Installation Manual
1970-1972 Chevelle/Malibu
Factory Air

DOCUMENT #1-2050FA
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Congratulations...

You have just purchased the highest quality, best performing A/C system ever designed for your 1970-1972 Chevelle/Malibu.

To obtain the high level of performance and dependability our systems are known for, please pay close attention to the following instructions. Our installation steps and procedures are derived from a long history of research and development and the combined experience achieved thru thousands of successful installations (and feedback from customers like you). Please remember that our #1 goal is that you’ll have a successful installation and a system that performs at a very high level for many years to come.

Before starting, read the instructions carefully, from beginning to end, and follow the proper sequence. On the next page you’ll find a safety and general checklist that you should read before starting your installation.

Again, thank you from our entire staff.
Check List, Pre-Installation:

☐ Before beginning the installation check the shipping box for the correct components. YOUR BOXED UNIT INCLUDES A LIST OF MAJOR COMPONENTS AND A LIST OF BAGGED PARTS. We have a 5 stage check process to make sure you have everything you’ll need.

☐ If your vehicle has been or is being modified, some procedures will need to be adjusted to fit your particular application.

☐ A basic cleaning of the engine compartment and interior before beginning will make things go more smoothly.

☐ Check condition of engine mounts. Excessive engine movement can damage hoses to A/C and/or heater.

☐ Before starting, check vehicle interior electrical functions (interior lights, radio, horn, etc). Make a note of anything that does not work as it’s supposed to. During the installation you might find the opportunity to repair or upgrade non-working or out of date components. When you’re ready to start the installation, DISCONNECT THE BATTERY FIRST.

☐ Drain the radiator. Retain the coolant and reuse, or dispose of properly.

☐ SAFETY FIRST: Wear eye protection while drilling/cutting, deburr sharp edges, and never get in a hurry or force a part.

☐ Tools: Your installation only requires the basic tools everyone has in their garage, nothing exotic or specific to A/C or Heat equipment.

Procedures, During Installation:

☐ Fittings: Use one or two drops of mineral oil (supplied with your kit) on ALL rubber o-rings, threads and rear of bump for o-ring where female nut rides. Do not use thread tape or sealants.

☐ Measure twice (or more), cut once

☐ Should you have any technical questions, or feel you have defective components (or missing items), call us immediately, we will be glad to assist you. Our toll-free number is listed on every page, we’re here to help!

YOU CAN NOW BEGIN THE INSTALLATION...
A Basic Overview of Automotive A/C....

1. **Evaporator with Blower Fan** In order to remove the heat from the air in the vehicle, the A/C evaporator allows the refrigerant to absorb the heat from the air passing over it. The blower fan moves cool air out into the car interior.

2. **Compressor** The compressor pumps and circulates the refrigerant through the system.

3. **Condenser** The condenser is a heat exchanger mounted at the front of the vehicle. Heat drawn out of the interior of the car is expelled here.

4. **Receiver/Drier** The drier not only dries refrigerant, it also filters the refrigerant and stores it under certain operating conditions.

5. **High Pressure Switch** A pressure switch is used to shut down the system if high or low pressure is detected, basically it acts as a safety switch.

The air conditioning system in your car is comprised of a compressor, condenser, expansion valve, receiver/drier, and evaporator. Refrigerant (also known as Freon) is compressed in the compressor. In the condenser, gas is cooled to a liquid state and travels to the expansion valve. As the liquid refrigerant goes through the expansion valve it rapidly cools in the evaporator. A fan blows over the evaporator and cools the air that blows out your vents.
Control & Operating Instructions

Your new Perfect Fit-Elite system offers complete comfort capabilities in virtually every driving condition. This includes temperature control in all of the modes. This system also provides the ability to blend the air between Face, Heat, and Defrost modes simultaneously. To illustrate the various ways you can adjust the airflow direction and temperature - we’ve provided these handy illustrations and chart to show exactly how you can adjust your Perfect Fit-Elite for maximum comfort...

