



WINSMITH STAINLESS GEARMOTOR MOTOR INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS

MOTOR PRE-INSTALLATION NOTES

- Before unpacking, check to ensure that the packaging is not damaged.
- Unpack the motor, remove any dust or other contaminants from the motor surface and any rust preventative coating or other surface coatings from the motor shaft.
- Check that the information on the motor nameplate is correct for your power supply.
- Inspect the motor for damage from transportation.
 - Ensure that the motor fasteners are tightened.
 - Rotate the motor rotor by hand. There should be no friction felt during the rotor's rotation.
- Use a 500volt megohmmeter to measure the insulation resistance. The measured value should not be less than 1megohm.
 - If the measured value is less than 1megohm, the motor internals will need to be dried. The drying temperature should not exceed 248°F (120°C).

INSTALLATION

1. Clean the motor shaft of any rust preventative or other surface contaminants/coatings from storage and transportation.
2. Align the motor shaft with its driven machine. If the motor shaft and driven machine are not aligned properly, vibration and high stress can be imparted on the output shaft and cause a failure.
3. Install motor and ensure that it is fully seated in the C-Face of the driven equipment.
4. Install the motor mounting bolts and torque them to 236in-lbs for dry fasteners, and 201in-lbs for lubricated fasteners.
5. If the motor is intended to be used in a washdown environment, remove the drain plug at the lowest location on the motor housing. When the drain plug is removed, the included t-drain bolt should be installed in its place. See figures below.

