Scroll service compressors

AC and Refrigeration

The following safety instructions must be strictly adhered to when servicing the system.

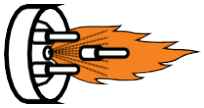
ELECTRICAL SHOCK HAZARD

- Failure to follow these warnings could result in serious personal injury.
- Electrical connections must be made by qualified electrical personnel.
- Disconnect and lock out power before servicing.
- Discharge all capacitors before servicing.
- Use compressor with grounded system only.
- Molded electrical plug required if used on original compressor.
- Refer to original equipment wiring diagrams.

FLAMMABLE REFRIGERANTS* HAZARDS

- Failure to follow these warnings could result in serious personal injury.
- If flammable refrigerant is released from a system, an explosive concentration can be present in the air
- near the system.
- If there is an ignition source nearby, a release of flammable refrigerant can result in a fire or explosion.
- While systems using flammable refrigerant are designed to mitigate the risk of ignition if the refrigerant is released, fire and explosion can still occur.

*Refrigerants R32, R454A R454B, R454C, R455A, R290



TERMINAL VENTING AND OTHER PRESSURIZED SYSTEM HAZARDS

- Failure to follow these warnings could result in serious personal injury.
- System contains refrigerant and oil under pressure.
- If electrical terminal pin loses seal, pressurized oil, refrigerant, and debris may spray out.
- Oil and refrigerant spray can be ignited by electrical arcing.
- Flames may project a significant distance from compressor.
- Use appropriate back up wrenches on rotalock fittings when servicing.
- Remove refrigerant from both the high and low compressor side before removing compressor.

BURN HAZARD

- Failure to follow these warnings could result in serious personal injury or property damage.
- Personal safety equipment must be used.
- Do not touch the compressor until it is cooled down.
- Ensure that materials and wiring do not touch high temperature areas of the compressor.
- Use caution when brazing system components.

COMPRESSOR HANDLING

- Use the appropriate lifting devices to move compressors.
- Personal safety equipment must be used.
- Failure to follow these warnings could result in personal injury or property damage.

The instructions provided below are general guidelines for the removal and installation of the compressor. The unit manufacturer's instructions should always be consulted for specific information related to servicing the unit.

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Before replacing or returning a compressor:

Be certain that the compressor is non-conforming. As many as one-third of compressors returned to Copeland for warranty analysis are determined to have nothing found wrong.

1. Troubleshoot system using any alarm codes if applicable.
2. Verify proper unit voltage.
3. Check that the compressor is correctly wired.
4. Normal motor winding continuity and short to ground checks will determine if the inherent overload motor protector has opened or if an internal short to ground has developed. If the protector has opened, the compressor must cool sufficiently to reset.
5. If resistance within specification and motor not shorted, connect service gauges to suction and discharge pressure fittings, turn on the compressor. If suction pressure falls below normal levels, the system is either low on charge or there is a flow blockage. **Single-Phase Scroll Compressor**, if the suction pressure does not drop and the discharge pressure does not rise to normal levels the compressor is faulty. See Notice for reverse rotation on 3 phase scrolls.
6. The compressor current draw must be compared to published compressor performance curves at the compressor operating conditions (pressures and voltages). Significant deviations (±15%) from published values may indicate a faulty compressor.

Removing the failed compressor from the unit

1. Disconnect and lock-out the power supply to the unit.
2. Recover the system refrigerant charge using an EPA certified refrigerant recovery machine.
3. Discharge any capacitors.
4. Verify that the power supply has been disconnected and locked-out and use a voltmeter to ensure that no voltage is present at the unit. Disconnect and remove any wiring to the compressor and crankcase heater.
5. Using a service manifold gauge set, verify that the refrigerant charge has been completely recovered from the system.
6. If the compressor has rotalock connections, use the appropriate wrenches to loosen and disconnect the rotalock fittings. If the compressor has brazed connections, cut the suction and discharge tubes close to the compressor using a tubing cutter (do not use a hacksaw and do not attempt to unbraze the suction and discharge tubes).
7. Remove the compressor mounting bolts.
8. Using caution and the appropriate lifting device, remove the compressor from the unit.
9. Follow the instructions of the service compressor provider on what to do with the failed compressor. If the compressor is field scrapped, the oil must be drained from the compressor and properly disposed of.

Installing the replacement compressor

1. Using caution and the appropriate lifting device, install the replacement compressor in the system and secure the compressor with the appropriate mounting hardware.
2. A new liquid line filter-drier must be used in all applications. If the system is severely contaminated, a suction line filter should also be installed. Refer to Application Engineering Bulletin AE1105 for more information on system clean-up.
3. Use caution and standard brazing practices to connect the suction and discharge piping to the compressor.
4. The compressor contactor should be inspected and replaced if there are any signs of wear. The best service practice is to replace the contactor.
5. The run capacitor should be replaced to ensure compressor reliability. The run capacitor value (if required) is listed on the compressor nameplate.
6. Copeland scroll compressors have the ability to start against unbalanced suction and discharge pressures without a hard start kit. Start kits are sometimes used on 3 to 5-ton residential scrolls to minimize light dimming. Refer to **copeland.com/OPI** for the proper components or scan the QR code below.
7. If a molded plug wiring harness is used on the compressor being replaced, a U.L. recognized, molded plug wiring harness must be used with the replacement compressor. Copeland universal replacement part number 529-0370-00 or OEM equivalent. Install the molded plug on to the compressor by hand, making sure it is completely seated. Do not use a hammer or blunt object to pound the plug on to the compressor. Refer to the system wiring diagram for instructions on wiring the replacement compressor.
8. If the compressor being replaced has a crankcase heater, the replacement compressor should also have a crankcase heater. A new crankcase heater of the correct voltage rating should be installed low on the shell of the compressor.
9. Follow the unit manufacturer's instructions for evacuation and charging techniques.

Visit **copeland.com/OPI** for service parts and other product information.

NOTICE	Three-phase scroll compressors are phase sensitive. If phasing is incorrect the compressor will run backwards and could overheat. If the compressor runs backwards when started, disconnect and lock-out the power supply and interchange any two of the T1-T2-T3 leads to the compressor at the unit contactor.
CAUTION	Polyolester (POE) compressor oil must be handled carefully and the proper protective equipment (gloves, eye protection, etc.) must be used when handling POE lubricant. POE must not come into contact with any surface or material that might be harmed by POE, including without limitation, certain polymers (e.g. PVC/CPVC, polycarbonates, etc.).
WARNING	Cancer and Reproductive Harm - www.P65Warnings.ca.gov

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