MODEL's MRS-1.3, MRS-2, MRS-3 and MRS-4

CARBON DIOXIDE

MODULAR REFRIGERATION SYSTEMS

OPERATIONAL MANUAL

P.O. Box 1938 Monroe, GA. 30655
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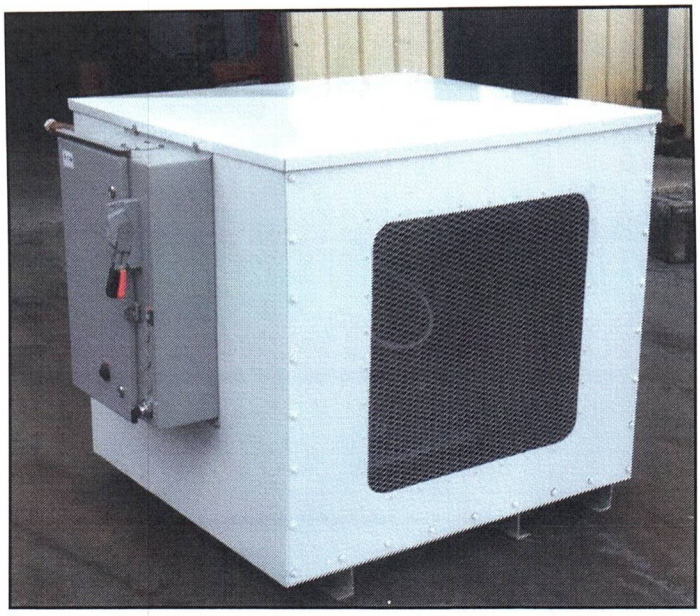
MODULAR REFRIGERATION SYSTEMS (MRS)



This ideal solution for your old or missing refrigeration system.
R-404A Systems for tanks with existing internal evaporator coils.
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MRS TECHNICAL INFORMATION

General Description

Carbo Tech Modular Refrigeration Systems consist of a Coepland semi-hermetic condensing unit mounted in a cabinet. The units are pre-piped to the outside of the cabinet and pre-wired for automatic operation.

Specifications

1. *Copland semi-hermetic condensing unit.*
2. *R-404A environmentally safe refrigerant.*
3. *Aluminum angle framework covered with pre-printed white aluminum cover.*
4. *Cutler Hammer electrical control panel with fused disconnect. NEMA 3R rating.*
5. *Allen Bradley pressure switch and all other controls necessary for automatic operation.*
6. *Includes suction filter, catch all, sight glass, vibration eliminator and solenoid.*

Capacities

Model	Based on -15 Degrees F Evaporator and 90 Degrees F Ambient
CT-MRS-1.5	7,620 BTU's per hour
CT-MRS-2	10,700 BTU's per hour
CT-MRS-3	16,900 BTU's per hour
CT-MRS-4	29,900 BTU's per hour
CT-MRS-5.5	42,300 BTU's per hour

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SAFETY PRECAUTIONS
! PLEASE READ !

Carbo Tech Carbon Dioxide MRS's are not complex, but are highly specialized. The knowledge of carbon dioxide and it's properties, and the hazzards associated with these systems is essential for a safe installation and trouble free operation of the unit.

The information provided in this manual is intended to be used by a qualified carbon dioxide specialist.

We strongly suggest that only qualified personnel install and maintain this equipment.

Refer to the appropriate Compressed Gas Association pamphlet for the proper materials to be used in the installation of carbon dioxide equipment.

Refer to the National Electric Code and/or appropriate governing body and consult a qualified electrician for proper power supply and hookup.

CAUTION

This equipment is operated under high pressure. EXERCISE EXTREME CAUTION!

This equipment is operated with high voltage. EXERCISE EXTREME CAUTION!

Always provide adequate relief protection for the piping system by installing safeties between block valves. Failure to do so could result in equipment damage and possible injury to operating personnel.

Always install carbon dioxide equipment in a well ventilated area. If the possibility of trapped vapor exists, consult local codes as to the requirements concerning area monitoring and personnel notification.

Disclaimer

The material contained in this manual is for information purposes only. The contents and the product it describes are subject to change without notice. Carbo Tech makes no representations or warranties with respect to this manual. Under no circumstances shall Carbo Tech be held responsible for any damages, direct or incidental, arising from the use of this manual.

