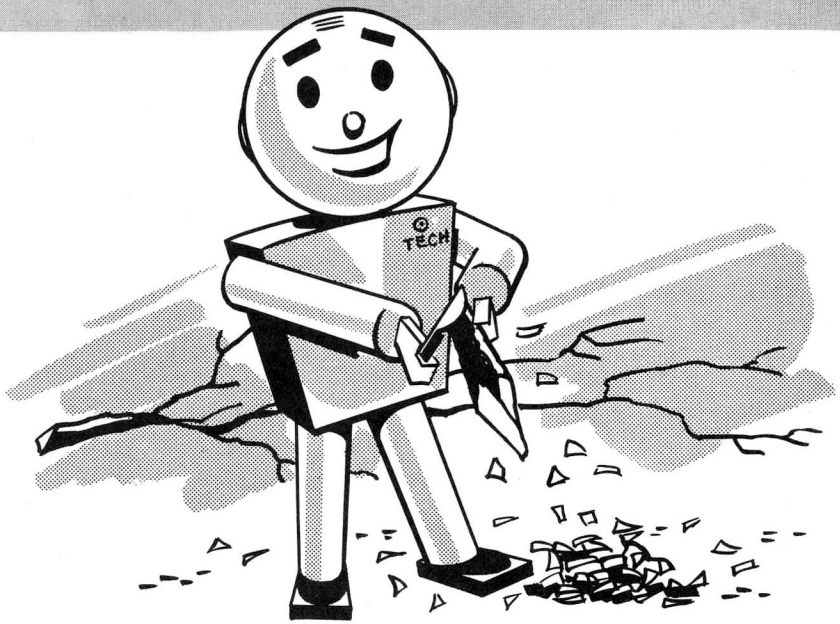
Tech says:

"SHARPEN UP YOUR AIR-CONDITIONING SERVICE SKILL"



A growing number of car owners want to enjoy comfortably cool driving. Actually, ever since air conditioning was introduced, its popularity has been steadily on the uptake. An even *greater number* of customers are lining up for units this year!

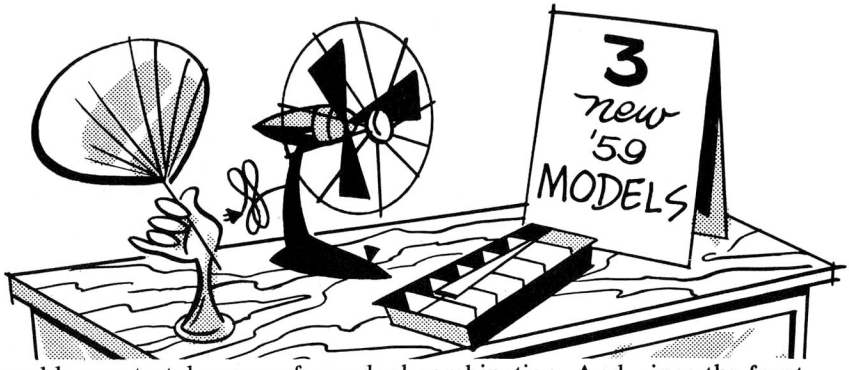
This means that the demand for air-conditioning service is also increasing. So more technicians will have to polish up their skills and get up-to-date on changes and improvements in the 1959 systems.

This reference book, then, is timely. It covers what's new and spells out maintenance, test, and diagnostic information to help you see that each unit delivers in the way it is designed to perform.

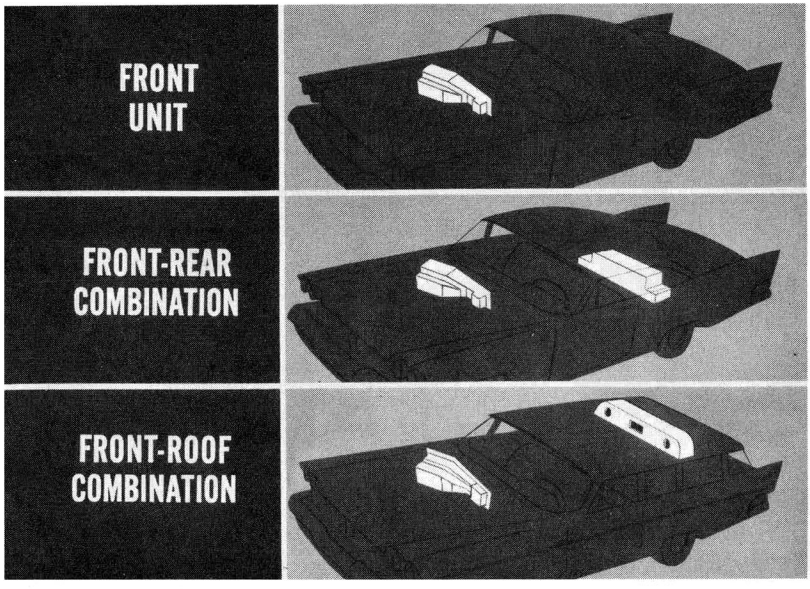
Here's where to look for this useful advice:

1959 AIR-CONDITIONING SYSTEMS

Three types of air-conditioning installations are available for the 1959 models: first, there's the front unit alone; second, there's a dual setup that combines the front with a rear-mounted unit to insure equal distribution of conditioned air to front- and rear-seat passengers; third, there's a combination of the front and a roof-mounted unit for suburban body styles. Knowing how to test and service the front unit will



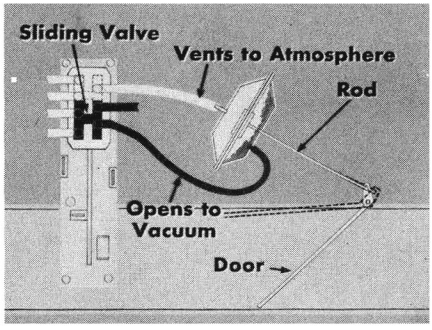
enable you to take care of any dual combination. And, since the front unit is the *basic* factory-installed arrangement, you'll find that installation featured on these pages.



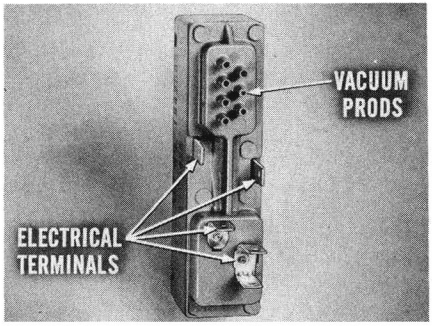
Operation

Operation of all units is much simpler because of the new system of push-button-controlled vacuum actuators. These actuators operate doors and a damper to direct air flow to suit any owner's personal cooling requirements.

