Congratulations...

You have just purchased the highest quality, best performing A/C system ever designed for your 1966, 1967 Chevelle.

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.
Pre-Installation Check List:

☐ 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 smoother.

☐ 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 During the installation you might find the opportunity to repair or upgrade non-working or out of date components.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.

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 and 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’s 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 and turns into a gas. In the condenser, this 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.
The FAN switch works like the OEM switch, moving the lever away from the OFF indicator powers the system.

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

The COLD/HOT positions work like any traditional adjustment lever.

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**Operation**

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...

<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>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution</td>
<td>Dash A/C 100%</td>
<td>Dash A/C 80%</td>
<td>Dash A/C 60%</td>
<td>Dash A/C 40%</td>
<td>Dash 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>
</tr>
<tr>
<td>Compressor State</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
</tr>
</tbody>
</table>
Remove glovebox and door, console (optional) radio and bezel, and set them aside for reinstallation later (see figure 1).

The first steps of the removal of the OEM heater 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 (see figure 3). The third cable is located on top of heater next to defrost duct (see Figure 4).
Disconnect the electrical harness at the resistor block (see Figure 5).

Remove the OEM control head, which is held in with two screws. Retain the OEM screws.

Set the control head aside (you’ll need the bezel later).
Moving to the engine compartment:

In order to remove your heater assembly it is necessary to remove the heater case housing first.

Located on the engine side of the firewall, remove seven (7) bolts around the perimeter of the heater case housing (see Figure 7). Remove the housing (Discard).

NOTE: To remove the two bolts at locations 1A and 7B, it may be necessary to lower the inner fender. Retain these screws.

Drain coolant from radiator. Remove the heater hoses from heater coil and firewall (see Figure 8).

You will also cut a power lead to the blower motor. This will not be re-used.
You should now be able to remove the heater assembly located behind the dash area. Rotate upward being careful not to drain any coolant left in the heater coil.

The OEM defrost duct is secured with two screws remove both screws from defrost duct and set aside.
OEM Heater and Defrost System Removal, continued

Step 1: Locate the template in back of instruction and line it up with cut (dashed) line as shown above. Make sure to mock the cut with the provided adaptor so its as close to the adaptor’s size and that the foam is compacted for a proper seal.

Step 2: Locate defroster adaptor in bag kit E. Attach the defrost adaptor over the opening the OEM defrost duct using the clips on the new defrost adaptor.

Step 3: Reinstall defrost duct using the original hardware.
THESE ARE THE PARTS YOU WILL FIND IN CONTROL BOX
You will use all of these parts and hardware during the next series of installation steps.

D.E.R. Controller
PN# 16-3048

Illustrations NOT shown actual size
Bag Kit B

**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.

- **Right Evaporator Support Bracket**
  - PN#0040-11
- **Fresh Air Inlet Block Off**
  - PN#10-1048-2
- **Defrost/Heat Duct Assembly**
  - PN#2-2025-2
- **Face/Floor Assembly**
  - PN#2-2025-1

Illustrations NOT shown actual size
Air Block Off

Within the engine compartment area, Install Fresh Air inlet block-off Pn# 10-1048-2 (from Bag Kit B) over the OEM fan opening using the OEM screws (A1 and B7).

If necessary, reinstall inner fender.

Remove evaporator unit from box and place on a work surface.
Familiarize yourself with the 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
- Expansion Valve
- Liquid Tube
- Heater Tubes
- Dash Servo Motor
- Defrost Adapters
- Defrost/Heat Duct Assembly
- Firewall Lower Mounting Bracket
- Floor Air Outlet
- Condensation Drain Outlet
- Suction Tube
- Dash Duct Assembly
- (4) Dash Air Outlets
- Evaporator Case
- Dash Servo Motor
- Firewall Lower Mounting Bracket
BENCH CALIBRATION & FUNCTION TESTING

