



M AINTENANCE I NSTRUCTION

TRACTION MOTOR BLOWER MOTOR MODEL I-1235

DESCRIPTION

On Model SD locomotives, a single blower is used in the long hood end of the locomotive to provide cooling air for three traction motors. This blower is powered by the Model I-1235, AC, 25 HP motor shown in Fig. 1.

This motor is a 4-pole, 3 phase squirrel cage type induction motor which receives power directly from the locomotive alternator. It drives the blower at approximately 3290 RPM at an engine speed of 835 RPM (or 3150 RPM at 800 RPM engine speed).

MAINTENANCE

Induction motors of this type require very little attention or maintenance. To insure the best possible performance and long service life, such motors should, however, be inspected at the periodic intervals specified in Maintenance Instruction 1704.

CLEANING

Occasional wiping of the motor exterior to remove accumulations of oil, grease and dirt will insure the best heat transfer from the frame to atmosphere. Similar cleaning of the air intake guard screen, air cone and blower wheel are important to prevent contaminants from being blown into the traction motor. Accumulations of dirt on the blower wheel, if not removed, can also cause an unbalanced condition leading to vibration and possible shortening of bearing life.

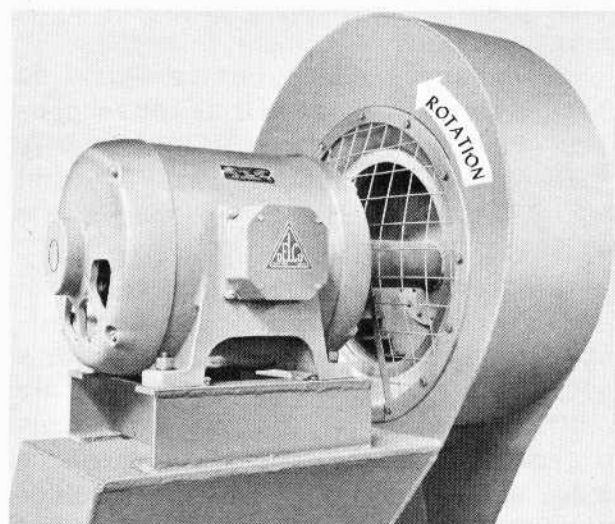


Fig. 1 - Traction Motor Blower Assembly

LUBRICATION

The motor is equipped with double shielded, grease packed ball bearings that are sealed and do not require further lubrication. At the time the motor is overhauled or the rotor is removed, the old bearings should be discarded and replaced with new factory packed bearings.

REMOVAL OF MOTOR-BLOWER ASSEMBLY

To remove the motor for thorough inspection or overhaul, the entire assembly consisting of motor, screen guard, air intake cone and blower wheel should be removed. To aid in installation, mark the shims removed from under the mounting pads so that they can be reapplied in their original position. The four locating pads 8192509 that are welded to the motor support rails should not be disturbed.

* THIS BULLETIN IS COMPLETELY REVISED AND SUPERSEDES M.I. 911.

ASSEMBLY INSPECTION

When the complete blower assembly has been removed, it should be further disassembled into its individual components. Upon removal of the screen guard, air intake cone and blower wheel from the motor, all parts should be cleaned and placed on a work bench for careful inspection.

The blades on the blower should be checked for cracks as well as for secureness of the rivet fastenings. If work is performed on the blower wheel it must then be checked for the proper static balance of one inch-ounce.

The resistance of the motor windings to ground should be checked with a megohmmeter. Readings should indicate a minimum of one (1) megohm resistance to ground. If below, the cause will have to be determined and corrected. Since moisture is a common cause for low readings, the motor should be thoroughly dried and rechecked before making further investigations.

Run the motor by connecting it to a source of 3 phase AC power, 60 cycle, 85 volts, comparable to that of the locomotive alternator. While running, check current in each phase which should be equal, or balance within 10%. If a current unbalance is found, it may be assumed that turn-to-turn shorts exist in the stator which will have to be eliminated.

MOTOR DISASSEMBLY

A study of Fig. 2 showing a cross-section of the motor will prove helpful in following the disassembly procedure given below.

A. Removing Rotor From Stator

1. Remove the four bearing retainer plate screws from the blower wheel end of the motor.
2. Remove the eight end frame mounting screws, four from each end frame.
3. Loosen and remove end frames from main frame by lightly tapping around the edges with a rawhide mallet.

