Air Conditioning Maker

Interoffice Letter

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Date: JUNE 28, 1979

From: DON CARLSON

Office: MSD SERVICE OPERATIONS- NEW YORK

Subject: 19EA MOTOR REPLACEMENT
F.E.R. 78-7

PURPOSE: To provide a procedure for changing 19EA motors (stator and rotor) in the field.

MACHINES: All 19EA Machines affected

PROCEDURE:

Thanks to our Falls Church office, a new, faster method of changing 19EA motors has been devised. This new procedure eliminates the necessity of removing the suction elbow and the compressor cap, resulting in a considerable time savings.

Attached is an outline of this procedure. Read this bulletin in its entirety as some space limitations are required for rigging.

REGARDS,

Don

DON CARLSON
DC/gd

filing instructions: F.E.R. Book
TAB: Compressor

1.0. MOTOR REPLACEMENT

1.1. If the existing motor is size D7, D8, D9, or D10, and manufactured by Ideal, a random wound stator may be replaced with a form wound stator without changing the rotor.

1.2. If the existing motor is size D1 thru D6, D11, D12, or D13, the rotor must be changed when installing a new form wound stator.

1.3. If an existing rotor is to be replaced on a machine with a random wound stator, a special rotor is now required. Current lead time is three (3) weeks. It is recommended that a new form wound stator also be installed; however, the option is yours.

1.4. The procedures outlined in this bulleting pertain to steps 1.2 and 1.3. above.

1.5. Contact the Service Parts Correspondent for ordering. Have the job number, model number, and machine serial number at hand.

2.0. SPACE LIMITATIONS

2.1. In order to move the rotor axially out of the bull gear, certain space limitaions are required. Also, the rigging pedestal (TS-384) has a height requirement. See Figure 1 for space requirements.

NOTE: An I-beam directly above and running parallel to the compressor-motor assembly will eliminate the need for the pedestal.

3.0. TOOLS REQUIRED

3.1 The following tools should be available prior to starting work.

3.1.1. Rigging Pedestal - TS 384
3.1.2. Assembly Tool - TS-250-1
3.1.3. Spanner Socket - TS-250-2A
3.1.4. Bearing Puller - TS-250-3A
3.1.5. "A" frame and I-beam with trolley
3.1.6 Two (2) one-ton chainfalls
3.1.7. Right angle pneumatic drill - available thru Zone
3.1.8. Complete set of mechanics tools.

4.0. DISASSEMBLY

NOTE: Prior to starting any work, insure that the main power is disconnected and tagged.

4.1. Pump refrigerant charge into utility vessel.

4.2. While pumping down, disconnect the motor leads from their terminals.

4.3. When pumpdown is complete, drain the oil from the reservoir, The oil lines and refrigerant supply line going to the back of the motor must be disconnected. If no fittings exist, they must be cut.

4.4. Remove motor terminal components. It is recommended that new terminal components be installed after a motor burnout. Order new components when placing order for stator.

At this point, one man can start the disassembly of the rear bearing assembly while the other works in the transmission area. See section 4.8. for rear bearing disassembly.

4.5. Remove bearing inspection cover. Remove coastdown oil reservoir.

4.6. Very carefully, remove the shaft cover on the bull gear shaft. It is held on by six pan-head countersunk screws which are usually center-punched. Don't be overly concerned about stripping the screws as a demister locknut should be ordered.

4.7. Remove the demistor locknut. First, remove the allen screw that pins the locknut to the shaft. It may be necessary to use a cheater bar to facilitate removal.

If the rigging pedestal is to be used, it should now be bolted to the bearing pedestal flange. The "A" frame and I-beam should now be positioned such that the I-beam lines up with the centerline of the compressor-motor assembly.

4.8. For the rear bearing and seal disassembly, proceed as follows:

4.8.1. Jack the bearing cap off. An O-ring tends to hold the bearing cap in place.

4.8.2. Remove the journal bearing. Two 1/4-20 holes are provided for pulling this bearing. A special tool, P/N TS-250-1, is available for lifting the shaft off the bearing.

