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YCC Mailing Address:
PO BOX 6620
AURORA, IL  60598-0620 YCC

Shipping Address:
3905 ENTERPRISE CT
AURORA, IL 60504
(630) 236-5500 PHONE
(630) 236-5511 FAX

Instruction 9200-1 2 03/04
ACCEPTANCE OF SHIPMENT

Thoroughly inspect this equipment before accepting shipment from the transportation company. If any of the goods called for in the bill of lading or express receipt are damaged or the quantity is short, do not accept them until the freight or express agent makes an appropriate notation on your freight bill or express receipt. If any concealed loss or damage is discovered later, notify your freight or express agent at once and request him to make an inspection. We will assist you in collecting claims for loss or damage in shipment; however, this willingness on our part does not remove the transportation company’s responsibility in reimbursing you for collection of claims or replacement of material. Claims for loss or damage in shipment must not be deducted from the YCC invoice, nor should payment of the YCC invoice be withheld awaiting adjustment of such claims, as the carrier guarantees safe delivery. If considerable damage has been incurred and the situation is urgent, contact the nearest YCC Representative or the factory for assistance. Please keep a written record of all such communications.

IMPORTANT

THOROUGHLY READ ALL INSTRUCTIONS BEFORE SERVICING YCC MOTORS. YCC cannot be responsible for any damage resulting from failure to comply with these instructions. This motor is not to be operated at conditions nor with liquids other than those stated in the original order acknowledgment without written permission from YCC. Keep this manual handy for ready reference.

CAUTION

Surface temperature of the motor enclosure may reach temperatures, which can cause discomfort or injury to personnel making accidental contact. Protection should be provided by the user to prevent accidental contact with hot surfaces. Follow all lockout/tagout procedures before servicing.

WARNING

MOTOR MAY CONTAIN GAS UNDER PRESSURE DUE TO HIGH TEMPERATURES FROM ABNORMAL OPERATION. DISASSEMBLY MAY CAUSE BODILY INJURY. CONTACT YCC FOR ASSISTANCE.

GENERAL NOTES

– YCC Dry Pit Submersible CLC Motors are totally enclosed non ventilated (TENV), internally cooled, tandem seal unit, with an oil chamber separate from the winding area. CLC is YCC's designation for submersible motors utilizing "Closed Loop Cooling". The CLC motors have cooling fluid, which is circulated within the motor frame. The lower seal housing is used as a heat sink to cool the fluid. The face of the lower seal housing must be in contact with the liquid being pumped at all times to meet nameplate rating. The CLC motor must be mounted vertical shaft down. To insure the integrity of sealing surfaces when servicing these motors, all parts should be handled with utmost care.

Wound Stators

- YCC Dry pit submersible Motors utilize a wound stator, which has been pressed into the housing. The stator insulation system has been designed for the temperature and electrical ratings involved. If motor failure is analyzed to encompass a winding failure, it is required that a replacement wound stator be ordered from YCC.

Epoxy seal cap assembly

- The leads have been specially encapsulated to insure integrity of the motor. The cap assembly can be removed from the motor in order to perform normal repairs. Should the epoxy seal cap assembly be damaged or the integrity of the encapsulation be in question, it is required that a replacement epoxy seal cap assembly be ordered from YCC.

Hardware

- All hardware is stainless steel and, if necessary, should be replaced with the same type.

SPECIAL CONSIDERATION

If optional tungsten/carbide seals have been provided with the motor, a run-in period is necessary prior to placing the pump into service. The motor must be positioned such that the lower seal is continuously submerged during the run-in period. The motor must be run continuously for a two-hour period while closely monitoring the operating conditions. It is essential that the motor not be operated beyond the boundaries of its performance to avoid overload conditions. The motor's moisture detection and thermal protection systems should be connected during the run-in period.

SPECIFICATIONS

- Voltage ±10% of nameplate
- Voltage unbalance 1% max between any two power phases.
- Frequency ±5% of nameplate
- Pressure 150 feet submergence or 150 psi at lower seal.
- Mounting Vertical shaft down
LONG TERM STORAGE INSTRUCTIONS

The equipment is shipped from the factory with adequate protection for transportation in covered trucks, and for indoor storage at the job site for a limited time between receipt and installation. If the equipment is not put into immediate use, it should be stored in a cool, clean, and dry indoor location. To help prevent rusting, any paint scratches or chips incurred during handling should be touched up prior to storage. Store in the vertical position.

