

# ***Installation Manual***

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## ***1971-1973 Mustang Factory Air***

DOCUMENT #1-3028FA

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 During the installation you might find the opportunity to repair or upgrade non-working or out of date components.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

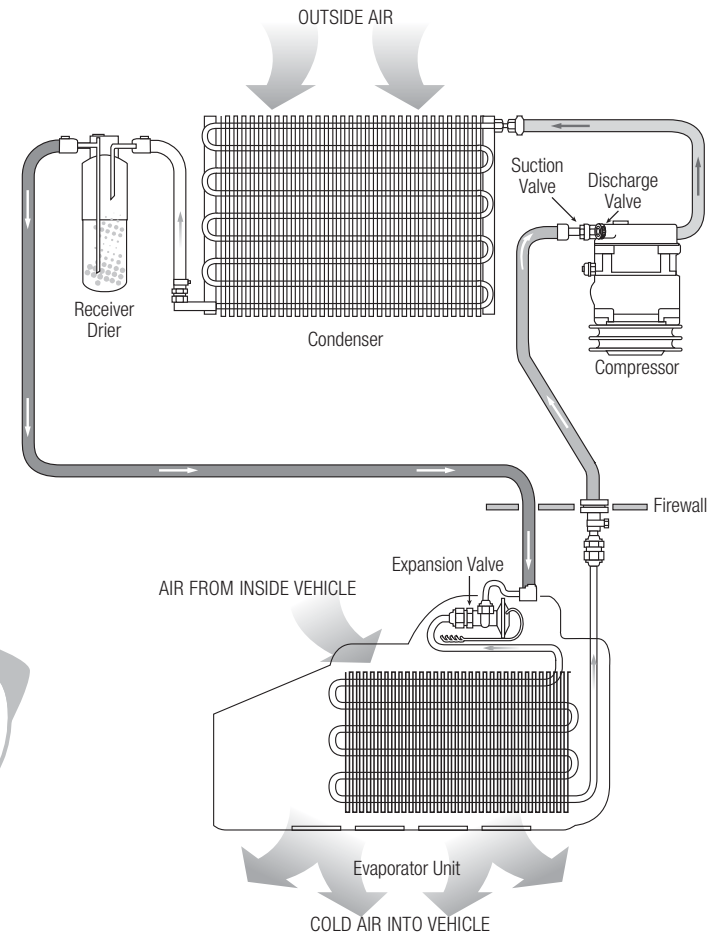
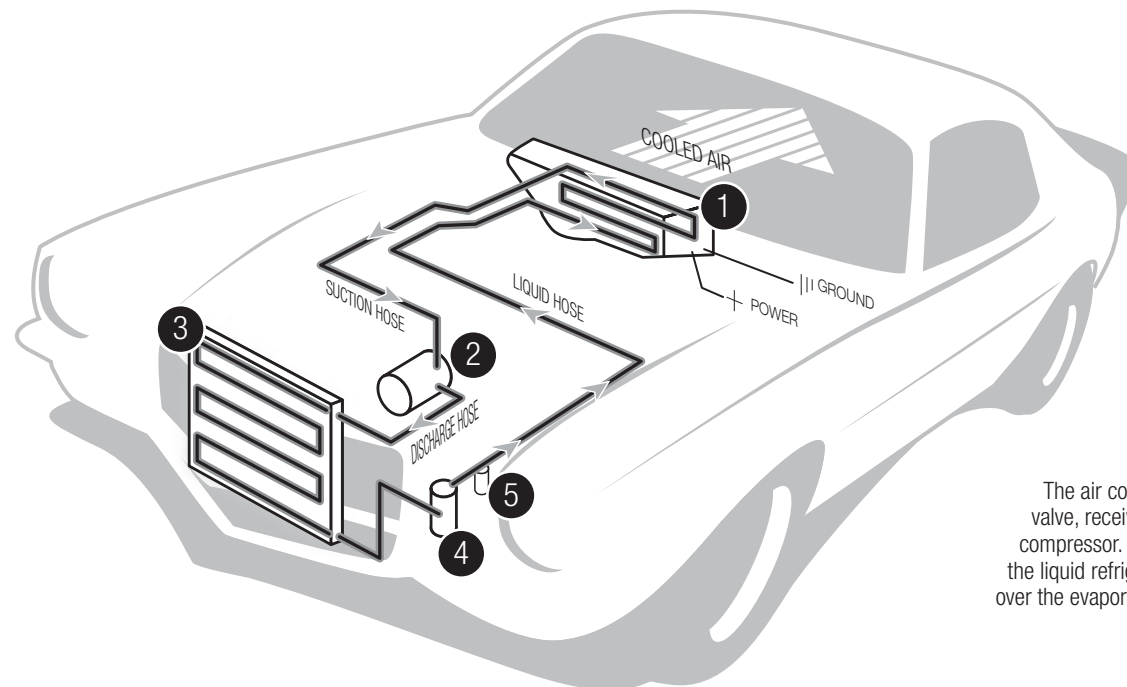
## Procedures, During Installation:

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

***YOU CAN NOW BEGIN THE INSTALLATION...***

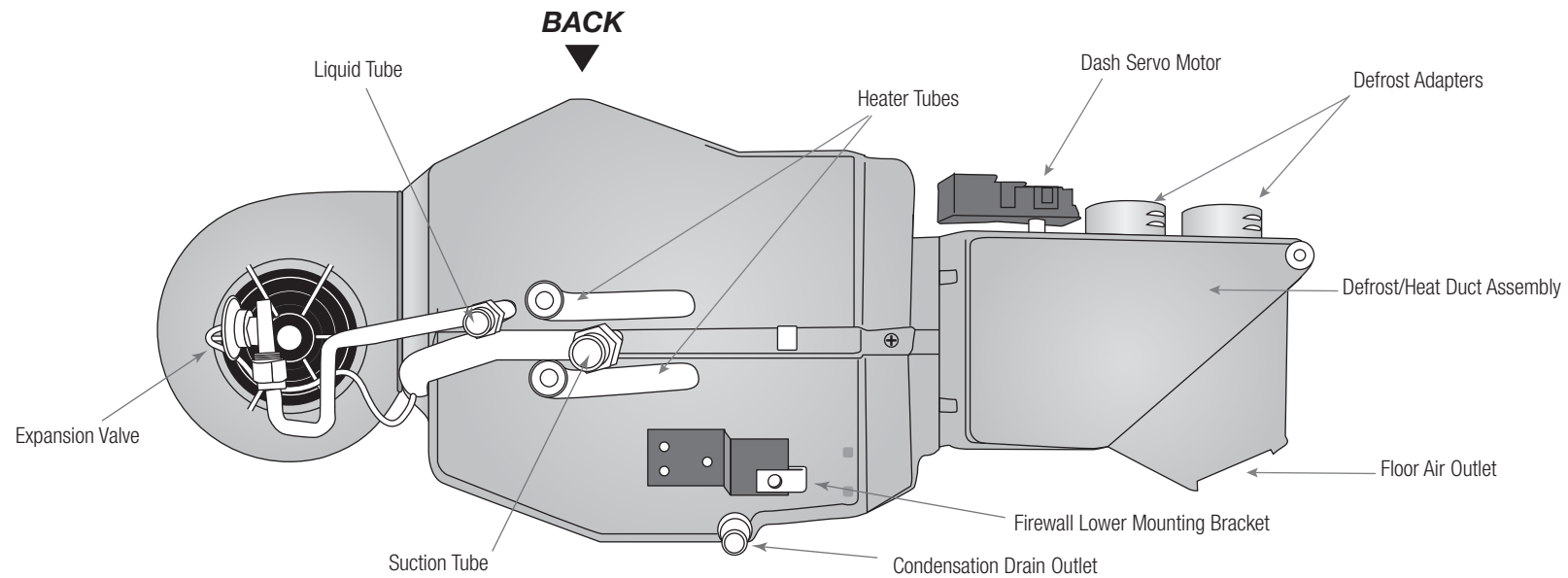
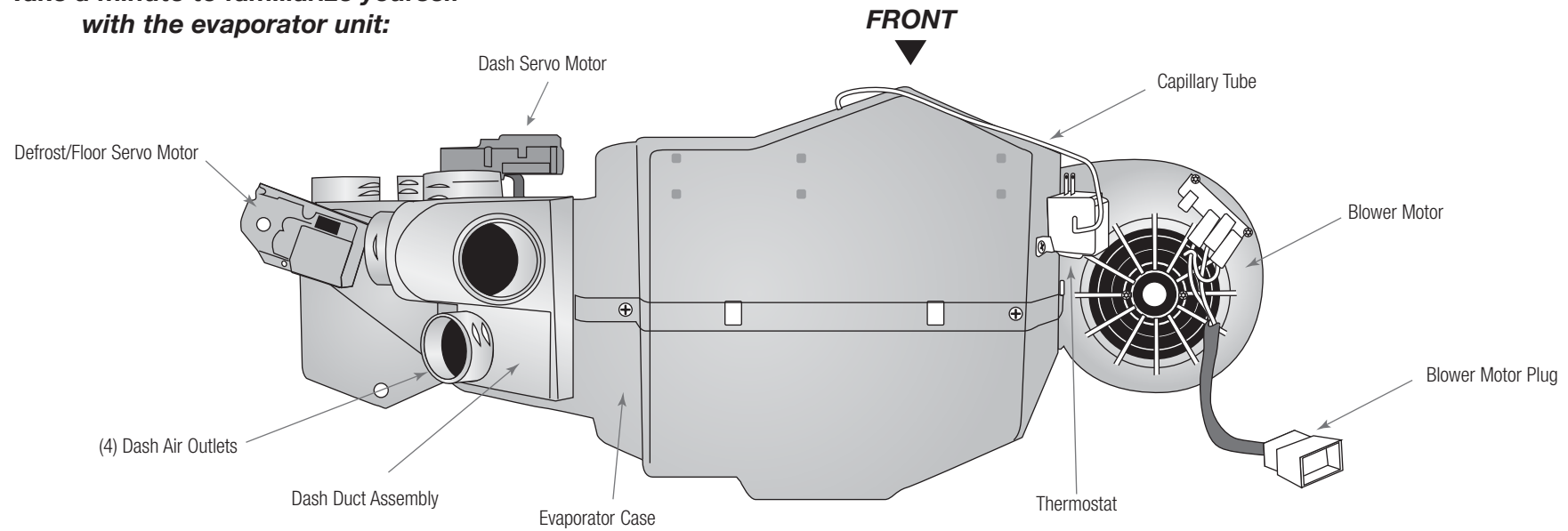
## A Basic Overview of Automotive A/C....

- 1 **Evaporator with Blower Fan** In order to remove the heat from the air in the vehicle, the A/C evaporator allows the refrigerant to absorb the heat from the air passing over it. The blower fan moves cool air out into the car interior.
- 2 **Compressor** The compressor pumps and circulates the refrigerant through the system.
- 3 **Condenser** The condenser is a heat exchanger mounted at the front of the vehicle. Heat drawn out of the interior of the car is expelled here.
- 4 **Receiver/Drier** The drier not only dries refrigerant, it also filters the refrigerant and stores it under certain operating conditions.
- 5 **High Pressure Switch** A pressure switch is used to shut down the system if high or low pressure is detected, basically it acts as a safety switch.



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

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



## Control & Operating Instructions

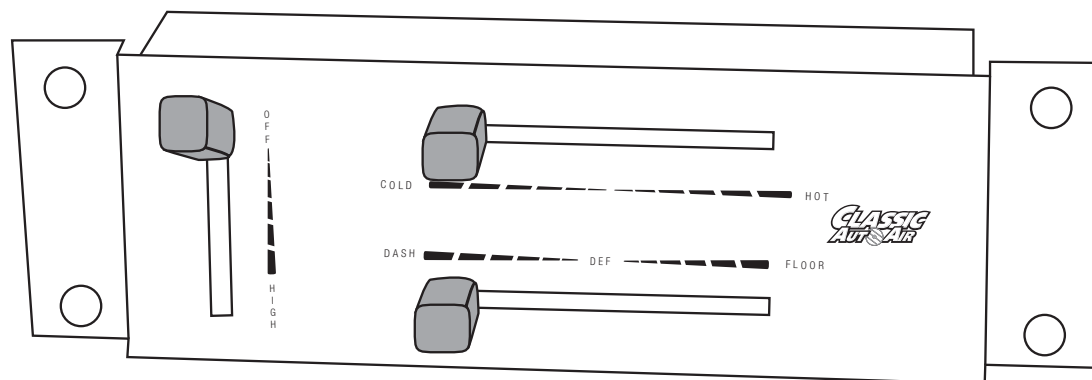
Your new **SMART A/C SERIES** system offers complete comfort capabilities in virtually every driving condition. This includes temperature control in all of the modes. This system also provides the ability to blend the air between Face, Heat, and Defrost modes simultaneously. To illustrate the various 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...

The FAN switch works like the OEM switch, the DOWN position is OFF (all power to the system is OFF in this position).

There are 11 levels of adjustment within the range of the MODE lever.

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

NOTE: When the TEMP lever is in the "FULL COLD" position the compressor is ON, no matter what position the MODE lever is in (think of it as a compressor-override function).



DASH

DEF

FLOOR

POSITION	1	2	3	4	5	6	7	8	9	10	11
MODE	Dash A/C 100%	Dash A/C 80% Defrost 20%	Dash A/C 60% Defrost 40%	Dash A/C 40% Defrost 60%	Dash A/C 20% Defrost 80%	Defrost 100%	Floor Defrost 20% Defrost 80%	Floor Defrost 40% Defrost 60%	Floor Defrost 60% Defrost 40%	Floor Defrost 80% Defrost 20%	Floor 100%
COMPRESSOR	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON

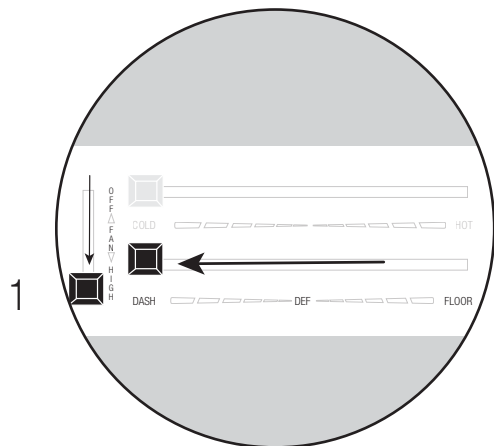
COLD

HOT

VALVE POSITION	CLOSED - 0%	OPEN - 10%	OPEN - 20%	OPEN - 30%	OPEN - 40%	OPEN - 50%	OPEN - 60%	OPEN - 70%	OPEN - 80%	OPEN - 90%	OPEN - 100%
COMPRESSOR	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	OFF

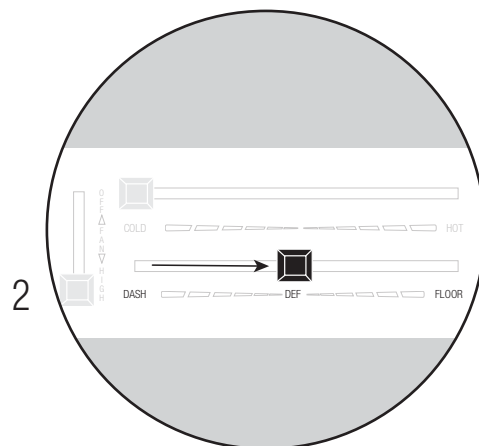
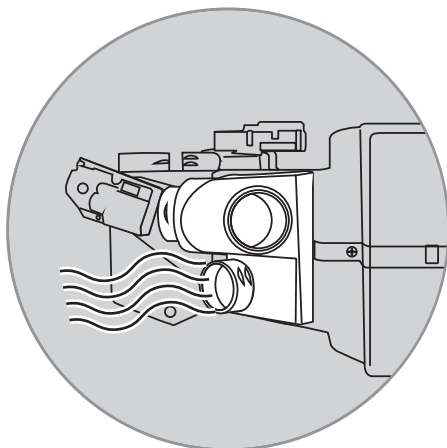
# OPERATION

• Function Test, Steps 1 thru 3



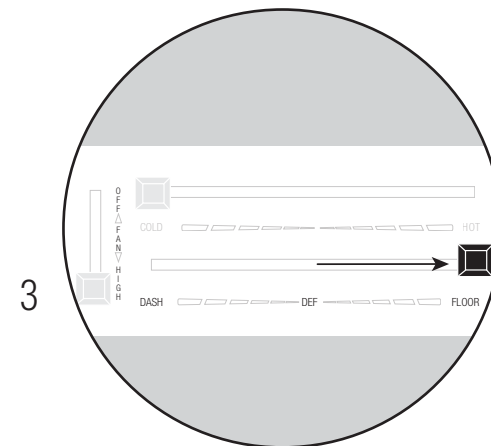
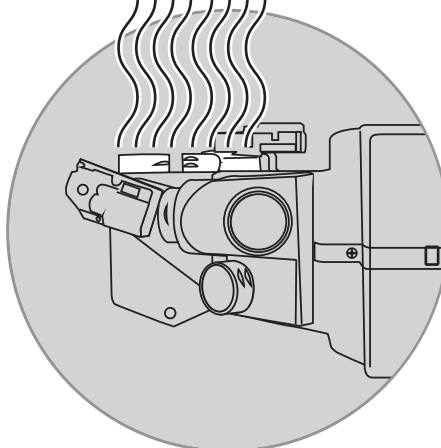
Move FAN knob to HIGH  
Move MODE knob to DASH

