

# **Installation Manual**

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**1964 1/2 - 1966 Mustang**  
**1964 - 1965 Ranchero**  
**1964 - 1965 Falcon**

DOCUMENT #1-3025

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# ***Congratulations...***

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

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 During the installation you might find the opportunity to repair or upgrade non-working or out of date components.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

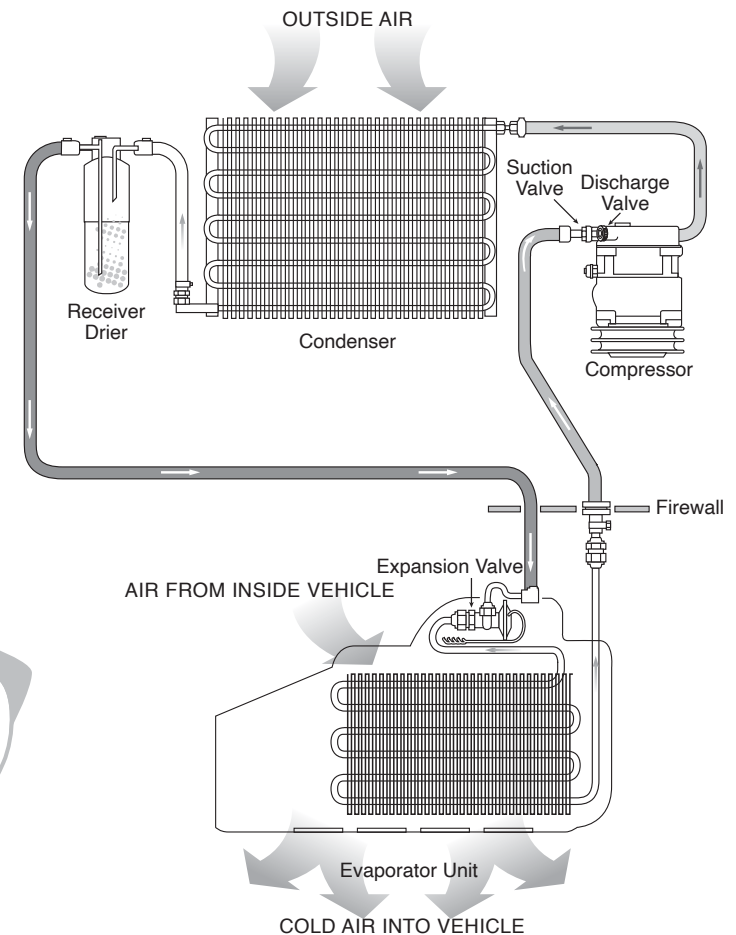
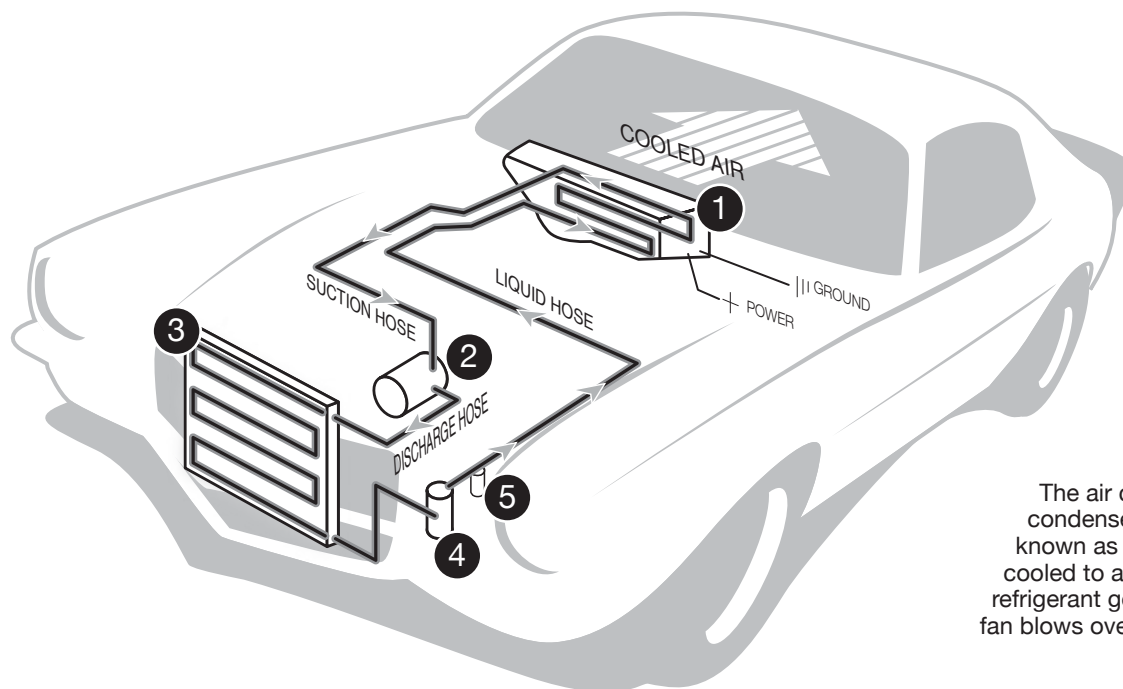
## Procedures, During Installation:

- ☐ Fittings: Use one or two drops of mineral oil (supplied with your kit) on ALL rubber o-rings, threads and where o-rings seat in fittings. 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...***

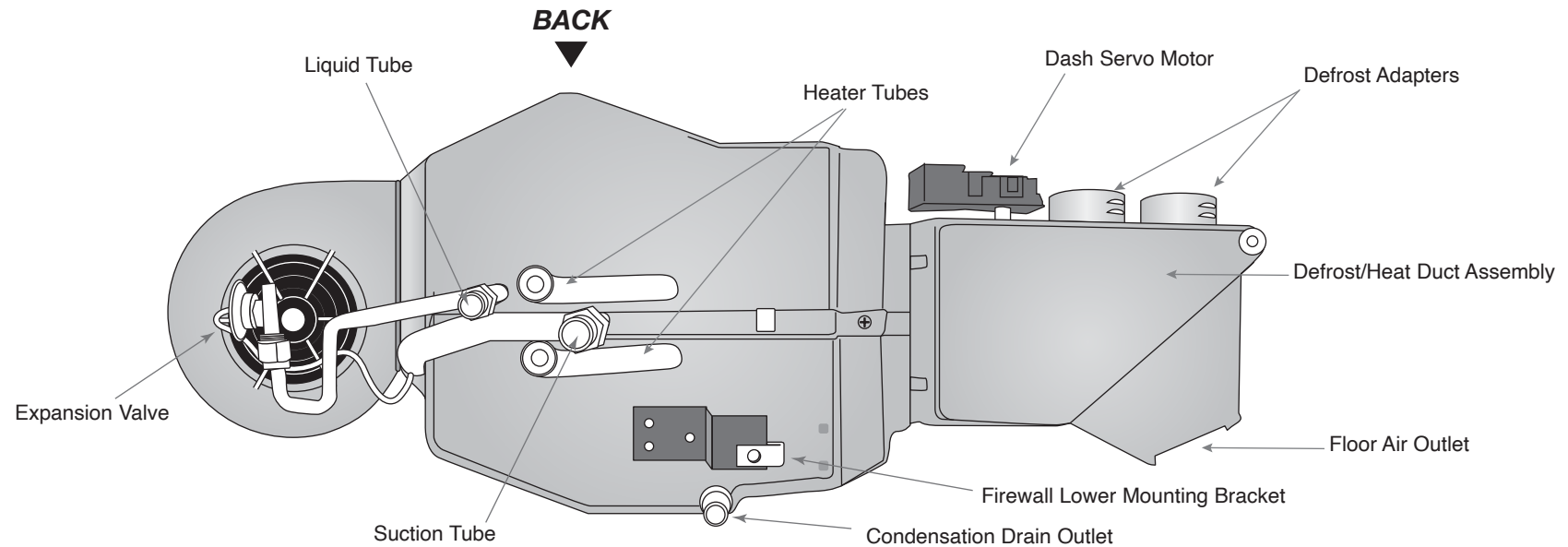
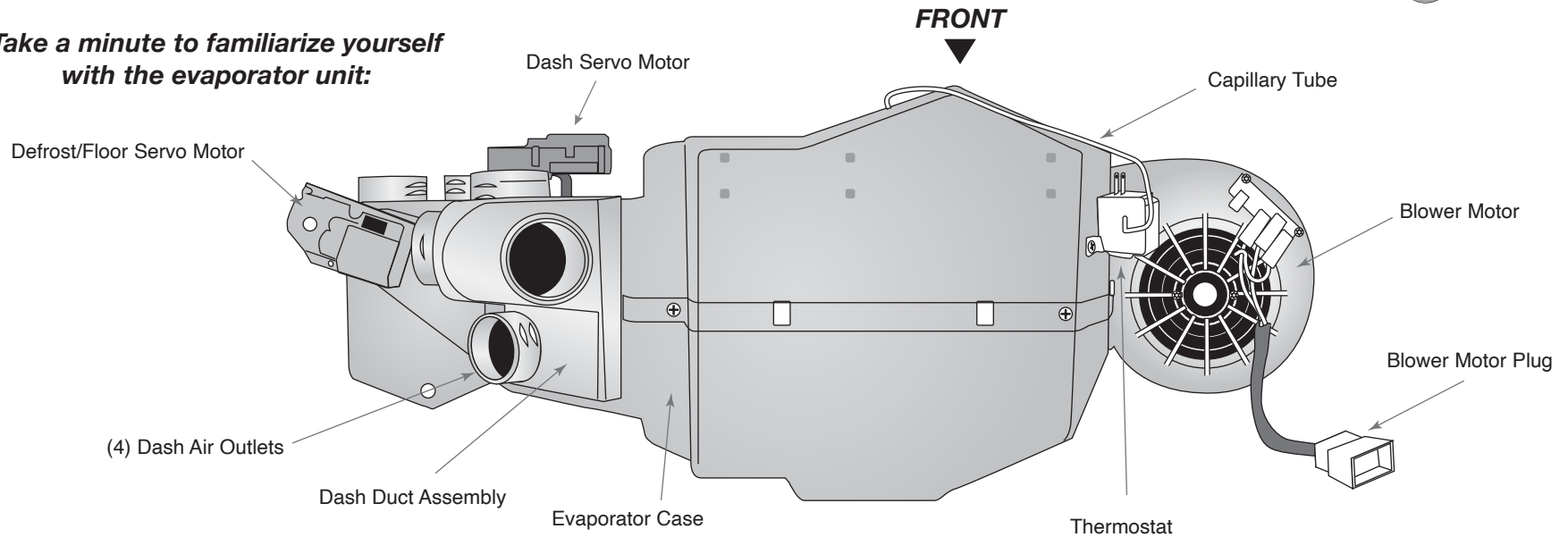
## A Basic Overview of Automotive A/C....

- 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.



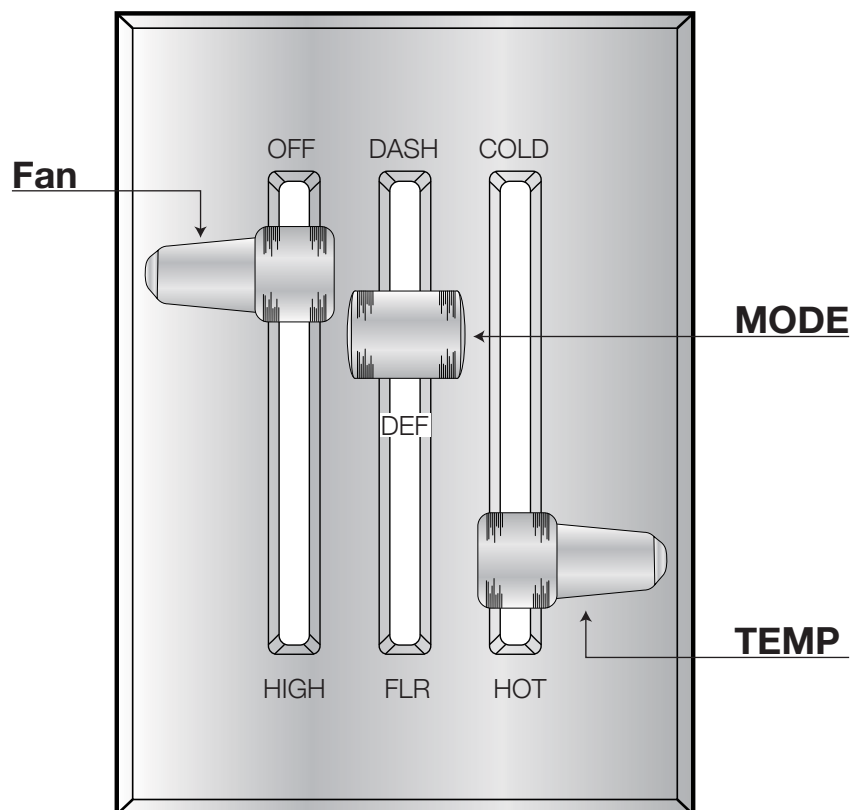
The air conditioning system in your car is comprised of a compressor, condenser, expansion valve, receiver/drier, and evaporator. Refrigerant (also known as Freon) is compressed in the compressor. In the condenser, gas is cooled to a liquid state and travels to the expansion valve. As the liquid refrigerant 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

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



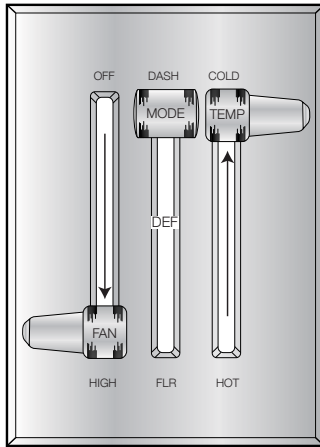
## CONTROL & OPERATING INSTRUCTIONS

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



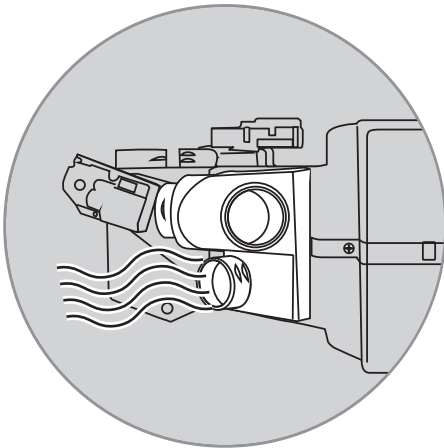
POSITION	MODE	COMPRESSOR	VALVE POSITION	COMPRESSOR
1	Dash A/C 100%	ON	CLOSED - 0%	ON
2	Dash A/C 80% Defrost 20%	ON	OPEN - 10%	ON
3	Dash A/C 60% Defrost 40%	ON	OPEN - 20%	ON
4	Dash A/C 40% Defrost 60%	ON	OPEN - 30%	ON
5	Dash A/C 20% Defrost 80%	ON	OPEN - 40%	ON
6	Defrost 100%	ON	OPEN - 50%	ON
7	Floor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