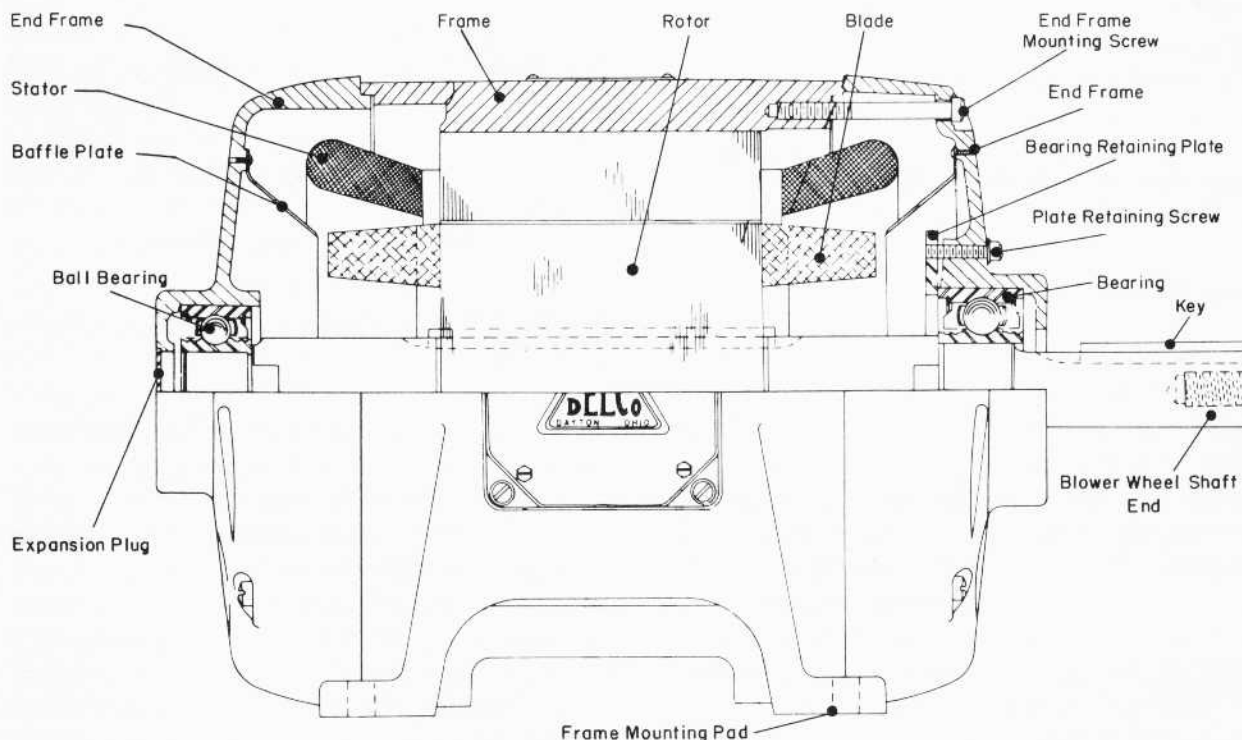


Fig. 2 - Cross-Section Drawing

4. Remove rotor assembly including bearings from the stator assembly using care to prevent damaging the windings and laminations. Place rotor assembly in a suitable wooden cradle for protection and ease of handling.

B. Removing Bearings

1. Using a standard bearing puller, remove bearing assemblies by applying puller jaws to the bearing.
2. Discard bearings as new ones should be applied when motor is assembled.

CLEANING STATOR WINDINGS

Stator windings should be brushed or wiped clean of all dirt, oil and grease. The use of liquid cleaning solvents is not recommended due to its deteriorating effect on insulation.

Carefully check condition of the insulation for signs of dryness, cracking, or general deterioration. If the stator has passed previous electrical checks it may then be given a varnish treatment to restore and preserve the insulation.

STATOR VARNISH TREATMENT

1. Apply protective covering to the stator leads in the conduit box and to the machined surfaces on the stator frame to prevent varnish from coating these surfaces which would otherwise have to be cleaned after varnish treatment.
2. Preheat stator assembly for 2 hours in a convection type oven set for 155-160° C.
3. Remove from oven and while hot, dip stator assembly in clear baking varnish type R-851-F (8160879 for 55 gallons) for 3 minutes. Varnish should have a viscosity of 40-55 seconds at 21.1° C. as measured with a Ford cup #4 orifice. Varnish temperature should be maintained between 20 and 50° C. "Xylol" 8089758 may be used as a varnish thinner if necessary.

4. Bake stator assembly for 5 hours in an oven set for 155-160° C.

NOTE: Should a second dip and varnish treatment be necessary, the first baking time can be reduced to 1 hour after which the stator can be dipped, while hot, then baked the full 5 hour period specified.

5. Remove the protective covering from leads and machined surfaces, then clean excess varnish from stator bore.

MOTOR ASSEMBLY

A. Application Of Bearings

1. Place the bearing retainer plate on the blower wheel end of rotor shaft.
2. Apply new bearing 5357374 to blower wheel end of shaft and bearing 5357373 to the opposite end.
3. Bearings can be pressed into place on the rotor shaft by means of a soft metal tube of such a size that pressure will be exerted only on the bearing inner race. Apply pressure to inner race moving the bearing on the shaft straight and square until it rests solidly against the shaft shoulder.

B. Applying Rotor To Stator

1. Apply end frame over bearing at the blower wheel end of rotor.
2. Through the bottom holes in the end frame, hold the bearing retainer plate in position against the ball bearing. Rotate retainer plate as necessary to line up holes, then insert the four screws and tighten them securely.
3. Carefully insert rotor with assembled end frame into stator. Line up holes and apply the four end frame mounting screws, tightening them securely.
4. Apply opposite end frame over rotor shaft bearings, line up holes and apply the remaining four end frame mounting screws tightening them securely.
5. Check for free rotation of shaft.

