



## ***Installation Manual***

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**1966-67 BELVEDERE** FACTORY AIR

**1966-67 SATELLITE** FACTORY AIR

**1967 GTX** FACTORY AIR

DOCUMENT #1-3065FA

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# ***Congratulations...***

You have just purchased the highest quality, best performing  
A/C system ever designed for your  
Belvedere, Satellite or GTX.

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.



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 During the installation you might find the opportunity to repair or upgrade non-working or out of date components.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

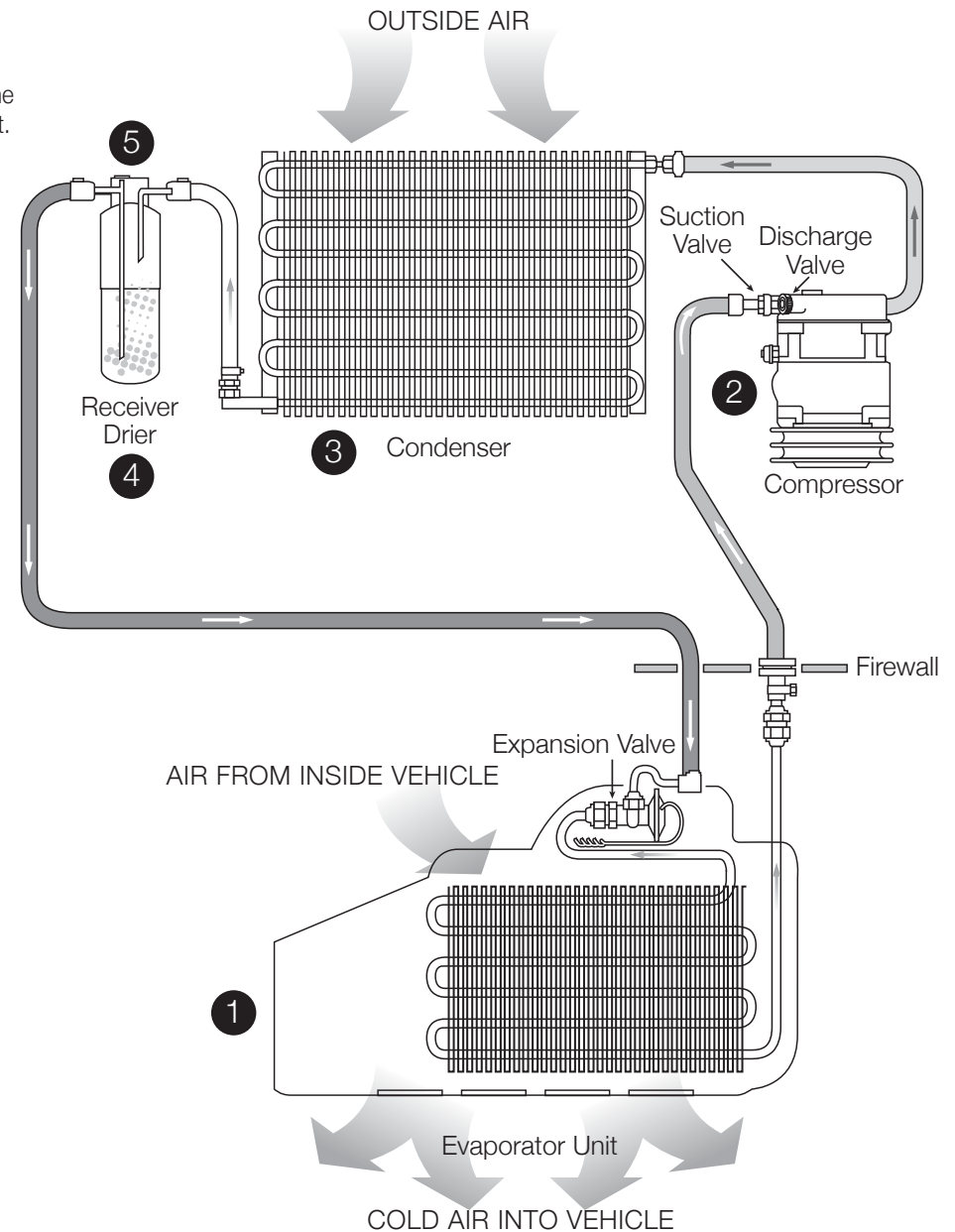
- ☐ Fittings: Use one or two drops of mineral oil (supplied with your kit) on ALL rubber o-rings, threads and where o-rings seat in fittings. Do not use thread tape or sealants.
- ☐ Measure twice (or more), cut once
- ☐ **Should you have any technical questions, or feel you have defective components (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...**

