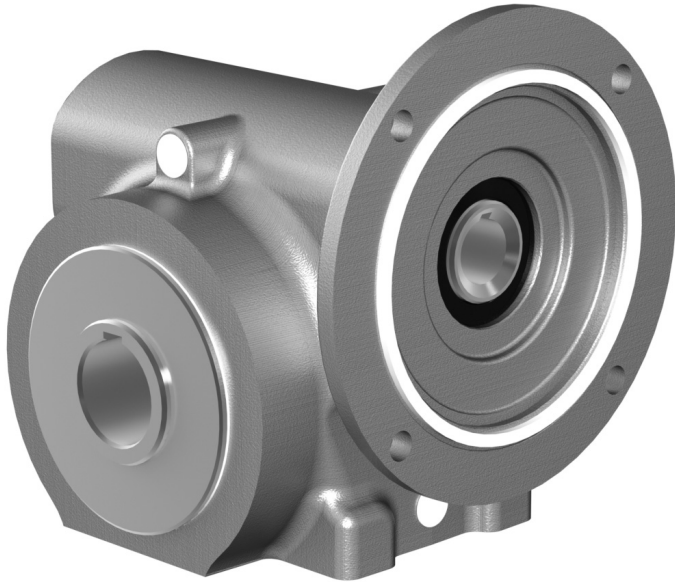




# Stainless Conveyor Drive

## Stainless Conveyor Drive, Operation and Lubrication Instructions



### I. INSTALLATION

#### 1. Shaft Alignment and Loading

**A.** The various drive components (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.

**B.** The Winsmith Stainless Conveyor Drive is designed for direct motor mounting to the input flange and shaft. If other input arrangements are required, contact the Winsmith Factory. If the 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 ensure 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.

**C.** A common base plate supporting the motor and reducer is not usually required, but 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 should be substantial enough to minimize flexing under vibration. After the first week or two of operation all of the fasteners used to mount the reducer and motor, pedestal, etc., to the base plate should be retightened. Vibration tends to loosen the fasteners even

if tight initially. Doweling the motor and speed reducer to the base plate will help ensure that alignment is maintained.

**D.** Excessive thrust or overhung loads on the input or output shafts of a gear reducer may cause premature failures of the bearings and/or shafts. Mount gears, pulleys and sprockets as close to the housing as possible to minimize such loads. Do not exceed catalog loads.

#### 2. Mounting Positions

Single reduction reducers are designed to accommodate most standard mounting positions. To minimize bacteria traps, mounting holes are provided only on the bottom of the housing closest to the output shaft. **Figure 1** illustrates the utility plug locations for each mounting orientation. Contact Winsmith for mounting orientations not shown in **Figure 1**. All standard single reduction models are equipped with an internal splash shield located near the worm. This shield deflects the oil from the vent, preventing leakage when the vent plug is adjacent to the worm (as on the worm over gear traditional mounting). When this location is used as a drain (as on the inverted mounting), drainage will be better facilitated if done at or near the operating temperature. Filling from this location is not recommended, as the shield will impede the oil flow rate. Bearings are splash lubricated, provided the input speed is 1160 RPM or greater. Contact a local Winsmith sales representative when input speeds fall below 1160 RPM.



# Stainless Conveyor Drive

## 3. Venting

During operation, the heat generated by the gearbox will cause the air and lubricant inside the reducer to expand. An optional vent can be used to equalize the resulting pressure. The location of the vent on the housing depends on the model and mounting position. Before putting the reducer into service, review **Figure 1** and locate the vent as shown for the appropriate model and mounting position. **To prevent loss of oil during shipment, the vent plug location is blocked with a hex head plug, which must be removed and replaced with the supplied vent prior to operation.** For intermittent duty, or severe environment applications, where the operating temperature does not rise more than 20 to 40 degrees F, internal pressure build-up is minimal and venting is not recommended. **Caution! Current venting technology may not completely keep out all contaminants, therefore WINSMITH recommends monitoring the condition of the oil and replacing it as necessary** (see section II #4 Oil Change Instructions).

## 4. C-Flange Motor Mounting Procedures

**A.** Check motor and reducer mounting registers for nicks that would interfere with assembly. Remove if necessary. Remove protective plastic plug from reducer input shaft. The bore has been coated with an anti-seize compound. Verify the white rubber face seal is present on the input flange. Align the motor shaft and key with keyway in bore and slide motor up to flange. **Note:** An input bushing with key may be installed in worm bore to reduce the possibility of fretting corrosion. Position the motor conduit box as desired. Using the stainless steel fasteners supplied, secure the motor to the reducer. Draw down evenly so as not to bend the motor shaft. Tighten the fasteners to the appropriate torque per the size and the material of the fastener.

