

ENGINEERING POLICY

Tecumseh Compressor Company
Compressor Group



Tecumseh

ENGINEERING POLICY ON: ROTARY 3 PHASE ROTATION

EP-14

Issued: June 28, 2004

PAGE: 1 of 2

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The use of a phase controller is required for Tecumseh 3-phase rotary compressors. Compressor warranty may be void if a controller is not used or otherwise approved by Tecumseh Engineering.

Rotary compressor models beginning with the letter T are designed for 3-phase voltage supply. 3-phase compressors are star wired. The resistance measured between 2 terminals is the same as 2 windings in series.

3-phase compressors have external overload motor protectors. The star is done inside the motor and electrically insulated from the other parts of the motor. For wiring instructions, reference the compressor electrical diagram schematic.

Phase Controller

3-phase compressor motors must run in the correct direction. The compressor will not pump if run in the wrong direction.

WARNING: Reverse rotation is harmful to the compressor and shall lead to premature failure.

To avoid reverse rotation we require the use of a phase controller for all 3-phase rotary compressors. We recommend controller number 8535136. Contact Tecumseh for further information and wiring.

1. Controller Description:

The phase controller senses the order and presence of the total or partial of the 3-phase current (V, V&W, or La, L2, and L3).

The phase controller checks that it's own 8-phase voltage is correct. The controller is active when the 3-phase current sequence is correct. When any on leg goes below 85% compared to the other 2 legs, the controller switches the current off to the compressor.

EXAMPLE 1. The controller checks that the 3-phase voltage is correct and all 3 legs to the compressor are present.

EXAMPLE 2 The controller switches the current off to the compressor if one or more leg is interrupted or the current drops below 85% of the system voltage.

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2. General Characteristics:

Mounting on a din rail

Time response: Activation delay alarm <100ms.

Deactivation delay alarm <300ms.

Indication of Proper Voltage:

LED will be green if proper.

LED will be red in alarm mode.

Protection Sing IP20.

Running Temperature:

From -4 to 140 F, RH<95% @ 475 vac, 65 hz.

From -4 to 122 F, RH<95% @ 550 vac, 65 hz.

Controller with screws, Max. torque .5nm (4.5 in/lb) (Spec. IEC 60947).

Voltage from 208 to 480 vac, 15% of 45 to 65 Hz.

Over voltage category III (IEC 60664 and IEC 60038).

Nominal absorbed power 13 vac @ 400 Vac, 50 Hz between L2 & L3.

3. Input Characteristics:

Phase L1, L2, L3.

It measures it's own voltage from 177 to 550 vac.

Detection threshold: >85% of the nominal voltage of the network.

4. Output Characteristics:

Isolated output: relay 1.

Voltage: 250 vac

Mechanical lifetime: >30.10*6 commutations.

Electrical lifetime: >10*5 commutations (8a, 250v cos Y-1).

Working frequency: <1200 commutations/hour.

Dielectric rigidity: dielectric voltage (efficient) 2kvac: dual voltage protection 4kvac (1.250 ys).

5. Default signal:

The default signal is given by a contact to be in series with the installation protector's power contactors.