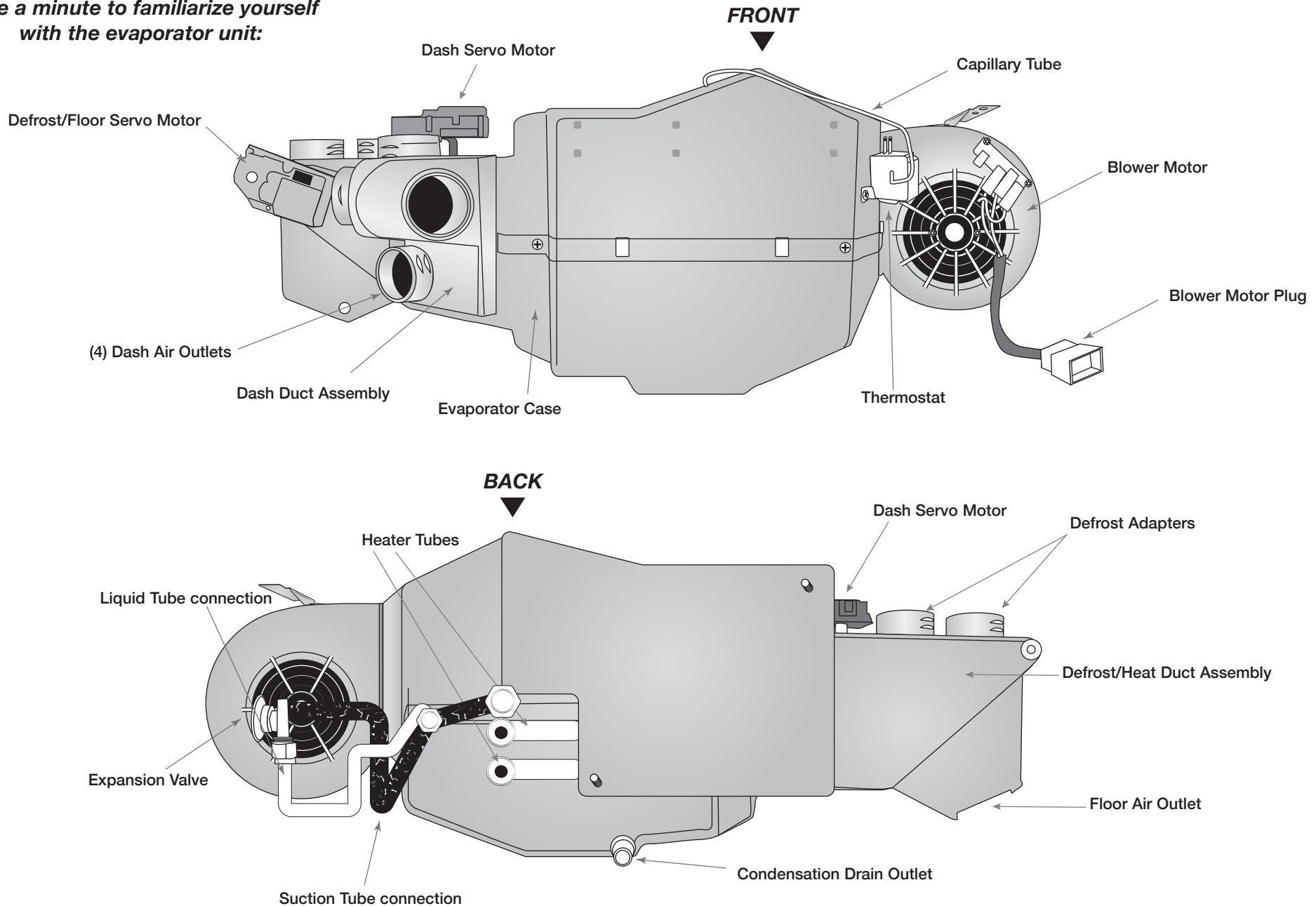
## A Basic Overview of Automotive A/C....

