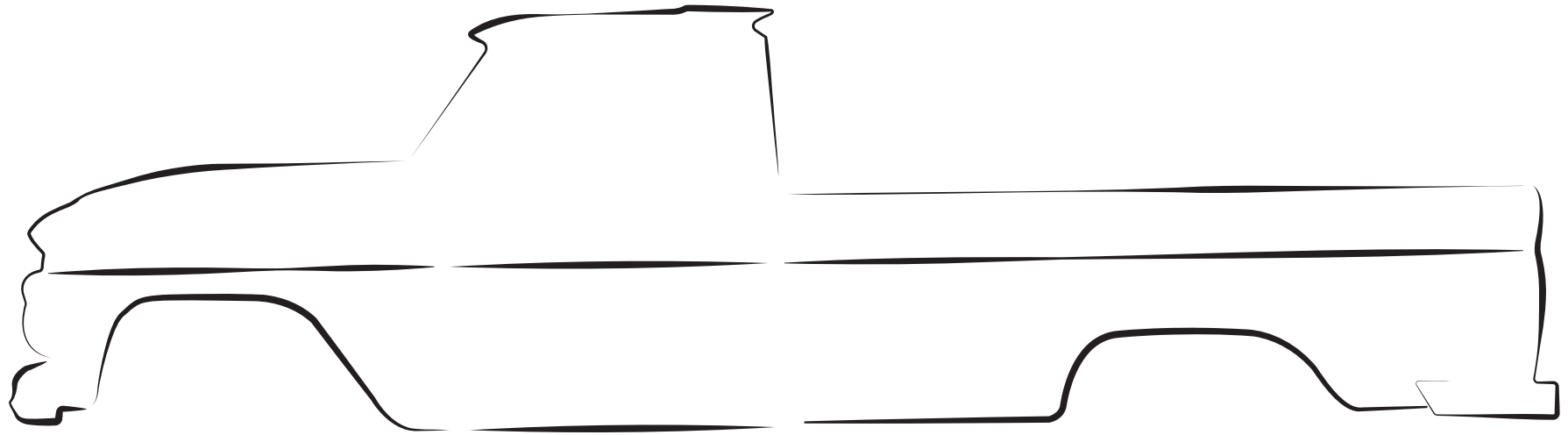




Installation Manual

1960-63 Chevrolet Pickup

1960-63 Chevrolet Suburban

DOCUMENT #20-3031

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Congratulations...

You have just purchased the highest quality, best performing A/C system ever designed for your 1960-63 Chevrolet Pickup.

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 During the installation you might find the opportunity to repair or upgrade non-working or out of date components.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

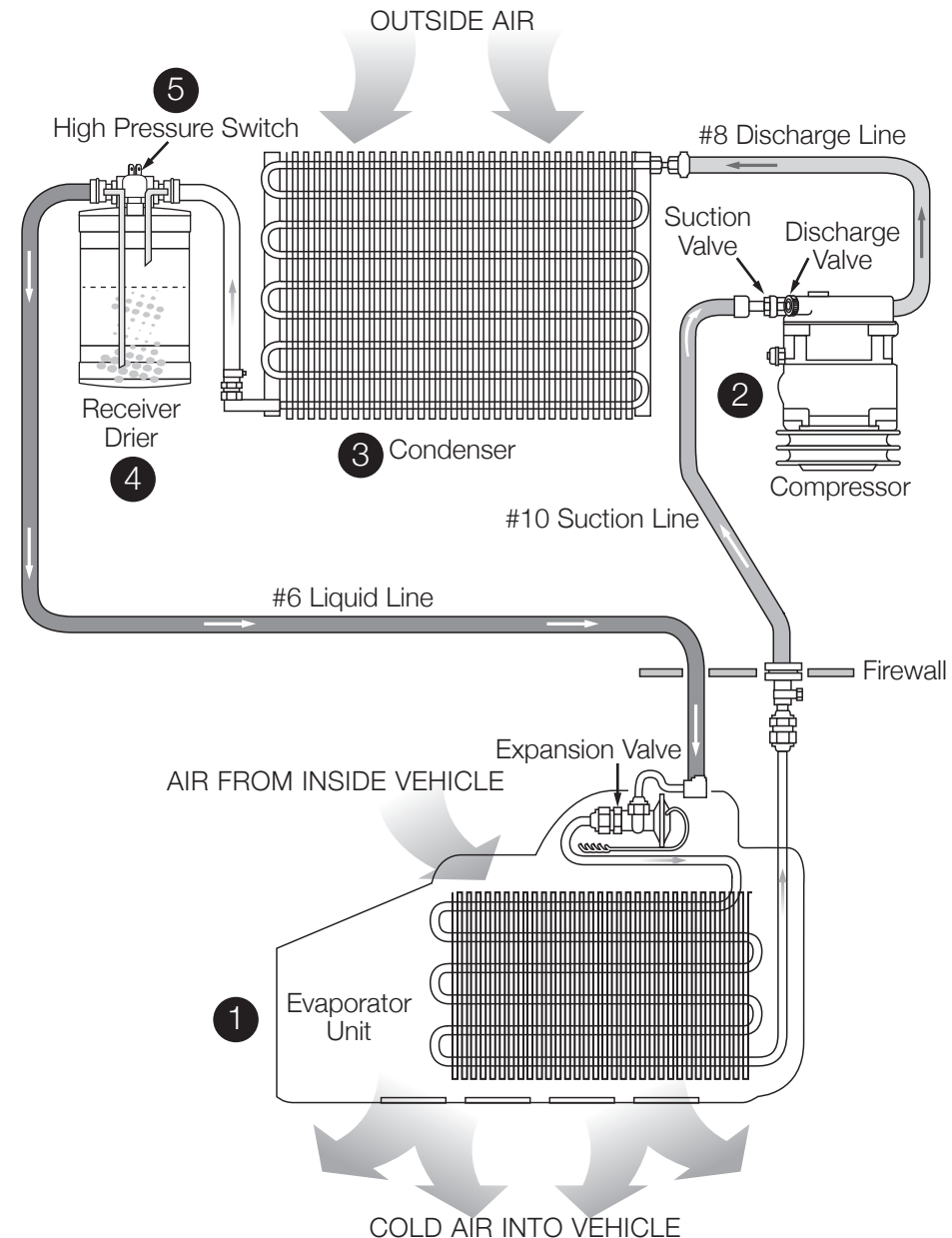
- ☐ Fittings: Use one or two drops of mineral oil (supplied with your kit) on ALL rubber o-rings, threads and rear of bump for o-ring where female nut rides. Do not use thread tape or sealants.
- ☐ Measure twice (or more), cut once
- ☐ **Should you have any technical questions, or feel you have defective components (or missing items), call us immediately, we will be glad to assist you.**

YOU CAN NOW BEGIN THE INSTALLATION...

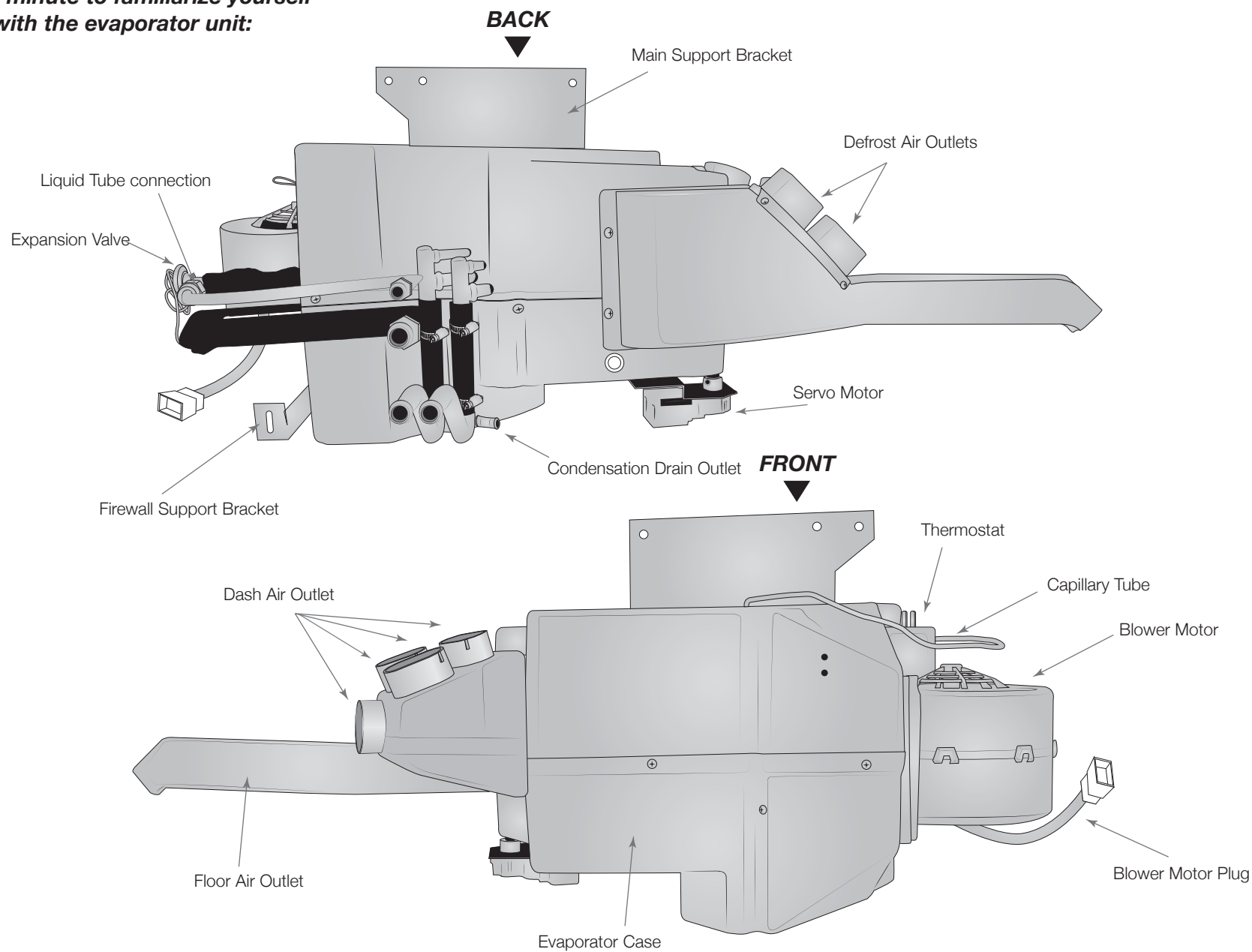
A Basic Overview of Automotive A/C....

- 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 vehicle 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.

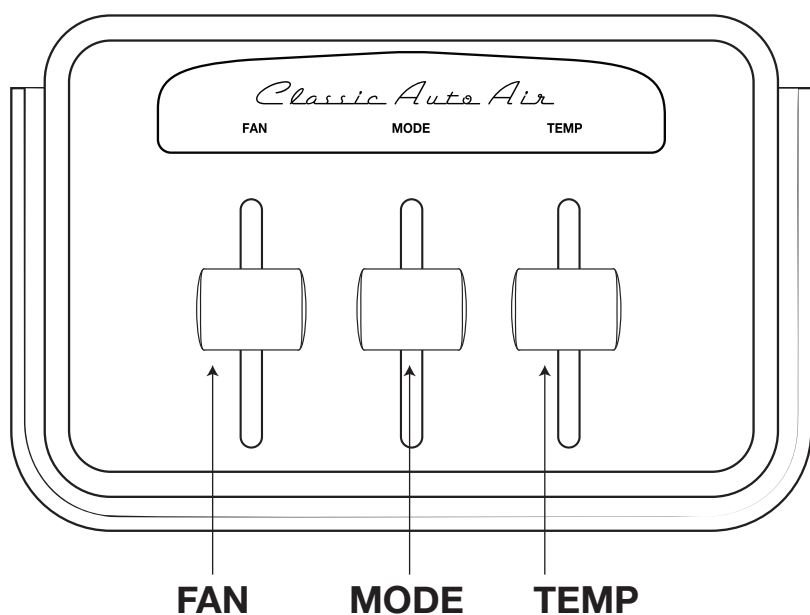


**Take a minute to familiarize yourself
with the evaporator unit:**



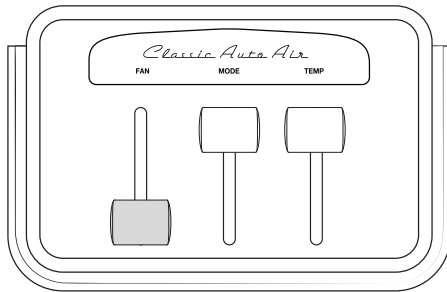
Control & Operating Instructions

Your new **Smart Series A/C** 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 **Smart Series A/C** for maximum comfort...



FACE DEF/FLR	POSITION	MODE	COMPRESSOR	VALVE POSITION	COMPRESSOR	COLD HOT
	1	Dash A/C 100%	ON	CLOSED - 0%	ON	
	2	Dash A/C 90% Def/Floor 10%	ON	OPEN - 10%	ON	
	3	Dash A/C 80% Def/Floor 20%	ON	OPEN - 20%	ON	
	4	Dash A/C 70% Def/Floor 30%	ON	OPEN - 30%	ON	
	5	Dash A/C 60% Def/Floor 40%	ON	OPEN - 40%	ON	
	6	Dash A/C 50% Def/Floor 50%	ON	OPEN - 50%	ON	
	7	Dash Defrost 40% 60%	ON	OPEN - 60%	ON	
	8	Dash Defrost 30% 70%	ON	OPEN - 70%	ON	
	9	Dash Defrost 20% 80%	ON	OPEN - 80%	ON	
	10	Dash Defrost 10% 90%	ON	OPEN - 90%	ON	
	11	Floor 100%	ON	OPEN - 100%	OFF	

1



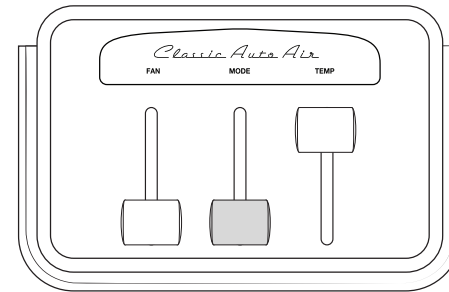
Move FAN knob to HIGH
Move MODE knob to DASH
Move TEMP knob to COLD



AIR OUT OF DASH VENTS



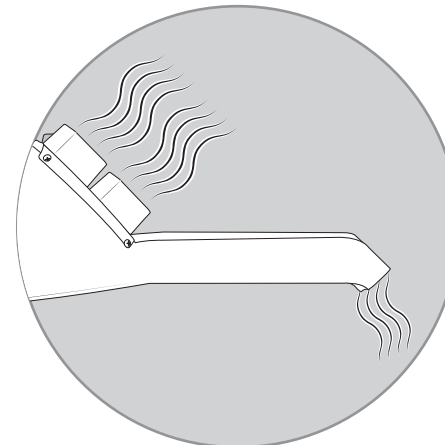
2



Move MODE knob to DEFROST/FLOOR



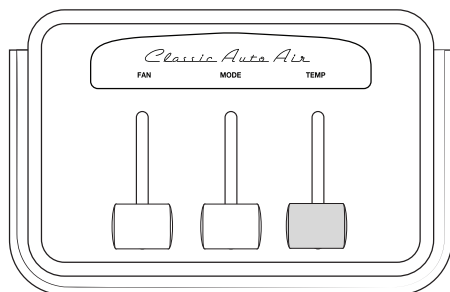
AIR OUT OF DEFROST/FLOOR VENTS



OPERATION

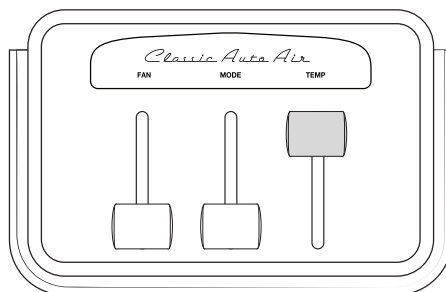
• Function Test, Steps 3 and 4

3



Move TEMP knob to HOT

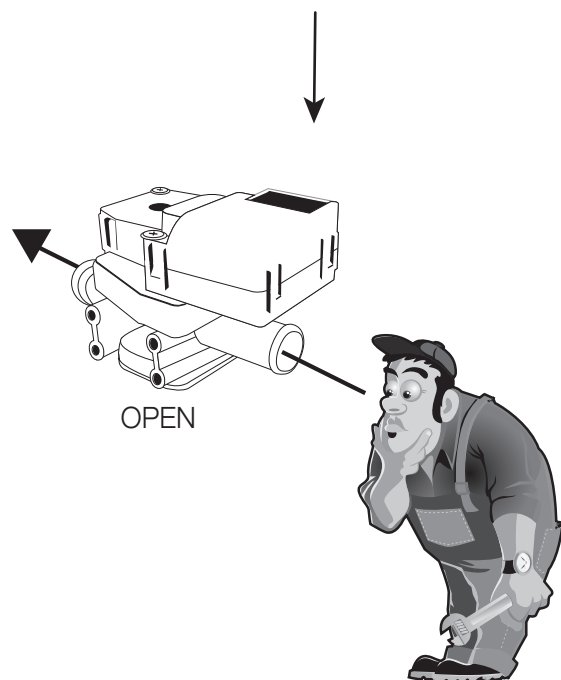
4



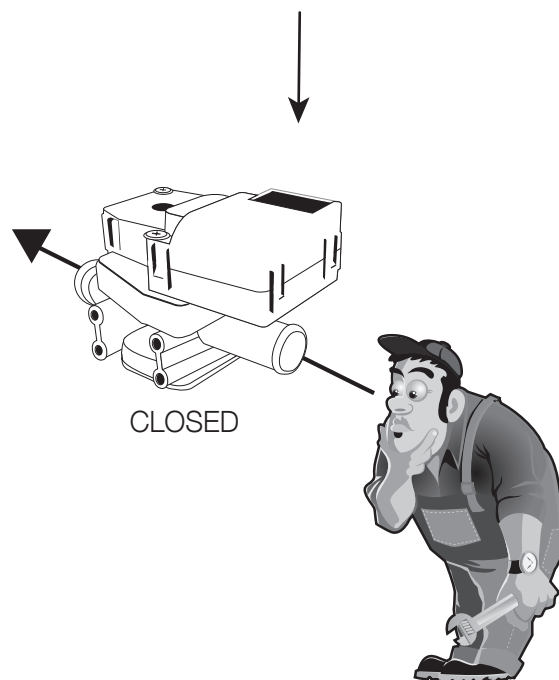
Move TEMP knob to COLD

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.



