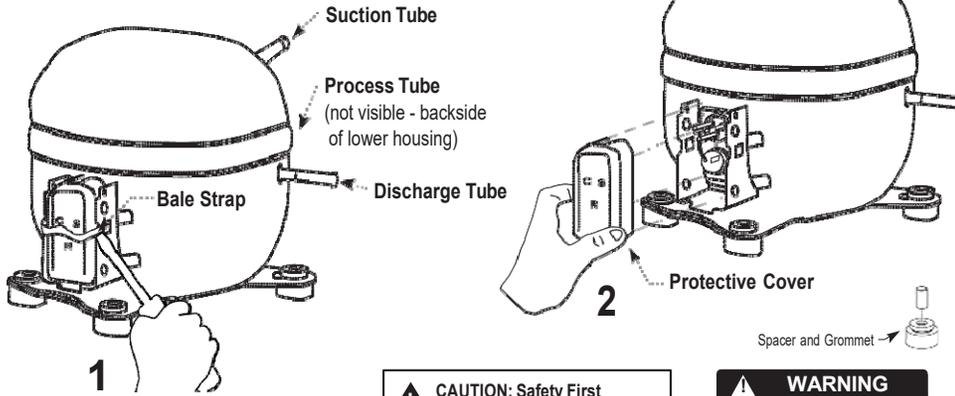


# AK<sup>2</sup> Series Compressor Installation Instructions

## Typical CSR Application

### Removal of the Protective Cover

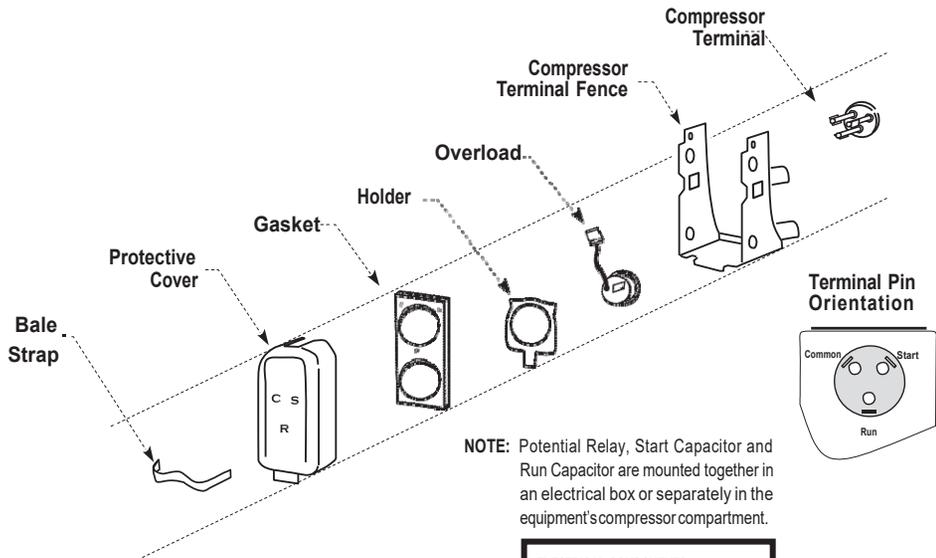
- 1 Remove the protective cover bale strap with screwdriver.
- 2 Remove the protective cover.



**CAUTION: Safety First**  
 Note: Never energize the system unless:  
 1. The protective cover is securely fastened, and  
 2. The compressor is properly connected to ground.

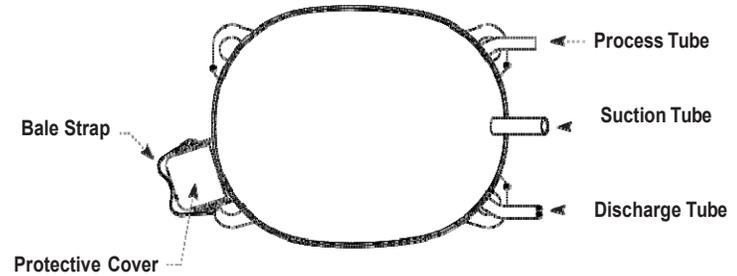
**WARNING**  
 Never service, repair, or troubleshoot unless you are qualified to perform these functions. Improper servicing can lead to serious injury or death from fire, electrical shock, or explosion.

