In this condition, caution should be exercised to avoid breathing in acid vapors - also, avoid skin contact with the contaminated liquid.

2. Thoroughly clean and replace all system controls such as Thermo valves, solenoids, check valves, reversing valves, etc. Remove all strainers and filter-driers.

3. Install replacement compressor and make a complete electrical check

4. Make sure that the suction line adjacent to the compressor is clean. Install an over-sized liquid line filter-drier and a suction line filter-drier.

5. Pressure and leak-test the system according to unit manufacturer's recommendations.

6. Triple evacuate to at least 500 microns.Break the vacuum with clean, dry refrigerant at 0psig.

7. Charge the system through an EK filter-drier to equipment manufacturer's recommendations.

8. Start the compressor and put the system in operation. Record the pressure drop across the suction line filter-drier on the enclosed label and apply label to the side of the shell.

9. Replace the suction line filter-drier if the pressure drop becomes excessive.

10. Observe the system during the first 4 hours.Repeat step 9 as often as required, until no further change in pressure drop is observed.

11. After the system has been in operation for 48 hours, check the condition of the oil with the Acid Alert test kit. If the oil test indicates an acid condition, replace both the liquid and suction line filter-drier.

12. Check the system again after approximately 2 weeks of operation.If the oil is still discoloured, replace the liquid and suction line filter-drier.

13. Clean-up is completed when the oil is clean and odor-free, and is determined to be acceptable with the Acid Alert test kit.

System Protectors

Fundamentals of the system protectors

Liquid line and suction line filter-driers are often referred to as system protectors because they remove harmful elements from the circulating refrigerant before serious damage results.

Keeping the system clean and free of foreign contaminants that can restrict the operation of valves, block capillary tubes or damage compressors is the best way to assure trouble-free operation. These contaminants can be solids, such as metal filings, flux, dust and dirt. Other equally menacing contaminants are solubles, such as acid, water, resins and wax.

No matter how many precautions are taken during assembly and installation or servicing of a system, contaminants can find a way into the system. Filter-driers are designed to protect a system during operation. It is the function of this all important unit to remove those residual elements that can attack and eventually destroy the system components. All of the liquid line filter-driers on the market today are a variation of one of two types:the molded block type or the bead type.

A. The block style filter-drier is manufactured by mixing the drying elements, which remove the soluble contaminants, with a suitable bonding element.This mixture is then poured into molds and finally placed in ovens where the blocks take a permanent form and the drying ingredients are activated.

B. The bead style filter-driers uses a less complicated manufacturing process, so there is less chance of error.The active drying material is in the form of beads or pellets. No bonding material is used to hold the beads together, but rather compacting is normally performed through some type of mechanical pressure. On the upstream side of the compacted beads is a filter network which cushions flow and traps the solid contaminants.

Filter-driers protect the refrigerant system from liquid and solid contaminants. They incorporate various desiccants for maximum moisture and acid removal and a special compound to prevent wax build-up.

Certain characteristics of system protectors must be understood in order to make the proper selection. When performing service work on a refrigeration system in the field it is next to impossible to determine the quantity or type of contamination which may be in the system. For this reason it is good practice to select the largest size filter-drier which fits the available space and economical considerations.

Filtration capacity

Solid particles or semi-solids such as sludges circulating in a refrigerant system can destroy valve seats, plug control valves, and score cylinder walls or compressor bearings.These contaminants can be the result of manufacturing, servicing, or can be generated during normal system operation. Of prime importance, is removing these contaminants as quickly as possible and preventing them fr om returning to the system. All filter-driers are designed to trap and hold large quantities of these contaminants while maintaining acceptable flow rates during their service life.

Moisture capability

Moisture in a refrigerant system can mean frozen valves, copper plating, damaged motor insulation, corrosion, and resulting sludges.Filter-driers accomplish the task of removing and retaining moisture through the use of one or more desiccants.The most popular and effective desiccant in use today for the removal of moisture is a molecular sieve which can hold three to four times the water of the other commercial absorbents.Moisture capacity of a filter-drier is normally given in drops of water per ARI Standard 710. These rated capacities are in addition to any residual moisture that might be absorbed during manufacturing.

Acid pick-up capability

Various organic acids result during the decomposition of the refrigerant and oil in a system. This decomposition can be the result of moisture in the system, excessive temperature, air, or exposure to foreign substances in the system.It is important that acid in a system is absorbed as soon as it is formed to prevent the acid from causing system damage. Activated alumina is the most popular of the desiccants used to remove acid.

Wax removals

The ability of a filter-drier to remove wax and resins is of major importance in low temperature applications that use R22.Wax when present in a system has a tendency to solidify on valve seats and pins, resulting in system malfunctions.

Clean-up procedure for compressor motor burnout

1. Determine the extent of the burnout.For mild burnouts where contamination has not spread through the system it may be economical to save the refrigerant charge, if the system has service valves on the compressor. A severe burnout exists if the oil is discoloured, and acid odor is present, and contamination products are found on the high and low side.