**B.** Winsmith stainless steel reducers are designed to utilize a rubber seal on the flange face between the reducer and the input motor. This seal is designed for severe environmental conditions and is necessary to minimize the risk of water and/or other contamination within the reducer. This seal should be replaced whenever the motor is replaced.

## II. LUBRICATION & MAINTENANCE

### 1. Factory Filling

**Winsmith Stainless Conveyor Drives are factory filled with Mobil Glygoyle® 460 (PAG) lubricant. The use of other lubricants may result in substantially lower torque capacity and is not recommended by Winsmith. If other lubricants are used, a thorough flushing procedure is required.**

**NOTE: Winsmith Conveyor Drives are factory filled with**

lubricant to a “universal” level. Consequently, the oil level as received may be slightly above or below the level plug shown in **Figure 1**. This fill level will work for any of the orientations shown in **Figure 1** and does not need to be adjusted.

### 2. Ambient Temperature

If the ambient temperature during operation is outside of -18 to 130 degrees F, please contact a local Winsmith sales representative.

### 3. Initial Start-Up

During the initial start-up operation, a break-in period is necessary before the reducer reaches maximum operating efficiency. Winsmith recommends a gradual application of load during the first several hours after start-up. The reducer may run hot during this initial break-in period. This is normal.

### 4. Oil Change Instructions

When changing the oil for any reason, use only Mobil Glygoyle 460 or other compatible PAG (Polyalkylene glycol) synthetic lubricants. If another oil type is used (PAO, Mineral Oil, etc.), the housing(s) must be drained and thoroughly flushed with a light flushing oil prior to refilling. Do not mix different lubricants in the reducer. Lubricant incompatibility may result in premature failure. Note: When changing oil, carefully inspect used oil to be sure there are no metal shavings, fragments or other signs of excessive wear.

The oil level should be checked after a short period of operation and adjusted if necessary. Each housing of a double reduction model should be drained and filled independently when changing the oil. Visit our website, [www.WINSMITH.com](http://www.WINSMITH.com), for a detailed flushing procedure.

In many light duty, relatively clean ambient conditions, the life of Mobil Glygoyle 460 is extended to the point where a reducer can operate for the AGMA/ISO specified “Normal” reducer life of 25,000 hours without ever changing the lubricant.

**Note:** The “Normal” reducer life of 25,000 hours specified in AGMA 6034-B92 and ISO TR 14521 is highly application dependent. In Winsmith’s 100 years of experience, we have found that the actual service life of many of our reducers exceeds 25,000 hours by several multiples. Under severe conditions (rapid temperature changes, moist, dirty, or corrosive environments) it may be necessary to change the oil at intervals of 1-3 months. Periodic examination of oil samples taken from the reducer will help establish the appropriate interval.

The oil change procedure for all Winsmith speed reducers is similar. The appropriate oil fill, drain, and level plugs are identified in **Figure 1**. Please note that these locations are unique for each operating position shown.

*\*Glygoyle is a registered trademark of Exxon Mobil Corporation or one of its subsidiaries.*

After draining the old lubricant, new lubricant should be added to the appropriate level plug shown. It is important to clean the threads of oil plugs and apply thread sealant prior to re-installation.

## Mounting Position and Lubricant Levels for Single Reduction Models

Optimal lubricant level information for single reduction models is shown in **Figure 1**. Lubricant levels are critical to the proper operation of all speed reducers. If a speed reducer was ordered and supplied for a specific mounting position, it should not be changed without contacting Winsmith. Altering the mounting position from that which was specified may result in inadequate lubrication. Contact a local Winsmith sales representative with questions regarding proper lubricant selection and level.

## 5. Long Term Storage or Infrequent Operation

If a speed reducer is to stand idle for an extended period of time, either prior to installation or during use, it is recommended that the reducer be filled completely with oil to protect interior parts from rust corrosion due to internal condensation. Remember to drain the oil to the proper level before placing the speed reducer in service. A long-term storage option is available on new reducers. Contact a local Winsmith sales representative for details.