The FAN switch works like the OEM switch, the BOTTOM Sposition is OFF (all power to the system is OFF in this)

There are 11 levels of adjustment within the range of the DASH/FLOOR

The COLD/HOT positions works like any traditional adjustment lever

<table>
<thead>
<tr>
<th>Left Lever Position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<th>11</th>
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</thead>
<tbody>
<tr>
<td>Distribution</td>
<td>Face A/C 100%</td>
<td>Face A/C 80%</td>
<td>Face A/C 60%</td>
<td>Face A/C 40%</td>
<td>Face A/C 20%</td>
<td>Defrost 100%</td>
<td>Floor 20%</td>
<td>Floor 60%</td>
<td>Floor 40%</td>
<td>Floor 80%</td>
<td>Floor 100%</td>
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<tr>
<td>Compressor State</td>
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<td>ON</td>
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Remove console, radio and radio bezel (optional), and set them aside for reinstall later (see figure 1). You will also need to remove the dash pad, which can be done by removing the 6 screws from under the front edge of the pad.

The removal of the Original A/C Assembly can be accomplished by disconnecting three control cables. One is attached to the Heat/Defrost door (see figure 2). One is attached to the Temperature door, and one is attached to the Vent / Heat door (see figure 3). Disconnect the electrical harness from the assembly. Also remove attachment screw located in front of the air inlet (see figure 4).

When retaining parts it’s a good idea to store parts in a zip lock bag, labeled with info where the parts came from and what size/type of tool is needed to reinstall.
Remove the original defrost duct. This is accomplished by removing four screws at the top of the dash. (retain hardware) It will be easiest to cut the defrost duct in half to remove it. You are going to utilize the left and right sides in later steps.
**BAG KIT E:** Place defrost duct on work bench. We’ve included templates for modifying both sides of the duct... cut out and tape the templates in place over the duct. Cut the defrost duct into two pieces as indicated, discarding the lower half. Using the ¼” x ½” open cell foam we’ve included, apply foam over the ends of the duct edge before installing the appropriate adapters. Pre-Drill duct with a 5/32” drill bit on both sides of the duct. Attach the adapter to the duct using two #10 x 5/8 PHP screws (figure 22). Install back into vehicle with OEM Hardware.
Locate the Fresh Air cowl blocks-offs from bag kit G and attach to backside of factory louver with the supplied S-clips. (Simply pushing the block off onto flange will secure). (see Figure 8)

Remove the passenger kick panel and retain the hardware.

Remove the vacuum motor only from the inlet door assembly (see figure 17). Position the door in the closed position so that outside air will not enter the cabin. This is to NECESSARY to provide clearance for the evaporator to be mounted later.

Reinstall passenger kick panel, slight trimming may be necessary.
CONTROL BOX
(varies based on your choice of using your factory controls or using our new D.E.R. Controller)

D.E.R. Control
PN#16-3050

NOTE: Illustrations NOT shown actual size
THESE ARE THE PARTS YOU WILL FIND IN BAG KIT B
You will use all of these parts and hardware during the next series of installation steps.

Evaporator Dash Support Bracket
PN#0044-1

Fresh Air Inlet Block Off
PN#10-1048-2

Defrost/Heat Duct Assembly
PRE-INSTALLED
PN#2-2025-1

Illustrations NOT shown actual size

Liquid Tube
PN#0034-9

Suction Tube
PN#0034-10

#6 and #10 O-rings

Six #10 - 10 x 5/8" Phillips Screws

One Flange Nut

One Male Spade Connector

Refrigerant Tape

One Bulb Clamp
Locate the original wiring harness that supplied power to the original heater motor. GM normally used a brown wire for power. After the removal of the wire, and vacuum harness there will be a hole in the firewall. On the OEM power supply wire attach a 1/4” insulated male spade connector. Within the OEM fuse box upgrade the factory HEATER fuse with a 20 amp fuse (VERY IMPORTANT).