You will be able to see through water valve passage

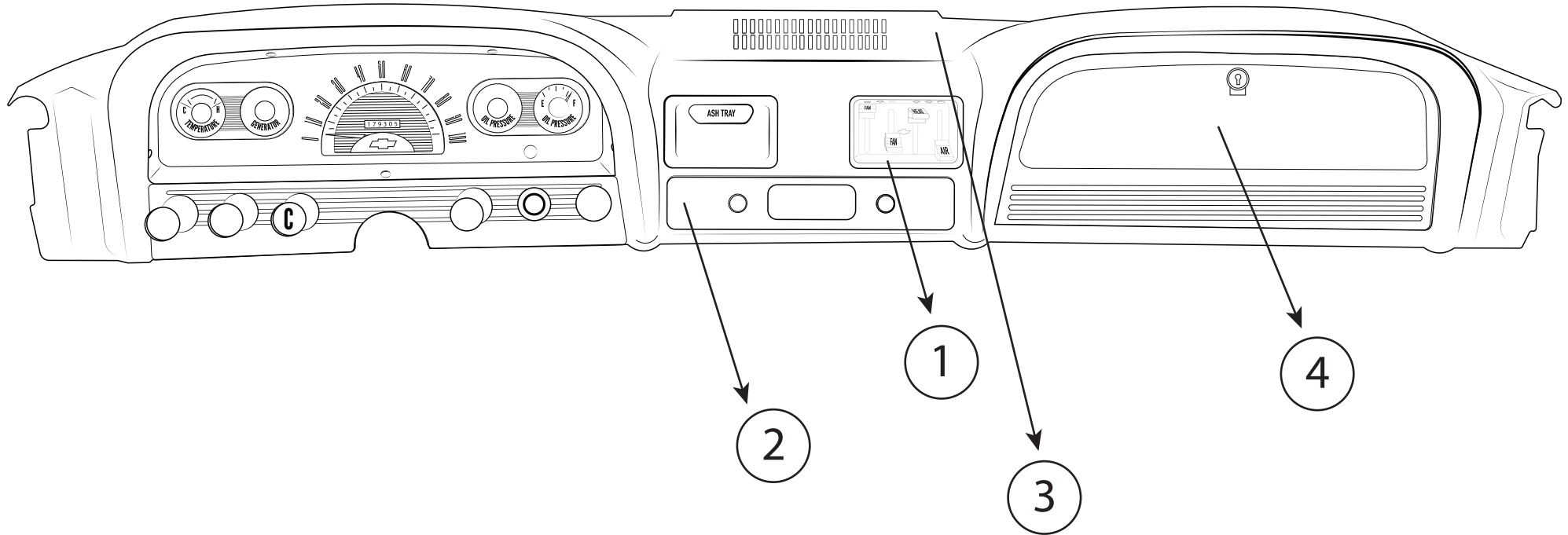


You will NOT be able to see through water valve passage

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

Remove Glove box, Console (if equipped), Radio OEM heater controls and defrost duct, set aside for modification and reinstall later.

The removal of the Original Heater Assembly can be accomplished by disconnecting two control cables. One is attached to the Heat/Defrost door. One is attached to the air shut off door. Remove original distribution box and remove two nuts above blower outlet.



1. Remove Heater controls.
2. Remove radio and keep hardware for reinstall.
3. Disconnect defrost duct work.
4. Remove the Glove box door, and remove glove box. Retain glove box door and all original hardware. Discard the glove box housing.



Moving to the engine compartment:

Located on the engine side of the firewall, remove five (5) bolts around the perimeter of the heater case housing (see Figure 7). Remove the housing (Discard).

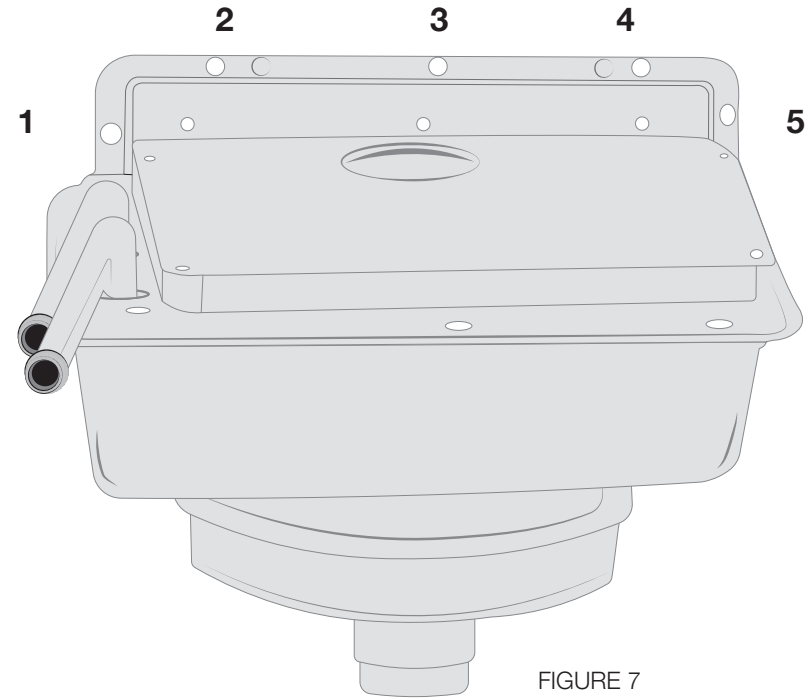


FIGURE 7

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.

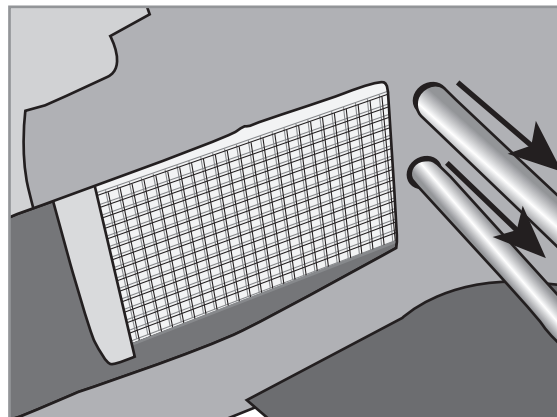
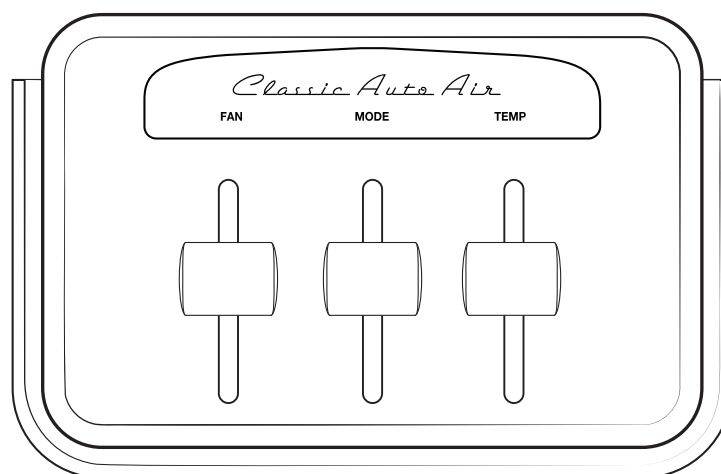


FIGURE 8

THESE ARE THE PARTS YOU WILL FIND IN BAG KIT A

(D.E.R. Controller)



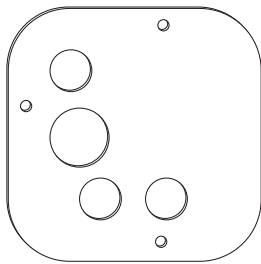
*D.E.R. Control
PN#16-4031*



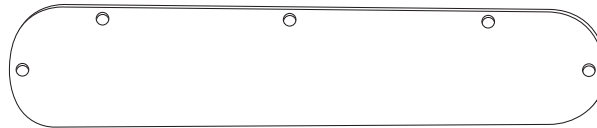
#10 x 3/4" Tek Screw

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.



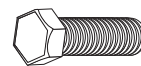
*Fresh Air Inlet Block Off
PN#10-3032-1*



