

HUSSMANN® IMPACT™

M1LGE

Dual Temp Operation Port Valve with E P R Control (Evaporator Pressure Regulator)

GENERAL

All cases piped together in a lineup must be equipped with the same controls.

The lineup must be set and leveled as described in the installation and operation manual that ships with the case.

Carefully unpack and inspect the components to ensure there are no missing or damaged parts.

ELECTRICAL

All wiring must follow NEC guidelines and local codes. All electrical connections are made in the electrical wireway.

Identification of Wiring

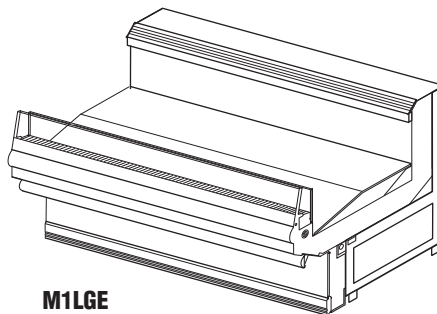
Electrical circuit leads are identified by colored plastic bands or insulation corresponding to the color code sticker (shown on Page 2) located inside the wireway.

| MODEL | DUAL TEMPERATURE KIT APPLICATION | |
|---------|----------------------------------|------------------|
| M1L4GE | HC40 | Electric Defrost |
| M1L4GE | HC41 | Gas Defrost* |
| M1L6GE | HC42 | Electric Defrost |
| M1L6GE | HC43 | Gas Defrost* |
| M1L8GE | HI13 | Electric Defrost |
| M1L8GE` | HI14 | Gas Defrost* |

*Note: All gas defrost kits need Reverse Fan Motor K-Kit KI041

Field Wiring

Field wiring must be sized for component amperage stamped on the serial plate. Actual amp draw may be less than specified. Field wiring from the refrigeration control panel to the merchandiser is required for defrost termination thermostats and for optional refrigeration thermostats. Multiple merchandisers on the same defrost circuit must have the defrost termination thermostats wired in series.



M1LGE

DUAL TEMPERATURE OPERATION

Dual temperature operation is accomplished by controlling the evaporator coil suction pressure with a port valve assembly that has an internal pressure regulator. This port valve assembly is located on the suction line inside the merchandiser and it varies the evaporator pressure according to the dual temperature switch setting. The dual temperature switch is located in the wireway and is wired to a solenoid coil on the port valve assembly.

August 2009



WARNING

Refrigerant vapor is hazardous to your health and can cause death.

Avoid breathing refrigerant and lubrication vapor or mist. Exposure may irritate eyes, nose and throat. If accidental system discharge occurs, ventilate work area before resuming service.

Always wear safety goggles and protective gloves when working with refrigerants. Contact with refrigerant may cause injury. Disconnect hoses with extreme caution! All hoses may contain liquid refrigerant under pressure.

Be sure that any room where you are working is thoroughly ventilated, especially if a leak is suspected.

Read all safety information regarding the safe handling of refrigerant and refrigerant oil, including the Material Safety Data Sheet. MSDS sheets can be obtained from your refrigerant supplier.

Refrigeration lines are under pressure and should be depressurized before attempting to make any connections.

When brazing pipes, be sure to use the insulation blanket shipped with the merchandiser to prevent fire or damage to the plastic case bottom.

WIRING COLOR CODE

Leads for all electrical circuits are identified by a colored plastic band: neutral wire for each circuit has either White insulation or a White plastic sleeve in addition to the color band.

| | |
|-------------------------|---|
| PINK | REFRIGERATION THERMOSTAT — LOW TEMPERATURE |
| LIGHT BLUE | REFRIGERATION THERMOSTAT — NORMAL TEMPERATURE |
| DARK BLUE | DEFROST TERMINATION THERMOSTAT |
| ORANGE OR TAN | LIGHTS |
| MAROON | RECEPTACLES |
| PURPLE | ANTI-SWEAT HEATERS |
| YELLOW | DEFROST HEATERS, 120V |
| RED* | DEFROST HEATERS, 208V |
| BROWN | FAN MOTORS |
| GREEN* | GROUND |

*EITHER COLORED SLEEVE OR COLORED INSULATION

ELECTRICIAN NOTE: CASE MUST BE GROUNDED

Low Temperature Mode

When the switch is in the low temperature setting, it energizes the coil on the port valve. The internal pressure regulator in the port valve is now wide open and runs the evaporator at rack saturated suction.

