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MEGOHM VALUES OF COPELAND COMPRESSORS

For years servicemen have used megohmmeters to evaluate compressor motor windings. However, most megohmmeter manufacturers publish guidelines that apply to open motors. For this reason, Copeland has investigated the use of megohmmeters on hermetic and semi-hermetic compressors.

When using megohmmeters to evaluate the motor insulation of compressors, it is important to understand that they should not be used as one would a volt-ohm meter. A single megohmmeter reading gives little insight into the condition of a motor's insulation.

Megohmmeters are best used as a part of a regular maintenance program to monitor trends (over several months). For example, one might record a megohm value and compare it to a previous reading. If subsequent readings show a trend of lower and lower values, then corrective action (such as system clean up) should be taken.

Copeland does not incorporate the megohmmeter into any of its quality checks. All Copeland compressors must pass U.L. required tests using hi-potential current leakage testers ("hi-pot"). Studies performed by Copeland have found that compressors with megohmmeter readings as low as 0.5 megohms still pass the hi-pot.

There are many factors that affect megohm readings including contaminated refrigerant, oil level, refrigerant in oil and current leakage through electrical fuses or terminal plates.

Any external electrical components connected to the compressor terminals also affect megohm readings. Wires, contactors and relays all leak current and will decrease compressor megohmmeter readings if not disconnected.

As mentioned earlier a single megohm reading cannot be used to condemn a compressor since many other factors are involved. However, limits can be placed on megohm values that dictate action be taken. Copeland has found that these limits are related to the rated voltage of the compressor. Megohm values equal to or greater than 1000 ohms per volt are probably acceptable. For example, a 460 volt compressor might show a megohm reading of 460,000 ohms or 0.46 megohm. Compressors with rated voltages of 208 to 230 volts would then be operable at megohm values of 0.208 to 0.230 megohms; for simplicity, Copeland has set the limit at 0.5 megohms before a compressor is condemned. **Figure 1** shows the required procedure for checking compressors with a megohmmeter.

New compressors that have never been installed will not need any system clean-up procedures so long as the megohm reading is above 0.5. A baseline reading must be established for comparison purposes and since this is its first reading this will be its baseline value.

Megohmmeter Test Procedure

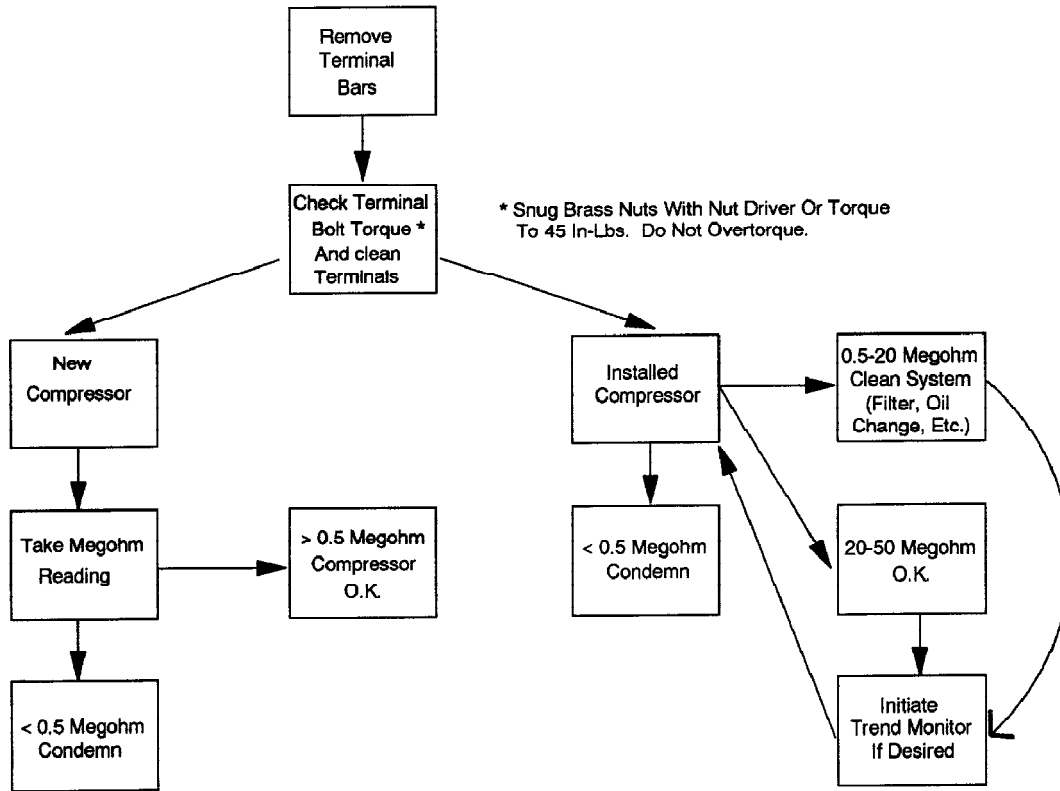


Figure 1