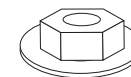
*Fresh Air Inlet Block Off
PN# 0032-26*



Two #10 x 5/8" Phillips Screws



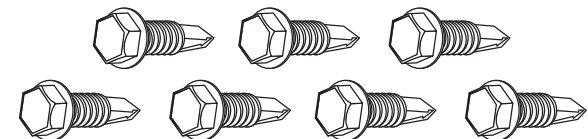
One 1/4 - #20 x 1" Bolts



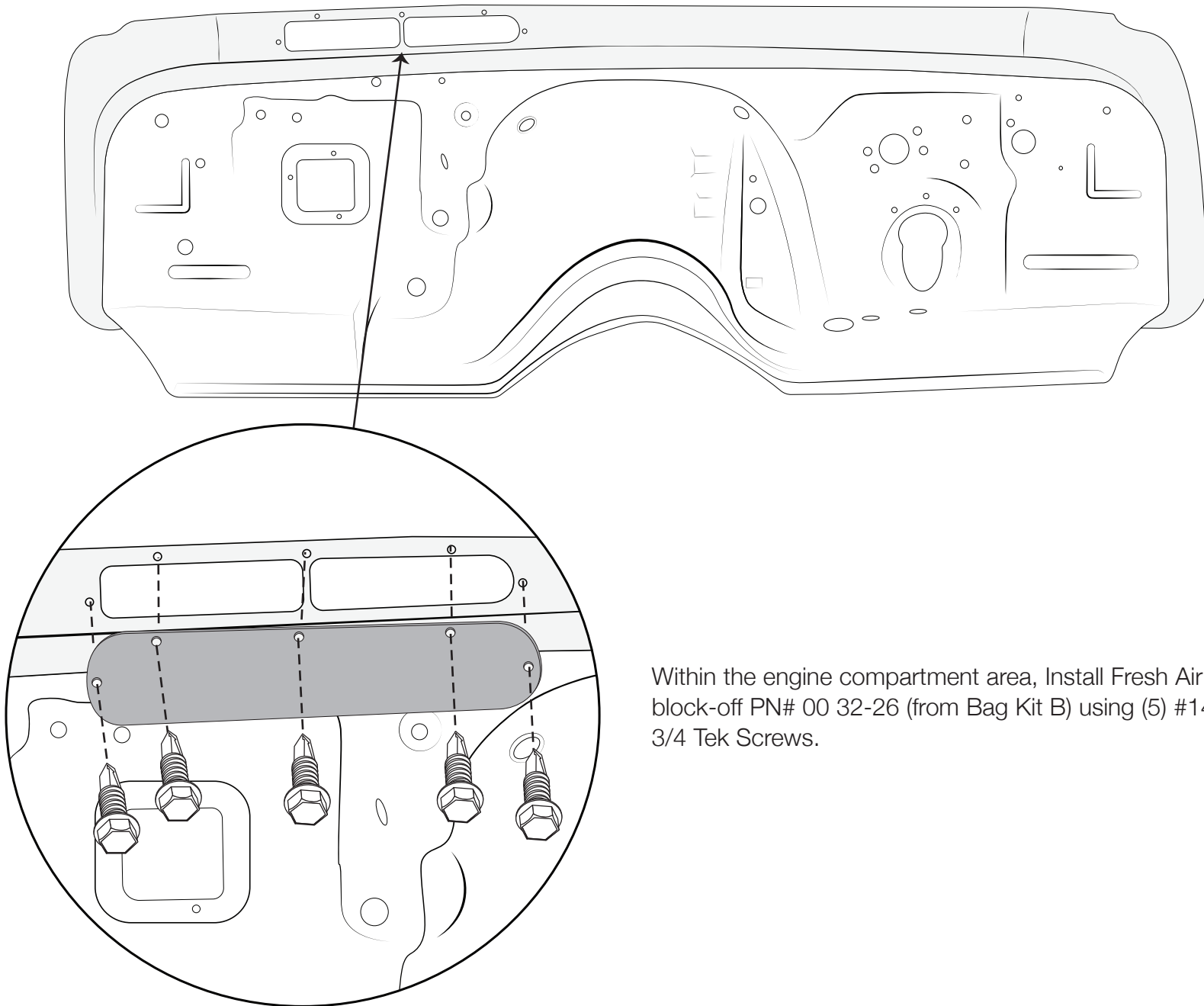
One Flange Nuts



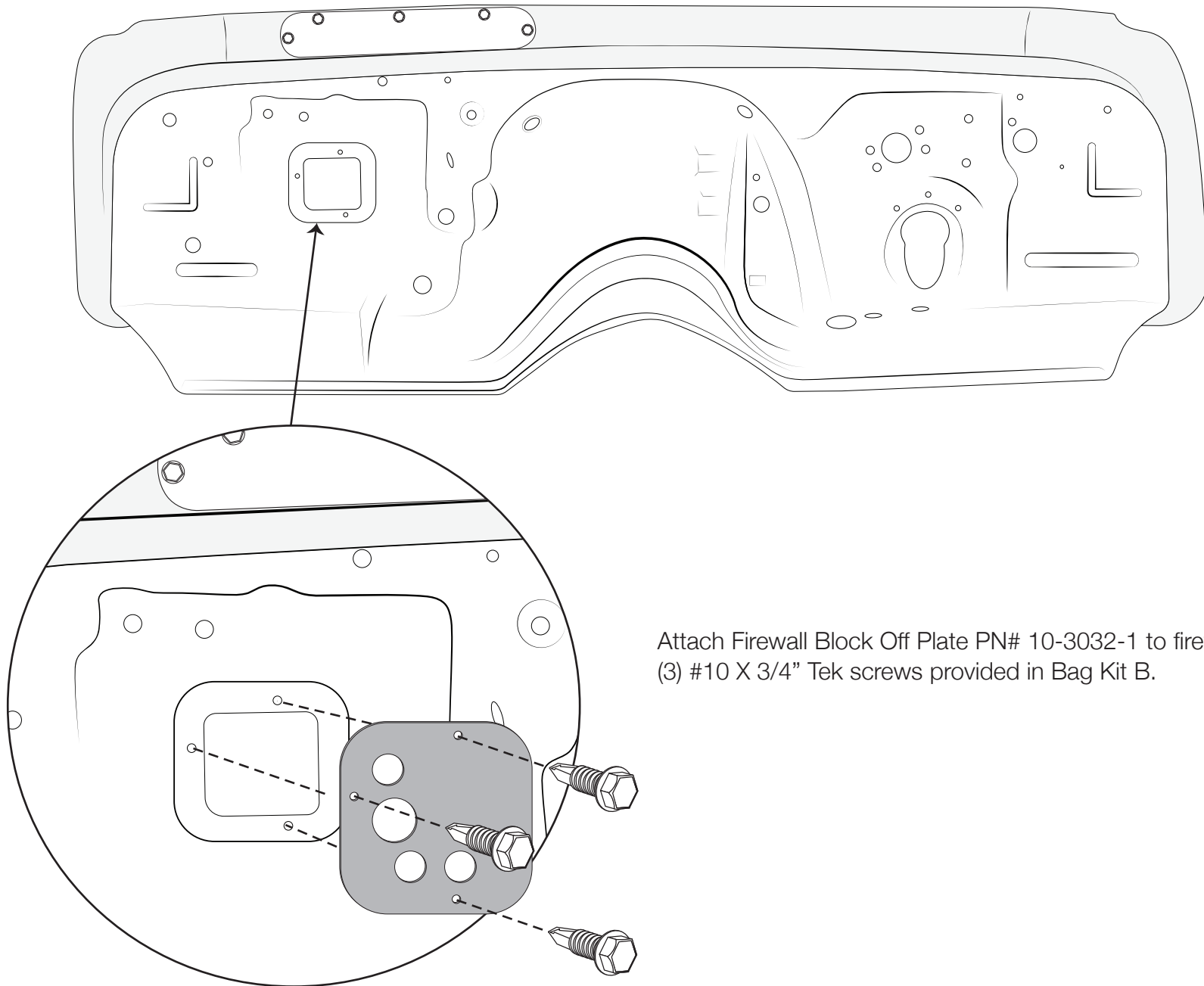
Three #10 - 16 x 3/4" Tek Screws



Seven #14 - 16 x 3/4" Tek Screws

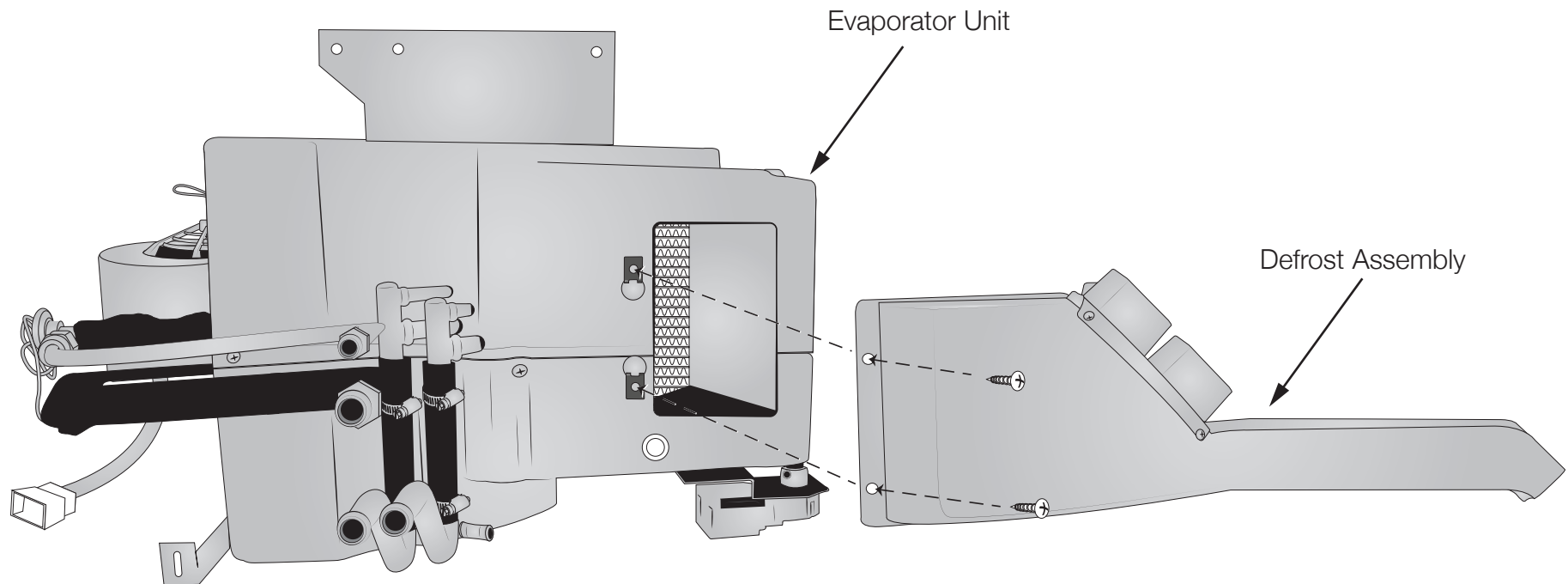


Within the engine compartment area, Install Fresh Air inlet block-off PN# 00 32-26 (from Bag Kit B) using (5) #14-16 x 3/4 Tek Screws.



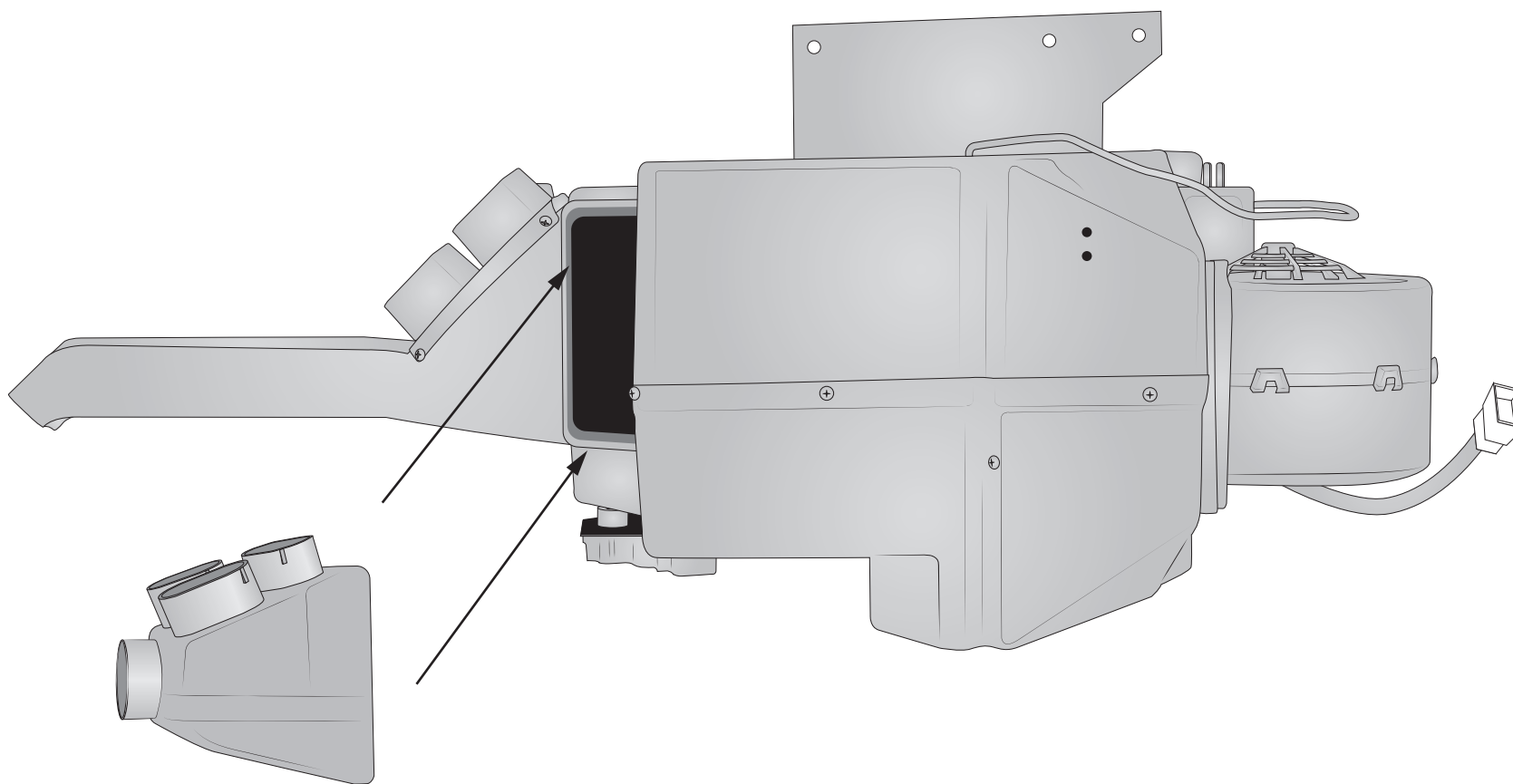
Attach Firewall Block Off Plate PN# 10-3032-1 to firewall using
(3) #10 X 3/4" Tek screws provided in Bag Kit B.

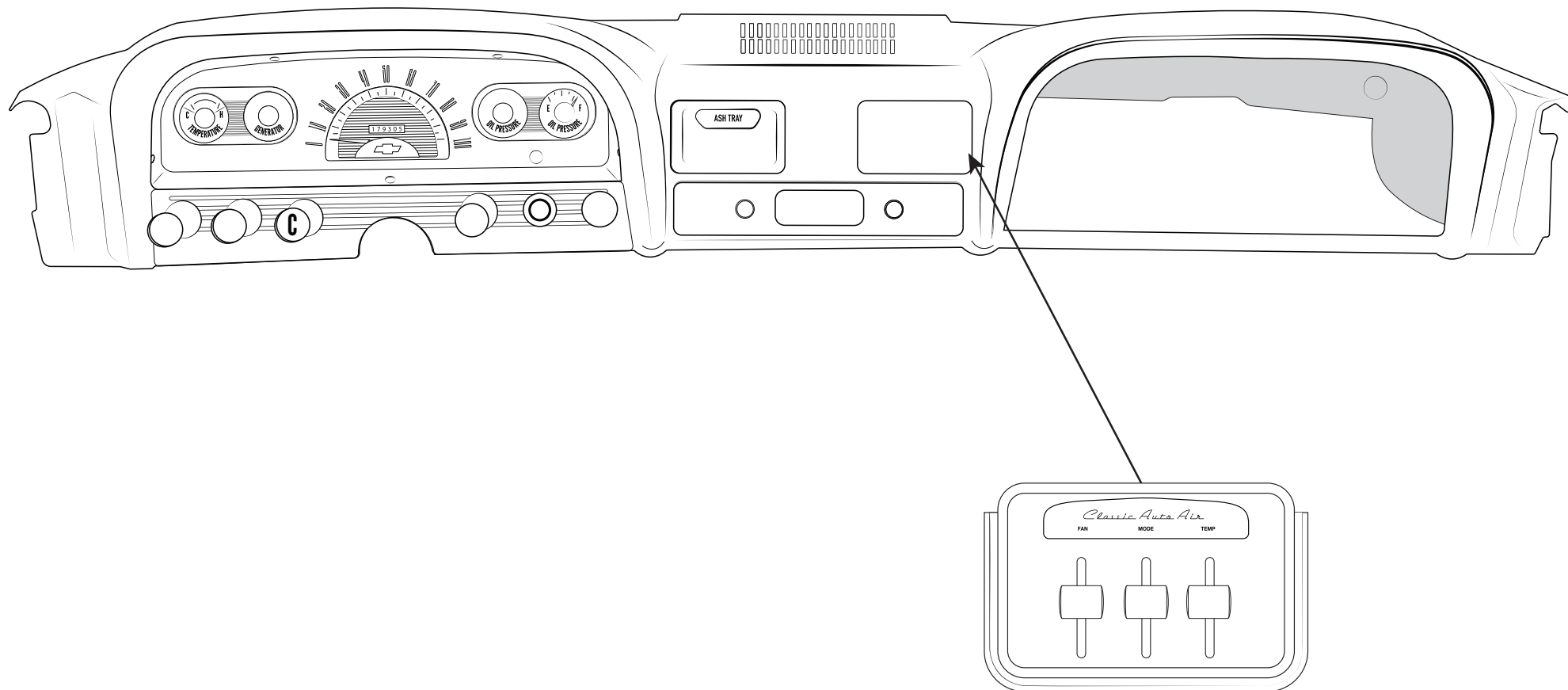
Remove Evaporator Unit and Defrost Assembly from box. The Defrost Assembly is pre-installed using Two #10 x 5/8" Phillips Screws.



Note: The Defrost adapter will have slight movement until it is installed, pressure of installation will make it stable.