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



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





## Control & Operating Instructions

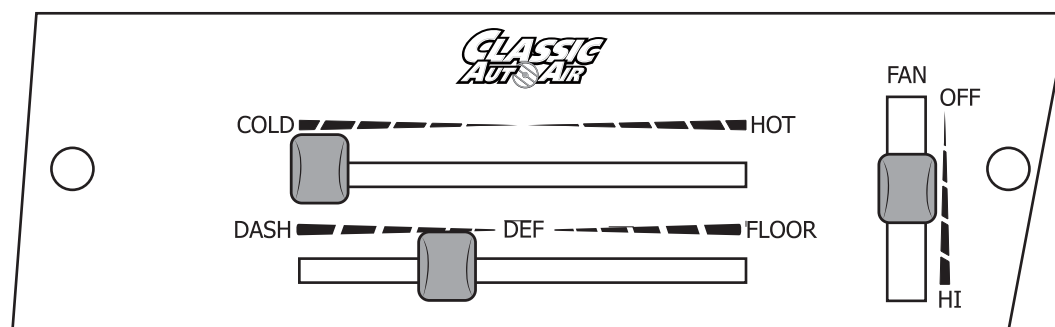
Your new **SMART A/C SERIES** system offers complete comfort capabilities in virtually every driving condition. This includes temperature control in all of the modes. This system also provides the ability to blend the air between Face, Heat, and Defrost modes simultaneously. To illustrate the various 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% 80% | Floor Defrost 40% 60% | Floor Defrost 60% 40% | Floor Defrost 80% 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         |



## Control & Operating Instructions

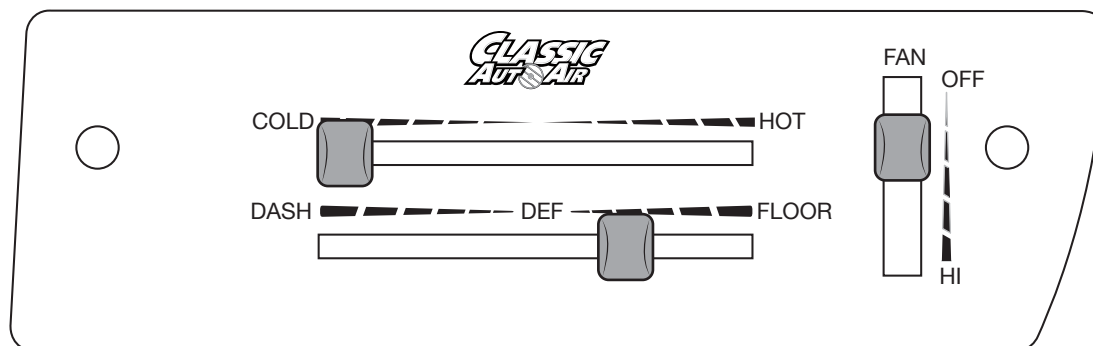
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| COMPRESSOR | ON            | ON                          | ON                          | ON                          | ON                          | ON           | ON                       | ON                       | ON                       | ON                       | ON         |

