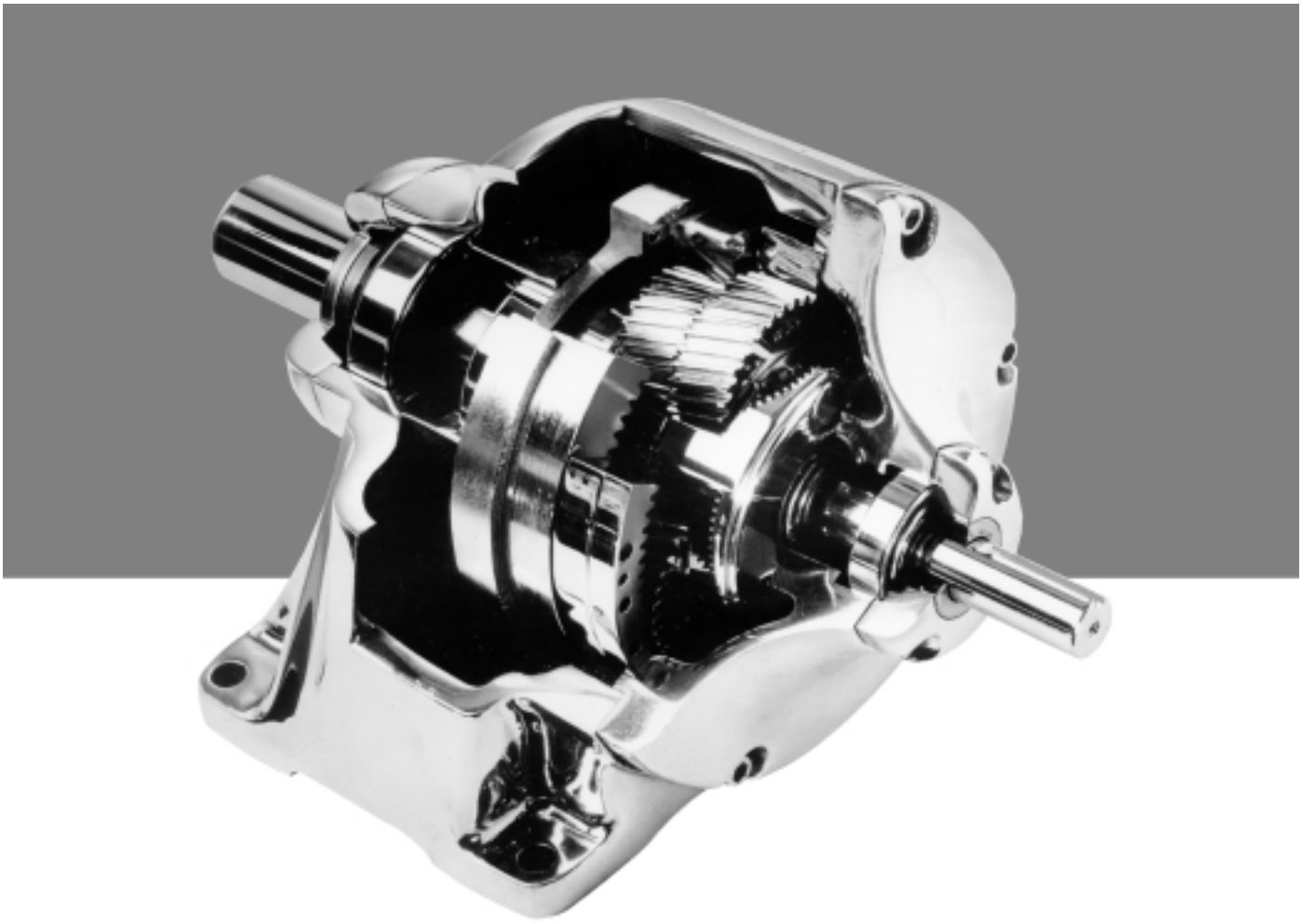
ENGINEERING
SERVICE BULLETIN

ILP-00

WINSMITH
PEERLESS-WINSMITH, INC.

PLANETARY & *HELICAL GEAR* *SPEED REDUCERS*



Installation, Operation, and Lubrication Instructions

This Engineering Service Bulletin is designed to enable users to obtain the best possible performance from their WINSMITH® Speed Reducers.