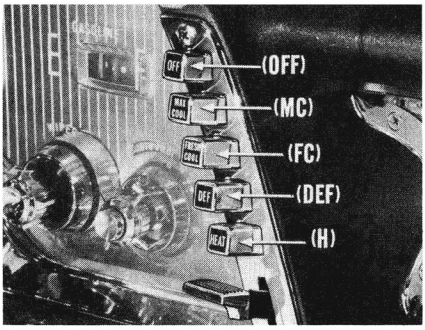
The push button causes a sliding valve to vent one chamber of the actuator to atmosphere, and open the other chamber to engine vacuum. As a result, the actuator opens or closes a door or damper.



Push buttons also control electrical circuits to the magnetic clutch of the compressor and to the blower switch. In the end of the temperature control lever, there's a switch for the electric blower motor control. On early production units, you'll find a two-position switch. For low blower speed, you push the knob *in*. For high-speed blower operation, you pull the knob *out*.



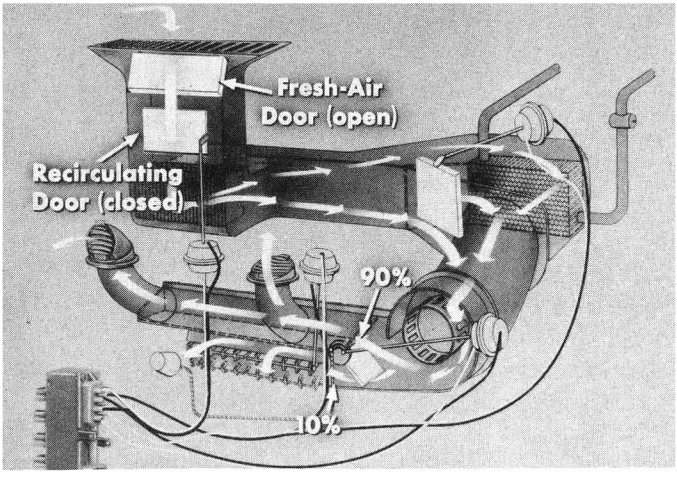
On later units, a three-position switch will be available. Pulling the knob out will provide high-speed blower operation. Pushing it halfway in will provide an intermediate speed that corresponds to the low-speed setting on two-position switches. Pushing the knob all the way in will result in an even lower speed. This new low setting will assist "ram" air flow, and is exceptionally quiet in operation. Owners can use the third position during highway driving when normal blower speeds aren't needed. They can also use it during heavy traffic conditions when air circulation is desirable without audible blower noise.



Push Buttons. As a reminder, the button marked "MC" is pushed when maximum cooling is desired. "FC" supplies fresh-air cooling. "DEF" provides defrosting, "H" is the heater button, and "OFF" turns the unit off.

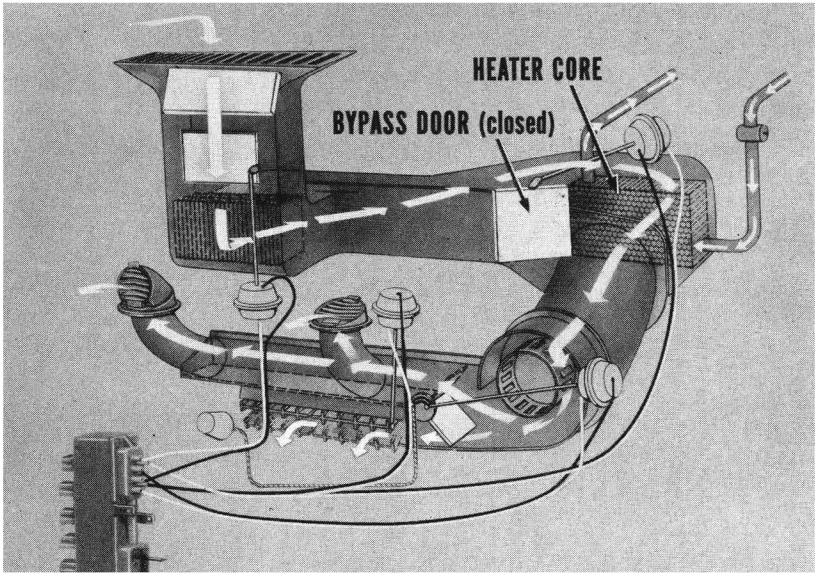
Air Flow—Maximum Cooling. As an example of the flow of air through the unit, here's what happens when an owner wants maximum cooling. In this setting, the temperature control lever is first moved to "OFF". Next, the "MC" button is pushed in. Third, the blower knob is pulled out for high speed. This *closes* the *fresh-air door* and *opens* the *recirculating* door. Air inside the car is then conditioned, but no fresh air will be drawn in from the outside.

If the distribution duct damper is set for normal distribution, about 90% of the air will discharge through the two instrument panel outlets. About 10% of the air will come from the floor outlets.



Air Flow—Fresh-Air Cooling. When the "FC" button is pushed in, the *fresh-air door* is *opened,* the *recirculating door* is *closed.* This pulls fresh air in, conditions it, and discharges it from the panel and floor outlets in the same 90%-10% amounts you get in the maximum cooling setting.

Temperature Control. Moving the control lever in its slot regulates air temperature by controlling hot water circulation through the heater core. About 75% of the air drawn in bypasses the core. The 25% going through the core is heated and mixes with the bypassed air in the distribution duct.

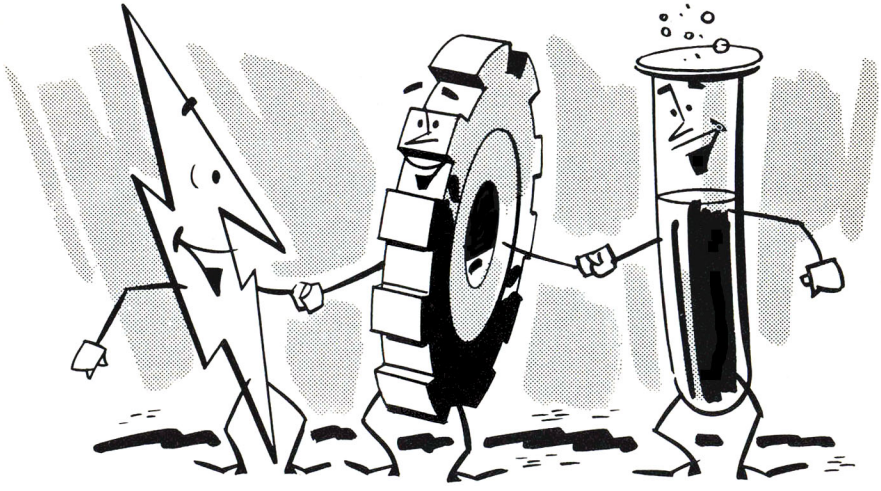


Air Flow—Defrosting. When defrosting operation is desired, you slide the control lever toward the "WARMER" end of the slot, and push the "DEF" (defrost) button in. This closes the heater bypass door. *All* outside air entering the opened fresh-air door is then directed through the heater core. Most of the heated air is discharged through the panel outlets to keep the windshield clear.