AIR OUT OF DASH VENTS



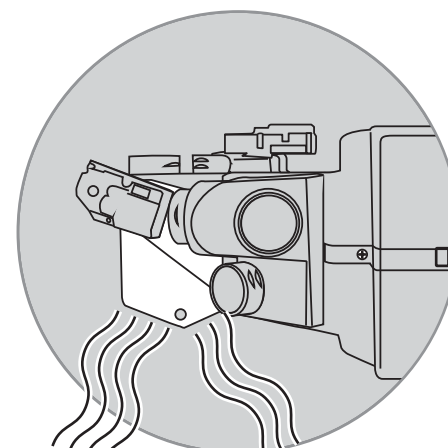
Move MODE knob to DEF

AIR OUT OF DEFROST VENTS



Move MODE knob to FLOOR

AIR OUT OF FLOOR VENTS

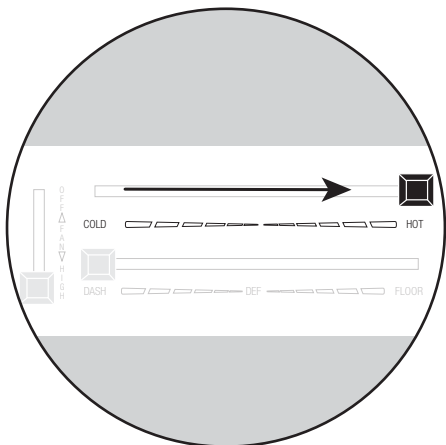




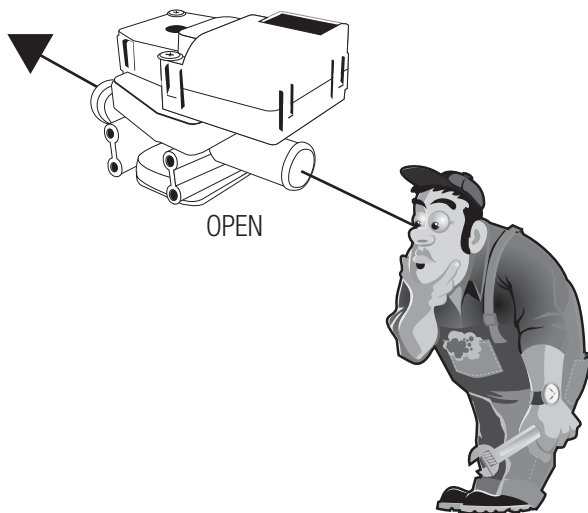
# OPERATION

## • Function Test, Steps 4 and 5

4

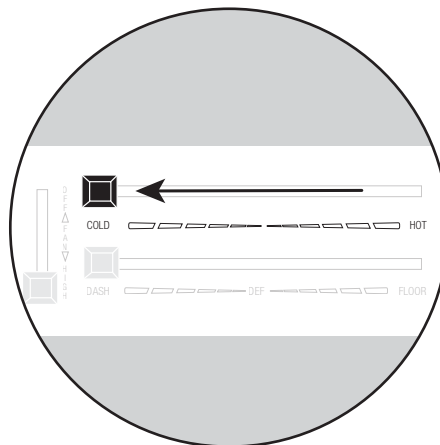


Move TEMP knob to HOT

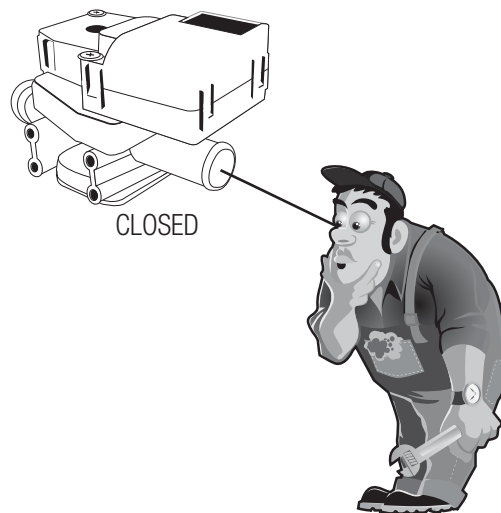


You will be able to see thru water valve passage

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.



Remove Glovebox, Console (if equipped), Dash Facia, Radio and Bezel, and set them aside for reinstall later (see figure 1).

The removal of the Original A/C Assembly is accomplished by disconnecting two control cables. One is attached to the Heat/Defrost door (see figure 2). One is attached to the Temperature door. (see figure 3). Disconnect the electrical harness from the assembly. You will not be reusing any of the OEM A/C assembly (see figure 2).

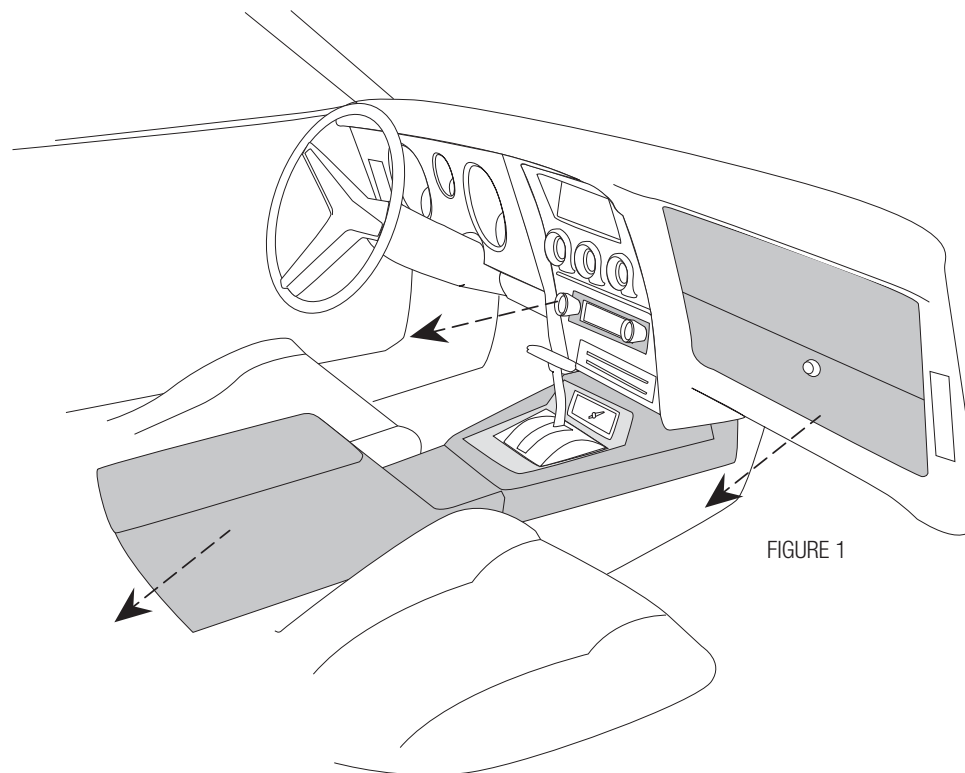


FIGURE 1



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.

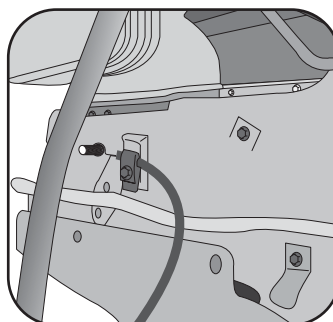


FIGURE 2

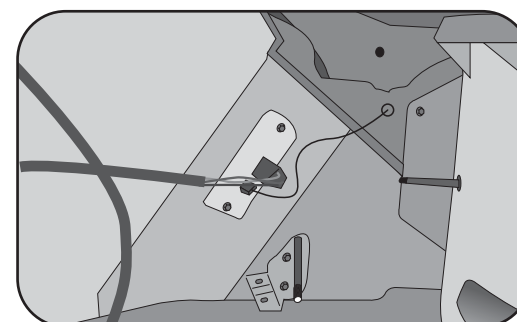


FIGURE 3

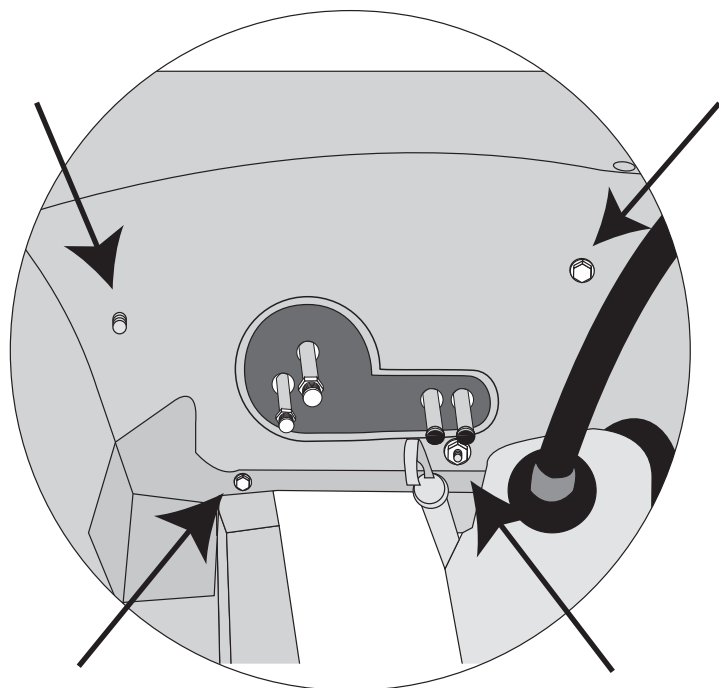
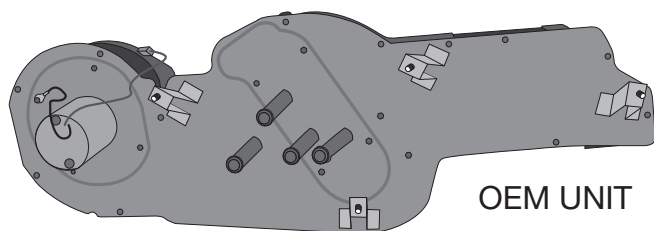


FIGURE 4

Remove 4 bolts around the perimeter of the OEM A/C housing (see Figure 4) located in the engine compartment on the passenger side of firewall.

Next Remove complete A/C assembly located in the dash. Rotate upward being careful not to drain any coolant left in heater coil. (see Figure 5)



OEM UNIT

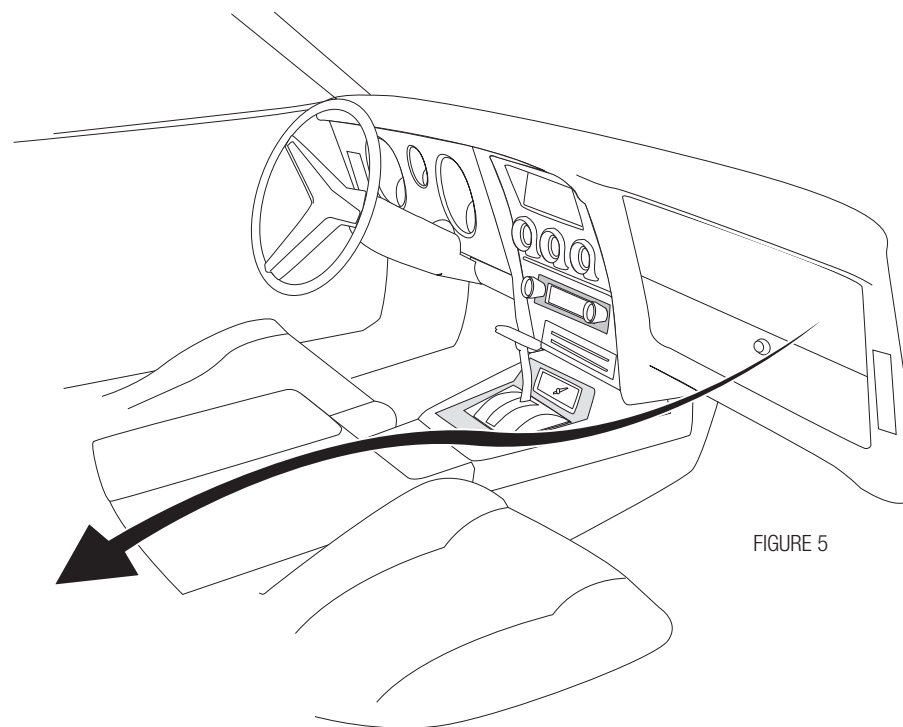


FIGURE 5

Remove the OEM defrost duct assembly and set aside for later modification.  
(Figure 7)

Remove the OEM Fresh air inlet box with push/pull cable assembly  
and Fresh Air transition duct from the passenger side of vehicle. Discard  
(Figure 6)

LOCATED ON PASSENGER SIDE OF VEHICLE

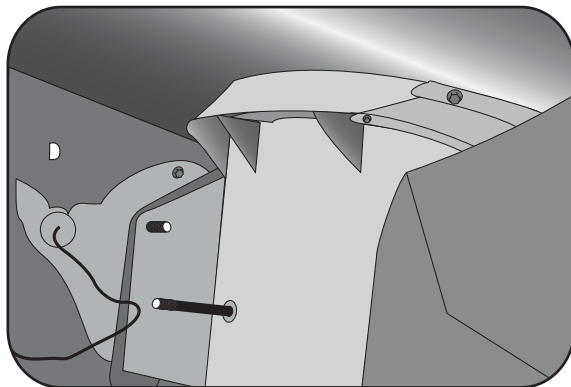


FIGURE 6

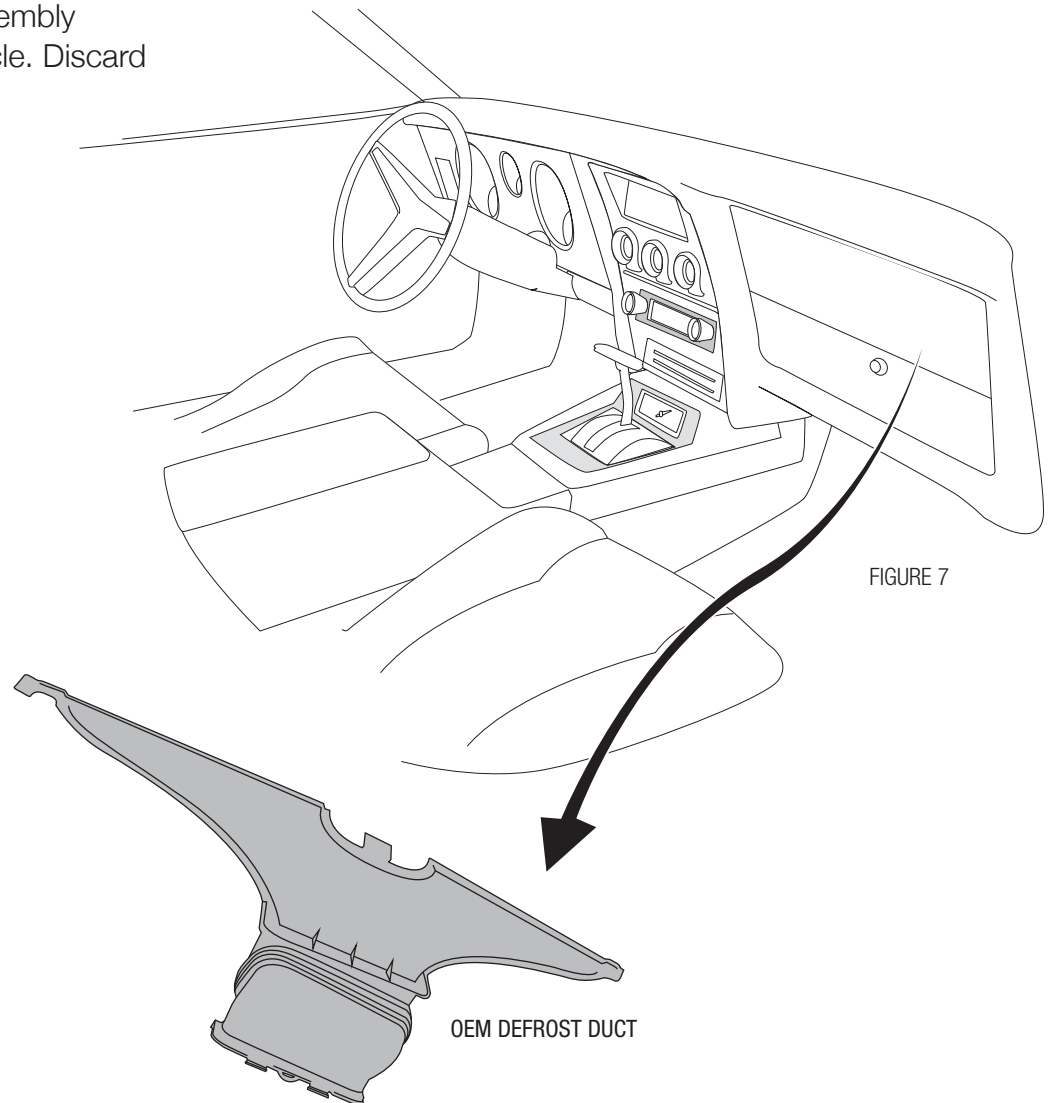
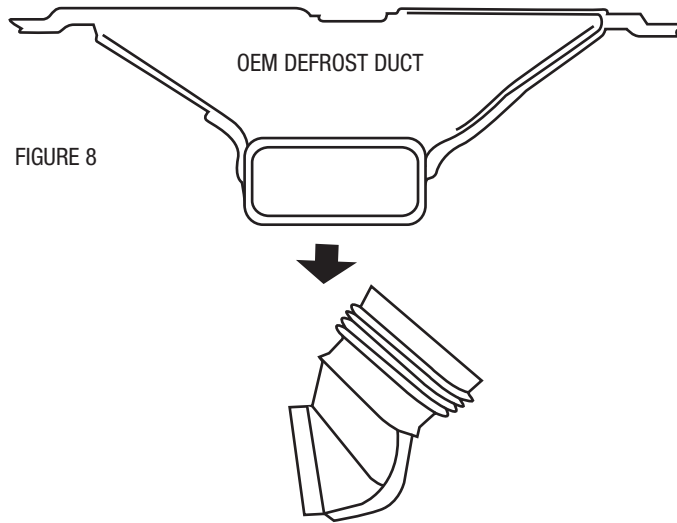