INSTALLATION, OPERATION AND LUBRICATION INSTRUCTIONS

PLANETARY &
HELICAL GEAR

WINSMITH®

PROPER SELECTION

The selection of the appropriate speed reducer for a given application requires that all factors affecting the operation of the unit be given careful consideration. Service factors must be applied to catalog ratings depending on the type of prime mover used, severity of the application and duration of daily service. If you have any questions relative to the suitability of your WINSMITH® speed reducer for your particular application, refer to the selection section of the appropriate WINSMITH catalog, contact your WINSMITH representative or distributor.

PROPER ALIGNMENT

1. The various drive members (motor, speed reducer, couplings, sprockets, sheaves, gears, etc.) should be aligned as accurately as possible to guard against unusual stresses and overloads imposed by misalignment.
2. If a prime mover shaft is to be directly connected to the high speed (input) shaft; or if the slow speed (output) shaft is to be directly connected to the driven shaft, flexible couplings should be used. It should be remembered that even flexible couplings have limited ability to accommodate misalignment. Care must be taken at installation to insure that shaft alignments are within the limits recommended by the coupling manufacturer. Use of a rigid coupling to connect speed reducer shafts to other drive components is not recommended as it is almost impossible to obtain exact alignment between two shafts.
3. A common base plate supporting the motor and reducer will help preserve the original alignment between reducer and motor shafts. If a structural steel base is used, the plate should be at least equal in thickness to the diameter of the bolts used to fasten the speed reducer to the base plate. Also, for sufficient rigidity, the design in general including angle or channel members should be substantial enough to prevent flexing under vibration. After the first week or two of operation all of the bolts and nuts used to fasten the reducer and motor, pedestal, etc., to the base plate should be retightened. Vibration tends to loosen the nuts even if tight initially. Dowelling the motor and speed reducer to the base plate will help insure that alignment is maintained.

LUBRICANT

1. FACTORY FILLING

WINSMITH speed reducers are filled to the proper level prior to shipment with the appropriate grade of oil for operation in an industrial environment. **The oil level should be checked prior to operation, using the oil level plug provided for that purpose.**

2. AMBIENT TEMPERATURE

If ambient temperatures are abnormally low or high, the type of lubricant installed at the factory may be unsuitable. See the chart in this bulletin for extreme temperature lubricant recommendations.

3. INITIAL OIL CHANGE

The oil in a new speed reducer should be drained (using the drain plug provided) at the end of 250 hours of operation. (30 days for 8 hour per day service, 15 days for 16 hour service, 10 days for 24 hour service).

4. OIL CHANGING

When changing oil for any reason, it should be remembered that oils of various types may not be compatible. Therefore, when changing to a different oil, it is recommended that the housing be completely drained and thoroughly flushed with a light flushing oil prior to refilling with the appropriate lubricant. Under normal conditions, after the initial change, the oil should be changed after every 2500 hours of operation, or every six months, whichever occurs first. Under severe conditions (rapid temperature changes, moist, dirty or corrosive environment) it may be necessary to change oil at intervals of one to three months. Periodic examination of oil samples taken from the unit will help establish the appropriate interval. If a speed reducer is to stand idle for an extended period of time, (such as when used as a spare) it is recommended that the unit be filled completely with oil to protect interior parts from rust and corrosion due to condensation inside the housing. Be sure to drain the oil to the proper level before placing the speed reducer into service.

5. EP (EXTREME PRESSURE) OILS

Extreme pressure gear oils are generally recommended for use in planetary speed reducers. EP oils may also be used in helical gear speed reducers such as concentric shaft (W/H Gear) shaft mount.

CAUTION: When a backstop is installed in a speed reducer, EP oils should not be installed. To assure proper operation of a backstop, non-EP gear oil of the proper viscosity as shown on the chart contained in this bulletin is mandatory.

6. GREASE FITTINGS

Some WINSMITH reducers are equipped with grease fittings to lubricate bearings not adequately lubricated by the oil splash. These fittings should periodically be pressure lubricated with a short fiber grease with a work penetration of 310 to 340 at 77°F and an ASTM drop point of 250°F minimum.

