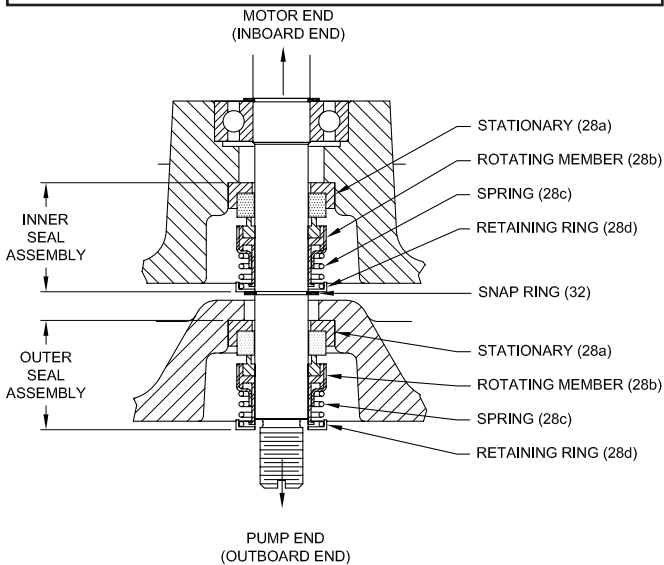


FIGURE 5 - DOUBLE SEAL

Inner Seal (DS Units Only) - To expose inner shaft seal (28) for examination, remove outer seal as outlined above. Remove socket head cap screws (64). Lift outer seal plate (29) and square-ring (27) from inner seal plate (5). See Figure 7. If further repair is required, remove snap ring (32), retaining ring (28d), spring (28c) and rotating member (28b) from shaft. Examine as outlined in outer seal paragraph. If replacing seal, remove stationary (28a) by prying out with flat screwdriver.

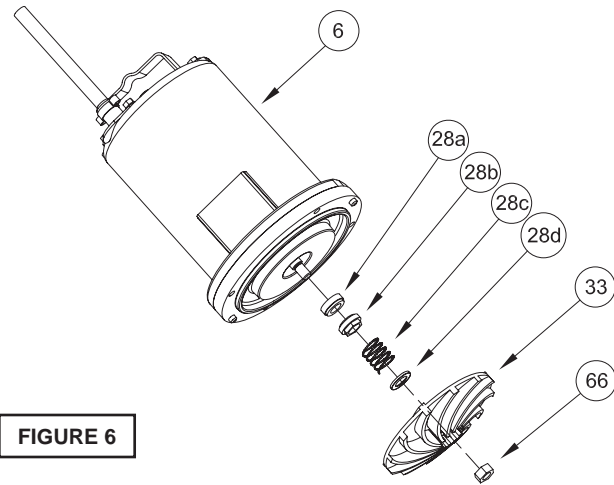


FIGURE 6

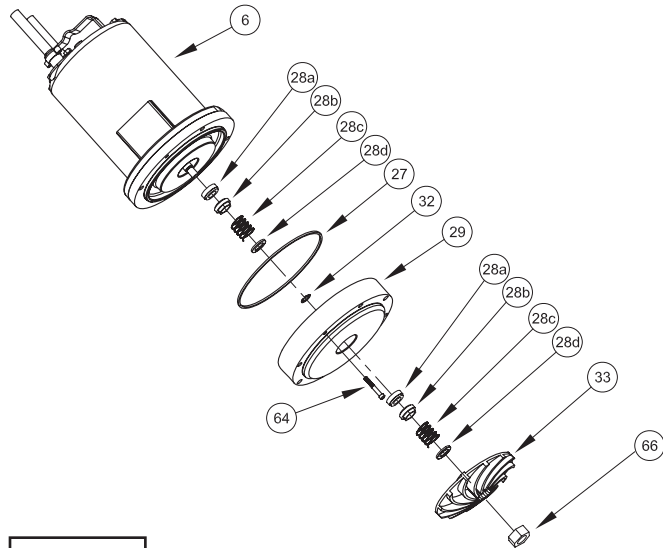


FIGURE 7

3.2) Reassembly:

Inner Seal (DS Units Only) - Clean and oil seal cavities in seal plates (5, 29). Lightly oil (**DO NOT** use grease) outer surface of stationary member (28a). Press stationary member (28a) firmly into inner seal plate (5), using a seal pusher (see parts list - seal tool kit). Nothing but the seal pusher is to come in contact with seal face (see Figure 8).