Electrical cables must be properly supported and protected from moisture. The rotating assembly must be spun for approximately one (1) minute monthly to insure proper distribution of lubricant and to prevent damage to the shaft or bearings.

INSTALLATION NOTES

Thermal Protectors (Leads marked P1 and P2) must be connected. See Figure 1 and Tables 1 & 2. If current through the thermostats exceeds the values listed in Table 2, an intermediate control circuit relay must be used to reduce the current or the thermostats will not work properly. Moisture probes (Leads marked W1 and W2) must be connected. See Figures 2 and 3 and Table 1. Check power supply against final nameplate connection voltage. When installing pump or other machine to motor shaft, care must be taken to properly fit shaft and key. If required, the impeller hub should be heated slightly before sliding it onto the shaft. UNDER NO CIRCUMSTANCES SHOULD THE IMPELLER BE DRIVEN ON BY POUNDING. THIS WILL DAMAGE THE SEALS AND BEARINGS. The key must be fit to shaft keyway to avoid impeller from riding on key. The fastener must employ locking means to prevent loosening. When fastener is removed, it is recommended fastener be replaced with a similar device available from YCC.

When a CLC motor ships from the factory it is ready for installation. No adjustment is required. Check that the fluid level is up to the oil fill plug (25) after motor is installed in shaft down position. The motor will operate successfully when applied within the specifications listed above.

All CLC motors will operate in either direction of rotation. To reverse the direction of a three-phase motor, interchange any two motors leads at the starter. Eyebolts are supplied for the purpose of installation and servicing the motor. DO NOT USE THE MOTOR ELECTRICAL CABLES FOR LIFTING.

Normal care should be exercised to prevent mechanical damage to the seal, frame and insulated electrical cable. An extra set of motor nameplates is furnished for future reference. These should be retained in a safe place.

<table>
<thead>
<tr>
<th>Volts (VAC)</th>
<th>Continuous Amperes</th>
<th>Inrush Amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>110-120</td>
<td>3.0</td>
<td>30</td>
</tr>
<tr>
<td>220-240</td>
<td>1.5</td>
<td>15</td>
</tr>
<tr>
<td>440-480</td>
<td>0.75</td>
<td>7.5</td>
</tr>
<tr>
<td>550-600</td>
<td>0.6</td>
<td>6.0</td>
</tr>
</tbody>
</table>

Table 2: Maximum Current Capacity of Motor Thermostat
MOISTURE DETECTION SYSTEM

IMPORTANT
YCC Dry Pit Submersible CLC Motors are equipped with moisture detection devices. Failure to properly connect or utilize this system voids the motor

Moisture probes, leads marked W1 and W2, must be used in conjunction with an induction relay. This device will detect moisture entering the fluid chamber due to failure of the lower seal and, when properly connected to a warning device, will provide notification of needed maintenance. Integrity of this system requires periodic testing.

CONTROLS AND SIGNAL DEVICES - A control and signal device (not supplied by YCC) must be installed at the installation site to complete the moisture detection system. Control leads should not be installed in the same conduit as power leads. Induced voltage can cause false moisture signals.

CONTACT OPERATION - Normally open load contacts close and normally closed load contacts open when the moisture probes detect the influx of moisture within the motor.

TEST PROCEDURE - A normally closed pushbutton and neon-indicating lamp should be provided as means of checking the moisture sensing components. When the pushbutton is depressed, the indicating lamp will be illuminated to indicate (A) power is supplied to the control, (B) the control is operative, and (C) wiring to the moisture probes in the motor is intact. This procedure should be performed periodically to confirm integrity of circuit.

SIGNAL DEVICES - The signal device may be audible (bell, buzzer, horn or siren) or visible (incandescent or neon lamp) or both - a signal device of your choice may be obtained from your local electrical supply house.

SYSTEM OPERATION - It is recommended that upon indication (by warning light, etc.) of lower seal failure that the motor is removed from the installation and the fluid and lower seal is replaced as soon as possible. If reconditioning is not performed within a 30-day period it is recommended that the upper seal and thrust bearing be thoroughly inspected and replaced if required.

