MAINTENANCE OF THE MJ VERTICAL GLANDLESS PUMP

PLEASE READ CAREFULLY BEFORE START-UP

GENERAL

1.1 The procedure where the motor and support are left in situ will be described. If the pump is on the floor, stand the pump on the motor fan cowl taking care not to damage the motor fan or cowling. Dismantle the pump parts in the order given.

DISMANTLING THE UNIT

1.2 Remove the suction, delivery and overflow pipework for a sufficient length to enable the pump components to be removed. In particular sufficient length must be removed from the suction to enable the Lower Rotor Casing to clear the impeller. This length will vary with the size of pump, but in general 0.2m will be sufficient. Usually it will only be necessary to break the discharge and overflow flange joints and remove the flange bolts.

Unscrew the clamp bolts (14) and the Lower Rotor Casing (8) will need temporary support and remove the clamp ring (9). The Lower Rotor Casing can now be removed in a vertically downward direction until the impeller is cleared, when it is removed sideways completely away from the pump. It should be noted that the joint washer (18) is used on the joint face. During this operation the two clamping studs (19) which are fitted with nylon nuts (20) are not slackened off. These studs and nuts will hold the upper body (7) and the Upper Rotor Casing (5) clamped to the mounting bracket (10).

The impeller will now be exposed and can be removed as follows. The shaft extension (2) is prevented from turning by the use of an open ended spanner-two flats being provided for this purpose. It is most important that a strap wrench is used to unscrew the impeller. SEE FIG 1. Any hammering or undue load on the impeller blades will result in damage, quite often of an irreparable nature. The strap should be wrapped round the periphery of the impeller. The screw thread is right-handed on all versions of the MJ pump.

The Upper Body (7) can now be released from the mounting bracket by unscrewing the two nuts (20). Removal of these two nuts will also release the Upper Rotor Casing (5). With the Upper Rotor Casing removed, the Vaned Thrower can be drawn downwards and removed, followed by the Upper Body. Again note the spigotted joint between the Upper Rotor Casing and the Upper Body. These joint faces must be treated with great care, as any scarring on the face may result in leakage on re-assembly.

For general maintenance purposes, it will not be necessary to remove the motor from the Mounting Bracket or the Shaft Extension (2) from the motor shaft. However, the

shaft extension is removed quite simply by unfastening the nut on the end of the Clamp Bolt (13) and pulling it off the Motor Shaft. The drive to the pump is taken through a key.

RE-ASSEMBLY OF THE UNIT

1.3 **CHECK MOTOR. THERE SHOULD BE NO AXIAL MOVEMENT OF THE MOTOR SHAFT EXCEPT FOR THE NORMAL BALL RACE CLEARANCES, THE MOTOR BEARING THAT TAKES THE AXIAL THRUST SHOULD BE CLAMPED ON THE OUTER RACE AND THE INNER RACE LOCATED ON THE SHAFT USUALLY BY MEANS OF A CIRCLIP.**

Re-assembly is in general a reverse of the above procedure, but special care must be taken to ensure that the various axial and diametral clearances are maintained according to the specifications. The diametral clearances are fixed by the spigot location of the pump components and no adjustment is necessary or provided.

The axial clearances of the various pump components are adjusted be means of Shims (4) between the end of the motor shaft and the shaft extension (2). The correct axial location of the Shaft Extension is pre-set before assembly of the pump components. If the Shaft Extension is positioned relative to the Mounting Bracket according for FIG 2, then the various axial clearances throughout the pump will be within the specified tolerances.

The settling dimension is valid whatever the attitude of the motor, due allowance has been taken of the axial clearance of the motor bearings. No further checks are necessary and assembly is accomplished as detailed above. These comments apply to new components which will, of course, be within the specified design tolerances. If, however, a check on impeller clearance is required on worn components the following procedure may be adopted. A piece of plasticine is compressed between the front of the rotor (6) and the Lower Rotor Casing (8) in a trial assembly. For unshrouded impellers (KEEPLUS or KEEBUSH) this clearance is between 0.5mm and 1.0mm when the components are new and unworn. See FIG 3.
NOTE If the motor has been disconnected, great care should be taken to ensure that on re-assembly the correct electrical connections are made, so that the direction of rotation is as shown on the label on the motor plate, i.e. **CLOCKWISE LOOKING ON THE MOTOR.** This applies to all of our vertical glandless pumps.

1.4 The pump branch flanges, seal clamp plate and pump casing fasteners should be tightened to the torque figures given in the table below.

1.5 IT IS OFTEN WORTHWHILE FITTING EXPANSION BELLOWS IN LINE WITH THE PUMP BRANCH CONNECTIONS OF PLASTIC PUMPS TO PREVENT UNDUE STRAIN AND POSSIBLE BREAKAGE OF THE PUMP CASING BY LOADS IMPOSED BY THE PIPEWORK EXPANSION, VIBRATION OR DEFLECTION.

The Keebush and Keeplus pumps should have 3mm thick rubber joints Shore hardness 50-70 fitted between the pump branches and connecting pipework. The rubber must be compatible with pumped fluid. The metal pumps should have CAF jointing gasket material 1-2mm thick between the pump branches and connecting pipework. The joint material must be compatible with pumped fluid.