



THERMOSEVER HOT-GAS DEFROST SYSTEM

FAST, EFFICIENT, POSITIVE DEFROSTING OF EVAPORATORS

- Three times faster than electric defrost systems.
- Factory installed defrost termination and fan delay pressure controls provide shorter defrost periods and faster return to refrigeration cycle; eliminating the thermal lag (time delay) found with conventional thermostat controls.
- The drain pan heater is energized two minutes prior to the start of the defrost cycle, preventing line blockage by keeping the melting frost warm throughout the drain line. This allows hot gas to directly enter the evaporator coil which maximizes the heat transfer effect.

ENERGY SAVINGS

- Reduction in box temperature rise, minimal product deterioration, and reduced power consumption.
- Shorter defrost cycle periods provide increased refrigeration time allowing smaller equipment sizing and lower initial equipment costs.
- Use with single or multiple evaporator systems. Multiple evaporators can all be defrosted together.

SAVE TIME AND MONEY DURING INSTALLATION

- All extra system components are all installed and pre-piped at the factory.
- Eliminate field installation of an extra hot gas pipe between the condensing unit and evaporator.
- No wiring the evaporator defrost controls back to the condensing unit.

MAXIMUM COMPRESSOR PROTECTION

- Crankcase pressure regulator protects compressor from excessive suction pressures reducing motor overloads.
- Two suction accumulators (one with a liquid/suction heat exchanger) provide maximum heat transfer and liquid trapping capability during both the defrost and refrigeration cycle.

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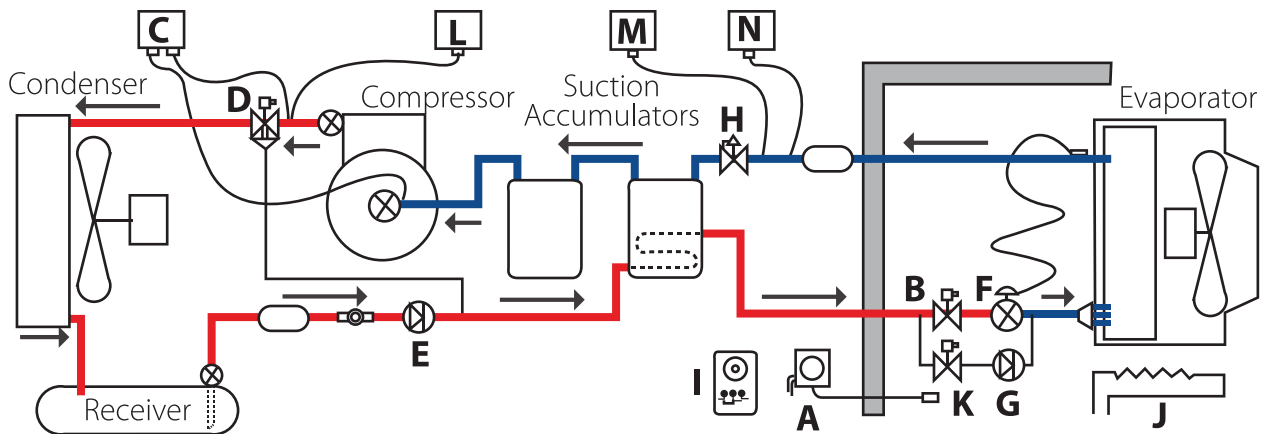
Thermosaver Operation Cycle

- The **Room Thermostat (A)** energizes the **Liquid Line Solenoid Valve (B)** as the box temperature rises; allowing the refrigerant to enter the evaporator, build up pressure, and cause the **Low Pressure Control (C)** to energize the compressor contactor and start the compressor.
- The compressor's hot discharge gas is piped out to the condenser through the **De-Energized 3-Way Valve (D)**; the cooler, ambient air condenses the hot refrigerant gas.
- The liquid then flows to the receiver through the **Opened Check Valve (E)** and on through the Coiled Liquid Line within the suction accumulator (this performs the function as a suction to liquid heat-exchanger).
- The sub-cooled liquid then flows through the Liquid Line Solenoid Valve (energized/open) and on to the **Thermostatic Expansion Valve (TXV) (F)**. The refrigerant moves through the distributor at a lower pressure and flows into the evaporator.
- Refrigerant is prevented to flow past the **Closed Check Valve (G)**. The refrigerant liquid/vapor mixture is then boiled by the warmer box air from the evaporator fan.
- The refrigerant vapor then flows through a **Crankcase Pressure Regulator (H)**, preventing a motor overload from high suction pressures, and enters the two suction accumulators and the compressor.

- To prevent frost formation on the surface of the evaporator a **Timeclock (I)** initiates a defrost cycle by de-energizing (closing) the Liquid Line Solenoid Valve, which causes the compressor to pump-down and shut off from the low pressure control.
- The Timeclock also energizes the **Drain Pan Heater (J)** in the evaporator, and a timer relay. After a two minute delay the 3-Way Valve and **Hot Gas Solenoid Valve (K)** are energized (opened); building up pressure in the evaporator causing the Low Pressure Control to close and start the compressor. The hot discharge gas from the compressor flows through the 3-Way Valve, Hot Gas Valve and Checkvalve forcing all the liquid left in the liquid line into the evaporator.
- If pressure builds up too high the **3-Way Valve Pressure Control (L)** will de-energize the Solenoid Valve and allow pressure to relieve through the condenser.
- Once all the frost has melted, the pressure will rise until the **Defrost Termination Pressure Control (M)** energizes the Timeclock's internal solenoid: terminating the defrost cycle. The 3-Way Valve and Hot Gas Solenoid Valve are de-energized while the Liquid Line Solenoid Valve opens and the compressor continues to run.
- Once any moisture left on the evaporator coil has drained away or frozen, the pressure becomes low enough to close the **Fan Delay Control (N)**; energizing the evaporator fans and resuming the refrigeration cycle.

The cycle continues until the room temperature is satisfied. This de-energizes the liquid line solenoid, initiating a pumpdown cycle that reduces the suction pressure to the cut-out setting on the low pressure control which de-energizes the compressor.

REFRIGERATION



DEFROST

