SMITH PUMPS

PREVENTIVE MAINTENANCE INSPECTION PLAN FOR SQ-SERIES SERIES SMITH PUMPS

This bulletin is a supplementary addendum, which must be read in conjunction with Technical Bulletin "AL-19". All information listed herein, is in the same numbered section order as detailed in "AL-19". It is applicable to SQ-Series pumps, as well as medium and high capacity Smith pumps, with the exception of what is stated, below. Always disassemble and reassemble the pumps in a safe, approved manner following instructions applicable to these models in other pertinent literature, such as "AL-1", "AL-17A", "AL-45" (N_2O), "AL-93", "AL-97", "AL-99", "AL-201", and "GM-1". Reseal the casings properly. Contact the factory if there are any questions.

1. **Keep Spare Parts on Hand.** No changes (see following page, "AL-19", and "AL-20").

2. **The First Scheduled Parts Inspection.** For all SQ-Series pumps, we suggest an interval of 50,000 gallons pumped (approximately 189,000 liters). In a properly operated and well-designed transfer system, the first significant wear patterns almost always occur in one or more of the following, as illustrated on the following page: idler gear bushings (C), idler gear shafts (B), and gears (C). Eventually noticeable wear develops on other parts, such as main shaft bushing (G), mechanical shaft-seal assembly (F), casings (B, D), and internal bypass valve (E).

3. **Inspection of Idler Gear Bushings.** SQ-Series pumps each have two idler gears per set (C) as illustrated on the following page. The proper i.d. of the carbon-graphite idler gear bushings in all idler gears after installation is 0.378 inches (9.60 mm.). If the sizes as measured do not exceed 0.379 inches (9.625 mm.), there has been very little wear and the bushings need not be replaced. If the sizes as measured exceed 0.379 inches (9.625 mm.) after such a short first interval of use, it will be important to examine the piping system and its operation to find the cause of such wear, which is excessive. When the idler gear bushings have worn to a diameter approaching 0.381 inches (9.68 mm.) or greater, the complete gear set must be replaced.

4. **Inspection of the Gears.** The width of new SQ-1 and SQ-H Series gears is 0.746-0.747 inches (18.95-18.97 mm.). If the used gears measure greater than 0.745 inches (18.92 mm.), they can be reused. The proper width of new SQ-HH and SQ-HH8 Series gears is 1.0615-1.0620 (26.962-26.975 mm.). If this measurement is greater than 1.0605 (26.937 mm.) the gears can be reused. See "AL-93", pgs. 5-7.

5. **Recommended Procedure if Excessive Gear Wear is Detected.** No Changes.

6. **Inspection of Idler Gear Shafts.** The proper diameter is 0.375 inches (9.53 mm.). If the measured diameter of a worn area is less than 0.374 inches (0.950 mm.) the shafts, assembled in (B) on the following page, must be replaced.

