



Advansor

Capable of making a difference.

**Hillphoenix**

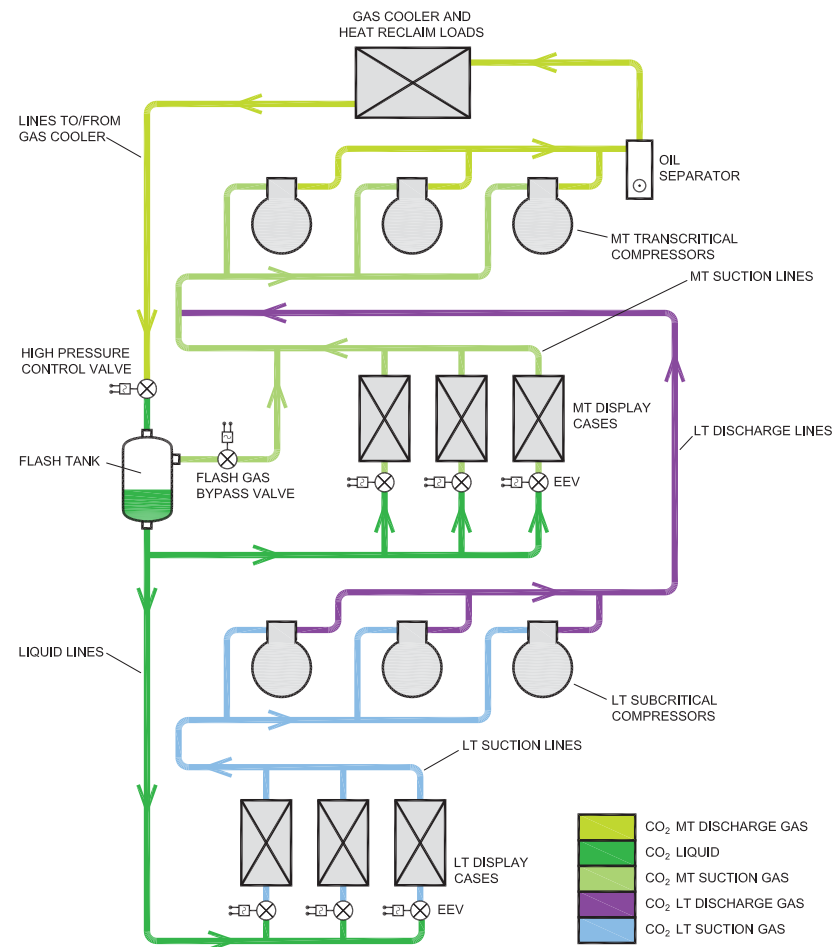
A DOVER COMPANY



The Hillphoenix® Advansor CO<sub>2</sub> booster system is a member of our sustainable line of refrigeration systems. The Advansor CO<sub>2</sub> booster system is an HFC-free refrigeration alternative that utilizes carbon dioxide as the only refrigerant in the system. Hillphoenix customers can take advantage of the inherent benefits of CO<sub>2</sub> and combine them with those of other Second Nature systems - reducing direct refrigerant emissions to the lowest level possible.

ADVANSOR™

## Basic CO<sub>2</sub> Booster System Design



The Advansor CO<sub>2</sub> booster system is a transcritical CO<sub>2</sub> system that provides both low- and medium-temperature refrigeration to display cases and walk-ins without relying on any HFC refrigerants.

The cooling cycle begins with liquid CO<sub>2</sub> in the flash tank (receiver). The liquid is distributed to coolers, freezers, and cases via a network of copper piping. Electronic expansion valves (EEVs) control the flow of CO<sub>2</sub> into the evaporators which have been specially designed to ensure efficient operation in CO<sub>2</sub> booster systems. Suction gas from the low-temp evaporators returns to the rack and is compressed by the subcritical compressors to the pressure of the medium-temp evaporators. Suction gas

from the medium-temp evaporators returns to the rack and is combined with the discharge gas from the low-temp compressors and with flash gas exiting the flash tank via the flash gas bypass valve. This mixture enters the transcritical compressors and is compressed to high pressure and is sent to the gas cooler where it is cooled to near ambient temperature — in cooler weather, the CO<sub>2</sub> in the gas cooler condenses similar to conventional systems.

From the gas cooler, the CO<sub>2</sub> enters the high-pressure control valve where it is expanded back to subcritical pressures. The CO<sub>2</sub> then enters the flash tank where it is separated into liquid and gas and the cycle begins again.