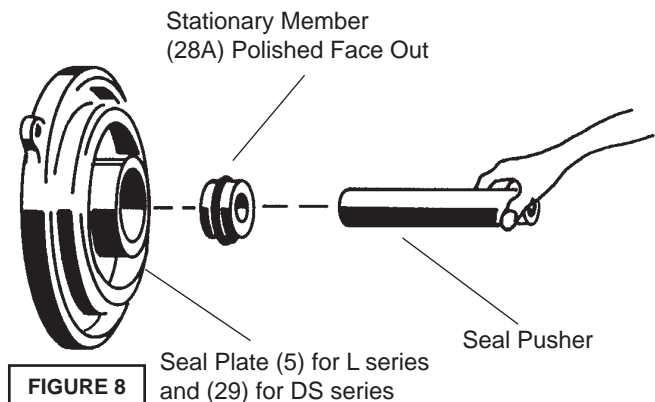


FIGURE 8



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

Make sure the stationary member is in straight. Slide a bullet (see parts list - seal tool kit) over motor shaft. Lightly oil (**DO NOT** use grease) shaft, bullet and inner surface of bellows on rotating member (28b), see Figure 9. With lapped surface of rotating member (28b) facing inward toward stationary member, slide rotating member over bullet and onto shaft, using seal pusher, until lapped faces of (28a) and (28b) are together (see Figure 8).

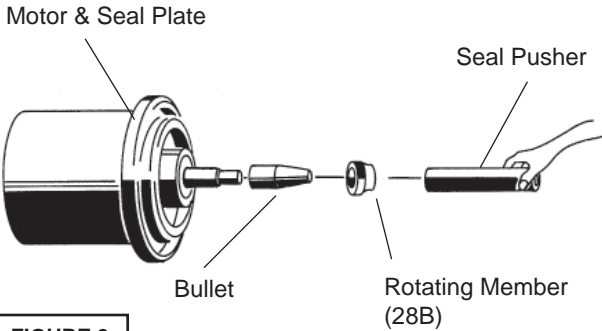


FIGURE 9

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 (28c) over shaft and in place on rotating member (28b), making sure it is seated on retainer and not cocked or resting on bellows tail. Slide retaining ring (28d) over shaft and let rest on spring (28c). Replace snap ring (32) in groove of shaft. Set square-ring (27) in groove on outer seal plate (29) and place outer seal plate (29) onto inner seal plate (5). Replace socket head cap screws (64) and torque to 60 in-lbs.

Outer Seal (All Units) - Press stationary member (28a) firmly into outer seal plate (5, or 29 on DS Units) as described above. Slide rotating member (28b) onto stationary member using seal pusher as described above. Place spring (28c) and retaining ring (28d) onto rotating member (28b). Assemble impeller and volute as outlined in paragraph 2.2. Replace oil as outlined in paragraph 1.4.

4) Motor and Bearing Service:

4.1) Disassembly and Inspection:

To examine or replace the motor (7), capacitor (9, single phase units), controls (56, optional), and bearing (25), drain oil from motor as outlined in paragraph 1.1. Disassemble volute and impeller as outlined in paragraph 2.1 and disassemble shaft seal as outlined in paragraph 3.1.

Position unit upright, using blocks to avoid resting unit on shaft. Unscrew cord hex bolts (11) and remove compression flange (16a) and power cord (16). Remove snap ring (19) with a flat head screwdriver. Pull the terminal block (21) out of the housing (6) using a T-bolt or a pair of pliers and a .25-20 screw in the threads of the terminal block (21). Be sure to leave slack on the motor leads connected underneath. Use needle nose pliers to pull each female connector off of the pins on the underside of the terminal block (21), see Figure 10. The unit voltage should be noted.