FIGURE 7

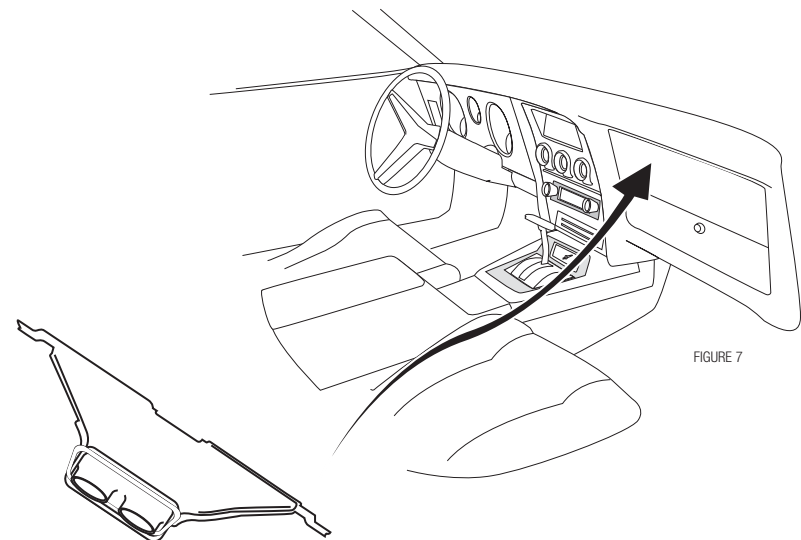
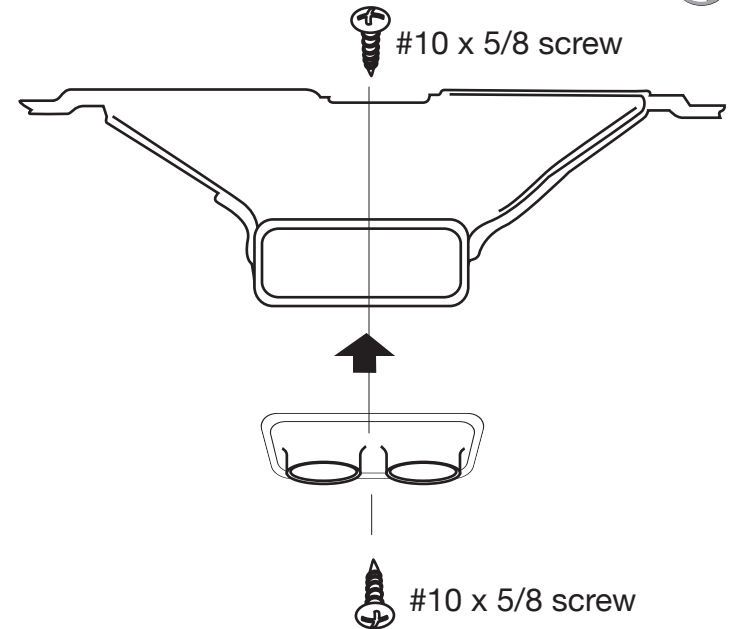
OEM DEFROST DUCT



Remove the transition duct from defrost duct assembly and discard.  
(Figure 8)

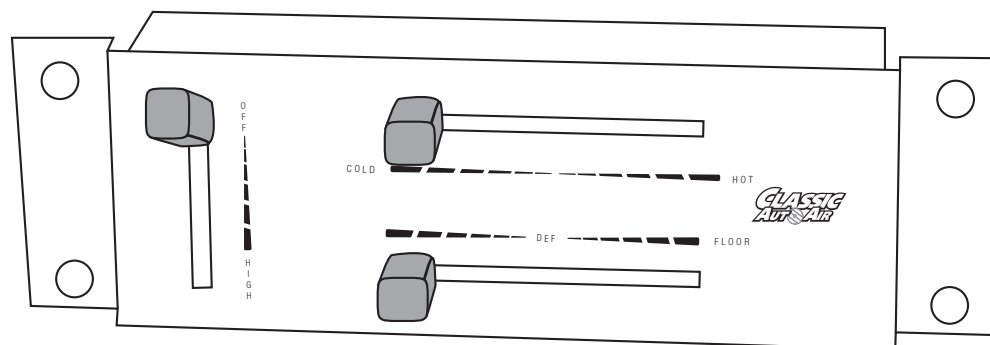
Locate defrost adapter (**PN# 2-1028-1**) and two #10-16 x 5/8 screws  
from bag kit E and attach to drost duct as shown (see Figure 9)

Install modified defrost duct into vehicle with original hardware.



## THESE ARE THE PARTS YOU WILL FIND IN CONTROL BOX

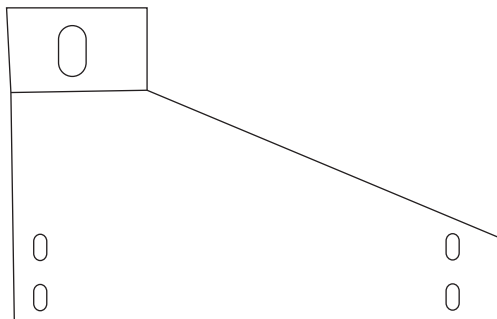
You will use all of these parts and hardware during the next series of installation steps.



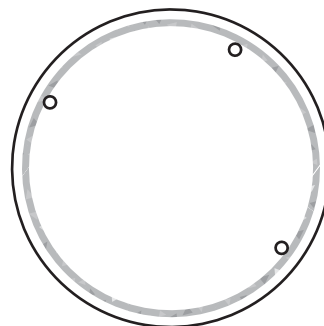
D.E.R. Controller  
PN# 16-3028

## 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  
0022-4*



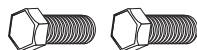
*Fresh Air Inlet Block Off  
10-1025-2*



*Two 1/4" Washers*



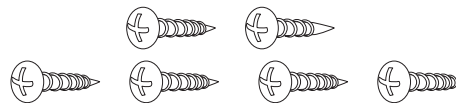
*One Male Spade Connector*



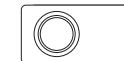
*Two 1/4" - #20 x 5/8" Bolts*



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



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



*One J-Clip*

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.

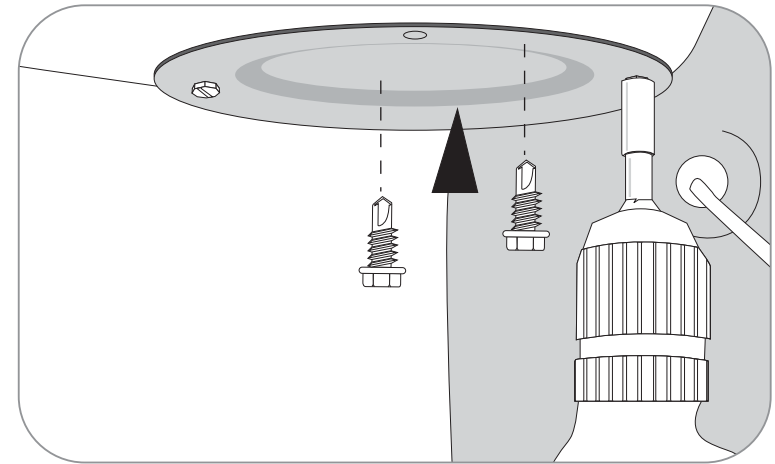
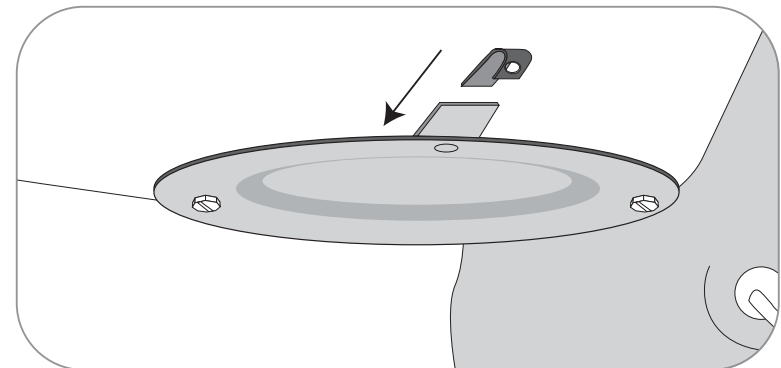


FIGURE 17

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 glovebox opening, inserting tubes through large opening in firewall.

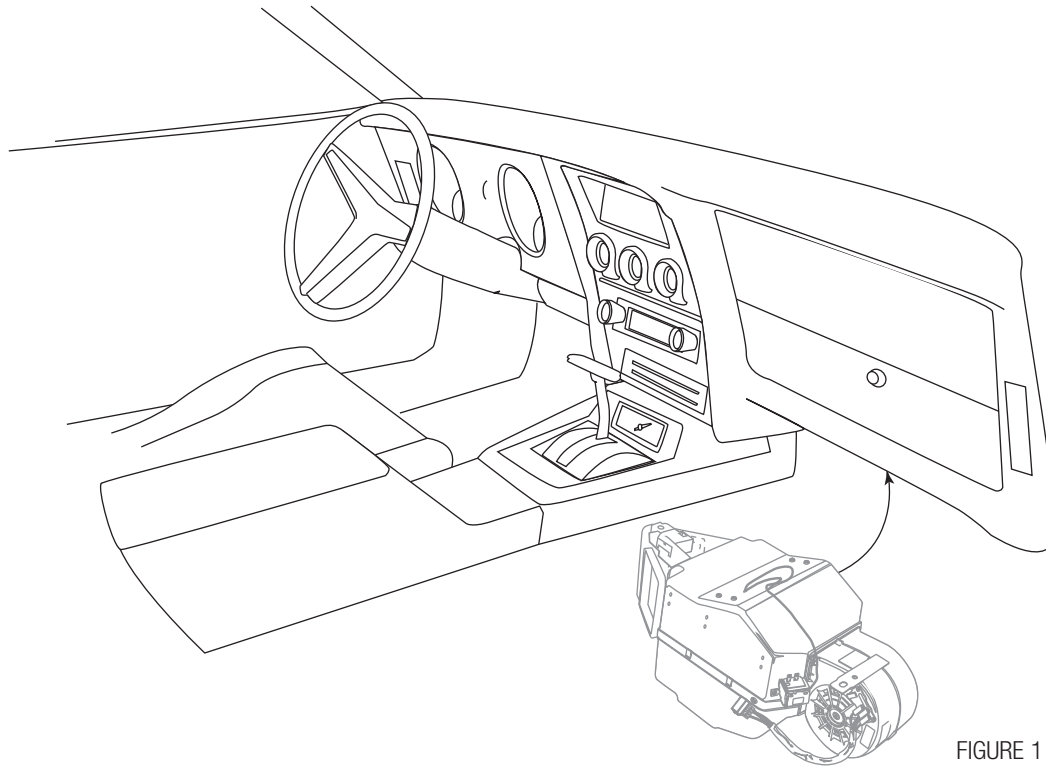
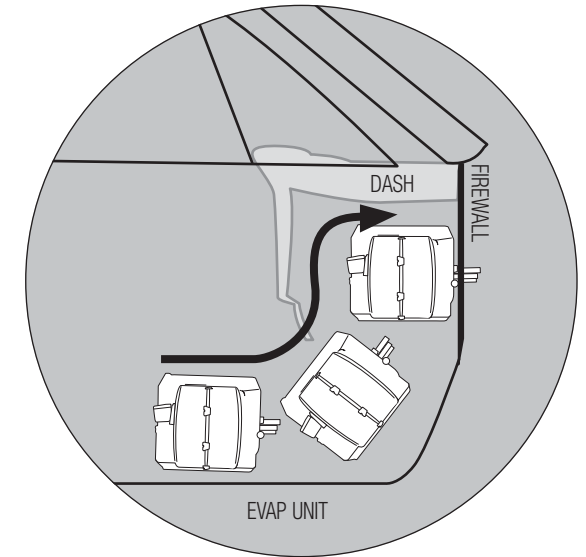


FIGURE 1



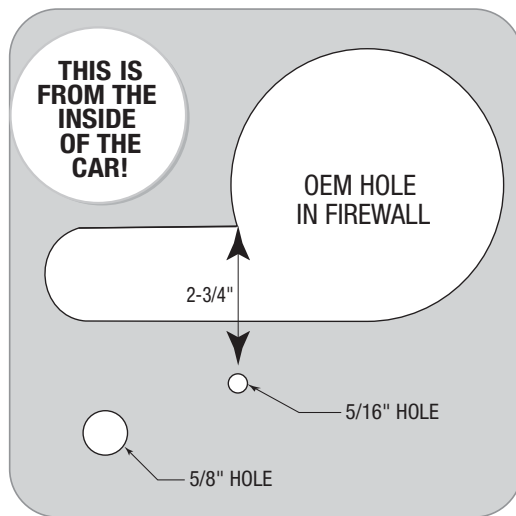


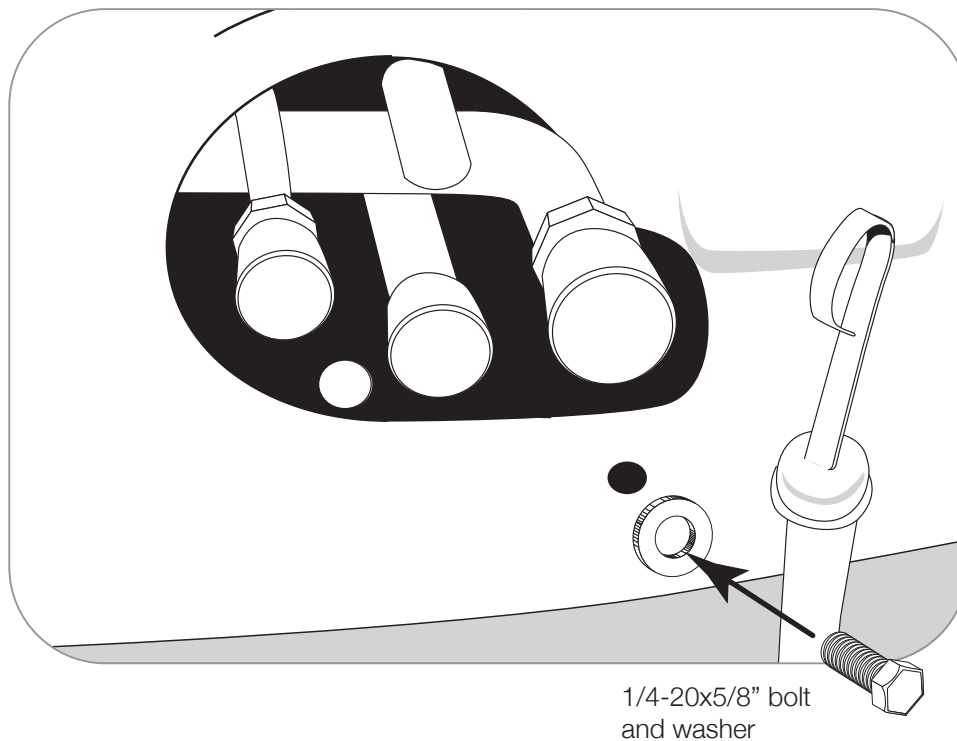
FIGURE 18

Drill one 5/16" hole in OEM hole firewall 2-3/4" directly down from corner. (see Figure 18)

Next drill one 5/8" hole down 5/8" and 1-3/8" to the right. (see Figure 18)

**CAUTION: On the engine side of the firewall there is a brake line.**

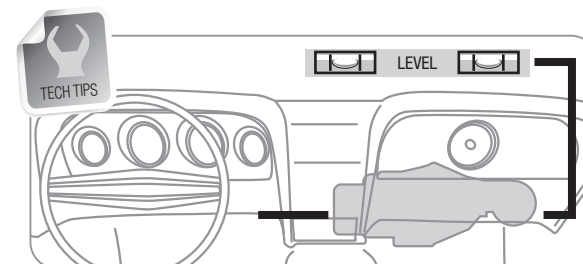
**Be careful not drill through the brake line.** It may be necessary to carefully push this line out of the way, securing it a bit lower is usually all that is necessary



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

In bag kit B locate one 1/4" washer and 1/4-20x5/8" bolt. Attach to lower mounting bracket through 5/16" hole perviously drilled in firewall.