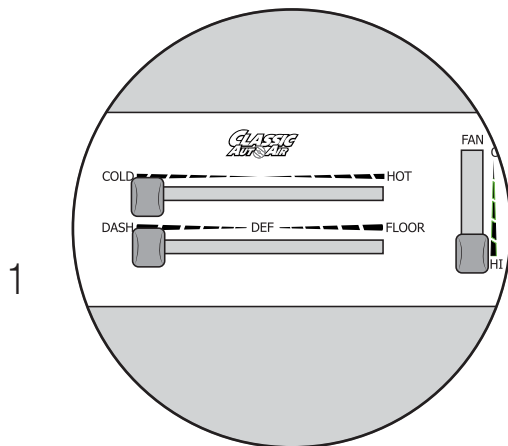
COLD

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         |

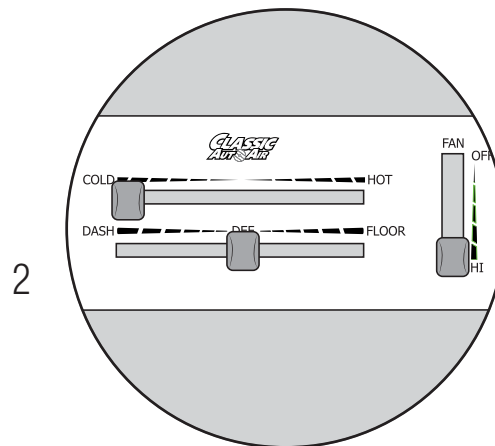
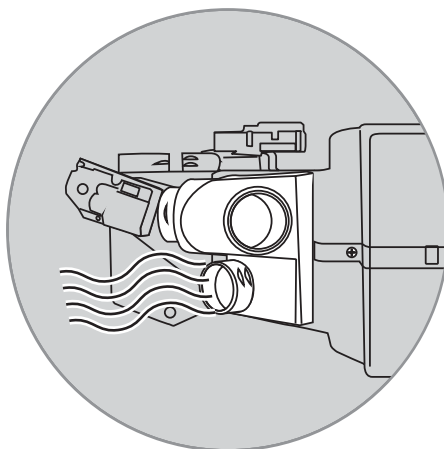
# OPERATION

- Function Test, Steps 1 thru 3



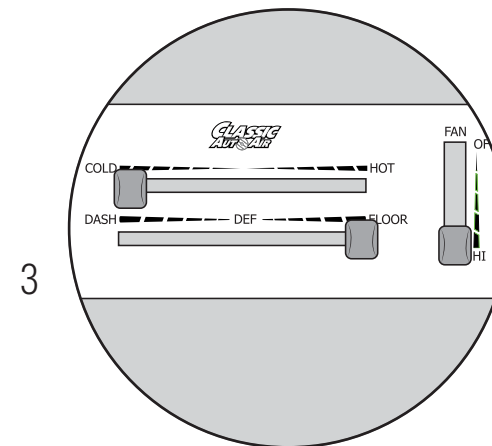
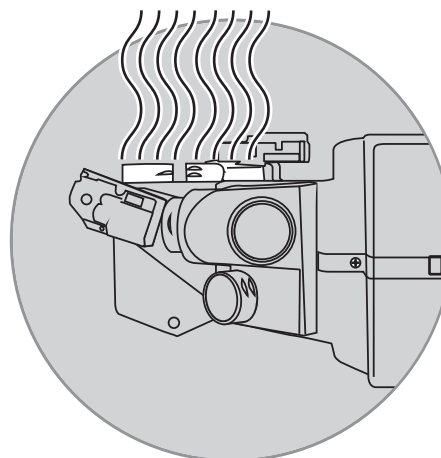
Move FAN knob to HIGH  
Move MODE knob to DASH