## 6. Low Input Speeds (Under 1160 RPM)

When input speeds are less than 1160 RPM, grease fittings will be required to lubricate any bearings not partially covered by the normal oil level. Such reducers are considered non-standard and require factory modification. If this low speed operating condition exists and reducers are without the appropriate grease fittings, please contact a local Winsmith sales representative.

## 7. Oil Temperature

Speed reducers in normal operation can generate temperatures up to 212°F (as measured on the external housing) depending on the type of reducer and the severity of the application (loading, duration of service, ambient temperatures).

**Note:** Initial operating temperatures may be higher than normal during the break-in period of the gear set. However, continuous operation above 212°F (as measured on the external housing) may cause damage to seals or other components and reduce the reducer operating life. Excessive oil temperatures may be the result of one or more of the following factors:

### A. Overloads

Overloads may be due to the original reducer selection being too small for the application, or increased 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 Under-filling

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 the 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 under-filled, the resultant friction can cause overheating and possible damage. If this occurs, check the gearing for excessive wear and then fill the speed reducer to the oil level plug hole.

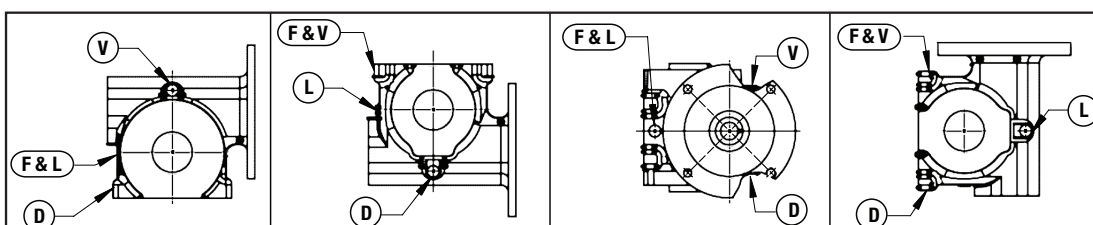
### C. Inadequate Cooling

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 should be used. If possible the use of a fan-cooled motor is recommended to increase airflow.

## 8. Surface Treatments

**Do Not Paint Reducer!** All exterior 300 series stainless steel surfaces have been passivated; no further treatment is required. Washing the reducers can effectively clean the surface. Do not use steel wool pads as they can induce rust. Thorough rinsing to remove any industrial solvent residue is highly recommended. Care should be exercised when rinsing with high-pressure techniques to avoid prolonged wash-down of vents and seals. Drying after wash-down is recommended to prevent mineral deposits. Abrasive techniques should be avoided especially on the optional #4 pharmaceutical surface finish units.

**FIGURE 1**



### KEY

(F)	REFILL PLUG
(V)	VENT PLUG
(L)	LEVEL PLUG
(D)	DRAIN PLUG

- Contact Winsmith for mounting orientations not shown in Figure 1 or when input speeds are less than 1160 RPM.



## Product Information/Cautions

### CAUTIONS/WARNINGS

Winsmith products, and associated equipment and machinery, are intended for selection and use by trained and skilled persons capable of determining their suitability for the specific application or use. Proper selection, installation, operation and maintenance, including implementation of adequate safety precautions, are the responsibility of the purchaser or user. The following safety precautions, as well as additional safety precautions that may be required for the specific application or use, are the responsibility of the purchaser or user. **FAILURE TO OBSERVE REQUIRED SAFETY PRECAUTIONS COULD RESULT IN SERIOUS INJURY TO PERSONS OR PROPERTY OR OTHER LOSS.**

### LOCK-OUT/TAG-OUT

It is **EXTREMELY IMPORTANT** that all equipment or machinery does not unexpectedly start. To prevent this possibility, all electrical or other input power sources must be turned off, and properly locked out. Tag out procedures must be followed before working on or near the reducer or any associated equipment. Loads on the input and output shafts should be disconnected prior to working on any reducer. Failure to observe these precautions may result in serious bodily injury and/or property damage.

### GROUNDING

Be sure the reducer and associated equipment are properly grounded and otherwise installed in accordance with all electrical code requirements.

### PROTECTIVE GUARDING/LOOSE CLOTHING, ETC.

Always ensure there is proper protective guarding over all rotating or moving parts. Never allow loose clothing, hair, jewelry and the like to be worn in the vicinity of rotating or moving parts or machinery. The purchaser or user is responsible for complying with all applicable safety codes. Failure to do so may result in serious bodily injury and/or damage to property or other loss.