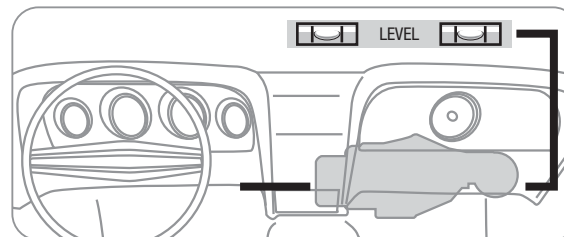
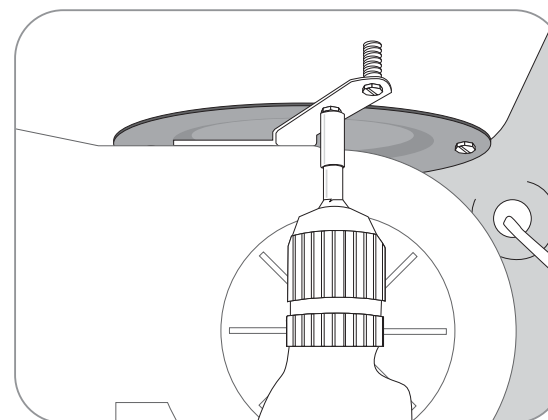
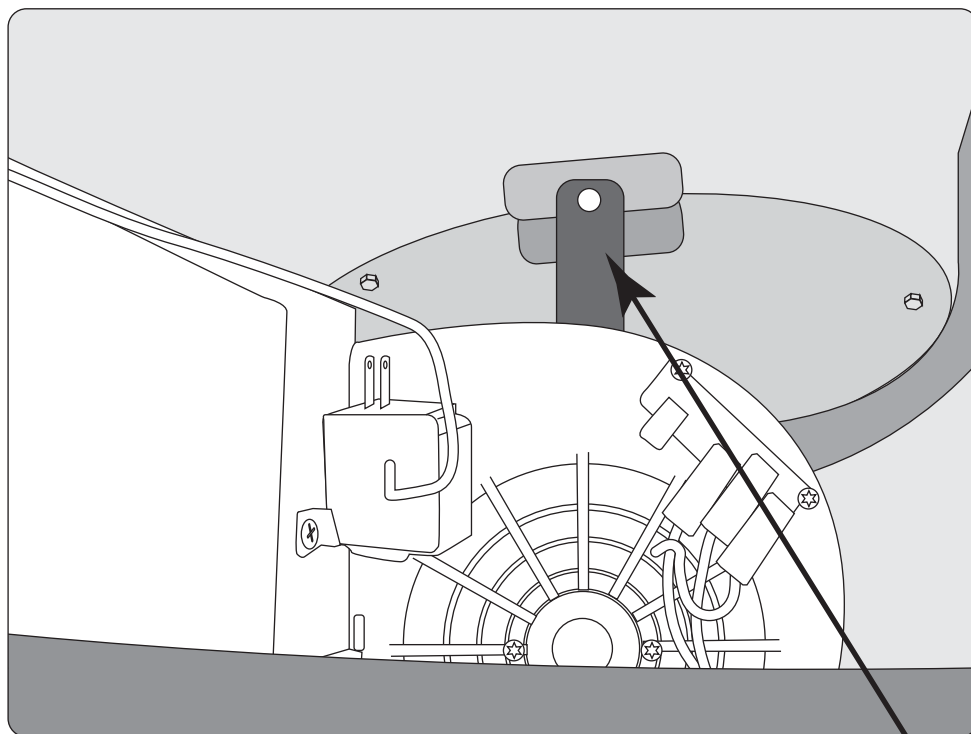
**NOTE: Leave bolt loose at this time.**



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

In bag kit B locate one 1/4" washer 1/4-20x5/8" bolt. Attach blower motor bracket to J-Clip previously installed.

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



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

1/4-20x5/8" bolt and washer

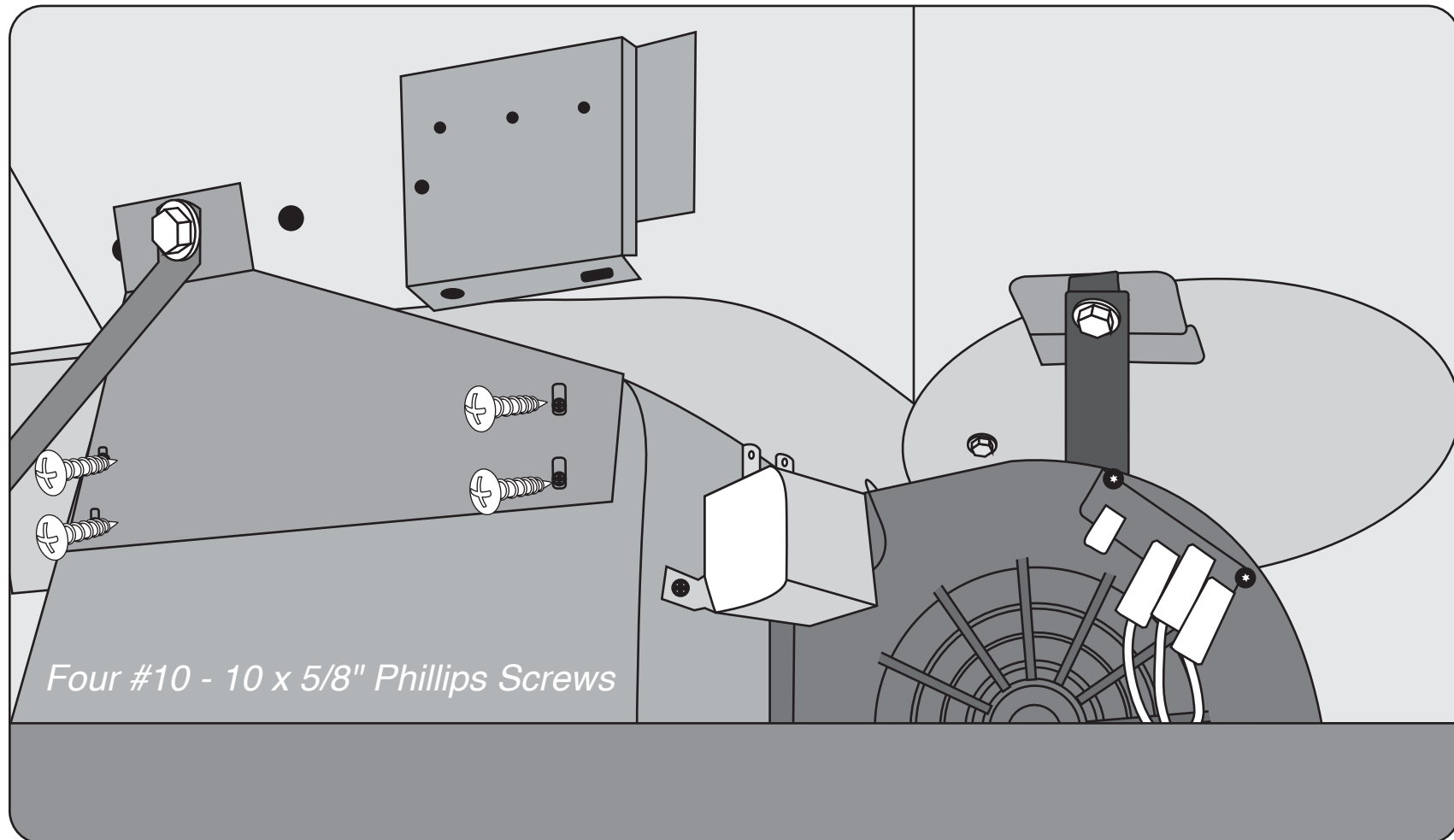


Locate evaporator mounting bracket from bag kit B (PN #0022-4) Attach to evaporator with four #10x5/8" screws. USE HAND POWERED SCREWDRIVER Temporarily remove dash brace and lift unit into place by aligning upper hole in bracket to captured nut in cowl. Replace dash brace and tighten using OEM bolt. (YOU MAY NEED TO REMOVE SECONDARY OEM BRACKET TO ALLOW UNIT TO LEVEL) (see Figure 12) The Bracket is slotted to allow adjustment for proper tilting of unit toward firewall for condensation drainage..

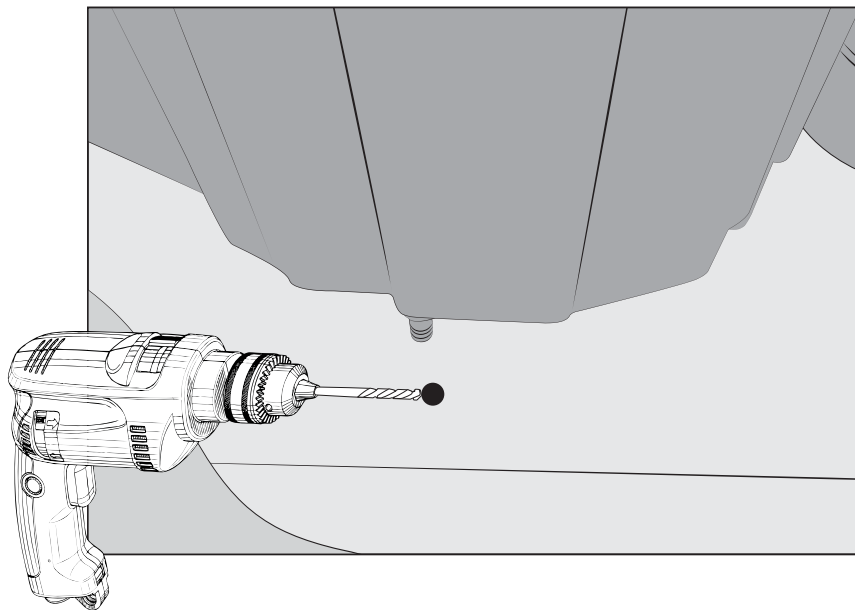
LEVEL UNIT WITH BOTTOM EDGE OF DASH AND TIGHTEN ALL BOLTS.

BRACKET MAY NEED TO BE REMOVED

FIGURE 12

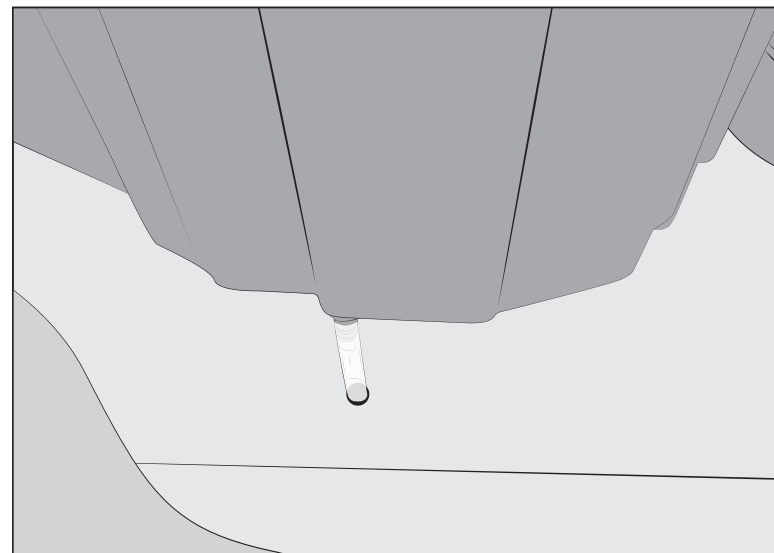


THIS IS FROM INSIDE THE VEHICLE!



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 D.E.R. into dash using OEM hardware.

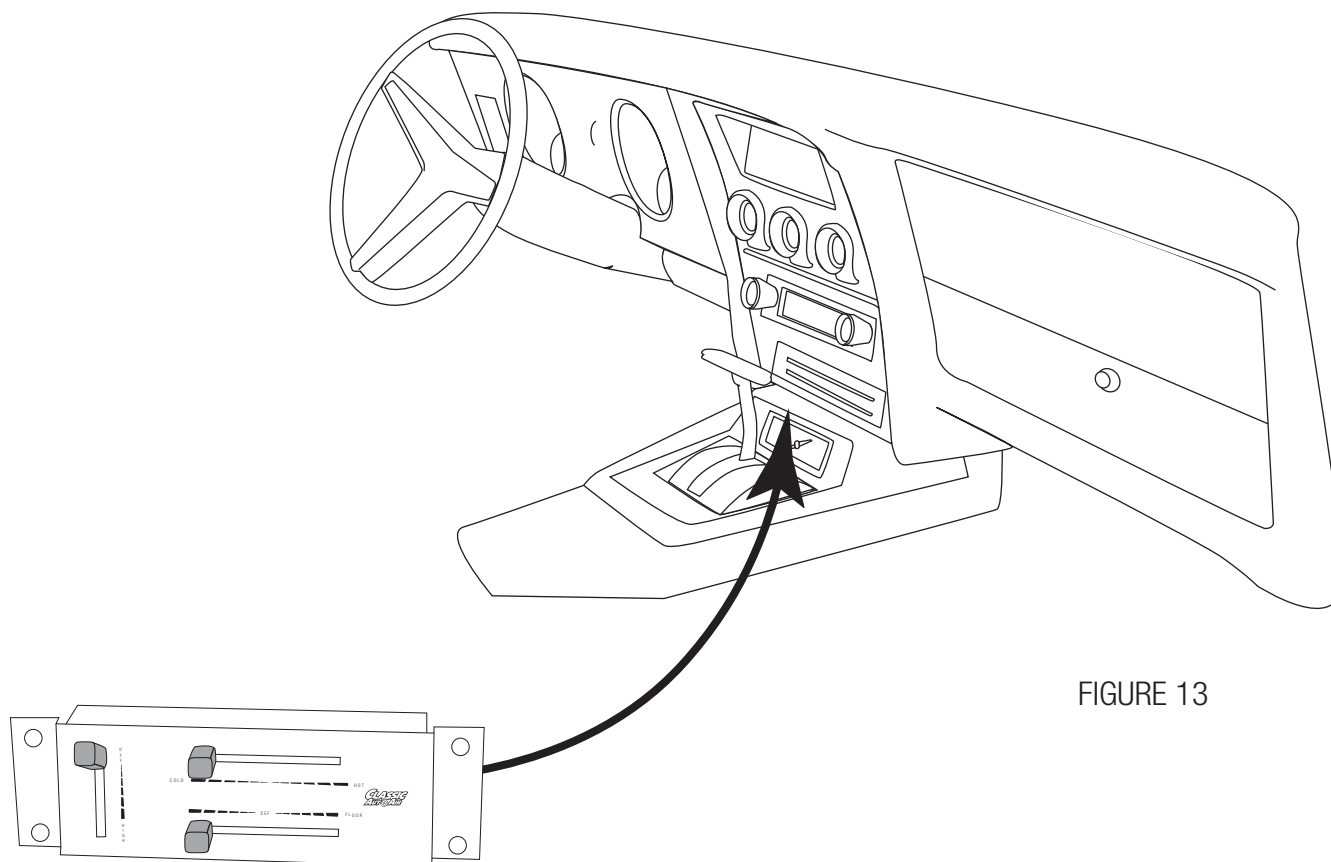
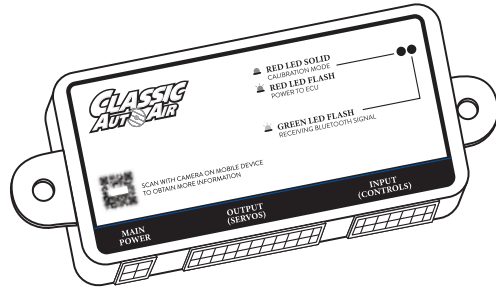


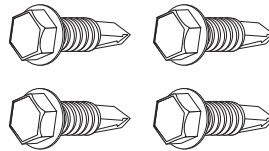
FIGURE 13

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

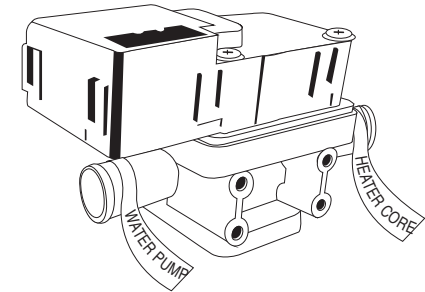
You will use all of these parts and hardware during the next series of installation steps.