Pre-installed Face Duct Assembly

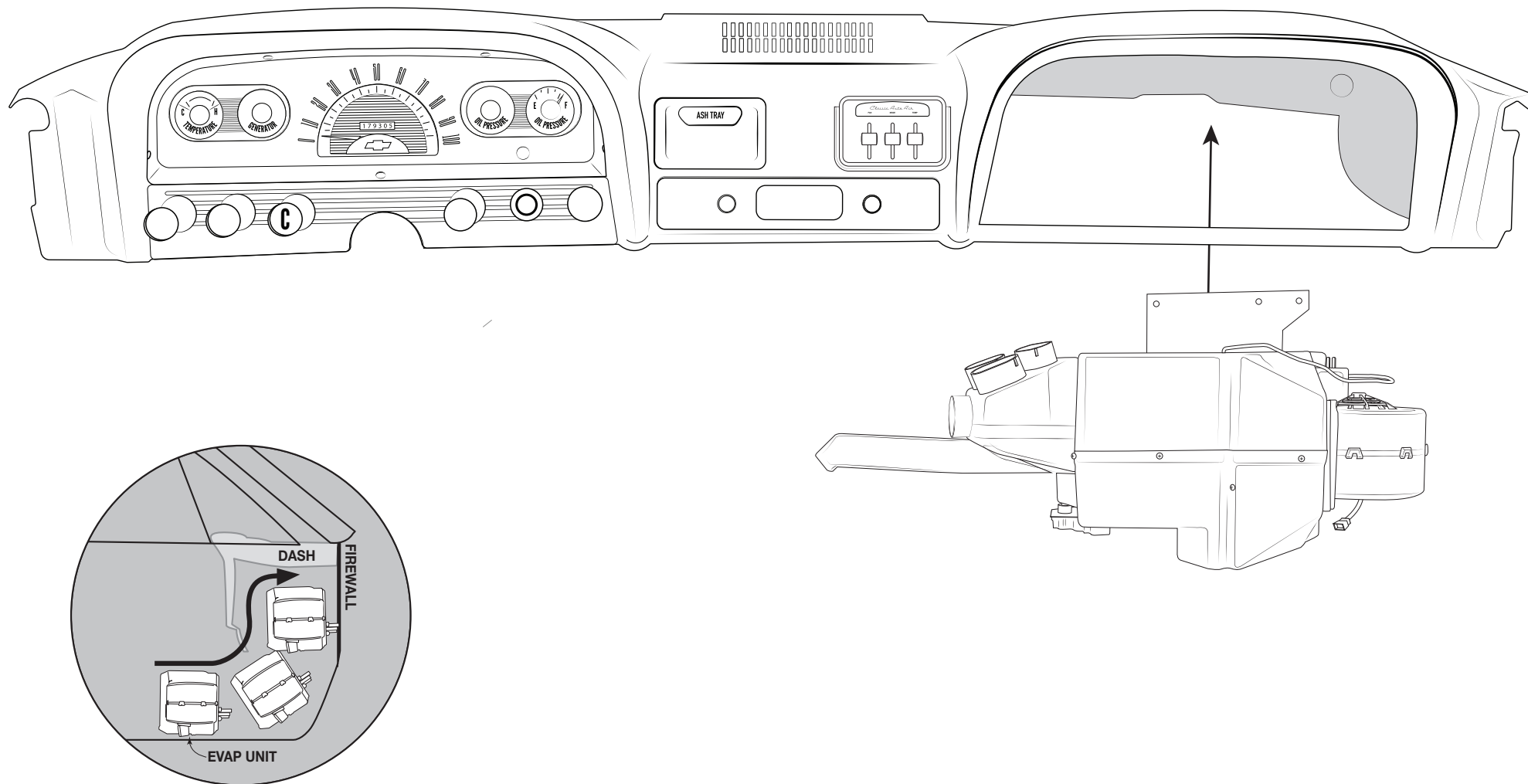


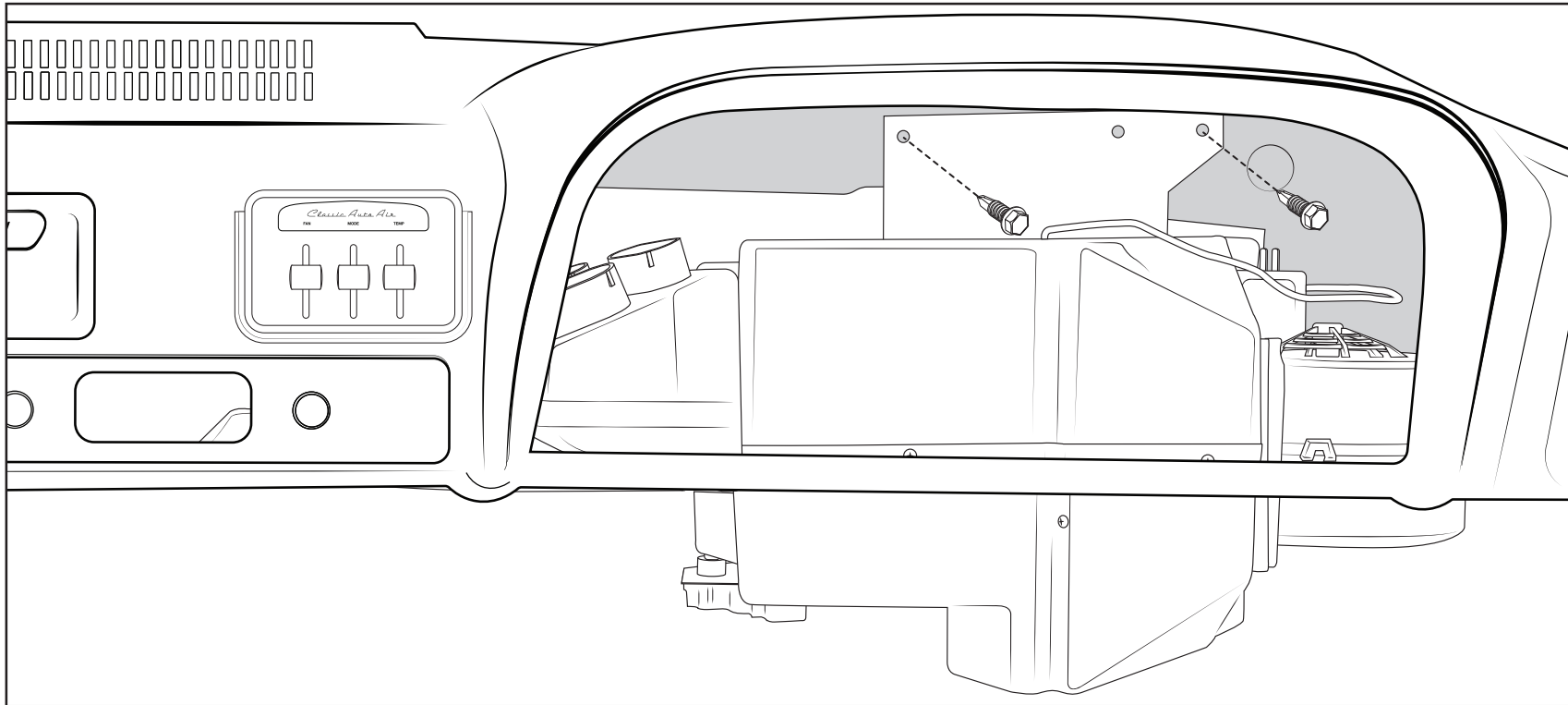


Install D.E.R. at this time using original mounting hardware.

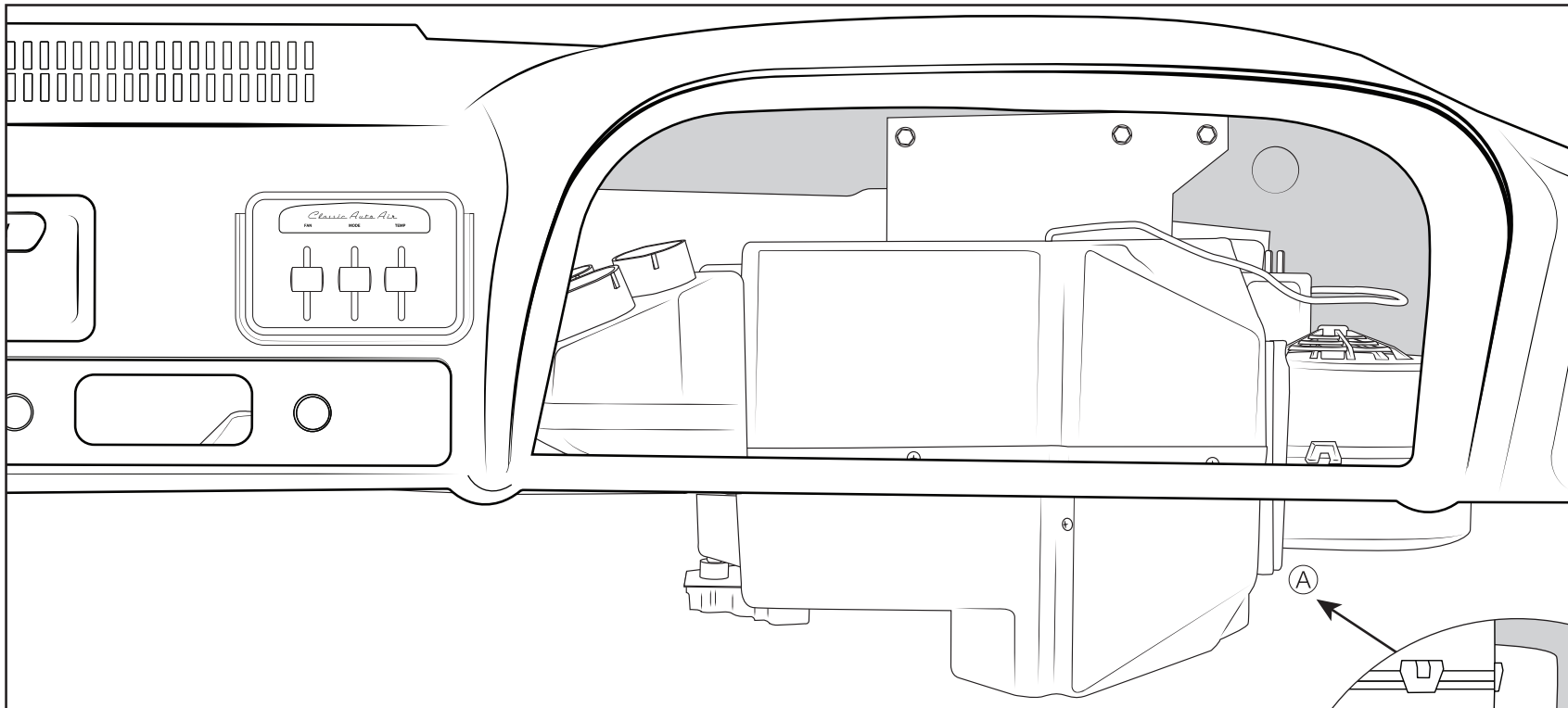
NOTE: Two people are needed for this step!

Place evaporator on floor panel. Roll unit up behind the glove box opening, inserting tubes thru the holes in the firewall block off plate.

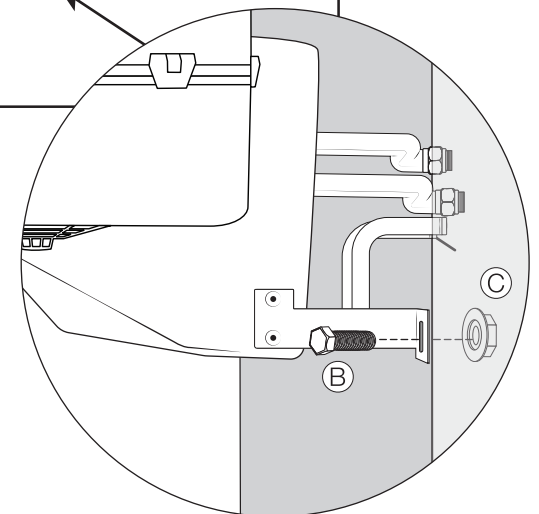




Holding the unit level, attach through top unit support into the fresh air duct behind the glove box. Use Two #14 - 16 x 3/4" Tek Screws from Bag Kit B.

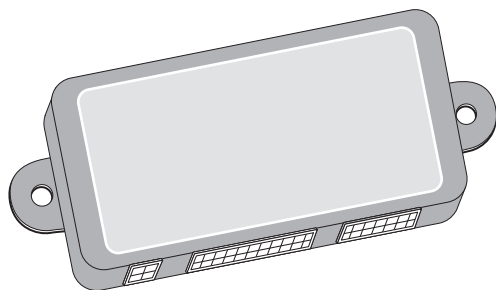


- (A) Locate the mounting bracket underneath the blower motor.
(B) Match drill a 9/32" hole through the bracket, and insert a 1/4" x 1" bolt.
(C) Secure with a Flange Nut.

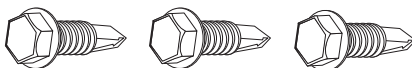


THESE ARE THE PARTS YOU WILL FIND IN BAG KIT C

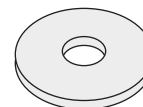
You will use all of these parts and hardware during the next series of installation steps.



ECU
PN# 16-2500



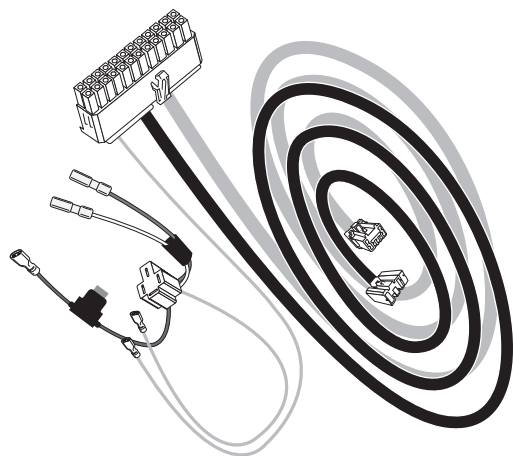
Three #10 - 16 x 3/4" Tek Screws



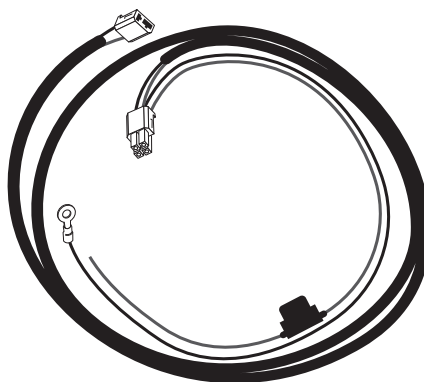
Firewall Grommet



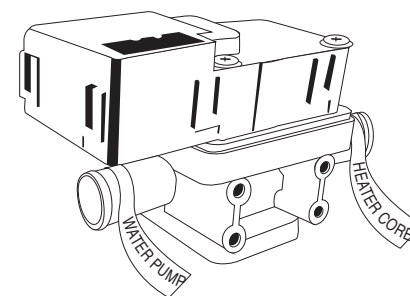
Relay
PN# 30-13373



Servo Output Harness
PN# 0125-20R3A



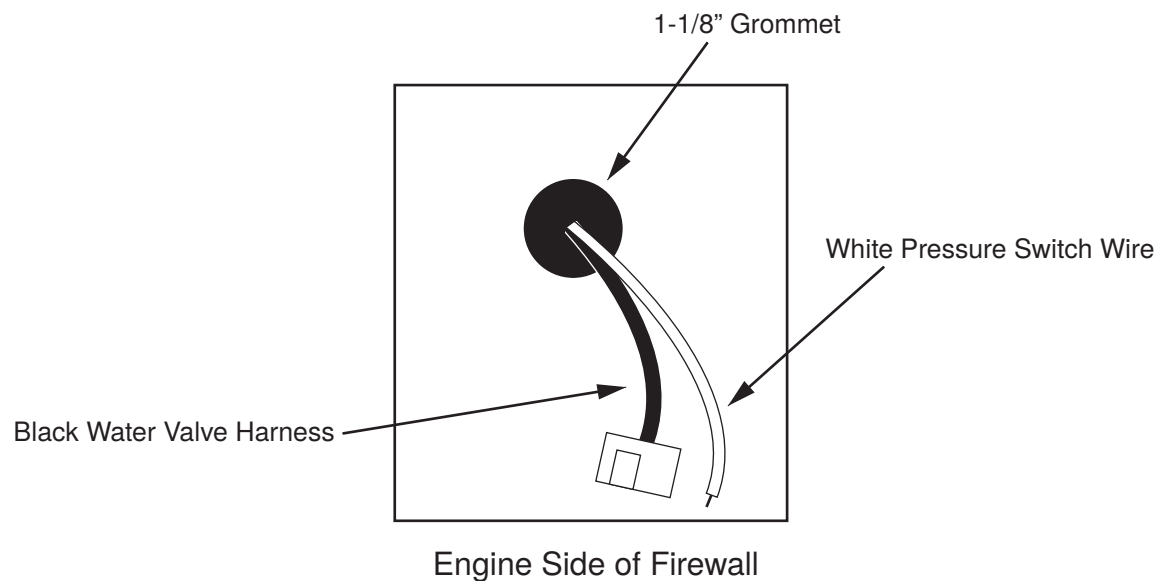
Harness Power Supply
PN# 0125-5R1



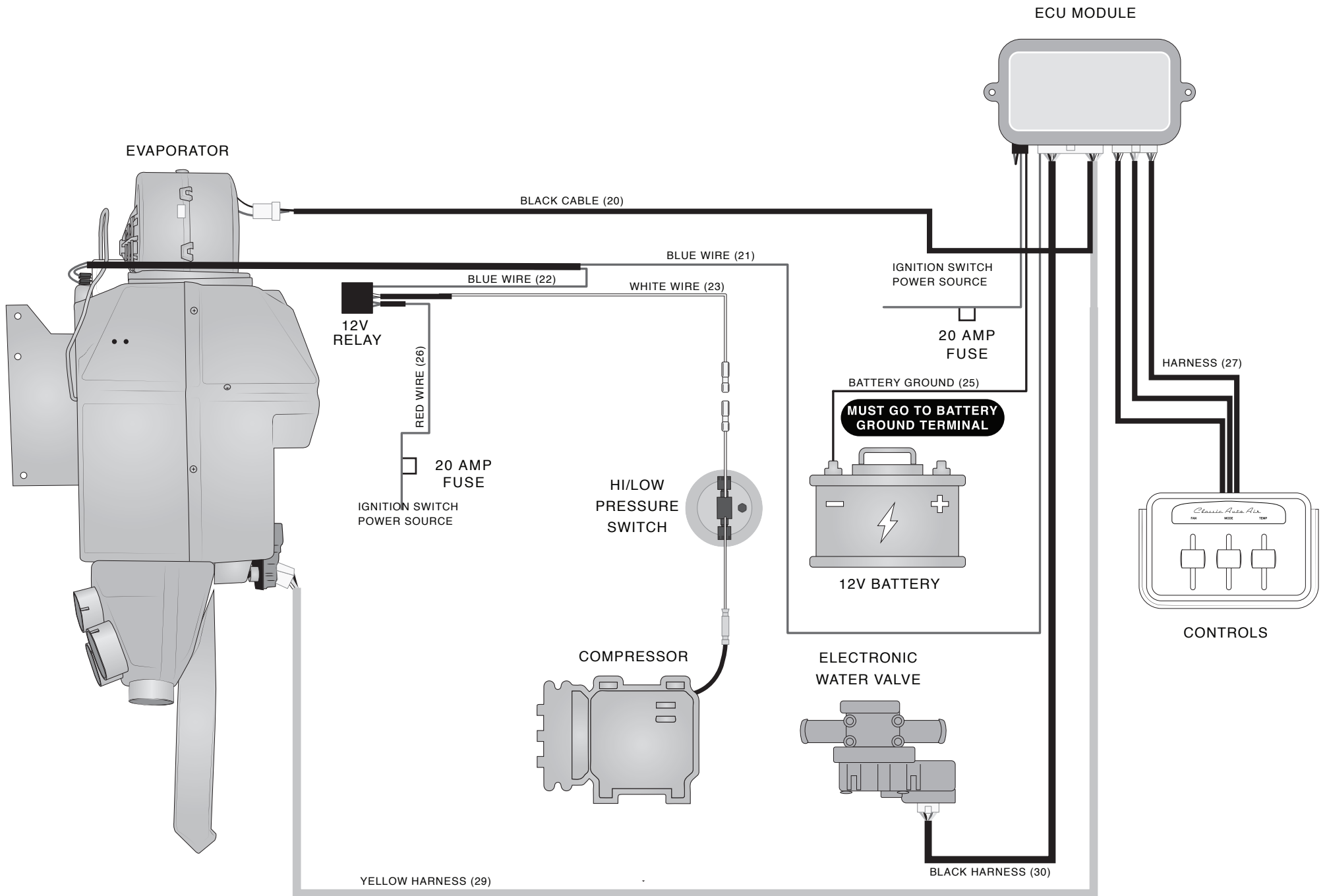
Electronic Water Control Valve
PN# 16-1023

NOTE: The following wire harness installation steps are shown in the wiring diagram on the next page.

- Install the output (servo) wire harness according to the wire diagram.
- Drill a 1-1/8 inch hole in firewall or firewall block off plate.
- Run the black water valve harness and white pressure switch wire through the 1-1/8 inch hole in the firewall.
- Wrap the 1-1/8 inch grommet around the wires and insert into the hole.

