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POWER IN. CHANGE ON.

## SAFETY RECOMMENDATIONS FOR **COMPRESSOR** INSTALLATION



# SAFETY RECOMMENDATIONS

## General Recommendations:

- Only trained personnel can perform diagnostic and maintenance procedures on refrigeration systems.
- Installation and repair requires special training, technical information, special tools and special equipment.
- Make sure in advance if the environment for maintenance is adequate and airy. Tools and process equipment should be available. The required Personal Protective Equipment (PPE) must be used by the technician.
- Before starting maintenance or diagnostics, first make sure that the cooling system is disconnected from the mains.
- After disconnecting the system from the mains, wait for the compressor to cool down. Only perform maintenance or diagnostic procedures with the cold compressor ( $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ).
- The compressors should be powered only in electrical installations with a ground fault circuit interrupter (GFCI) circuit breakers.
- Correct grounding is required for the use of compressors.



*Failure to shut down the mains compressor during maintenance procedures and to apply a system without a ground fault circuit interrupter (GFCI) may cause serious physical hazards by electric shock and/or fire to the technician.*



*Failure to disconnect the compressor from the mains may, in the event of a short circuit in the region of the hermetic terminal of the compressor, cause expulsion of the hermetic pins causing leakage of the cooling fluid. This situation becomes more critical when applying inflammable refrigerants, because if it is associated with an ignition source, there may be flame generation and serious risks to the technician's physical integrity.*

# 1 - ELECTRICAL ACCESSORIES

Before removing the protective plastic cover from the electrical components, check if the compressor is disconnected from the mains and that starting and / or running capacitors are used.



*Never handle any electrical accessory with the compressor connected to the mains. Failure to shut down the mains compressor during maintenance procedures and to apply a system without a ground fault circuit interrupter (GFCI) may cause serious physical hazards by electric shock and/or fire to the technician.*



*Starting and / or running capacitors must be handled with care, as they may cause electric shock even when disconnected.*

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When it is necessary to remove the capacitors, carefully disconnect these components with extra attention to the exposed electrical terminals. The capacitor must be discharged before handling.

Check that the capacitance range ( $\mu\text{F}$ ) printed on the starting and running capacitor label (if applicable) comply with the compressor data sheet that is installed in the system. The ACV Voltage value printed on the capacitor label must be equal to or greater than the value specified in the compressor data sheet. If one of the values (ACV Voltage and / or Capacitance) is not in accordance with the compressor specification, replace the capacitor.



*Application of an unsuitable capacitor and / or application of unspecified starting devices (Relay or PTC) may cause the capacitor to overheat. Overheated capacitors are subject to rupture which can lead to leakage of overheated material, that can lead to burns.*

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When necessary to disconnect the electrical components of the hermetic compressor terminal, remove the overload protector and the starting device (relay or PTC) by applying longitudinal effort to the pins. Never apply transverse forces to the pins of the hermetic compressor terminal



*Improper removal of these accessories may cause poor electrical connection, damaging the hermetic compressor terminal, and causing refrigerant and oil leakage. This situation becomes more critical when applying flammable refrigerant, because if it is associated with an ignition source, there may be flame generation and serious risks to the technician's physical integrity.*

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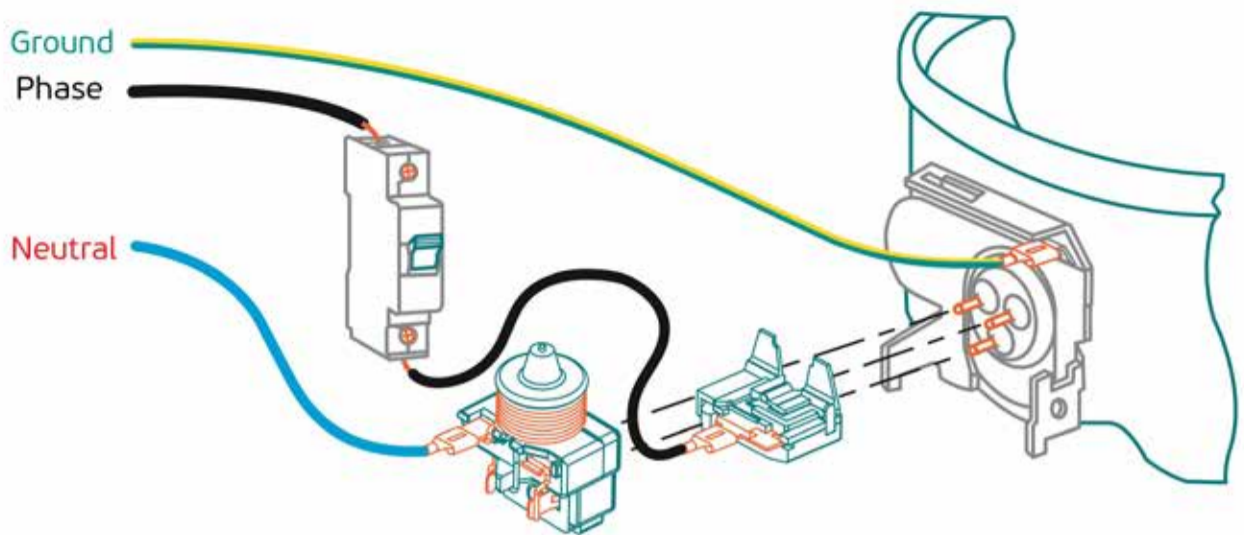
Compare the printed code on the overload protector, Relay or PTC with the compressor data sheet. If the code is different, replace the component. There are no universal or similar electrical accessories, always use the one specified in the compressor's data sheet.



