30RA010-055
Minimum Load Control Accessory

Installation Instructions

Part No: 30RA-900---030

SAFETY CONSIDERATIONS

Installing, starting up, and servicing air-conditioning equipment can be hazardous due to system pressures, electrical components, and equipment location.

Only trained, qualified installers and service technicians should install, start up, and service this equipment.

When working on air-conditioning equipment, observe precautions in the literature and on tags, stickers, and labels attached to the equipment.

Follow all safety codes. Wear safety glasses and work gloves. Use care in handling equipment.

⚠ WARNING

Be sure power to equipment is shut off before performing maintenance or service. Lockout and safety-tag all disconnects.

GENERAL

This control accessory reduces 30RA chiller capacities below the standard lowest capacity step. This capacity reduction provides more precise control of leaving fluid temperature during light load conditions.

The Minimum Load Valve (MLV) limits the amount of refrigerant which can be bypassed from the condenser without impacting oil return.

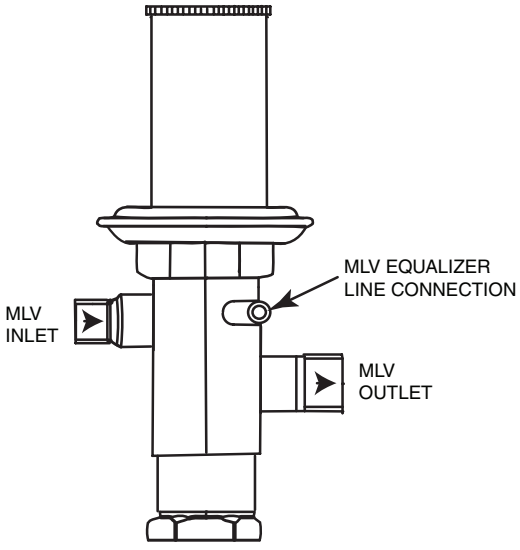

Fig. 1 — Minimum Load Valve (MLV) Connections

The 30RA032-055 units are equipped with two circuits; two accessory packages are required for these units.

INSTALLATION

Examine the valves for the correct part numbers. If the valves are damaged, file a claim with the shipping company and notify your Carrier representative.

This kit contains the following:

- Minimum load valve, part no. EA52DS421
  $^5/_8$-in. ODS (outside diameter, sweat) copper connection (see Fig. 1)
- → Solenoid valve, part no. EF23BS221
  $^5/_8$-in. ODS copper connection
- Installation instructions

The following material must be field supplied:

- Approximately 10 ft of $^5/_8$-in. OD copper tubing
- Approximately 5 ft of $^1/_4$-in. OD copper tubing
- Standard $^5/_8$-in. OD copper elbows
- Standard $^1/_4$-in. OD copper tee

Install the MLV and Solenoid Valve

1. Remove refrigerant charge from the circuits using an approved refrigerant recovery device before proceeding with this installation. Follow good piping practices.
2. Locate the factory-supplied liquid stub on the bottom refrigerant tube entering the cooler and the discharge stub on the bottom of the coil header. Also, locate the thermostatic expansion valve (TXV) equalizer line as it is needed for controlling the MLV. See Fig. 2.

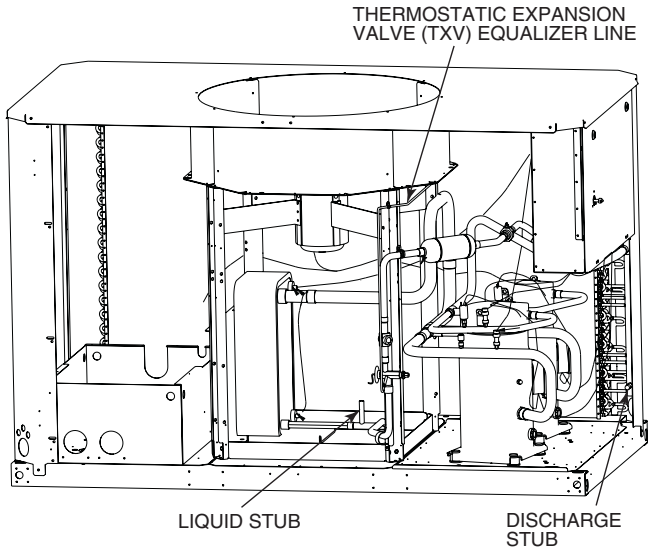

Fig. 2 — Base Unit Connection Locations

3. Install a $^5/_8$-in. copper elbow on the liquid stub and connect the MLV outlet directly on the elbow. Connect 4 to 6 in. of $^5/_8$-in. OD copper tube to the MLV inlet and then connect the solenoid valve to the end of that piping. In between the solenoid valve and the discharge stub, install the amount of $^5/_8$-in. OD copper tube and $^5/_8$-in. OD copper elbows necessary to connect the valve and stub together. The refrigerant flow will be coming from the discharge stub and into the liquid stub. See Fig. 1 and 2.