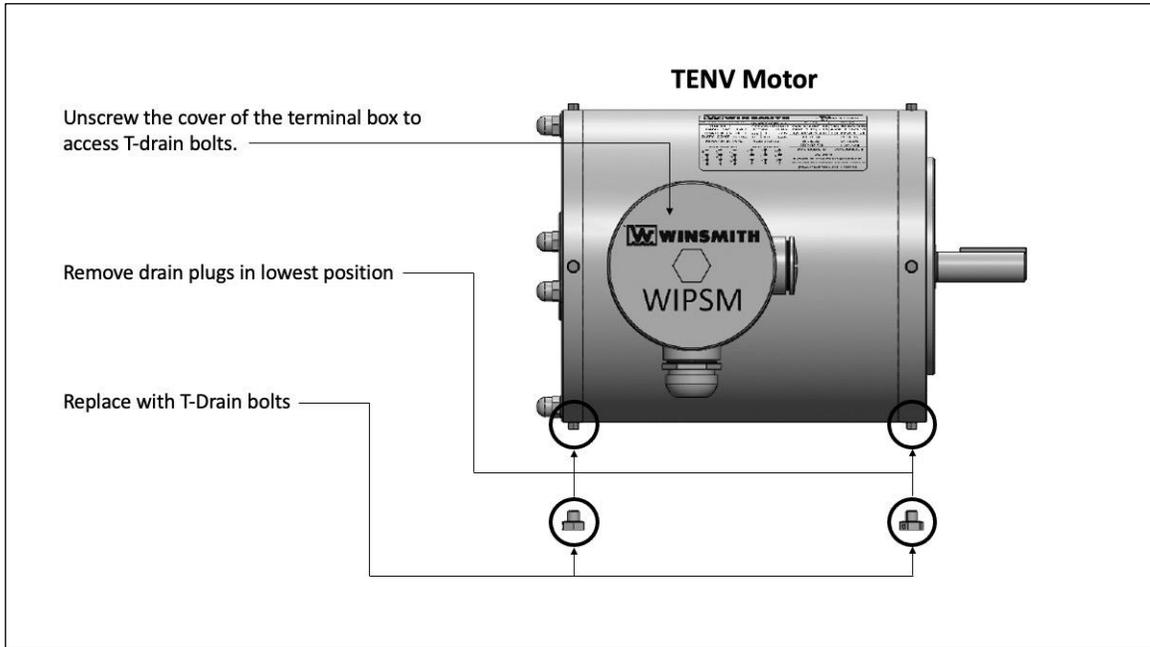


Figure 1 TENV T-drain bolts

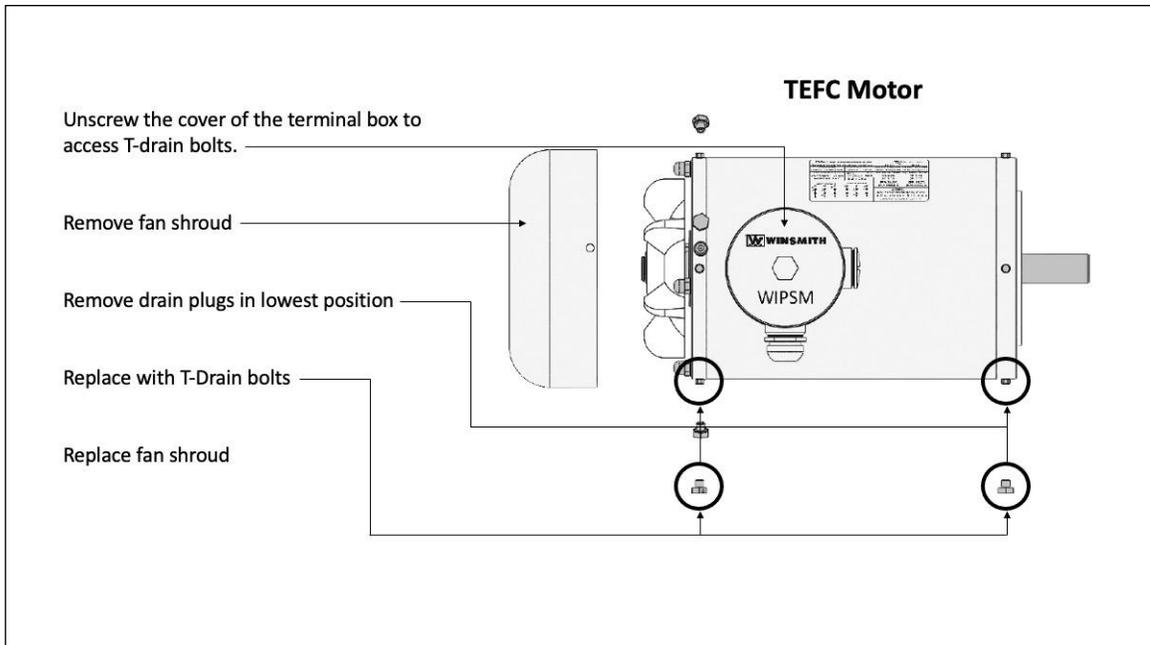
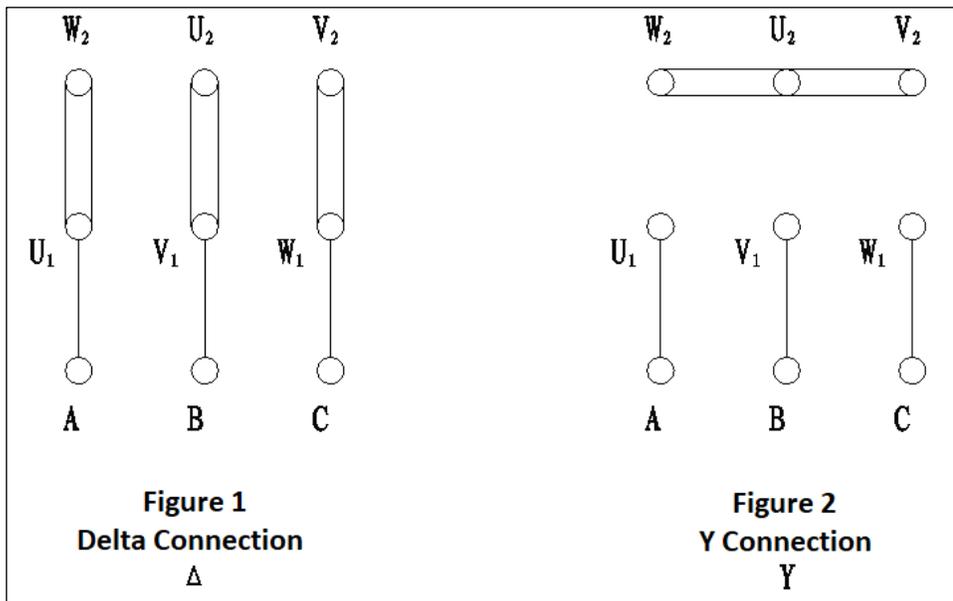