1

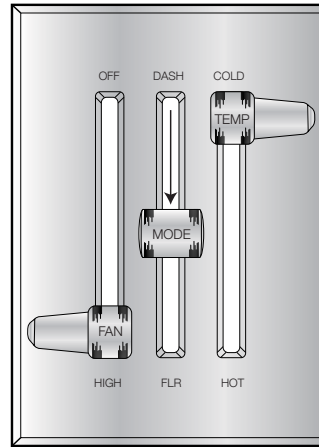


Move FAN knob to HIGH  
Move MODE knob to DASH

AIR OUT OF DASH VENTS

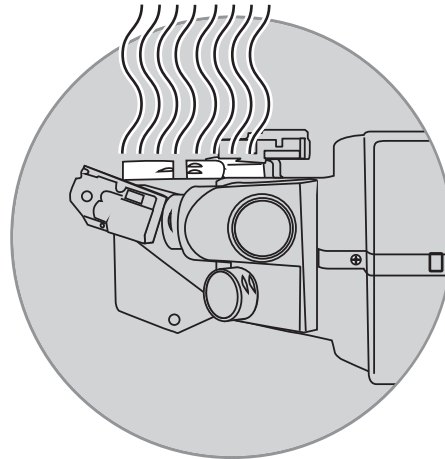


2

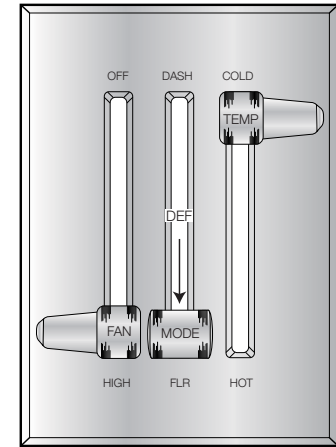


Move MODE knob to DEF

AIR OUT OF DEFROST VENTS

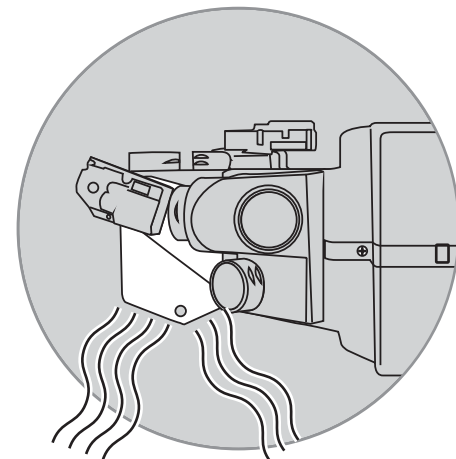


3



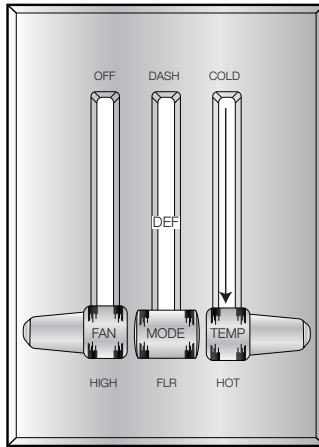
Move MODE knob to FLOOR

AIR OUT OF FLOOR VENTS

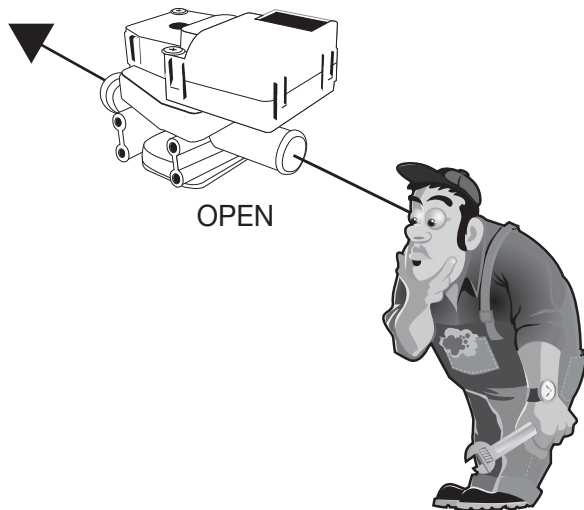




4

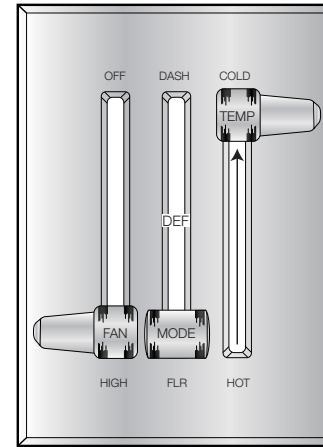


Move TEMP knob to HOT

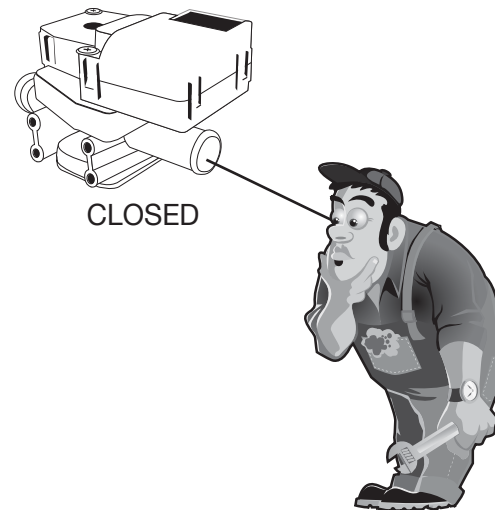


You will be able to see thru water valve passage

5



Move TEMP knob to COLD



You will NOT be able to see thru water valve passage

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.

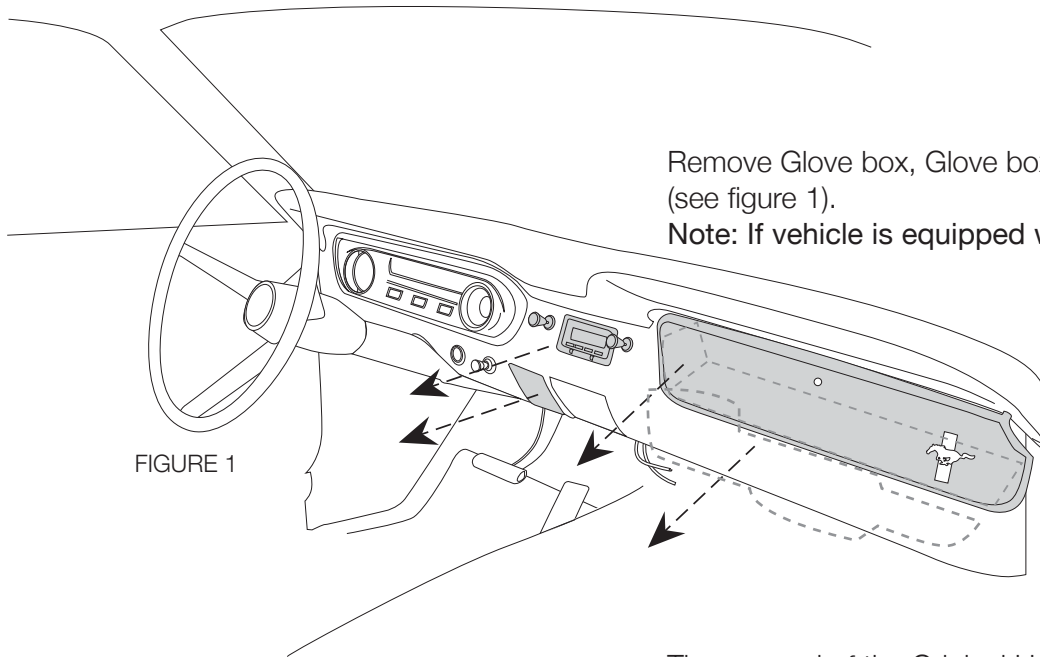


FIGURE 1

Remove Glove box, Glove box door, Ashtray, and Radio, and set them aside for reinstall later (see figure 1).

**Note:** If vehicle is equipped with a console, remove entire console and set aside.

The removal of the Original 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, and one is attached to the Vent / Heat door (see figure 3). Disconnect the



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.

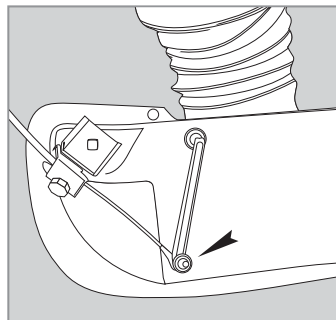


FIGURE 2

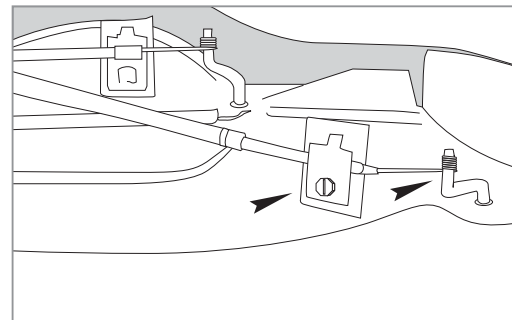


FIGURE 3

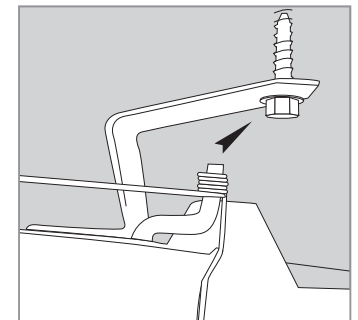


FIGURE 4

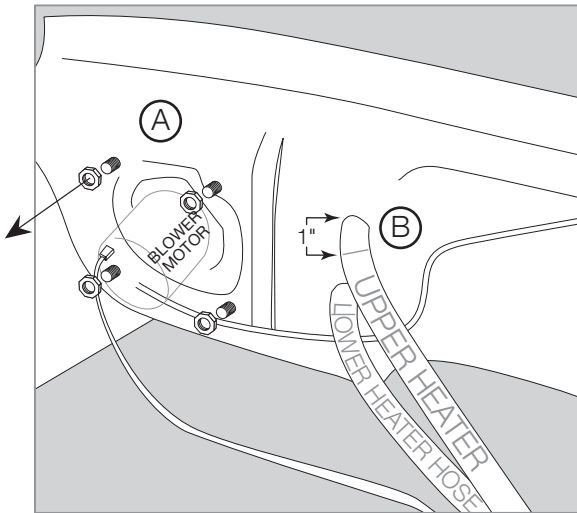


FIGURE 5

Locate blower motor on the firewall (**Passenger Side**) in the engine compartment. Remove all 4 nuts around blower. Also disconnect the electrical connector from the blower motor (see figure 5A). Cut wires at grommet in firewall.

**DRAIN COOLANT FROM RADIATOR.** Store safely to reuse or recycle accordingly. Cut heater hose approximately 1" from firewall (see figure 5B). Also, to prevent forgetting to refill the coolant when the installation is completed, do not put the cap back into place - instead put the cap to the side and cover radiator hole with a clean rag or something similar.

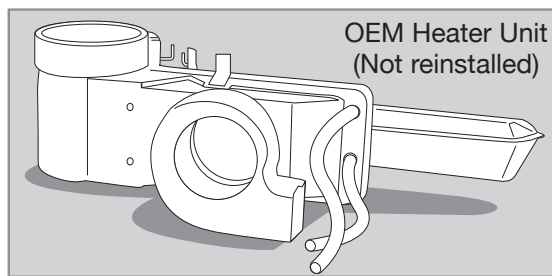
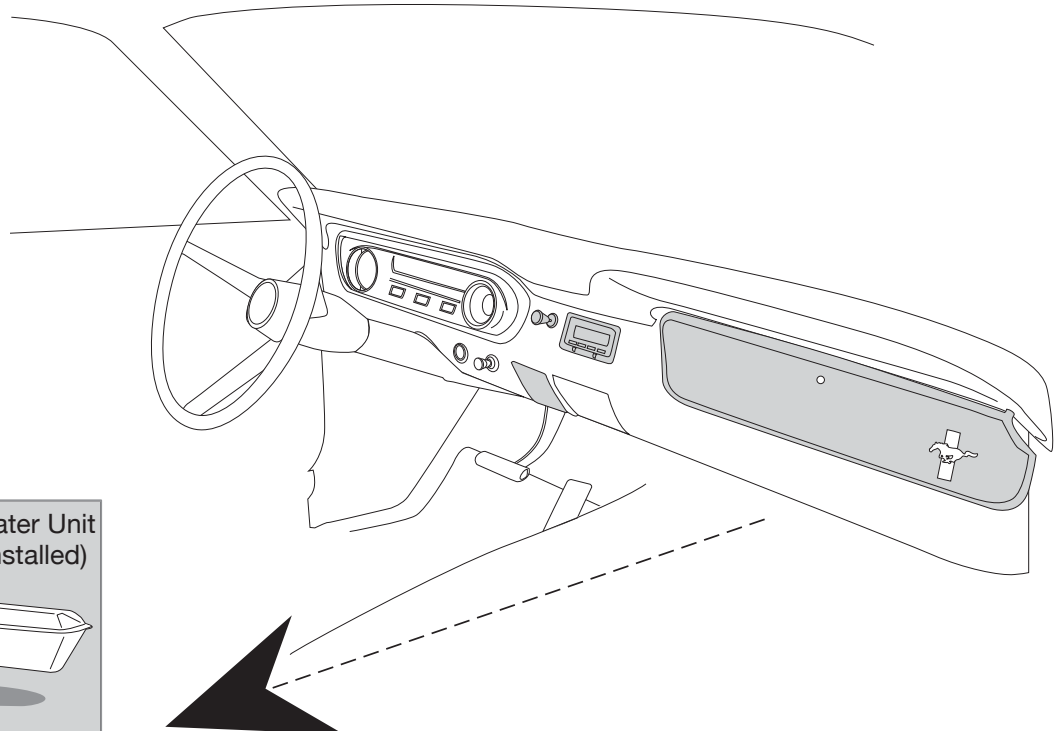
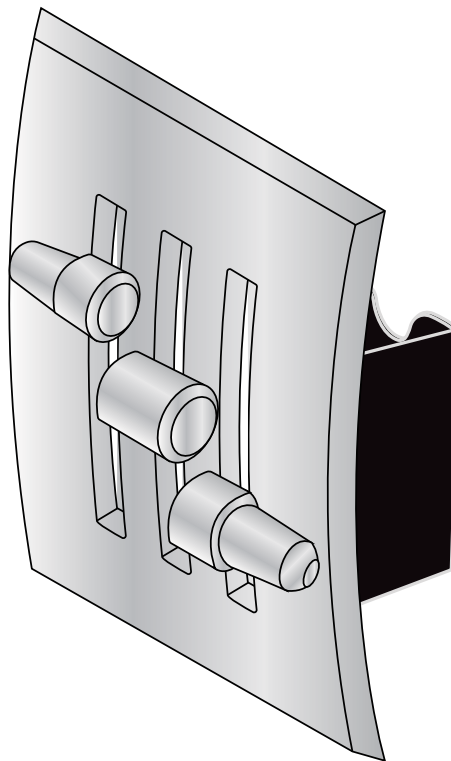


FIGURE 6



## THESE ARE THE PARTS YOU WILL FIND IN BAG KIT A

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



64-66 Mustang  
D.E.R. Controller  
16-3025

**REMOVE THE HEATER CONTROL HEAD FROM THE DASH.**

On the back side of the control head there are two nuts and retaining clips. Remove the control head assembly (see figure 8).