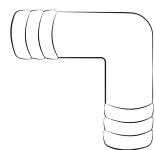


- Install the power supply wire harness according to the wire diagram.
- Mount the ECU with (2) #10-16 x 3/4" Tek screws.
- Secure the relay with the remaining #10-16 x 3/4" Tek screw.



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.



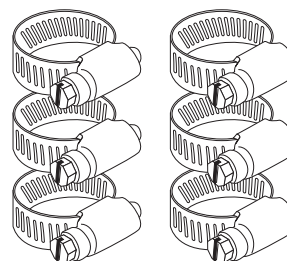
90 Degree Elbow



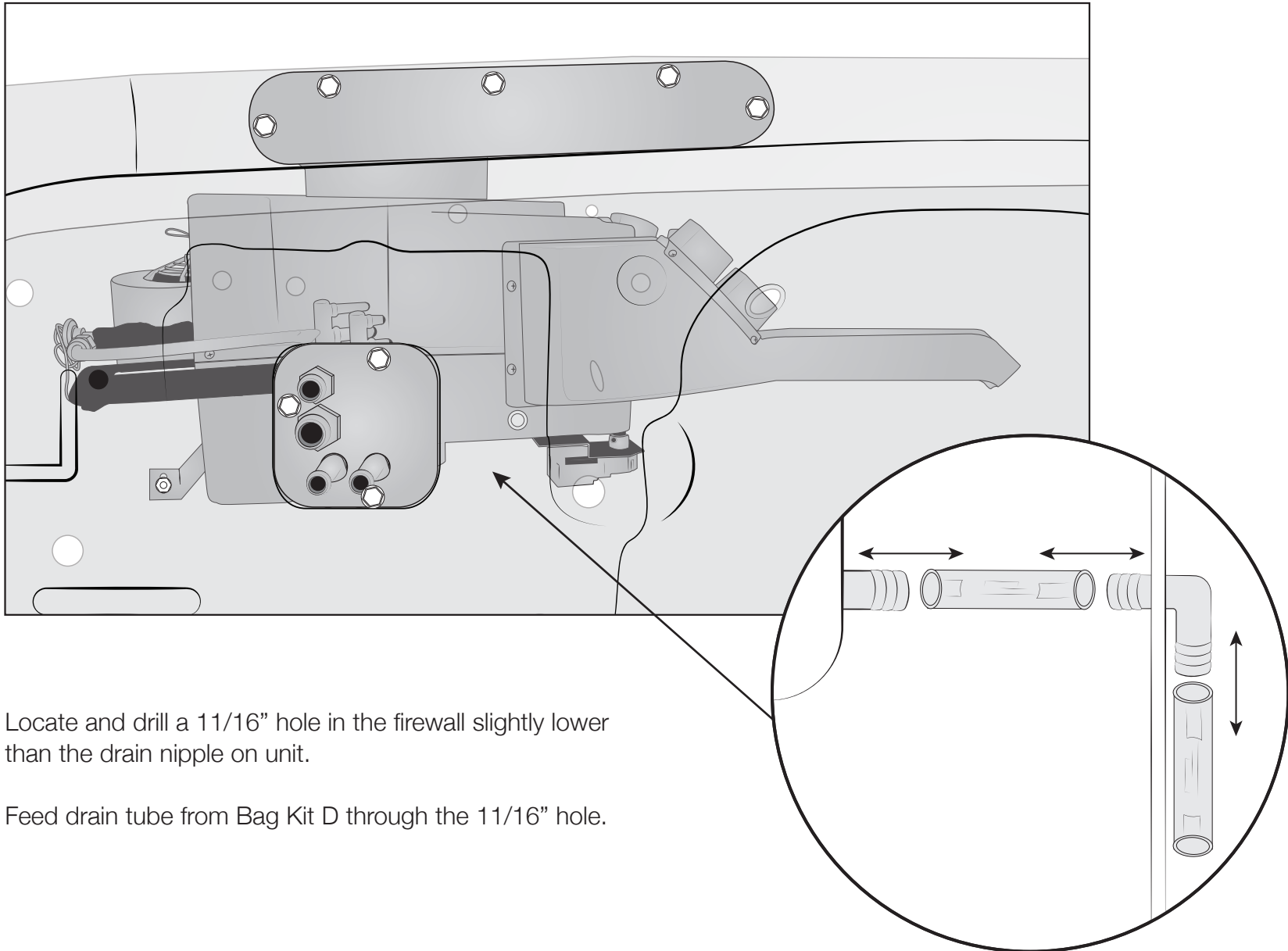
Clear Plastic Drain Tube



Refrigerant Tape



Six Worm Gear Clamps



Locate and drill a 11/16" hole in the firewall slightly lower than the drain nipple on unit.

Feed drain tube from Bag Kit D through the 11/16" hole.

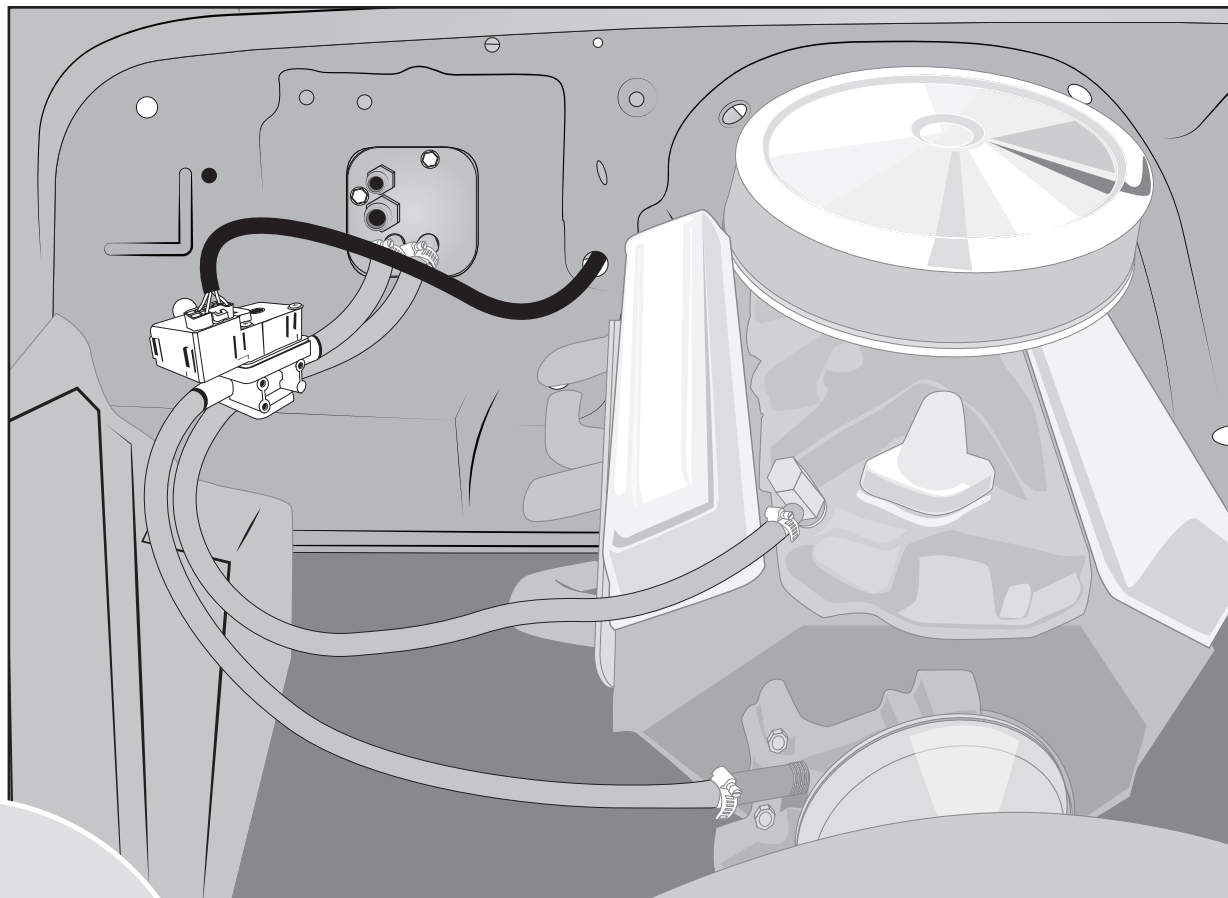
IMPORTANT NOTICE: PROPER INSTALLATION OF WATER VALVE

Your water valve **MUST be installed per these instructions!... (If not, your system will not work properly.**

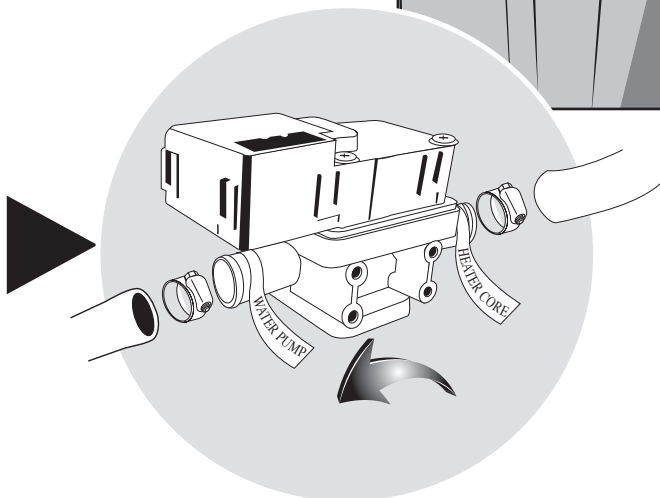
The **right** heater tube connection on firewall will be routed to the water connection on intake manifold using 5/8" dia. heater hose with the supplied worm gear clamp.

The **left** 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.



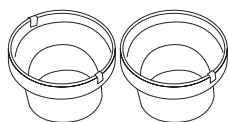
**FOLLOW THESE
TAGS... CHECK IT
TWICE BEFORE
PROCEEDING!**



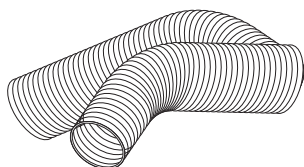
THESE ARE THE PARTS YOU WILL FIND IN BAGS E,F,G

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

BAG E



*Adaptor
PN# 2-1025-3*

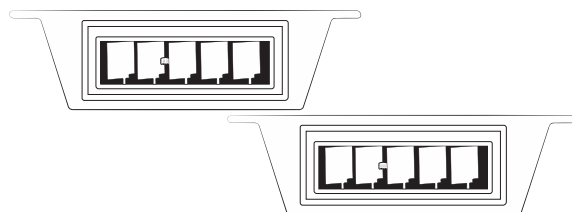


Two Duct Hoses, 2" I.D.

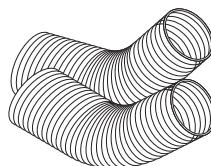


Four Zip-Ties

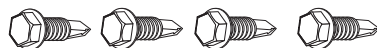
BAG F



*Underdash Louver Assembly
PN#2-1038*



Two Duct Hoses, 2" I.D.

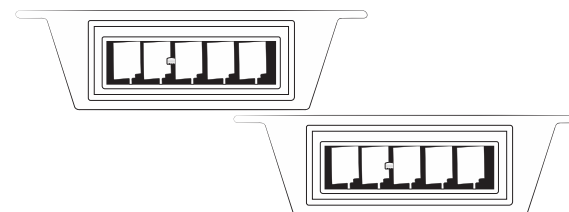


Four #10 - 16 x 3/4" Tek Screws

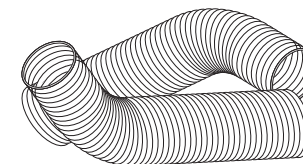


Four Zip-Ties

BAG G



*Underdash Louver Assembly
PN#2-1038*



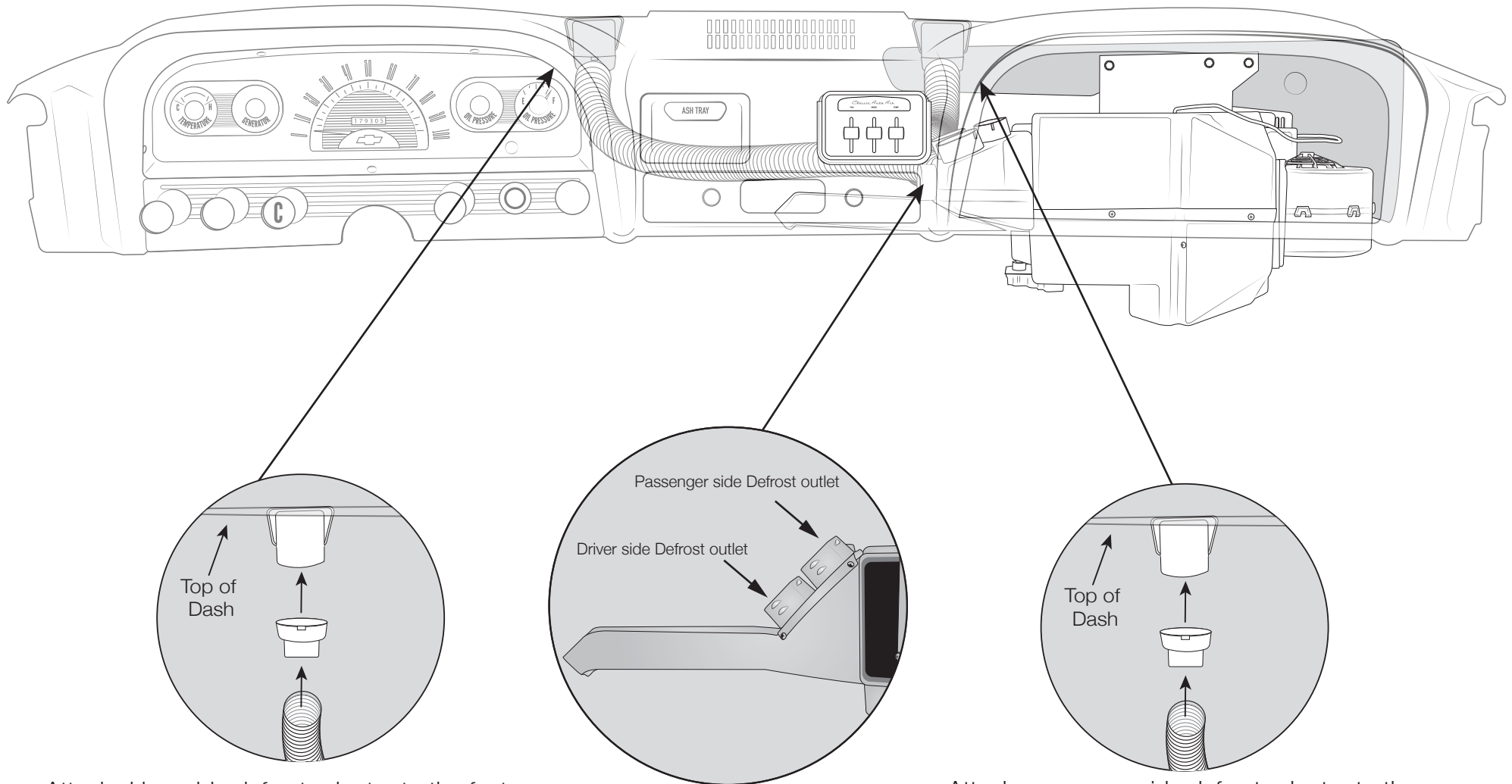
Two Duct Hoses, 2" I.D.