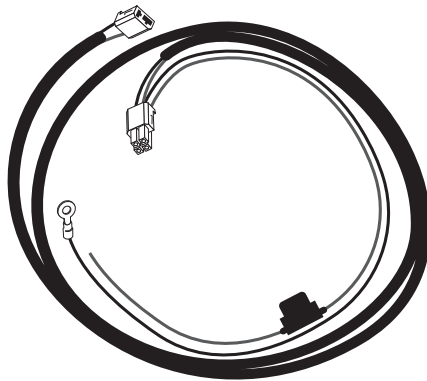
*ECU  
16-2500*



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



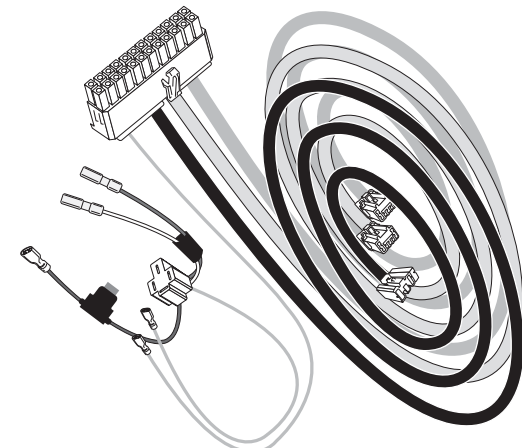
*Electronic Water Control Valve  
PN# 16-1023*



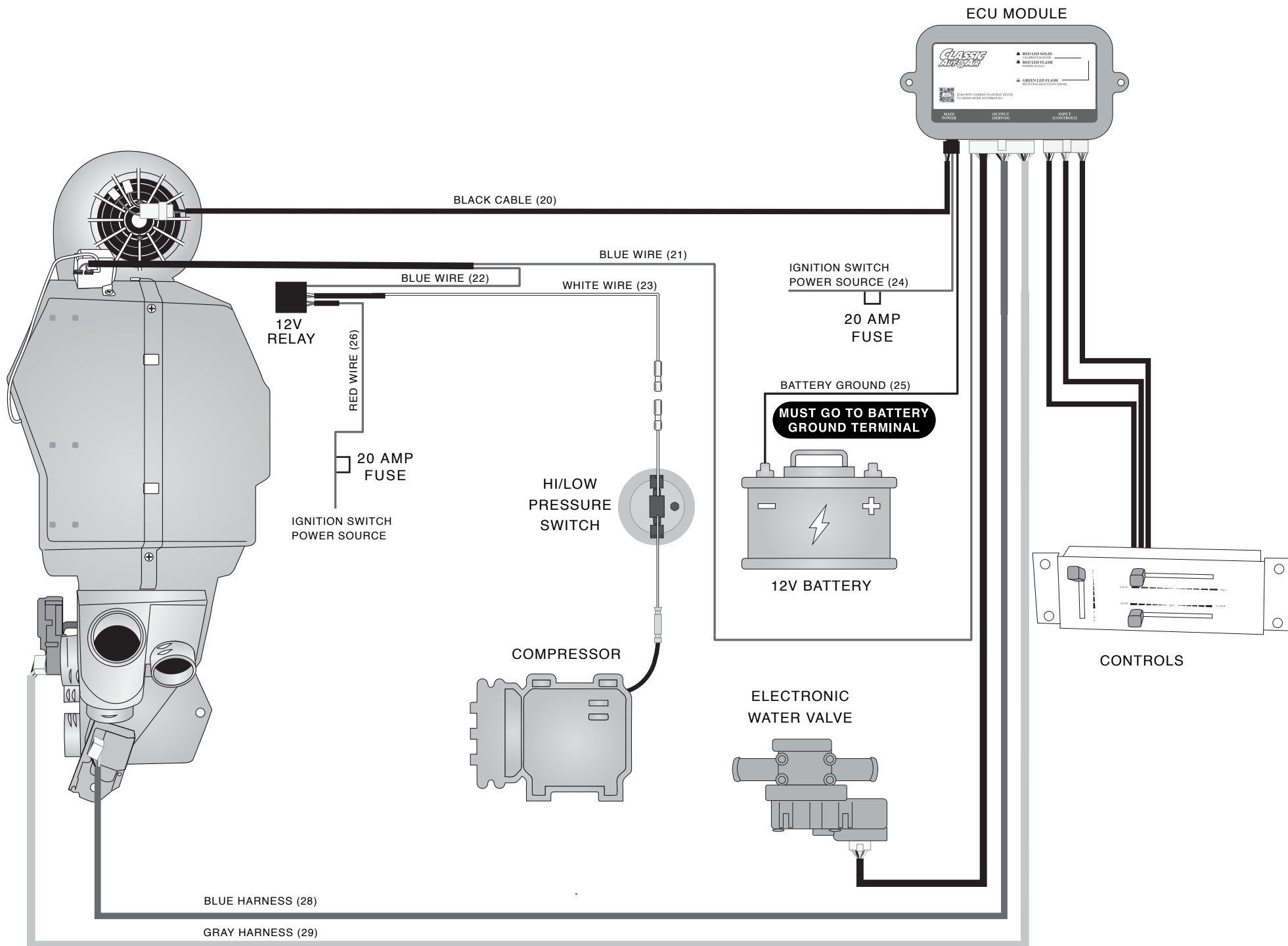
*HARNESS POWER SUPPLY  
0125-5*



*Relay  
30-13373*



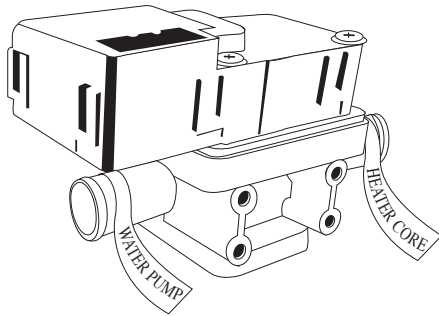
*HARNESS  
0125-6A*



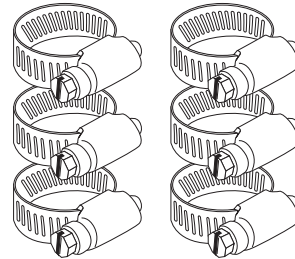


## THESE ARE THE PARTS YOU WILL FIND IN BAG KIT D

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



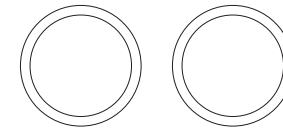
**Electronic Water Control Valve**  
PN# 16-1023



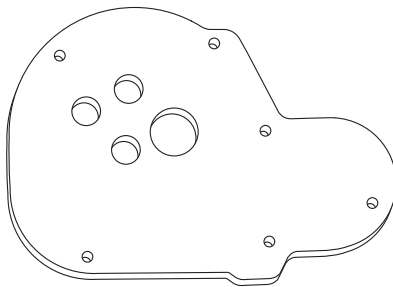
**Six Worm Gear Clamps**



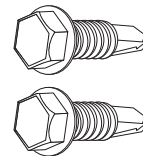
**Clear Plastic Drain Tube**



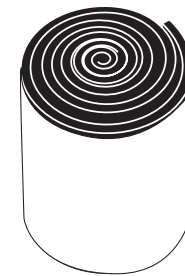
**Two 1" Cap Plugs**



**Firewall Block Off**



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



**Refrigerant Tape**

*Illustrations NOT actual size*

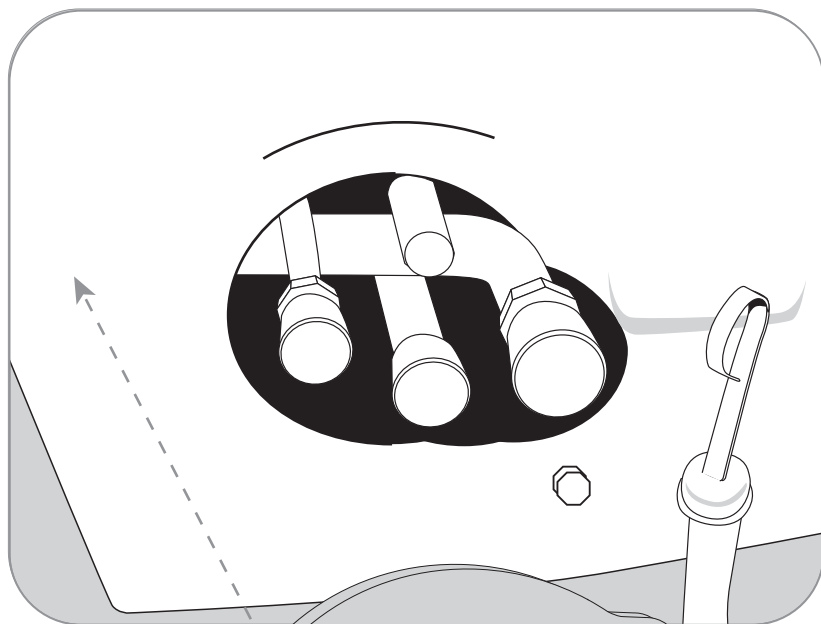
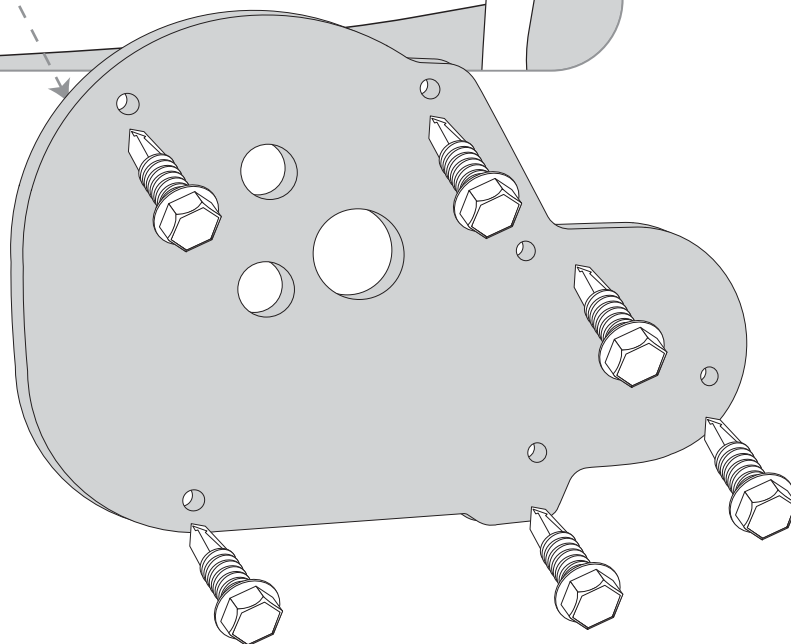


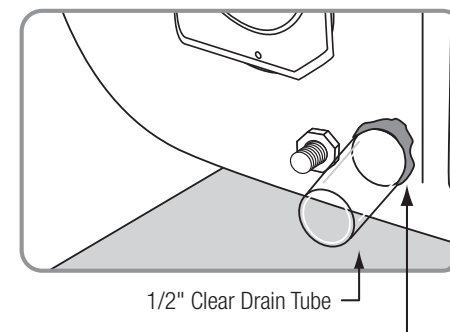
FIGURE 25



Locate the firewall block off plate PN# 10-2026FA-1. Install this over the hose connections coming thru the firewall within the engine compartment. Attach with six #10 - 16 x 3/4" Tek screws (Figure 25). Seal around the tubes with the included refrigerant tape.

Locate the clear drain tube and install through 5/8" hole previously drilled in firewall. Cut tube to proper length and seal with refrigerant tape. (see Figure 26)

FIGURE 26



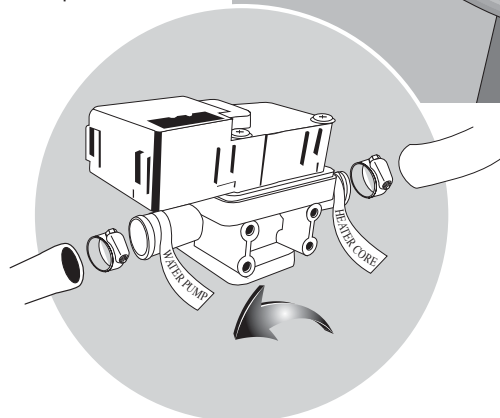
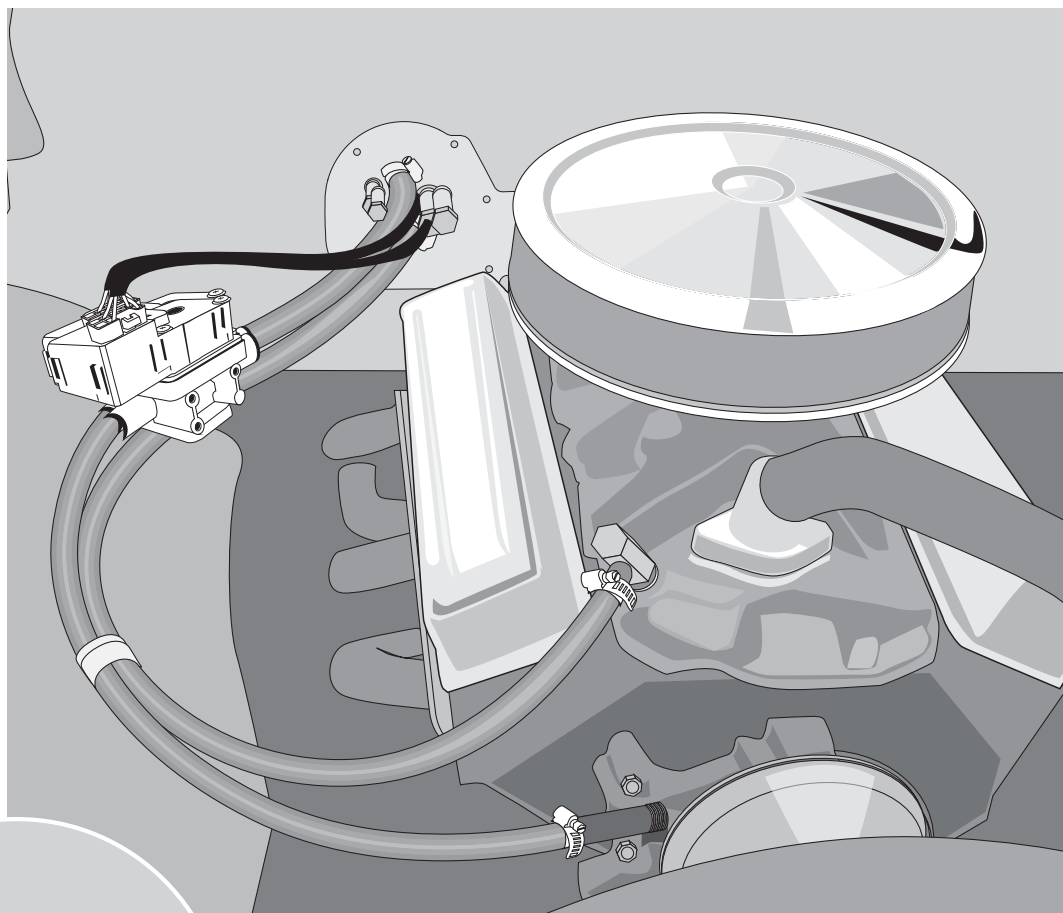
### IMPORTANT NOTICE: PROPER INSTALLATION OF WATER VALVE

**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!**

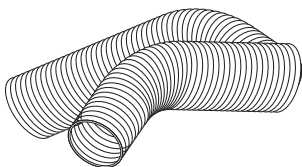
## THESE ARE THE PARTS YOU WILL FIND IN BAG KITS E, F, and G