Locate the included template, piece it together from the two pages. Align the template with the upper left hand corner of the large OEM rectangular opening. Mark and drill the holes for the liquid and suction tubes.

Follow directions on the templates and drill the holes for the evaporator. From outside of the vehicle drill the hole for the drain tube.

You can now begin installing your Classic Air Perfect Fit Elite System.
Within the engine compartment area, Install Fresh Air inlet block-off over the OEM fan opening using the original screws (it will also tuck in behind the edge of the hood hinge... tip: leave the hinge loose for now....)

Remove evaporator unit from box and place on a flat work surface.

Locate the defrost/heat duct assembly and attach to the evaporator using two #10 - 10 x 5/8” Phillips screws (see figure 16). NOTE: Be sure that the s-clips are pushed over rear flange on evaporator.
Take a minute to familiarize yourself with the evaporator unit:

- Capillary Tube
- Blower Motor
- Defrost/Floor Servo Motor
- Thermostat
- Blower Motor Plug
- Heater Tubes
- Defrost/Heat Duct Assembly
- Dash Servo Motor
- Firewall Mounting Stud
- Liquid Tube connection
- Expansion Valve
- Suction Tube connection
- Defrost Adapters
- Defender/Heat Duct Assembly
- Floor Air Outlet
- Condensation Drain Outlet
- Evaporator Case
- Dash Duct Assembly
- (4) Dash Air Outlets
WIRING PREP

- Locate Evaporator Unit from Main Box
- Locate Face Duct Assembly from Bag Kit B
- Locate Defrost/Heat Duct Assembly from Bag Kit B
- Locate electronic water valve from Bag Kit D
- Locate Blue, Yellow, Orange wiring harness from Bag Kit C
- Locate main wiring harness from Bag Kit C
- Locate the D.E.R. control in the CONTROL BOX or modified OEM Controls
- Locate ECU and Calibration Key from Bag Kit C
- Acquire a 12V Battery (NOT a battery charger)

• Items Needed for Bench Calibration
PRE-INSTALLED DUCT ASSEMBLIES

S-Clips pushed over flange securing with two #10x5/8” screws, from back

Attached to front outlet securing with pre-installed S-Clips

Part# 2-2025-2

Part# 2-2050-1
• Wiring Preparation Steps 1 thru 3

1. Connect Blue Harness into Defrost/Heat Servo Motor

2. Connect Yellow Harness into Face/Floor Servo Motor

3. Connect Orange Harness into water valve
WIRING PREP

Wiring Preparation Steps 4 thru 7

4. Connect Yellow Harness into Face/Floor Port on ECU

5. Connect Blue Harness into Defrost/Heat Port on ECU
   Connect Orange Harness into Water Valve Port on ECU

6. Connect Green Harness into Control Port on ECU

Click!

From your D.E.R.,
Connect Green Harness into Control Port on ECU
WIRING PREP

• Wiring Preparation Steps 8 through 12

8. Connect 12V Power lead to 12V.

9. Connect red tagged power harness to POWER port on ECU. Connect ground.

10. Connect corresponding fan switch harness to the Bower Switch on Controls. Connect Power lead to 12V. Connect ground.

11. Connect both BLUE leads into thermostat (either lead into either terminal). Connect ground.

12. Connect ground.

(White lead is to be connected to compressor)
FUNCTION TESTING

1. Move FAN knob to HIGH
   Move MODE knob to DASH
   Move TEMP knob to COLD

   AIR OUT OF DASH VENTS

2. Move MODE knob to DEFROST

   AIR OUT OF DEFROST VENTS

3. Move MODE knob to FLOOR

   AIR OUT OF FLOOR VENTS
FUNCTION TESTING

Return all wiring harnesses, water valve, and ECU to their originally bags/boxes (this keeps them organized for future installation steps).

Your controls are now fully calibrated to your unit. Please refer to the next steps in your installation manual for installing the system in your vehicle.

