

NAPA AUTOMOTIVE CAREER TRAINING

Passenger Comfort - Air Conditioning - Continued

Filter-Drier

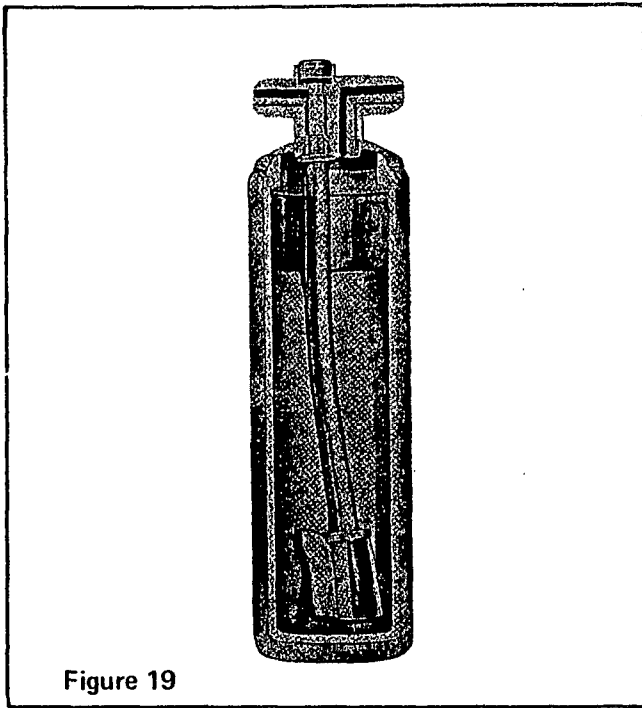


Figure 19

After the liquid Freon leaves the condenser, it flows to the receiver-drier under pressure. Because of variations in heat or humidity, extra refrigerant must be stored until needed by the system. The filter-drier (Figure 19) acts as a storage tank (receiver) to serve this function.

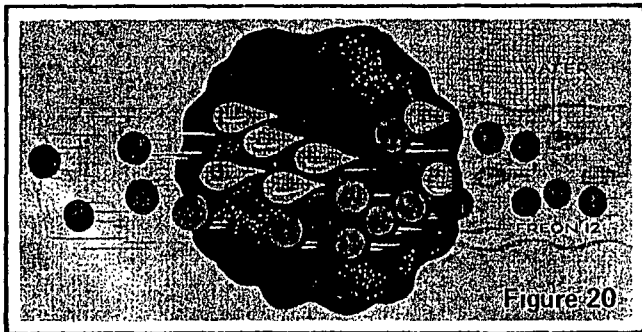


Figure 20

Moisture which is constantly entering the system through hoses, seals, etc., is the Number One enemy of an air conditioner. This moisture must be removed from the refrigerant. The "drying" action (Figure 20) is accomplished by forcing the refrigerant through a network of dessicant, which is a solid substance capable of removing moisture from the refrigerant. The dessicant in each filter-drier has a definite capacity, usually 82 drops of water. When this capacity is reached, water will seep into the system, possibly causing a stoppage at the expansion valve and, in time, will ruin the compressor.

Another function of the filter-drier is to filter any solids from the refrigerant. As the refrigerant flows to the pick-up tube inside the drier, it passes through a filter screen, which traps any solid matter inside the unit and prevents its escape back into the system. **IMPORTANT!!** If either the drying or filtering action becomes ineffective, the unit must be removed and replaced. The filter-drier should be replaced every three years or when major repairs, such as a hose replacement, shaft seal, etc., are made on the unit. There is no way of checking how much moisture has accumulated in a filter-drier, so periodic replacements must be made to insure that this unit performs its job of protecting the system.

Expansion Valve

The expansion valve (Figure 21) is the "carburetor" of the air conditioning system. It is the primary control valve of the system. Liquid Freon, under pressure, is sprayed into the evaporator chamber through this valve.

When the evaporator gets too cold, the valve will close. When the evaporator needs more Freon, the expansion valve will open—automatically.

A sealed Freon-filled sensing bulb (Figures 21-A and 22-A) is part of the expansion valve. The Freon in this bulb will respond to a rise in temperature by expanding and allowing the valve to open. When it gets too cold, the Freon contracts and allows the valve to close.

There are two types of expansion valves. Externally equalized valves (Figure 22) sense evaporator pressure through an equalizer line. (Figure 22-B) This line fastens into an outlet on the evaporator. Internally equalized valves (Figure 21) have no equalizer line and sense evaporator pressure directly through the evaporator connection. (Figure 21-C)

In actual operation, the expansion valve continually opens and closes in response to evaporator pressure and the sensing bulb, keeping the evaporator from freezing.

This is a fully automatic valve which is pre-set at the factory and cannot be adjusted or repaired. The entire valve must be replaced. The expansion valve fails by losing its sealed Freon charge or by clogging. The sensing tube must be in intimate contact with the evaporator outlet (like an electrical connection) for satisfactory performance.