

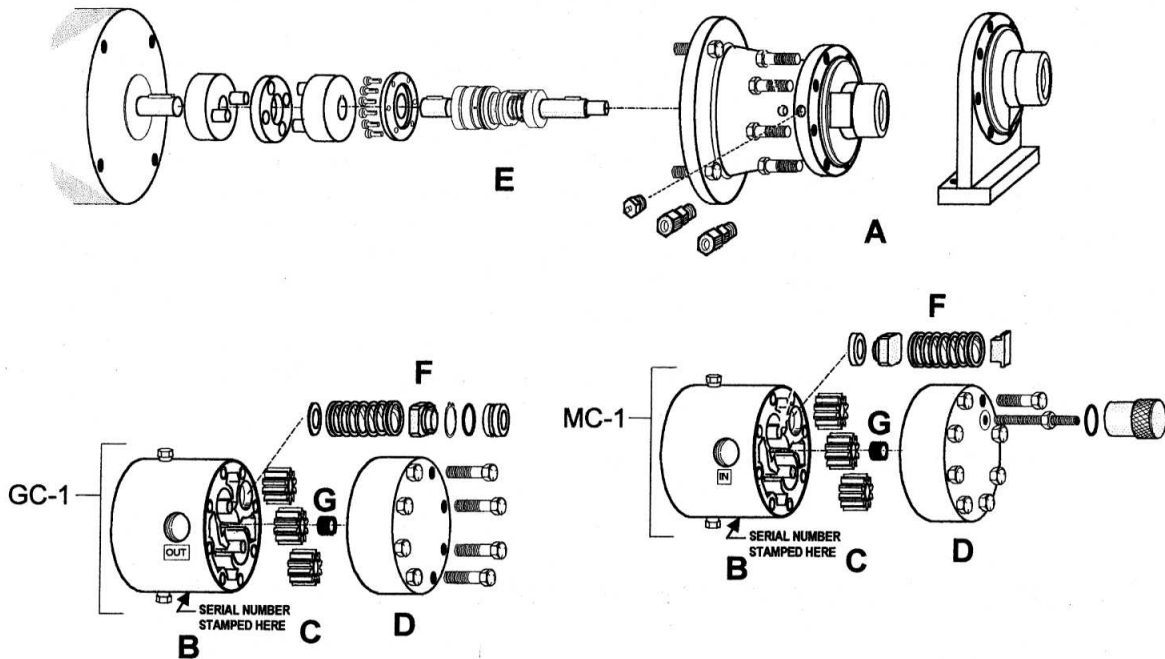
**PREVENTIVE MAINTENANCE INSPECTION PLAN FOR
MC-1 AND GC-1 SERIES SMITH PUMPS**

This bulletin is a supplementary addendum, which must be read in conjunction with Technical Bulletin "AL-19", and Manual "GM-1". All information listed herein, is in the same numbered section order as detailed in "AL-19". It is applicable to MC-1 and GC-1 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 all applicable instructions in "AL-19", "GM-1", and other literature such as "AL-1", "AL-17A", "AL-45" (N₂O), "AL-99", and "AL-201". 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-21").
2. **The First Scheduled Parts Inspection.** For all MC-1 and GC-1 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 (E), casings (B, D), and internal bypass valve (F).
3. **Inspection of Idler Gear Bushings.** MC-1 and GC-1 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 (9.63 mm.), there has been very little wear and the bushings need not be replaced. If the sizes as measured exceed 0.379 inches (9.63 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 proper width of new MC-1 and GC-1 Series gears (C) is 0.747-0.748 inches (18.97-18.99 mm.). Used gears measuring greater than 0.746 inches (18.95 mm.) can be reused (see gear inspection procedure in repair manual "GM-1").
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 (9.50 mm.) the shafts assembled in (B) as illustrated on the following page, must be replaced.
7. **The Mechanical Shaft-Seal Assembly.** All mechanical shaft-seal assemblies (E) should be frequently checked for leakage. Under normal conditions, the mechanical shaft seal assembly for MC-1 and GC-1 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 "Beacon 325".

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 0.374 inches (9.50 mm.), the shaft-seal assembly must be replaced.

8. **Main Shaft Bushing.** The main shaft bushing (G), "649-11" 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, 0.378-0.379 inches, or 9.60-9.63 mm., 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 measures greater than 0.380 inches (9.65 mm.) it should be replaced.
9. **Inspection of Internal Bypass Valve Components.** These parts (F) should be visually checked during every scheduled inspection. If they do not form a positive seal, the pump will not function efficiently.
10. **Later Inspections.** No changes. Check for subsequent casing wear in items (B) and (D) in the illustration, below. See Manual "GM-1" for additional information on this and all other related aspects of concern in this procedure.



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