Unitra, Inc

INSTALLATION & OPERATION MANUAL

for

End Suction Centrifugal Pumps
EC 2 Series

EC 2 SERIES
END SUCTION CENTRIFUGAL PUMPS

MOUNTING

The pump-motor unit should be mounted so that its weight is on the mounting feet and is not carried by the piping. Bolts or screws securing the feet to the mounting surface should be furnished with lock washers or spring loaded nuts to dampen vibration and prevent any wracking of the pipe or volute. The pumps may be mounted in any position except with the motor below the pump. The pump may be rotated in relation to the motor to any of four positions if the direction of discharge makes it desirable to do so. The re-positioning is accomplished by rotating the volute.

LOCATION

Motors on these pumps are rated at 40 C rise. Location should be such that there is ample clearance on all sides for service and air circulation.

PIPING

All piping should be supported independently of the pump. Do not tighten union so as to cause a strain on the volute or pump housing. Piping should be as short and direct as possible to reduce friction. On new installations, pipes should be flushed before installation to prevent possible seal damage. Gate valves are preferable to globe valves. The vertical lift plus friction losses must not exceed 20 feet of water (17.5" of Mercury) on the suction side of the pump. For best operation, the end of the suction pipe should be 3 feet below minimum pumping level. Do not throttle suction to vary capacity. Discharge piping should include a gauge and check valve. When pumping water possibly containing debris or suspended solids, a mesh strainer should be attached to the suction pipe to prevent possible damage to the impeller or seal.

WIRING

Connect wiring according to directions on motor. Wiring diagram on single phase motor is usually located on the inside of terminal box cover. Direction of rotation must be in direction of arrow on pump volute. If three phase motor rotates in opposite direction, interchange any two motor leads.

PRIMING

Before starting pump, fill the casing and suction pipe with liquid being pumped. If pump is located above liquid level, install a foot valve on end of suction pipe, remove pipe plug at discharge opening and fill until all air is evacuated. If pump is below liquid level, remove upper drain plug to evacuate air from casing

STARTING

Before starting, remove drive plug at far end of motor shaft, insert screwdriver in shaft slot and test freedom of rotation. Each pump is given a short test run before shipment and there should be no leakage around seal: If slight leakage develops, let pump operate a few hours for seal faces to run-in. At this time check all bolts.

SEAL REPLACEMENT

The type 21 seal, most commonly used in UNITRA Pumps, is shown (fig 1). This seal should be replaced with an identical seal. To replace a seal, remove the piping from the suction and discharge ports. Remove the volute from the pump bracket and then take the impeller off the shaft.

On motor mounted pumps with a 56J motor frame size, the impeller is screwed onto the right hand threads on the shaft. Hold the shaft by the slot in the opposite end and unscrew the impeller off. All other UNITRA Pumps have keyed shafts. Now remove the bolts that hold the bracket to the motor or bearing housing face, and pull the bracket off of the shaft. Turn the bracket face down and carefully tap the seal seat and cup out. After polishing and lightly oiling the shaft and seat bore on the bracket, the pump is ready to be reassembled with new seal.

SEAL REPLACEMENT PROCEDURE FOR TYPE (21) SEALS IN PUMPS ASSEMBLED ON 56J FRAME THREADED SHAFT MOTOR

To replace type 21 seal, remove seat from rubber gasket. Place gasket in seat counter bore, oil outside edge of seat and force into gasket with thumbs. (Do not damage seal face.) Replace motor bracket. Remove spring from rotating seal part, oil rotating parts inside and out. Slip over shaft, being careful not to fold under sealing washer. Start on shaft with thumbs, then, using a piece of tubing slightly larger than shaft, push this part until it contacts the seal seat. Replace spring, impeller and other parts.

BEARING REPLACEMENT: After removing the pump end as described in the seal replacement procedure, the bearing housing retaining rings and/or bearing clamp plate must be removed (for base mounted pumps). Push the shaft and bearings out of the bearing housing, and carefully clean bearing bore and front face of any foreign matter. Press old bearings off of the shaft and polish bearing surfaces with fine grit polishing cloth. Now install new bearings by pressing against inner ring of the bearings. The shaft and bearing assembly can now be pressed back into the bearing housing by pushing against outer ring of the bearing. Replace the retaining rings and/or bearing clamp plate (base mounted pumps). Slide slinger onto the shaft and reassemble pump end onto bearing housing.

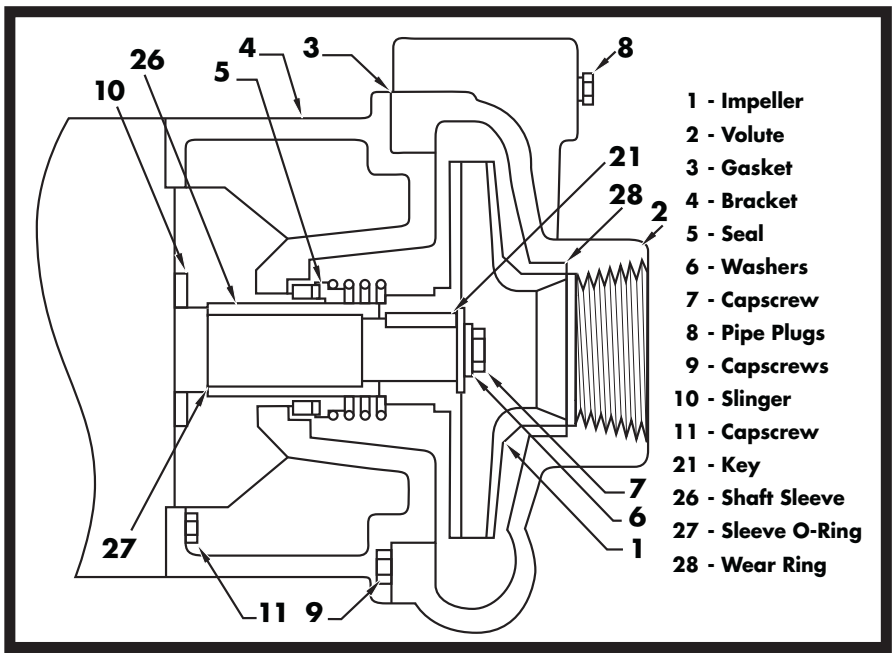
MAINTENANCE

All models should be inspected regularly. Remove volute and impeller to clean out any foreign matter. Inspect impeller for stoppage at suction and discharge openings. Pumps should be flushed with clean water after use. If excessively dirty water or corrosive or abrasive solutions have been pumped, flush thoroughly with clean water and drain volute by removing bottom pipe plug.

SEAL

All UNITRA EC-2 Pumps are equipped with standard mechanical seals suitable for pumping relatively clean water at temperatures up to 150°F . When pumping liquids other than water, the maximum temperature must be reduced. Hot water seals are available. Consult factory for recommendations.

FIGURE 1



TYPE 21 SEAL IN TYPICAL SLEEVED SHAFT PUMP ON JM FRAME MOTOR