

OPERATING AND INSTALLATION INSTRUCTIONS

LAMB BY-PASS VACUUM MOTOR

1. INSTALLATION INSTRUCTIONS

A. MOUNTING

Design Application Considerations-The motor working air and ventilating air must be separated to prevent overheating of the motor due to air re-circulation. To provide for shock mounting, air sealing and electrical insulation, the peripheral discharge by-pass vacuum motors are designed to be mounted between two rubber rings (see figure 1). These rings are compressed to provide an air tight seal between the cooling and working air in the vacuum chamber. Care should be exercised in clamping the motor between the two rubber rings to provide sufficient pressure to resist the startup torque of the motor. Care should also be exercised not to compress the mounting rings to the extent that the mechanical shock mounting advantage is lost or the fan case is damaged. Motor should be shielded such that rotating parts and live parts are not accessible to a 1/4" diameter rod.

For tangential discharge by-pass vacuum motors, a single rubber ring is used and the ring compressed using the motor mounting lugs (see figure 2). To prevent electrical shock hazard, motors must always be grounded. Since the motor cooling air passes directly over the motor windings, the air-flow over the motor must be dry and dust free.

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

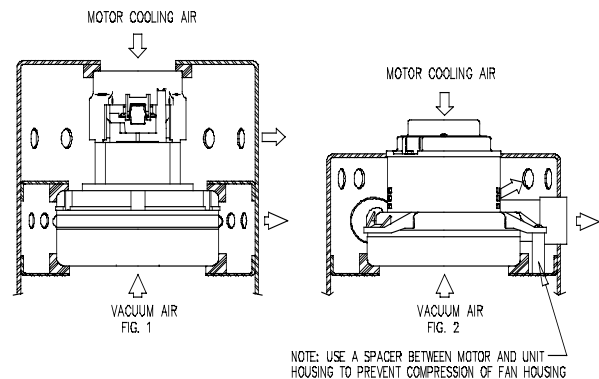
By-pass vacuum motors must be connected to a grounding or earthing point within your machine in the following manner:

- 1) The 5.7" and 7.5" diameter by-pass motor includes provision for grounding.
- 2) The 7.2" diameter by-pass vacuum motor has three lead wires. The green or green with yellow tracer wire is for connection to ground only.

You should contact Underwriters Laboratories, Inc. or other appropriate safety related testing agency for acceptable methods of connecting your machine to a grounding or earthing point. Do not use motor thru-bolts to connect ground wires.

2. SAFETY PRECAUTIONS FOR USE

A. In the application of 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. For those motors equipped with a green hex-head ground screw for grounding, the screw should be used for no other purpose. See previous discussion in Item 1C, "Connection to Ground".
- 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 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, liquid or foam 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 design by you so as to prevent the vacuum or air pressure from being concentrated in a manner that can expose the user to bodily 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 operated at voltages below the rated voltage successfully. By reducing the voltage, performance will be 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 contact is established and the connections must be properly insulated
- 8) Disassembly or attempted repairs: If accomplished incorrectly, repairs can create an electrical shock hazard.

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 Lamb Electric 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 Underwriter Laboratories, Inc., or other appropriate testing agencies as indicated by the type of product that you manufacture.

3. 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 to 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, acts of God, acts of government, floods, fires, shortage of materials, strikes and other labor difficulties or delays or failures of transportation facilities.

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTIES OF FITNESS OR MERCHANTABILITY, EXCEPT AS EXPRESSLY SET FORTH ABOVE WITH RESPECT TO SUCH PRODUCTS OR PARTS THEREFORE, NOR SHALL SELLER HAVE INCURRED ANY OTHER OBLIGATIONS OR LIABILITIES ON ITS PART OR BE LIABLE FOR ANY ANTICIPATED OR LOST

PROFITS, INCIDENTAL DAMAGES, CONSEQUENTIAL DAMAGES, TIME CHARGES OR ANY OTHER LOSSES INCURRED IN CONNECTION WITH THE PURCHASE, INSTALLATION, REPLACEMENT OR REPAIR OF SUCH PRODUCTS OR ANY PARTS THEREFORE WHETHER ORIGINAL EQUIPMENT OR INSTALLED AS A REPLACEMENT, COVERED BY THIS WARRANTY OR OTHERWISE; AND SELLER DOES NOT AUTHORIZE ANY PERSON TO ASSUME FOR SELLER ANY OTHER LIABILITY IN CONNECTION WITH THE PRODUCTS OR PARTS THEREFORE.

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 a foreign object not of Lamb Electric manufacture.