IMPORTANT: The MLV and solenoid valve are direction specific and must have their arrows (printed on valves) pointing toward the cooler. The lower connection (outlet) of the MLV must be connected to the elbow that is directly connected to the liquid stub. The narrow head end of the solenoid valve must be connected to the piping that is directly connected to the higher connection (inlet) of the MLV.

4. Connect the MLV equalizer line to the TXV equalizer line by cutting the TXV line and installing the $^1/_4$-in. copper tee to create a through connection. This continues the TXV line, while leaving the side connection open. Use this open connection to connect the MLV equalizer line using $^1/_4$-in. OD copper tubing. See Fig. 1 and 3.
5. When piping is completed, leak test the assembly. Then evacuate, dehydrate, and recharge the circuit using approved refrigeration practices. Be sure to use the correct type and amount of refrigerant listed in the nameplate data and base unit documentation.

The 30RA032-055 units are equipped with two circuits and thus, require two accessory packages. Use the second accessory package and repeat this process for the remaining circuit in these units.

Install Control Wiring

1. Locate the capped ends of the gray and brown wires on the unit wiring harness near the circuit A compressor contactors. These wires are labeled MLV-A for models 30RA010-030 and MLV-A and MLV-B for models 30RA032-055.
2. Cut off the capped ends, strip the wires back $^1/_2$-in., and wire the solenoid coil(s) to the MLV terminals. For dual circuit units (30RA032-055), wire the solenoid for circuit A to MLV-A and the solenoid for circuit B to MLV-B. See Fig. 4.

Configure Unit for Minimum Load Control — The control must be configured for the minimum load control operation. Use the Scrolling Marquee display to configure the system.

1. Set the Enable/Off/Remote switch to OFF position.
2. Press ESCAPE until the screen is blank and use the arrow key to select the Configuration mode LED.
3. Press ENTER , then use the arrow keys to select the sub-mode 'OPT1', then press the ENTER key.
4. Press the ▼ key until 'MLV.S' is displayed.
5. Press the ENTER key twice. The words 'PASS' and 'WORD' will flash.
6. Press 1 1 1 1, then the ENTER key so that 'NO' flashes.
7. Use ▼ ▲ to change to 'YES' and press ENTER.
8. Return the Enable/Off/Remote switch to the proper position.

The chiller is now configured for MLV control.

Test Minimum Load Relay Output — Use the Scrolling Marquee display, the instructions given in the Controls, Start-Up, Operation Service and Troubleshooting manual, and the Service Test mode to verify proper operation of the solenoid(s). Illuminate the Service Test LED, enable the Test mode using the 'TEST' sub-mode and enter the 'CMPA' or 'CMPB' sub-mode to test the output 'MLV' for each circuit.

NOTE: The K11 relay on the Main Base Board will be energized only when the lead compressor is on to energize the solenoid valve.

Once the outputs have been tested, the installation is complete.