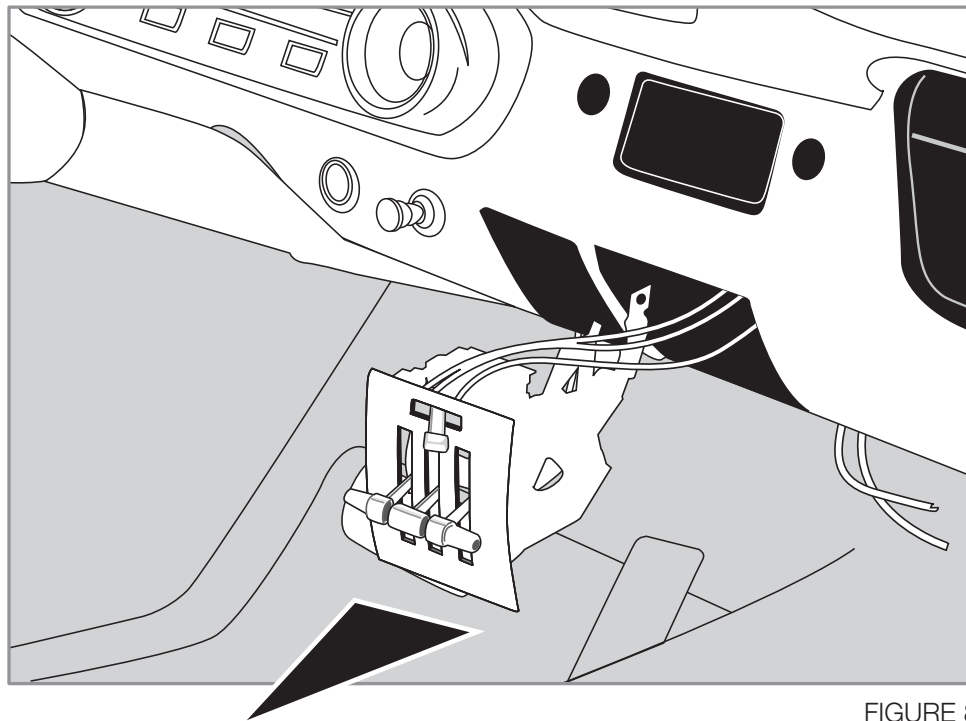
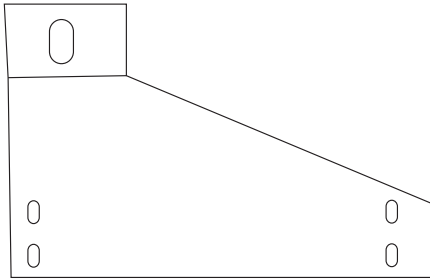


FIGURE 8

## 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.



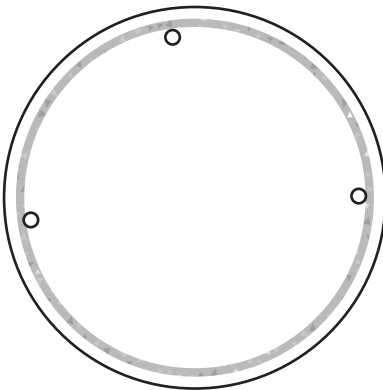
Evaporator Support Bracket  
PN# 0022-4



One 1/2" Washer



One Male Spade Connector



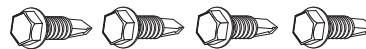
Fresh Air Inlet Block Off  
PN# 10-1025-2



One J-Clip



Two 1/4 - #20 x 5/8" Bolts



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



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

Illustrations NOT shown actual size

Locate the Fresh Air inlet block off from bag kit B. Install over hole in inlet cowl as shown on the passenger side (see figure 17). Attach with three #10 - 16 x 3/4" Tek Screws.

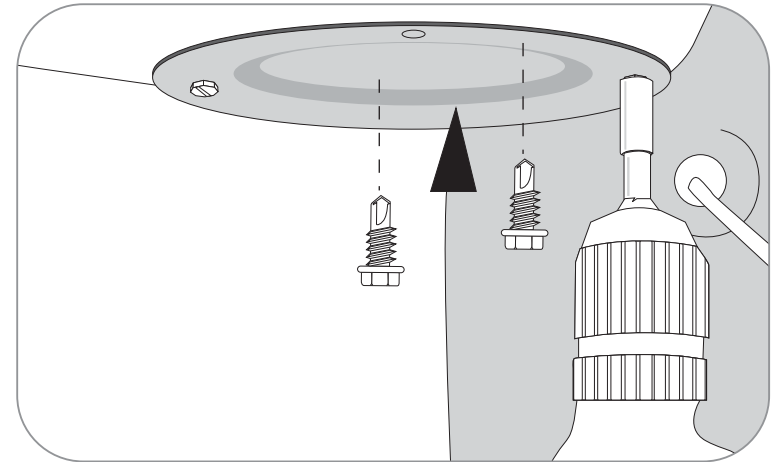
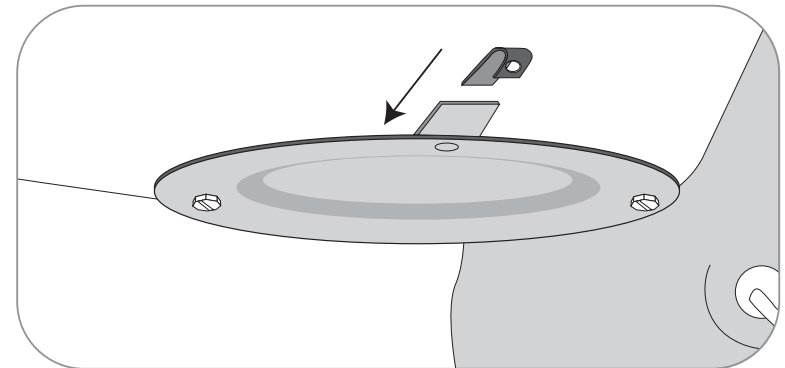


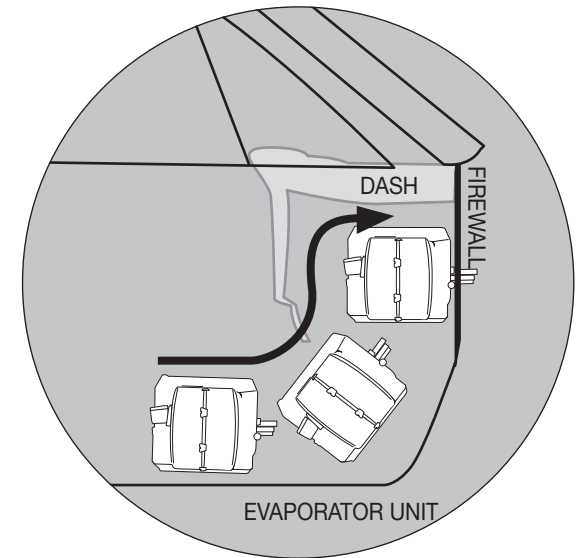
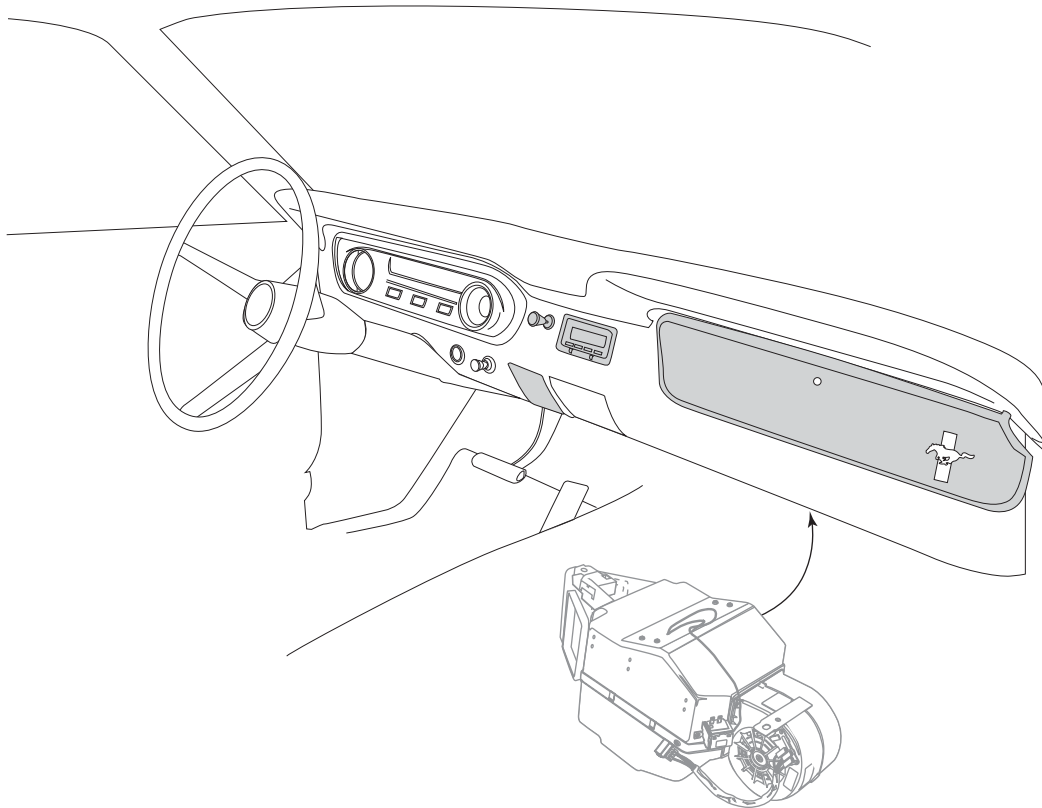
FIGURE 17

Locate the mounting tab location as shown and attach the 1/4" 20 J-clip supplied (see figure 18).



**NOTE: Two people are needed for this step!**

Place evaporator unit on floor panel. Roll unit up behind glove box opening, inserting tubes through large opening in firewall.

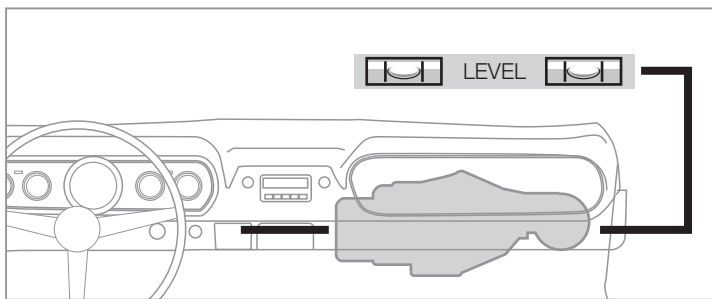




**ONE PERSON ON THE INTERIOR HOLDING EVAPORATOR UNIT IN PLACE:**

In bag kit B locate one 1/4" washer and 1/4-20 x 5/8" bolt. Attach to lower mounting bracket through lower OEM hole as shown.

**NOTE: Leave bolt loose at this time.**



Be sure to align the evaporator unit level with the bottom of instrument panel (assuming the vehicle is sitting level) as shown above, but with a small degree of tilt toward the back to allow proper drain of condensation.

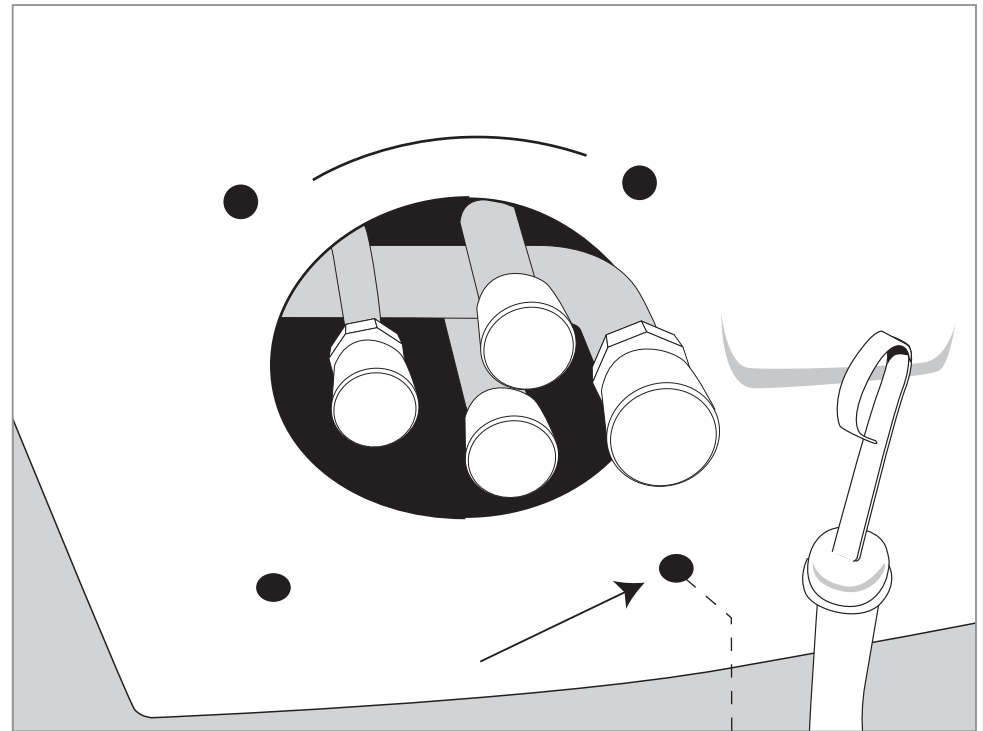
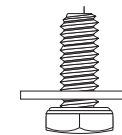


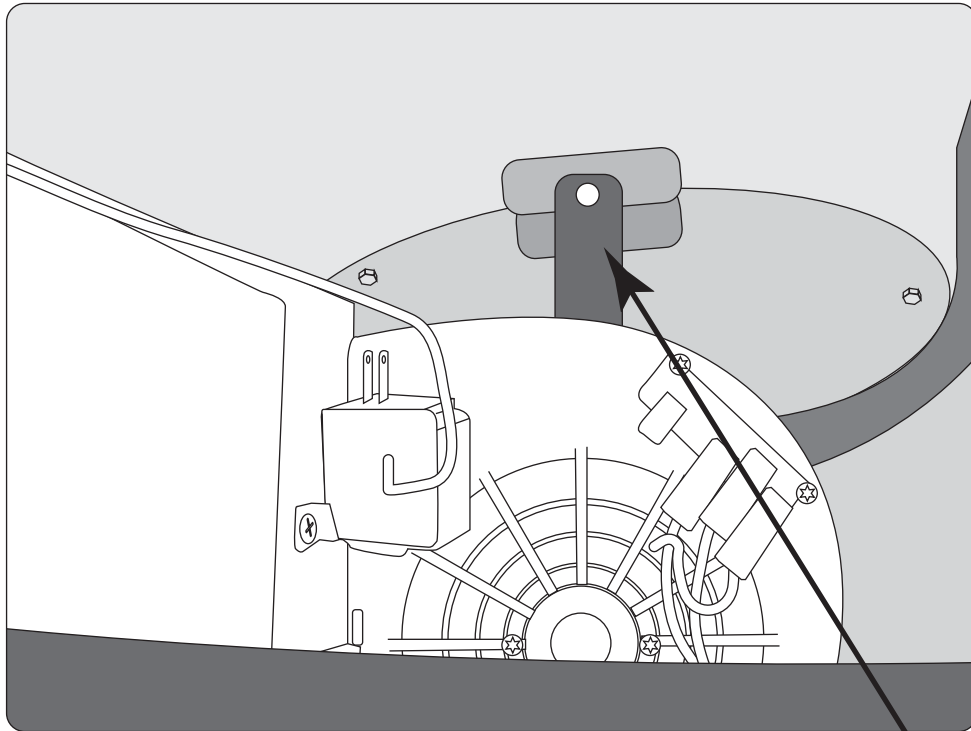
FIGURE 22



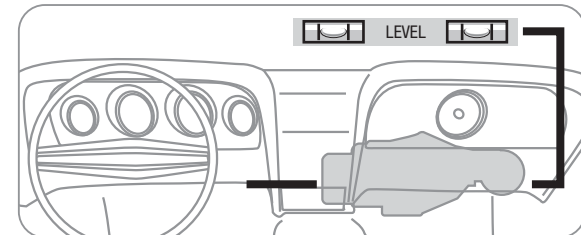
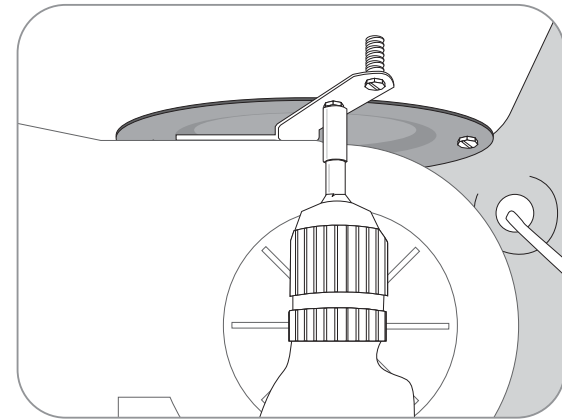
1/4 - #20 x 5/8" bolts and  
a 1/4" washer

In bag kit B locate one 1/4" washer 1/4-20 x 5/8" bolt. Attach blower motor bracket to J-Clip previously installed.

