



GEVISA

Instructions

Installation, Operation and Maintenance

TEFC 250-280 Frame Motors

GEEP-380-I

Safety Precautions

WARNING: HIGH VOLTAGE AND ROTATING PARTS CAN CAUSE SERIOUS OR FATAL INJURY. INSTALLATION, OPERATION AND MAINTENANCE OF ELECTRIC MACHINERY SHOULD BE PERFORMED BY QUALIFIED PERSONNEL

FOR EQUIPMENT COVERED BY THIS INSTRUCTION BOOK, IT IS IMPORTANT TO OBSERVE SAFETY PRECAUTIONS TO PROTECT PERSONNEL FROM POSSIBLE INJURY. AMONG THE MANY CONSIDERATIONS, PERSONNEL SHOULD BE INSTRUCTED TO:

- AVOID CONTACT WITH ENERGIZED CIRCUITS OR ROTATING PARTS.
- AVOID BYPASSING RENDERING INOPERATIVE ANY SAFEGUARDS OR PROTECTIVE DEVICES.
- AVOID EXTENDED EXPOSURE IN CLOSE PROXIMITY TO MACHINERY WITH HIGH NOISE LEVEL.
- USE PROPER CARE AND PROCEDURES IN HANDLING, LIFTING, INSTALLING, OPERATING, AND MAINTAINING THE EQUIPMENT.

SAFE MAINTENANCE PRACTICES WITH QUALIFIED PERSONNEL ARE IMPERATIVE. BEFORE STARTING MAINTENANCE PROCEDURES, BE POSITIVE THAT:

- EQUIPMENT CONNECTED TO THE SHAFT WILL NOT CAUSE MECHANICAL ROTATION.
- MAIN MACHINE WINDINGS AND ALL ACCESSORY DEVICES ASSOCIATED WITH THE WORK AREA ARE DISCONNECTED FROM ELECTRICAL POWER SOURCES.

IF A HIGH POTENTIAL INSULATION TEST IS REQUIRED, PROCEDURES AND PRECAUTIONS OUTLINED IN NEMA STANDARDS MG1 SHOULD BE FOLLOWED.

WARNING: FAILURE TO PROPERLY GROUND MOTOR MAY CAUSE SERIOUS INJURY TO PERSONNEL. GROUNDING SHOULD BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND CONSISTENT WITH SOUND LOCAL PRACTICE.

Description

GEVISA induction motors, totally enclosed, external fan cooled, covered by these instructions, are carefully designed and constructed with high-quality materials to give long period of trouble-free service when properly installed and maintained.

These motors receive special inspection during manufacturing and assembly operations to assure the purchaser that all parts have been manufactured in accordance with strict reliability-assurance standards.

These motors are built with a cast-finned frame. The cooling system is designed so that the external air does not reach the active parts or the air inside the machine.

An external fan, which can be coupled directly to the motor shaft or driven by a secondary motor, if necessary for ASD application, circulates the ambient air over the fins, carrying off the heat generated by the machine. Internal fans, coupled to the machine shaft, circulate the internal air inside the motor.

Receiving, Storage and Handling

The motor is shipped from the factory complete, and is ready for installation and operation. Motors should be carefully inspected upon arrival. Any damage should be reported promptly to the carrier and to the nearest office of GEVISA

In the event that the machine will not be put into service immediately, certain protective precautions should be taken to protect the machine while in storage. If



it all possible, it should be placed under cover in a clean, dry location.

- During storage, windings should be protected from excessive moisture absorption by space heaters, if supplied, or some other type of reliable heating means should be used to always keep the temperature of the winding a few degrees above the temperature of surrounding air.
- During the time of manufacturing, testing, and preparation for shipment, basic precautions are taken by the factory to guard against corrosion in general. The machine parts are slushed at the factory to prevent rust during shipment. Examine the parts carefully for rust and moisture, if the equipment is to be stored, and re-slush where necessary.

Experience has shown that adequate precautions during storage will avoid costly deterioration of parts and lengthy maintenance procedure at installation and start-up.

Lifting and handling of the motors are to be done only through the lifting lugs existing on the top of the frame.

WARNING: LIFTING LUGS OR EYEBOLTS ON THE MOTOR ARE DESIGNED FOR HANDLING THE MOTOR ONLY. THEY ARE NOT TO BE USED TO LIFT THE MOTOR PLUS ADDITIONAL EQUIPMENT SUCH AS PUMPS, COMPRESSORS OR OTHER DRIVEN EQUIPMENT. IN THE CASE OF ASSEMBLIES ON A COMMON BASE, LUGS OR EYEBOLTS PROVIDED ON THE MOTOR ARE NOT TO BE USED TO LIFT THE ASSEMBLY AND BASE, BUT, RATHER, THE ASSEMBLY SHOULD BE LIFTED BY A SLING AROUND THE BASE OR BY OTHER LIFTING MEANS PROVIDED ON THE BASE. IN THE CASE OF UNBALANCED LOADS (SUCH AS COUPLINGS OR OTHER ATTACHMENTS), ADDITIONAL SLINGS, OR OTHER EFFECTIVE MEANS SHOULD BE USE TO PREVENT TIPPING.

FAILURE TO OBSERVE THESE PRECAUTIONS MEY RESULT IN DAMAGE TO THE EQUIPMENT, INJUTY TO PERSONNEL, OR BOTH.