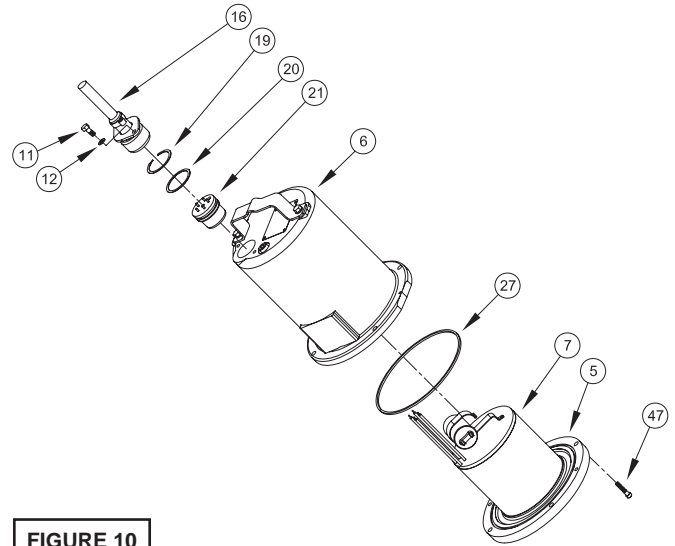


FIGURE 10

Repeat cord and terminal block removal procedure for any control cords (56) if equipped. Remove socket head screws (47). Vertically lift the motor housing (6) from seal plate (5) by lifting handle (13). Inspect square ring (27) for damage or cuts. Remove the motor bolts and lift motor stator from seal plate (5). Disconnect capacitor leads from capacitor (9, single phase units). Examine bearing (25) and replace if required. If replacement is required, remove bearing (25) from motor shaft using a wheel puller or arbor press, see Figure 11.

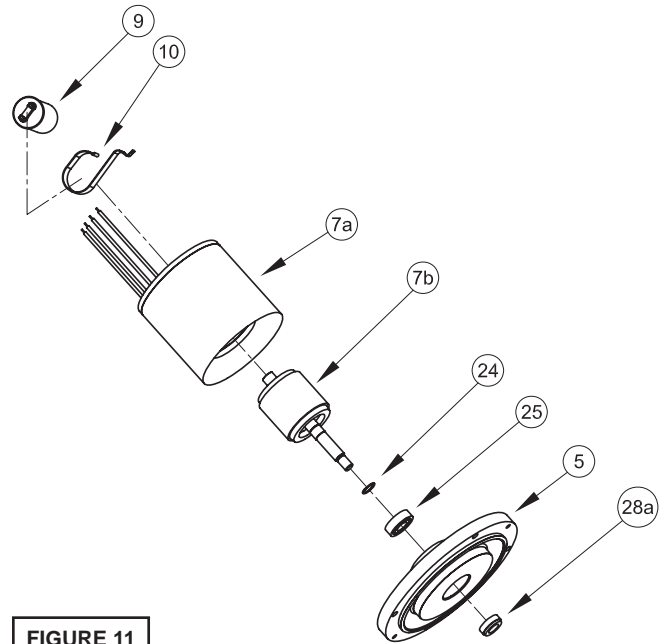


FIGURE 11

Check motor capacitor (9, single phase units) with an Ohm meter by first grounding the capacitor by placing a screwdriver across both terminals and then removing screwdriver. Connect Ohm meter (set on high scale) to terminals. If needle moves to infinity (∞) then drifts back, the capacitor is good. If needle does not move or moves to infinity (∞) and does not drift back, replace capacitor (9).

