



## **Pre-Startup Guide**

## **Protocol CO<sub>2</sub>**

**P/N M001210 Rev A**

August 2025

**Read the entire document before using this equipment. Keep this document in store for future reference.**

Installation and service must be performed by a qualified installer or service agency.

The unit uses R-744 (CO<sub>2</sub>) as the refrigerant. If a leak is present or even suspected, evacuate the affected area and do not allow untrained personnel to attempt to find the cause.

**FAILURE TO ABIDE BY THIS WARNING COULD RESULT IN AN EXPLOSION, DEATH, INJURY, AND PROPERTY DAMAGE.**

We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions or replacements for equipment previously sold or shipped.

## PROTOCOL CO<sub>2</sub> PRE-STARTUP GUIDE

### Piping, Evacuating, and Charging

- ☐ All field-installed piping completed, including cases, walk-ins, gas cooler, heat reclaim, etc.
- ☐ Remotely mounted relief valves should be installed per the installation details.
- ☐ All piping should be pressure tested per local codes.
- ☐ The system should be evacuated as described in this manual.
- ☐ The vacuum on the system should be broken using CO<sub>2</sub> vapor tanks to a pressure of 100 psig to prevent the formation of dry ice, as described in this manual. Liquid may be used to charge the system once the pressure is above 100 psig. Enough CO<sub>2</sub> should be available on site in both liquid tanks and vapor tanks to fully charge the system. The CO<sub>2</sub> should be Refrigerant Grade CO<sub>2</sub> (99.9% purity) or better.
- ☐ Verify that all filters are installed on the rack, including the oil separators, suction filters, and liquid driers (field installed).
- ☐ The oil reservoir should be filled with the oil specified by the compressor manufacturer; ZEROL RFL 68EP (PAG oil) only. Enough oil should be available on site for the initial startup and first oil change.

### Protocol

- ☐ All electrical connections in the Protocol control panel are properly tightened.
- ☐ Main power and control power is on, and the voltage is correct.
- ☐ All Protocol control boards are online and communicating with the Protocol controller.
- ☐ All Protocol temperature sensors are reading correctly in the Protocol controller.
- ☐ All Protocol pressure transducer shut-off valves are open, and the transducers are reading correctly in the Protocol controller.
- ☐ Compressor crankcase heaters should be turned on 24 hours prior to system start up.
- ☐ There should be a minimum of 40% of the Protocol evaporator load (both MT and LT) available for the initial startup of the system.

### Gas Cooler

- ☐ All electrical connections in the gas cooler control panel are properly tightened.
- ☐ Power is on and the voltage is correct.
- ☐ Verify that the gas cooler fan staging, speed control, and rotation are correct.
- ☐ Adiabatic gas coolers should have the water turned on and drain lines completed.
- ☐ Gas cooler outlet temperature sensor(s) should be installed, insulated, and wired to the Protocol controller per the installation details.
- ☐ All control wiring for the gas cooler operation is installed as required. This may include wiring for communication, fan speed reference, fan staging, ambient temperature, adiabatic pre-coil temperature, alarm/status outputs, etc. See installation details for specific requirements.
- ☐ The gas cooler temperature sensor(s) are reading correctly in the Protocol controller.
- ☐ If equipped, the control boards installed in the gas cooler are online and communicating with the Protocol controller.

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### Cases and Walk-ins

- ☐ All case controller communication wiring should be complete.
- ☐ The power for the cases and walk-in evaporator coils should be turned on.
- ☐ All case controllers should be addressed and communicating with the Protocol controller.
- ☐ All temperature sensors on the cases and walk-in evaporator coils are reading correctly in the case controllers.
- ☐ All pressure transducer shut-off valves are open, and the transducers are reading correctly in the case controllers.
- ☐ Verify operation of all case and walk-in evaporator coil fans.
- ☐ The case drain lines or evac system should be completed.
- ☐ All penetrations should be sealed.
- ☐ The case controller programming in the rack controllers is complete.
- ☐ The walk-in leak detector system must be operational.

### Other

- ☐ Verify that the machine room leak detection and ventilation are functional.
- ☐ All work areas represent a safe work environment and are free of construction debris.
- ☐ The customer or contractor must provide competent personnel with proper tools and equipment and be present on-site for the entirety of the FQS visit.
- ☐ If equipped, the backup condensing unit and generator should be installed and operational.