AIR OUT OF DASH VENTS



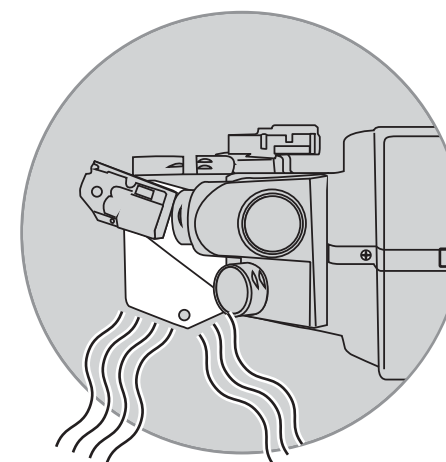
Move MODE knob to DEF

AIR OUT OF DEFROST VENTS



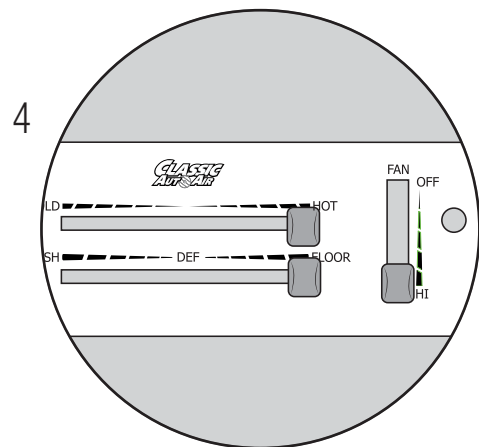
Move MODE knob to FLOOR

AIR OUT OF FLOOR VENTS

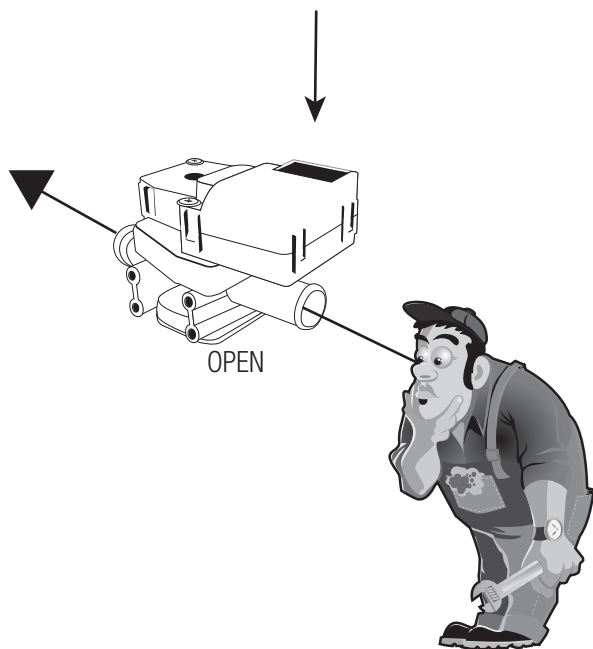


# OPERATION

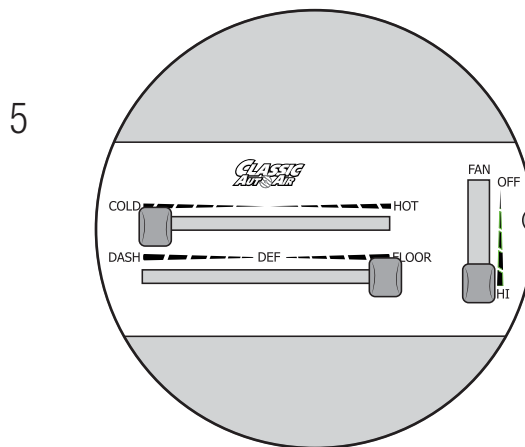
## • Function Test, Steps 4 and 5



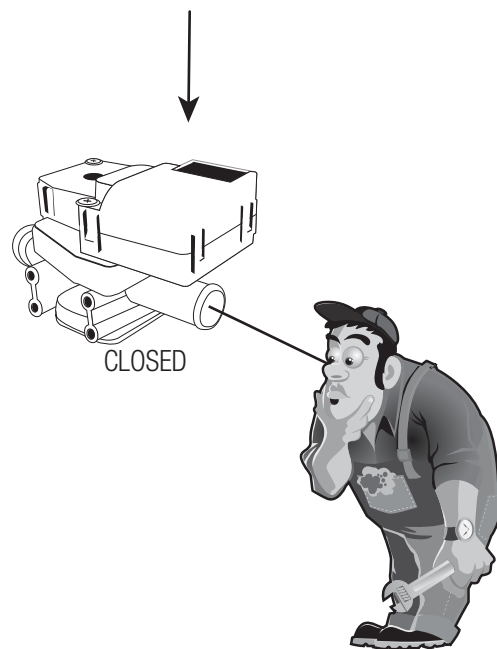
Move TEMP knob to HOT



