



A Disabled Veteran Business Enterprise (D.V.B.E.)

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INSTALLATION, OPERATION AND MAINTENANCE GUIDELINES FOR CALIFORNIA TURBO TRANSFORMER COOLING FANS

Introduction

California Turbo believes that its products, if operated and maintained as shipped from the factory, and in accordance with recommended operation practice, conform to OSHA requirements, subject to interpretation of the law as it is now written. The purpose of the following information is to assist in the proper installation and operation of California Turbo Transformer Cooling Fans. These guidelines are not meant to be detailed instructions. The purchaser is responsible to provide qualified service personnel for electrical and air moving apparatus to insure the employee's safety during installation and startup.

Safety

Fan guards are OSHA compliant with a maximum 1/2" openings. The fan should never be energized without the guard properly installed. All electrical connections must be in accordance with the wiring diagrams provided. Caution should be taken that foreign objects (wire, rods, etc.) have not been inserted through the guard openings prior to startup. Always disconnect the fan from the power source before performing any maintenance.

Shipment & Receiving

All fans have been thoroughly inspected and have passed operation, balance, and noise level tests. All fans have been packaged to fully comply with trucking requirements. Inspect all shipments carefully upon receipt for damage and note any damage on carrier's Bill of Lading. File a claim immediately with the trucking company (if damaged) and notify California Turbo of the damage.

Storage

IMPORTANT

If the fan is not put into service immediately, it must be stored in a clean, dry and warm location. The main source of water in a motor during storage is condensation that can occur as a result of repeated heating and cooling cycles. For example, when the motor gets hot, the air within the motor expands and pushes out. Later, when the motor cools, fresh, moisture laden air will be drawn in as the air contracts. The moisture in this air will condense out against the cool internal parts of the motor and accumulate if not drained away. As this cycle repeats again and again, substantial quantities of water can accumulate. If unchecked it will lead to insulation and bearing failure.

Where motors are run continuously, heat generated in the motor can keep the windings and bearings dry. When a motor is run infrequently or in storage, and is subjected to swings in temperature, condensation can occur. Several precautionary steps must be performed to prevent motor damage during storage.

1. If the storage location is damp or humid, the motor windings must be protected from moisture. This can be done by minimizing temperature swings, condensation will occur as the motor casing cools.
2. Rotate the motor shaft at least 10 turns every two months during storage (more frequently if possible). This will prevent bearing damage due to storage.
3. Use a "Megger" periodically to ensure that the integrity of the winding insulation has been maintained. Record the Megger readings. Immediately investigate any significant drop in insulation resistance.

Startup

Motors have been pre-lubricated and have sealed bearings so lubrication is not required. Arrows showing the direction of rotation and airflow are attached as a double check on the correct electrical connections. All fans have been tested for vibration during assembly but rough handling during shipment could create an imbalance. If excessive vibration occurs, contact California Turbo.

Maintenance

Fans should be maintenance free under 'normal' circumstances. However, odd things can happen and a periodic walk-by inspection is a prudent precaution. Birds do build nests on guards and propellers will accumulate waste buildup in certain industrial areas; both can create vibration.

It is nearly impossible to keep all moisture out of a motor. Condensation occurs due to repeated heating and cooling cycles (induced by the motor cycling on and off) substantial amounts of water can accumulate in the motor. California Turbo motors have four (4) drain plugs to meet the three common installation positions; vertical up, vertical down, and horizontal. A moisture problem arises if the motors are positioned such that the drain plug(s) are not at the lowest point of the motor. Over time the accumulated water can create corrosion of the motor interior and/or insulation failure. This condition will be most severe in explosion proof motors, which do not have drain plugs.

It is important that drain plugs be oriented to the lowest position on the installed motor (towards the ground). We suggest that the lowest plug(s) be removed. This will permit evaporation - ***but the removal of plug(s) must be at the discretion of the installer with consideration given to the possibility of wind blown rain entering the open drain.***

Limited Warranty

California Turbo, Inc. warrants, to the purchaser, its fans and blowers to be free from defects in workmanship and materials, under normal use and service, for one year after date of purchase. Any part, which is determined by California Turbo, Inc. to be defective in workmanship or materials, will, at California Turbo, Inc.'s option and as an exclusive remedy, be repaired or replaced free of charge. This warranty applies to all products and motors but does not apply to other electrical or electronic components which are warranted by their respective manufacturer (contact California Turbo, Inc. for additional information).

No other warranty, expressed or implied, as to description, quality, merchantability, fitness for particular purpose, or any other matter is given by California Turbo, Inc. Under no circumstances shall the seller be liable for direct or indirect costs, expenses, losses or damages arising out of defects in, or failure of, the product; and in any case, costs in excess of the selling price of the product.

This warranty shall not apply to products which have failed due to:

- improper storage and handling prior to installation,
- faulty installation or incorrect electrical connections, or
- abnormal operating conditions such as excessively high corrosive or hazardous environments.

No product can be returned for repair without prior written authorization and return freight prepaid.

California Turbo, Inc.

Sales Department

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