You can ventilate the car when you want to without heating or cooling the air. You do this by pushing in either the defrost or heat buttons, and by moving the temperature control lever to "OFF". In this case, all air is directed through the heater core. But since there is no hot water in the core, *unheated,* fresh air enters the car.

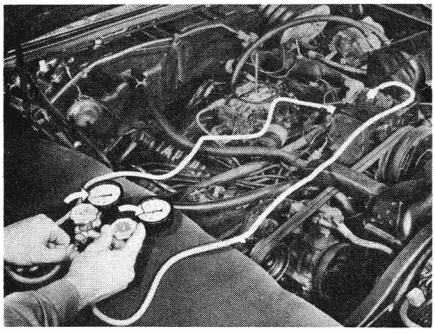
TESTING PERFORMANCE OF THE SYSTEM

To get a car equipped with air conditioning ready for delivery, or to diagnose any malfunction of the air-conditioning system, it pays to make an over-all operation and performance test. This brings into play all mechanical, electrical, and chemical conditions involved. When a unit passes such a performance test, you'll know that it will be satisfactory to the owner.



NOTE: Make this test only when room temperature is 75° F. or higher. Testing the system in a room colder than 75° F. will only give you a false picture of what the system can do.

To start the test, install the manifold gauge set, hoses and all (C-3627, C-3644, C-3645), along with a tachometer. Open the discharge and suction service valve stems two turns clockwise from their back-seated positions. Momentarily, open and close the gauge manifold valves alternately. That will purge air from the hoses between the compressor and manifold. Next, read the pressures on the gauges. If the car has been parked inside long enough for all parts to reach room temperature, the pressures registered on the gauges will agree with those shown in the following table.



TEMPERATURE-PRESSURE RELATION CHART (FOR REFRIGERANT 12)

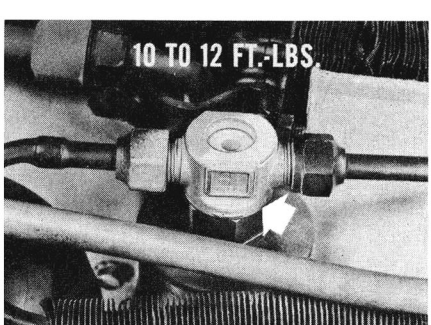
Temp. F.	Refr. Press.	Temp. F.	Refr. Press.	Temp. F.	Refr. Press.	Temp. F.	Refr. Press.
60	57.7	75	76.9	90	99.6	105	126.2
61	58.9	76	78.3	91	101.3	106	128.1
62	60.0	77	79.2	92	103.0	107	130.0
63	61.3	78	81.1	93	104.6	108	132.1
64	62.5	79	83.5	94	106.3	109	135.1
65	63.7	80	84.0	95	108.1	110	136.0
66	64.9	81	85.5	96	109.8	111	138.0
67	66.2	82	87.0	97	111.5	112	140.1
68	67.5	83	88.5	98	113.3	113	142.1
69	68.8	84	90.1	99	115.1	114	144.2
70	70.1	85	91.7	100	116.9	115	146.3
71	71.4	86	93.2	101	118.8	116	148.4
72	72.8	87	94.8	102	120.6	117	151.2
73	74.2	88	96.4	103	122.4	118	152.7
74	75.5	89	98.0	104	124.3	119	154.9

No Pressure. No pressure at all means the system's empty because of a leak. In a case like this, evacuate the system, put in a sweep-test charge, find the leak and correct it. After that, purge the test charge and replace the drier. Then, evacuate and charge the system with the proper amount of Refrigerant 12 according to the table below:

INSTALLATIONS	REFRIGERANT CAPACITIES
Front Unit Only	**2¾ to 3 lbs. (3 Cans)**
Rear Unit Only	**3¼ to 3½ lbs. (3 Cans and 8 to 11 oz.)**
Dual Front and Rear Units	**3¾ to 4 lbs. (4 Cans)**
Dual Front and Roof Units	**3¾ to 4 lbs. (4 Cans)**

WARNING: When breaking any connection, or charging the system with refrigerant, wear safety goggles (C-3355) to protect your eyes.

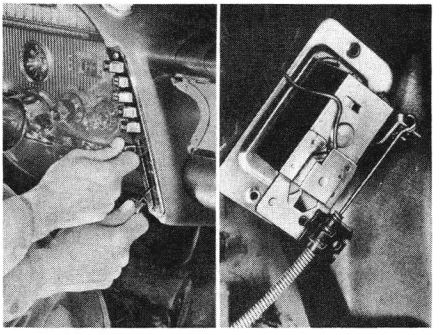
NOTE: You'll find it pays to keep a squirt or pressure-type oil can filled with refrigerant oil on hand. You'll need it if you have to replace a piece of tubing or hose. The threads of both connections, for example, should be lubricated—especially the turning surface of the female nut.



Always use new copper gaskets when you reconnect brass to steel, or steel to steel connections. And when you replace the receiver-drier, be sure to use the new gasket that comes with the drier. Torque the new drier-to-dry-eye connection 10 to 12 foot-pounds maximum.

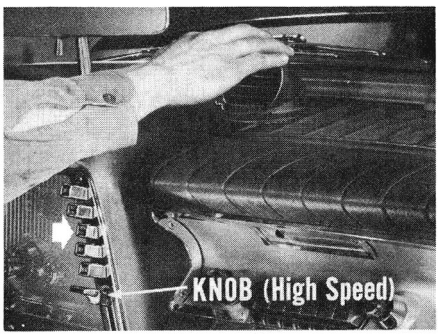
NOTE: Make sure the arrow on the dry eye points toward the evaporator connection. On cars with sub-coolers, the arrow should point toward the sub-cooler connection.

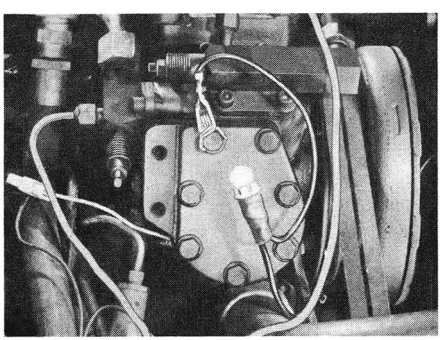
Pressures Normal. If you find that pressures are normal for the temperature, check the operation of the temperature control lever and the temperature control valve (water valve). Move the lever to extreme "WARM" and back to "OFF" positions in the slot. The control lever must travel the full length of the slot. The hot water valve lever must be moved its full travel by the control cable, or the valve won't close or open fully. You can feel valve action as you move the control lever. If the hot water valve doesn't close completely, readjust the control cable housing.