When ordering parts or reporting trouble have complete motor nameplate data available.
DISASSEMBLY INSTRUCTIONS

WARNING

TO AVOID CONTACT WITH LIVE PARTS, DISCONNECT ALL POWER INCLUDING POWER TO THE MOISTURE CONTROL SYSTEM BEFORE PERFORMING ANY DISASSEMBLY OPERATIONS.

Refer to cross-section Drawings Figure 5.a (210), Figure 5.b (250), Figure 5.c (320), and Figure 5.d (360)

NOTE: EXCEPT for epoxy seal cap assembly REPLACEMENT electrical repairs for the 250 CLC motor require the complete disassembly of the motor. Refer to Mechanical Repair (250 only) section for instructions.

ELECTRICAL REPAIRS (210, 320 and 360)

CAUTION

Follow all lockout/tagout procedures before servicing. Disconnect motor leads and control cable leads.

Electrical repairs such as stator repair and/or replacement or servicing of thermal protectors may be accomplished without disturbing the rotating assembly (i.e. Rotor and Thrust Bearing Housing).

Mount the motor in the vertical shaft down position.

Drain internal cooling fluid from the motor frame by first removing pipe plug (25) and then removing drain plug (40). Use caution in removing these plugs. Slowly unthread the plug until loose and the internal pressure is relieved. Use caution in the removal of this fluid to prevent spillage and dispose of properly. Uncontaminated fluid may be reused.

Loosen, but do not remove cap screws (26) securing the epoxy seal cap assembly (9). Back epoxy seal cap assembly slowly out of radial bearing housing (8) until loose and internal pressure is relieved. Remove all screws.

Disconnect the motor power leads (T1, T2 and T3), and ground screw (27) in the cap. Disconnect moisture probe leads (W1 and W2) and thermal protector leads (P1 and P2). Remove epoxy seal cap assembly.

Remove thrust bearing housing mounting screws (23) from the thrust bearing housing (5).

Using the eyebolts (38), carefully lift the stator/stator housing and radial bearing housing assembly up and off the thrust bearing housing assembly.

Make sure that moisture probe leads are free to be pulled through the opening in the radial bearing housing as these leads are connected to the thrust bearing housing.

If necessary, radial bearing housing (8) can be removed from stator/stator housing assembly (7) by removing cap screws (24) from the radial bearing housing.

MECHANICAL REPAIRS (210, 320 and 360)

CAUTION

Follow all lockout/tagout procedures before servicing. Disconnect motor leads and control cable leads.

To inspect Lower seal:

Position motor in the shaft up position.

NOTE: Attempted removal of the lower seal may require it to be replaced.

Remove lower seal snap ring (12).
Remove lower seal (13) rotating element.

Thoroughly clean the recess and visually inspect the seal.

To inspect the Upper seal:

NOTE: Fluid will flow from the lower seal area if the seal is removed before draining fluid.

Remove frame pipe plug (25), drain fluid plug (40) and drain fluid. Remove lower seal as explained above.

Remove cap screws (22) from lower seal housing (4).

Remove lower seal housing (4).

To replace oil baffle, remove oil baffle (41) from lower seal housing (4) by removing screws (42).

Remove inner seal snap ring (15), fluid impeller (29) impeller key (36) and upper seal (16) rotating element.

Thoroughly clean the chamber and visually inspect seal.

If Failure is Analyzed to Require Thrust Bearing Replacement:

Remove fluid, seals and lower seal housing as described above. Mount motor in vertical shaft down position and continue as follows.

Refer to Electrical Repairs for removal of stator/stator housing assembly from the thrust bearing housing.

Disconnect the moisture probe lead wires (32) at probes (21).

Remove cap screws (46) securing the thrust bearing cap (6) to the thrust bearing housing (5).

Place an eyebolt (not provided) in the threaded hole in upper end of the shaft (3) and lift the rotating assembly from the thrust bearing housing (5).

Remove thrust bearing locknut and lockwasher (45) 320 & 360 frames or thrust bearing snap ring (44) 210 frame, from shaft (3).

Using a suitable bearing puller, remove thrust bearing (10).

Remove thrust bearing cap (6) from shaft.

For Total Disassembly:

Remove moisture probes (21) and resistor (37) if necessary.

Using a suitable bearing puller, remove radial bearing (11), if necessary.

**MECHANICAL REPAIRS (250)**

**CAUTION**

Follow all lockout/tagout procedures before servicing. Disconnect motor leads and control cable leads.