You will be able to see thru water valve passage



Move TEMP knob to COLD



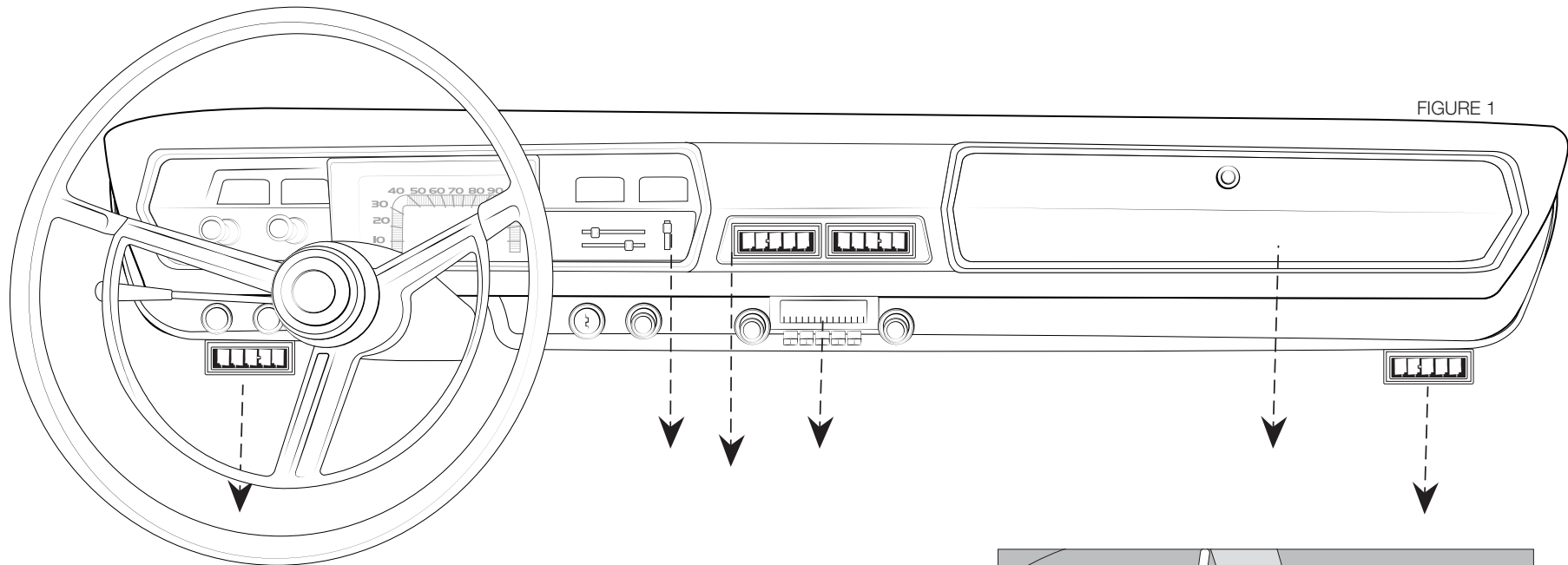
You will NOT be able to see thru water valve passage

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

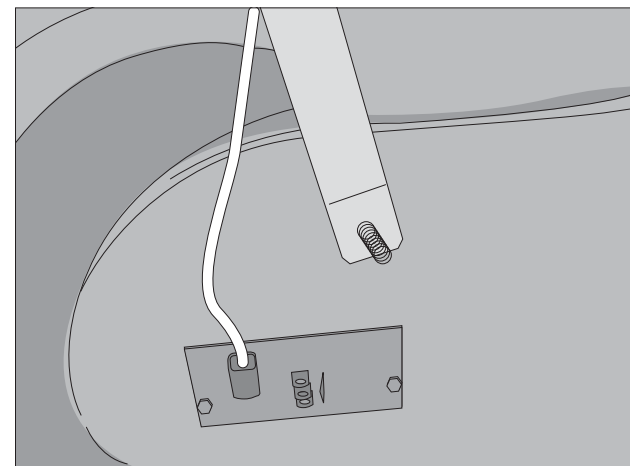
Your controls are now fully calibrated to your unit. Please refer to the next steps in your installation manual for installing the system in your vehicle.

