

# ENGINEERING POLICY

Tecumseh Compressor Company  
Compressor Group



*Tecumseh*

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## Engineering Policy on: PTC Start Assist Devices

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In the typical application of PSC compressors, there is occasionally the need to improve the starting ability of the compressor due to extremely low voltage or the imposition of excessive starting conditions.

In the past these problems have been solved by adding the start capacitor and a potential type relay, which are specified on the bill of material. Although this is a satisfactory solution, it does require several different relay-capacitor combinations to cover the total Tecumseh line of PSC compressors. In most cases for models that specify start capacitors below 72-88 MFD, a PTC (Positive Temperature Coefficient) device can be used in place of the start capacitor and relay. The PTC is wired in parallel with the run capacitor, and its cold resistance increases the starting torque of the motor.

The design engineer should be aware of all the operating characteristics of the PTC. One characteristic the PTC has is that of a fairly constant resistance versus temperature curve until it reaches a predetermined temperature, at which time its resistance increases at a very rapid rate to a value where the PTC becomes essentially nonconductive. It therefore switches itself out of the circuit.

In order for the PTC resistance to return to its original "cold" value, a minimum "off" time of three minutes is required. If capacitance type "off-cycle" heat is being used during the off cycle, the PTC device cannot be used as it would never cool down due to the constant voltage across the run capacitor.

It is important to understand that this PTC device is intended to alleviate any PSC starting problem that is normally alleviated by the addition of the smaller sized start capacitors and relays or added run capacitance as shown in Policy Bulletin No. [PB-102](#) and WS100. If the PTC does not alleviate the problem, then the addition of the start capacitor and potential relay as specified on the bill of material would be the alternative.

It is not Tecumseh's intention to specify this device or show the wiring schematic on the bill of material. At the present time there are several PTC devices, which qualify under the conditions of this Policy Bulletin. Tecumseh sales representatives should be contacted if assistance is needed in applying the proper PTC device to the application.

Tecumseh Engineering Department