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

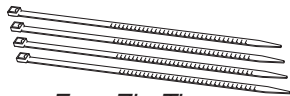
### Bag E



*Defrost Adaptor  
PN#2-1028-1*



*Two Duct Hoses, 2" I.D.*

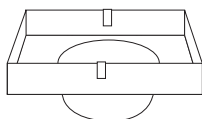


*Four Zip-Ties*

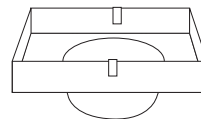


*Two #10 - 10 x 5/8" Screws*

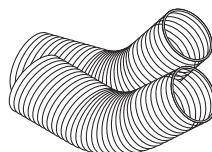
### Bag F



*Passenger Louver Adaptor  
PN#2-2028-1*



*Driver Louver Adaptor  
PN#2-2028-4*

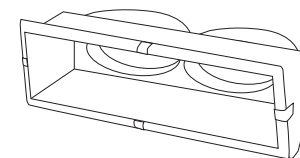


*Two Duct Hoses  
2" I.D.*

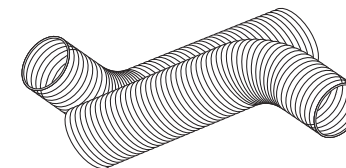


*Four Zip-Ties*

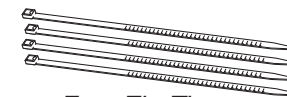
### Bag G



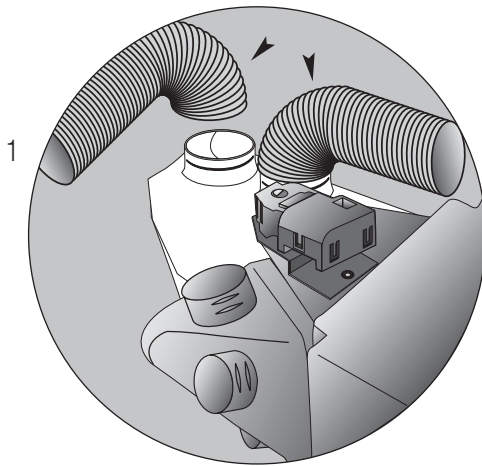
*Center Vent Duct Adaptor*



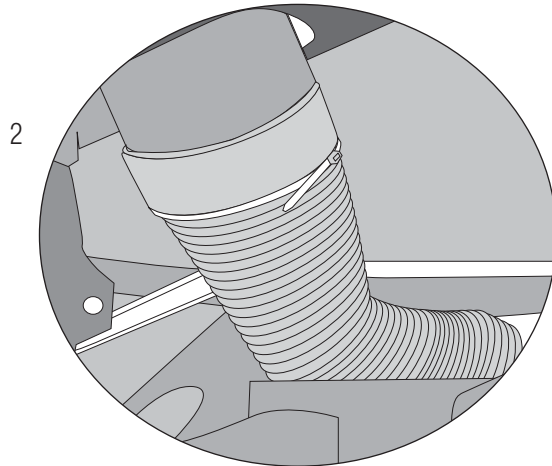
*Two Duct Hoses, 2" I.D.*



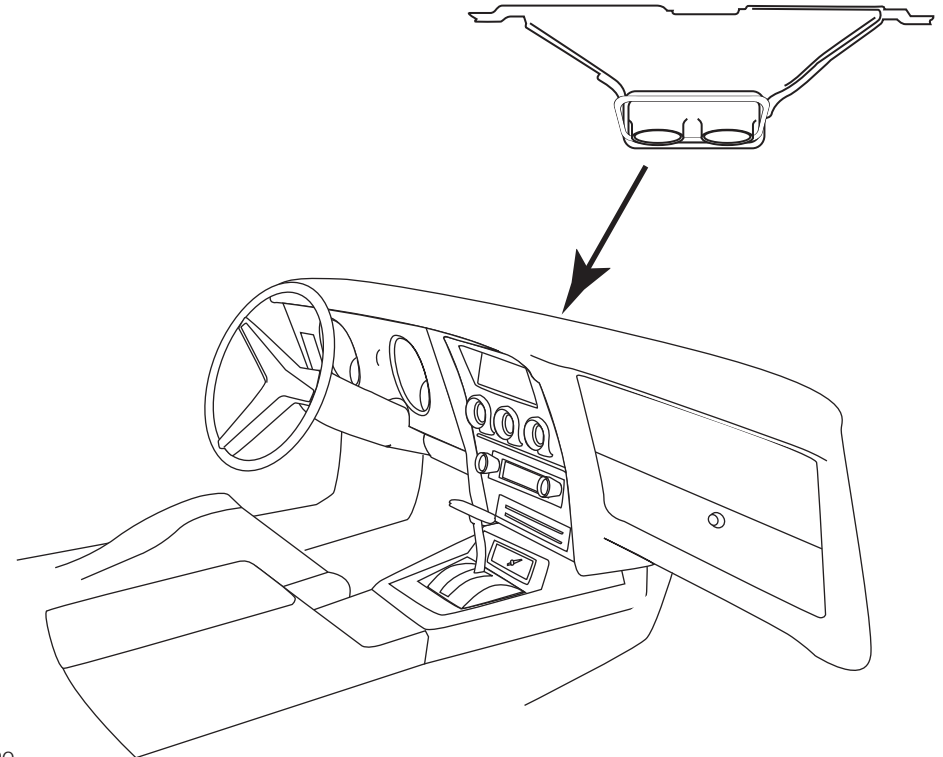
*Four Zip-Ties*



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



Next route the duct hoses from the defrost/heat duct assembly upward toward defrost vents. Attach the flex hose to the defrost diffuser using zip-ties on both ends.



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



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

Locate Drivers louver adapter (LARGER) from bag kit F and attach to backside of factory louver with the supplied S-clips. (Simply pushing the adapter onto flange will secure the adapter to the louver)

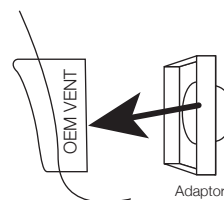
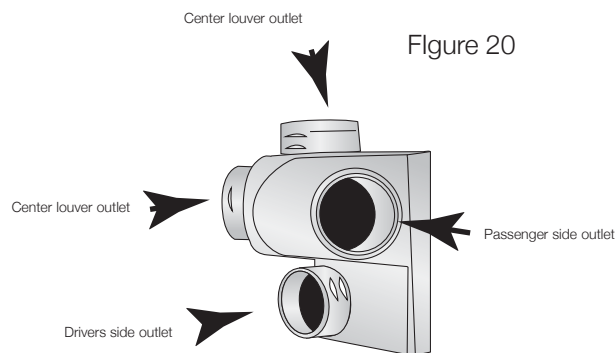
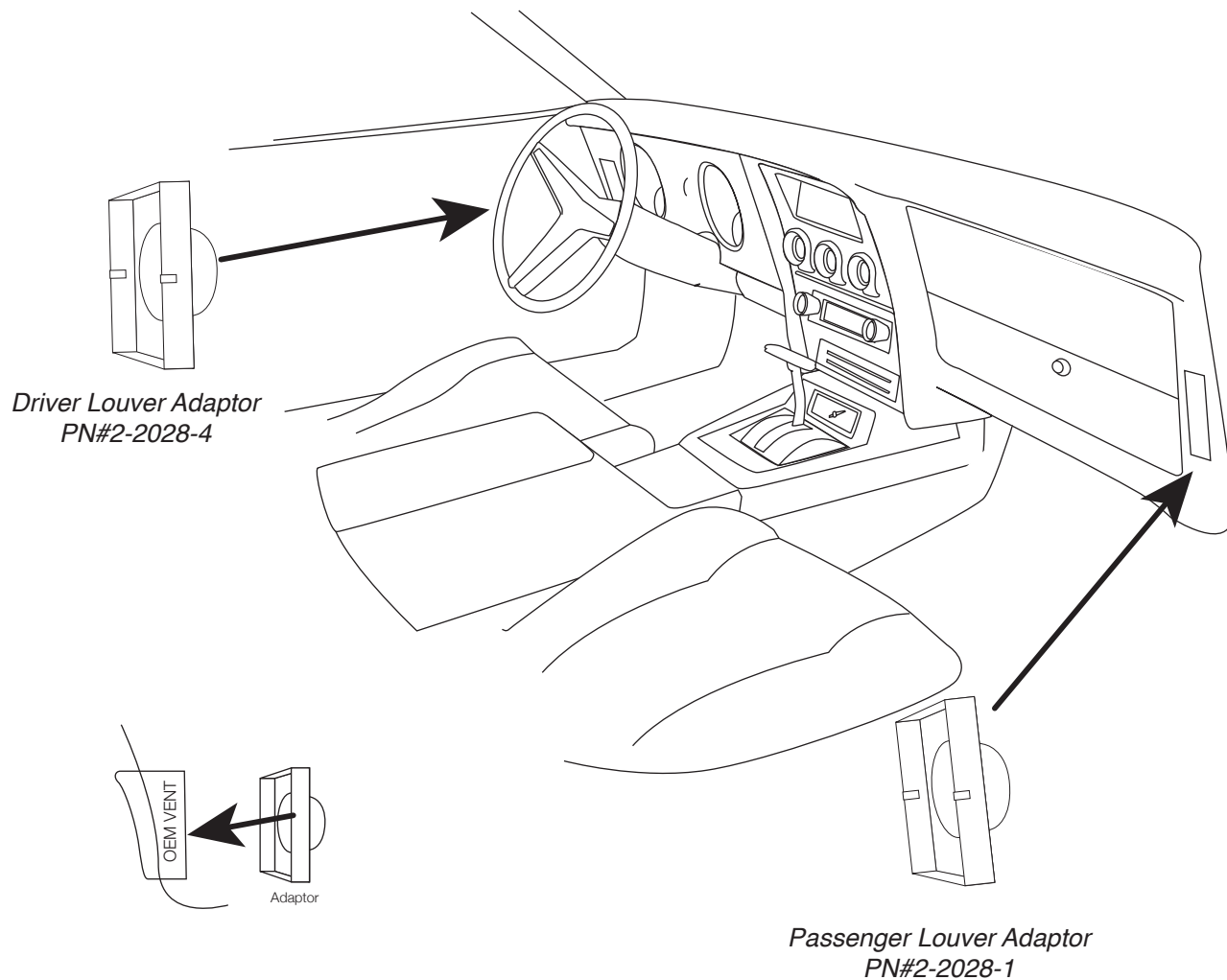
Route the supplied flex hose from drivers louver adapter to DASH DUCT labeled Drivers side(see Figure 20) It may be necessary to cut flex hose shorter to be certain optimal air flow is achieved.

Secure all hose connections with tywraps.

Next Locate Passenger louver adapter (SMALLER) from bag kit F and attach to backside of factory louver with the supplied S-clips. (Simply pushing the adapter onto flange will secure the adapter to the louver)

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

Secure all hose connections with tywraps



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

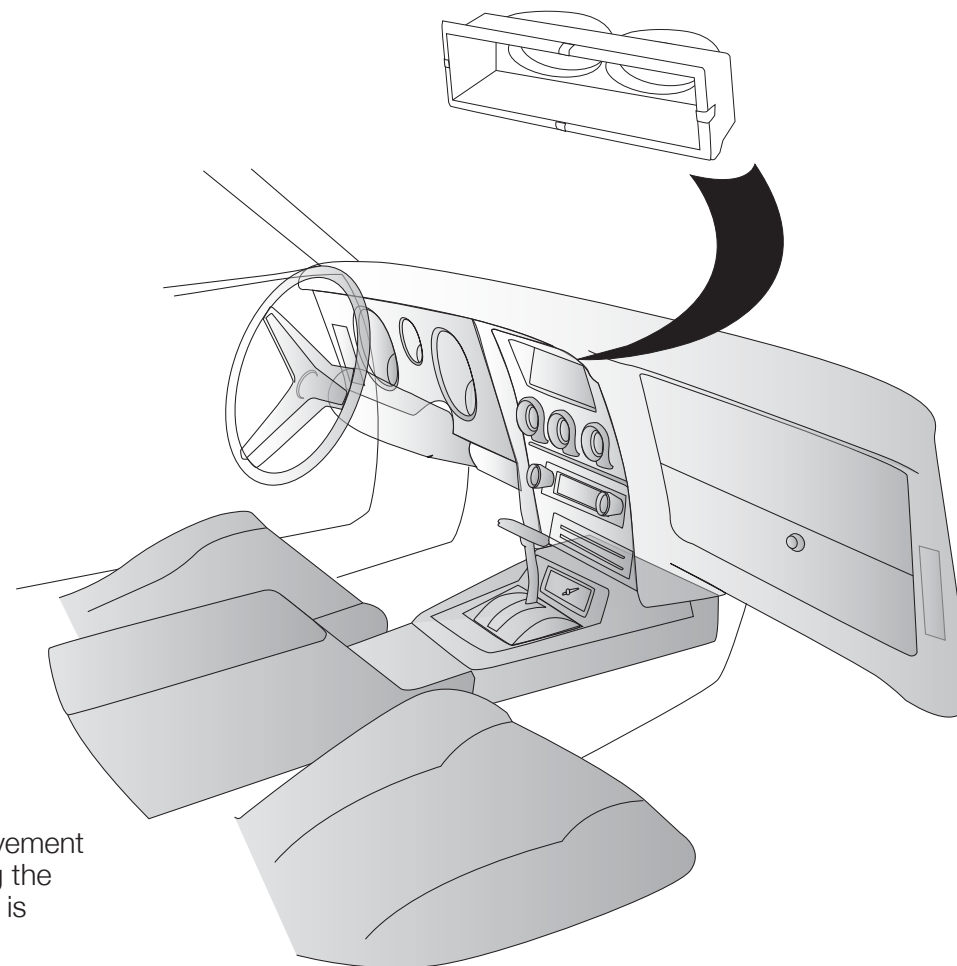
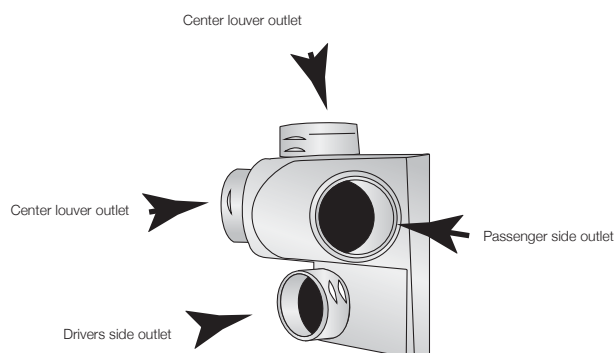


During installation of the hoses be aware of the eventual movement of the wiper arm components.

Locate Center louver adapter from bag kit G and attach to backside of factory louver with the supplied S-clips. (Simply pushing the adapter onto flange will secure the adapter to the louver)

Route the supplied flex hose from center louver adapter to DASH DUCT labeled Center (see Figure 20) There are two flex hose connections for greater airflow. It may be necessary to cut flex hose shorter to be certain optimal air flow is achieved.

Secure all hose connections with tywraps.