### SELECTION & INSTALLATION

This speed reducer and associated equipment must be selected, installed, adjusted and maintained by qualified personnel who are knowledgeable regarding all equipment in the system and the potential hazards involved.

### CONSULT CATALOG RATINGS

Load, torque and other requirements must not exceed the published ratings in the current catalog and/or on the speed reducer nameplate. The reducer selected must be consistent with all service factors for the application. See Winsmith catalogs and [www.WINSMITH.com](http://www.WINSMITH.com).

### BRAKE TORQUE LOADS

Whenever a brake or any other stopping force is involved in an application, braking torque loads imposed on the speed reducer must not exceed the allowable load ratings.

### NOT A BRAKE

Speed reducers should never be used to provide the function of a fail safe brake or an assured safety locking device. Speed reducers must never be used to replace a brake or a critical braking application function.

### EXCESS OVERHUNG LOADS

Excessive overhung loads on the input or output shafts of a speed reducer may cause premature failures of the bearings and/or shafts. Mount gears, pulleys and sprockets as close to the housing as possible to minimize such loads. Do not exceed catalog ratings.

### EXCESS THRUST LOADS

Excessive thrust loads on the input or output shafts of a gear reducer may cause premature failure of bearings. Do not exceed catalog ratings.

### ALIGNMENT

Properly align any input and output power transfer elements connected to the speed reducer. Even slight misalignments in a rigid mounting system may cause binding, large vibration forces or excessive overhung loads, leading to premature bearing, shaft, or speed reducer failure. Use of flexible couplings that allow the reducer and connected transfer elements to self-align during operation will compensate for minor misalignments.

### NOT A SUPPORT STRUCTURE

A speed reducer must never be used as an integral component of a machine superstructure or support frame that would subject it to additional loads other than properly rated loads transmitted through the shafts.

### MOUNTING POSITION

The speed reducer should be mounted in one of the mounting positions shown in the catalog. Different mounting positions should not be used without contacting Winsmith as this may result in improper lubrication.

### OVERHEAD MOUNTING

Mounting of a speed reducer in overhead positions may be hazardous. Use of external support rails or structure is strongly recommended for any overhead mounting.

### LIFTING EYEBOLTS

Any lifting supports or eyebolts provided on the speed reducer are supplied with the purpose of vertically lifting only the speed reducer, without any other attachments or motors. Inspect such supports and bolts before each use.

### PROPERLY SECURE MOUNTING BOLTS

Proper mounting bolts and proper torques must be applied and maintained to insure the speed reducer is securely mounted to the desired machinery. Inspect regularly as machine vibration may loosen fasteners.

### THREAD LOCKING COMPOUND

Proper thread locking compound should be appropriately applied to the cleaned threads of all mounting bolts connecting or securing the speed reducer to equipment and any drive, accessories, or brake components attached to the speed reducer. If, at any time after installation a factory supplied assembly or construction bolt is removed, care must be taken to thoroughly clean off the old thread locking compound and new appropriate thread locking compound must be applied. Failure to properly apply new thread locking compound on all mounting or reducer construction bolts may result in serious injury or death from falling mechanical components.

### REDUCER SURFACE IS HOT

Operating speed reducers generate heat. Surface temperatures may become hot enough to cause severe & burns. Proper personal protective equipment should be used.

### NOISE

Operating speed reducers may generate high noise levels. Use appropriate hearing protection and avoid extended exposure to high noise levels.

### LUBRICANTS HOT AND UNDER PRESSURE

The temperature of lubricants inside a speed reducer may be very high. The reducer should be allowed to cool to ambient temperature before removal of any vent, drain, level, or fill plugs, and before removing seals or bearing covers. Speed reducers without a pressure vent may also be under great internal pressure. Slowly loosen the lubricant fill plug above the lubricant level to vent any internal pressure before further disassembling.

### LUBRICANT CONTACT

Contact with lubricants can present safety concerns. Proper personal protective equipment should be used whenever handling speed reducer lubricants. Consult the lubricant Safety Data Sheet (SDS) which is often available on the lubrication manufacturer's website.

### FDA, USDA, AND NSF APPLICATIONS

Factory supplied lubricants may not be suitable or safe for applications involving food, drugs and similar products. This includes applications subject to FDA, USDA, NSF or other regulatory jurisdiction. Consult the lubricant supplier or Winsmith for acceptable lubricants.

### INSPECTION AND LUBRICATION

Ensure proper operation by regularly inspecting the speed reducer and following all maintenance, operation and lubrication guidelines.

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