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



Four Zip-Ties

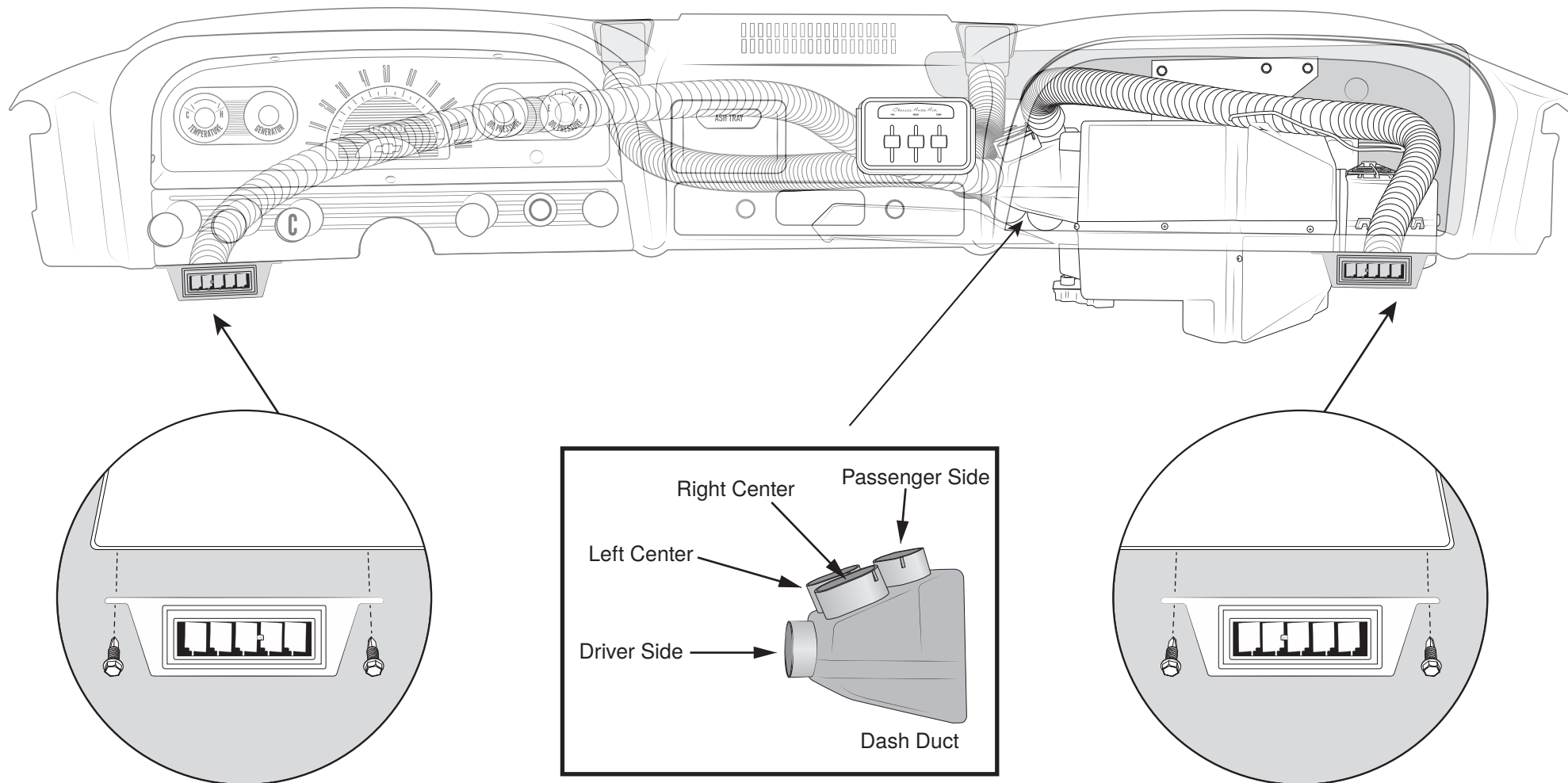


Attach driver side defrost adapter to the factory driver side defrost vent. Attach hose from defrost vent on evaporator to the adapter at this time. Secure with Zip-tie.



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

Attach passenger side defrost adapter to the factory passenger side defrost vent. Attach hose from defrost vent on evaporator to the adapter at this time. Secure with Zip-tie.

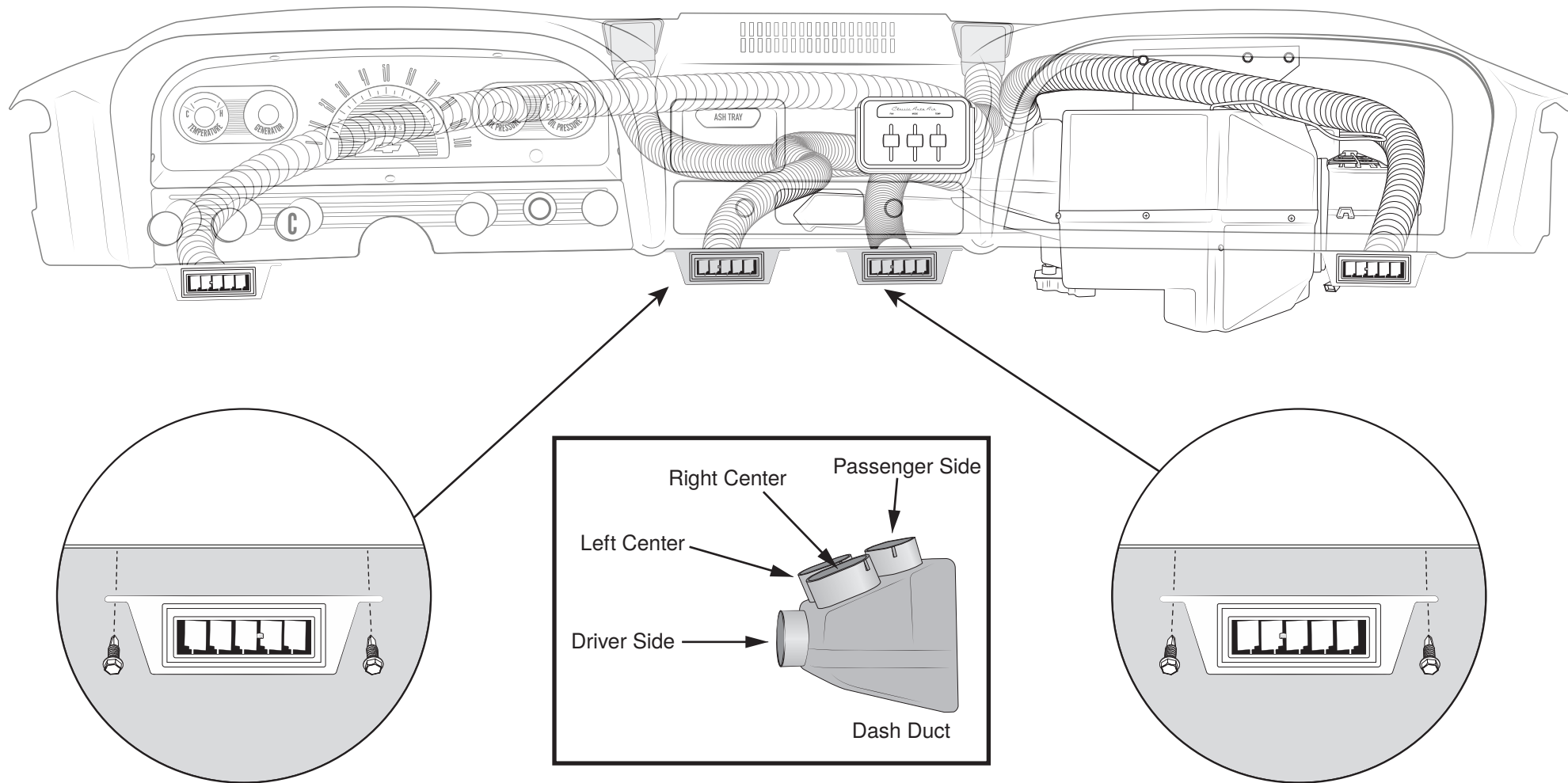


Attach louver to bottom of dash with (2) #10 x 3/4" Tek screws. Route duct hose as shown and secure with zip ties.



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

Attach louver to bottom of dash with (2) #10 x 3/4" Tek screws. Route duct hose as shown and secure with zip ties.



Attach louver to bottom of dash with (2) #10 x 3/4" Tek screws. Route duct hose as shown and secure with zip ties.

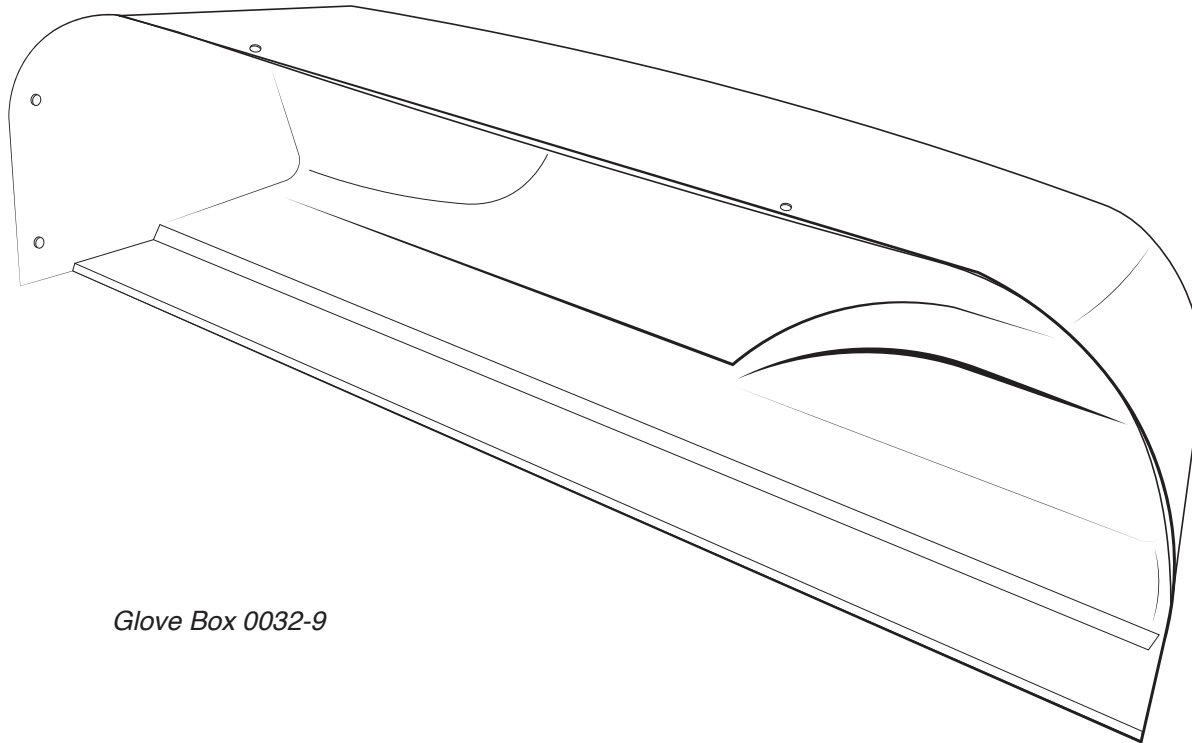


The smoother the route of the flex hoses the better the airflow.

Attach louver to bottom of dash with (2) #10 x 3/4" Tek screws. Route duct hose as shown and secure with zip ties.

Locate the new glove box provided in kit. Install using original hardware.

Caution: Carefully check under the instrument panel for all cables, electrical harness, or flex hose that might interfere with the safe operation of the vehicle. Make sure that you cycle the windshield wipers to insure proper clearance of mechanism.

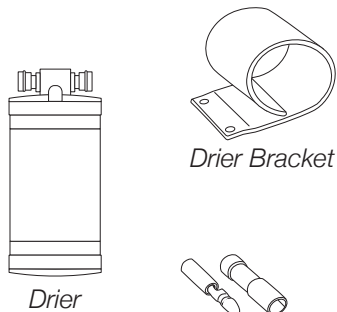


Glove Box 0032-9

This completes the interior portion of the **Smart Series A/C** 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.

The interior of your car should look pretty much the same as before you started (or better). Plus you probably got to know the underside of your dash a lot better and might even have repaired or upgraded components that needed attention.

THESE ARE THE PARTS YOU WILL NEED FOR THE ENGINE COMPARTMENT INSTALLATION



Drier Bracket

Drier



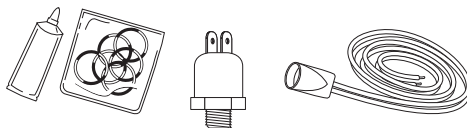
*Splice and
Bullet Connector*



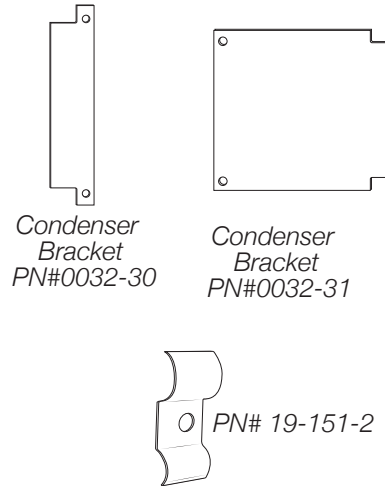
Six #10 - 20 x 1/4" Screws



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



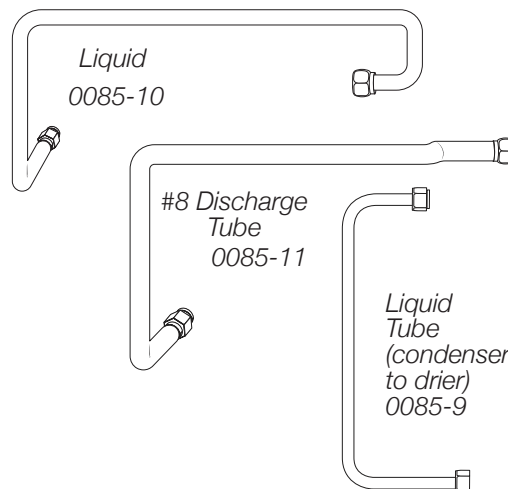
*Pressure Switch and harness,
Bag of O-rings and Mineral Oil Tube*



*Condenser
Bracket
PN#0032-30*

*Condenser
Bracket
PN#0032-31*

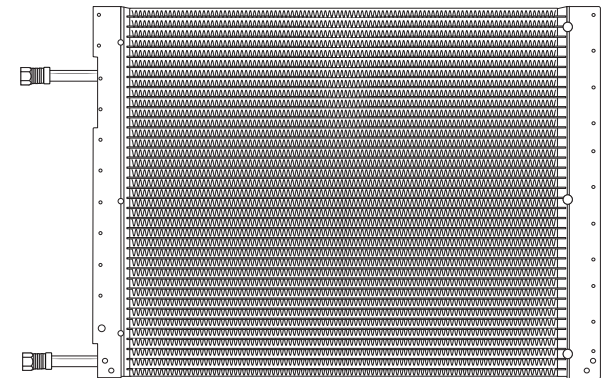
PN# 19-151-2



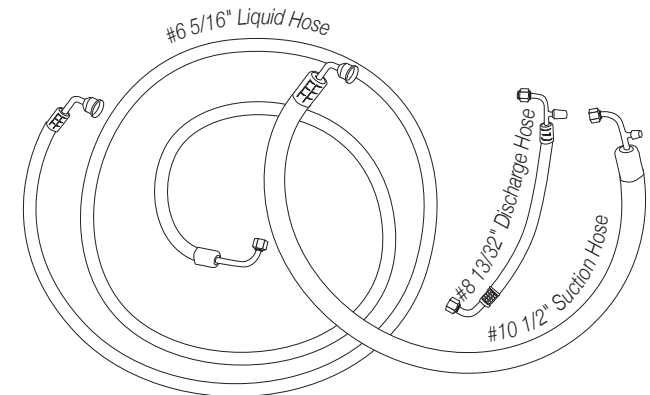
*Liquid
0085-10*

*#8 Discharge
Tube
0085-11*

*Liquid
Tube
(condenser
to drier)
0085-9*



*Condenser
PN#11-1044*



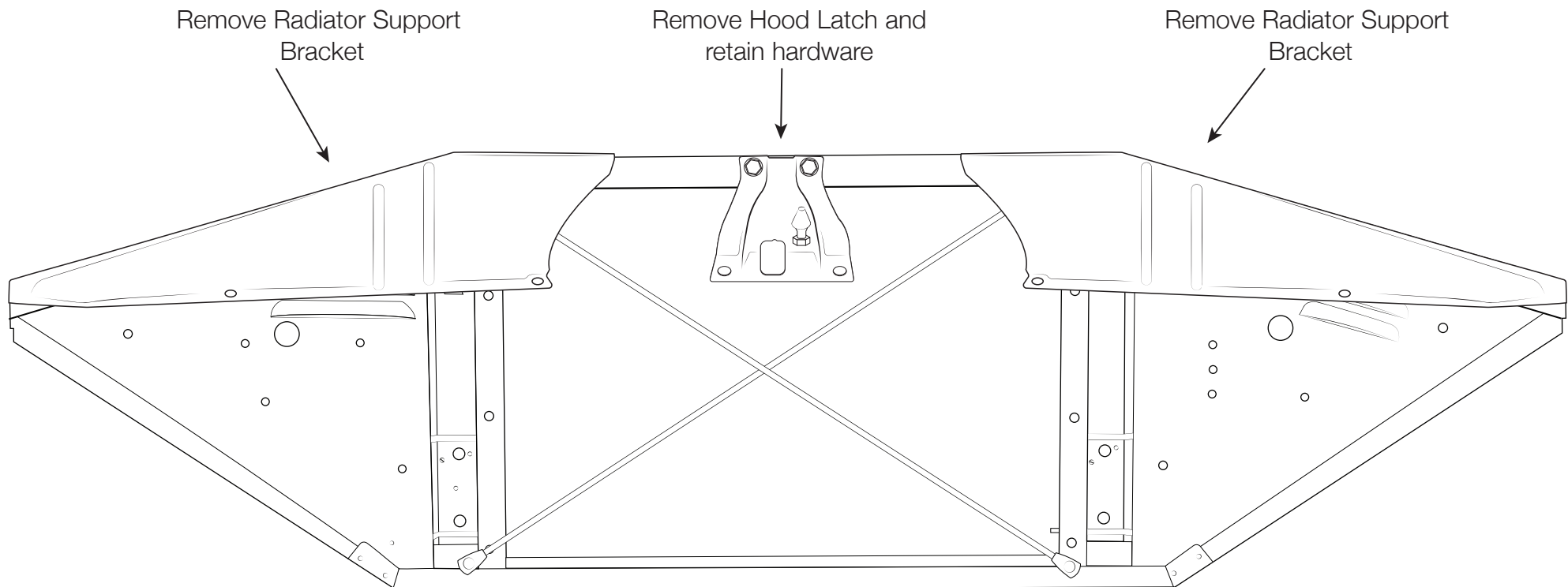
#6 5/16" Liquid Hose

#8 13/32" Discharge Hose

#10 1/2" Suction Hose

Three Refrigerant Hoses

Remove the hood latch, bulkhead supports and retain the hardware for re-installation. Remove the battery, battery box, original fan, fan shroud and drain and remove radiator. Retain all original hardware.