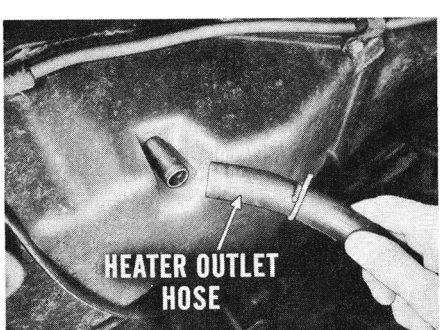
Water valves on Plymouth, Dodge, De Soto and Chrysler work the same way. The valve used on the Imperial works just the opposite—push to open, and pull to close.

Blower Speed. You are now ready to run the system. So, first remove the radiator cap, open the car windows, and move the temperature control lever to its "OFF" position. Start the engine and run it at 1250 r.p.m. Push in the "FC" button and pull the blower knob out to get high-speed operation. If the blower doesn't work, or doesn't operate at high speed, check the blower electric circuit to locate and correct the cause.





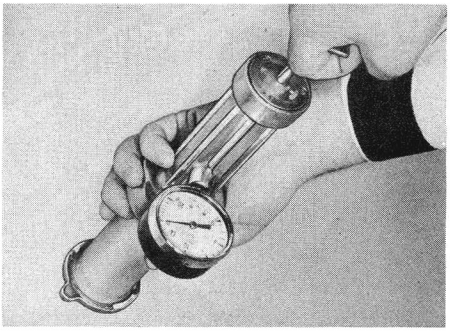
The compressor clutch should be engaged and the system should be working. If the clutch didn't engage, you'd have to use a test light to check out the compressor clutch circuit. Check contact of the brushes at the clutch, and replace worn brushes.



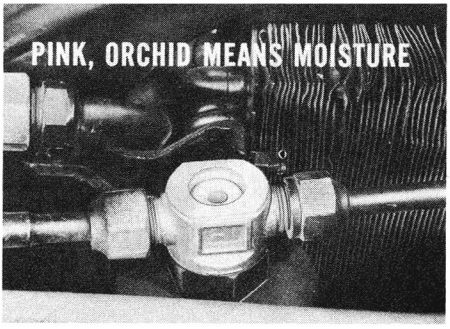
Temperature Control Valve Check. Even though the temperature control valve seems to be properly operated by the cable, it is well to check the valve itself. Momentarily, disconnect the heater outlet hose at the top of the heater housing. If there is just a small amount of water, but no continuous flow, the valve is closing properly. A continuous flow, on the other hand, means that the control cable is improperly adjusted, or

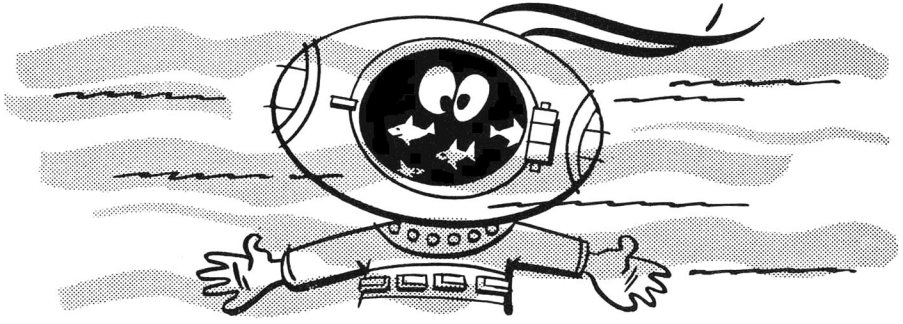
the water valve is faulty. Readjust the control cable. If the valve still won't close completely, replace the valve.

Radiator Pressure Cap. Before you reinstall the radiator cap, test its relief pressure, using Tool No. C-3499. It must hold between fifteen and sixteen pounds pressure. If it doesn't, replace it with one that will. The correct cap is Part No. 1686107, and has the numeral "16" stamped in the ear of the cap. Replace the radiator cap and run the system for about 15 minutes.

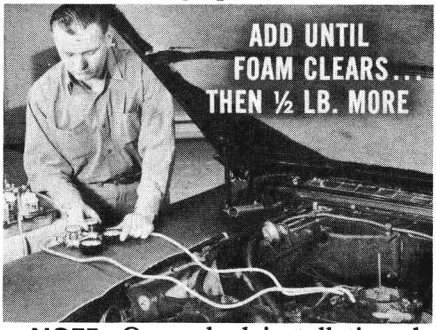


Then check the dry eye for color. If it is *blue,* the system is free from moisture. Pink, or an orchid color means moisture is present. This, of course, will call for purging the refrigerant, replacing the receiver-drier, and recharging the system.





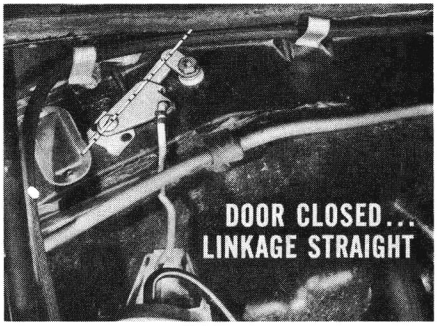
Sight Glass. Block the air flow across the condenser to boost discharge pressure to between 225 and 250 psi. Then, check the sight glass for foam. If the sight glass has no foam, unblock the condenser and let discharge pressure return to normal.



If you notice foam, it means the system is low on refrigerant. In this case, maintain discharge pressure at 225 to 250 psi and add refrigerant gas through the suction side until the foam clears. Then add exactly ½ pound more.

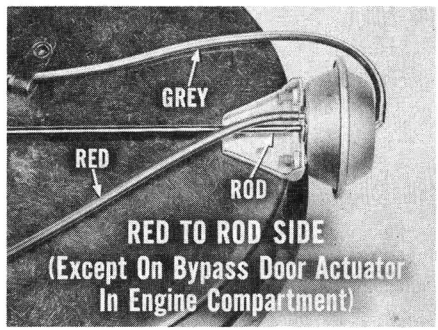
NOTE: On a dual installation, both blowers would have to be on high speed during the test, and also during the charging. Remember to unblock the condenser so discharge pressure can get back to normal.

Vacuum Actuators. You are now ready to test operation of the vacuum actuators. So cut engine speed down to idle. That provides high vacuum for a quicker actuator response. Push each button alternately, and check for slow or improper door, damper, or deflector operation. As an example, when you press the defrost or heat button, the bypass door should be closed, and the over-center lever and linkage (visible in the engine compartment) will be in a straight line. If the bypass door doesn't close completely, the linkage may need adjustment, or vacuum hose connections at the actuator may be reversed.



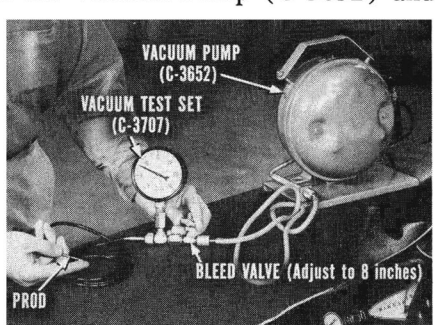
To adjust the bypass door linkage, loosen the lever pivot screw. Slide the pivot and screw in its slot as you push the actuator rod rearward to close the door completely. Then, retighten the screw.