4.8.3. Remove the seal locknut. Locknuts on early machines were staked in place. Machines after approximately S/N 15000 have two setscrews. These 8-32 setscrews have 5/64 hex sockets. Remove the seal locknut with the special spanner socket, P/N TS-250-2. The nut has right-hand threads.

4.8.4. Remove the seal contact ring. Three 10-24 holes are provided in the ring to aid in removal. Leave the carbon in place at this time.

4.8.5. Remove the seal and bearing housing assembly. Tool P/N TS-250-3 in available for pulling this assembly. The tool has a swivel-jointed leveling pad which jacks againsts the shaft to pull the housing out. An O-ring will cause the housing to come out hard enough so that some sort of puller is required. Once the O-ring clears the end bell housing, remove the puller and install the shaft lifting tool. Raise the shaft and take its weight off the labyringth and pull the housing assembly out carefully so that the carbon seal ring is not damaged.

4.8.6. Remove the carbon seal ring. An O-ring holds the carbon in place so some pressure with fingernails or some other device must be exerted on the back of the carbon ring, between it and the pressure plate.

4.8.7. Remove and clean the refrigerant spray ring.

4.8.8. Inspect the shaft labyrinth.

4.9. Unbolt the motor flange and remove the stator and shell from the machine. Maximum rigging weight (stator and shell) is 1500 lbs.

Note: If the rotor shaft assembly is loose within the bull gear, it may be necessary to hold the rotor in place to prevent it from sliding out with the stator.

.10. Rig up the rotor with a chain fall to remove same from the bull gear. Care must be taken to balance the rotor evenly. Position the keys at the 3 o"clock and 9 o"clock position.

4.11. Carefully slide the rotor out using a traveler as per the attached sketch. Watch for the keys in the rotor shaft as it is being removed from the compressor assembly. Mark keys to keyways.

4.12. Set old rotor aside and check the following clearances and fits of the new rotor:

4.12.1. Keys in slots

4.12.2. Height of keys

4.12.3. Diameters of rotor shaft and I.D. of bull gear

4.13. Install the keys in the new shaft using a small amount of contact cement. This will hold the keys in place during the installation of the new rotor into the bull gear.

4.14. Turn the bull gear so that the keyway slots are at the 9:00 o'clock and 3:oo o'clock position. Rig the new rotor assembly such that the keys line up with the bull gear and the shaft is balanced in a horizontal position. Use a small bubble level to determine this.

4.15. Oil the shaft and inside the bull gear. Slowly slide the rotor into the bull gear, making sure that the keys line up with the bull gear keyways. Insert the shaft all the way into the bull gear.

4.16. Put the demistor locknut on hand-tight to keep the rotor from sliding out of the unit while placing some support under the rotor, preventing any damage to the rotor and associated parts.

4.17. Install stator in normal manner. Ber careful not to drag the stator on the rotor. If you are installing a new form wound stator, reverse the rear motor support foot and lengthen the oil and refrigerant lines to compensate for the different dimensions of the shells. Dowel pin the foot to the back of the motor shell.