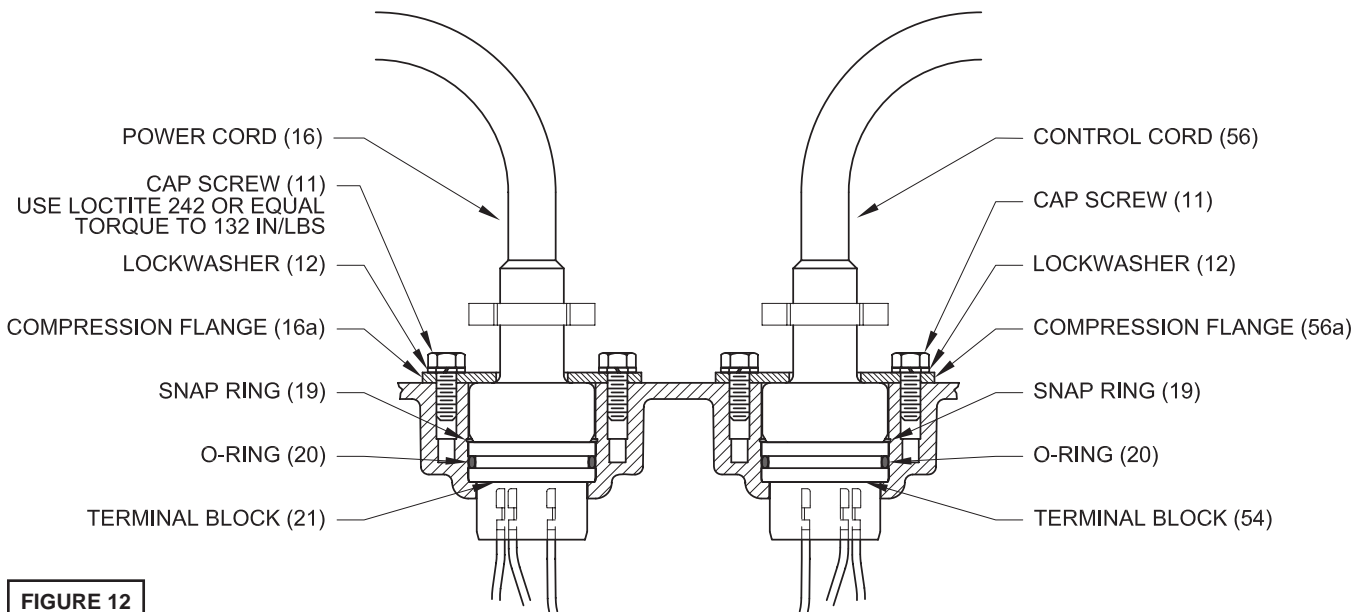


FIGURE 12

If moisture sensors (4, optional) are damaged, disconnect leads by removing machine screws (45) and washers (46) from probes (4). Remove probes (4) from seal plate (5). To test the temperature sensor (50, optional), check for continuity between the black and white wires. If found to be defective, contact a motor service station or Barnes Pumps Service department. Inspect motor winding for shorts and check resistance values. Check rotor for wear. If rotor or the stator windings are defective, the complete motor must be replaced.



Important ! - All parts must be clean before reassembly.

4.2) Reassembly:

Moisture Sensors, DS Models - If pump is equipped with optional moisture sensors, reassemble by applying thread compound to threads on probes (4) and install in upper seal plate (5). Connect wire assemblies (53) to probes (4) with washers (46) and machine screws (45).

Thermal Sensors- If pump is equipped with optional thermal sensors use terminal connectors (52) to connect wire assemblies (51) to sensor leads. If found to be defective, contact a motor service station or Barnes Pumps Service department.

Bearings- When replacing bearing, be careful not to damage the rotor or shaft threads. Clean the shaft thoroughly. Press bearing (25) on the motor shaft, position squarely onto the shaft applying force to the inner race of the bearing only, until bearing seats against the retaining ring (24) (retaining ring not included with motor).

Motor- Slide lower bearing (25) and motor shaft squarely into the seal plate (5) until bearing seats on the bottom. Place stator over rotor, lining up motor bolts with holes in seal plate (5). Position capacitor (9, single phase units) so that it will lay on the opposite side of the cord entry bosses of the motor housing (6). Reconnect capacitor leads. Torque motor tie bolts to 17 in-lbs. Set square ring (27) in groove on seal plate (5).

4.3) Wiring Connections:

Check power cords (16) and control cord (56, if used), for cracks or damage and replace if required (see Figure 12). Make internal wiring connections which are independent of the terminal block as shown, using connectors (48) and wire assemblies (49) as required. **Do not** use wire nuts. Slip motor leads and ground wire into fiberglass sleeve. Lower motor housing (6) down onto seal plate (5) while aligning holes and stringing motor leads through the cord entry bore(s). (Slipping cords inside a 1 ft. length of .5" conduit makes this easier). Place socket head cap screws (64) through seal plate (5) into motor housing (6) and torque to 60 in-lbs. Reconnect motor and optional control leads to the underside of the terminal block(s) (21), (54 optional) as shown in Figure 14. Note that the pins are numbered underneath the terminal block. Place o-ring (20) into groove in terminal block and lubricate with dielectric oil.