To check vacuum hose connections at the actuators, you'll need to know the color code. Each hose to an actuator has either a gray or a red stripe. Hoses with red stripes connect to the *rod* side of the actuator in all cases except at the *bypass door* actuator. On the bypass door actuator, the red-striped hose connects to the side that's *opposite* the actuator rod.

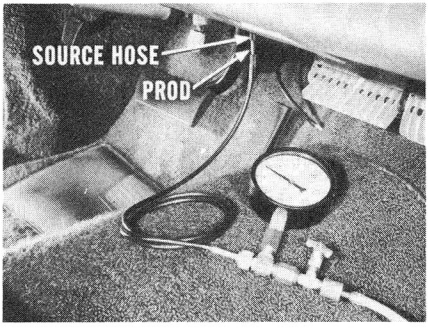


Inspect and correct any binding, misalignment, or maladjustment of the recirculating and fresh-air door connecting linkage.

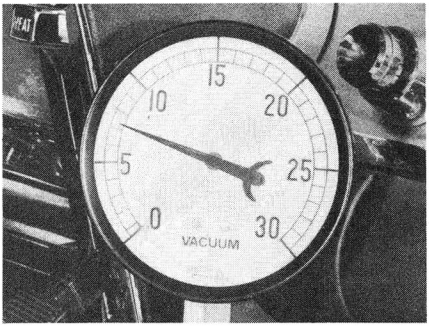
If the hoses are properly connected, but the actuator operation appears too slow, or fails entirely, the next step is to check the actuator for a vacuum leak. Stop the engine and check the fit of the black vacuum hose connection at the intake manifold. It should be a tight fit. Then, you'll have to use the Vacuum Pump (C-3652) and the vacuum test set (C-3707). Use manifold gauge set center hose (C-3645) to connect the vacuum pump to the vacuum gauge test set. Adjust the bleed valve to get a reading of *exactly 8 inches of vacuum,* while your finger blocks the prod on the end of the test hose.



Release your finger on the hose prod a few times and reblock it. The bleed valve must be adjusted so the gauge needle returns to exactly 8 inches when your finger covers the prod.



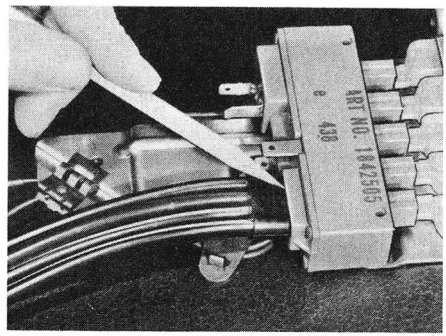
Disconnect the engine vacuum source hose at the plastic connection under the instrument panel. Insert the tester prod from the vacuum test set into the source hose that leads to the control switch.



First push in the heat button. The vacuum gauge will read lower until the actuator works—and then it will build back up. Try all the buttons, and allow time for vacuum drop and build-up. You shouldn't get a vacuum drop of more than ¾-inch of vacuum below 8 inches.

If you get *more* than the maximum allowable vacuum drop of ¾-inch, recheck the tester to be sure it is adjusted to read exactly 8 inches. If that's okay, start checking with the 7-hole hose connector plug attached to the control switch. This plug must be positioned all the way on the seven prods of the control switch. Do not lubricate

the prods or holes, as that can ruin the vacuum valve in the switch. If you can't position the connector plug properly on the switch prods, use a drop or two of clean water in the holes. That will help the plug slide onto the prods.



If a tighter fit on the hose connector plug doesn't bring vacuum drop within limits, remove the plug from the switch. Insert the test prod alternately in the connector block holes—first in the four holes in a row, and then in the two outer holes of the row of three. Watch the test gauge and if it comes back to 8 inches after each actuator operates, it proves the hose and actuators are okay, but the control switch is faulty and must be replaced.

If excessive vacuum drop shows up at one or more holes in the connector block, isolate the faulty hose or actuator. If the vacuum drop is noticed at the two outer holes of the line of three holes, check the tee connectors under the instrument panel that connect the vacuum hoses leading to the heater bypass door and the deflector actuators.

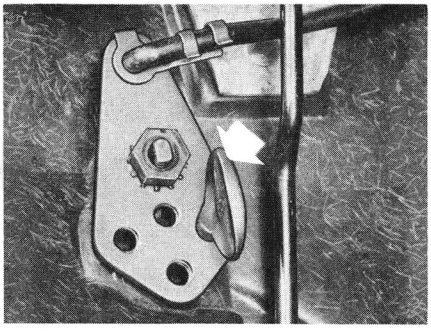
If you find tee connections okay, inspect the hose connections to the actuator involved. And, if you find the connections good, check whether the actuator or hose is at fault. Replace the actuator or hose assembly, whichever is at fault.

NOTE: You can find a hose leak under vacuum test by running your fingers along the hose and watching the gauge. Cut out any faulty spots and splice the hose with a section of ⅛"-OD copper tubing.

Check the Condenser. Foreign matter on the condenser or sub-cooler fins will decrease heat dissipation, which will affect the efficiency of the system and increase the load on the engine. So, clean the fins, if

needed. Also, check for bent fins. You can use the Condenser Comb (C-3663) to straighten out any bent or wrinkled fins.

NOTE: Bug screens are not recommended for cars equipped with air conditioning as they decrease the flow of air through the radiator and condenser.



Cool-Down Test. With the car windows still open, move the temperature control lever to "OFF". Adjust the distribution duct damper control stop (or the cable, if the car is so equipped), so that it will direct 50% of the air through the panel outlets, and 50% through the floor outlets.

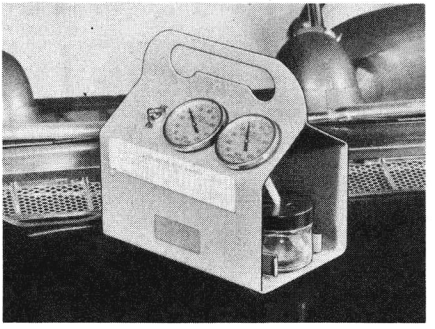
Fully extend the outlet grilles to direct air flow toward the rear of the car. In the right-hand outlet grille, insert a thermometer. Then, start the car, and adjust engine speed to 1250 r.p.m.

Push in the fresh-air button and pull the blower knob out for high-speed operation. Recheck to be sure there is 50-50 air flow up and down.

NOTE: When you test the front unit of a dual system, leave the rear, or roof unit blower turned off.

Another thing, if the needle on the discharge gauge dances too much, backseat the discharge service valve stem slightly to reduce the jiggle. Don't close the valve, however.

