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AMETEK

LAMB®
THRU-FLOW
VACUUM
MOTOR

2-VT570-001

August 1, 1980

OPERATING AND INSTALLATION INSTRUCTIONS

(Air over windings) 5.7″ Diameter Fan Case

1. INSTALLATION INSTRUCTIONS

A. MOTOR MOUNTING

Since the motor is cooled by the discharge of vacuum air from the blower section, this type of unit is suitable only for applications which employ primary and secondary filters and where the airflow is dry and dust free.

To provide for shock mounting, air sealing and electrical insulation, these motors are designed to be mounted with the fan case clamped between two soft rubber rings (see Figure 1). Clamping pressure should be sufficient to keep the motor from rotating and to maintain an air seal but not so great as to defeat the shock mounting by over compression of the rubber rings. The major supporting structure of the application must hold the vacuum end of the fan case and be rigid enough to support the forces caused by high vacuum levels and starting torque.

There are four mounting holes on the top of the fan case that may be used for mounting purposes where a more rigid mounting arrangement is required (see Figure 2). In this arrangement a soft rubber gasket is placed between the motor bracket and the mounting surface as shown. Care must be taken to accommodate air sealing, noise isolation and electric insulation. The motor should be shielded in such a manner that the rotating live electrical components are not accessible to a ¼″ diameter probe rod.

B. HANDLING

Vacuum motors must be handled only by the motor frame or fan case. Do not handle the motor by the lead wires as this could cause damage to the motor.

C. CONNECTION TO GROUND

The thru-flow vacuum motor must be insulated from the outside surface of any machine if it is a portable type and fed by a two-wire power supply. For motors installed in grounded applications, a green hex head screw is provided on each motor for the sole purpose of connection ground. You should contact Underwriters' Laboratories, Inc. or other appropriate safety related testing agency for acceptable methods of connecting your machine to a ground or earthing point. Do not use motor thru-bolts to connect ground wires.

2. SAFETY PRECAUTIONS FOR USE

A. In the application of AMETEK, Lamb Electric Motors as a component in your product, you must exercise the following minimum precautions.

1) The motors must be connected to a proper and effective ground or mounted in a manner that will guarantee electrical isolation and insulate the user and others from electric shock. Use the green Hex-head screw for grounding and no other purpose. See previous discussion in Item 1C, "Connection to Ground".

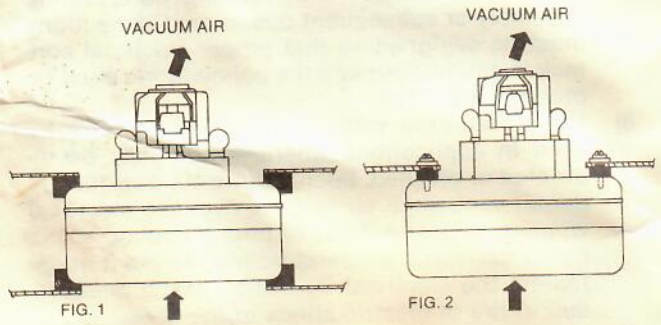


FIG. 1 FIG. 2

2) Universal motors must not be used in an area contaminated by volatile or flammable materials since sparking can be expected in the normal operation of the motor and may ignite the contaminants causing a dangerous explosion. At your request, Lamb Electric can supply special electric motors designed specifically for use in hazardous duty locations. See AMETEK, Lamb Electric Bulletin 2-VX752-0001 for motors that are designed for use under certain hazardous conditions.

3) The rotation of the motor shaft or anything mounted on the shaft is a potential source of injury and must be taken into account in the design of your end product. You must provide the necessary guarding or housing as required by the finished product and you must indicate to the user the direction of rotation.

4) The motors must not be exposed to moisture or liquid or used outdoors, except in equipment which is specifically designed for outdoor use and meets the Underwriters' Laboratories, Inc. requirements for outdoor use. Moisture or liquid can damage the motor and defeat the electrical insulation resulting in an electric shock to the user.

5) Equipment incorporating vacuum motors/blowers must be designed by you so as to prevent the the vacuum or air pressure from being concentrated in a manner that can expose the user to injury by coming into contact with any body area, such as eyes, ears, mouth, etc.

6) Lamb motors must not be operated above the design voltage which is stamped on the motor. Over voltage conditions can cause excessive speed of the motor and can result in electrical shock and/or other traumatic injury to the operator.

Lamb Electric vacuum motors may be opera-

READ CAREFULLY BEFORE INSTALLATION

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ted at voltages below the rated voltage successfully. By reducing the voltage, performance will by lowered and the life expectancy of the motor will be enhanced. Care must be taken in such reduced voltage applications to insure that a pure resistance is used to lower the voltage. When using alternating current, universal motors require a full sine wave for proper commutation and such pure resistance devices as a transformer or Variac should be used to reduce voltage to the motor.