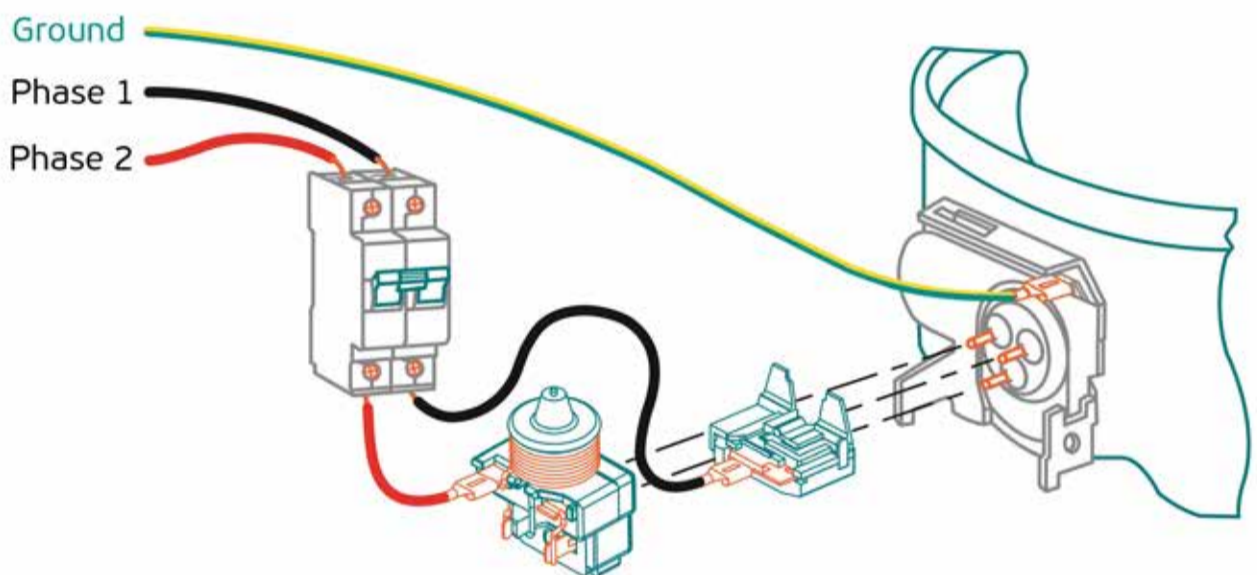
*Not specified starting devices (Relay or PTC) may cause the capacitor to overheat. Overheated capacitors are subject to rupture which can lead to leakage of overheated material, that can lead to burns.*

*The use of overload protector or starting device (relay or PTC) other than specified can generate short circuit in the hermetic compressor terminal, causing the expulsion of hermetic pins causing refrigerant and oil leakage. This situation becomes more critical when applying flammable refrigerant, because if it is associated with an ignition source, there may be flame generation and serious risks to the technician's physical integrity.*

## 1.1 - Electrical Installation



In single-phase installations, the Phase wire must be protected by a circuit breaker and connected to the overload protector. The neutral wire must be connected to the starting device (relay or PTC). The system must be grounded



In the case of two-phase installations, it is mandatory to use a 2-pole circuit breaker, because in case of a short circuit both phases of power supply are protected. The system must be grounded.



*Failure to use a 2-pole circuit breaker leaves the compressor susceptible to short circuit in the region of the hermetic compressor terminal, which may cause the hermetic pins to be ejected causing the refrigerant and oil to leak. This situation becomes more critical when applying flammable gas, because if it is associated with an ignition source, there may be flame generation and serious risks to the technician's physical integrity.*



*Application of a system without grounding may expose the technician to risk of electric shock.*

## 2 - COMPRESSOR

If you need to replace the compressor, be aware of the following safety recommendations:

- I. Make sure the compressor is disconnected from the mains.



*Failure to shut down the compressor from the mains during maintenance procedures may expose the technician to risk of electric shock and fire.*

- II. Never remove the compressor before removing all refrigerant from the system. For this, the use of a fluid collecting machine is recommended. In the case of flammable fluids, such as R290 and R600a, ensure the removal of small accumulations of gas from the system.



*The presence of flammable fluid residues may expose the technician to risk.*

- III. Use a pipe cutter to disconnect the compressor tubes. Under no circumstances use the flame of the torch to disconnect the compressor tubes.



*The use of a torch to disconnect compressors using flammable coolant may cause fire and release toxic vapors.*

- IV. In case of burning of the compressor and / or internal contamination of the system Clean the piping with a suitable solvent applied according to the solvent manufacturer's technical guidelines.



*Failure to comply with the solvent manufacturer's technical guidelines may expose the technician to fire hazards and intoxication.*

- V. Before connecting a compressor, make sure that:

- The voltage at the compressor label is suitable for the mains and the electrical installation complies with item 1.1.



*The application of a compressor in incorrect voltage may cause short circuit in the hermetic compressor terminal, causing the expulsion of hermetic pins causing refrigerant and oil leakage. This situation becomes more critical when applying flammable gas, because if it is associated with an ignition source, there may be flame generation and serious risks to the technician's physical integrity.*

- The plastic cover for electrical protection is properly seated.



*The non-use or improper positioning of the plastic cover may expose the electrical technician the risk of electric shock and fire.*

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