Mount motor in vertical shaft down position.

Remove epoxy seal cap assembly (9) as described in Electrical Repair (210, 320 and 360) section.
If the cooling fluid cavity is to be opened, thoroughly drain fluid by removing pipe plug (25) and then removing drain plug (40). Use caution in removing these plugs. Slowly unthread the plug until loose and the internal pressure is relieved. Properly dispose of contaminated fluid. Uncontaminated fluid may be reused.

Rotate motor to the vertical shaft up position.

To inspect Lower seal:

NOTE: Attempted removal of the lower seal may require it to be replaced.

Remove lower seal snap ring (12).
Remove lower seal (13) rotating element.
Thoroughly clean the recess and visually inspect the seal.

To inspect the Upper seal:

Remove cap screws (22) from lower seal housing (4) and remove lower seal housing.
Remove upper seal snap ring (15), fluid impeller (29) impeller key (36) and upper seal (16) rotating element.
Thoroughly clean the chamber and visually inspect seal.

If Failure is analyzed as Electrical, stator/stator housing may be removed as follows:

Disassemble motor as described previously.
Thoroughly clean the fluid chamber and remove cap screws (23) from the thrust bearing housing (5).
Place a properly sized eyebolt (not provided) in the shaft (3) extension and carefully lift the rotating assembly from the stator/stator housing assembly. Make sure that moisture probe leads (32) are free to pull through the cored lead channel in the stator housing (7) and radial bearing housing (8).
Rotate the stator/stator housing and radial bearing housing (8) assembly to the shaft down position.
Remove cap screws (24) from the radial bearing housing (8).
Lift housing from the stator/stator housing assembly.

If Failure is Analyzed to Require Thrust Bearing Replacement:
Remove rotating assembly as described previously and place horizontally on bench. Carefully block assembly so that it cannot roll. Disconnect the moisture probe lead wires (32) at probes (21).
Remove cap screws (46) securing the thrust bearing cap (6) to the thrust bearing housing (5) and remove bearing housing.
Remove thrust bearing snap ring (44) from shaft (3).
Using suitable bearing puller, remove thrust bearing (10).
Remove thrust bearing cap (6) from shaft.

For Total Disassembly:
Remove moisture probes (21) and resistor (37) if necessary.
Using suitable bearing puller, remove radial bearing (11).
RE-ASSEMBLY INSTRUCTIONS (210, 320 and 360)

**WARNING**

SUITABLE PROTECTIVE CLOTHING (I.E. GLOVES) MUST BE WORN WHEN HANDLING HEATED COMPONENTS.

Thoroughly clean all parts prior to re-assembly. Special care must be taken with o-rings and o-ring fits. Place o-rings on all bracket fits and lightly coat fits with grease (not excessive).

**CAUTION**

When installing ball bearings, press only against inner races of bearings. Pressing outer races will damage balls and ruin the bearing. Press evenly on inner race, using extreme care not to score shaft.

Rotating Assembly

It may be necessary to heat bearings to facilitate installation because of close tolerance fits. Bearings may be heated by either of the following methods:

- **OIL BATH**: Accomplished by submerging bearing in a tank of oil having a high flash point. The bearing should be suspended so as not to be in contact with the heat source, for 20 to 30 minutes at a temperature of approximately 220°F. Oil temperature must not exceed 250°F.
- **INDUCTION HEATING**: Accomplished by applying heat directly to the bearing (i.e., commercially available induction bearing heater). Extreme caution must be exercised to insure that bearing temperature does not exceed 200°F.

The bearings should be quickly installed and positioned squarely against mating face while it is still hot and secured with appropriate locknut or retaining ring.

Install radial bearing (11) on shaft. Pack the bearing partially with specified grease.

Assemble thrust bearing cap (6) and thrust bearing (10) to the rotor/shaft assembly. NOTE: *Pumpac bearings must be prelubricated and installed in accordance with instructions supplied with the bearings. Special care must be taken to position the directional “arrow” marks on the outer races of the bearings toward the output end of the shaft.*

Secure the thrust bearing on the shaft with bearing lockwasher and locknut (45) – 320 & 360 or snap ring (44) - 210.

**Thrust Bearing Housing Assembly**

Coat moisture probe (21) pipe threads with sealant and screw into place making sure they are tight. Clean excessive sealant from the bearing housing.

