

POLICY BULLETIN

Tecumseh Compressor Company
Compressor Group



Tecumseh

SUBJECT: HBP Rotary Application Parameters

PB-118

PAGE: 1 of 4

Issued: November 9, 1989

REV DATE: 10/24/2007

A rotary compressor is a precision piece of equipment, designed and manufactured to very close tolerances. For superior performance and long-term reliability, the following parameters **must** be maintained when applying Tecumseh rotary compressors:

1. Refrigerant: R-22 (R407C, R134a)
2. Evaporator Temperature Range: Air Cond and Heat Pump
-10 to 55 ° F (-23.3 to +12.8 ° C)
3. Condensing Temperature Range: +35 to +155 ° F (+1.7 to +68.3 ° C) *
4. Pressure Ratio: 6.5:1 Maximum (R22, R407C, R134a)
5. Motor Temperature: 265 ° F (129.4 ° C) Maximum (Resistance Method)
6. Bottom Shell delta T: Minimum of Saturated Condensing
Temperature plus 10° F (5.6° C) (see page 3 and 4)
7. Discharge Gas Temperature: 260 ° F (126.7 ° C) Maximum (D2I) providing maximum motor
temperature is not exceeded.
8. The rotary is a direct suction compressor with a factory installed suction screen. See Policy Bulletin
No.[PB-120](#).
9. Suction Gas Temperature: 5 ° F (2.8 ° C). Minimum Superheat NOTE: Under transient flood
back conditions, less than 5 ° F (2.8 ° C) superheat is permissible,
providing the above shell bottom parameter is maintained.
10. Voltage Range (Run): See Policy Bulletin No. [PB-113](#).
11. Voltage (Start): See Policy Bulletin No. [PB-102](#).
12. Abnormal Discharge Pressure: 750 PSIG (5171 kPa) Maximum.
13. Tubing: .035” (0.9 mm) vibration to be checked through operating limits of voltages and
frequencies. Clearances between active and inactive components must be sufficient to avoid
contact.
14. Mounting Components: Grommet 70941, and Sleeve 71000.

* See Application Boundaries for Applicable Refrigerant

[EP-12](#) “TECUMSEH ROTARY COMPRESSORS APPLIED TO PORTABLE SPLIT WINDOW RAC”.

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PAGE: 2 of 4

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TECUMSEH ROTARY HBP APPLICATION FLOODBACK TESTING

The following requirements are offered to assist in the application of the Tecumseh rotary Compressor in air conditioning and heat pump systems, regarding liquid flood back to the compressor, which can cause oil dilution, bearing washout, and compressor failure.

1. **OBJECTIVE:**

The system must be tested to prove that under extreme conditions the compressor shell delta T (see item 6 in [PB-118](#), page 1 of 4) will not drop below 10°F. The following tests are minimum requirements that must be run. Other tests, which you deem appropriate, which may result in low delta T 's during regular cycling or steady state running, should also be conducted. All of this application test data must be submitted to Tecumseh Application Engineering for review.

1a. **TECUMSEH FREEZE TEST:**

The test conditions are 67 °F DB/ 57 °F WB in both the indoor and outdoor rooms. The test is run with the fan on low speed and the wind tunnel attached and set for zero static. The airflow is restricted by restricting the evaporator inlet air to 50 % of the airflow measured during the capacity test, or 28 °F evaporator saturation temperature, whichever comes first. Run the unit continuous for 2 to 3 hours to stabilize, and monitor evaporator temperatures, airflow, and static pressure across the ductwork, to be sure the coil does not begin to freeze, and take a reading. To run the cycle part of the test, the ductwork should be removed, but the restriction of the inlet air should remain. The test consists of 3 ten-minute cycles (3 minutes off and 7 minutes on). Temperature and pressure data should be collected at 10-second intervals, or faster, to monitor the bottom shell delta T.

1b. **TECUMSEH MODIFIED CAPACITY TEST:**

The test conditions are 72 °F DB/ 60 °F WB in the indoor room and 95 °F DB/ 75 °F WB in the outdoor room. This test is run with 50 % of the airflow at capacity conditions by running the unit on low fan speed and restricting the inlet air to the evaporator. Run the unit on continuous run to obtain stable temperatures and pressures, and take a reading. The ductwork needs to be removed to run the cycle part of the test. The test consists of 3 cycles of 30 minutes each (15 minutes off and 15 minutes on). Temperature and pressure data should be collected at 10-second intervals, or faster, to monitor the bottom shell delta T.

2. **RESULTS:**

Per Policy Bulletin [PB-118](#) the bottom shell delta T for the above tests should not be less than 10°F.

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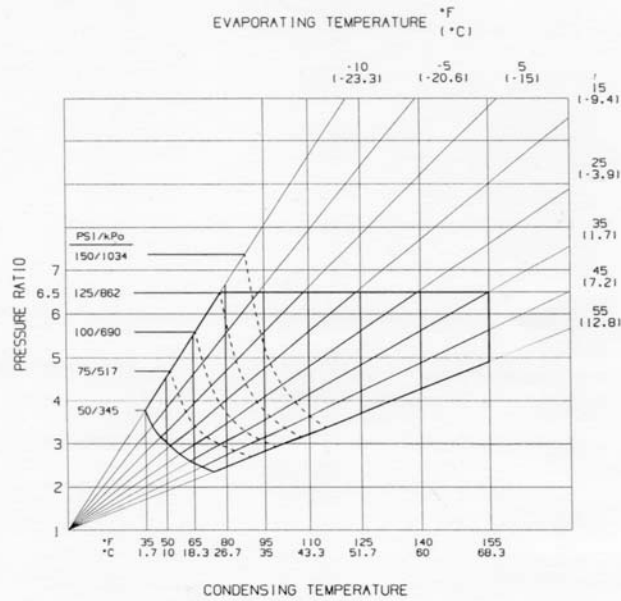
PAGE: 3 of 4

Issued: November 9, 1989

REV DATE: 10/24/2007

PART OF POLICY BULLETIN No. 118

R134a HBP ROTARY APPLICATION BOUNDARIES



DOTTED LINES SHOWING CONSTANT PRESSURE DIFFERENTIAL (PSI/kPa)
ARE TO AID IN SELECTING THE CORRECT SYSTEM EXPANSION DEVICE.

M0913 UPDATED: 08FEB2007

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PAGE: 4 of 4

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