- Items Needed for Bench Calibration

- Locate Evaporator Unit from Main Box
- Pre-installed Face Duct Assembly
- Pre-installed Defrost/Heat Duct Assembly
- 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
- Locate ECU and Calibration Key from Bag Kit C

DO NOT USE CALIBRATION KEY WITHOUT TECH SUPPORT

- Acquire a 12V Battery (NOT a battery charger)

Acquire a 12V Battery (NOT a battery charger)
PRE-INSTALLED DUCT ASSEMBLIES

Install 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# 2-2025-1

Part# 2-2025-2
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
4. Connect Yellow Harness into Face/Floor Port on ECU

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

6. Connect Orange Harness into Water Valve Port on ECU

7. From your D.E.R., Connect Green Harness into Control Port on ECU
8. Connect corresponding Fan Switch harness to the Bower Switch on Controls. Connect Power lead to 12V.

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

10. Connect corresponding fan motor harness. Connect ground. Connect both BLUE leads into thermostat (either lead into either terminal)

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

12. Connect ground. (White lead is to be connected to compressor)
FUNCTION TESTING

- Function Test, Steps 1 thru 3

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 DEF
   AIR OUT OF DEFROST VENTS

3. Move MODE knob to FLOOR
   AIR OUT OF FLOOR VENTS
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
Mounting the Evaporator

Installing the complete evaporator unit under the dash will go much easier with the help of a friend.

It will be necessary to loosen the dash on the passenger side in order to slide the evaporator into place. Located below the dash to the left (a) and right (b) of the glove box opening are two bolts that will be removed and reused. It will also be necessary to remove the screw holding the trim panel as shown (c).
NOTE: Two people are needed for this step!

Place evaporator on floor panel. Roll unit up behind the glove box opening, inserting tubes thru the large hole in firewall. It is necessary to carefully pull the bottom of the dash to clear the evaporator.
Mounting the Evaporator - Steps 2 and 3

Insert upper rear firewall mounting stud through the OEM hole as shown. Attach using one ¼” – 20 flange nut provided. **NOTE: leave nut loose at this time!**

Locate in Bag Kit B the two ¼” – 20 bolts and washers. Attach to lower mounting bracket through OEM existing holes. **NOTE: leave bolts loose at this time!**

View from the inside of the engine compartment
Mounting the Evaporator - Steps 4 thru 5

Reinstall lower dash bolts in support braces with bolts previously removed.

Reinstall Screw into trim piece.
Mounting the Evaporator - Steps 4 thru 5

Locate in bag kit B the right evaporator support bracket (PN#0040-11). Using a non powered screwdriver attach the brace through the holes provided on the evaporator (see figure 1 for EVAP hole location) using (2) #10 x 5/8" pan head screws provided in bag kit B (see Step 4). Attach brace to the dash panel using one #10 x 16 -3/4" Tek screw provided in bag kit B (see Step 5).

Tighten mounting stud nut and lower mounting bracket on firewall.
Installing the Drain tube

Mount Evaporator level to firewall.

Locate Drain nipple on Evaporator and drill a 3/4” hole below the nipple on the firewall. This will allow condensation to drain properly.

Attach 1/2” clear drain tube to Evaporator nipple and run through 3/4” hole you just drilled.

All condensation will now drain out into the engine bay.

THIS IS FROM INSIDE THE VEHICLE!
Mounting the D.E.R.

Before installing your new D.E.R. the original controller trim bezel will need to be installed as follows:

1) Locate OEM control removed from dash

2) Remove one upper and two lower retaining clips (retain hardware)

3) Place OEM trim bezel on D.E.R. as shown, and secure using original retaining clips

4) Mount D.E.R. into dash using original hardware
Bag Kit C

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.

ECU and Calibration Key
DO NOT USE CALIBRATION KEY WITHOUT TECH SUPPORT

Wire Harness System

Illustrations NOT shown actual size
Wiring Installation Steps 1 and 2

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 Installation Steps 3 thru 6

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

4. Connect Blue Harness into Defrost/Heat Port on ECU

5. Connect Orange Harness into Water Valve Port on ECU
   Next route other end of harness out of firewall opening as shown below

6. From your D.E.R., Connect Green Harness into Control Port on ECU
   Mount your ECU under the dash with included tek screws.
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.