Installation, Start Up and Operation Instructions For Carbo Tech MRS

Installation

Uncrate and inspect the unit for shipping damage. Report damage to the freight carrier.

Install the MRS on a level surface.

Check the nameplate for power requirements. Be sure the voltage and service supplied agrees with the nameplate. Connect the power to the line terminals of the disconnect switch.

Install the sub-cooler in the loop system as close to the receiver as possible. Connect the Allen Bradley pressure switch to a vapor port on the receiver.

Start Up

Do not attempt to start the MRS unless the receiver has liquid carbon dioxide in it and the pressure is near 300 psig and carbon dioxide liquid is flowing through the pump.

The refrigeration system should be started by a qualified properly trained service technician.

Visually check the system for broken lines or other damage and repair as needed. Remove the refrigerant solenoid lift stem cap and screw the stem in to the open valve. Carefully open the reservoir service valve by turning it counter clockwise. Allow some pressure to flow into the lines and close the valve. Check for leaks and repair as needed. Once assured there are no leaks, return the solenoid valve stem to its original position and replace cap. Open all three refrigeration valves. There are two on the compressor and one on the freon reservoir. With the pressure at 305 psig or above, turn on the refrigeration service disconnect. The system should start. Allow it to run several minutes and check the refrigerant sight glass and oil level port on the compressor. If they show full, continue to monitor the system until the pressure is lowered to about 295 psig and the systems shuts off. If during the entire time the unit ran it showed full of freon and oil, you may assume the system is fine. It is a good idea to check the system several times for the first few days to insure that the freon is full, oil level is OK and the system is cycling properly. Should at any time the system show low on freon connect manifold gauges. Confirm the proper refrigerant and fill as needed using the sight glass as a full indicator. For proper settings of the refrigeration system see "Operation" below.

Operation

Turn the main disconnect switch "ON". Turn the control power switch "ON". In order for the system to function properly there must be liquid CO2 in the receiver and flowing through the loop. The pressure must be at or near 300 psig. The system is designed to actuate via the Allen Bradley pressure switch at about 305 psig. It should shut off at about 295 psig. The system should be filled using the sight glass with R-404A (HP-62). The Suction pressure should settle out between 18 and 20 psig.

The Refrigerant Control needs to be set to cut Out at 0 and On at 10 psig.

Operation of Refrigeration Pump

Down Cycle

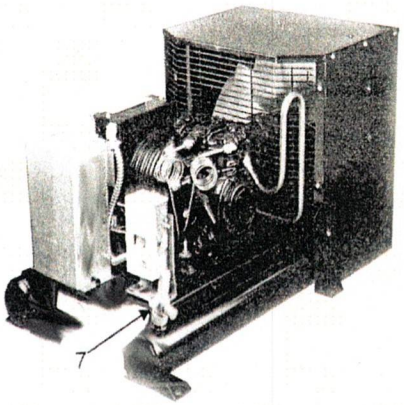
Pressure increase: When unit pressure increases to 305 psig, the CO2 pressure switch closes; this opens the liquid solenoid valve and closes relay 1; evaporator pressure increases; refrigerant control closes and starts the compressor.

Pressure decrease: When the unit pressure decreases to 295 psig, the CO2 pressure switch opens; shuts solenoid; opens relay 1 (compressor will continue to run on auxiliary); evaporator pressure drops; refrigerant control opens; circuit from motor starter breaks and the compressor stops.

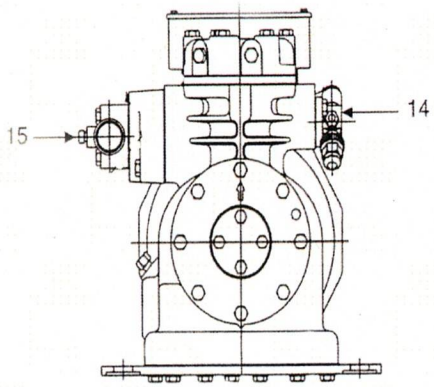
Service Valves

For 2HP and UP

Open all three (3) service valves before operating system



7. Receiver Service Valve



14. Discharge Service Valve
15. Suction Service Valve