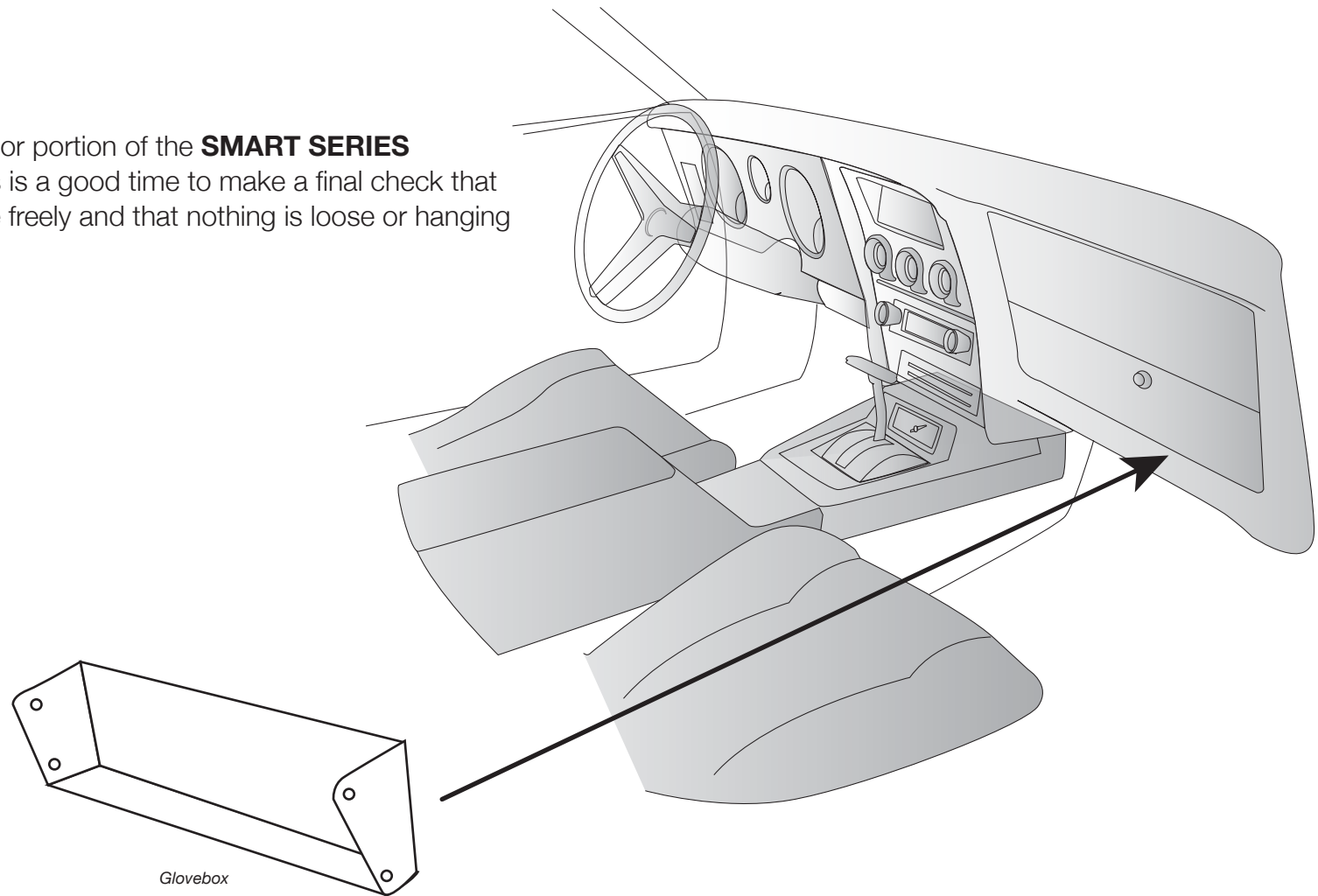
During installation of the hoses be aware of the eventual movement of the wiper arm components. Also, the process for installing the center louver vent will require a small amount of cutting. This is outlined on the next page.



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

Install provided glovebox in dash with OEM screws

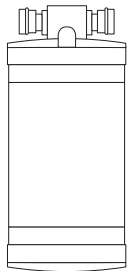
This completes the interior portion of the **SMART SERIES** installation process. This is a good time to make a final check that all the controls still move freely and that nothing is loose or hanging down..



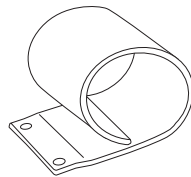


## THESE ARE THE PARTS YOU WILL NEED FOR THE ENGINE COMPARTMENT INSTALLATION

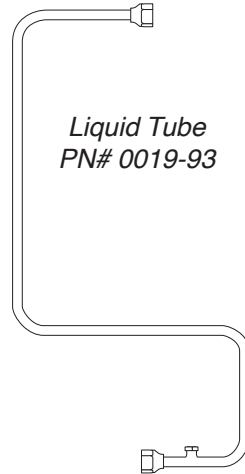
You'll find all of these parts within the main box



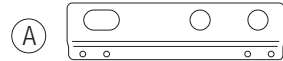
Drier  
PN# 12-1008



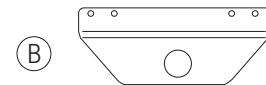
Drier Bracket  
PN# 19-1003



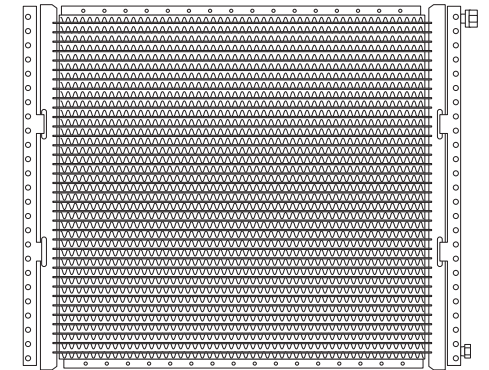
Liquid Tube  
PN# 0019-93



(A) Condenser Brackets  
PN# 0019-53



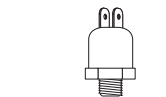
(B) Condenser Brackets  
PN# 0019-100



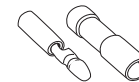
Condenser  
PN# 11-1093



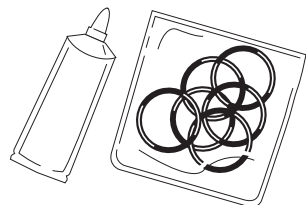
Pressure Switch Harness



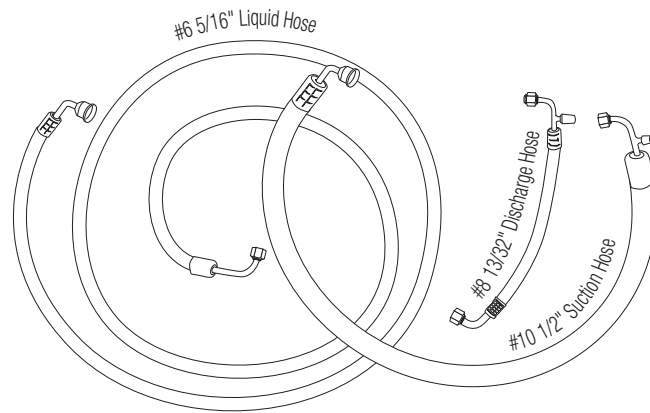
Pressure Switch



Splice and  
Bullet Connector



Bag of O-rings and Mineral Oil Tube



Three Refrigerant Hoses



3/8 Fender Washer  
'71 only



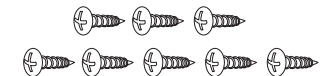
3/8 x 1" Bolt  
'71 only



3/8 Nut  
'71 only



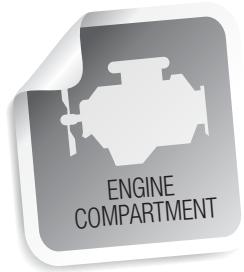
Four Zip-Ties



Eight #10 - 20x5/8" Screws



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



## ENGINE COMPARTMENT INSTRUCTIONS

During the next steps you'll be installing the condenser, drier, and routing the refrigerant hoses. You will need to remove the center grill section, and latch support assembly (see figure 33). Retain all the mounting screws

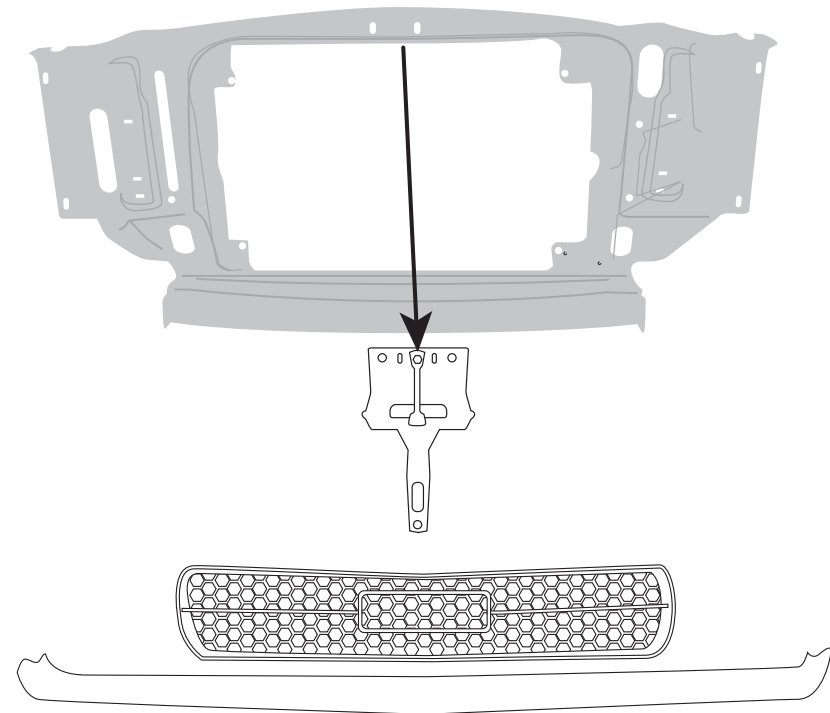


FIGURE 33

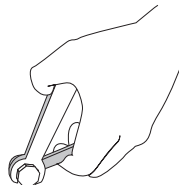
**STEP ONE: DRIER AND CONDENSER PREPARATION.** You can perform most of the following steps on a clean flat surface. Lay the condenser down so that both hose connections are on the right side (the larger connection will be on top). The drier is conveniently mounted on the right hand side of the condenser. First insert the drier into the drier mounting bracket (it's basically a sleeve for the drier). Attach 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 components combined it will be easy to find the correct place to attach the drier bracket to the condenser with the included #8-20 x 5/8" bolts and lock nuts (attach drier and bracket from the back of the condenser). Tighten all connections once proper location is set.

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

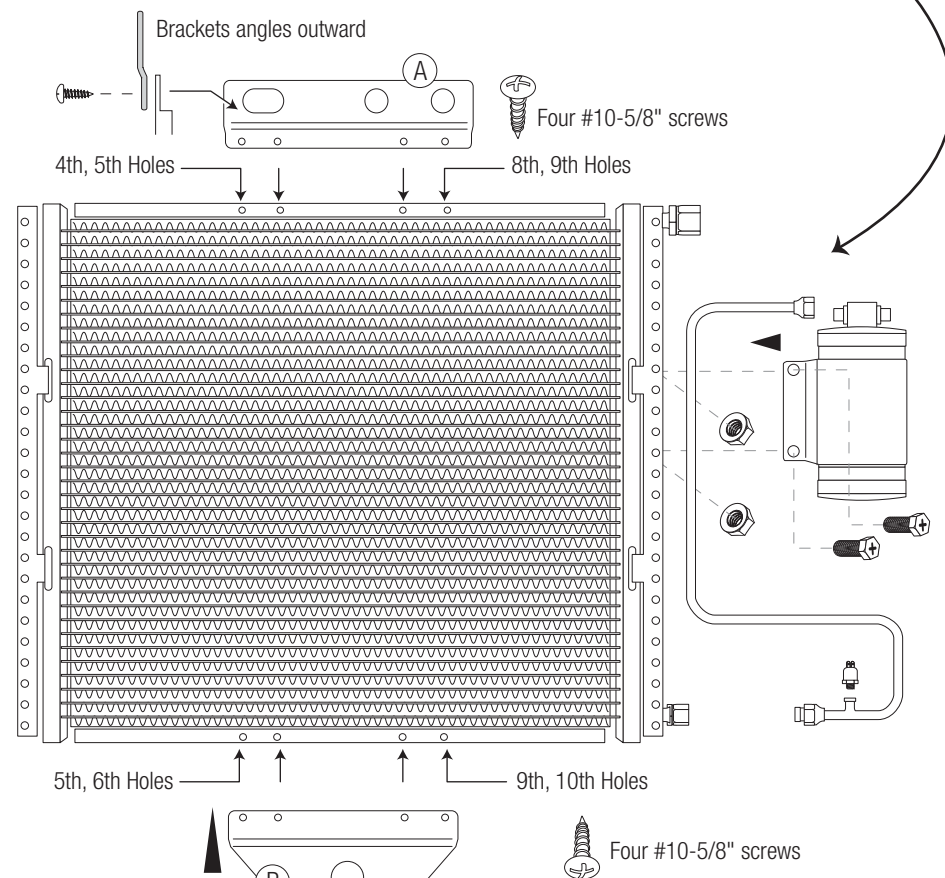
**STEP THREE:** Install the upper condenser bracket (A) using four #10 - 20 x 5/8" screws in the 4th, 5th, 8th and 9th holes on the condenser from the left, be sure the bend on the bracket is facing towards you. Next, attach the lower bracket (B) using four #10-20 x 5/8" screws in the 5th, 6th, 9th and 10th hole from the left hand side. This bracket has a large hole that corresponds to the OEM latch support previously removed from the vehicle.



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



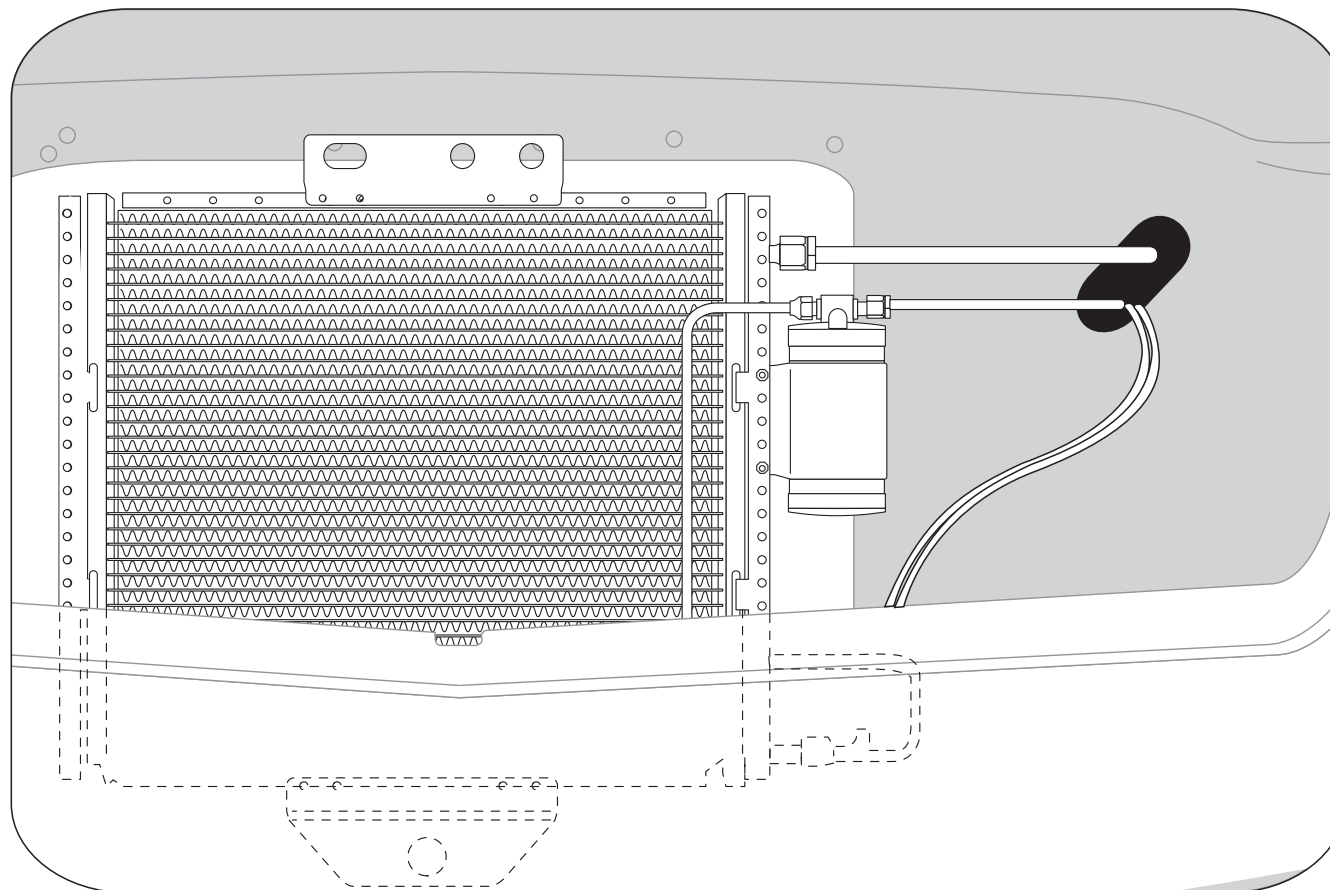
You can easily find the correct position for mounting the drier to the condenser by using the drier liquid tube as a gauge.



**STEP FOUR:** 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 34)

Route wires from high-pressure switch out thru the tube hole and along the discharge tube into the engine compartment.

