RETROFIT PROCEDURE TO REPLACE R404A OR R507

Replacing R404A or R507 with RS-50 essentially will follow the procedure specified by the equipment manufacturer for a refrigerant change. Since RS-50 is zeotropic it is very important that liquid refrigerant, not vapour, be removed from the container and added to the system.

1. Ensure the right equipment is available, eg recovery unit and cylinders, container for recovered lubricant, vacuum pump, weighing scales, replacement drier etc.
2. Before removing the R404A or R507A, operate the unit under standard operating conditions and record the pressures, temperatures and any other relevant measurable data to establish unit performance. Typically, the appropriate standard conditions for setting up the unit will have already been specified by the equipment supplier.
3. Recover and weigh the R404A or R507A from the unit. The weight should be within the range specified by equipment manufacturer.
4. Replace the filter/drier and evacuate the system.
5. As in the case of R404A and R507, RS-50 should be used with a polyol ester lubricant.
6. Before operating the unit, charge the unit with liquid RS-50. The weight added at this stage should be approximately 10% lower than the R404A or R507 charge specified by the equipment manufacturer.
7. Operate the unit under conditions similar to those used in Step 2, closely watching the liquid line sight glass, the compressor oil level sight glass and the suction superheat.
8. RS-50 has a lower liquid flow rate than R404A and R507, so that it may be necessary to replace the expansion device with a valve approximately 40% smaller.
9. The evaporator superheat should be checked and changed as necessary by adjusting the TX valve.
10. If the equipment manufacturer recommends charging R404A or R507 by evaporator superheat or liquid sub-cooling, use the same amount of superheat or sub-cooling for RS-50

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11. If a liquid line sight-glass is fitted, charge to a full glass gradually adding more liquid RS-50 until only liquid is passing through the expansion valve. Do not overcharge the system.
12. Adjust the expansion device superheat setting as required.
13. Check system thoroughly for leaks.
14. Remove all R404A or R507A labels and clearly label system RS-50.

Warning: It is highly recommended that the thermostatic expansion valve be checked and adjusted to compensate for small differences in the pressure temperature relationship of the replacement refrigerant when compared to the original refrigerant. Failure to check and adjust the valve could allow liquid refrigerant to enter the compressor and damage bearings and other compressor components.

RS SERIES OF REFRIGERANTS PRESSURE/TEMPERATURE CHARTS

RS Series Pressure/Temperature charts indicate both liquid bubble point and vapour dew point of the RS Series Refrigerant.

Liquid Bubble Point

this is the temperature which the liquid refrigerant will begin to vaporize at the given pressure. Below this temperature the liquid refrigerant will be sub-cooled.

Vapour Dew Point

this is the temperature at which refrigerant vapour will begin to condense at the given pressure. Above this temperature the refrigerant vapour will be superheated.

Evaporator Vapour Superheat

To determine evaporator superheat, measure the suction line temperature at the outlet pipe of the evaporator and measure the suction pressure at the outlet pipe of the evaporator. Using the Pressure/Temperature chart, determine the vapour dew point for the measured suction pressure. Subtract the determined dew point from the actual temperature and this difference is the evaporator superheat.

Condenser Liquid Sub-Cooling

To determine condenser sub-cooling, measure the temperature of the outlet pipe of the condenser and measure the condenser pressure at the outlet pipe of the condenser. Using the Pressure/Temperature chart, determine the liquid bubble point for the measured condenser pressure. Subtract the measured temperature from the determined bubble point and this difference is the condenser liquid sub-cooling.

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