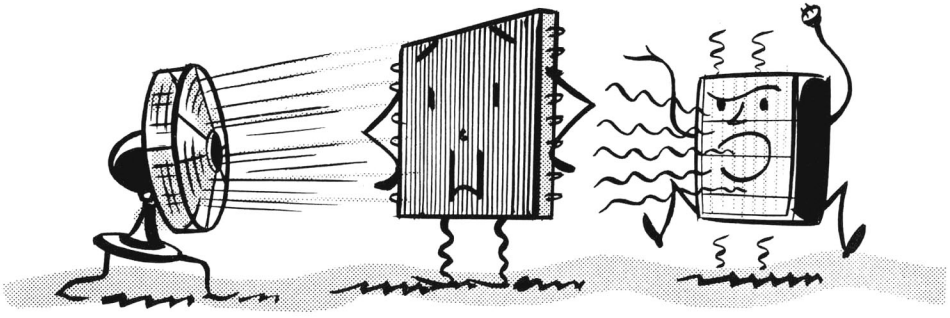
Arrange the hoses and tachometer leads so the hood can be lowered and closed. Also, put a motorized psychrometer (C-3704) near the air inlet grille for wet bulb-dry bulb readings. Then, run the engine for 15 minutes to get it up to operating temperatures, and stabilize the air-conditioning system.



NOTE: The 12-volt motorized psychrometer is recommended for air-conditioning service departments. It is faster and more accurate than the inexpensive sling type (Tool C-3668).

Use distilled water, incidentally, as it will prevent drying out and hardening of the wet sock.

Performance Test. The performance test must be made at a discharge pressure between 190 and 210 psi. If necessary, block the condenser to increase pressure; use an outside floor fan to increase air flow through the condenser and decrease pressure.



Let's suppose you record a wet-bulb temperature of 59° F., and a dry-bulb temperature of 80° F. On the thermometer in the outlet grille, let's assume that temperature of the delivered air is about 47° F. Refer to the performance chart below, and see if delivered air is within the allowable limit and the system is up to specifications.

PERFORMANCE

INLET AIR		WET-BULB																
		52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
DRY BULB TEMPERATURE	75	46	46	46	47	47	47	48	48	49	49	50	50	51	52	52	53	54
	76	47	47	47	47	48	48	48	49	49	50	50	51	51	52	52	53	54
	77	47	48	48	48	48	49	49	49	49	50	50	51	51	52	52	53	54
	78	48	48	48	49	49	49	49	50	50	50	51	51	52	52	53	53	54
	79	49	49	49	49	50	50	50	50	50	51	51	51	52	52	53	53	54
	80	49	49	50	50	50	50	50	50	50	51	51	51	52	52	53	53	54
	81	50	50	50	50	50	50	50	51	51	51	51	52	52	53	53	54	54
	82	50	51	51	51	51	51	51	51	51	52	52	52	53	53	54	54	55
	83	51	51	51	51	51	52	52	52	52	52	52	53	53	54	54	55	55
	84	51	52	52	52	52	52	52	52	52	53	53	53	54	54	54	55	55
	85	52	52	52	52	52	52	52	53	53	53	53	53	54	54	55	55	56
	86	52	52	53	53	53	53	53	53	53	53	53	54	54	54	55	55	56
	87	53	53	53	53	53	53	53	54	54	54	54	54	55	55	55	56	56
	88	54	54	54	54	54	54	54	54	55	55	55	55	55	55	56	56	56
	89	55	55	55	55	55	55	55	55	55	55	55	55	56	56	56	56	57
	90	X	X	X	55	55	55	55	55	55	55	55	56	56	56	56	57	57
	91	X	X	X	X	55	56	56	56	56	56	56	56	56	56	57	57	57
	92	X	X	X	X	56	56	56	56	56	56	56	57	57	57	57	57	58
	93	X	X	X	X	X	57	57	57	57	57	57	57	57	57	58	58	58
	94	X	X	X	X	X	58	58	58	58	58	58	58	58	58	58	58	58
	95	X	X	X	X	X	58	58	58	58	58	58	58	58	58	58	59	59
	96	X	X	X	X	X	59	59	59	59	59	59	59	59	59	59	59	59
	97	X	X	X	X	X	59	59	59	59	59	59	59	59	60	60	60	60
	98	X	X	X	X	X	X	60	60	60	60	60	60	60	60	60	60	61
	99	X	X	X	X	X	X	61	61	61	61	61	61	61	61	61	61	61
	100	X	X	X	X	X	X	61	61	61	61	61	61	61	61	61	62	62
	101															62	62	62
	102															62	62	63
	103															63	63	63
	104															63	63	63
	105															63	63	63
	106															64	64	64
	107															64	65	65
	108															65	65	65
	109															65	65	65
	110															66	66	66

MAXIMUM DISCHARGE AIR TEMPERATURE

TEMPERATURE CHART

TEMPERATURE

69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
54	55	56	56	57	58																
54	55	56	57	57	58	58															
54	55	56	57	58	58	58	60														
55	55	56	57	58	59	58	60	61													
55	55	56	57	58	59	59	60	61	62												
55	55	56	57	58	59	60	60	61	62	63											
55	56	56	57	58	59	60	61	62	63	64	64										
55	56	57	57	58	59	60	61	62	63	64	65	65									
56	56	57	58	59	59	60	61	62	63	64	65	66	67								
56	57	57	58	59	60	60	61	62	63	64	65	66	67	68							
56	57	58	58	59	60	61	61	62	63	64	65	66	67	68	69						
56	57	58	58	59	60	61	62	62	63	64	65	66	67	68	69	69					
57	57	58	59	59	60	61	62	63	64	64	65	66	67	68	69	69	70				
57	58	58	59	60	60	61	62	63	64	65	65	66	67	68	69	69	70	71			
57	58	58	59	60	61	61	62	63	64	65	65	66	67	68	69	69	70	71	72		
57	58	59	59	60	61	62	62	63	64	65	66	66	67	68	69	70	70	71	72	73	
58	58	59	59	60	61	62	62	63	64	65	66	67	67	68	69	70	71	71	72	73	74
58	59	59	60	60	61	62	63	63	64	65	66	67	67	68	69	70	71	71	72	73	74
59	59	60	60	61	62	62	63	64	64	65	66	67	67	68	69	70	71	71	72	73	74
59	59	60	61	61	62	62	63	64	64	65	66	67	67	68	69	70	71	71	72	73	74
59	60	60	61	61	62	63	63	64	64	65	66	67	67	68	69	70	71	71	72	73	74
60	60	60	61	62	62	63	63	64	65	65	66	67	68	68	69	70	71	72	72	73	74
61	61	61	62	62	63	63	64	64	65	66	66	67	68	69	69	70	71	72	73	73	74
61	62	62	62	63	63	64	64	65	65	66	67	68	68	69	70	70	71	72	73	73	74
62	62	62	63	63	64	64	64	65	66	66	67	68	68	69	70	71	71	72	73	73	74
62	62	63	63	63	64	64	64	65	66	66	67	68	68	69	70	71	71	72	73	73	74
62	63	63	63	64	64	64	65	65	66	67	67	68	69	69	70	71	72	72	73	74	75
63	63	63	63	64	64	65	65	66	66	67	67	68	69	70	70	71	72	72	73	74	75
63	63	64	64	64	65	65	65	66	66	67	68	68	69	70	71	71	72	73	74	75	75
63	64	64	64	64	65	65	66	66	67	67	68	68	69	70	71	71	72	73	74	75	76
64	64	64	64	65	65	65	66	66	67	67	68	68	69	70	71	71	72	73	74	75	76
64	64	64	65	65	65	66	66	66	67	67	68	69	69	70	71	72	72	73	74	75	76
65	65	65	65	65	66	66	66	67	67	68	68	69	70	70	71	72	73	73	74	75	76
65	65	65	66	66	66	66	67	67	68	68	69	69	70	70	71	72	73	74	75	76	77
66	66	66	66	66	66	67	67	67	68	68	69	69	70	71	71	72	73	74	75	76	77
66	66	66	66	66	66	67	67	67	68	68	69	69	70	71	71	72	73	74	75	76	77