Figure 2 T-drain bolts

OPERATION NOTES

1. The motor must be properly grounded, with a grounding device in the junction box.
2. The motor terminal box corresponds to the internal winding lead wires. The power wire corresponds to the phase sequence. The specific wiring layout is as follows:



Phase Sequence	A	B	C
Start of Phase Winding	U1	V1	W1
End of Phase Winding	U2	V2	W2

3. When the motor is wired in accordance with the motor nameplate, it is connected in either a Δ or Y configuration and should rotate in a clockwise direction. If the direction needs to be switched, the phase sequence of two phases can be switched to change the motor direction.
4. The motor should have a thermal protection device when in use. The rated value of the protection device should be chosen in accordance with the current on the motor nameplate.
5. All motors must be wired in accordance with the National Electric Code and/or any other applicable local codes.



MAINTENANCE

1. **Motor Overheating:** Ensure the motor is mounted with good ventilation around the motor housing. Re-arrange the mounting to improve ventilation and decrease the motor operating temperature.
2. **Thermal Protection Fault:** Determine if the fault is caused by an instantaneous event, fault in the motor, the motor being overloaded, or an improperly rated thermal protection device. If the fault is caused by an instantaneous event, the fault can be cleared, and operation can be continued.
3. **Short-circuit Protection Fault:** Determine if the fault is caused by an instantaneous event, fault in the motor, the motor is overloaded, or an improperly rated short circuit protection fault. If the fault is caused by an instantaneous event, the fault can be cleared, and operation can be continued.
4. **Bearing Lubrication:** Bearings should be periodically checked for proper lubrication. Every 2000 hours the bearings should be checked, and grease should be added or replaced. If bearings are suspected of overheating, the grease should be replaced after thorough cleaning.
5. **Bearing Failure:** The noise and vibration of the motor will increase significantly. If a bearing is suspected of failure, the bearing should be replaced.

STORAGE AND TRANSPORTATION

1. During transportation and storage, the motor should be secured to prevent damage.
2. The motor should be stored in a clean environment, avoiding large temperature swings and high moisture.



General 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 DEATH AND SERIOUS INJURY TO PERSONS OR PROPERTY OR OTHER LOSS.

Lock-out/Tag-out

It is EXTREMELY IMPORTANT that 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 motor or any associated equipment. Loads on the motor and gear shafts should be disconnected prior to working on any motor. Failure to observe these precautions may result in serious bodily injury and/or property damage.

Grounding

Be sure the motor and associated equipment are properly grounded and otherwise installed in accordance with all electrical code requirements. Electrical shock can cause serious and/or fatal injury.

Protective Guarding / Loose Clothing, etc.

Always insure 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 motor 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, and the reducer selected must be consistent with all service factors for the application. See Winsmith catalogs at 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 gear 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 self-locking device. Speed reducers must never be used to replace a brake or a critical braking application function.

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.

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.

Properly Secure Mounting Bolts

Proper mounting bolts and proper torques must be applied and maintained to ensure the gear 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 a 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 gear reducers generate heat. Surface temperatures may become hot enough to cause severe burns. Proper personal protective equipment should be used.

Noise

Operating gear 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 gear 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. Gear 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 disassembly.

