

# POLICY BULLETIN

Tecumseh Compressor Company  
Compressor Group



*Tecumseh*

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**SUBJECT: Application of Tecumseh "ACD" Condensing Units  
to Bulk Milk Coolers and Other System**

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REV DATE:

1/15/2007

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Overall reliability can be enhanced if there exists a complete understanding of the features, system design, installation requirements, processing, charging and initial startup of the unit which is used.

The "ACD" Advanced Commercial Design units are offered in two categories:

With Suffix "XM" for use with expansion valve systems

With Suffix "XN" for use with large bore capillary tube systems

Note: Both "XM" and "XN" type units are shipped with a dry air or nitrogen holding charge and must be evacuated prior to addition of system refrigerant charge.

## I. Unit Features

1.1 The "XM" units are offered for R-22 applications. Capacitor range from 2 to 6 HP.

1.1.0) All are equipped with crankcase heaters.

1.1.1) All have amply sized suction line accumulators.

1.1.2) All have large receiver tanks and 1/2 or 3/8 or sweat fittings on the liquid stop valve.

1.1.3) 4, 5 and 6 HP units have 7/8" sweat or 1 1/4" flare connection for the suction line valve on the accumulator.

Note: An adequately sized suction line filter should be installed ahead of this connection.

1.1.4) There are pressure actuated fan controls to maintain adequate pressure differential (high to low) during low ambient situations.

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- 1.2 The "N" units are offered for in R-22 in 3 ½, 4 ½ and 6 HP capacitor.
  - 1.2.0) All are equipped with crankcase heaters.
  - 1.2.1) All have amply sized suction line accumulators.
  - 1.2.2) Liquid receivers are not required with cap tube systems.
  - 1.2.3) The field connections are 7/8" Q.C. (Aeroquip # 5782-14-11) suction and 3/8" Q.C. (Aeroquip #5782-6-6) liquid. See instruction tag # 70820 on unit.
  - 1.2.4) A large filter is included on the accumulator inlet.
  - 1.2.5) For field servicing, the compressor has a shutoff valve on the suction inlet and in the discharge tube.
  - 1.2.6) There are Heat Exchanger Option Fittings (3/8 Q.C.) In the discharge tube from the compressor.
  - 1.2.7) A liquid stop valve is base mounted between the condenser outlet and the Q.C.
  - 1.2.8) There are pressure actuated fan controls to maintain adequate pressure differential (high to low) during low ambient situations.
- 2.0 System Design
  - 2.1 The "M" units are offered for use with expansion valve systems. The setting should be at the lowest practical superheat point and a bleed port is recommended.
  - 2.2 The "N" units are offered for use with large bore cap tube systems with the advantage that the liquid in the flooded evaporator will be allowed to be driven backward into the condenser during the hot water tank cleaning process and during the early minutes of milking when the unit operation has been delayed as optioned by the dairyman.

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## 2.3 Recommendations

2.3.0) A sight glass should be provided in the liquid line (upstream from the drier) for proper charge checking.

2.3.1) The liquid line should have an adequately sized refrigerant drier.

2.3.2) An ASME pressure relief valve may be required, based on the design strength of the tank.

2.3.3) During the development testing by the OEM, the complete system shall be tested to ensure that there are no oil traps and to ensure that the proper oil level in the compressor is being maintained.

Note: Sample compressors with oil level sight glasses are available for this testing work.

In the event there are indications that additional oil is require, that oil should be pre-charged into the tank.

2.3.4) These units are not offered for use in pump down cycle systems in which oil logging in the flooded evaporator is common. The low-pressure control is used for loss of charge protection.

## 3.0 Installation Requirements

3.1 Location - All Tecumseh Condensing Units are approved for use in ambient temperatures from +32°F to +110°F. The units are not offered for outdoor use unless properly protected from the weather and must have the ambient maintained above 32°F. Please refer to Figures 1,2 and 3, which illustrate typical methods of installing the condensing unit so as to meet the above criteria as relates to ambient temperature and weather protection. A recommended maximum length of line (unit to tank) is 35 feet. If a greater length is required, contact Tecumseh Compressor Company.

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- 3.2 Initial Start-up Instructions Both the "M" and "N" units have a dry air or nitrogen holding charge only.
  - 3.2.0) Upon installation, care must be exercised to disallow any non-condensable, moisture or foreign material from entering any part of the system.
  - 3.2.1) With all system stop valves open, the entire system must be properly evacuated prior to the refrigerant charging operation. **CAUTION: DO NOT OPERATE COMPRESSOR WHILE UNDER VACUUM.**
  - 3.2.2) Break the vacuum by allowing liquid refrigerant to enter the system through the liquid line process fitting. Start compressor and complete the charging process to OEM specifications by injecting refrigerant vapor or liquid through the suction port at a rate not to exceed 5# per minute.
  - 3.2.3) Following proper charging as described by the OEM instructions, the stop valves should be opened completely (back seated) and the gage port and stem caps should be properly assembled and tightened to prevent leakage.
  - 3.2.4) The crankcase heater should be checked to assure that is operating properly. This is most readily done prior to compressor startup.