According to our example, the chart calls for 50° F. and the system was delivering 47° F. This is below the temperature called for, so the system is delivering at its rated cooling capacity. The thermal switch, however, should be tested in order to make sure satisfactory operation will continue.

Some allowances must be made from the standard Performance Chart reading because of variations brought about by the type of installation and the cubic content of the body. For convenience, the '59 cars have been classified as follows: Plymouth, Dodge, De Soto Firesweep and Chrysler Windsor are in the "Short Wheelbase" group; De Soto Firedome and Fireflite, Chrysler Saratoga and New Yorker, and Imperial models are in the "Long Wheelbase" group.

The variations to be allowed when comparing the Performance Chart reading with the actual outlet temperature of the car being tested are listed in the following table:

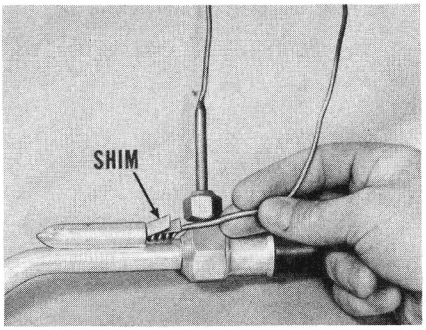
OUTLET TEMPERATURE DIFFERENCES FROM PERFORMANCE CHART

INSTALLATION COMBINATION	TEMPERATURE DIFFERENCE	
	Short Wheelbase	Long Wheelbase
Front Unit only	Chart (no variation)	Chart −1° F.
Front Unit of Dual	Chart +2° F.	Chart −1° F.
Rear Unit only	Chart (no variation)	Chart −1° F.
Rear Unit of Dual	Chart −3° F.	Chart −4° F.
Roof Unit of Dual	Chart +5° F.	Chart +4° F.

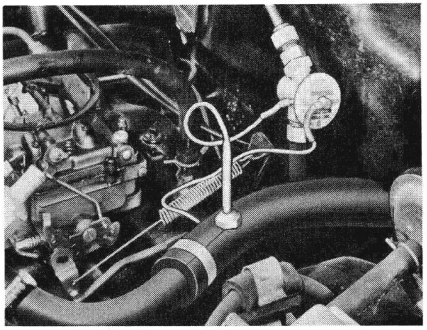
In other words, if the outlet temperature of the car you are testing checks with the Performance Chart figure as revised according to the allowance given in the above table, the air-conditioning unit should be considered satisfactory.

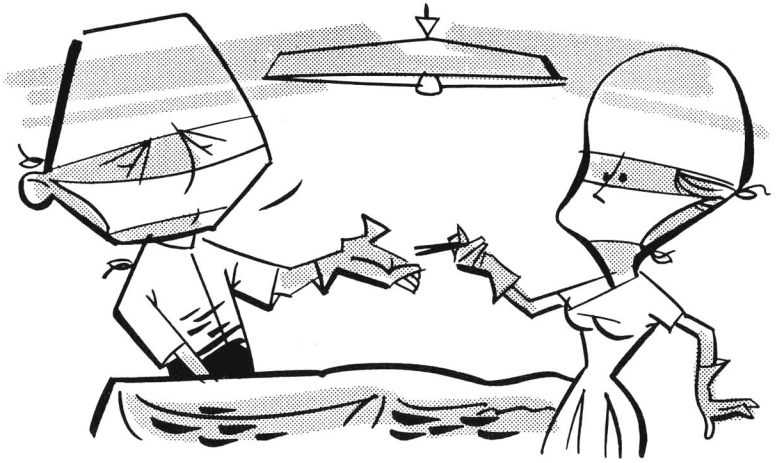
Thermal Bulb. Now, if the discharge air temperature is *above* the maximum allowed on the performance chart, you'll have to inspect the fit of the expansion valve thermal bulb in the suction line well.

The bulb should be a wedge fit using brass shims between the top of the well and the thermal bulb. Thoroughly coat the thermal bulb with "Thermal Mastic" (available at all refrigeration supply sources) to assure a good tight thermal contact.



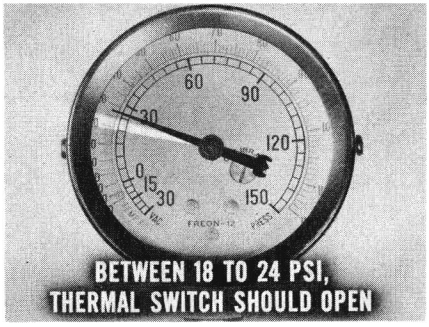
Use foam rubber insulation hose (Package No. 2084287) to insulate the expansion valve thermal bulb in the well. Slit the hose lengthwise to install it on the suction line from the suction line hose connection to the evaporator housing. Seal the slit in foam rubber hose with weatherstrip adhesive, and install the clamps found in the package.



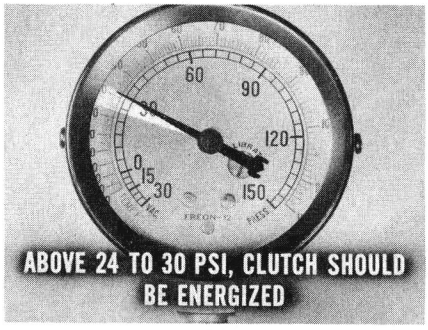


If the thermal bulb fit is good, test compressor capacity. If that is up to specifications, make an expansion valve super-heat test. These are tests with which you are already familiar.

Thermal Switch Test. To check the thermal switch, push in the "MC" button and push the blower knob in for low-speed operation. See if you can feel the difference in reduced speed at the panel outlet. If it feels a lot slower, close up the windows and doors, and watch pressure on the suction gauge.