**NOTE: Leave bolt loose at this time.**



1/4-20 x 5/8" bolt and washer

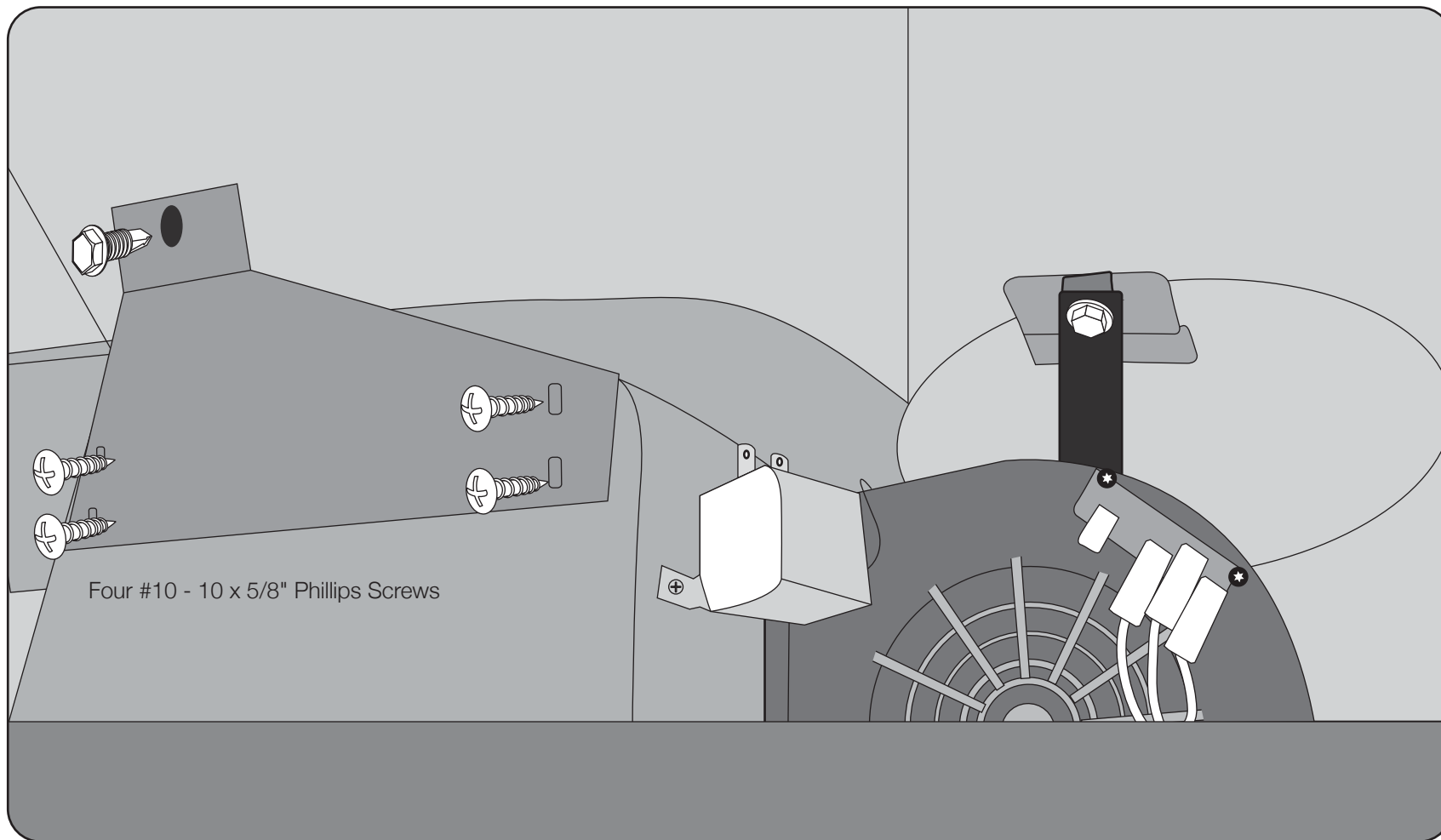


Be sure to align the evaporator unit level with the bottom of instrument panel as shown above

Locate evaporator mounting bracket from bag kit B (PN #0022-4) Attach to evaporator with four #10 x 5/8" screws. USE HAND POWERED SCREWDRIVER The Bracket is slotted to allow adjustment for proper tilting of unit toward firewall for condensation drainage. Once proper angle is found use one #10-16 3/4" TEK screw and fasten to interior cowl.

LEVEL UNIT WITH BOTTOM EDGE OF DASH AND TIGHTEN ALL BOLTS.

FIGURE 12

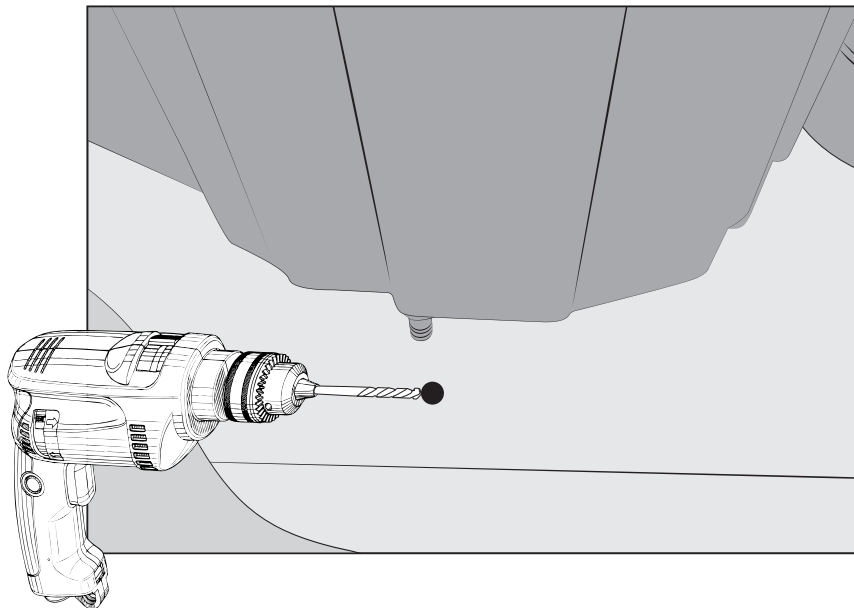


## Installing the Drain tube

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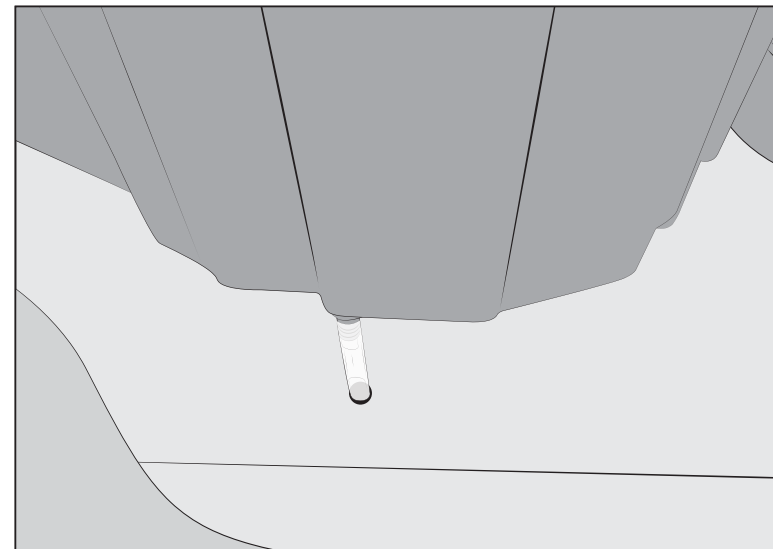


THIS IS FROM INSIDE THE VEHICLE!



Mount Evaporator level to firewall.

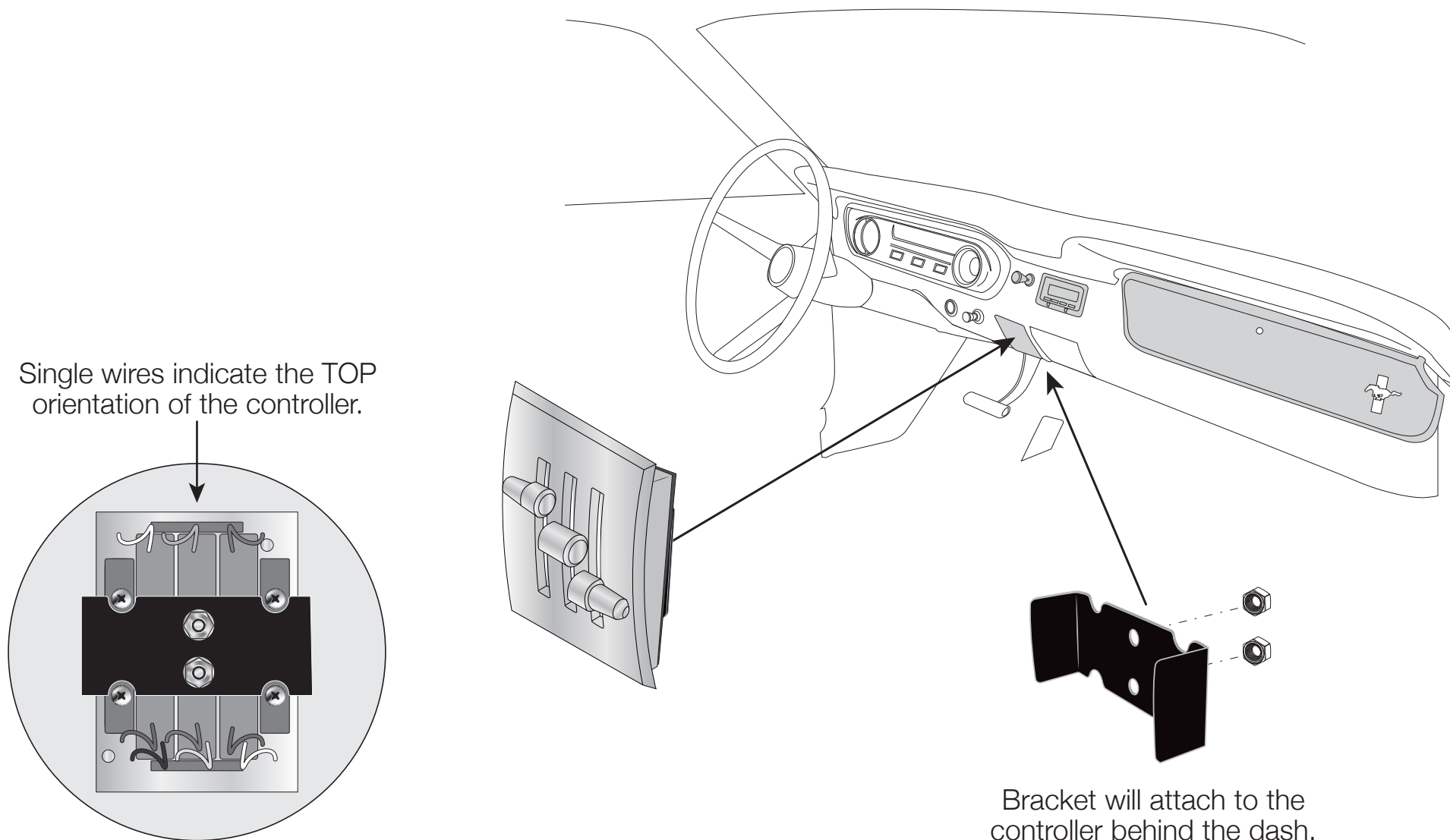
Locate Drain nipple on Evaporator and drill a 3/4" hole below the nipple on the firewall. This will allow condensation to drain properly.



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

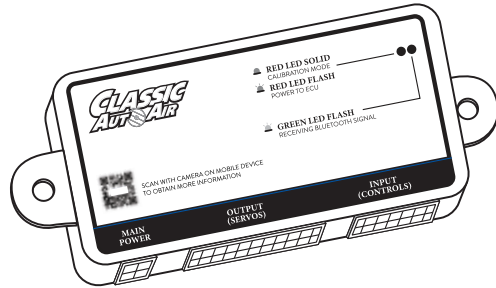
All condensation will now drain out into the engine bay.

Mount your New Classic Auto Air D.E.R. controller into dash.

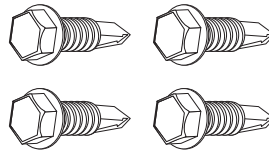


## THESE ARE THE PARTS YOU WILL FIND IN BAG KIT C

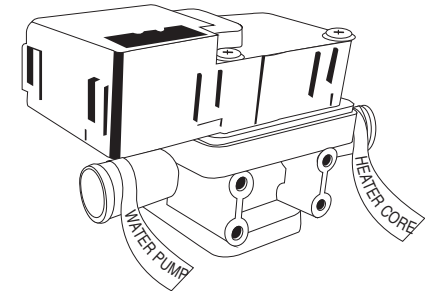
You will use all of these parts and hardware during the next series of installation steps.