7. OIL TEMPERATURE

Speed reducers in normal operation can generate temperatures up to 200°F depending on the type of reducer and the severity of the application (loading, duration of service, ambient temperatures). Excessive oil temperatures may be the result of one or more of the following factors:

A. OVERLOADS

An overload, due to the original selection of a unit too small for the application, or increasing loads on the speed reducer to a point where its rating is exceeded after it has been in service for a period of time. Always check the speed reducer rating when increasing driven loads or increasing the horsepower rating of the motor or other prime mover.

B. OVERFILLING OR UNDERFILLING

If a speed reducer is overfilled with oil, the energy used in churning the excessive oil can result in overheating. If this occurs, shut down the drive, remove the oil level plug and allow oil to drain until oil ceases to drain from the level hole, reinstall the oil level plug, and restart the drive. If the speed reducer is underfilled, the resultant friction can cause overheating. If this occurs, fill the speed reducer to the oil level plug hole.

C. INADEQUATE COOLING

In order to dissipate internally generated heat, the speed reducer must be installed in such a way that air can circulate freely. Tightly confined areas (inside cabinets, etc.) should be avoided. If this is not possible, forced air cooling by means of a separate blower or a fan integral to the speed reducer should be used.

8. OIL RETENTION

A. VENT PLUGS

To prevent loss of oil during shipment, WINSMITH speed reducers are shipped with a brass pin in the vent hole in the filler and vent plug. This pin must be removed before the reducer is put into operation. Failure to remove the brass pin can result in pressure build up which can pump oil through the seals. If the speed reducer is installed in an atmosphere containing exceptional amounts of moisture or dust, a shielded or hooded vent plug should be used.

B. OIL SEALS

Although WINSMITH uses high quality oil seals and precision ground shafts to provide a superior seal contact surface, it's possible that circumstances beyond WINSMITH's control can cause oil seal leakage (damage during shipment or installation, etc.). When replacing a shaft oil seal, using the following suggestions will help to insure leak-free operation and long seal life.

a. When installing a new seal, wrap the shaft with light shim stock or heavy paper to protect the seal lip from being damaged by a rough shaft or cut by the sharp edge of the keyway.

b. A sealant should be used between the O.D. of the seal and the I.D. of the bore into which the seal is installed. The seal bore should also be free of any burrs, nicks, or scratches.

c. Be sure that the seal is not cocked in the seal bore. The outer face of the seal should be flush with the surface into which it is mounted.

Lubricants

For special applications that involve severe ambient temperature extremes or a seasonal oil requirement, WINSMITH, based on extensive testing and field experience, recommends the use of Mobil SHC synthetic lubricants.

Planetary Gear Reducers, Helical Reducers Without Backstops**

Ambient Temperature	-30 to 15°F	16 to 50°F	51 to 95°F	96 to 131°F
ISO Viscosity Grade	100	100	220	460
AGMA Lubricant No.	3S*	3 EP	5 EP	7 EP

Mobil	SHC 627	Mobilgear 627	Mobilgear 630	Mobilgear 634
American Lubricants	N/A	AGMA #3 EP	AGMA #5 EP	AGMA #7 EP
Castrol	N/A	Optigear BM 100	Optigear BM 220	Optigear BM 460
Chevron	Tegra 150	Compound 100 EP	Compound 220 EP	Compound 460 EP
Conoco	Syncon R & O 100	HYDROCLEAR EP 100	HYDROCLEAR EP 220	HYDROCLEAR EP 460
Exxon (Esso)	Spartan Syn EP 100	Spartan EP 100	Spartan EP 220	Spartan EP 460
Fiske Brothers	N/A	SPO-233	SPO-255	SPO-277
Shell	Omala RL 100	Omala 100	Omala 220	Omala 460
Texaco	Pinnacle 100	Pinnacle EP 100	Pinnacle EP 220	Pinnacle EP 460

*Synthetic oil

**For units equipped with backstops, use an equivalent grade of non-EP oil

Lubricant selections are provided by the lubricant manufacturer based on AGMA recommended viscosity grades.

Viscosity grades are based on Lubrication Standard ANSI/AGMA 9005-D94.

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PWS-18562 October 2005–5M
Printed in U.S.A.