NOTE: IF DURING ANY OF THESE STEPS YOU DO NOT GET THE CORRECT OUTCOME, PLEASE CALL TECH SUPPORT BEFORE INSTALLING INTO VEHICLE. 1(866)435-7801

4
Move TEMP knob to HOT

5
Move TEMP knob to COLD

You will be able to see thru water valve passage
You will NOT be able to see thru water valve passage
NOTE: Two people are needed for this step!

First remove two OEM retainer bolts (see figure 13). One person can carefully flex the dash outward while another person slides the evaporator unit behind the glove box. Place evaporator on floor panel. Roll unit up behind the glove box opening, inserting tubes thru the large hole in firewall.
Installing the complete evaporator unit under the dash will go much easier with the help of a friend. One person can take the unit within the car and “roll” up and under the dash while the other person can be ready at the firewall area with the included flange nut to secure the unit in place (see figure 8). Now the unit will be easy to level and secure. Leave flange nut loose at this time.
Locate the two mounting brackets. Attach the dash support bracket to the evaporator by removing the case screw, positioning the bracket in place, and re-inserting the screw into the case (see figure 16). Do not tap into the other holes on the evaporator for any reason. Also, use a screwdriver and hand-power. Do not over-tighten so you don’t strip the holes. Secure the other end of the bracket between the dash support bracket, and tighten (see figure 17).
Install Liquid tube onto the Expansion valve (TXV) as shown. Use #6 o-ring and (2) drops of mineral oil on the o-ring and tighten securely.

Install Suction Tube to the coil outlet on the unit as shown. Use #10 o-ring and (2) drops of mineral oil on the o-ring and tighten securely.

We’ve included a bulb clamp, Which you will use to attach coil to the Suction Tube as shown below.

**CAUTION: YOUR SYSTEM WILL NOT FUNCTION PROPERLY IF THE SENSING COIL IS NOT CLAMPED IN THE CORRECT POSITION. SEE THE DIAGRAM BELOW.**

Once the sensing coil is installed, wrap suction tube and coil with refrigerant tape. Be sure that all of the exposed metal is covered.

**Reminder...**

Use two wrenches to tighten o-ring fittings.
Install controls into dash using OEM hardware.
THESE ARE THE PARTS YOU WILL FIND IN BAG KIT C

You will use all of these parts and hardware during the next series of installation steps.

Five #10 - 16 x 3/4" Tek Screws

Illustrations NOT shown actual size
1. Connect Blue Harness into Defrost/Heat Servo Motor
2. Connect Yellow Harness into Face/Floor Servo Motor
3. Connect Orange Harness into water valve
Connect Orange Harness into Water Valve Port on ECU
Next route other end of harness out of firewall opening

Connect Blue Harness into Defrost/Heat Port on ECU

Connect Yellow Harness into Face/Floor Port on ECU

From your OEM Controls, Connect Green Harness into Control Port on ECU

Mount your ECU under the dash with included tek
Connect corresponding Fan Switch harness to the Bower Switch on Controls
Connect Power lead to 12V.

Connect red tagged power harness to POWER port on ECU.
Connect ground.

Connect Power lead to 12V.
Connect corresponding fan motor harness.
Connect ground.

Connect both BLUE leads into thermostat (either lead into either terminal)

Connect ground.

(White lead is to be connected to compressor)
THESE ARE THE PARTS YOU WILL FIND IN BAG KIT D

You will use all of these parts and hardware during the next series of installation steps.

Illustrations NOT shown actual size

Electronic Water Control Valve
PN#16-1081-2

Firewall Block Off
PN#10-2055FA-1

Clear Plastic Drain Tube

Six Worm Gear Clamps

Six #10 - 16 x 3/4" Tek Screws
In **Bag Kit D** you’ll find the firewall block off. Install this over the hose connections coming thru the firewall within the engine compartment. Attach with six #10 - 16 x 3/4" Tek screws.

**TIP:** Route **ORANGE** cable thru the block off plate (it will be plugged into the electronic water valve).

The white wire from main power harness can be fed thru the same hole (as shown below).