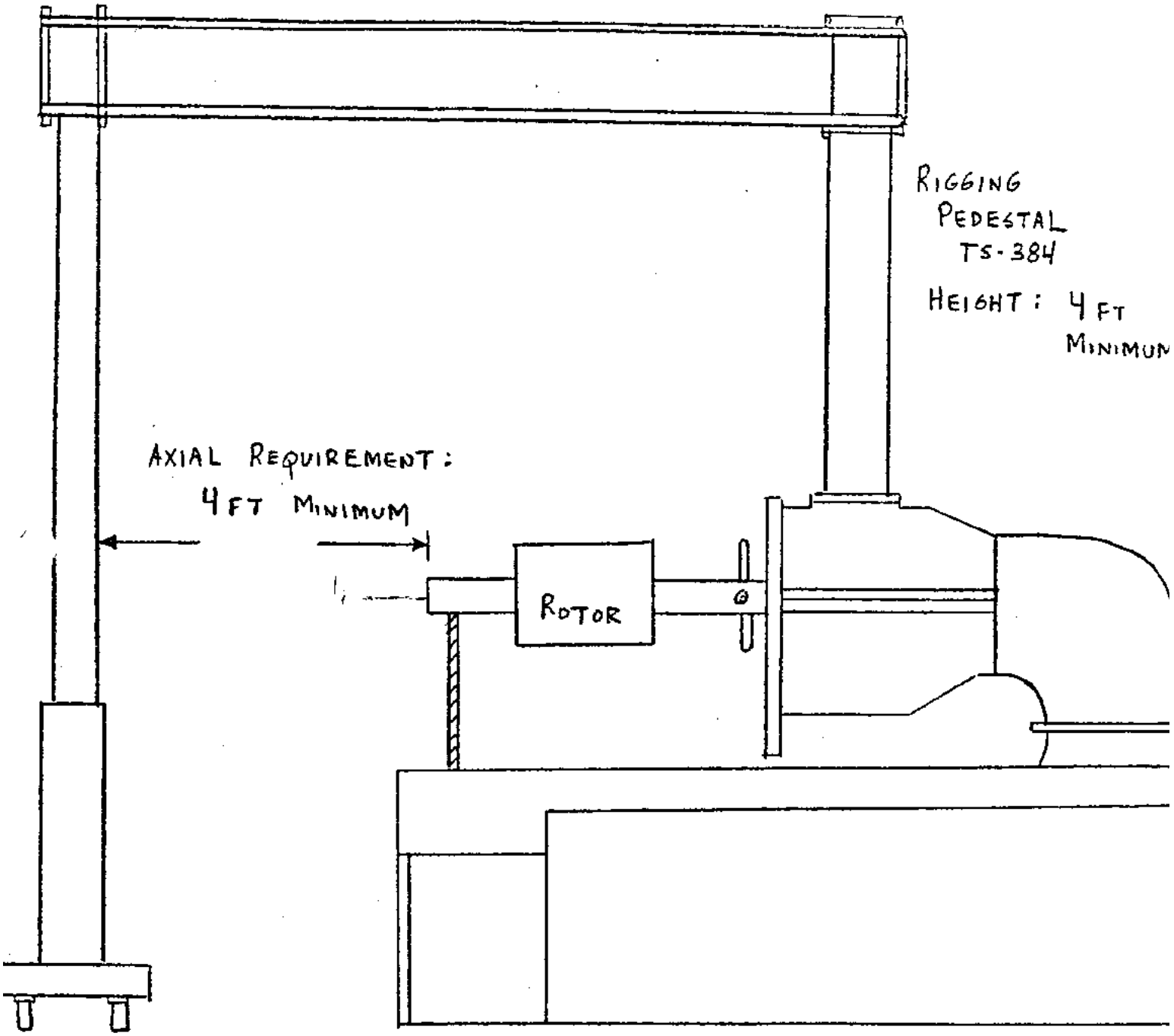
4.18. After the stator and rear bearing are installed, tighten up the demistor locknut.

4.19. Using a small angle drill, machine a 1/4-20 hole through the demistor nut and into the rotor shaft at 180° from the old locking screw position. Install a 1/4-20 locking screw into the demistor nut and shaft.