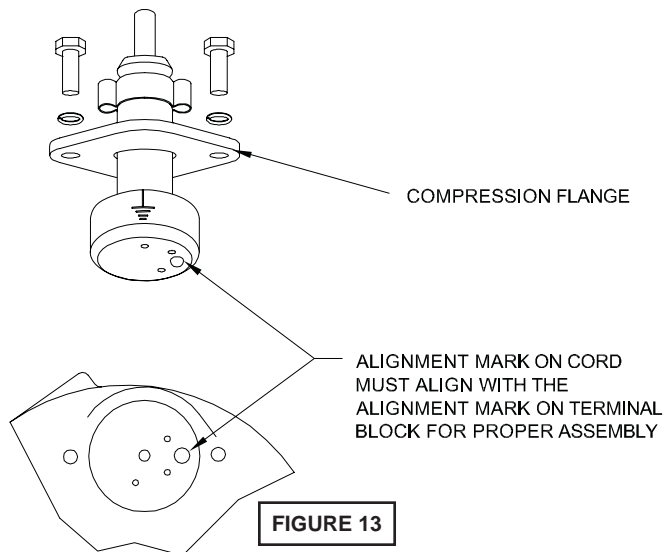


FIGURE 13

Press the terminal block (21) into the housing so it seats completely below the snap ring groove. Place snap ring (19) into groove in cord entry bore of housing. Repeat terminal block installation for control cord, if equipped.

4.4) Cord Assemblies:

Power/Control Cord - Refill the cooling oil as outlined in paragraph 1.3. Make wire connections as outlined in paragraph 4.3. Insert female end of cord plug into housing bore aligning timing mark with hole in terminal block (21), see Figure 13. Compress cord plug with compression flange (16a) by tightening hex bolts (11) into the housing (6). Torque to 132 in-lbs.

