OPERATION

The following operating recommendations are made to aid you in keeping your gear drive in the best possible condition. Careful attention to these details will prolong the useful life of your equipment.

Starting

Always check the oil level in the housing of the gear drive and add oil if needed. Inspection when starting and regular checks during the operating period will prevent failure of the gear drive due to poor oil circulation. Should the circulation appear to be lagging, check the oil level and the age of the oil in the drive. Oil tends to thicken with use and old oils will not circulate properly in the gear drive oiling system.

Turn by hand the drive shaft between pump and engine to check whether pump turns freely. (When the engine has no clutch, as in fire pump drives, it will be necessary to uncouple the shaft.)

When the drive is furnished with a non-reverse clutch, check to see that ratchet pins are clean and drop readily. Do not oil pins.

Before applying power replace dome and all covers and guards.

Apply power to drive gradually, but do not idle at low speed for a long period.

Observe carefully the entire installation during the starting period and do not leave until satisfied that all units are functioning properly.

Operating Temperatures

A standard drive operating at 1760 RPM pump speed under rated load and normal atmospheric conditions will reach a temperature of approximately 130-170°F depending on whether the unit is air or water cooled and local conditions peculiar to the installation. It is not possible to hold one's hand on the gear drive case except momentarily when temperatures exceed 135°F.

Increased speed, high loads, or lack of air circulation will cause the temperature to rise, but the oil temperature should not at any time exceed 200°F. A thermometer may be used at the oil filling hole of the drive to obtain actual temperatures if unusual conditions exist. When starting the drive at temperatures below 10°F, the oil should first be checked to see whether it is above the pour point. The drive must not be operated if the oil does not flow, which limiting condition exists at approximately 10°F.

Shutdown Periods

When the installation is to be inoperative for a considerable time, such as after the completion of an irrigation period, the gear drive should be drained while hot and then replenished with new oil.

Occasional brief operation during extended shutdown periods will help prevent damage from condensation and will benefit the bearings by changing the position of the balls and races. This procedure is of equal benefit to the engine, as it spreads an oil film on the cylinder walls, rings, bearings, etc.

In localities where freezing conditions prevail, drain the water from the oil coolers of drives so equipped.

Long Term Storage

1. Fill with oil in appropriate amount for storage period only. Replace oil when put into regular duty.
2. Spray exposed machined parts (i.e., base, shaft end, upper coupling) with rust-retarding oil.
3. Operate gear drive every month long enough to oil bearings and gears to prevent condensation and rusting.
4. Store in heated building if at all possible.
5. Cover with tarpaulin or other dust shield.

General Precautions

The bearings furnished are of high quality and have been approved by the manufacturer for the rated loads and speeds of the gear drives in which they are used. Bearing life is directly affected by the care given in operating the equipment and adherence to the instructions given in this manual. Usually a bearing will become noisy and give adequate warning of impending failure. Do not operate the gear drive with noisy bearings as destruction of the gears will result if the bearing should fail.

Changes sometimes occur in the water level, or alterations may be made to the pump subsequent to selection and installation of the gear drive. Such changes will usually affect the operating conditions of the gear drive and should be thoroughly investigated.

As mentioned repeatedly in this manual, lubrication is the most important factor affecting the life of the drive, which, given ordinary care and properly operated, will give exceptionally trouble-free service.

Conditions when Cooling water is Unnecessary

Assuming that the installation is such that normal air circulation exists, it is not necessary to furnish cooling water under the conditions below. The cooler is primarily needed at higher shaft and pump speeds when greater horsepower ratings and oil turbulence are present. Gear units running without cooling will run at higher temperatures, but will not exceed the allowable limits. This applies only to gear units listed in our catalogs, not to special units quoted with higher ratios.

1160 RPM pump & under, all speed increasing ratios & speed decreasing ratios thru 3:2

860 RPM pump & under, speed decreasing ratios greater than 3:2

Special Instructions

Johnson Right Angle Hollow Shaft Gear Drives used for Factory Mutual and NPFA fire pump installations are not permitted to omit or disable the non-reverse ratched coupling. Nor is the use of disconnecting couplings or clutches permitted between the engine and gear drive, or to reset the engine from its pre-set speed.