Coat all machined surfaces of thrust bearing housing (5) with a thin coat of grease.

Prepack thrust bearing (10) with grease.

Lower reassembled rotating assembly into thrust bearing housing (5). Secure thrust bearing cap (6) to the bearing housing with cap screws (46).

Attach moisture probe lead wires (32) marked W1 and W2 and resistor (37) to probes (21). Lower stator housing (7) over rotating assembly, pulling W1 and W2 lead wires (32) through cored channel in the stator housing. Bolt thrust bearing housing (5) to stator housing (7) with cap screws (23) making sure o-rings (18) and (19) are not damaged and are properly seated.

**Radial bearing housing Assembly**

Coat all machined surfaces of the radial bearing housing with a thin coat of grease.

Assemble radial bearing housing to stator housing (7) by lowering onto stator housing assembly while pulling all lead wires through cored openings in radial bearing housing (8). Make sure o-rings (18) & (19) are properly seated.

Secure radial bearing housing (8) to stator housing (7) with cap screws (24).
Lower Seal / Lower seal housing Assembly
Place the motor assembly in the vertical shaft up position. Thoroughly clean seal cavity and probes.

Lightly lubricate the upper seal (17) stationary seat rubber seal and the thrust bearing housing (5) seal seat with Mobiltherm 603 or Citgo Sentry 19.

Make sure that the lapped seal face is exposed. Carefully place the upper seal stationary seat (17) over shaft (3) and into the thrust bearing housing (5). Using a suitable pressing tool, press stationary seat until properly positioned.

Wipe lapped face clean with a clean towel or rag. Lightly lubricate rubber parts of upper seal (16) rotating element and shaft (3) with Mobiltherm 603 or Citgo Sentry 19. Slide complete rotating element onto shaft.

Install upper seal spring and place fluid impeller (29) and impeller key (36) onto shaft and up against the spring. Firmly push impeller into position and install upper seal snap ring (15) on shaft using a suitable tool. Turn shaft by hand to make sure seal is properly seated.

Assemble oil baffle (41) to lower seal housing (4) using screws (42).

| TABLE 3 |
| RECOMMENDED OIL QUANTITIES |
| (Mobiltherm 603 fluid or Citgo Sentry 19 or equivalent) |

<table>
<thead>
<tr>
<th>MOTOR FRAME</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>12 quarts</td>
</tr>
<tr>
<td>250</td>
<td>16 quarts</td>
</tr>
<tr>
<td>320</td>
<td>24 quarts</td>
</tr>
<tr>
<td>360</td>
<td>32 quarts</td>
</tr>
</tbody>
</table>

Assemble lower seal housing (4) to the thrust bearing housing (5) using cap screws (22). Make sure o-ring (28) is properly seated before tightening. Thoroughly clean seal cavity.

Install lower seal (14) stationary and rotating elements and lower seal snap ring (12) following the procedure outlined above. When complete, turn shaft by hand to make sure seals are properly seated.

Rotate motor to the shaft down position.

Replace lower pipe plug (40).

Remove pipe plugs (25) and (39) and fill with Mobiltherm 603 or Citgo Sentry 19 fluid until fluid level reaches the pipe plug hole (25). For the approximate quantity of fluid required see Table 3. Do not use standard oil or the cooling capacity of the motor will be reduced and the motor may overheat prematurely.

Epoxy seal cap assembly
Place o-ring (20) over fit and lightly coat with grease (not excessive).

Using suitable connectors, reconnect power leads to proper final voltage connection. Be sure to check lead wire marking and color coding prior to connecting. Refer to Table 1 for correct lead color-coding.

Reconnect control leads W1 to W1, W2 to W2, P1 to P1, P2 to P2.
Reconnect power cable ground wire to ground terminal in top of radial bearing housing (8) using screw (27).

Secure epoxy seal cap assembly (9) to radial bearing housing (8) using screws (26), making sure o-ring (20) is properly seated.
RE-ASSEMBLY INSTRUCTIONS (250)

Thoroughly clean all parts prior to re-assembly. Special care must be taken with o-rings and o-ring fits. Place o-rings on all bracket fits and lightly coat fits with grease (not excessive).

**CAUTION**
When installing ball bearings, press only against inner races of bearings. Pressing outer races will damage balls and ruin the bearing. Press evenly on bearing inner race, using extreme care not to score shaft.