**Match drill drain tube hole.**

Feed drain tube thru the hole.
Your water valve **MUST** be installed per these instructions!... *(If not, your system will not work properly.)*

The **lower** heater tube connection on firewall will be routed to the water connection on intake manifold using 5/8” dia. heater hose with the supplied worm gear clamp.

The **upper** heater tube connection on the firewall will be routed to the water valve connection labeled *heater core*, using a 6” piece of 5/8” heater hose attached with supplied worm gear clamp.

Connect the remaining outlet on water valve labeled *water pump* to the water pump using 5/8” dia. hose with the supplied worm gear clamp.
THESE ARE THE PARTS YOU WILL FIND IN BAG KITS E, F, and G

You will use all of these parts and hardware during the next series of installation steps.

**Bag E**
- Defrost Adaptor Left
  - PN#0044-3
- Defrost Adaptor Right
  - PN#0044-3
- Four #10 - 10 x 5/8" Phillips Screws
- Foam Tape
- Two Duct Hoses, 2" I.D.
- Four Zip-Ties

**Bag F**
- Two Louver Adaptors
  - PN#2-1050-4
- Two Fresh Air Block Off Plates
  - 2-1050-5
- Two Duct Hoses, 2" I.D.
- Four Zip-Ties

**Bag G**
- Center Louver Adaptor
  - PN#2-1050-4
- One Duct Hoses, 2" I.D.
- Two Zip-Ties
NOTE ALL HOSES MAY NEED TO BE TRIMMED. NO HOSES OF EXACT LENGTH ARE INCLUDED.

Bag Kit E. The following steps are for left and right Defrost Diffusers...
Locate and route the duct hoses from the defrost/heat duct assembly upward toward defrost vents. Attach the flex hose to the defrost diffuser using zip-ties. The other end of the duct hose is installed over the defrost/heat duct assembly outlets on main unit (see figures 23 and 24).

The defrost duct hoses can now be routed upward and attached to the adapters using the included zip-ties.
Locate Drivers louver adapter (SQUARE) from bag kit F and attach to backside of factory louver with the supplied S-clips. (Simply pushing the adapter onto flange will secure the adapter to the louver)

Route the supplied flex hose from drivers louver adapter to DASH DUCT labeled Drivers side (see Figure 20) It may be necessary to cut flex hose shorter to be certain optimal airflow is achieved.

Secure all hose connections with tywraps.

Next Locate Passenger louver adapter (ROUND) from bag kit F and attach to backside of factory louver with the supplied S-clips. (Simply pushing the adapter onto flange will secure the adapter to the louver) It may be necessary to trim approx. 1” off of the flange.

Route the supplied flex hose from drivers louver adapter to DASH DUCT labeled
Bag Kit G: Route last hose to the OEM center louver (see figure 26). We’ve included a center louver adapter, which you will push over the opening on the OEM air plenum (Take your time and route so it won’t become kinked or torn).

During installation of the hoses be aware of the eventual movement of the wiper arm components.

Reinstall dash pad using the OEM hardware.
THESE ARE THE PARTS YOU WILL NEED FOR THE ENGINE COMPARTMENT INSTALLATION

You’ll find all of these parts within the main box

- Drier Bracket PN#0044-53
- Top Condenser Bracket PN#0044-54
- Top Condenser Bracket PN#0044-55
- Condenser PN#11-1039
- Bottom Condenser Bracket PN#0044-52
- Bulkhead Washers PN#0028-46
- Bulkhead Washers PN#0028-47
- Splice and Bullet Connector
- Ten #10 - 20x3/8" Screws
- Six #5/16 x 1/2" Bolts
- Pressure Switch and harness, Bag of O-rings and Mineral Oil Tube
- Liquid Tube (condenser to drier)
- Liquid Tube (drier to rad support)
- Discharge Tube (condenser to rad support)
- #6.5/16" Liquid Hose
- Three Refrigerant Hoses
DRIER AND CONDENSER PREPARATION. You can perform most of the following steps on a clean flat surface like a workbench. Lay the condenser down so that both hose connections are on the left side (the larger connection will be on top). The drier is conveniently mounted on the left hand side of the condenser. First insert the drier into the drier mounting bracket. Attach the drier liquid tube to the drier and also to the connection on the condenser (tighten connections at either end using supplied o-rings on both ends and a few drops of mineral oil to each o-ring). With these two combined it will easy to find the correct place to attach the drier bracket to the condenser with the included #10-20 x 1/4” screws (attach drier and bracket from the front of the condenser).