## Advansor Benefits

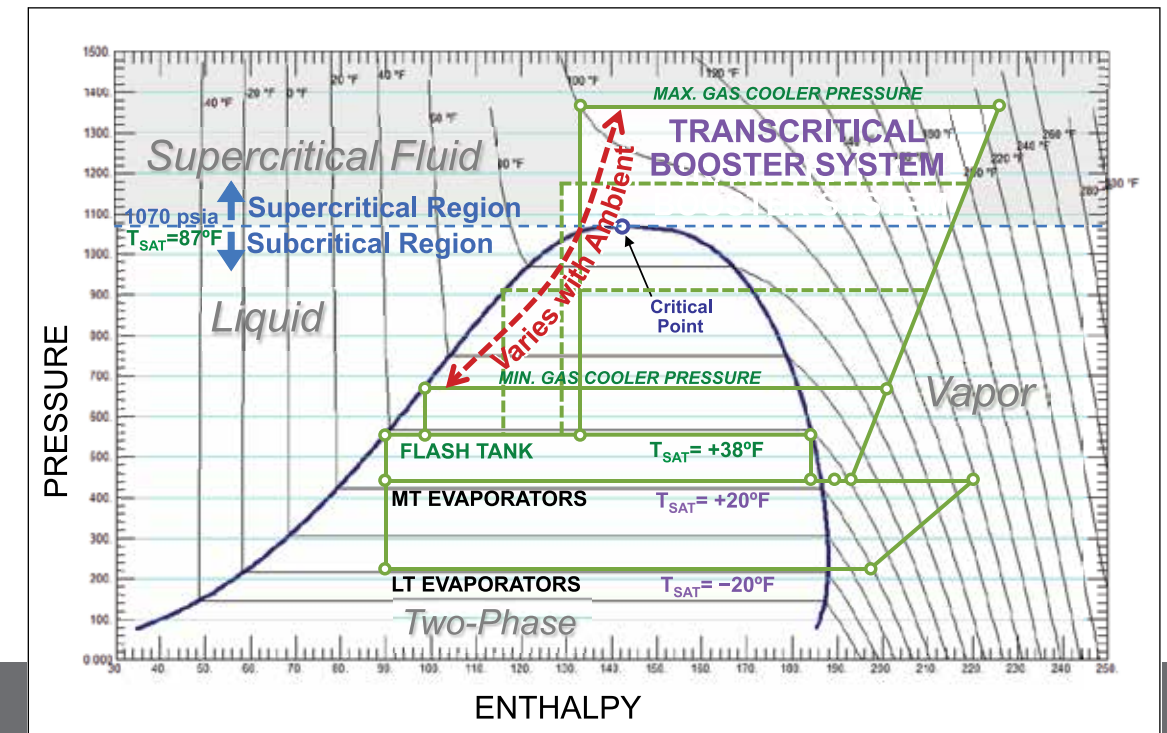
- It's an HFC-free system – CO<sub>2</sub> (R-744) is the only refrigerant used.
- CO<sub>2</sub> is a “natural refrigerant” that is non-ozone-depleting (ODP=0) with almost no global warming potential (GWP=1).
- CO<sub>2</sub> transcritical systems have proven themselves in thousands of installations throughout Europe.
- Advansor technology has over 2000 installations and counting.
- The system's higher quality heat reclaim opportunities improve store energy performance.
- Advansor systems require a lower CO<sub>2</sub> charge and have a smaller weight and footprint compared to CO<sub>2</sub> secondary systems.
- More efficient than conventional HFC systems in some climates.
- An excellent way to help achieve GreenChill Platinum-Level Certification.

## Advansor Features

- Air-cooled gas cooler with variable-speed fans.
- Electronic-controlled, high-pressure control valve and flash gas bypass valve ensure optimal performance at all ambient conditions.
- Simple electronic oil management system ensures adequate lubrication and long compressor life.
- A suction accumulator and heat exchanger protect low-temperature system from liquid flood-back.
- CO<sub>2</sub> reciprocating compressors for both low- and medium-temperature loads have proven themselves in thousands of installations worldwide.
- Specially-designed evaporator coils for CO<sub>2</sub> direct expansion operation provide good oil return back to the system.
- Electronic expansion valves on all evaporators ensure efficient coil operation.

## CO<sub>2</sub> Booster Cycle

CO<sub>2</sub> Booster System on P-h Diagram



# How It Works

# Advansor Gets Results



#### Standard Equipment:

- CO<sub>2</sub> reciprocating (MT) and scroll (LT) compressors, which have proven themselves in thousands of installations world wide.
- Variable-frequency drive on lead medium-temperature compressor.
- Cases and walk-in unit coolers equipped with electronic expansion valves and electric defrost.

#### Optional Equipment:

- Heat reclaim heat exchangers can be factory-mounted.
- Air-cooled, CO<sub>2</sub> discharge gas de-superheater for increased energy efficiency.
- Variable-frequency drive on low-temperature compressor group.
- Factory-piped gas cooler on common frame with Second Nature Advansor CO<sub>2</sub> rack.

#### Display Cases Complete the Picture:

A full range of standard and specialty display cases with evaporators specifically designed for operation with the Advansor CO<sub>2</sub> booster system are available.

The new Advansor CO<sub>2</sub> booster systems are a welcome addition to the Second Nature family and reflect the

Hillphoenix commitment to providing a wide range of quality refrigeration solutions to our customers.

For more information about Advansor or any other Hillphoenix product, please contact your Hillphoenix representative today.

# Hillphoenix®

A **DOVER** COMPANY

REFRIGERATION SYSTEMS

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