### Exploded View of Assembly



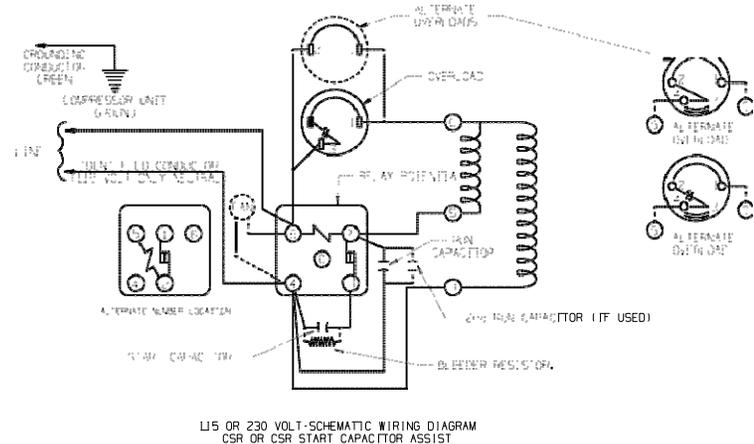
**ELECTRICAL COMPONENTS**  
 Use only new electrical components specific for this compressor model.

## Compressor Port Locations



**NOTE:** Reference Tecumseh Engineering Policy Bulletin EP-16 when applying AK<sup>2</sup> Series and other direct suction compressors in Cube Ice Machine applications. Refer to the "Library - Engineering Policies" section of our website ([www.tecumseh.com](http://www.tecumseh.com)).

## Electrical Wiring Diagram - CSR



## PED REQUIREMENTS



**Standards series EN 60335-2** apply only to loads <150g of flammable fluids. R290 for a load >150g: Apply the ISO 5149 / EN 378. We recommend to make a risk analysis and also avoid the refrigerant accumulation in case of leakage in potentially ignition source zones. By the refrigeration system design, the protective cover environment must not be in an explosive atmosphere.

**Compliance Statements and Incorporation:** This compressor is designed for installation in machines in accordance with the machinery directive 2006/42 / EC. They comply with the low voltage directive 2014/35/EU and 2014/68/EU. Commissioning is only permitted if the assembly was performed in accordance with these instructions and if the machines meet the regulations. **Consistent with the PED,** all Category II compressors are tested under a higher air pressure or equal to the required 1.43PS according to Annex I section 7.4 of 2014/68/EU. The compressor free internal volume is 4.5L. For information: 1.43\*PS = 21.2 bar for R290. **Maximum allowable pressure:** this is the maximum refrigerant saturation pressure, at 46°C ambient temperature, in the shell, compressor off. Limit the refrigerant charge in order not to exceed the maximum allowable pressure (read the label). **Application signage:** refrigerant used and its mass must be completed. In case of A2, A2L or A3 refrigerant, the flammability logo will be visible and legible.

**"Steam Effect" caution:** can occur when water enters into the refrigerant circuit. The compressor will behave as a steam generator and motor temperature will increase pressure beyond the maximum operating pressure. The use of a safety pressure switch is a way to limit the pressure rise in the compressor shell. In order to continually improve its products, TECUMSEH reserves the right to modify this manual without notification.

## GENERAL INSTALLATION INSTRUCTIONS

- \* Prior to removal of current compressor please refer to Tecumseh's Service Handbook to verify compressor requires replacement. The Service Handbook is available online at [www.tecumseh.com](http://www.tecumseh.com).
- \* Tubing sizes and orientation may vary between compressors and applications.
- \* Use only electrical start components supplied with this replacement compressor.  
**Do Not Reuse Electrical Components! Use Only New Electrical Components.**
- \* Tecumseh recommends using provided replacement mounting grommets and hardware.
- \* Install a properly sized filter-drier for the system being serviced.
- \* Evacuate to a minimum of 500 microns. Always use a vacuum gauge to measure vacuum levels.



### CAUTION: SAFETY FIRST

- \* DO NOT INSTALL, service, repair, or troubleshoot an air conditioning or refrigeration system without proper certification and approval from authorities (Local, State, Federal).
- \* YOU MUST have the necessary knowledge, training and equipment.
- \* DISCONNECT ELECTRICAL POWER before removing the protective cover of any electrical terminal.
- \* DO NOT RE-CONNECT electrical power unless the protective covers of all electrical terminals are in place and securely fastened.
- \* DO NOT OPERATE compressor or connect electrical power, unless it is connected to ground.
- \* DO NOT RESET A BREAKER or replace a fuse without first checking for ground fault (short circuit to ground).
- \* An open fuse or tripped circuit breaker is a strong indication of a ground fault, also known as a short circuit to ground.
- \* If a ground fault does exist, keep the power off, find and repair. Use only a Mega Ohmmeter ("megger") or a Hi-potential ground tester ("Hi-Pot") to check for a ground fault. A conventional ohmmeter will not reliably detect an insulation breakdown causing the ground fault.
- \* Never expose system to leak test pressures greater than 150 psig (11.4 bar abs).
- \* Never overcharge system with refrigerant. Overcharging with refrigerant may lead to excessive pressures and rupture of hermetic terminal may occur. Always use proper charging techniques and limit charge amounts to those specified on the system equipment serial label or in the original equipment manufacturer's service information.
- \* Contact with refrigerant, mixtures of refrigerant and oil, or other chemicals can cause a variety of injuries including burns and frostbite.
- \* Oil and refrigerant can spray from compressor electrical terminals and be ignited by electricity or other sources of ignition causing serious INJURY or DEATH.

