



General Service Bulletin

HCOM-SB-85

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Product	35-60 ton helical rotor compressors
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Subject:

35-60 Ton Helical Rotary Compressor Motor Terminal Retrofit

Introduction:

The original insulators used on the 35-60 ton helical rotor compressor motor terminals may leak due to slight variations in the terminal plate. Rather than re-designing the terminal plate, the motor terminal stud insulators were re-designed to be more tolerant of variations in the terminal plate.

The original insulators were also installed with steel nuts and washers. If the compressor is located in an environment with high humidity the steel nuts and washers will rust. The rust can travel down the terminal and across the insulator. This path can cause the compressor to short to the terminal plate.

Discussion:

As of July 14, 1996, the compressors are manufactured with the new insulators, as well as, brass nuts and washers. If the compressor terminals develop a leak follow the procedures below "Terminal Replacement". If the compressor has shorted follow the procedures below "Compressor Checkout". If the terminals are developing rust follow the procedures under "Terminal Corrosion".



CAUTION: Prior to starting any Pueblo product, the technician must install a suction pressure gauge to insure that there is refrigerant in the system. If no refrigerant is present the entire unit must be leak checked.

Corrective Action

Terminal Replacement



WARNING: Before proceeding with the following steps, disconnect all power.

NOTE: The following are brief steps for removing and reinstalling only the insulators around the motor terminals. Refer to RTAA-IOM-4A for further details on electrical and refrigerant issues. Refer to Figure 1 for assembly details.

1. With the power disconnected and all refrigerant removed from the compressor, loosen the nuts securing the insulators to the terminals.
2. Remove the 12 terminal plate mounting bolts.
3. Remove the nuts, washers and upper insulators from the motor terminal.
4. Carefully tip the terminal plate up so the motor temperature sensors can be disconnected.

NOTE: Label the terminals before removing to insure the terminals are reinstalled in the proper holes on the terminal plate.

5. Remove the terminal plate.
6. Inspect components for scratches, etc. that may cause a leak.
7. Remove lower insulator.
8. Begin reassembly by replacing lower insulators

- (green) with the square black insulator making sure the terminal post is seated in the insulator.
9. Replace o-rings with the rubber seal.
10. Oil and install new terminal plate gasket.
11. Carefully push terminals through the terminal plate.

NOTE: Be sure to reinstall the terminals into the same holes they were removed from. The terminal plate is stamped with the appropriate numbers.

12. Install upper insulator (round, black).
13. Place flat brass washer on top of the upper insulator.
14. Place belleville washer on top of the flat brass washer such that the outside edges of the belleville touch the flat washer.
15. Hand tighten the nut. Do not exceed 10 ft.-lb. on the nut. Refer to Figure 1 for the assembly of the new insulators.
16. Reconnect the spade connectors for the motor temperature sensors. Follow the color coding of the sensors.
17. Install the terminal plate on the compressor with the 12 mounting bolts. Follow the torquing sequence as shown in Figure 2.
18. Torque the terminal plate mounting bolts to 40 ft.-lb.
19. Torque the terminal stud nuts to 10 ft.-lb.



CAUTION: Over torquing the terminal nuts may result in breakage, leakage, or both.