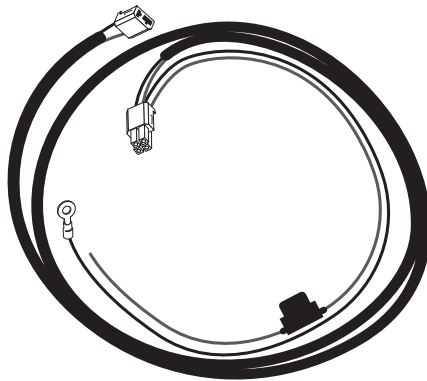
*ECU  
16-2500*



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



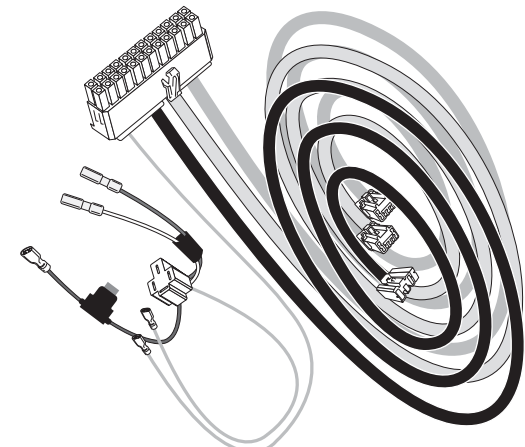
*Electronic Water Control Valve  
PN# 16-1023*



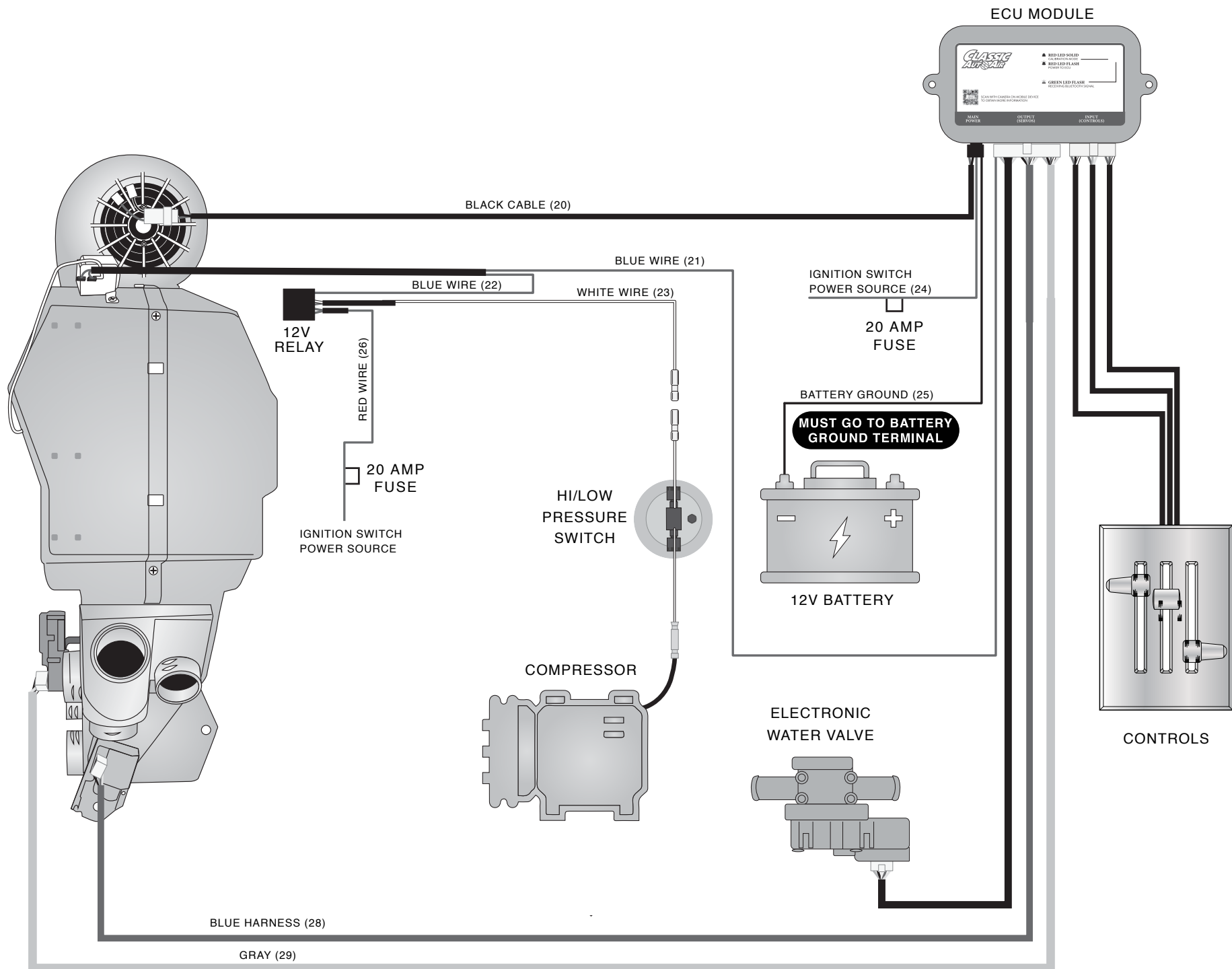
*HARNESS POWER SUPPLY  
0125-5*



*Relay  
30-13373*

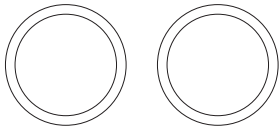


*HARNESS  
0125-6A*

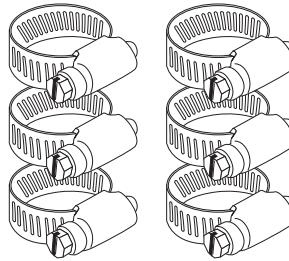


## THESE ARE THE PARTS YOU WILL FIND IN BAG KIT D

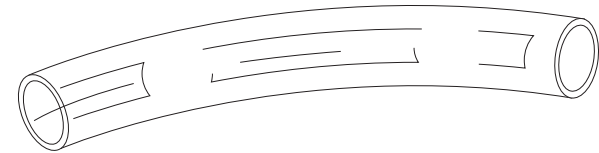
You will use all of these parts and hardware during the next series of installation steps.



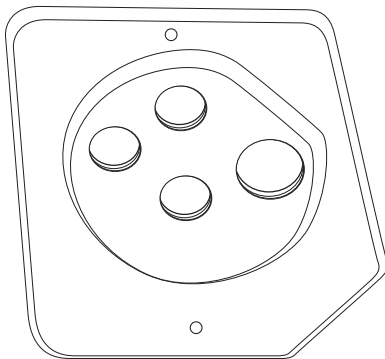
Two 1" Cap Plugs



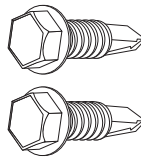
Six Worm Gear Clamps



Clear Plastic Drain Tube



Firewall Block Off  
PN# 10-1025-1



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

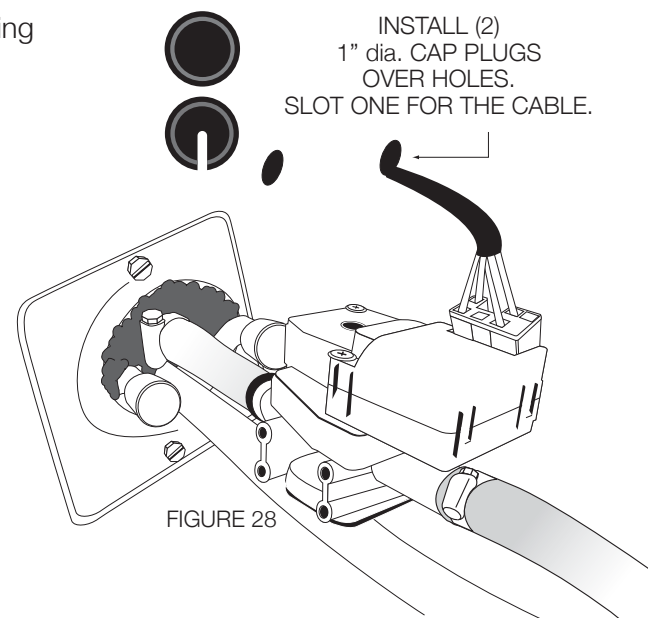
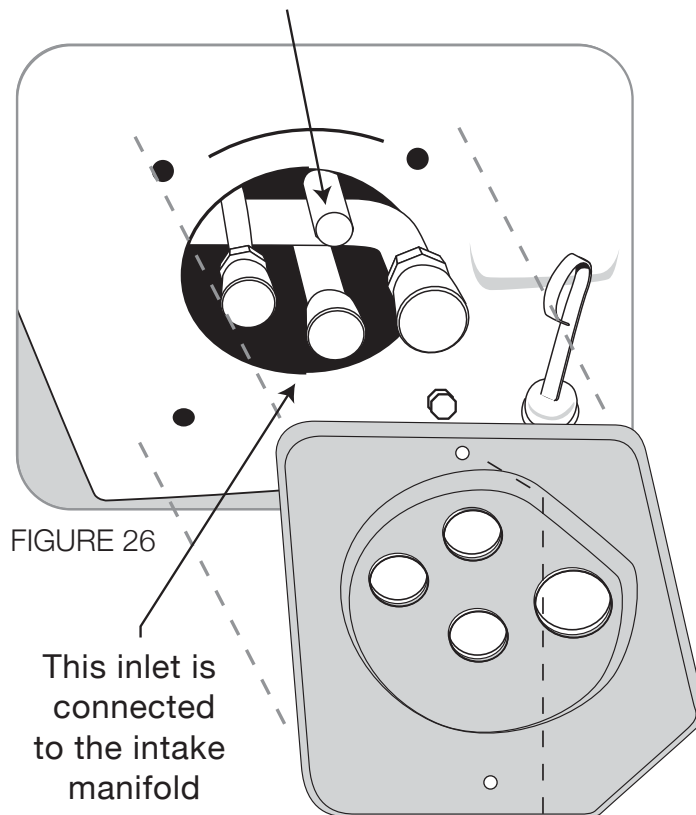


Refrigerant Tape



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 Two #10 - 16 x 3/4" Tek screws.

Water valve hose connects to this connection



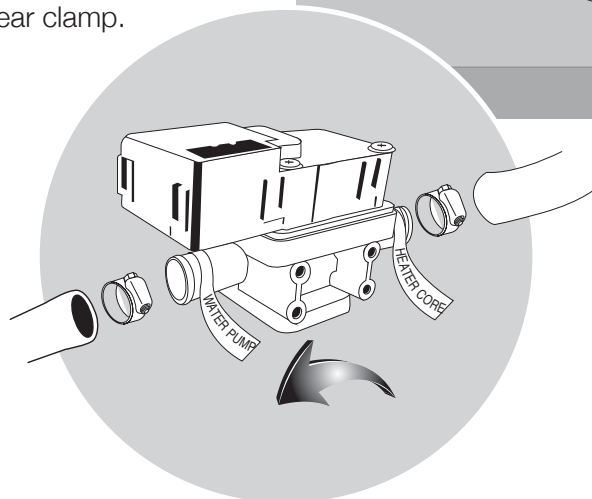
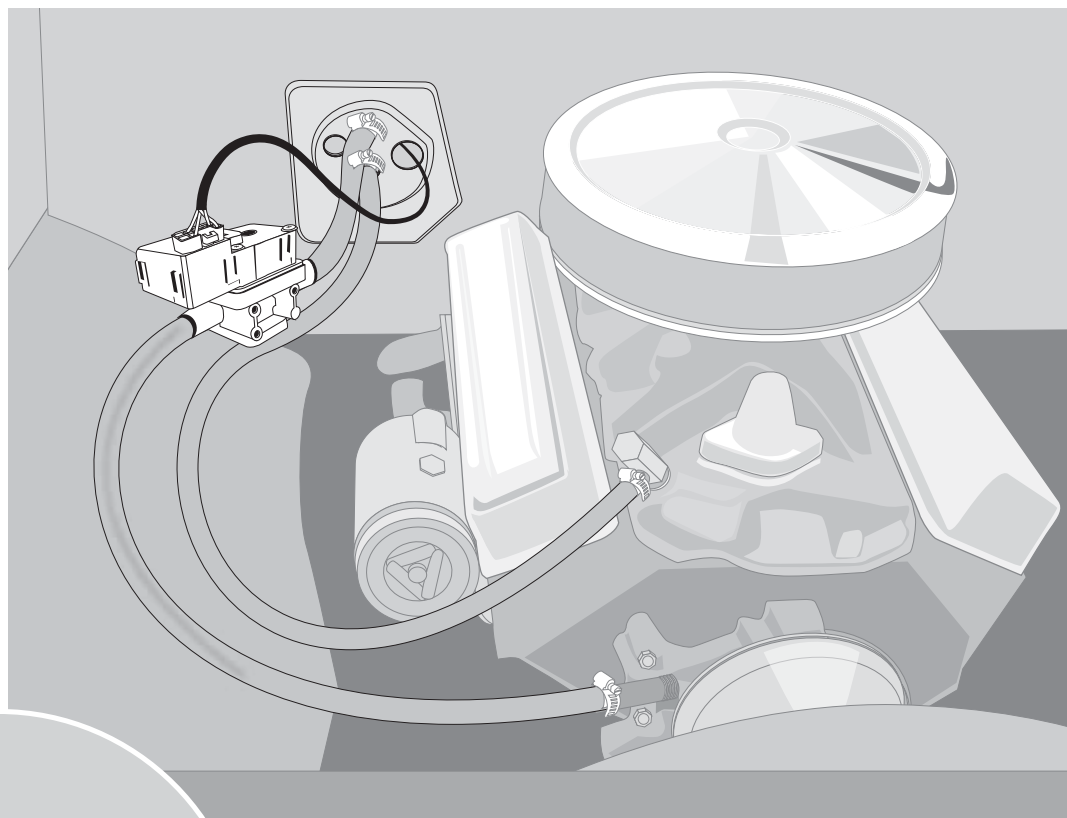
### IMPORTANT NOTICE: PROPER INSTALLATION OF WATER VALVE

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

The **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.

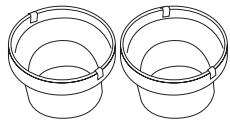


**FOLLOW THESE  
TAGS... CHECK IT  
TWICE BEFORE  
PROCEEDING!**

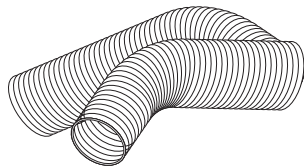
## THESE ARE THE PARTS YOU WILL FIND IN BAG KITS E, F, and G

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

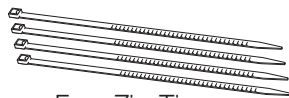
### Bag E



Defrost Adapter Reducers  
PN# 2-1025-3

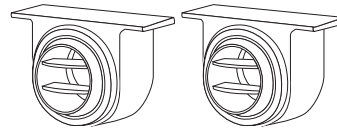


Two Duct Hoses, 2" I.D.

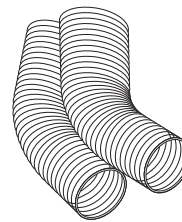


Four Zip-Ties

### Bag F



Two Louver Ball Assemblies  
PN# 2-1005



Two Duct Hoses, 2" I.D.

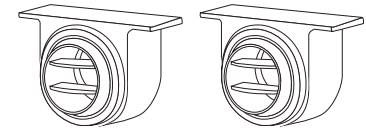


Four #10 - 16 x 3/4" Tek Screws

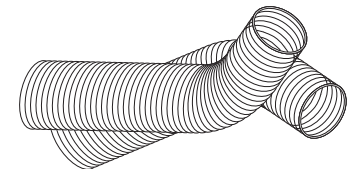


Four Zip-Ties

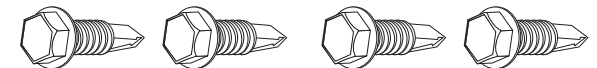
### Bag G



Two Louver Ball Assemblies  
PN# 2-1005



Two Duct Hoses, 2" I.D.