12V Power (20 amp fuse) Grd -

Connect corresponding fan motor harness. Connect ground.

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

Click!

(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.

Electronic Water Control Valve
PN# 16-1023

Clear Plastic Drain Tube

Firewall Block Off
PN#10-1048-1

Refrigerant Tape

Six Worm Gear Clamps

Seven #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 seven #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 loose white wire from main power harness can be fed thru the same hole (as shown below).
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. heater 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
  PN#2-2048-1
- Two Duct Hoses, 2" I.D.
- Four Zip-Ties

**Bag F**
- Center Dash Vent Assembly
  PN#10.183.28
- Lower Louver (optional)
  PN#2-1038
- Cap Plug
  PN#DM-2001
- Two Duct Hoses, 2" I.D.
- Two #10 - 16 x 3/4" Tek Screws
- Four Zip-Ties

**Bag G**
- Two Ball Louvers
  PN#2-1006
- Two Duct Hoses, 2" I.D.
- Four Zip-Ties
- Two #8 X 3/8" Phillips Screws
- GLOVE BOX MOUNTING
Defrost

One end of the duct hose is installed over the defrost/heat duct assembly outlets on the main unit.

Next 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 on both ends.
Use the included templates to mark and cut holes in the lower dash for the ball louver adaptors. Cut out the templates, tape templets to lower dash corners, and use a 2 1/2” hole bit to cut the holes. The ball vents come with hose adaptors, which you will use to secure the louvers in place (place ball louver thru dash from the front, screw on adaptor from back).

Route supplied flex hoses as shown below. Take your time and route them so they don’t become kinked or torn. Hoses are secured to the back of the louvers with the included tywraps.

We’ve also included an OPTIONAL, rectangular lower dash louver (Bag Kit F) that can be used to provide extra cooling for the passenger side of your vehicle. If you want to utilize this vent, just mount onto the lower dash using the included tek-screws and route the included flex hose to it. If you decide not to use this louver, BE SURE TO CAP THE OPEN PORT of the face/floor assembly with the included cap plug.

The smoother the route of the flex hoses the better the airflow.

GOOD IDEA
Center Louver Installation

In order to install the center louver you’ll need to cut into the center of your upper dash using provided template (this space is used for vents on factory air cars). Cut out and tape the included template, mark it, cut out the area for the vent. It’s best to cut a bit small first, then enlarge slowly (with a file) until you can get a tight and secure fit for the vents. Insert the new center louver assembly (it will self-secure).

Attach duct hose to the back of the louver assembly with tywraps and then route to the evaporator. Take your time and route the hose so it doesn’t become kinked or torn.

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

The smoother the route of the flex hoses the better the airflow.
We’ve included a replacement glovebox that you can install at this point. We’ve included screws (Bag Kit G), and you’ll attach the new glovebox to the OEM glovebox door.

This completes the interior portion of the **PERFECT FIT-ELITE** installation process. This is a good time to make a final check that all the controls still move freely and that nothing is loose or hanging down.
THESE ARE THE PARTS YOU WILL NEED FOR THE ENGINE COMPARTMENT INSTALLATION ON A 1966-1967 CHEVELLE

- Condenser Kit
- Drier Bracket
- Splice and Bullet Connector
- Two 1" grommets PN#14-1098
- Condenser Bracket PN#0040-31
- Condenser Bracket PN#0040-30
- Drier Bracket
- Eight #10 - 20x1/4" Screws
- Two #10 - 32x1/2" Bolt and Lock Nut
- One #10 - 20x3/4" TEK Screw
- One Hose Clamp
- Pressure Switch and harness, Bag of O-rings and Mineral Oil Tube
- Condenser PN# 11-1093
- Liquid Tube PN#0040-35
- Three Refrigerant Hoses
- Eight #10 - 20x1/4" Screws
- Two #10 - 32x1/2" Bolt and Lock Nut
- One #10 - 20x3/4" TEK Screw
- One Hose Clamp
- Pressure Switch and harness, Bag of O-rings and Mineral Oil Tube
- Condenser PN# 11-1093
- Liquid Tube PN#0040-35
- Three Refrigerant Hoses

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Place condenser so that both hose connections are on the right side (LARGER FITTING ON TOP).