Rotating Assembly

It may he necessary to heat bearings to facilitate installation because of close tolerance fit. Bearings may be heated by either of the following methods:

**OIL BATH:** Accomplished by submerging bearing in a tank of oil having a high flash point. The bearing should be suspended so as not to be in contact with the heat source, for 20 to 30 minutes at a temperature of approximately 220°F. Oil temperature must not exceed 250°F.

**INDUCTION HEATING:** Accomplished by applying heat directly to the bearing (commercially available induction bearing heater). Extreme caution must be exercised to insure that bearing temperature does not exceed 200°F.

The bearings should be quickly installed and positioned squarely against mating face while it is still hot and secured with appropriate locknut or retaining ring.

**WARNING**
SUITABLE PROTECTIVE CLOTHING (GLOVES) MUST BE WORN WHEN HANDLING HEATED COMPONENTS.

Assemble radial bearing (11), thrust bearing cap (6) and thrust bearing (10) to the rotor/shaft assembly.

Secure the thrust bearing on the shaft with bearing snap ring (44).

**Thrust bearing Housing Assembly**

Coat moisture probe (21) pipe threads with sealant and screw into place, making sure they are tight. Clean excessive sealant from the bearing housing.

The thrust bearing should be packed with grease. Coat all machined surfaces of the thrust bearing housing with a thin coat of grease. Install thrust bearing housing (5) over thrust bearing (10). Secure inner bearing cap (6) to the bearing housing with cap screws (46).

Attach moisture probe lead wires (32) marked W1 and W2 and resistor (37) to probes (21). Install the thrust bearing housing / rotating assembly into the stator housing while pulling the moisture probe lead wires W1 and W2 through the cored passage in the stator housing.

Bolt the thrust bearing housing (5) to stator housing (7) with cap screws (23) making sure o-ring (18) is not damaged and is properly seated.

**Radial bearing housing Assembly**

Radial bearing (11) should be packed with grease. Coat all machined surfaces of the radial bearing housing with a thin coat of grease.

Mount motor assembly in the shaft down position and lower radial bearing housing (8) onto the motor assembly. Pull moisture probe leads W1 and W2, thermal protector leads P1 and P2, and motor power leads through cored cavities in the radial bearing housing (8).

Install cap screws (24) to secure the radial bearing housing (8) to the stator housing (7). Make sure that o-rings (19) are seated properly.
Lower Seal / Mounting Flange Assembly

Place the motor assembly in the vertical shaft up position. Thoroughly clean seal cavity and probes. Lightly lubricate the upper seal (17) stationary seat rubber seal and thrust bearing housing (5) seal seat with Mobiltherm 603 or Citgo Sentry 19.

Make sure that the lapped seal face is exposed. Carefully place the upper seal (17) stationary seat over the shaft (3) and into the thrust bearing housing (5). Using a suitable pressing tool, press until properly positioned. Wipe lapped face clean with a clean towel or rag.

Lightly lubricate rubber parts of upper seal (16) rotating element and shaft (3) with recommended oil. Slide complete upper seal rotating element onto shaft.

Install upper seal spring and place fluid impeller (29) and impeller key (36) onto shaft and up against the spring. Firmly push impeller into position and install upper seal snap ring (15) on shaft using a suitable tool. Turn shaft by hand to make sure seal is properly seated.

Assemble lower seal housing (4) to the stator housing using cap screws (22). Make sure o-ring (19) is properly seated before tightening. Thoroughly clean seal cavity.

Install lower seal (14) stationary and rotating element and lower seal snap ring (12) following the procedure outlined above. When complete, turn shaft by hand to make sure seals are properly seated.

Rotate motor to the shaft down position.

Replace lower pipe plug (40).

Remove pipe plugs (25) and (39) and fill with Mobiltherm 603 or Citgo Sentry 19 fluid until fluid level reaches the pipe plug hole (25). For the approximate quantity of fluid required see Table 3. Do not use standard oil or the cooling capacity of the motor will be reduced and the motor may overheat prematurely.

Epoxy seal cap assembly

Place o-ring (20) over fit and lightly coat with grease (not excessive).

Using suitable connectors, reconnect power leads T1, T2, T3 to proper final voltage connection. Be sure to check lead wire marking and color coding prior to connecting. Refer to Table 1 for correct lead color-coding.