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



Four Zip-Ties

Illustrations NOT shown actual size

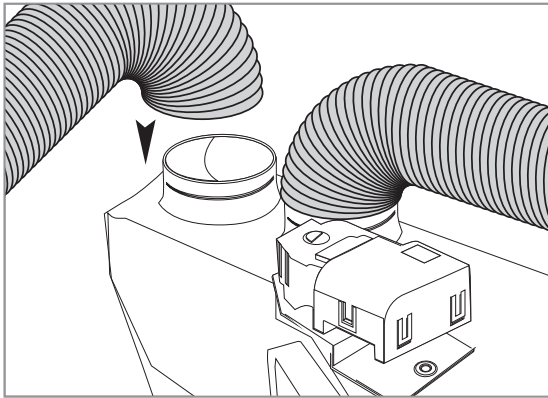


FIGURE 29

**The following steps are for left and right Defrost Diffusers:** Locate and route the duct hoses from the defrost/heat duct assembly (see figure 29) upward toward the defrost adapter diffusers. Next locate and install defrost adapter diffusers from the top of the dash and secure with v-clips supplied. Attach flex hose to the defrost diffuser adapters using zip-ties. Push adapters onto diffusers from below. The other end of the duct hose is installed over the defrost/heat duct assembly outlets on main unit (see figure 30 and the diagram below).

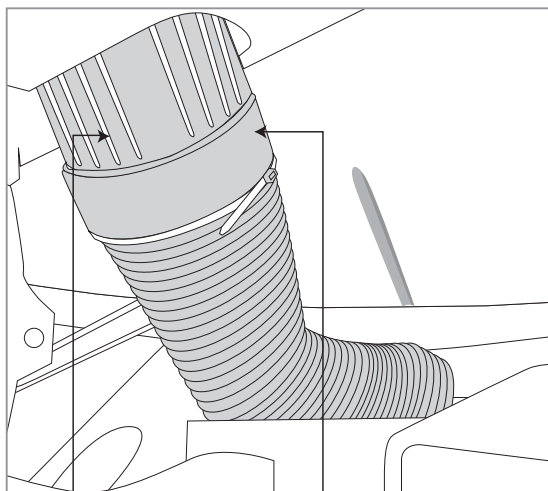
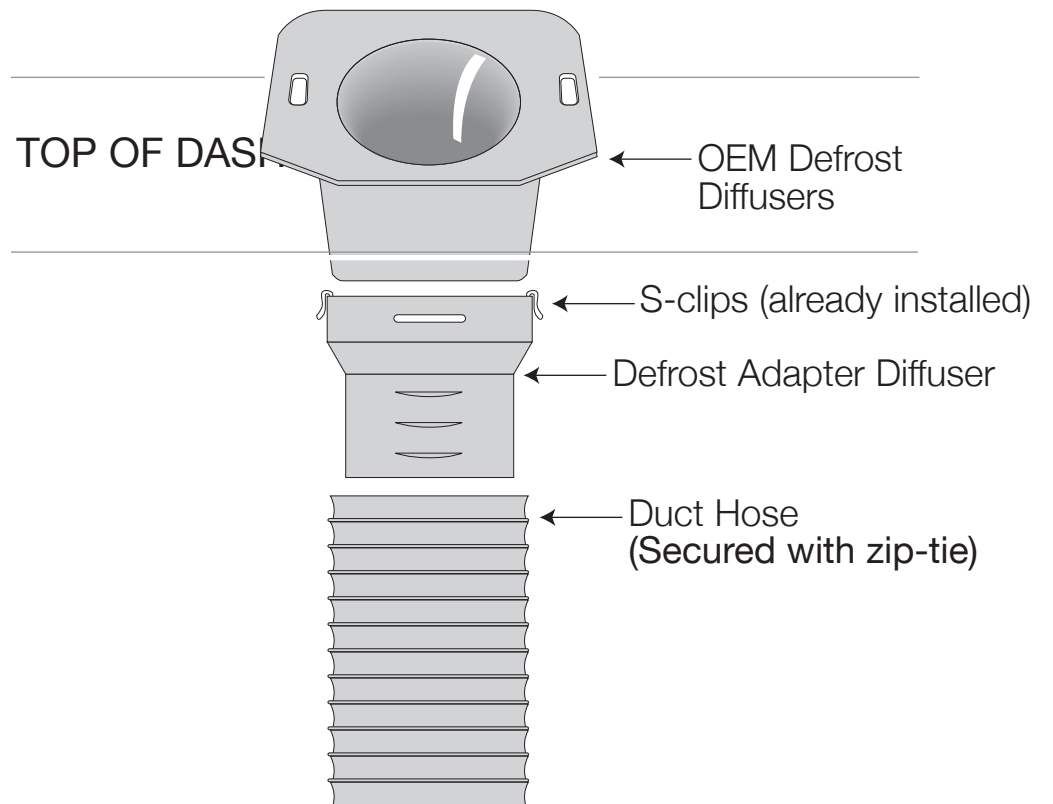
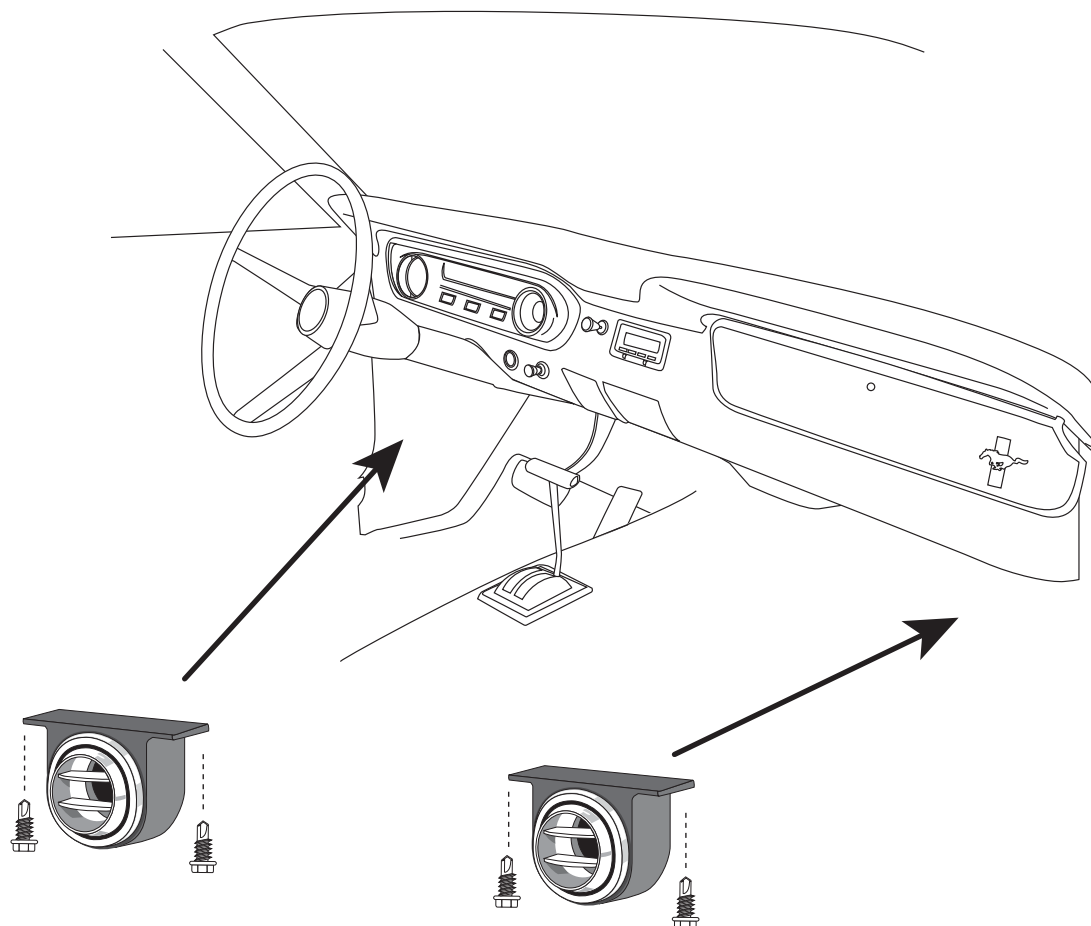
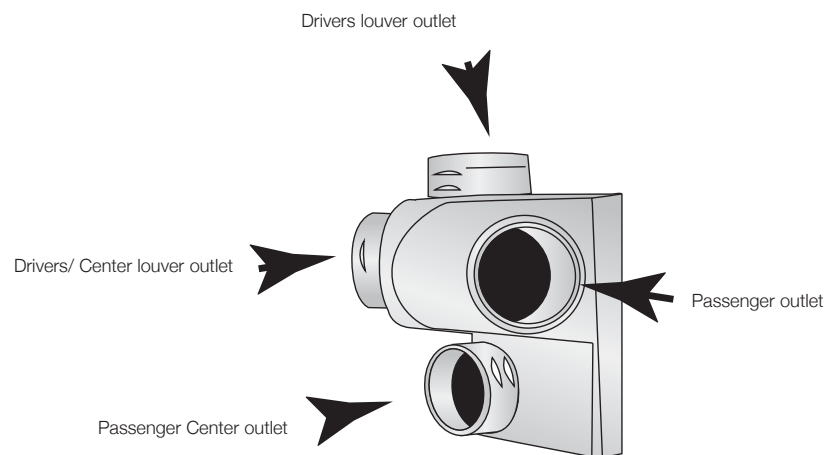


FIGURE 30

OEM Defrost  
Diffuser

Defrost Adapter  
Reducer



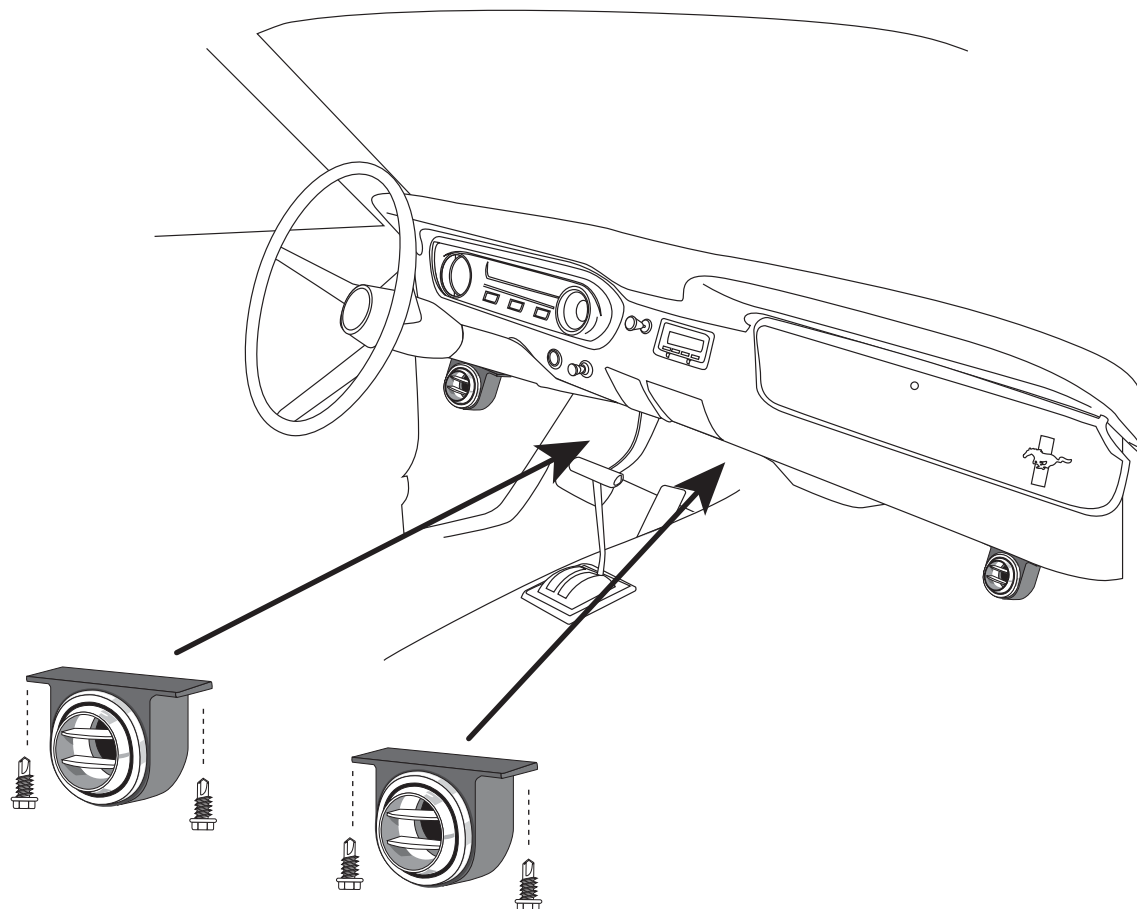


Drivers louver outlet

Drivers/ Center louver outlet

Passenger outlet

Passenger Center outlet



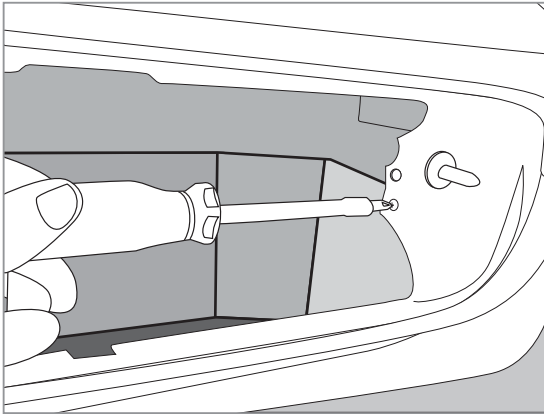


FIGURE 32

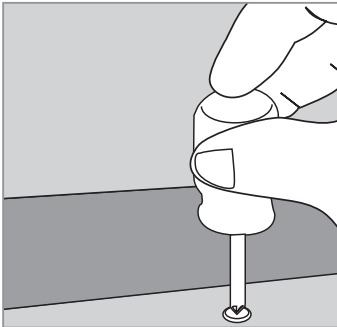
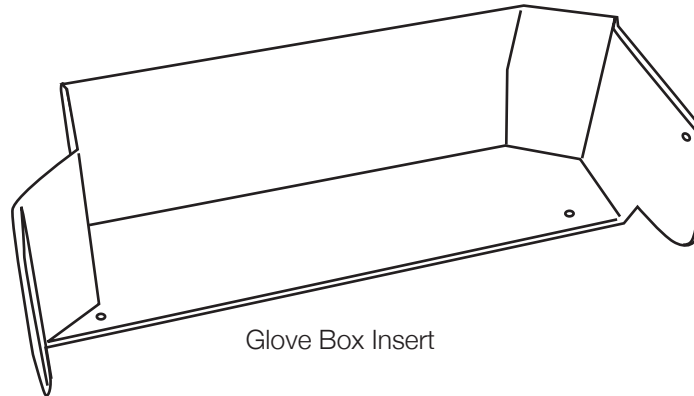


FIGURE 33

Locate the new glove box provided in kit. Install using original hardware (see figure 32-33).

**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.

Reinstall the Glove box door and Ashtray.