NOTE: If vehicle is equipped with a four blade fan, it is necessary to upgrade to a six blade fan.

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 **RIGHT SIDE** (the larger connection will be on top).

Locate condenser, Condenser Bracket PN#0032-30, Condenser Bracket PN#0032-31, and (4) #10 - 20 x 1/4" Screws. Attach brackets to the coil as shown.

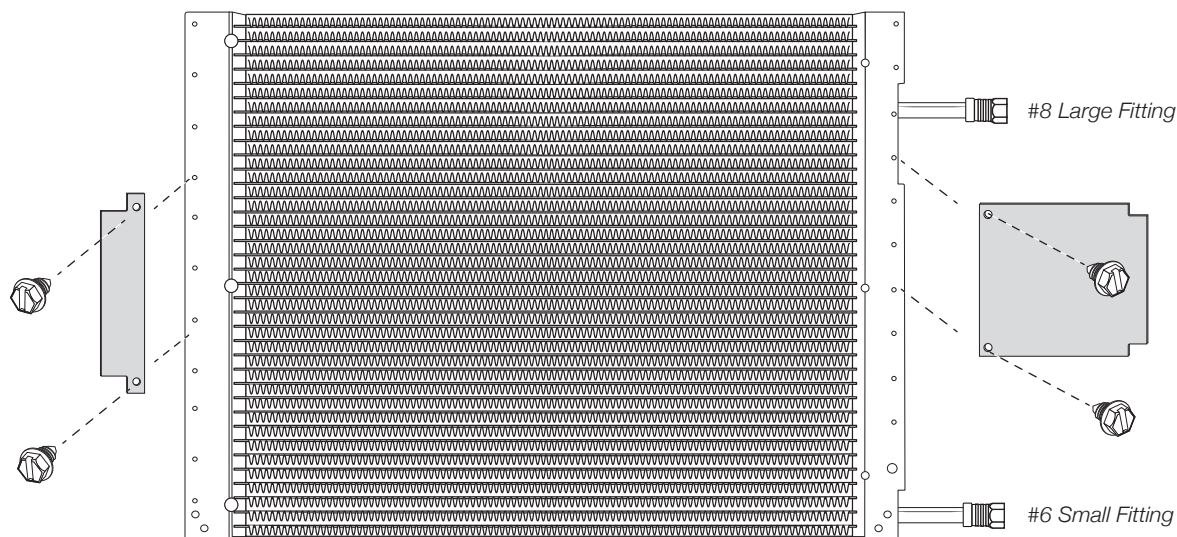


FIGURE 29

Condenser
Bracket
PN#0032-30

Condenser
Bracket
PN#0032-31

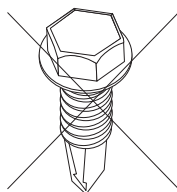
**Attach Brackets fourth hole from the top
on each side
of the condenser**

YES



#10-20 x 1/4"
HEX-HEAD

NO



#10 - 16 X 3/4"
TEK SCREWS

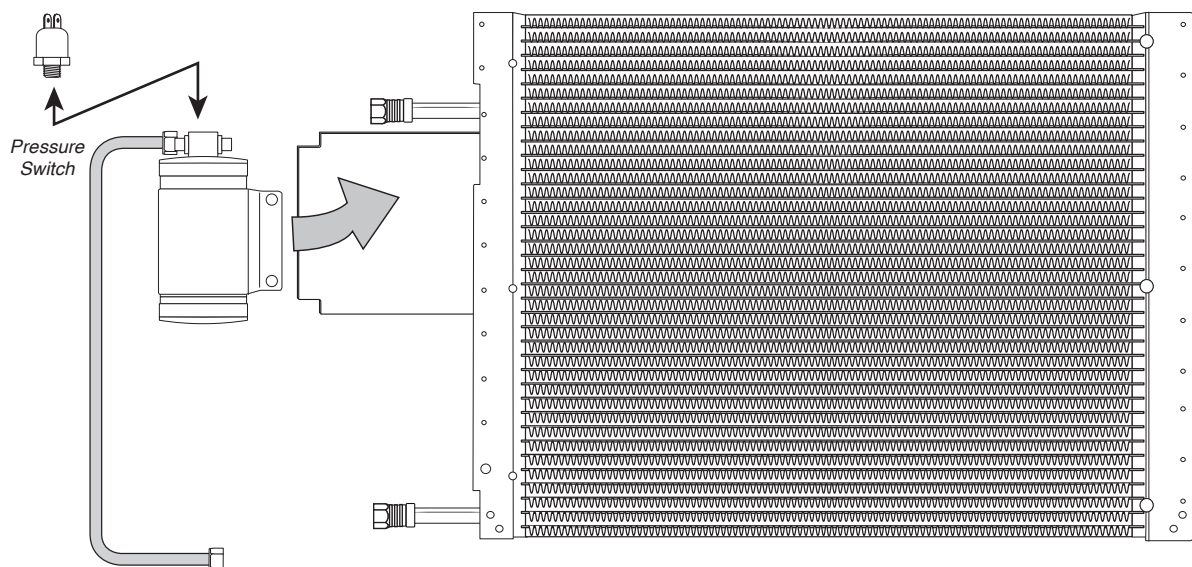
DRIER AND CONDENSER PREPARATION. Lay the condenser down so that both hose connections are on the **LEFT SIDE** (the larger connection will be on top). The drier is conveniently mounted on the left hand side of the condenser.

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).



You can easily find the correct position for mounting the drier to the condenser by using the drier liquid tube as a gauge.

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



Attach receiver to the condenser as shown.

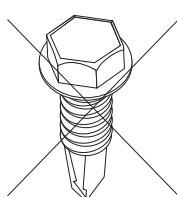
Use a few drops of mineral oil at the o-ring connections.

YES



#10-20 x 1/4"
HEX-HEAD

NO



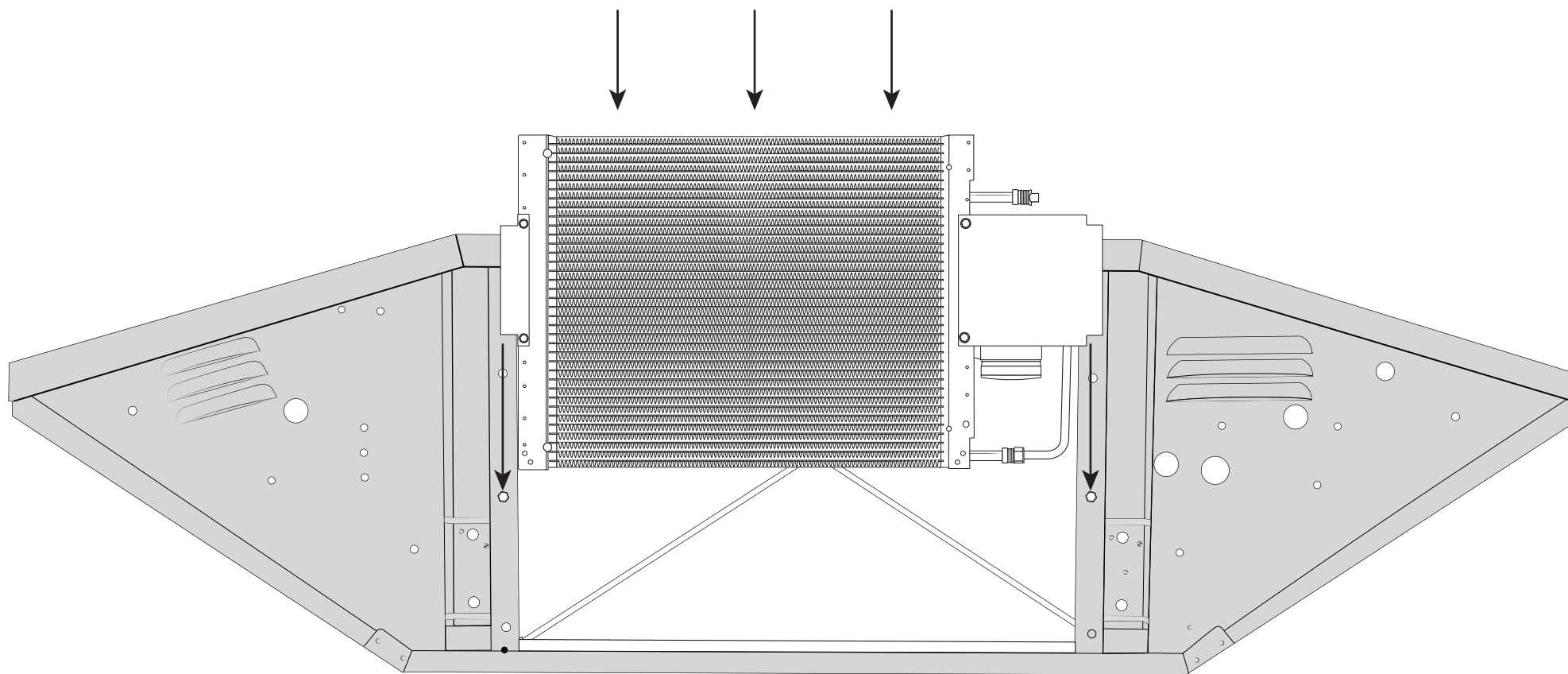
#10 - 16 X 3/4"
TEK SCREWS



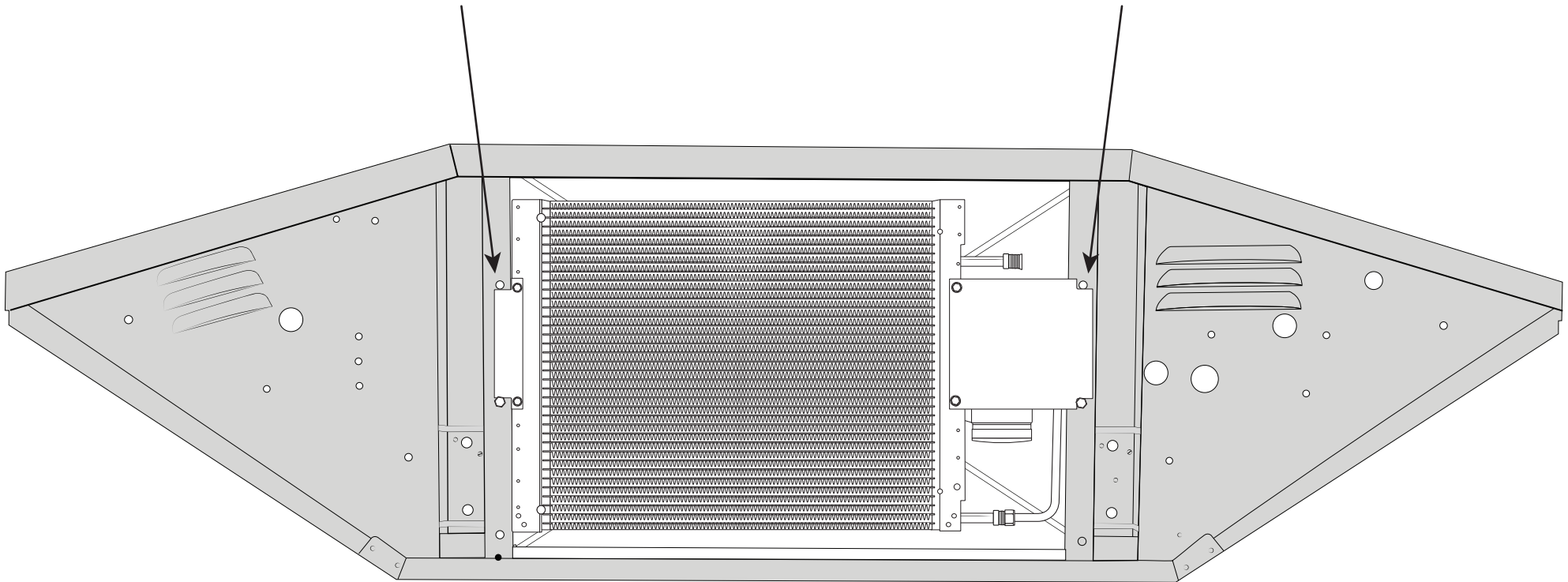
Reminder...
Use two
wrenches to
tighten o-ring
fittings



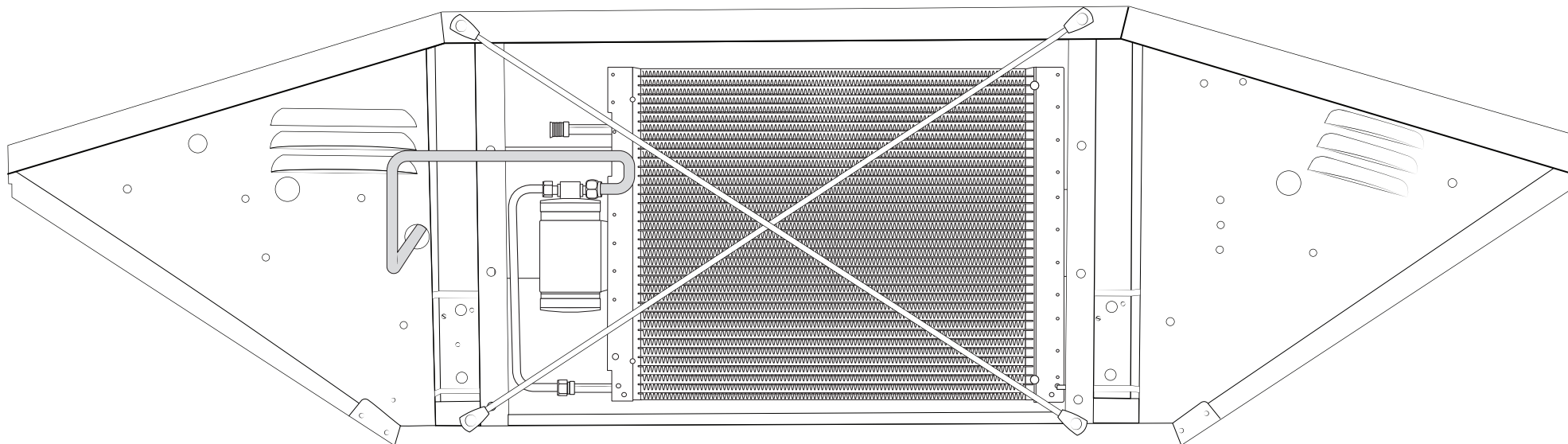
Remove the top two bolts in the mounting flange bracket, and loosen the rest. From the engine side, slide the condenser assembly into place between the radiator bulkhead and flange brackets. Rest the condenser brackets on top of the loosened bolts. The flange bracket bolts can now be re-installed and tightened.



Reinstall the upper bolts to pin condenser between core support and flange brackets.