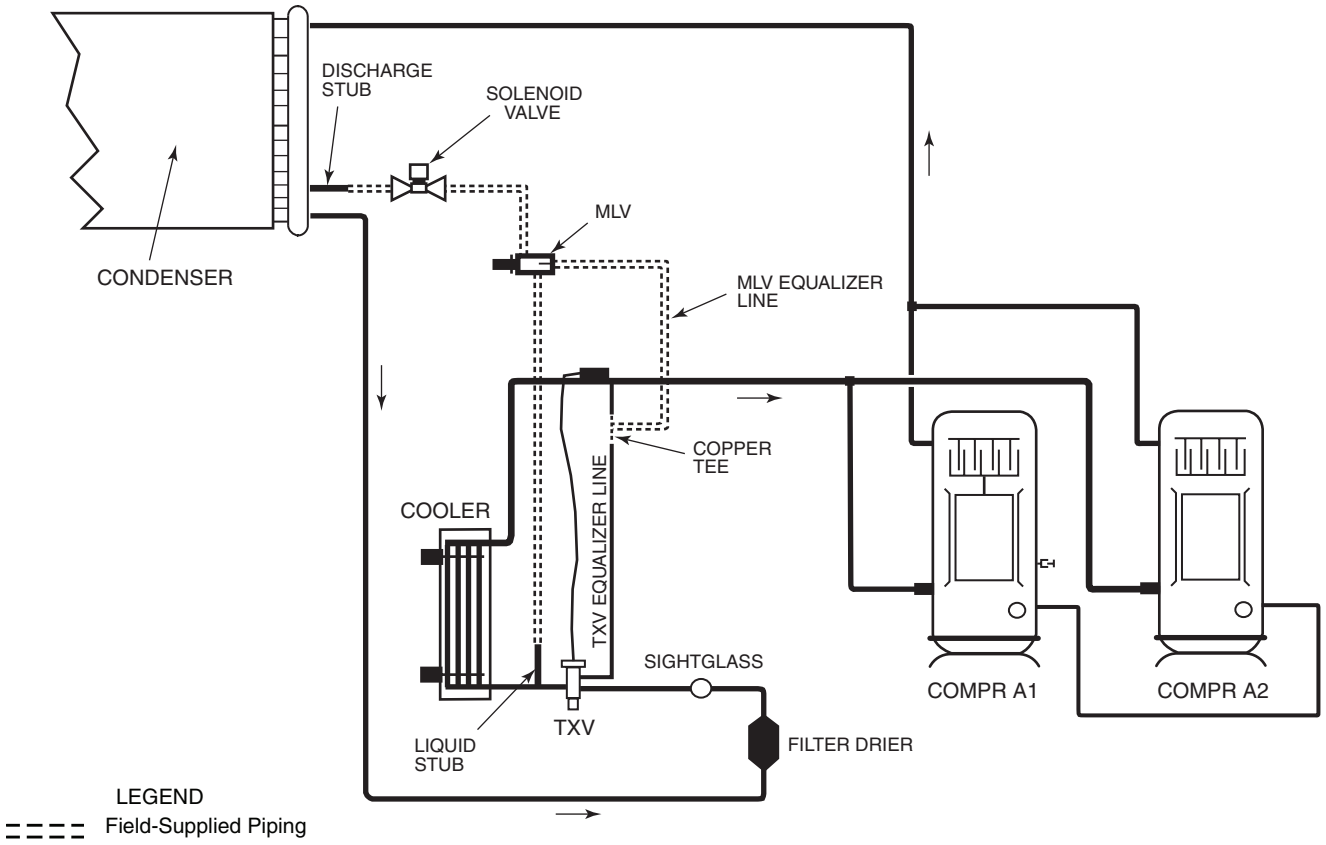

Fig. 3 — Minimum Load Valve (MLV) Installation Piping

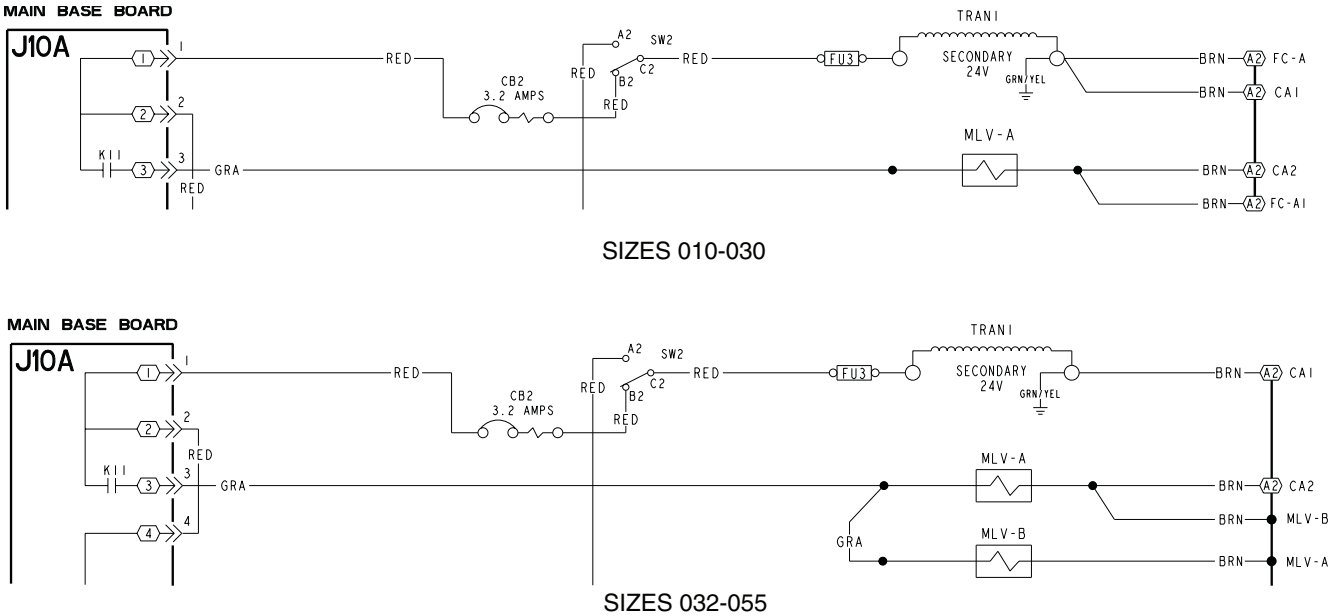

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Fig. 4 — Solenoid Valve(s) Wiring