Lubricant Contact

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

Carefully inspect oil for metal shavings, fragments and other signs of excessive wear.

Use only recommended lubricants. Do not mix different lubricants in the reducer. Lubricant incompatibility may result in premature failure.

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.

Alignment & Mounting

Properly align any output power transfer elements connected to the motor. Even slight misalignments in a rigid mounting system may cause binding, large vibration forces or excessive overhung loads, leading to premature bearing, shaft, or motor failure. Even slight misalignments in a rigid mounting system may cause binding, large vibration forces or excessive overhung loads, leading to

premature bearing, shaft, or unit failure. Use of flexible couplings that allow the motor and connected transfer elements to self-align during operation will compensate for minor misalignments. Excessive overhung loads on the input or output shafts of a gear reducer may cause premature fatigue failures of the bearings and/or shafts. Mount gears, pulleys and sprockets as close to the housing as possible to minimize such loads. Catalog ratings should not be exceeded. Excessive thrust loads on the input or output shafts of a gear reducer may cause premature failure of bearings. Catalog ratings should not be exceeded.

Do not excessively force couplings or other connection devices onto either input or output shafts, as permanent bearing damage may result.

Before operation, be sure all shaft keys are captive and secured.

The suggested mounting for a hollow shaft reducer is to incorporate the use of a torque arm. If the reducer uses a flange/bracket mounting design, it is recommended that the reducer be mounted on the conveyor head shaft using the conveyor pillow block or flange bearing on the opposite side of the conveyor from the speed reducer as a support bearing. This provides three bearings for alignment purposes. A system with a rigidly mounted bearing close to a rigidly mounted speed reducer will probably be difficult to align and maintain. If this rigid mounting approach is used, it is extremely important that great care be taken to "custom" align" and custom "shim" all components prior to tightening mounting bolts to avoid excessive loads due to misalignment.

When using a bushing in the output bore of any hollow output shaft speed reducer, it is recommended that an appropriate key also always be used.

When mounting a motor onto an input flanged speed reducer with a quill, insure that the motor is properly seated before tightening the mounting bolts. If the motor does not readily seat itself, check to determine if the motor shaft key has moved axially along the motor shaft, causing interference. Staking of the keyway adjacent to the motor key will aid in preventing the axial movement of the key during the mounting procedure.



Lifting Eyebolts

Any lifting supports, or eyebolts provided on the motor are supplied with the purpose of vertically lifting only the motor, without any other attachments. Inspect such supports and bolts before each use. Use proper lifting procedures when in use.

Flange Mounted

C-face machines should be properly seated and aligned.

Note: If a wrong rotational direction is detrimental to the load or safety, the rotational direction should be checked before a load is coupled to the motor shaft.

For V-belt sheaves or chain sprockets, mount the sheave or sprocket as close to the motor housing leaving clearance for end-to-end movement of the motor shaft. Do not overtighten belts or chains as this may cause premature bearing failure or shaft breakage.

Direct coupled machines should be carefully aligned, and the shaft should rotate freely without binding.

General Electrical

The user must select a motor starter and overcurrent protection suitable for this motor and its application. Consult the National Electric Code and/or applicable local codes.

Motor Testing

If the motor has been in storage for an extensive period or has been subjected to adverse conditions or high humidity the user should check the motor insulation resistance with a meg ohm meter. Contact your Winsmith sales rep if the insulation resistance is less than $1M\Omega$.

Wear Components

Various normal wear components such as seals, bearings and gears may also need more frequent replacement in severe applications. Gear reducer shaft lip seals are all subject to wear. Experience indicates that their useful life is extremely variable, based primarily on operating temperature. Other operating factors that influence seal life are high input shaft speeds and environmental factors, such as air-borne abrasive particulates. The only way to ensure that no lubricant leakage occurs from a gear reducer is to inspect regularly and replace shaft seals at the first sign that they have been operated beyond their useful life. In some applications this might be as frequent as 2 years or less and in others as long as 10 years or more.