

## **Topping Off The Refrigerant Charge**

**WARNING: The procedure described in this chapter requires a type 608 certification if performed in U.S. territory. Outside the U.S. other restrictions apply.**

If your system is well-installed and proper procedures are followed during extended shut-downs (see below), your system charge will only rarely need to be “topped up”. All “open” type (ie. non-hermetic) compressors, such as that used in your Glacier Bay system inevitably have a low level of refrigerant leakage (a small price to pay for their superior energy efficiency). Therefore, a system which needs to have the refrigerant charge “topped up” once every three to five years would be typical. More often than that and you will want to search your system for a bad solder or flare connection. *Note: Failing to isolate the compressor by shutting the rotolock valves (see “Winterizing and Extended Storage” below) during a system shut-down of 3 or more months will often cause a loss of refrigerant out the front seal of the compressor (see “About The Front Seal”)*

Refer to the “Charging The System” (page IM - 24 of the Installation Manual) for instructions on hooking up the gauge set and adding refrigerant to the system.

### Does Your System need To Be “Topped Up”

Identifying the correct charge level in your system is done by looking at the “sight glass”, NOT by pressure! The pressures (high and low side) will only change if the charge is severely over or under charged. A moderate loss of refrigerant (1-2 lbs) could be seen in the sight glass but would not change the pressures.

*Note: If your system incorporates the ARCTIC AIR air conditioning option, only use the sight glass while the holding plates (refrigerator or freezer) are cooling down. The system will often appear “undercharged” (according to the sight glass) when running the air conditioning blowers.*

Undercharged System - Your system is undercharged if either (a) flowing refrigerant is visible in the sight glass for more that 10 minutes after the compressor starts running during a normal “pull-down” cycle, or, (b) no refrigerant at all is visible in the sight glass (ie “100% empty” - this only applies if absolutely no cooling is taking place).

Correctly Charged System - Your system is correctly charged if (a) flowing refrigerant is visible in the sight glass less than 10 minutes after the compressor starts running then “clears” (ie completely fills up) during a normal “pull-down” cycle, or, (b) no refrigerant at all is visible in the sight glass at any time while the compressor is running (ie “100% full” - this only applies if the system IS NOT tripping the high-pressure cut-out switch - otherwise see “overcharged”).

Overcharged System - Your system is overcharged if no refrigerant at all is visible in the sight glass at any time while the compressor is running (ie “100% full”) and the system IS tripping the high-pressure cut-out switch.

*Note: Always use a flashlight when looking at the sight glass. Flowing refrigerant is clear in color and can be very hard to see. A 100% “full” and 100% “empty” sight glass looks identical - even to professionals. If no refrigerant can be seen flowing through the sight glass (ie. completely clear) and there is any cooling at all occurring, then the glass is 100% “full”.*

## **Winterizing And Extended Storage**

To ensure a trouble-free startup in the Spring, two special precautions should be taken whenever shutting your system down for the winter or any period exceeding 3 months. These are:

### Prepare the cooling water circuit

Thoroughly drain any cooling water remaining in the water pump and the condenser. This is often most easily accomplished by shutting off the sea cock(s) and removing the hose from the pump and the bottom of the condenser. If possible, it is also a good idea to rinse the entire water circuit out with fresh water. This is also a good time to clean the condenser and inspect the zinc.

### Isolate the Refrigerant Charge

TURN THE MAIN CIRCUIT BREAKER OFF. Tightly close (ie. “front seat”) both compressor rotolock valves. The idea here is to isolate the refrigerant charge into various portions of the system to prevent total loss of the refrigerant in the event of a leak. Such leaks may often occur at the compressor crankshaft seal when the system is not run for several months. *Be sure to put a RED LABEL on the main circuit breaker to remind everyone that the valves MUST be open prior to starting the compressor. Failure to open the valves before starting the compressor can cause serious damage to the internal compressor valves and connecting rods.*