

Contractor Service Tips

Tip Card

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Single Phase Burns

Extensive Copeland testing and field experience has proven that single phase motor burns are caused by the malfunction or misapplication of the system contactor(s).

Contactors play a role in any compressor overload protection scheme, but are particularly important when they are part of a pilot-operated protection system.

Contactors have a limited life and should be inspected during routine maintenance and replaced every time a compressor is installed.

The Copeland warranty does not extend to external electrical components furnished by others, and the failure of such components resulting in compressor failure will be taken into consideration by Copeland in determining the warranty status of returned compressors.

Please refer to Copeland Contactor Application Specifications on the back of this card for additional information.

Contactor Selection Guide

Copeland Contactor Application Specifications

The following Copeland Contactor Application Specifications are based on contactor ratings as listed with U.L.

- A. The contactor must meet the operational and test criteria in ARI (Air Conditionings and Refrigeration Institute) Standard 780-78, "Standard For Definite Purpose Contactors."
- B. The contactor must be certified by the manufacturer to close at 80% of the lowest nameplate voltage at normal room temperatures (166 Volts for contactors used on 208/230 Volt rated equipment).
- C. On single contactor applications, the rating of the contactor for both full load amperes and locked rotor amperes (LRA) must be greater than the corresponding nameplate amperage rating of the compressor motor RLA, plus the nameplate amperage ratings of any fans or other accessories also operated through the contactor.
- D. For two contactor applications, each contactor must have a part winding locked rotor rating equal to or exceeding the half winding locked rotor rating of the compressor.

Since half the winding LRA is larger than 50% of the compressor full winding LRA, some definite purpose contactor manufacturers oversize their contactors for two contactor applications. Check with the contactor manufacturer to determine if larger contactors are needed for two-contactor applications.

Time Delay Relays

For part winding start applications, a time delay relay is required between contactors with a setting of 1 second plus or minus 1/10 second. The operation of a delay relay can be affected by low voltage.

In order to insure reliability, time delay relays listed as meeting Copeland specifications for nominal 208/230 Volt control systems must be guaranteed by the manufacturer to function properly at 170 Volts in a -40° ambient.

For information on time delay relays, see AE Bulletin 10-1244.