Installation

Avoid obstacles, which may hinder motor ventilation such as walls, adjoining machinery, etc.

WARNING: BELT AND CHAIN GUARDS SHOULD BE INSTALLED AS NEEDED TO PROTECT AGAINST ACCIDENTAL CONTACT WITH MOVING PARTS. MACHINES ACCESSIBLE TO THE PERSONNEL SHOULD BE FURTHER GUARDED BY SCREENING, GUARD RAILS, ETC., TO PREVENT THEM TO COMING IN CONTACT WITH THE EQUIPMENT.

FAILURE TO OBSERVE THESE PRECAUTIONS MAY RESULT IN INJURY TO PERSONNEL.

Nameplate voltage and frequency should agree with power supply. Motors will operate satisfactorily on line voltage within $\pm 10\%$ of the nameplate value or frequency within $\pm 5\%$, combined variation not to exceed $\pm 10\%$.

Dual voltage motors can be connected for the desired voltage using instructions on nameplate or connection diagram.

Wiring of motor, control, overload protection and grounding should meet the National Electrical Code and local building codes.

Thermally protected motors have those words on the nameplate and have built-in protection against dangerous overheating.

Operation

Dry out motors thoroughly which have been stored in a damp location before operating. Do not exceed a temperature of 85°C in drying.

Operate at no load to check rotation and for free running. To reverse rotation, interchange leads T1 and T3.

Operate under load for an initial period of at least one hour to observe whether any unusual noise or hot spots develop.

Check operating current against the nameplate current. Do not exceed the value of the nameplate amperes multiplied by the service factor (if any) under continuous load.

Consult the nameplate for the correct temperature rating of the machine. The actual operating temperature of the motor is the rise stamped on the



nameplate plus the temperature of the surrounding air. If the machine is not supplied with temperature indicating devices and abnormal heating conditions are suspected, shutdown the machine until the cause is determined. In case the problem still persists, consult the nearest GEVISA office.

Maintenance

Inspect the motor at regular intervals. Keep motor clean and ventilating openings clear.

The bearings are adequately lubricated at the factory. Motors with regreasing facilities should be relubricated at intervals consistent with the type of service (see Table 1) to provide maximum bearing life. Excessive or too frequent lubrication may damage the motor.

| Type of service | Typical Examples | Lubrication Interval |
|-----------------|---|----------------------|
| Easy | Infrequent operation | 3 years |
| Standard | One-or-two shift operation | 1 year |
| Severe | Continuous operation | 6 months |
| Very Severe | Dirty locations and/or high ambient temperature | 3 months |

Table 1

The grease indicated in Table 2 should be used for relubrication, unless a special grease is specified on the motor nameplate.

Relubricate while the motor is warm with the shaft stationary for safety end best purging of old grease.

| Insulated Motor Class | Recommended Grease |
|-----------------------|--------------------|
| B | Shell Alvania R2 |

| | |
|---|----------------------------------|
| | Or equivalent |
| F | Exxon Unirex N2 Or equivalent |

Table 2

WARNING: IF LUBRICATION IS PERFORMED WITH THE MOTOR RUNNING, STAY CLEAR OF ROTATING PARTS.

To regrease the motor, remove the caps on the fan cover for access to the grease plugs. On the drive end and opposite drive end with pipe plugs, insert a lubrication fitting. Remove the other plug for grease relief. Clean grease relief opening of any hardened grease. Be sure fittings are clean and free of dirty. Using a low-pressure, hand-operated grease gun, pump in clean recommended grease until new grease appears at the relief hole. After lubricating, allow the motor to run for ten minutes before replacing relief plug.

Frequent careful inspection of machines during operation is essential to detect any improper operation, which may, in time, result in a serious failure. Some operating difficulties, which may occur, and their causes, are given in Table 3 and should be corrected as soon as discovered.

To clean the motor windings, use a soft brush and, if necessary, a slow acting solvent in a well-ventilated room.

When ordering parts, give a description and state the quantity of parts desired. All orders for renewal parts must include the nameplate rating and identification number of the machine. These are required to identify every part of the motor.

Service

Your GEVISA motor should be service only by qualified persons who have the proper tools and equipment. For information and service, refer to the nearest GEVISA Sales Office or GEVISA Service Shop.



| Affected Parts | Difficulty | What to Check |
|-----------------------|--|---|
| Bearings | Overheating | Calibration of measuring instrument Worn out or dirty grease Excessive or insufficient grease Misalignment Excessive end thrust or radial loading |
| Motor | Excessive Vibration, Noise | Misalignment Non-uniform air gap Improper or settled foundation Rubbing parts Bent shaft Unbalance Unbalanced stator current Damaged bearing |
| Windings | Overheating | Calibration of measuring instrument Improper or restricted ventilation Excessive ambient temperature Excessive current Unbalanced a-c current Dirty windings |
| Insulation | Low insulation resistance or insulation failure | Moisture, dirt, metal particles, oil or other contaminants on the insulated windings Wrong voltage Excessive temperature Mechanical damage Voltage surges Excessive vibration with resultant mechanical damage |
| Motor | Failure to Start Insufficient torque(Adjustable speed drive operation)) | Wrong connections Open circuit Wrong transformer taps Excessive line drop Excessive load Rotor rubs Wrong direction of rotation Adjustable speed drive failure |

Table 3