Figure 1. Description of Motor Terminal Insulator Retrofit

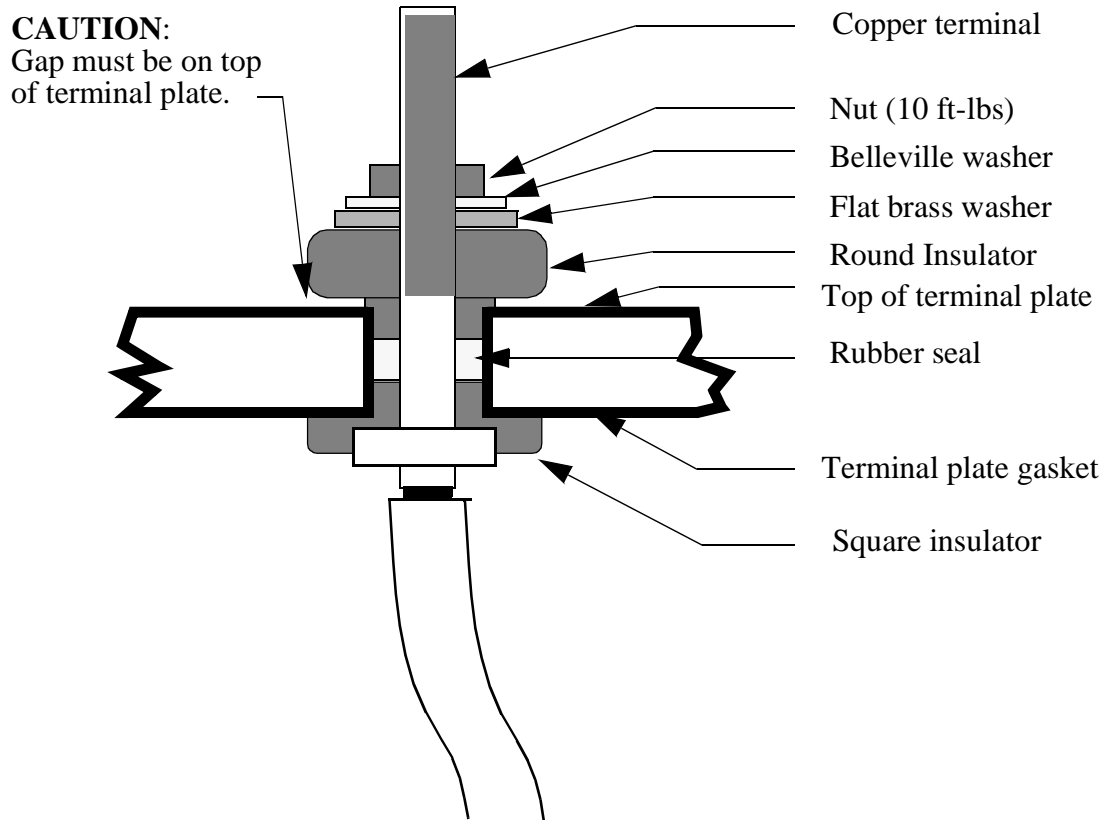
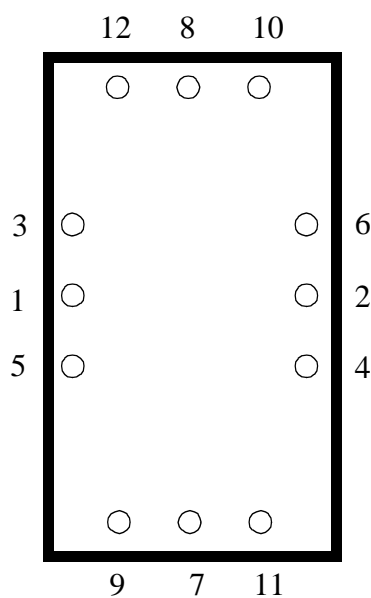


Figure 2. Terminal Plate Torquing Sequence



Compressor Checkout

If the compressor appears to be grounded, follow the procedures below to determine if the problem is with the motor or the terminal studs.



WARNING: Disconnect all power before proceeding.

1. Inspect the motor terminals for moisture, debris, or overheating.
2. Check the resistance of the windings by using a volt-ohm meter:

Terminal studs	Resistance
T1 to T4	0.1 to 0.5 ohms
T2 to T5	0.1 to 0.5 ohms
T3 to T6	0.1 to 0.5 ohms
T1 to ground	infinite
T2 to ground	infinite
T3 to ground	infinite
T4 to ground	infinite
T5 to ground	infinite
T6 to ground	infinite

3. If one or all of the above readings are out of range, isolate the compressor from the refrigerant charge. Refer to RTAA-SB-10 for details on refrigerant handling.
4. With the pressure removed from the compressor, disconnect the terminal studs from the terminal plate.
5. Re-test the compressor winding resistances with the terminal plate removed.
6. If the readings now fall within the specified ranges, the compressor motor is good. Proceed with the “Terminal Replacement” procedures.
7. If the resistances are still out of range, the motor is bad. Replace the compressor.

Terminal Corrosion

If the compressor is still operative but the nuts and washers used on the terminal studs are developing rust, follow the procedures listed under “Terminal Replacement”. This will convert the compressor to the new style of insulators with copper nuts and washers.

Units Affected

Units manufactured after July 1, 1996 have the modified motor terminal insulators installed at the factory. Any compressors built with a compressor serial number between U3H**** and U6G**** are suspect needing the retrofit if a leak or corrosion problem exists.

Parts Ordering

This service bulletin is informational only and does not authorize any parts or labor. One insulator retrofit kit is required per affected compressor. Contact your local Trane Parts Center.

KIT 3909 = Motor Terminal Insulator Retrofit Kit