Medium Temperature Mode

When the switch is in the medium temperature setting, it de-energizes the coil on the port valve. The internal pressure regulator in the port valve will now run the evaporator at a set suction temperature. For medium temperature operation, M1LGE cases should be set for a +10°F saturated suction temperature, which corresponds to a 17°F discharge air temperature. See refrigeration section on adjusting port valve assembly.

Note: The switch port valve operation is the same for electric and gas defrosts.

DEFROST OPERATION

Piping assemblies are different between electric and gas defrost. Both electric and gas defrost merchandisers use a reverse air method when the defrost cycle is initiated by the rack controller. Reverse air is when defrost triggers the fans to reverse direction in order to reverse the flow of air in the merchandiser.

Note: The fan wiring and relays are different depending on whether electric or gas defrost is being used.

Electric Defrost

When the defrost cycle is initiated, two components need to be energized:

- the 208 V Defrost Heaters; and
- the 220V red leads on the fan relay (located in the wireway) which reverses fan direction during defrost.

Refer to Figure 1 for piping and electrical schematic.

Defrost termination is accomplished when all tube mounted thermostats (close on rise at 48°F) reach temperature. These thermostats are located in each merchandiser on the suction line next to the last evaporator coil being fed by refrigeration. Refer to Figure 2. Merchandisers that are on the same rack branch circuit need to have all thermostats wired in series in order to signal the controller to terminate defrost.