BRACKETS: Install the upper condenser brackets using four #10 - 20 x 1/4“ screws in the top two holes on each side (see figure 27). Next, attach the lower brackets using the 3rd and 4th bottom two holes, with the same size screws (see figure 28). These brackets have a bend that will face away from you.

The outer ends of the brackets, top and bottom, will be secured to the radiator support, using the threaded OEM holes already there with the included 5/16 x 1/2 bolts.

Reminder... Use two wrenches to tighten o-ring fittings

You can easily find the correct position for mounting the drier to the condenser by using the drier liquid tube as a gauge.
Route discharge line from top of condenser to hole in support (see figure 29). Locate two discharge bulkhead flat washers. Slide one flat washer over bulkhead fitting and insert the bulkhead fitting through existing hole on driver’s side of the bulkhead. Attach bulkhead nut on engine side of the bulkhead.

Locate the liquid bulkhead tube and one #6 o-ring. Attach liquid tube to the drier using one #6 o-ring and few drops of lubricating oil and a ¾” open end wrench (see figure 30). Attach bulkhead fitting on the liquid tube to original hole on passenger side of the bulkhead. Use one bulkhead flat washer on each side of the bulkhead.

**PRESSURE SWITCH:** Screw the high-pressure switch into the port on the top of the drier (see figure 31). Go ahead and plug the pressure switch harness into the switch at this time (black electrical boot with two long white wires).

Route the two white wires through the grommet along with #6 refrigerant hose. One of the wires attaches to blue clutch wire from thermostat and the other to the compressor clutch.
Install the compressor kit. Included was a premium compressor kit with all the parts you'll need to install the compressor. This kit includes instructions specifically written for your engine. Once you've installed the complete compressor kit, continue on to connecting the hoses.

CONNECTING THE HOSES:
Based on PASSENGER or DRIVERS SIDE compressor mounting see illustrations for routing.

The #10 (LARGEST) refrigerant hose. Attach end with service fitting to the compressor using (1) #10 o-ring and a few drops of mineral oil. Attach other end to #10 fitting at the firewall. Attach using one #10 o-ring and a few drops of mineral oil. Tighten securely.

The #6 (SMALLEST) refrigerant hose. Route behind fender and to the connection on firewall. Attach using two #6 o-ring and a few drops of mineral oil.

The #8 (MEDIUM) refrigerant Hose. Route behind fender and to the connection on compressor. Attach using two #6 o-ring and a few drops of mineral oil.

TWO WRENCH METHOD

Reminder... Use two wrenches to tighten o-ring fittings
New A/C System Preparation... A MUST READ!

Please read through these procedures before completing this new A/C system charging operation. 

A licensed A/C technician should be utilized for these procedures to ensure that your new system will perform at it’s peak, and that your compressor will not be damaged.

1. Your radiator/cooling system is an integral part of your new system. Please insure that you have a 50/50 mix of distilled water and antifreeze. The heater coil MUST be purged (cycle heater control valve) to make sure no water, without antifreeze, is in the heater coil before you charge the A/C system.
2. Evacuate the system for a minimum of 45 minutes.
3. Your new compressor MUST be hand turned 15-20 revolutions before and after charging with liquid. Failure to do this may cause the reed valves to become damaged. This damage is NOT covered by your warranty.
4. Your new system requires 1.5 lbs (24 oz) of R134a refrigerant.
5. Your new compressor comes charged with oil - NO additional oil is necessary.
6. Ensure that the new belt is tight.
7. **DO NOT** charge system with liquid refrigerant!