Glove Box Insert

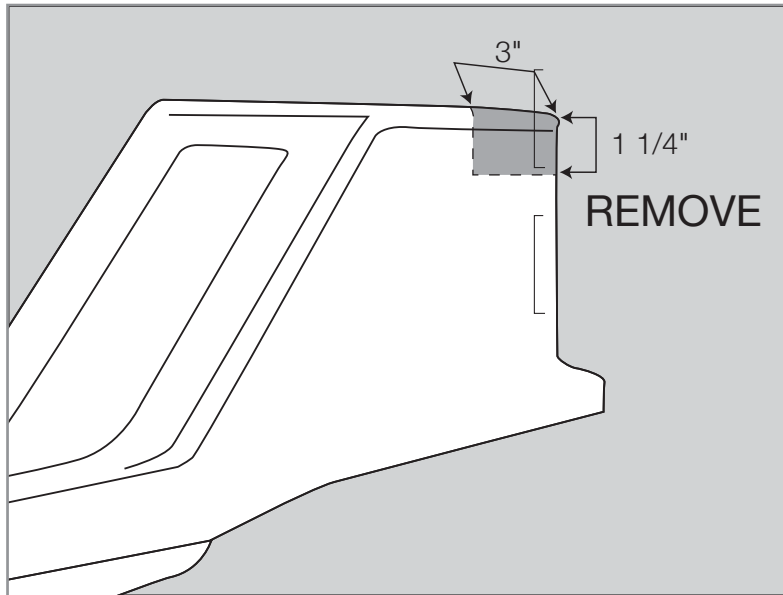
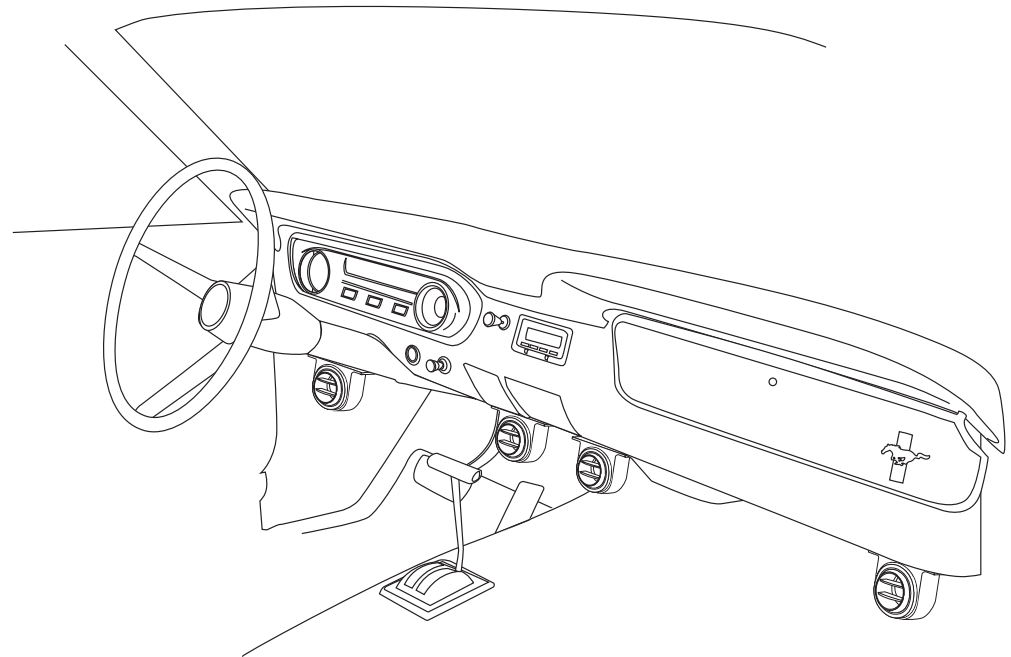


FIGURE 34



Retaining all the non-reinstalled OEM parts is a good idea, but that's your choice.



If your vehicle was equipped with a center console (which you removed earlier), you may need to modify it as shown (see figure 34) and reinstall. Test fit your console first.

This completes the interior portion of the Smart Series 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.

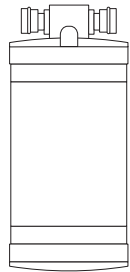
The interior of your car should look pretty much the same as before you started (or better). Plus you probably got to know the underside of your dash a lot better and might even have repaired or upgraded components that needed attention.

Good Job... Let's move on to the major components within the engine compartment....

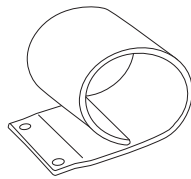


## THESE ARE THE PARTS YOU WILL NEED FOR THE ENGINE COMPARTMENT INSTALLATION

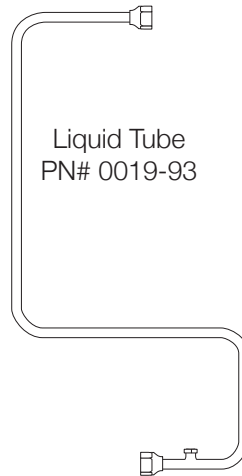
You'll find all of these parts within the main box



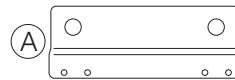
Drier  
PN# 12-1008



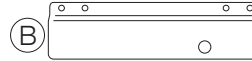
Drier Bracket  
PN# 19-1003



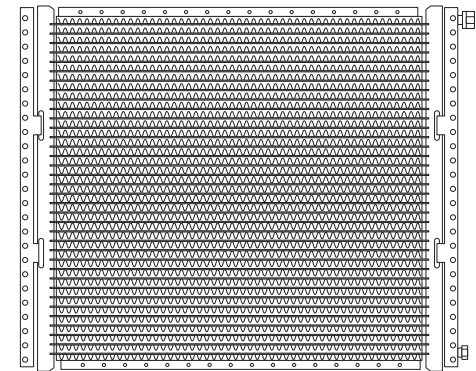
Liquid Tube  
PN# 0019-93



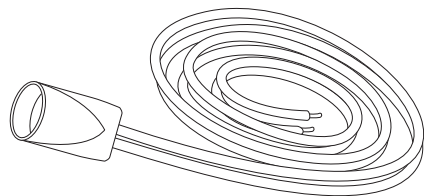
(A)  
Condenser Brackets  
PN# 0019-53



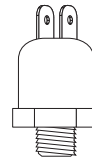
(B)  
Condenser Brackets  
PN# 0019-52



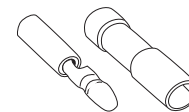
Condenser  
PN# 11-1093



Pressure Switch Harness



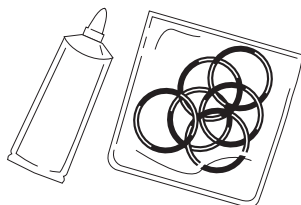
Pressure Switch



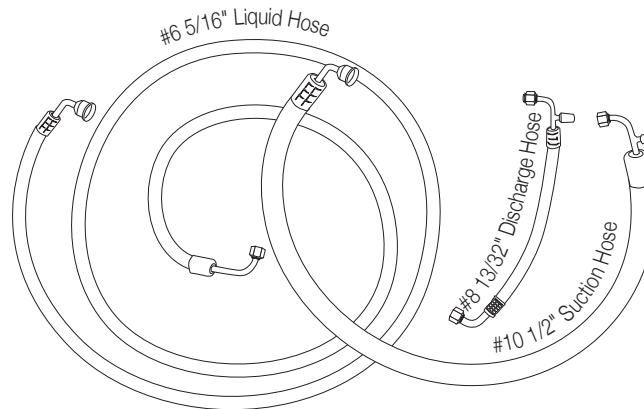
Splice and  
Bullet Connector



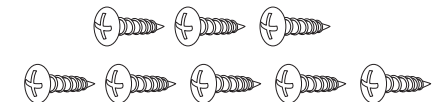
Four Zip-Ties



Bag of O-rings and Mineral Oil Tube



Three Refrigerant Hoses



Eight #10 - 20 x 5/8" Screws



Two #8 - 20 x 5/8" Bolts and Lock Nuts

## ENGINE COMPARTMENT INSTRUCTIONS

**STEP ONE:** IF YOU HAVE NOT ALREADY, DISCONNECT THE BATTERY.

**STEP TWO:** During the next steps you'll be installing the condenser, drier, and routing the high/low pressure lines and the liquid line. Since much of this is installed in the OEM location for the condenser, you'll need to remove the center grill section, horn(s), and latch support assembly (see figure 35). Be sure to retain all the mounting screws – you'll reinstall these pieces in the exact reverse order with the OEM screws.

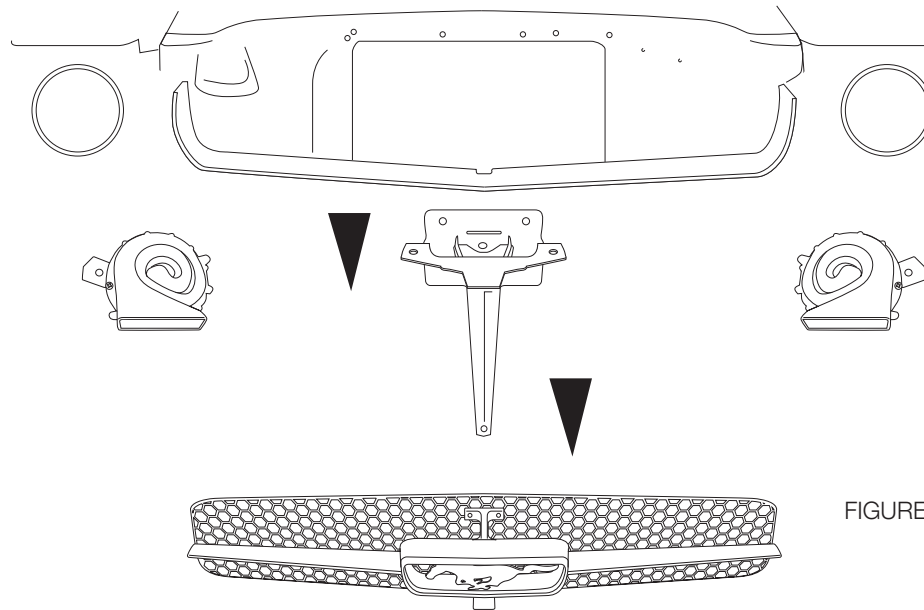
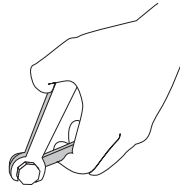


FIGURE 35

**STEP THREE:** Time to install the compressor kit. Included in your box is a premium compressor kit with all the parts you'll need to install the compressor. This kit includes easy to follow instructions specifically written for your engine. Once you've installed the complete compressor kit, continue on to the next step. We believe that this is the finest compressor kit available, and you're bound to notice the excellent fit and quality once this step is completed.

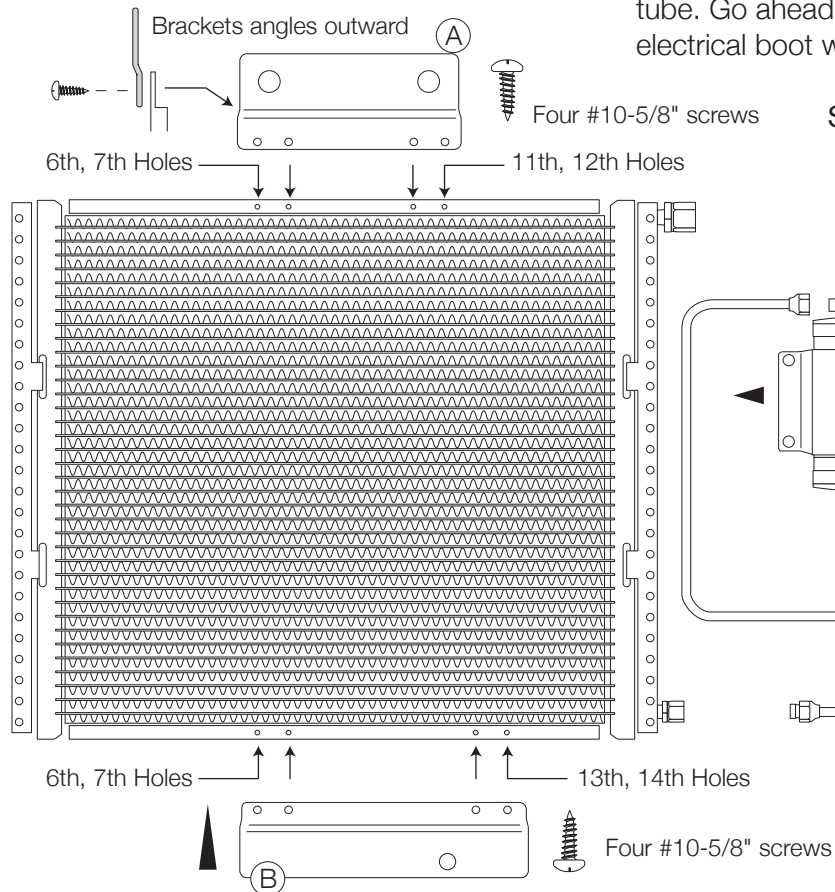


**Reminder...**  
Use two  
wrenches to  
tighten o-ring  
fittings



**STEP FOUR: 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 right side (the larger connection will be on top). The drier is conveniently mounted on the right hand side of the condenser. First insert the drier into the drier mounting bracket (it's basically a sleeve for the drier). Attach using the two #8 - 20 x 5/8" Bolts and Lock Nuts, making sure that the drier bracket is bolted to the condenser from the backside. Tighten connections at either end using supplied o-rings on both ends and a few drops of mineral oil to each o-ring.

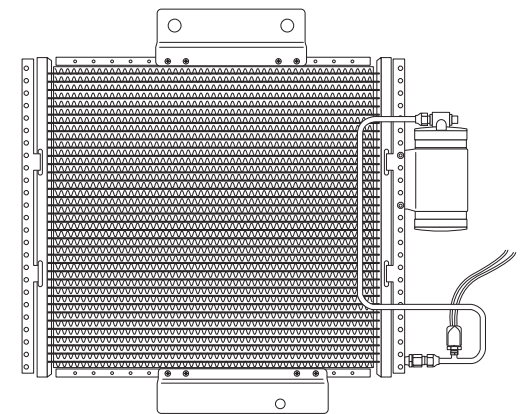
**STEP FIVE:** Screw the high-pressure switch into the port at the lower end of the drier liquid tube. Go ahead and plug the pressure switch harness into the switch at this time (black electrical boot with two long white wires).



**STEP SIX:** Install the upper condenser bracket (A) using four #10 - 20 x 5/8 screws in the 6th, 7th, 11th and 12th holes on the condenser from the left, be sure the bend on the bracket is facing towards you. Next, attach the lower bracket (B) using four #10-20 x 5/8 screws in the 6th, 7th, 13th and 14th hole from the left hand side. This bracket has a large hole that corresponds to the OEM latch support previously removed from the vehicle.



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



Final Configuration

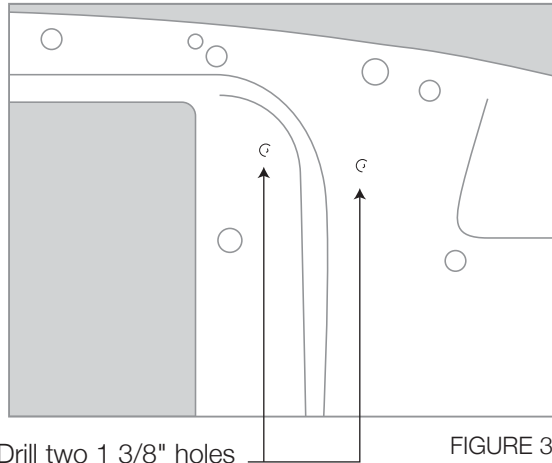


FIGURE 36

**STEP SEVEN:** Your OEM radiator support was designed to support a A/C condenser and conveniently has two small indentations on the drivers side for drilling the holes needed for this part of the installation (see figure 36, **after-market core supports may or may not have these indentations**). If your vehicle was already equipped with a OEM A/C, one of these holes may already be drilled. 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, see figure 36). You'll notice that the hole closest to the upper condenser fitting is level with the connection fitting (the discharge hose to the compressor will go thru this hole). The other hole is to accommodate the liquid hose and the wiring harness plug for the high-pressure switch.