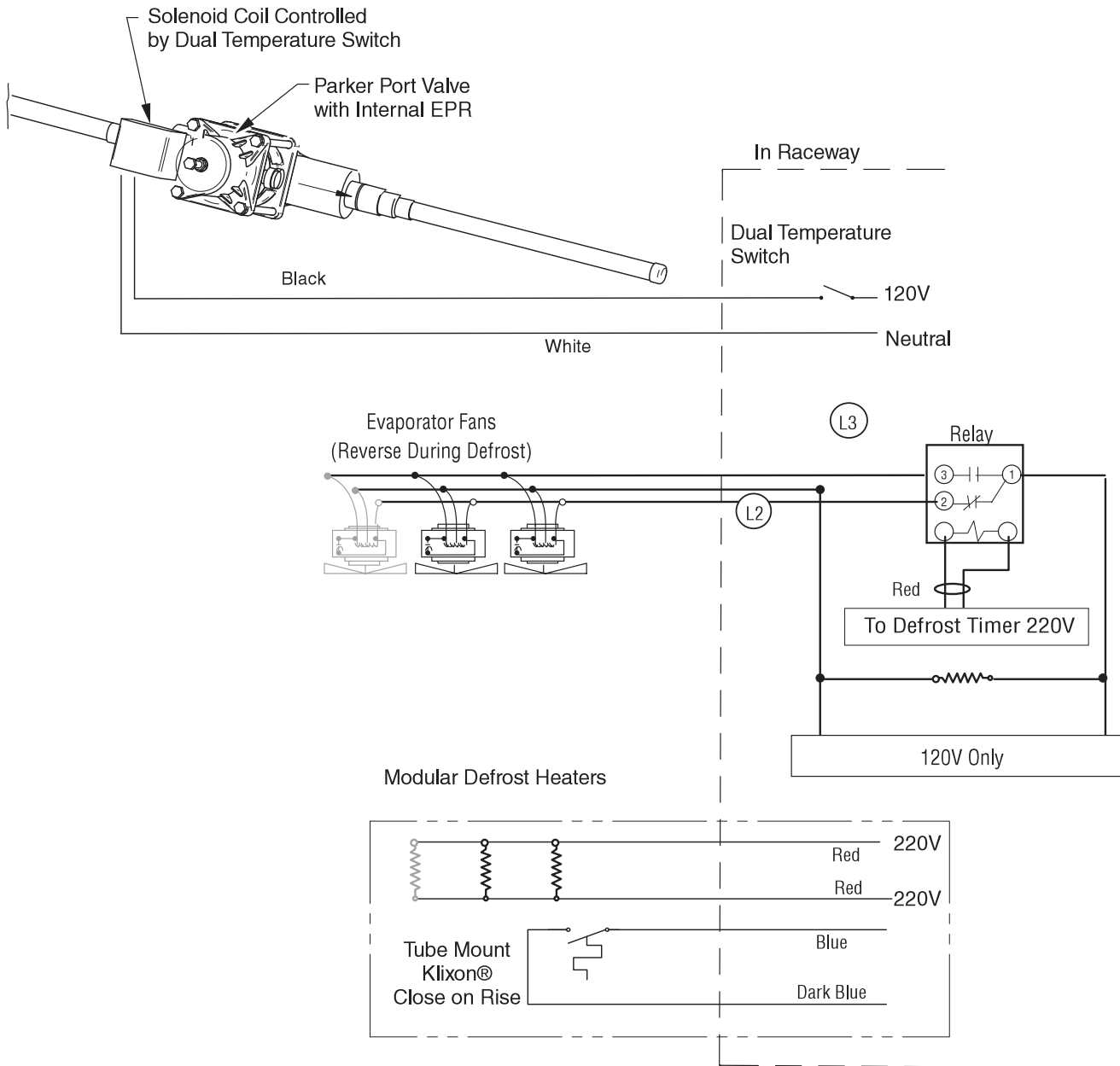


Figure 1. Electric Defrost Schematic

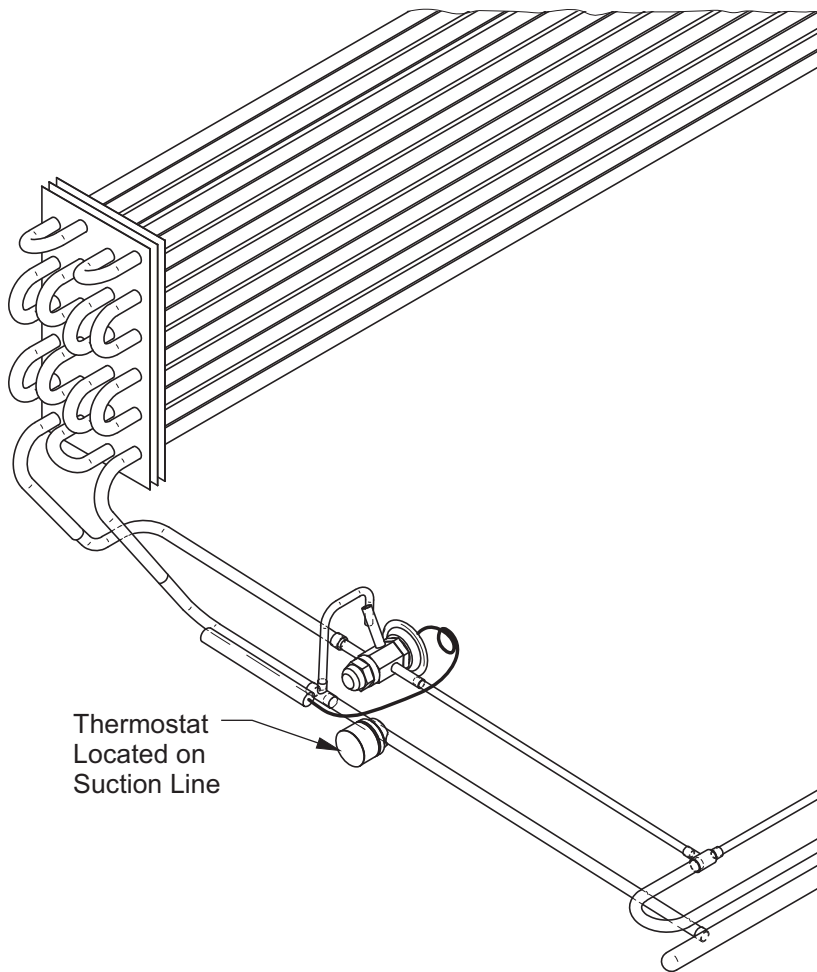


Figure 2. Electric Defrost Thermostat Location

Gas Defrost

When the rack controller begins the gas defrost cycle, the following is initiated:

- The flow of gas is reversed in the suction line of the merchandiser; and
- The reversed flow of gas triggers the fans to reverse direction.

Refer to Figure 3 for piping and electrical schematic.

The gas flow is diverted around the port valve assembly via the bypass loop. The bypass loop contains a normally open solenoid valve that allows gas flow to reach the evaporator. The gas flow melts any frost or ice accumulation on the fins and tubing of the evaporator coil. This flow continues until the sensing bulb on the expansion valve bypass line reaches the set temperature, thus indicating that all ice has been melted. This close on rise Single-

Pole, Single-Throw (SPST) thermostat then energizes (or closes) the normally open solenoid on the bypass loop. The flow of gas is now terminated; defrost for the merchandiser is complete.

During gas defrost, the direction of the fan blade rotation is reversed which reverses the direction of airflow in the merchandiser. The signal to reverse fan direction is sent by the close on rise thermostat located on the suction line next to the last evaporator coil. Refer to Figure 4. When the gas flows backwards through the evaporator it heats up the thermostat, which closes at 35°F. This energizes the coil on the fan relay in the wireway, causing the reverse fan circuit to be complete. The fans rotate in the reverse direction.

After defrost, when the temperature is below 20°F, the thermostat opens. This breaks the reverse fan circuit and the fans rotate in the normal direction.

Refer to Figure 5 for wiring diagram.