7) Precautions must be exercised to ensure motor leads are properly routed and connected in your equipment. Lead wires must be routed and retained to ensure that they do not become pinched or come in contact with rotating parts during assembly or subsequent operation. Connections must be designed so that proper electrical contack is established and the connections must be properly insulated.

8) Lamb Thru-Flow vacuum motors must never be used in applications where airflow may be restricted or blocked. Such motors are designed to permit vacuumed air to pass over the electrical winding to cool it. Lack of proper cooling of the motor can raise temperatures to the point of defeating the electrical insulation which could result in fire or electric shock to the user.

9) Disassembly or attempted repairs: If accomplished incorrectly, repairs can create an electrical shock hazard. It is recommended that repairs be made only by AMETEK, Inc., Lamb Electric Division and not by others.

B. WARNING

SINCE THE FAILURE TO OBSERVE THE ABOVE SAFETY PRECAUTIONS COULD RESULT IN SERIOUS BODILY INJURY, INCLUDING DEATH IN EXTREME CASES, we recommend that you provide adequate instructions and warnings on your equipment; including labels setting forth the precautions listed above to the user of your product.

In setting forth the above listed recommendations with regard to precautionary steps that you must consider we in no way intend to imply that if these steps are taken your product will meet safety standards applicable to the product. We at AMETEK are not sufficiently conversant with the specific safety hazards which may be associated with your particular product. We can only advise you on precautions to be employed generally for the safe use of electric motors as components. For testing specifically related to the safety of your product, we recommend that you contact Underwriters' Laboraties Inc., or other appropriate testing agencies as indicated by the type of product that you manufacture.

3. REPAIRS

Lamb Electric recommends that all repairs be made at its own Service Center. Warranty repairs must be returned through the original purchaser. For non-warranty repairs, return the motor to:

AMETEK, LAMB ELECTRIC DIVISION
Service Center
627 Lake Street
Kent, Ohio 44240

You will be quoted a flat repair charge for the non-warranty repair of the motor.

Where brush change is required, the brushes should be changed BEFORE the brush shunt touches the commutator. On reassembly and handling, the lead wires must be kept away from rotating parts and motor frame.

To achieve best performance, the new brushes should be seated on the commutator before full rated voltage is applied. After brush change, apply 50% to 75% of rated voltage for thirty minutes to accomplish this seating. The motor will return to full performance after thirty to forty-five minutes of running at full rated voltage. The motor must not be run with the vacuum air inlet sealed off.

DIRECT APPLICATION OF FULL RATED VOLTAGE AFTER CHANGING BRUSHES WILL CAUSE ARCING, COMMUTATOR PITTING, AND REDUCED OVERALL LIFE.

If reduced voltage is unavailable, connecting two motors of similar rating in series for thirty minutes will accomplish the brush seating.

4. LIMITED WARRANTY

Seller warrants products manufactured and sold by it against defects in material and workmanship arising under normal usage and care for a period of twelve months from the date of original sale. The aforesaid warranty shall extend only to the original purchaser and it is not assignable to any other person. For application of product warranty, return the motor to the original source of supply. Seller's obligation the aforesaid warranty is limited to repairing or replacing, at its option, such products or parts therefore which are returned to Seller's factory, freight prepaid, within the warranty period and are found to be defective in materials or workmanship, and does not include the cost of furnishing any labor in connection with the installation of such repaired or replaced products or parts or the responsibility or cost for transportation. Seller assumes no liability for delay in performing its obligations under the aforesaid warranty. Seller assumes no liability for failure in performing its obligations thereunder if failure results, directly or indirectly, from any cause beyond its control, including but not limited to, act of God, acts of government, floods, fires, shortages of materials, strikes and other labor difficulties or delays or failures of transportation facilities.

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Motors showing any of the following typical signs of abuse will not be considered in-warranty failures:

- Damaged in shipment—the title of goods is transferred to the customer at the time the carrier signs the bill of lading at our dock. The carrier acts as customer's agent and assumes all responsibility including internal damage.
- Moisture damage.
- Rust and corrosion caused by detergents and moisture.
- Dirty motors, failure of which was caused by inadequate filtration.
- Broken brush holders, brackets, etc., caused by heavy impact.
- Holes drilled in motor for adapting other devices, unless approved by Lamb Electric Engineering Department.
- Paint being sprayed into motor, particularly at commutator end.
- Improper application or installation of the motor in end product usage.
- Any motor where commutator wear indicates the motor has been used to full extent of its normal life expectancy, regardless of the date stamp.
- Rewound armatures or fields.
- Evidence of disassembly or attempted field repair.
- Introduction in the fan eye of á foreign object not of Lamb Electric manufacture.

AMETEK
LAMB ELECTRIC DIVISION • 627 LAKE STREET, KENT, OHIO 44240
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