## NEW INSTALLATION TIPS

- \* Upon receipt of your new compressor check for damage from shipping. Report any damage immediately to your local Tecumseh dealer.
- \* Check the name plate for correct voltage, phase, frequency, and refrigerant for the intended use BEFORE installation.
- \* Check compressor windings for correct ohm readings and potential short circuit to ground BEFORE installation. Keep the following in mind:
  - Power to unit must be off
  - Removing wires to expose terminals can lead to mis-wiring, replace correctly
  - Securely replace protective cover

- \* Warning labels are provided to inform and protect persons servicing Tecumseh equipment. Care must be taken not to damage or destroy labels during installation. Damaged or missing labels should be replaced with approved labels from your Tecumseh dealer.
- \* This compressor is shipped with a holding charge of nitrogen or dry air. Remove the holding charge only after the equipment has been installed with connecting tubing and a new filter-drier installed. Purge the holding charge thru a service port. DO NOT leave the unit open to the atmosphere for an extended period of time, to do so will contaminate the oil and cause excessive evacuation time, and could cause premature failure.
- \* Be sure to use clean, refrigeration tubing with both ends sealed.
- \* Remove discharge tube hang tag prior to brazing. Cut, form and braze tubes carefully to avoid getting dirt and/or metal filings into the lines. When sizing suction and liquid lines, consult the refrigerant line sizing section of the Tecumseh Hermetic Service Handbook, or use the Tecumseh refrigerant line sizing app located at <http://boxload.tecumseh.com/> Whenever possible, pitch the suction line downward in the direction of flow, approximately 1/2" for each 10 ft length, to aid in oil drainage. Avoid line lengths in excess of 100 ft. Contact Tecumseh Technical Service for assistance.
- \* When you open the system, complete the service operation as quickly as possible so it will not be exposed to the air longer than necessary.
- \* Once all connections have been made, leak test with regulated dry nitrogen or other approved gas to a pressure not to exceed 150 psig (11.4 bar abs). Repair any leaks and leak test again.
- \* When system is leak free, connect a vacuum pump capable of at least 500 microns vacuum to both sides of the system. Evacuate to at least 500 microns for a minimum of 30 min. Vacuum levels should be measured with an electronic gauge.
- \* Do not operate the compressor without a charge in the system. Operating the compressor without a charge in the system can damage the hermetic terminals. To avoid serious injury or death from terminal venting with ignition, DO NOT energize the compressor unless the protective cover is securely fastened.
- \* CAUTION!!! Only use refrigerant indicated on serial label when charging the system. Using a different refrigerant can lead to excessive system pressure and/or an explosion. Use of a refrigerant other than the serial label refrigerant will void the warranty.

## COMPRESSOR REPLACEMENT TIPS

- \* Disconnect all electrical power supplies to the system, making sure all power legs are open. (note: The system may have more than one power supply.)
- \* Be sure all refrigerant is recovered before removing the compressor. Attempting to remove the compressor before removing all refrigerant from the system can cause a sudden release of refrigerant and oil. Among other things this can cause fire, a variety of injuries including burns and frostbite, and expose the service person to oxygen displacing gas..
- \* Install a properly sized filter-drier for the system being serviced.
- \* Use only regulated dry nitrogen or dry nitrogen with trace amounts of the serial label refrigerant to purge and/or leak test the system to a pressure not to exceed 150 psig (11.4 bar abs).

## QUESTIONS AND SUPPORT

**Tecumseh Tech Support: 800.211.3427 or Email: [technical.service@tecumseh.com](mailto:technical.service@tecumseh.com)**

Tecumseh reserves the right to change any information in this publication at any time.

This document is not intended to replace the training required for professional service personnel, or replace other information available from refrigeration and air conditioning equipment manufacturers. The information in this document is intended to assist service personnel in safely installing and servicing Tecumseh AK<sup>2</sup> compressor. Mounting and tubing connections are likely to differ from original installation. Careful review of current application requirements is essential. IT IS THE RESPONSIBILITY OF THE SERVICE PERSON TO ASSURE THEY HAVE PURCHASED A REPLACEMENT PRODUCT WHICH MEETS THE NEED OF THE APPLICATION. Failure to do so may result in misapplication requiring immediate or subsequent additional compressor replacement.