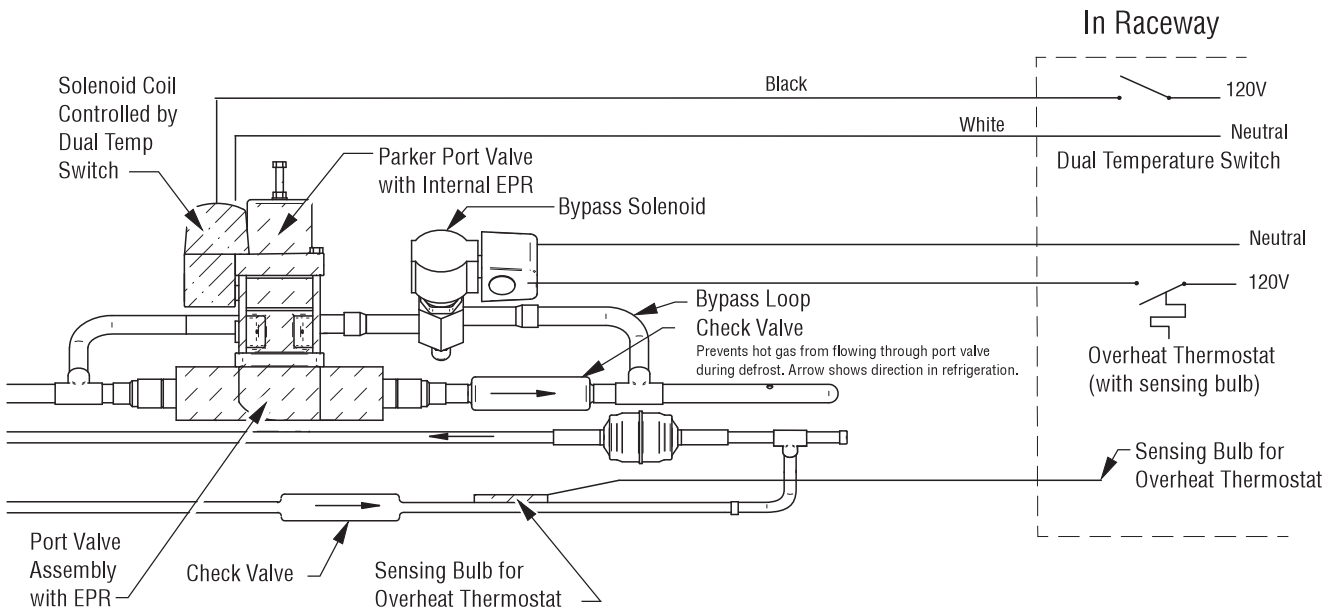


Figure 3. Gas Defrost Piping and Electrical Schematic

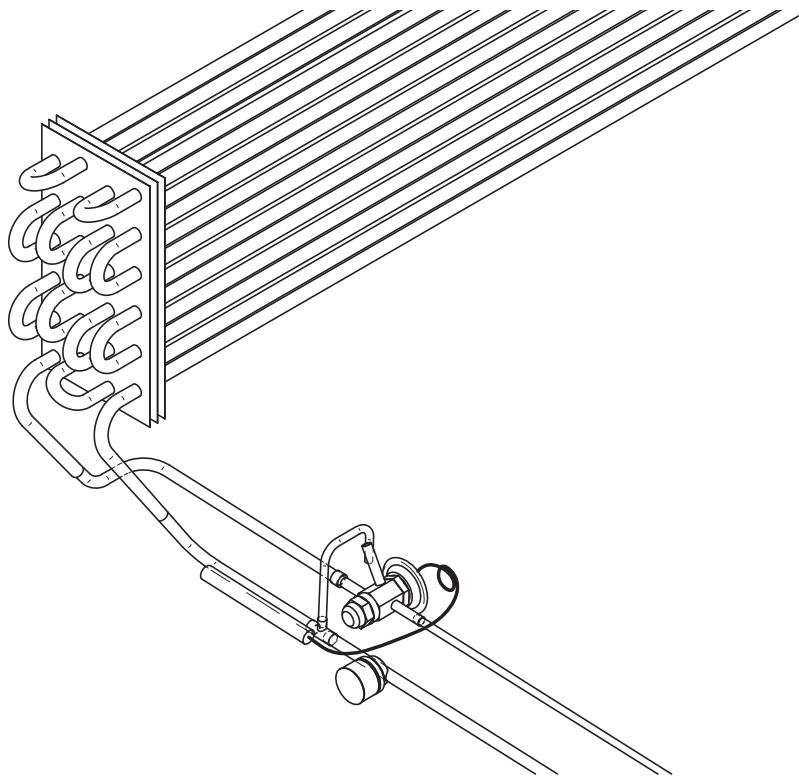


Figure 4. Gas Defrost Reverse Air Thermostat Location

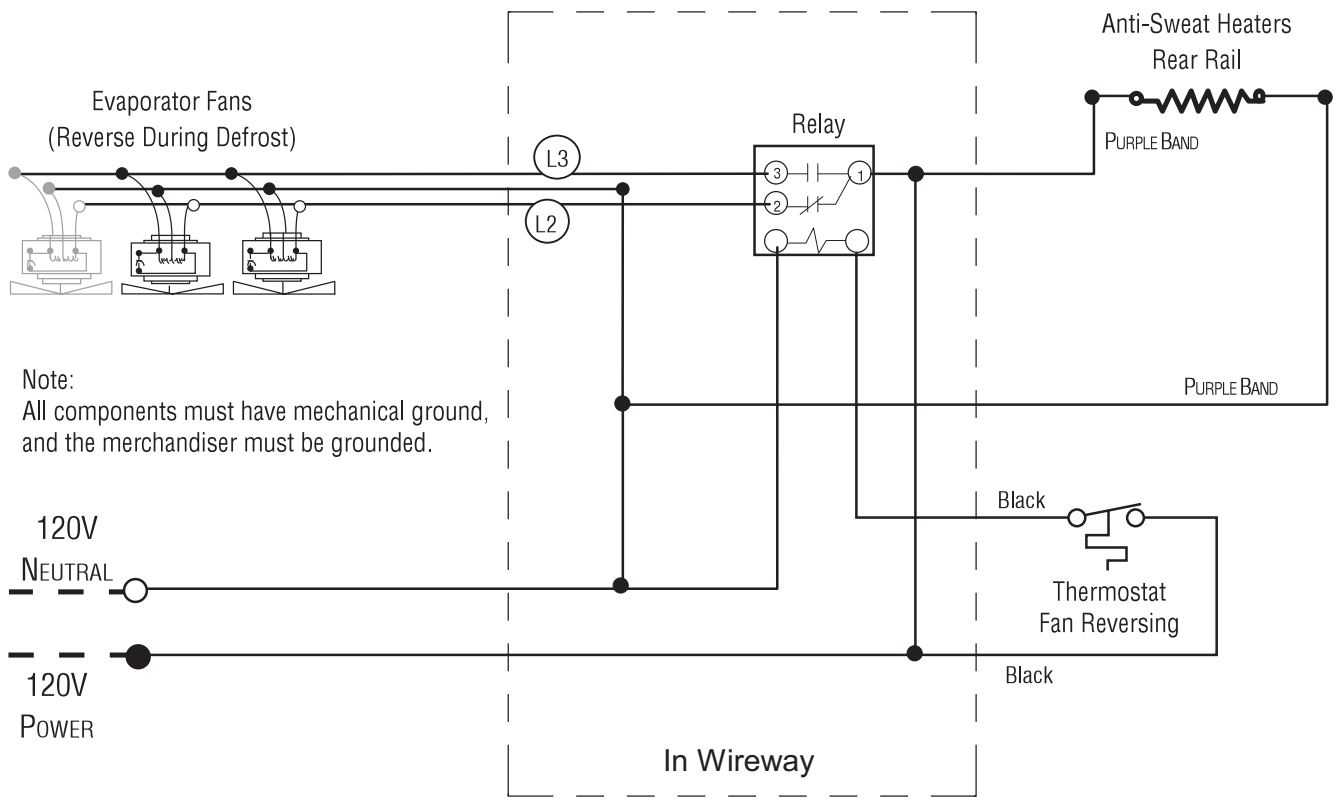


Figure 5. Gas Defrost Fan Wiring

REFRIGERATION

Refrigerant

The refrigerant type will be stamped on the serial plate of each merchandiser. Serial plates are located on the left-hand end of the interior front liner.

Control Settings and Adjustments

After all installation work has been completed and as soon as refrigeration has started, adjust the controls in the following sequence:

1. Remove the trip pins from the defrost timer dial and set the fail-safe to 40 minutes.
2. Set the suction pressure at the case close to the value recommended for the application by the Technical Data Sheet (TDS).
3. Set the temperature select switch for medium temperature operation. Remove the adjustment screw cover cap from the dual temperature EPR.
4. Measure the discharge air temperature. Adjust the EPR to produce the discharge air temp shown in the table for medium temperature operation.

5. Change the temperature select switch to low temperature operation. Verify the discharge air temperature with the table below.

NOTE:

REFER TO TDS FOR DEFROST TIMES AND SETTINGS FOR ELECTRIC AND GAS DEFROST.

| Refrigeration Control Settings | |
|---|--------------------------------------|
| Operating Mode | Discharge Air Temperature (1) |
| Medium Temperature | +17°F |
| Low Temperature | -12°F |
| (1) Measure discharge air temperature at the center of the discharge honeycomb in the center of the merchandiser. | |