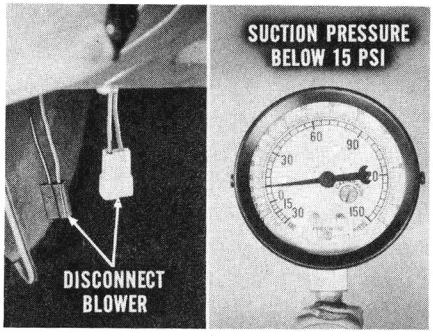


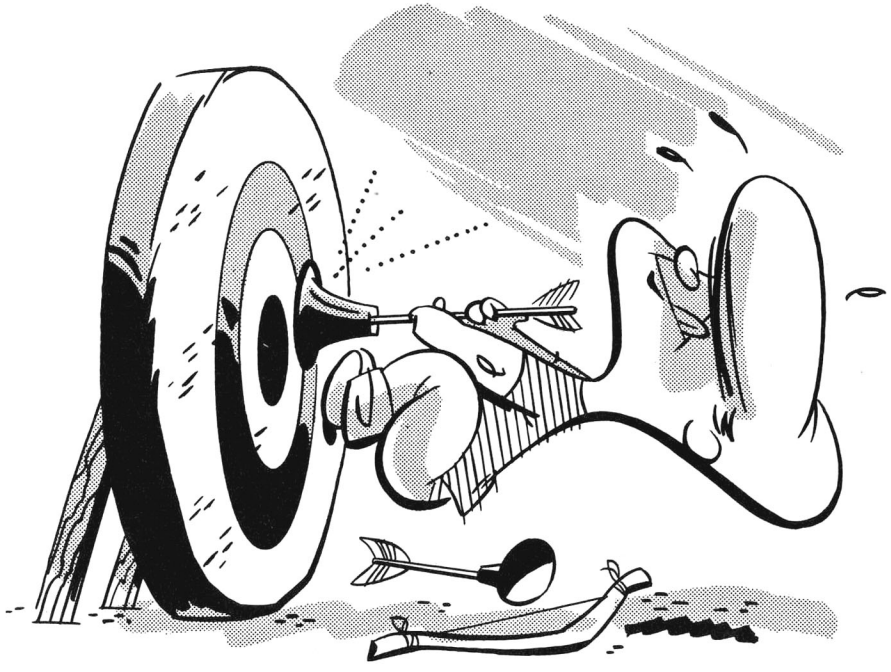
As the evaporator cools down, suction pressure should gradually lower. In fact, when suction pressure is between 18 and 24 psi, the thermal switch contacts should open and de-energize the clutch.



After the contacts open, suction pressure should rise rapidly. When it goes above 24 to 30 psi, the clutch should be energized again. Run the system several times to be sure that pressure changes and clutch engagements take place continuously.

If the suction pressure doesn't pull down enough to cycle the clutch, disconnect the blower connections under the instrument panel. If suction pressure, without blower operation, goes below 15 psi before the clutch de-energizes, it would mean there is a bad contact between the thermal switch sensing tube and the evaporator fins and tubes.





If suction pressure goes below 10 psi and still doesn't de-energize the clutch, the thermal switch wires may be shorted, or the switch itself may be faulty and need replacement.

COMPRESSOR CARE WHEN REMOVED FROM THE ENGINE

Keep the compressor upright whenever it's removed from the engine. If it's turned upside down, or on its side, refrigerant oil in the sump will flow past the suction reed valves and get on top of the pistons.

A compressor that's operated with oil on top of the pistons can build up hydraulic pressure strong enough to dish the suction reed valves, distort the discharge reed valves, and fracture the compressor head gaskets.

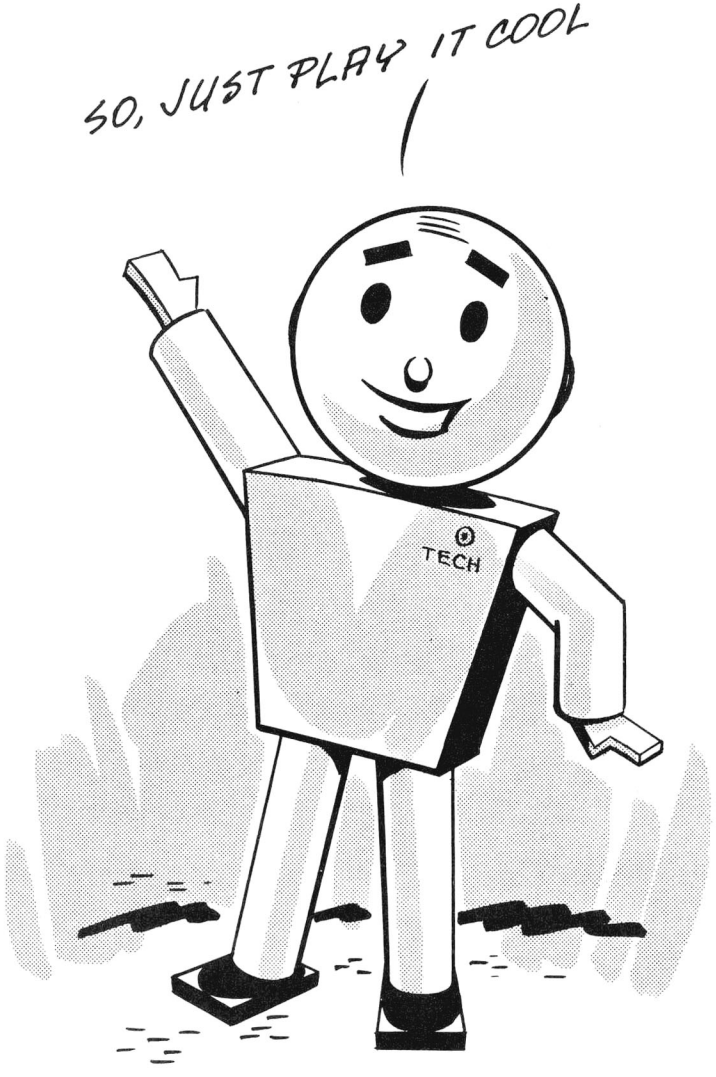
When installing, or reinstalling a compressor, mount it on the engine and align the struts and brackets correctly. Connect the suction and discharge tubes. Open the service valves next. Then, by hand, turn the clutch disc so the compressor crankshaft will rotate at least two complete revolutions.

That will let any oil trapped on top of the pistons flow out of the discharge reed valves gradually and prevent compressor damage.

CONCLUSION

Your work on an air-conditioning unit can be a good service ad each time the system is used by the owner. If it continues to deliver comfortably cool driving, the owner will remain a steady service customer. Not only that, he'll tell his friends about your skill which increases the chance that your business will grow.

Since more air conditioners will be installed each year, this opportunity to display your ability will increase. The information in this reference book is designed to help you build a sound, profitable reputation in air-conditioning service. Thorough study on your part will pay extra dividends on this popular accessory.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