STEP 1:

BOTTOM BRACKET: Attach the lower bracket PN#0040-30 using four #10-20 x 1/4” HEX-HEAD screws into the 3rd, 4th and 7th, 8th from fittings. (RIGHT SIDE)
Condenser Prep.

Flip condenser over so that both hose connections are now on the left side (LARGE FITTING ON TOP).

**STEP 2:**
Attach top bracket PN#0040-31 using four #10-20 X 1/4” HEX-HEAD screws into the 6th, 7th and 9th, 10th holes from fittings. (LEFT SIDE)

**STEP 3:**
Insert the drier into the drier mounting bracket. Attach the drier liquid tube to the “IN” (SEE Figure 1) port on drier and to the connection on the condenser (using supplied o-rings on both ends and a few drops of mineral oil to each o-ring). Use the two #10 - 32 x 1/2” Bolts and Lock Nuts (attach drier from the front of the condenser).

**STEP 4:**
Next install the pressure switch to the liquid tube PN#0040-35. (using supplied o-ring and a few drops of mineral oil to o-ring)

**FINGER TIGHTEN ALL FITTINGS UNTIL THE DRIER IS IN PLACE!**
Use two wrenches when tightening all o-ring connections. Place one wrench on condenser connection, and tighten other fitting connection with other wrench. Apply equal pressure to both wrenches - this will keep twisting force from damaging condenser parts.

**FAILURE TO DO SO WILL DAMAGE CONDENSER.**
Condenser Installation

REMOVE THE FOLLOWING:
- Battery
- Radiator
- Hood latch
- Grill (for ease of installation)

Retain all hardware
1: Place condenser assembly from engine side of radiator support carefully rotating assembly through radiator opening and placing on **FRONT** side of radiator support as shown.

2: Position the condenser/drier unit into place, locating it so that the holes in the condenser brackets align with the holes in the core support used to attach the hood latch.
3: Reinstall the hood latch using original hardware.

(The condenser is held in place when the hood latch is reinstalled.)

Reinstall the radiator using original hardware.
Step 4 Your OEM fender liner was designed to support A/C hose routing and conveniently has two small indentations on the passenger side behind battery (aftermarket fender liners may or may not have these indentations). Locate these two small indentations and drill a 1-3/8” hole thru each (be sure to check for any obstructions before drilling, and remove any sharp burrs from the drilling before continuing, Step 5, Insert two rubber grommets (Part # 14-1098). You’ll route the discharge hose to the compressor will go thru this hole, as well as the liquid hose and the wiring harness plug for the high-pressure switch.
Step 6: Attach the discharge hose (45 degree fitting) to the top of the condenser (using supplied o-ring and a few drops of mineral oil) and route around core support and thru the hole previously drilled in fender liner then continuing in towards firewall and connect to compressor.

Step 7: Attach the liquid hose (90 degree fitting) to the drier (using supplied o-ring and a few drops of mineral oil) and route around core support and thru the hole previously drilled in fender liner then continuing in towards firewall and connect to evaporator connection on firewall.

Step 8: Attach supplied hose clamp using one #10-20 x3/4” TEK screw to frame rail looking through bumper opening on passenger side as shown above.
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.

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 insure 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 45 minutes (minimum).

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 134a refrigerant. It will require 1.5 lbs (or 24 oz).

5) Your new compressor comes charged with oil - NO additional oil is needed.

6) Insure 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 approx. 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.

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.

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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 ratttle 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 permanantly 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 guages 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 guages 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 guages 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.
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