NOTE: IF DURING ANY OF THESE STEPS YOU DO NOT GET THE CORRECT OUTCOME, PLEASE CALL TECH SUPPORT BEFORE INSTALLING INTO VEHICLE.

Remove Glove box, Glove box door, Ashtray, and Radio, and OEM A/C controls (we provide our new D.E.R. controls). and set them aside for reinstall later (see figure 1). Note: If vehicle is equipped with a console, remove entire console and set aside.

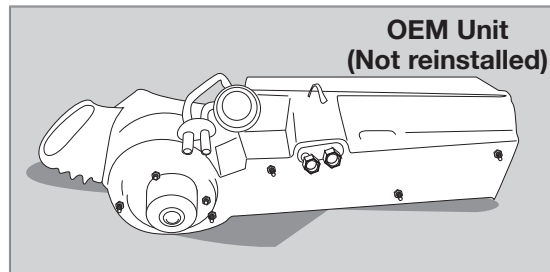
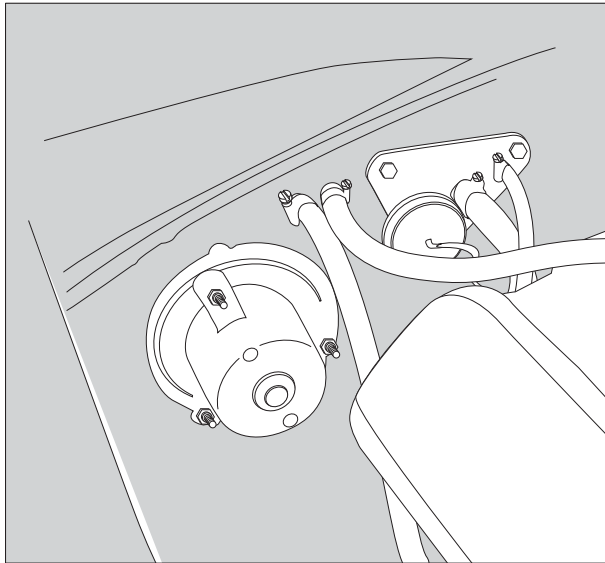


Disconnect the electrical harness from the OEM assembly. Remove front support brace from the OEM unit (see figure 2). Retain the hardware (we will be providing a new support brace).



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. Cleaning the parts before you need to reinstall them is a good idea too.

FIGURE 2



Remove all the factory duct hoses and discard. Unhook the cable to the OEM heater valve and push the tout thru the firewall. Remove all 5 nuts that hold OEM A/C unit to firewall (see figure 3). At this point the OEM A/C unit should be free and you can remove from the vehicle. Nothing on the OEM unit will be reused on this installation.

**DRAIN COOLANT FROM RADIATOR. Store safely to reuse or recycle accordingly.** Cut heater hose approximately 1" from firewall. 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.