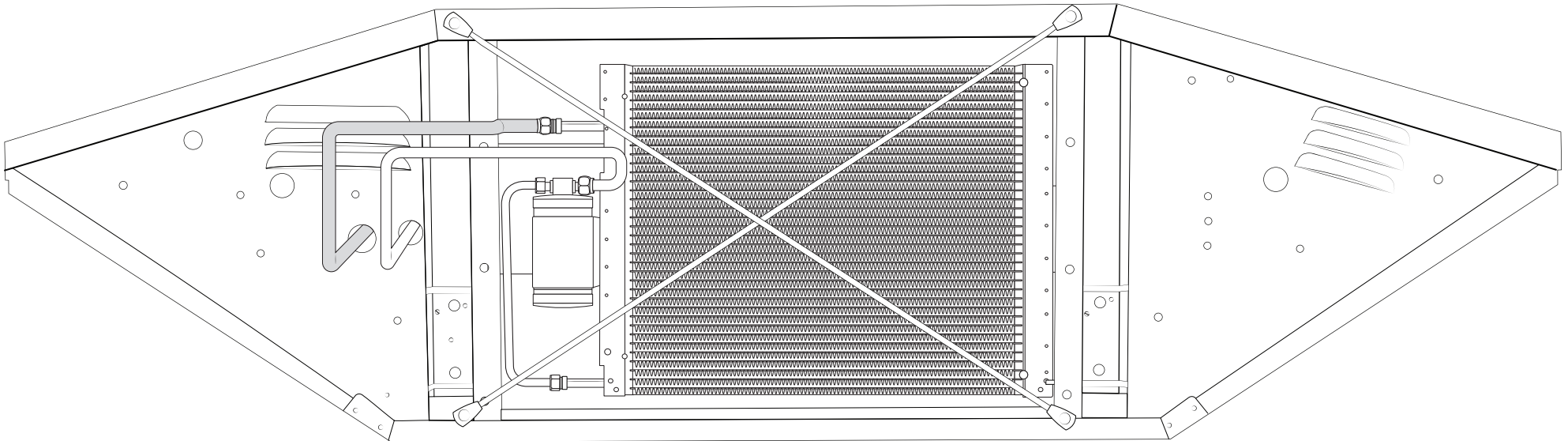


Locate the liquid tube PN#0085-10 and discharge tube PN#0085-11. Line up the tube to the condenser and drier, then match drill the hole in the core support for the liquid tube connections to go through.



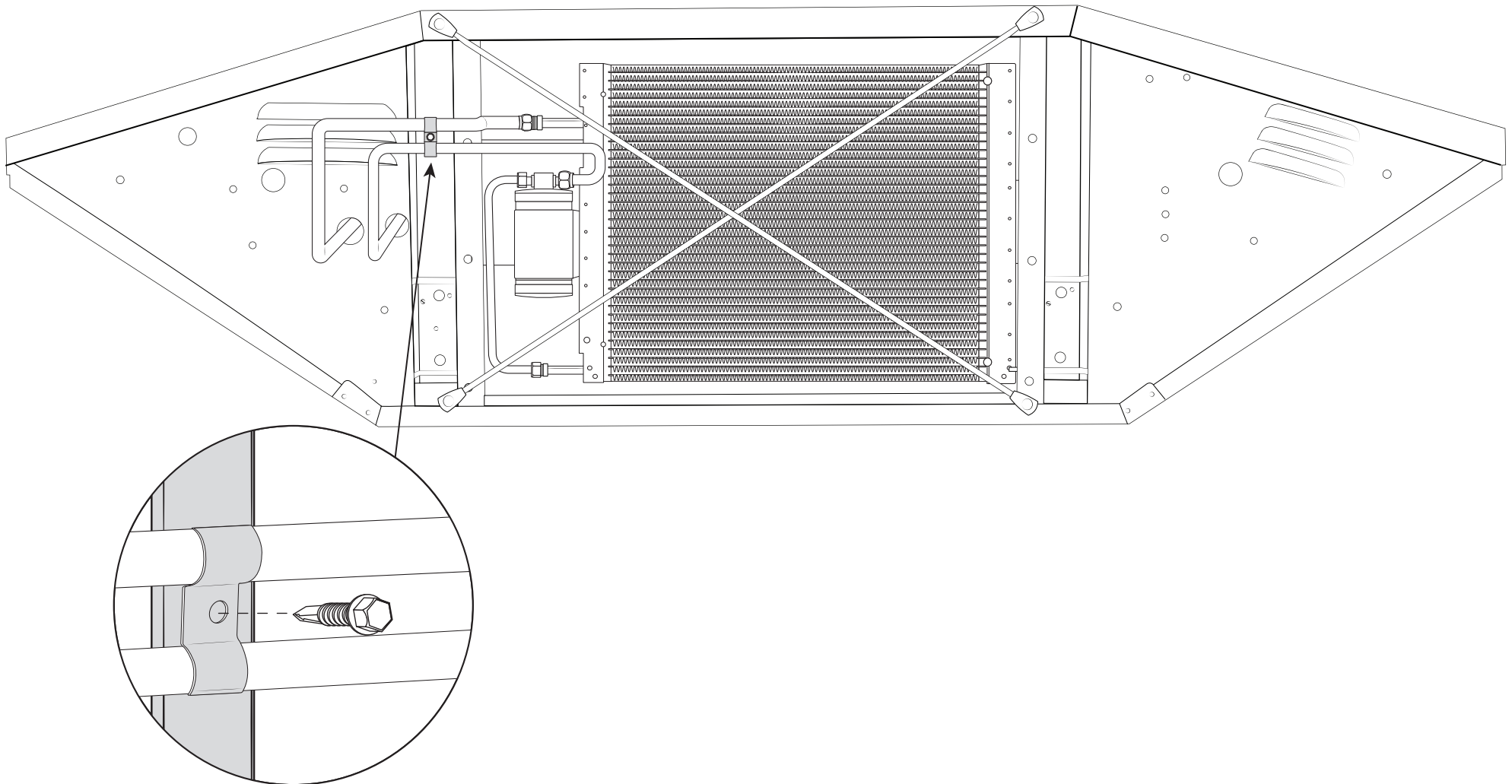
Attach the liquid tube to the drier using an o-ring and mineral oil.

Line up the discharge tube to the condenser, then match drill the hole in the core support for the discharge tube connections to go through.



Attach the discharge tube to the #8 fitting on the condenser using an O-ring and mineral oil.

Locate the tube clamp bracket PN#19-151-2 and (1) #10-16 x 3/4" Tek screw. Attach tubes to core support.
Reinstall radiator fan, fan shroud, battery box, battery, hood latch and radiator support brackets.



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:

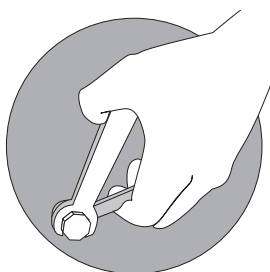
Based on PASSENGER or DRIVERS SIDE compressor mounting see illustrations for routing.

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.

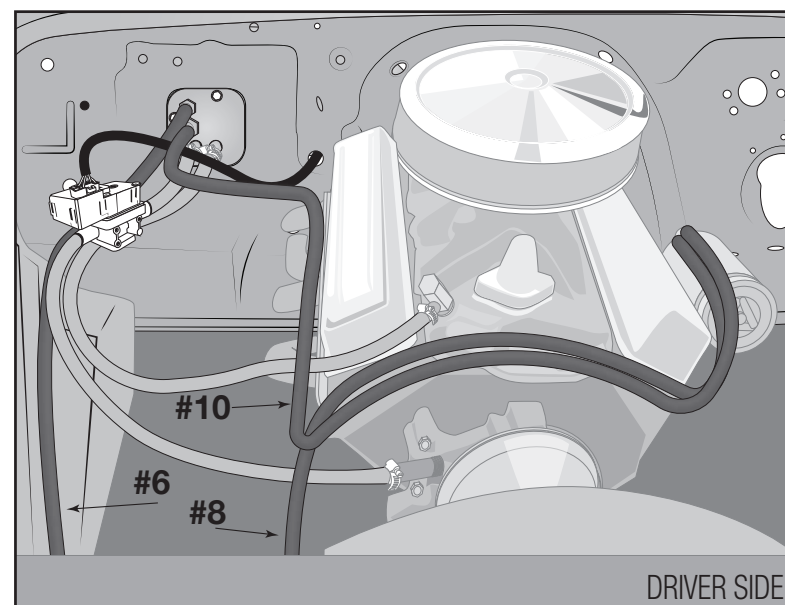
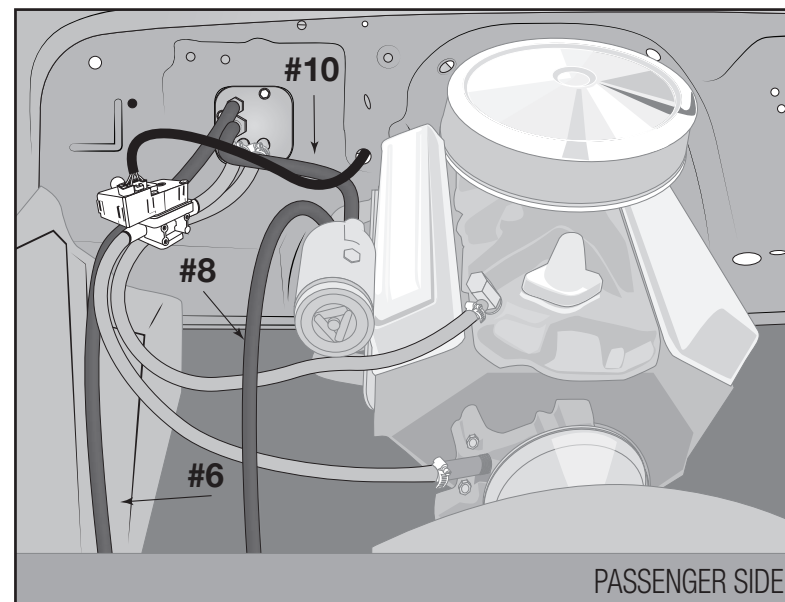
The #6 **(SMALLEST)** refrigerant hose. Route behind fender and to the connection on firewall. Attach using two #6 o-ring and a few drops of mineral oil.

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 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!**

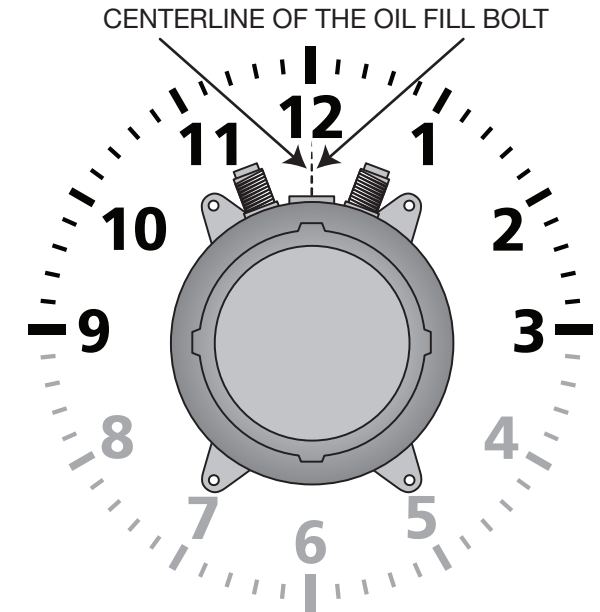
RECOMMENDED TEST CONDITIONS: (After system has been fully charged and tested for basic operation)

- 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

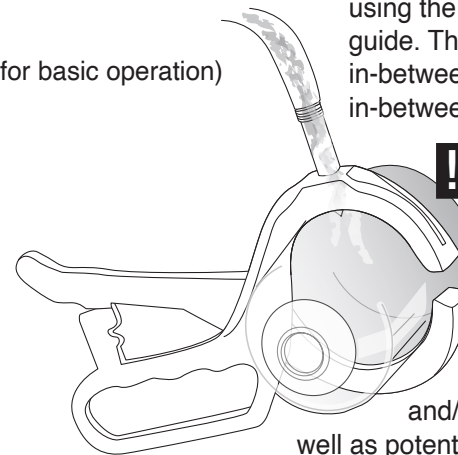
ACCEPTABLE OPERATING PRESSURE RANGES:

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 in-between the 9 to 3 positions. **DO NOT** mount in-between the 4 to 8 positions.



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.

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.

TROUBLESHOOTING GUIDE

TEST CONDITIONS USED TO DETERMINE SYSTEM OPERATION

(THESE TEST CONDITIONS WILL SIMULATE THE AFFECT OF DRIVING THE VEHICLE AND GIVE THE TECHNICIAN THE THREE CRITICAL READINGS THAT THEY WILL NEED TO DIAGNOSE ANY POTENTIAL PROBLEMS).

- B. CONNECT GAUGES OR SERVICE EQUIPMENT TO HIGH/LOW CHARGING PORTS.
- C. PLACE BLOWER FAN SWITCH ON MEDIUM.
- D. CLOSE ALL DOORS AND WINDOWS ON VEHICLE.
- E. PLACE SHOP FAN IN FRONT OF CONDENSER.
- F. RUN ENGINE IDLE UP TO 1500 RPM.

ACCEPTABLE OPERATING PRESSURE RANGES (R134A TYPE)

- 1. HIGH-SIDE PRESSURES (150-275 PSI) **Note- general rule of thumb is two times the ambient (daytime) temperature, plus 15-20%.*
- 2. LOW-SIDE PRESSURES (10-25 PSI in a steady state).

CHARGE AS FOLLOWS: R134A = 24 OZ.
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. Heater control valve installation - Installing the heater control valve in the incorrect hose. Usually when this occurs the system will cool at idle then start to warm up when raising the RPM's of the motor. THE HEATER CONTROL IS A DIRECTIONAL VALVE; MAKE SURE THE WATER FLOW IS WITH THE DIRECTION OF THE ARROW. As the engine heats up that 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, thus inhibiting 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 - Freezing can occur both externally and internally on an evaporator core. External freeze up occurs when the coil cannot effectively displace the condensation on the outside fins and 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 common cause of external freezing is the setting of the thermostat and the presence of high 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 there is too much moisture inside the system. 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, eventually going into a vacuum. At this point, the system should be checked by a professional who will evacuate the system and the drier will have to be changed.
- E. Inadequate airflow to condenser - 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. If the pressures drop significantly, this will indicate the need for better airflow.
- F. Incorrect or inadequate condenser capacity - 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. Expansion valve failure - 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, while the low side will be unusually low or may even go into a vacuum. A valve that is stuck open will be indicated by both the high and low pressures rising to unusually high readings, seeming to move toward equal readings on the gauges.
- H. Restrictions in system - 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 discharge gauges reading excessively high. These simple tests can be performed by a local shop and can help determine the extent of the systems problem.

Trouble Shooting Your Classic Auto Air A/C System

PROBLEM: system is not cooling properly

ISSUE: cold at idle, warmer when raising engine RPM's

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 connected to the incorrect hose it allows water to circulate through the system via the heater core over powering the cooling effect of the A/C coil, (normally the air conditioning is functioning properly).

Step 1: Check placement of the water valve, correct if needed. (In some cases changing the location of the water valve may not fix the above problem.) Continue to next step.

Step 2 If changing the location of the water valve does not rectify the issue, then possibly the water valve is permanently damaged and may need to be replaced. To check the integrity of the water valve completely remove the water hoses for the heater core and "loop" together. (This will remove the heater system completely from the possibilities) If the system now cools, replace the water valve

Verify Adequate Air Flow to Condenser

For an air conditioning system to function properly there has to be adequate airflow across the condenser. The function of the condenser is to dissipate heat, without proper airflow your system will not cool correctly in the cabin of your vehicle.

Step 1: connect gauges to a/c hoses. The pressures should be: with the ambient temp is 90, low side pressures should be between 10-25 psi, high side pressures should be between 150-275 psi

Step 2: IF the low side pressures are normal and the high side pressures are high then there might be an airflow issue, continue to next step.

To test air flow to Condenser do the following three tests:

1. Place a piece of paper on the condenser with the car in idle and see if paper is held in place.
2. With car in idle, attach gages, and place a large capacity fan in front of

the condenser. What happens to the pressures?

3. With car still in idle and gages attached, pour water down the front of the condenser. What happens to the pressures?

If the paper is held in place you are at least getting some air flow. If the high side decreases during test 2 & 3 then your condenser is not getting enough air which is causing your system to not cool properly. To correct this issue you will need a more powerful mechanical fan.

Step 3: Confirm correct Refrigerant charge in System

All of our systems should be charged with 24 oz or 1.5 lbs of R134A Refrigerant only. If overcharged you will need to evacuate the system and recharge with the correct amount.*

What measurements mean:

Low Temp and High Pressure seem to be equal...

You have a malfunctioning expansion valve that is stuck open.

High Side is extremely high and Low Side is extremely low (possibly into vacuum)...

There is a blockage in the system. Remove hoses and blow compressed air through in both directions. If pressures don't change its possible that your expansion valve is stuck closed and would have to be replaced.

*Compressor Concerns:

This is often misdiagnosed as a problem for the system not cooling properly. If you have a noisy compressor it is due to improper charging of refrigerant. An overcharged (more than 24 oz or 1.5 lbs R134A) compressor can cause rattling. If charged with pure liquid there is a high probability you have bent reed valves that are causing tapping sound.

SCAN QR code
with your mobile camera

Get the technical support you want the moment you need it, with no wait times. Simply **SCAN** the **QR code** and be directly taken to our support section to troubleshoot all things A/C.