Recommended Test Conditions:
(After system has been fully charged and tested for basic operation)
- Determine the temperature outside of the car
- Connect gauges or service equipment to high/low charging ports
- Place blower fan switch on medium
- Close all doors and windows on vehicle
- Place shop fan directly in front of condenser
- Run engine idle up to approximately 1500 rpm

**ACCEPTABLE OPERATING PRESSURE RANGES:**
1. High-side pressures: 150-275 PSI
2. Low-side pressures: 10-25 PSI (in a steady state)

Readings above are based on an ambient temperature of 90° with an adequate airflow on condenser.

**CAUTION!** When mounting your compressor and/or adjusting the belt use caution. Mount by using the centerline of the oil fill plug as your guide. The compressor can ONLY be mounted inbetween the 9 to 3 positions. **DO NOT** mount inbetween the 4 to 8 positions.

This can cause compressor failure.

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Do **NOT** tilt, shake or turn refrigerant can upside-down OR use a charging station to install refrigerant while the engine is running. Doing so will direct liquid refrigerant into the compressor piston chamber, causing damage to reed valves and/or pistons and/or other components, as well as potentially seizing the compressor. Allow a minimum of 30 minutes for liquid to “boil off.” You must hand turn the compressor hub (not the pulley) a minimum of 15 complete revolutions prior to starting the engine with the clutch engaged.
Test conditions used to determine system operation:
These test conditions will simulate the effect of driving the vehicle and give the technician the three critical readings that they will need to diagnose any potential problems.
A. Connect gauges or service equipment to high/low charging ports
B. Place blower fan switch on medium
C. Close all doors and windows on vehicle
D. Place shop fan in front of condenser
E. Run engine idle up to 1500 RPM

Acceptable operating pressure ranges (R134A type):
1. High-side pressures: 150-275 PSI
   *note: general rule is two times the ambient/daytime temperature plus 15-20%
2. Low-side pressures: 10-25 PSI in steady state

Charge as follows: R134a = 1.5lbs (24oz)
No additional oil is necessary in our new compressors.

Typical problems encountered in charging systems - noisy compressor:
A noisy compressor is generally caused by charging a compressor with liquid or overcharging.

A. If the system is overcharged both gauges will read abnormally high readings. This is causing a feedback pressure on the compressor causing it to rattle or shake from the increased cylinder head pressures. System must be evacuated and re-charged to exact weight specifications.

B. Installing the heater control valve in the incorrect hose will cause the system to cool at idle and gradually warm up when the RPM’s of the engine rise. The heater control is a directional valve; make sure the water flow is with the direction of the arrow. As the engine heats up, the water transfers the heat to the coil thus overpowering the a/c coil. A leaking or faulty valve will have a more pronounced affect on the unit’s cooling ability. Installing the valve improperly - such as having the flow reversed - will also allow water to flow through which inhibits the cooling. Check for heat transfer by disconnecting hoses from the system completely. By running down the road with the hoses looped backed through the motor you eliminate the possibility of heat transfer to the unit.

C. Evaporator freezing can occur both externally and internally on an evaporator core. External freeze up occurs when the coil can’t effectively displace the condensation on the outside fins so the water forms ice. The evaporator core resembles a block of solid ice, it restricts the flow of air that can pass through it, which gives the illusion of the air not functioning. The most common cause of external freezing is the thermostat setting and humidity in the passenger compartment. All door and window seals should be checked in the event of constant freeze-up. A thermostat is provided with all units to control the cycling of the compressor.

D. Internal freeze-up occurs when the system has too much moisture inside. The symptoms of internal freeze-up often surface after extended highway driving. The volume of air stays constant but the temperature of the air gradually rises. When this freezing occurs the low-side pressure will drop and eventually go into a vacuum. At this point, the system should be checked by a professional who will evacuate the system and change the drier.

