BOWIE PUMPS

INSTALLATION — OPERATION — MAINTENANCE

PUMPING PRINCIPLE:

The meshing of the gears cause a slight depression, with the resulting unmeshing of the gears causing a vacuum drawing the fluid being pumped into the space between the teeth of the gear. The liquid is carried between the teeth and the case to the opposite side of the pump. The fluid is also forced into the discharge line by the meshing of the gears. Bowie Pumps are positive displacement pumps. The pumping gears are of equal size and are the only two moving parts in the pump, which promotes longer life.

PUMP CAPACITY:

The Series 300, 400 and 500 — 2'' and 3'' Bowie Pumps are designed and recommended to be operated not to exceed 400 RPM and not in excess of 100 psi of pressure. At this speed the 2'' Bowie Pump will deliver approximately 140 GPM at no discharge pressure and the 3'' will deliver approximately 238 GPM. The Series 8100 — 9100, 1¼'' - 1½'' are designed and recommended to be operated not to exceed 780 RPM. At this speed either size will deliver approximately 48 GPM and not in excess of 100 psi of pressure. The Bowie Pump is a rotary pump, and the delivery rate will vary some with the differential pressure and the viscosity of the liquid. The Bowie Pumps operate either clockwise or counter-clockwise with equal efficiency. No alterations are necessary relative to connections, but it must be remembered that when reversing rotation, the flow of liquid is also reversed in that suction line becomes discharge line and vice versa. The suction line must always be at least the same size of the suction port.

INSTALLATION:

Bowie Pumps are ideally adapted to truck mount power take-off drive. The most popular method of tank truck installation is ''Direct Drive'' with two U-joints being utilized (one on each end of the drive shaft). A sleeve joint is recommended at the pump to compensate for any play caused by road conditions. The alignment is of utmost importance in mounting pumps on tank trucks. Misalignment will cause excessive wear on U-joints, and many breakdowns due to U-joint failure. The alignment should be held to not less than 3 degrees and not more than 15 degrees line connection if possible and never should be allowed a deviation in excess of 20 degrees variation between the two joints. It is pointed out that even though an alignment in excess of 20 degrees does not exist this WILL NOT CAUSE PUMP FAILURE.

Chain and V-belt drives are the most popular and economical method for installing the Bowie Pump on drive equipment other than tank trucks. It is recommended to use a pillow block bearing on all series of Bowie Pumps when using V-Belt or chain drives, due to the side pull and weight on the drive shaft.

IT IS VERY IMPORTANT THAT A STRAINER OR SCREEN BE INSTALLED ON THE SUCTION LINE TO PREVENT FOREIGN MATTER FROM ENTERING THE PUMP, CAUSING COSTLY BREAKDOWNS. THIS STRAINER OR SCREEN SHOULD BE LARGE ENOUGH AS TO NOT OBSTRUCT SUCTION.

LUBRICATION:

Bowie Pumps require lubrication only where grease fittings are provided. All bearing and bushing type pumps require a good grade of gun grease to insure longer life of the pumps. No lubrication is required on bushing or bearing type pumps if oil is pumped exclusively. This is the only exception. Periodic lubrication is of utmost importance in the care of the Bowie Pumps. This point cannot be over emphasized, and depending on use, this greasing should be done every four (4) hours of continuous operation.

ADJUSTMENT FOR CLEARANCE: All Series BOWIE PUMPS

Should it be necessary to adjust the pumps due to excessive clearance from normal wear of the impellers between the front and back plate housing, remove the backplate and remove one, two or three, etc., pump gaskets as may be required to take up the slack. Replace back plate, being extremely careful that the remaining gaskets do not crimp or wrinkle, and tighten bolts diametrically opposed to each other, pulling each bolt up evenly.

MAINTENANCE ON STANDARD BOWIE PUMPS: Series 300 and 8100 - 9100

The standard or stock sleeve bearing Bowie Pump is furnished with a high grade, braided type of asbestos packing, lubricated with graphite and impregnated with lubricant. No further lubrication is needed for normal operation of this packing. When tightening the packing nut do not compress the packing too greatly and cause excessive binding on the shaft. Another type of packing used is the graphited rubber packing ring. This type is preferred by many, however; great care must be taken when installing this ring to insure that the packing nut is not too tight causing binding on the shaft. This type packing tends to bind easier than the asbestos packing, due to friction on shaft and packing causing heat which swells the rubber. When installing bronze or teflon bushings in the standard Bowie Pump, care must be taken not to "scar" the bushings. It is preferable to press the bushings in place rather than tap or hammer them.

When purchasing replacement gears for Bowie Pumps, the gears are sold with shafts installed. Shafts may be purchased separately, however. Often when shafts are pressed into the gears the shafts will bend and cause pump malfunction, however; this is checked at the factory. If this is done by someone other than the factory, care must be taken to insure that the shafts are perfectly straight after pressing into the gears.

MAINTENANCE OF BALL BEARING PUMPS: Series 400/OB/POB and 500/IB

On each plate of the ball bearing Bowie Pumps are two (2) $^{3}/_{8}$" threaded bolt holes which aid in the pulling of the plates when disassembling for maintenance. Merely insert a $^{3}/_{8}$" USS (approximately 2" in length) bolt and turn into threaded holes, this operation should be done in a manner where both bolts pull the plates evenly to eliminate binding on the bearings and shafts.

When replacing shafts in plates extreme care must be taken on the bearing type pumps to insure that the seals are not damaged. A good method to insure against this is to grease these seals thoroughly so that the shaft may slip in without binding and turning the lips of the seal backwards.

When replacing bearings in the Bowie Pump, caution must be exercised to not damage the bearing by hammering, prying, etc.

NDS Drilling Supply, Inc.
26041 Newton Circle
Elko New Market, MN 55020
1-800-637-1940 952-461-3400