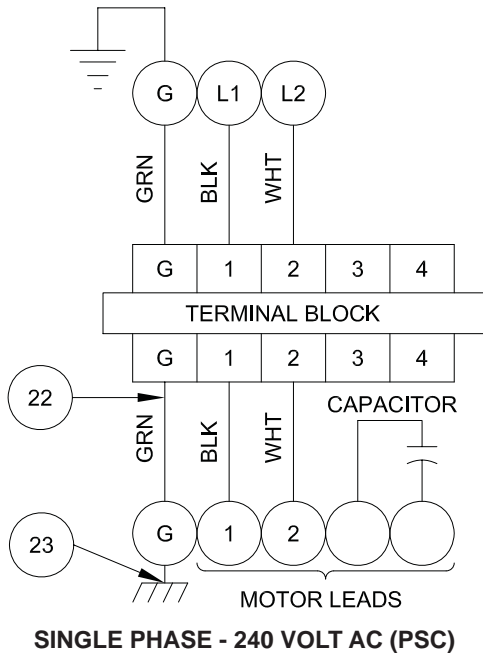


FIGURE 14

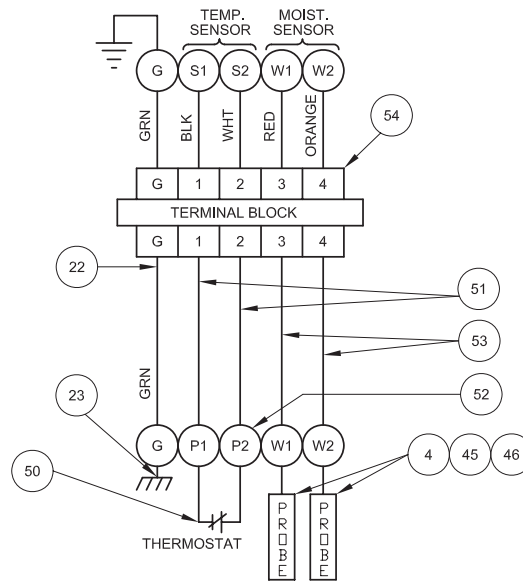
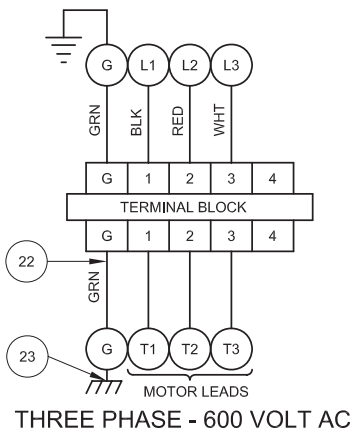
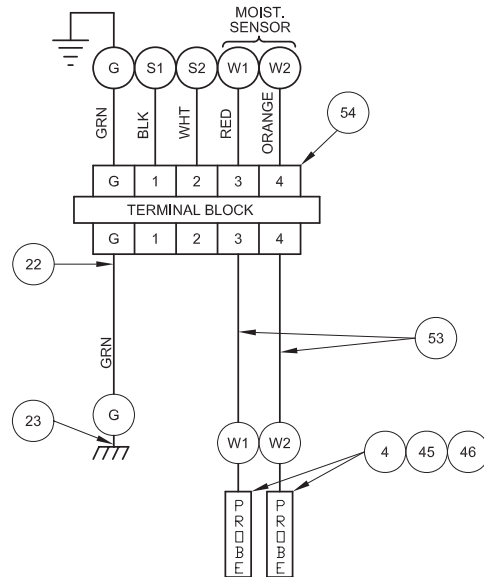
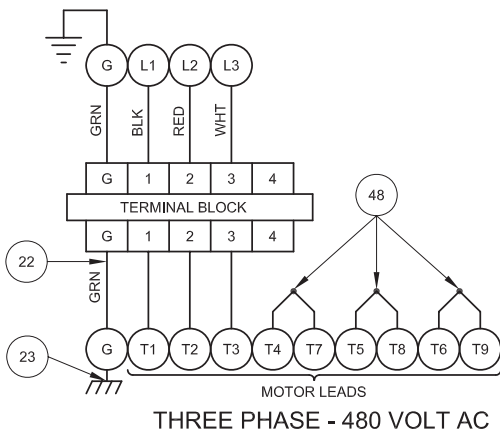
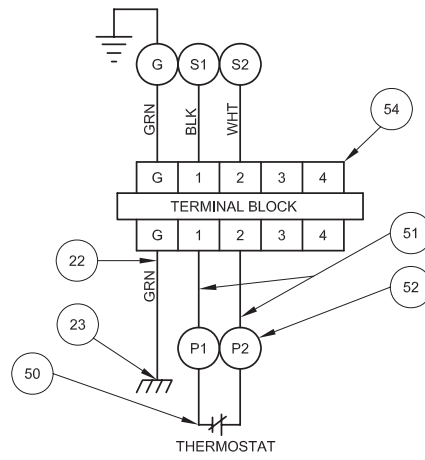
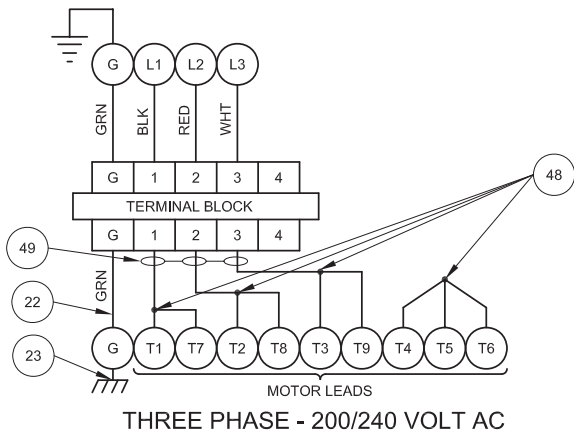


FIGURE 14 - CONTIUED

BARNES®



burks®

WEINMAN®

DEMING®

PROSSER®

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.

CRANE®

A Crane Co. Company

PUMPS & SYSTEMS

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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 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.**