FINAL INSPECTION AND TEST

1. Apply high potential test to motor assembly using 1200 volts (RMS) 60 cycles for 10 seconds.
2. Run the motor by connecting it to a source of 3 phase AC power, 60 cycle, 85 volts, comparable to that of the locomotive alternator. Check direction of rotation which should be clockwise when facing blower wheel end of shaft with phase sequence 1-2-3.
3. Check phase resistance which should be $0.01667 \pm 3-1/2\%$ at 25° C .

ASSEMBLY OF COMPONENTS AND INSTALLATION ON LOCOMOTIVE

Place air intake cone on motor shaft. Insert key in shaft and apply blower wheel. Mount assembled motor and blower wheel to the blower housing. Position motor mounting pads up against the respective locating pads 8192509, Fig. 3, which are welded to the motor support rails. Insert shims previously removed, under their proper mounting pads. Check clearance between blower wheel and air intake cone which should be $3/16'' + .000'' - 1/16''$ if the previously removed parts are all properly reinstalled.

If insufficient clearance is noted, additional shims may be used as needed. Should this still prove ineffective, the motor may have to be repositioned. This is done by removing pads 8192509 and then relocating the motor so as to obtain the proper clearance. After the motor mounting bolts are tightened, the pads should be reapplied so as to bear against the motor mounting pads and welded in place.

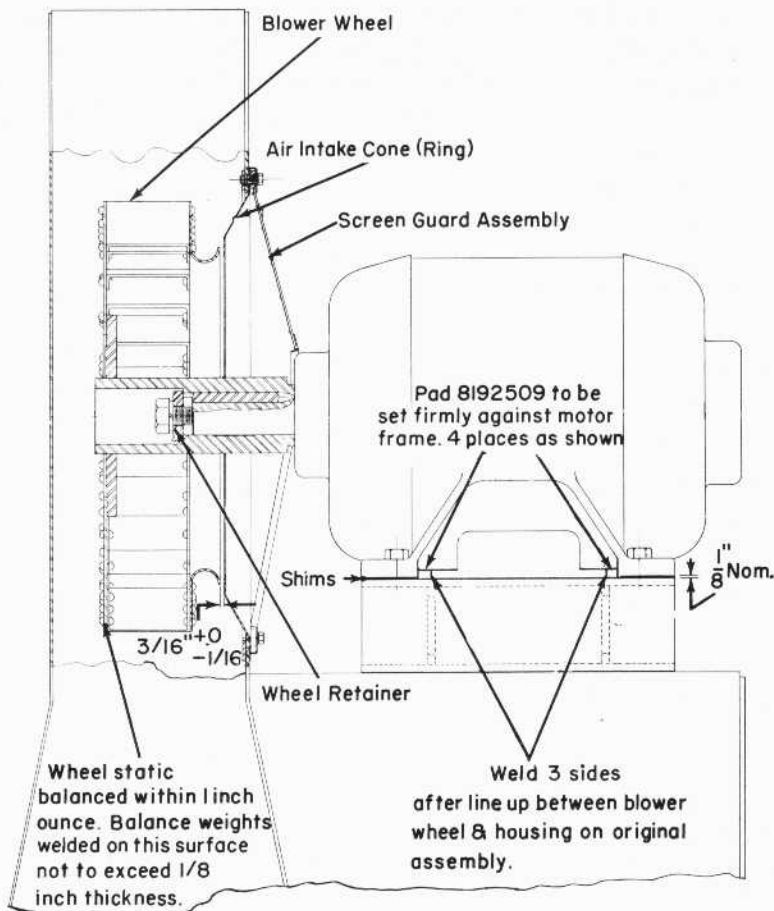


Fig. 3 - Traction Motor Blower Application

When installation is completed, blower rotation should again be checked to see that it is in agreement with that shown in Fig. 1.

For details of motor wiring, refer to the connection diagram shown in Fig. 4.

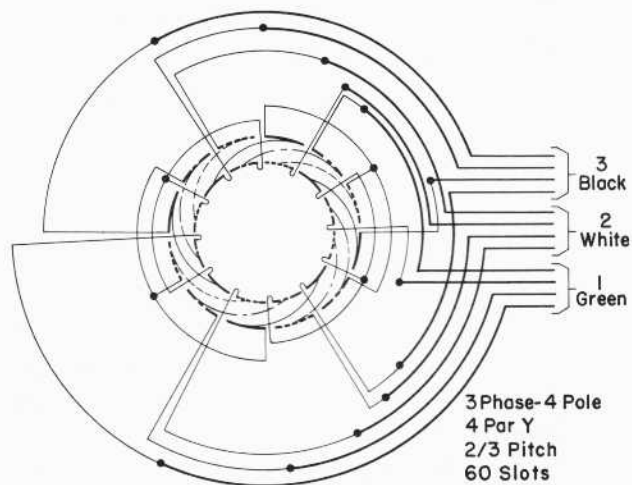


Fig. 4 - Connection Diagram