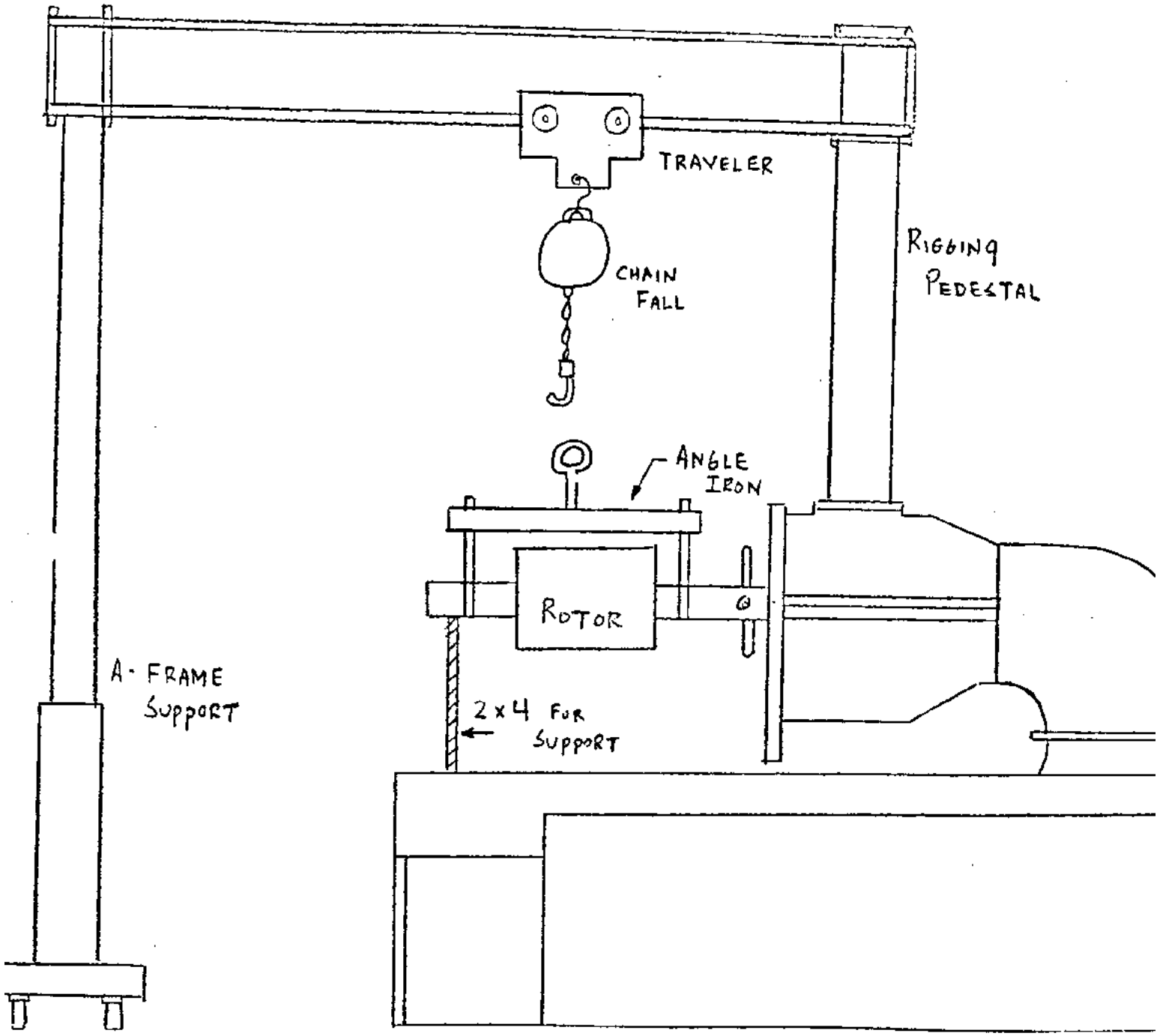
4.20. Install shaft cover plate and secure with setscrews.

4.21. Complete reassembly of transmission area and reconnect the oil and refrigerant lines to the rear bearing cap.

FINAL NOTE: There has been some questions regarding the application of this procedure to early 19EA machines. All 19EA bull gears are a snug fit, not a shrunk fit, to the rotor shaft. Sometimes, a little dirt or other foreign matter gets into the joint and makes the separation difficult. However, all 19EA rotors should be able to be removed this way.



Space Requirements
Fig. 1



Rotor Removal
Fig. 2