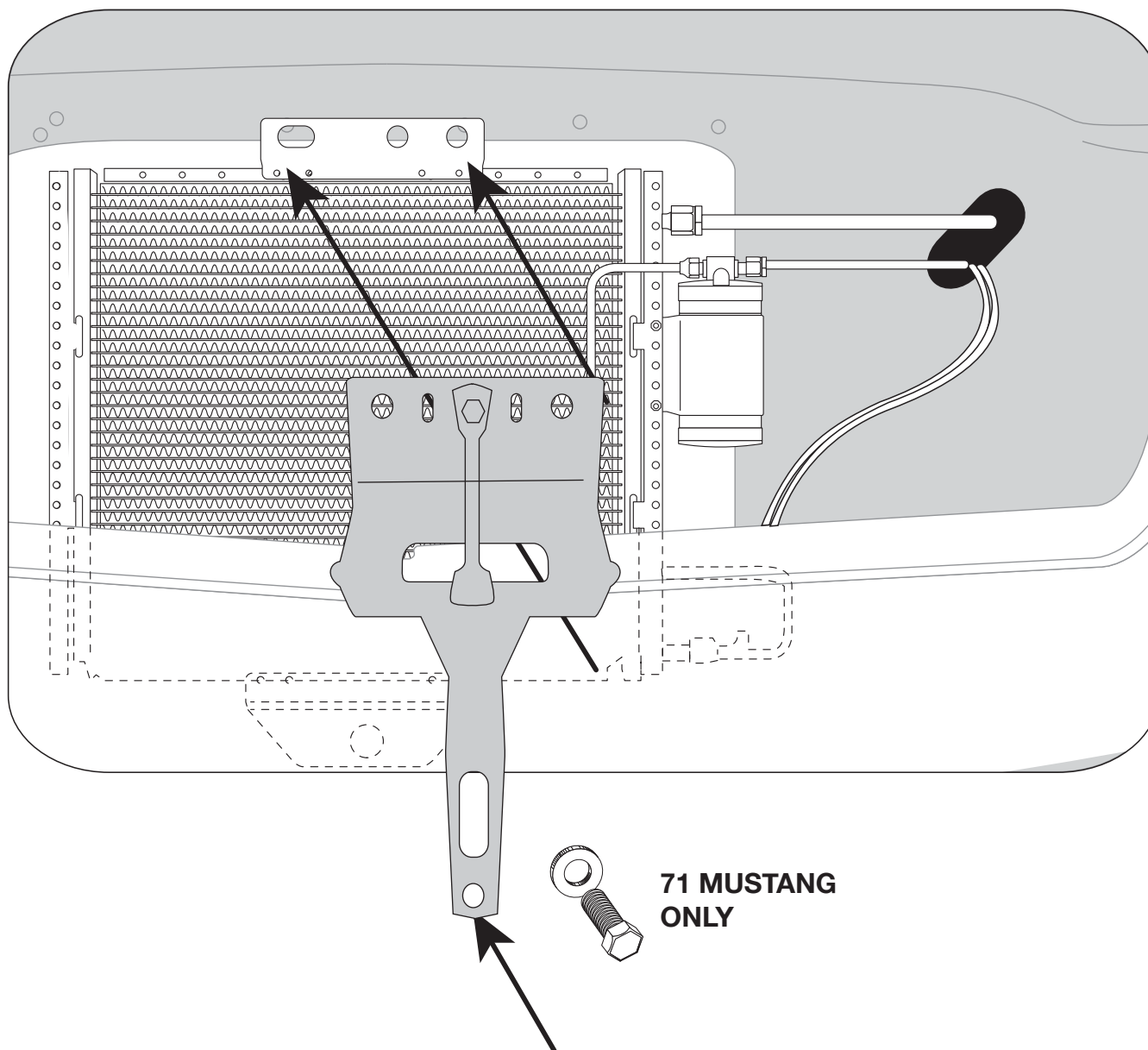
**FIGURE 34**



Attach bracket OEM hood latch support and bracket to core support using original hardware. Leave loose at this time to allow for small adjustments when installing refrigerant hoses in next step.

### 1971 MUSTANGS ONLY

Use supplied fender washer and 3/8 x 1" nut and bolt to secure lower condenser bracket to lower portion of core support. (see Figure 24)



**71 MUSTANG  
ONLY**

**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.

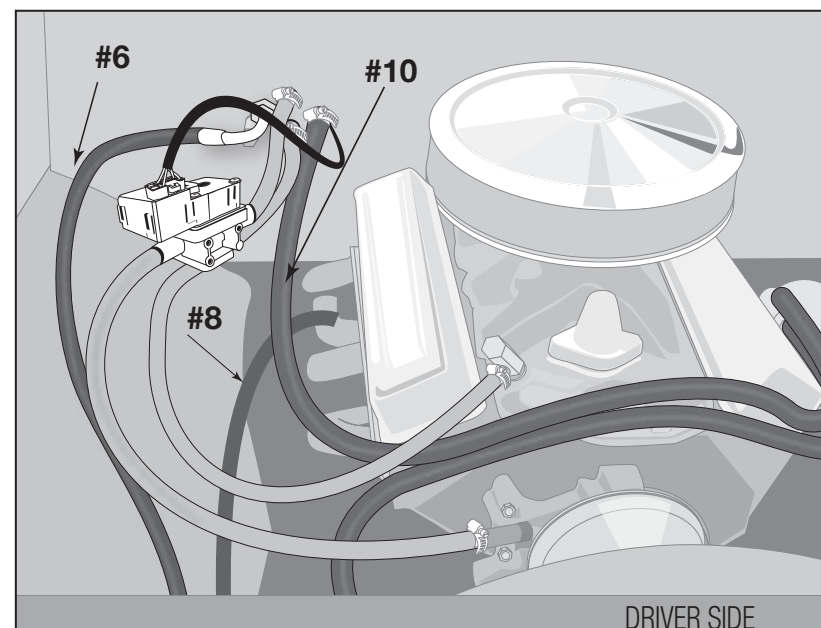
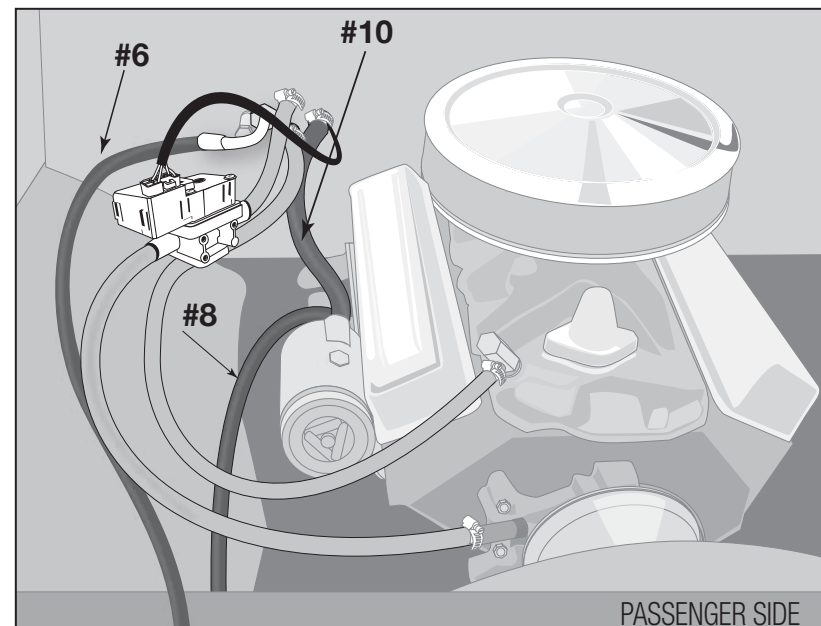
The #6 (**SMALLEST**) refrigerant hose. Route behind fender and to the connection on firewall. Attach using two #6 o-ring and a few drops of mineral oil.

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!**

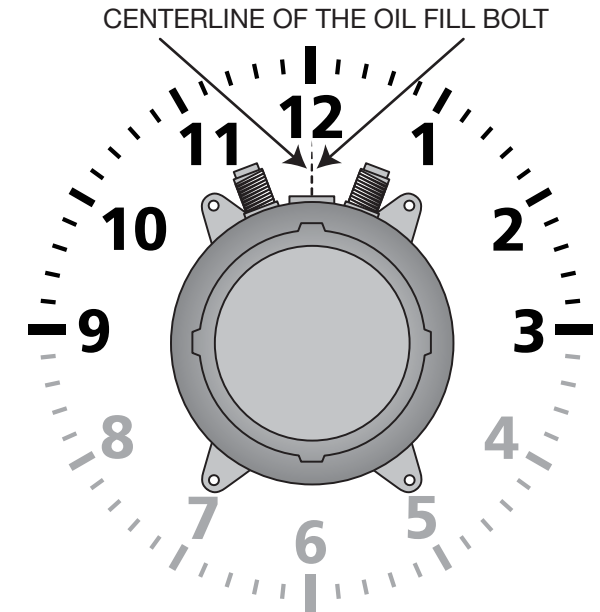
**RECOMMENDED TEST CONDITIONS:** (After system has been fully charged and tested for basic operation)

- 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

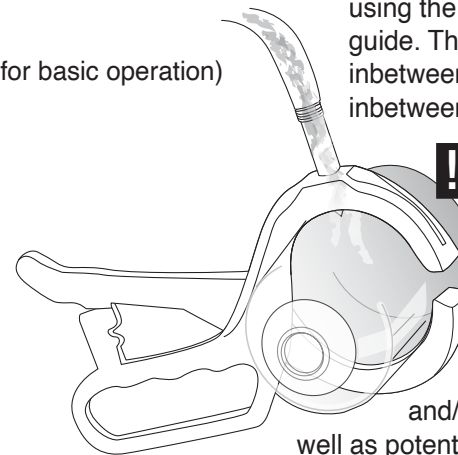
**ACCEPTABLE OPERATING PRESSURE RANGES:**

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

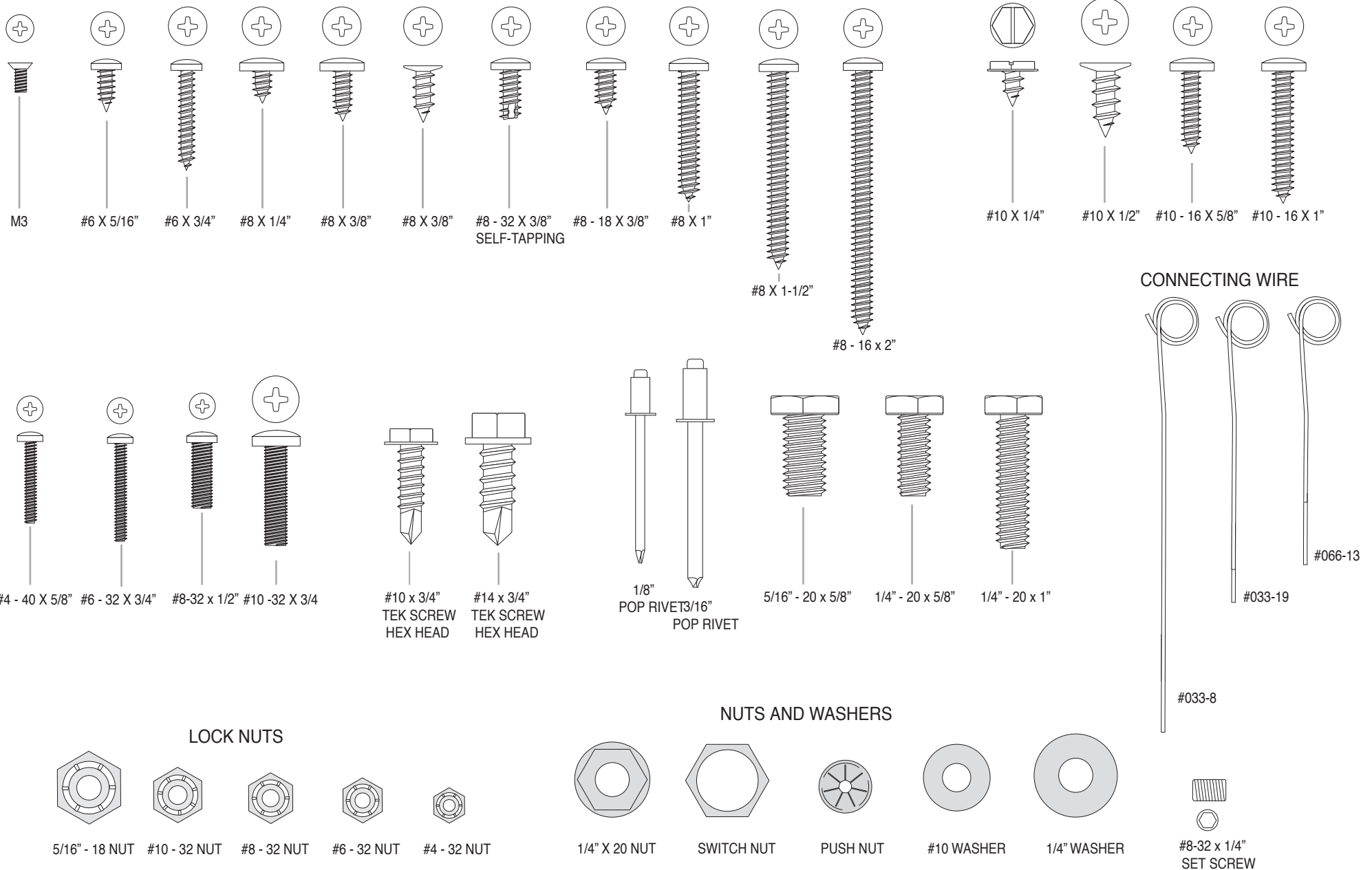
Get the technical support you want the moment you need it, with no wait times. Simply **SCAN** the **QR code** and be directly taken to our support section to troubleshoot all things A/C.



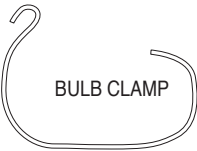
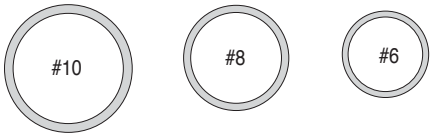


## Classic Auto Air Hardware Reference Guide

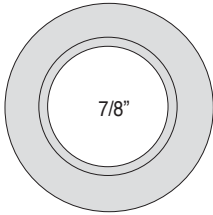
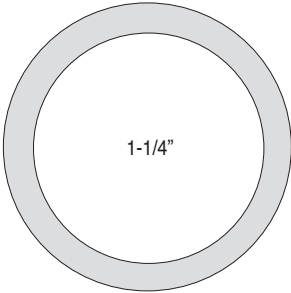
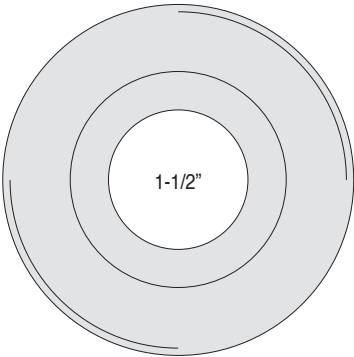
This is our basic line-up of hardware. No single kit will not contain all of these, but you can use this guide to match-up hardware for shape and size (all of these are actual size.)



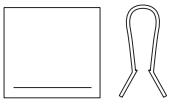
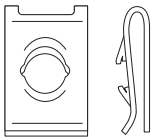
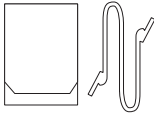
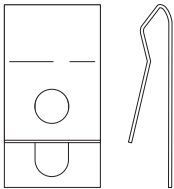
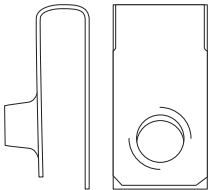
ORINGS



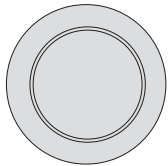
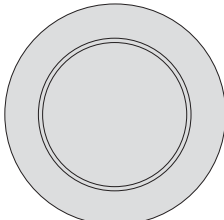
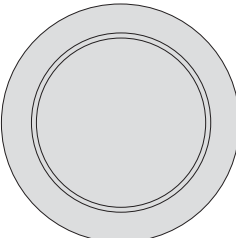
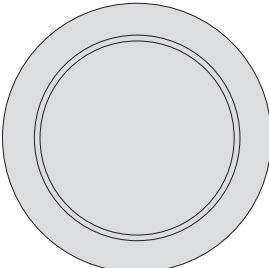
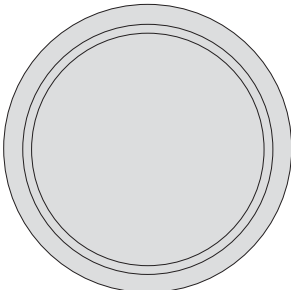
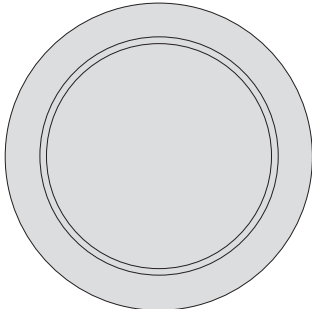
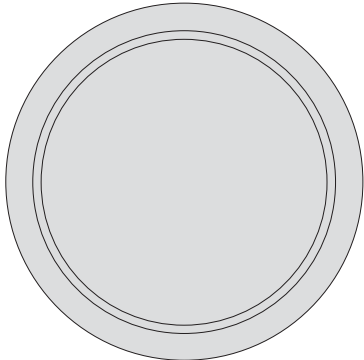
GROMMETS



CLIPS



HOLE PLUGS



HOSE CLAMPS

