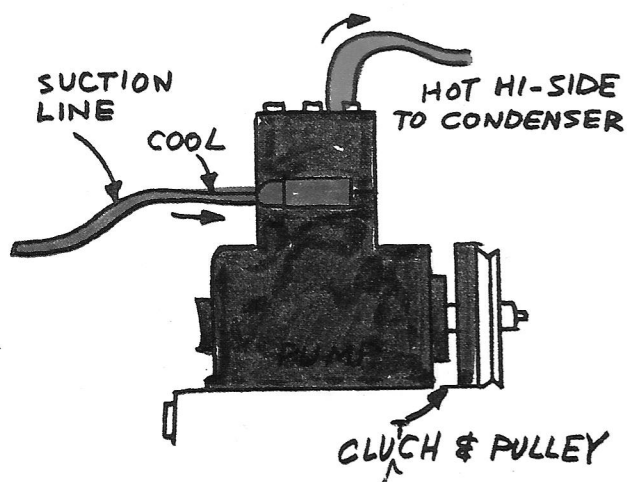


in your drum. Now you are ready to charge the unit. Start the engine and turn on the air conditioner switch. The minute you switch on the air conditioning, the unit clutch will engage, and the pump will start to pump. You will note that the low-side gauge will start to come down and the high-side will start to go up. All right, now give it a big slug of gas by opening your low side valve on your manifold; the drum valve is already open. As soon as you give the unit enough gas to form some liquid in the condenser, this liquid will start to feed through the liquid line to the expansion valve; and you will notice some heat in the high side line; and the sight glass may start to show some activity. By shutting off your charging manifold once in awhile, you will note a steady rise in the low-side operating pressure. Now you are ready to keep a careful watch on the suction line coming back to the compressor. The moment this line flashes cold or begins to cool off, you can say that there is a bare minimum charge in the system. At least you know that there is expansion (refrigeration) taking place in the evaporator, or it would never have a cool suction line. See **Figure 10-14**.

With a cool suction line and a hot discharge line out of the compressor, you know you have refrigeration going on. At this point you can now make a decision as to how much gas you will put in, over and beyond this minimum charge. First set a pedestal fan in front of the radiator. The auto fan blade does not move enough air when the car is not moving. If you are in doubt as to whether you have too much or not, then keep a sharpeye on your high-side gauge and see if it suddenly goes very high. Also watch your sight glass very closely. For



(Fig. 10-14)

instance, if it were running along with a head pressure of about 150 psi, and you gave the unit a shot of gas, and the head pressure jumped to 200, or even 300, then you know you have added too much gas. There is no need to panic, but shut down immediately or something may blow out. Now, bleed off that last shot you gave it; and you know you are fully charged when the gauge pressure on the high-side comes back to the steady normal operating pressure that you had with a minimum charge. Say about 150 psi, and the sight glass is clear. You are ready now to backseat and disconnect your gauges, put the cap and covers back on the valves, and you are finished. (Some older cars still have service valves.) You may have to tighten the belt on the unit. Remember these belts run fairly tight.

Here is some extra service you can give the customer. If the seal were leaking, then it undoubtedly leaked out some of the compressor oil. Add some oil. Use 300 viscosity refrigeration compressor oil or what is recommended by the factory. Do not use motor oil. Be generous with the oil. Most automobile air conditioner pumps are reciprocating, and they will take oil very nicely. Here is the procedure for adding oil to an auto compressor: Close the suction line service valve on the pump by front-seating until nothing can get into the pump from the evaporator. Run the pump and pull a vacuum on your low-side manifold. Now place the charging line in a can of oil. Now crack the manifold gauge valve and let the vacuum in the pump suck in its oil. You may want to purchase a hand-type pump from your nearest supply house. It will pump the oil in even under pressure. About a pint of oil is as much as should be added to the average auto unit.

See the steps in **Figure 10-15**.

Now one word of caution. You have been taught that you can use oil generously in a reciprocating pump. Now where cylindrical type compressors are used on General Motors autos (not all GM cars), you will not add oil unless it is absolutely necessary, and it would be advisable to let the pump be a little short on oil rather than add oil. This GM type compressor that I am referring to looks very much like an automobile generator. It is round and built like a cylinder, not like a piston-type pump.

Charging automobile units is easy work and simple if you take your time, and do not hurry. You can do a good job by just following the instructions in this lesson. There is one factor that must be considered when you are charging an auto unit. You must keep in mind that the design of the unit called for the auto to be