E. The condenser works best in front of the radiator with a large supply of fresh air. Abnormally high pressures will result from improper airflow. Check the airflow requirements by placing a large capacity fan in front of the condenser and running cool water over the surface. Pressures dropping significantly will indicate the need for better airflow.

F. Incorrect condenser capacity will cause abnormally high head pressures. A quick test that can be performed is to run cool water over the condenser while the system is operating, if the pressures decrease significantly, it is likely a airflow or capacity problem.

G. An expansion valve failure is generally caused by dirt or debris entering the system during assembly. If an expansion valve fails it will be indicated by abnormal gauge readings. A valve that is blocked will be indicated by high-side that is unusually high and the low-side unusually low (may even go into a vacuum.) A valve that is stuck open will be indicated by both the pressures rising to unusually high readings and tend to move toward equal readings on the gauges.

H. A restriction in the cooling system will cause abnormal readings on the gauges. A high-side restriction, between the compressor and the drier inlet, will be indicated by the excessively high discharge reading. These simple tests can be performed by a local shop and can help determine the extent of the system’s problem.
Troubleshooting Your Classic Auto Air A/C System

Problem: system is not cooling properly
Issue: cold at idle. warmer when raising engine RPMs

Make sure the water valve is positioned correctly.
The water valve is a directional valve and should be installed with the arrow pointing towards the water pump. It should be connected to the heater hose that runs from the heater core to the water pump. If the water valve is incorrectly connected to the hose it allows water to circulate through the system via the heater core over-powering the cooling effect of the a/c coil.

Step 1: Check placement of the water valve and correct if needed.
Step 2: If changing the location of the water valve does not rectify the issue, the water valve may be permanently damaged and may need to be replaced. To check the integrity of the water valve you will need to completely remove the heater core’s water hoses and “loop” together. By doing so, the heater system will be completely removed from the possibilities. If the system now cools then the water valve will need to be replaced.

Verify adequate air flow to the condenser.
The condenser’s function is to dissipate heat. Your air conditioning system will not cool your vehicle’s cabin properly if you do not have an adequate airflow across the condenser.

Step 1: Connect gauges to a/c hoses. When ambient temp is 90°, pressures should be:
   - Low-side pressures: 10-25 PSI
   - High-side pressures: 150-275 PSI
If the low-side pressures are normal but the high-side pressures are high then there might be an airflow issue and you will need to test the airflow to the condenser.

Test airflow to the condenser.
   - Step 1: Place a piece of paper on the condenser with the car idling to see if the paper is held in place.
   - Step 2: With the car still idling, attach gauges and place a large capacity fan in front of the condenser. Check the pressures to see what happens.
   - Step 3: With the car still idling and the gauges still attached, pour water down the front of the condenser. Check the pressures again to see what happens.
If the paper was held in place then you are getting some air flow. If the high-side decreases during step 2 and step 3 then your condenser is not getting enough air which is stopping your system from cooling properly. To correct this issue, you will need a more powerful mechanical fan.

Confirm the correct refrigerant charge is in the system.
All of our systems should be charged with 1.5lbs (24oz) of R134a refrigerant only. If overcharged, you will need to evacuate the system and recharge with the correct amount. *

Measurement meanings:
1. Low temp and high pressure seems to be equal = malfunctioning expansion valve that is stuck open.
2. High side is extremely high and low side is extremely low (possibly into vacuum) = blockage in the system. Remove hoses and blow cold compressed air through it in both directions. Re-check your pressures. If pressures do not change then it is possible that your expansion valve is stuck closed and would have to be replaced.

*Compressor Concerns:
If you have a noisy compressor, it is due to the improper charging with liquid or overcharging. An overcharged compressor will cause rattling. A compressor charged with pure liquid produces a high probability of bent reed valves. When the reed valves get bent they will created a tapping sound. Ensure your system is charged with 1.5lbs (24oz) of R134a refrigerant to avoid compressor related cooling issues.
Wiring Schematic / REVERSE

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OEM OPENING

DRILL 1/4" DIA. HOLE
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