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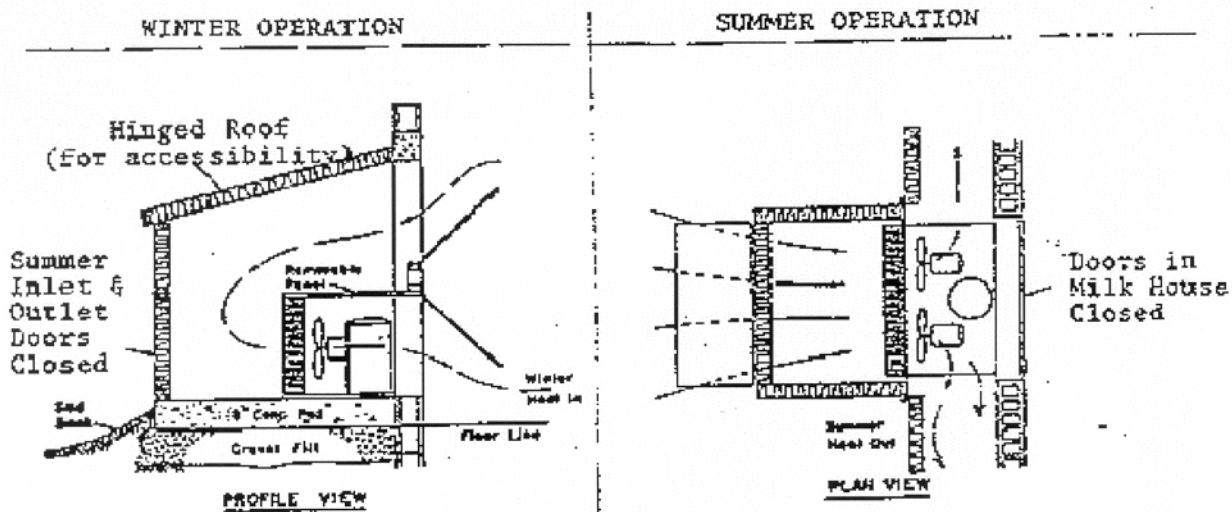


Figure 1

Condensing unit doghouse showing doors for winter and summer operation. It is suggested that the cross-sectional area of all air passages be one and one half times the area of the condenser.

Note: The geographic areas where the outdoor ambient temperature can be less than +32°F, it will be necessary to insulate the condensing unit compartment, and/or thermostatically controlled heat, to maintained condensing unit ambient of +32°F.

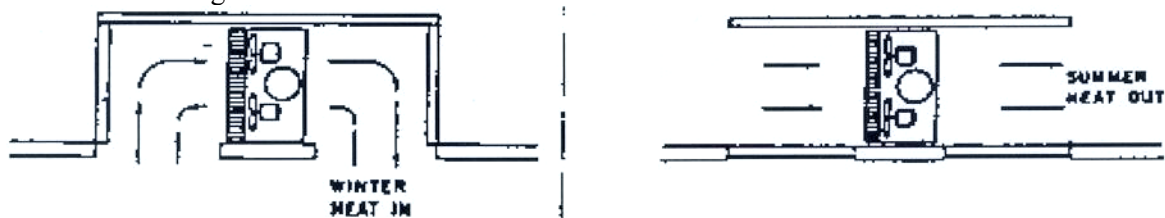


Figure 2

Condensing Unit outside milkhouse wall

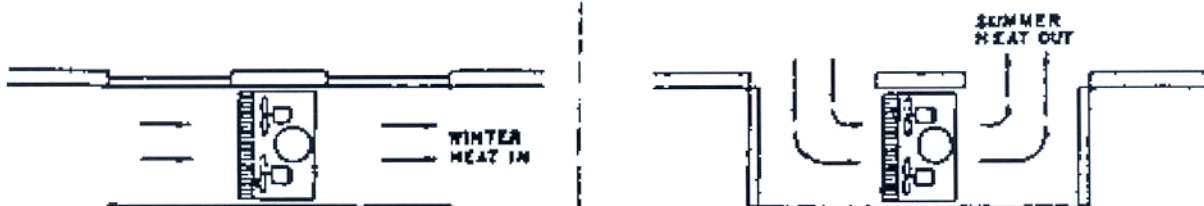


Figure 3

Condensing Unit inside milkhouse wall