Reconnect control leads W1 to W1, W2 to W2, P1 to P1, P2 to P2. Reconnect power cable ground wires to ground terminal in top of radial bearing housing (8) using screw (27). Secure epoxy seal cap assembly (9) to radial bearing housing (8) using screws (26), making sure o-ring (20) is properly seated.
ADDENDUM
MECHANICAL SEAL INSTRUCTION – CLC

The mechanical seals used on motors manufactured by YCC are purchased commercially from various suppliers that make interchangeable seals. The most common types are called the John Crane Type 21, Pac-Seal/Flowserve Type 21-31, and the Burgmann MG9. These seals applied in YCC motors function interchangeably with some minor changes to the mounting details. Shown on this document are the variations and the details to correctly substitute seals. DO NOT ASSUME A REPLACEMENT SEAL MOUNTS IDENTICALLY TO AN EXISTING SEAL. The retainers for all seals have been updated to accommodate different seals and springs. Some seals use a spring holder which looks like a thin washer, some use a cup shaped spring holder, some use a retaining ring alone. The replacement seal is supplied with the correct retaining components. The diagrams below illustrate the differences. Note the conical springs and their orientations.

Note: Protect lapped seal faces from contamination or damage during handling and installation. Never use grease or heavy motor oil as a seal installation lubricant. Oil, grease or dirt on the seal faces may cause leakage.

1. Disassemble pump to expose seal. Motor lower seal housing will need to be removed to service upper seal. Note assembly and mounting of existing seal. New seal should mount similar but may require additional components such as spacer or different retaining ring.

2. Carefully remove old seal rotary and stationary components taking care not to damage shaft or housing bore.

3. Clean shaft and housing bore with very fine emery cloth to remove rust and burrs, but avoid making flat spots or reducing the shaft diameter.

4. Lubricate the shaft and housing bore, and the seal’s Viton elastomer components only with water based seal lubricant or light multipurpose oil. Seal faces should not be lubricated.

5. Press stationary seal seat firmly into housing bore. Protect seal face with plastic or cardboard.

6. Check both seal faces for contamination by lubricant or particles. Slide rotary seal components by hand pressure along shaft to insure completely parallel contact with stationary seat. Make sure spring properly engages step on rotary seal and opposite end of spring either engages spring retainer or sits against the Impeller, Inner. Seal may be supplied with a spacer that is to be placed between the retaining ring and the seal spring on the lower seal on some models. See sketches above. Some seals sit on the Impeller, Inner and the impeller drive key must engage the seal spring next to the end turn to allow spring to sit flat against impeller.

7. Reassemble motor and pump replacing any components supplied in kit if applicable.

8. Some dry-pit submersible pumps are provided with a manual pump vent. When pump is started, the casing must be flooded and the trapped air must be vented to assure that the seal is properly cooled by the pumpage and the pump will remain primed. Never run pump dry.
Figure 3 - Seal Cap and Motor Wiring Diagram
Typical 180, 210, 250 Frames
FIGURE 4 - SEAL CAP AND MOTOR WIRING DIAGRAM
TYPICAL 320 & 360 FRAMES

ATTENTION!
1. THE TERMINALS SHOULD BE PLACED IN THE EXACT POSITION SHOWN.
3. BEND ANY EXTRUDED TERMINALS TO FIT ALL LEADS.

POWER CABLE
CONTROL CABLE
EPOXY
SEAL CAP
LOCKNUT
LOCK WASHER & NUT
GROUNDING LEAD WIRE ASSY.
GROUND SCREW
STATOR THERMOSTAT LEADS
STATOR

POWER LEADS
TERMINAL BOARD
MOISTURE DETECTION LEADS
TERMINAL BOARD
GROUNDING LEAD
360 SEAL CAP
320 SEAL CAP

VIEW 'A-A'

FILE NAME: 109833
CROSS SECTION AND PARTS IDENTIFICATION DRAWING

Typical 320 Frame

FILE NAME: 110417

FIGURE 5.c

12/27/01
<table>
<thead>
<tr>
<th>NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
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* NOT APPLICABLE TO ALL FRAMES.

TABLE 4: PARTS LIST FOR FIGURES 5.a, 5.b, 5.c, 5.d

FILE NAME: 110418 122701