**STEP EIGHT:** Place 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 (it will rest on the lower radiator core brace, see figure 37).



If you want to verify that you have the correct indentations in sight before drilling, place fit the condenser into it's final location. Also, the holes on the upper bracket are larger than needed to allow for small adjustments. The condenser is held in place when the hood latch is reinstalled at a later time.

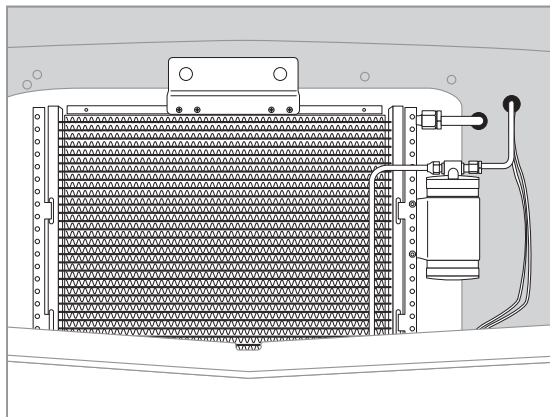


FIGURE 37

## Connecting the Hoses



**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:

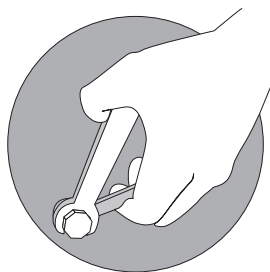
**Based on PASSENGER or DRIVERS SIDE compressor mounting see illustrations for routing.**

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.

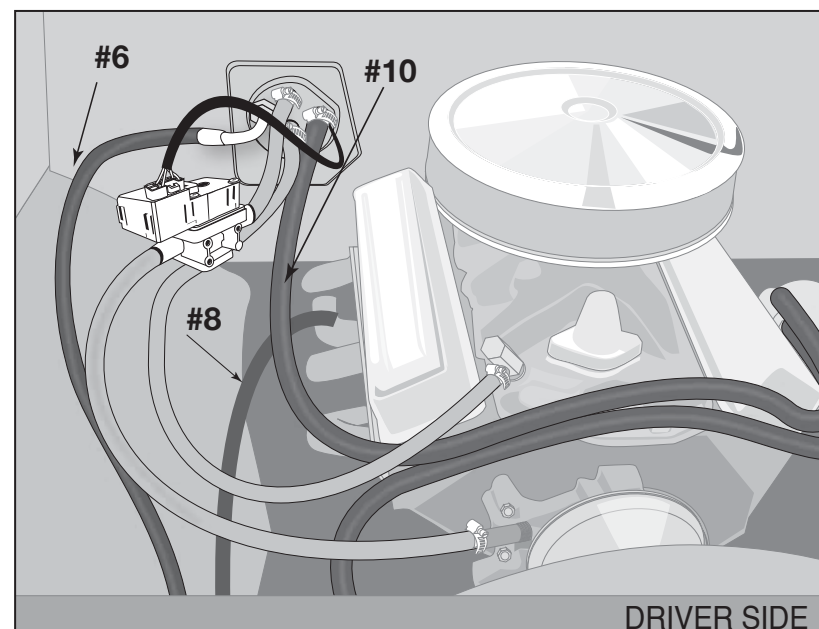
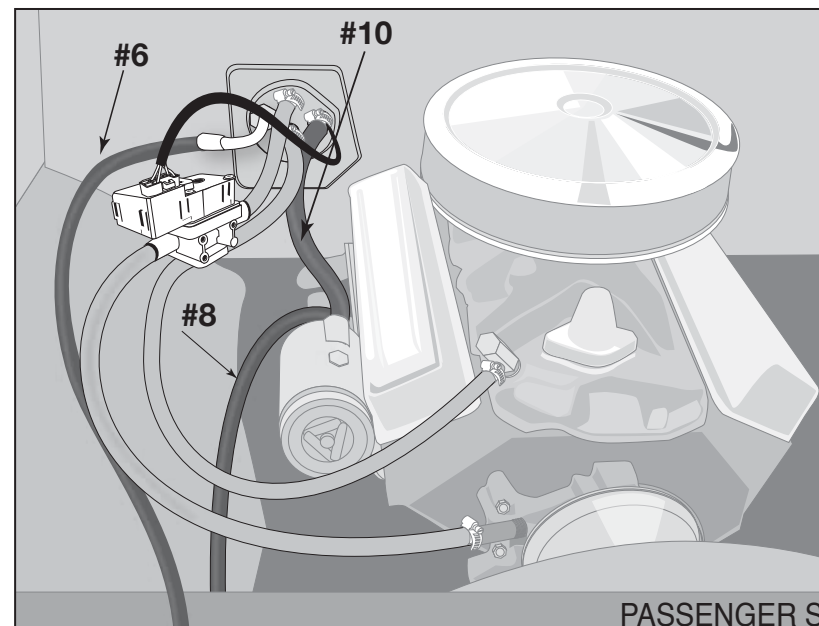
The #6 (**SMALLEST**) refrigerant hose. Route behind fender and to the connection on firewall. Attach using two #6 o-ring and a few drops of mineral oil.

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!**

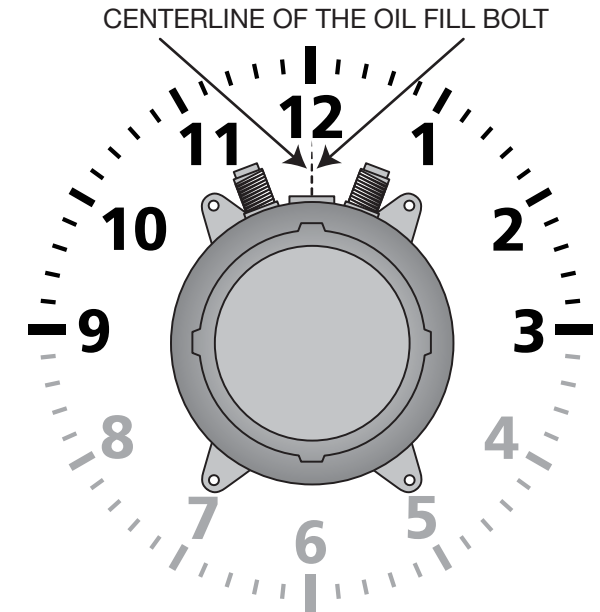
**RECOMMENDED TEST CONDITIONS:** (After system has been fully charged and tested for basic operation)

- 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

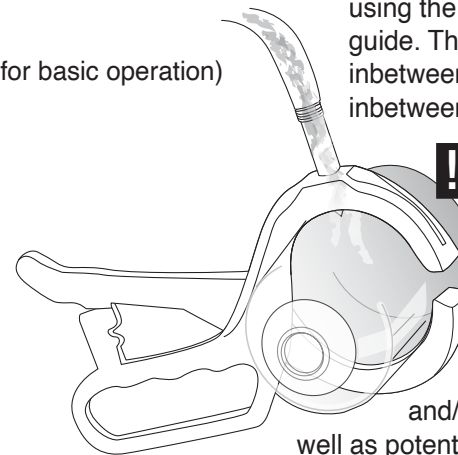
**ACCEPTABLE OPERATING PRESSURE RANGES:**

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 inbetween the 9 to 3 positions. **DO NOT** mount inbetween 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.

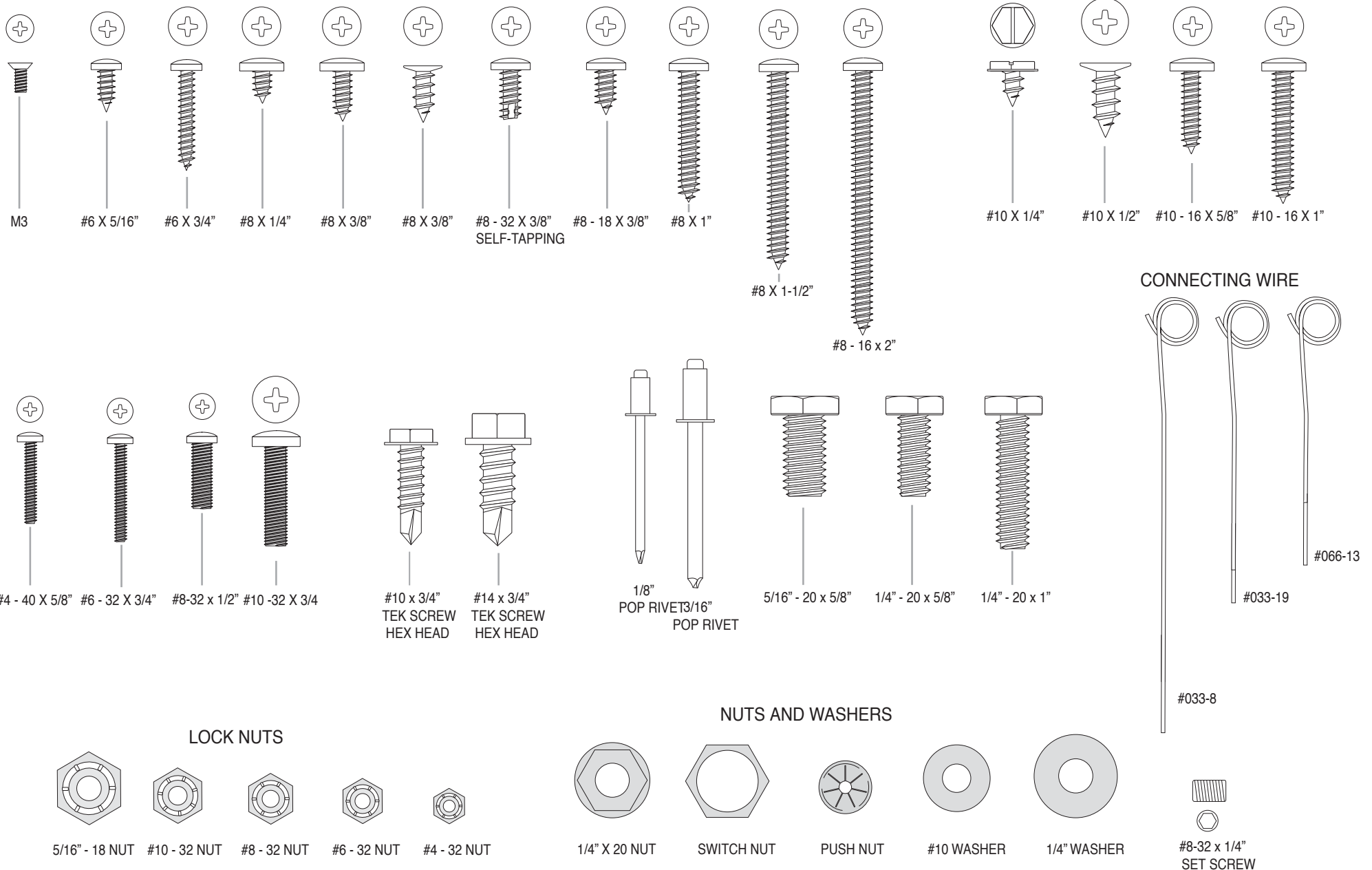




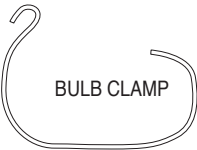
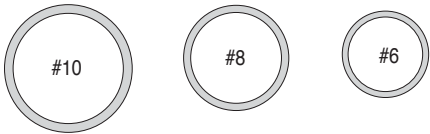


## Classic Auto Air Hardware Reference Guide

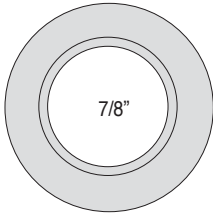
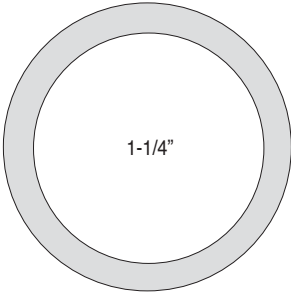
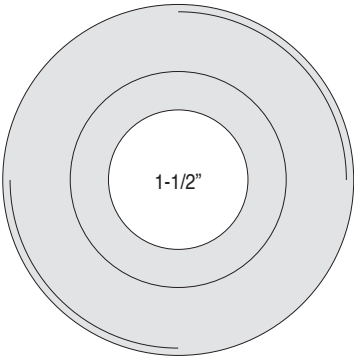
This is our basic line-up of hardware. No single kit will not contain all of these, but you can use this guide to match-up hardware for shape and size (all of these are actual size.)



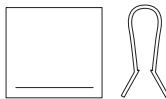
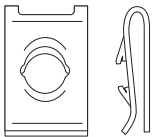
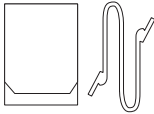
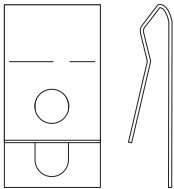
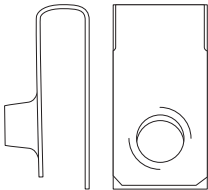
ORINGS



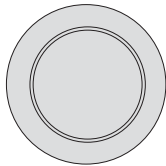
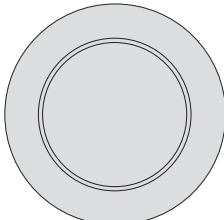
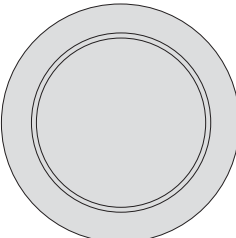
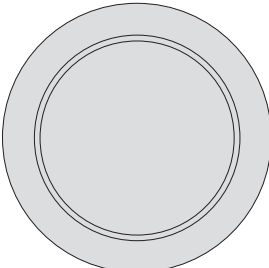
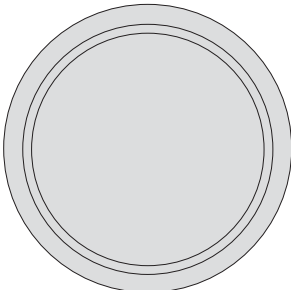
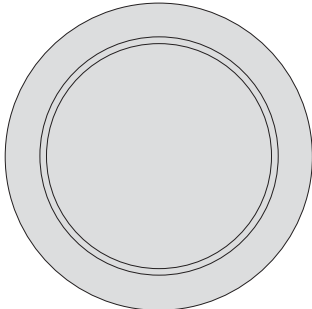
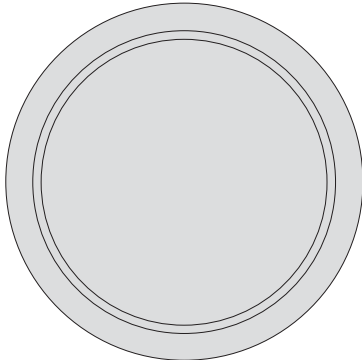
GROMMETS



CLIPS



HOLE PLUGS



HOSE CLAMPS