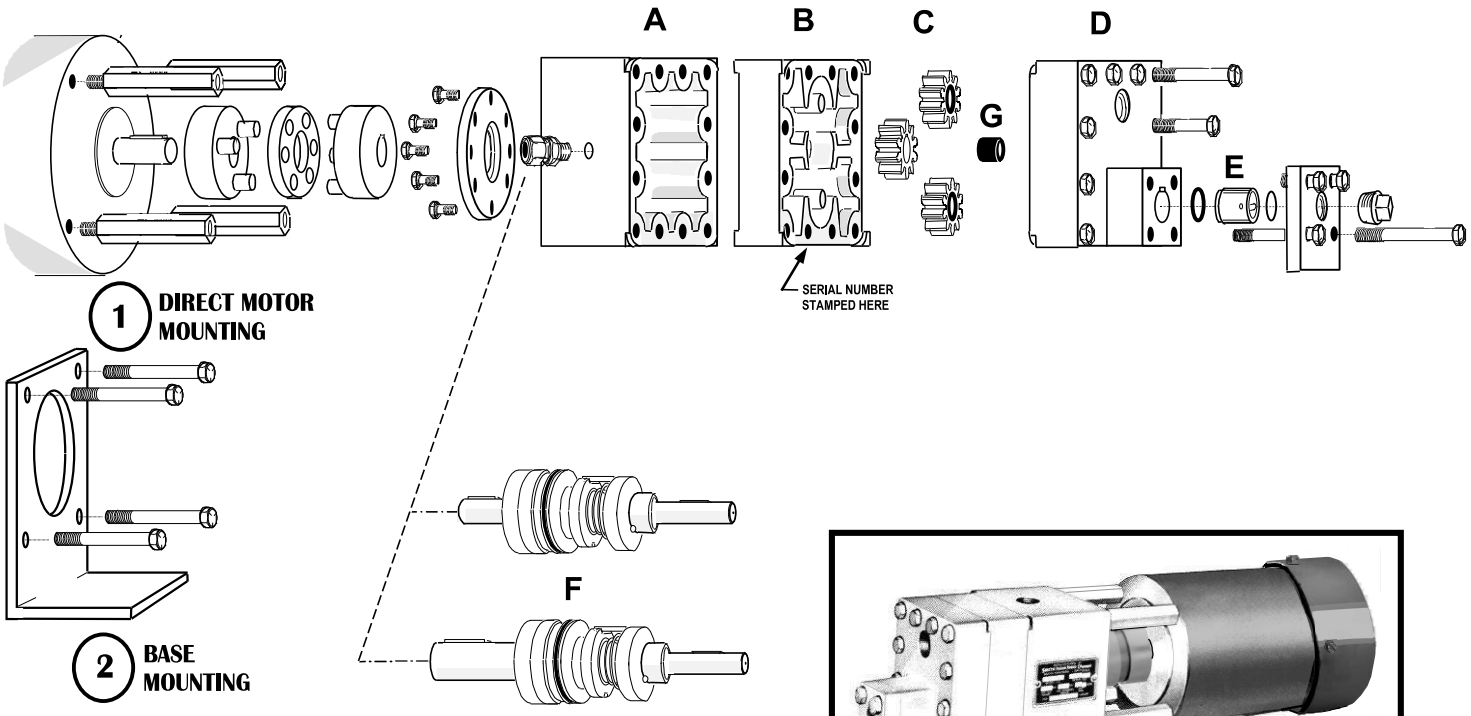
7. **The Mechanical Shaft-Seal Assembly.** All mechanical shaft-seal assemblies (F) should be frequently checked for leakage. Under normal conditions, the mechanical shaft seal assembly for SQ-Series pumps should be replaced after 8,000 hours of use. However, it may have to be replaced sooner, especially if it leaks, or a worn bushing contact surface is detected. The ball bearing, which is one of the components of the Smith mechanical shaft-seal assembly, should be checked as part of the recommended visual inspection (see "AL-201"). The grease seal should be removed, and the ball bearing checked for grease. We recommend a 30% grease pack. The grease utilized in the ball bearing is "DC-33".

Also, be sure to carefully examine the supported end of the drive shaft for wear. If the diameter of the area has visible wear patterns, or is worn to less than 0.499 inches (12.68 mm.), the shaft-seal assembly must be replaced.

8. **Main Shaft Bushing.** The main shaft bushing (G), "E-10", is installed in the gear end cover ("D"). This carbon-graphite "journal bearing" will crack if tapped into position. It must be pressed into place, and will then acquire the proper internal diameter, as long as the corresponding bore is not overly enlarged. Bushings with visually detectable discrepancies such as one-sided wear patterns, discolorations, or circumferential cracking, must always be replaced. There should be at least 0.002-0.003 inches (0.05-0.08 mm.) clearance between the internal shaft end diameter, and the i.d. of the corresponding bushing. If the main shaft bushing i.d. measures greater than 0.505 inches (12.83 mm.) it should be replaced.

9. **Inspection of Internal Bypass Valve.** This valve (E), if piped into the system for additional protection, should be visually checked during every scheduled inspection. If it does not form a positive internal seal, the pump will not function efficiently.

10. **Later Inspections.** No changes. Add "AL-31", and "AL-34" to the list of recommended literature. Check for subsequent casing wear in items (B) and (D) in the illustration, below.



SMITH "SQ-SERIES" PUMP MOUNTED TO A FRACTIONAL HP MOTOR

SMITH PUMPS

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