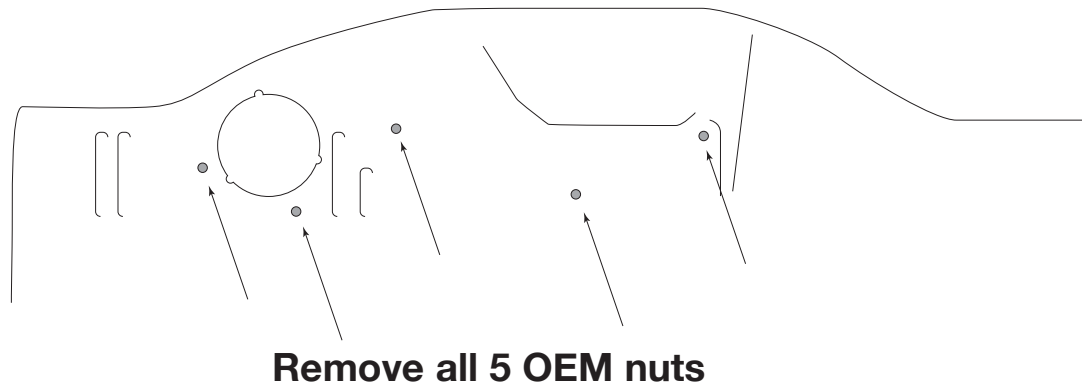
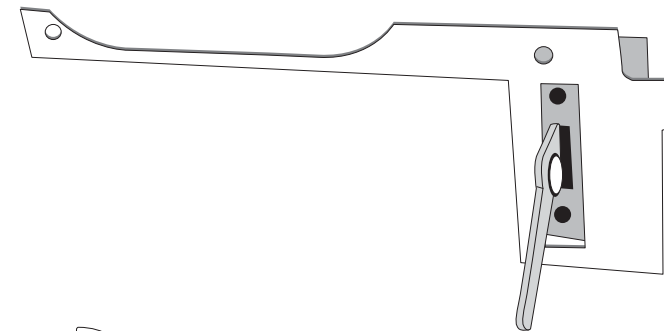
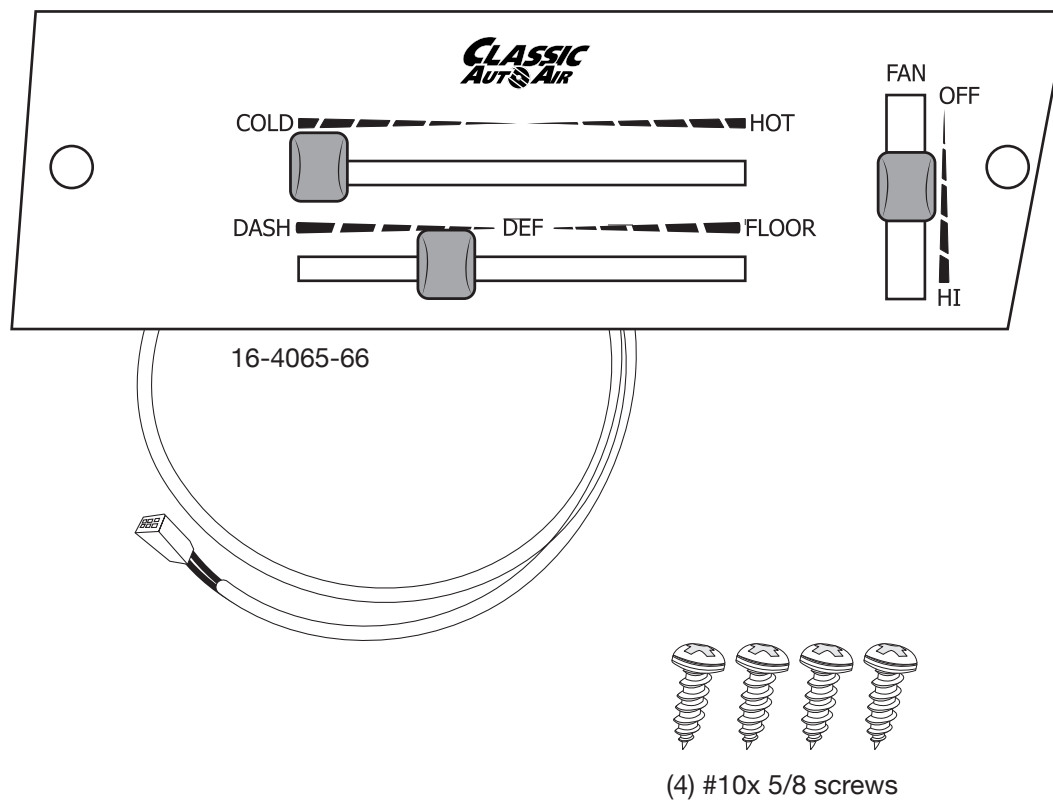


FIGURE 3



## 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.

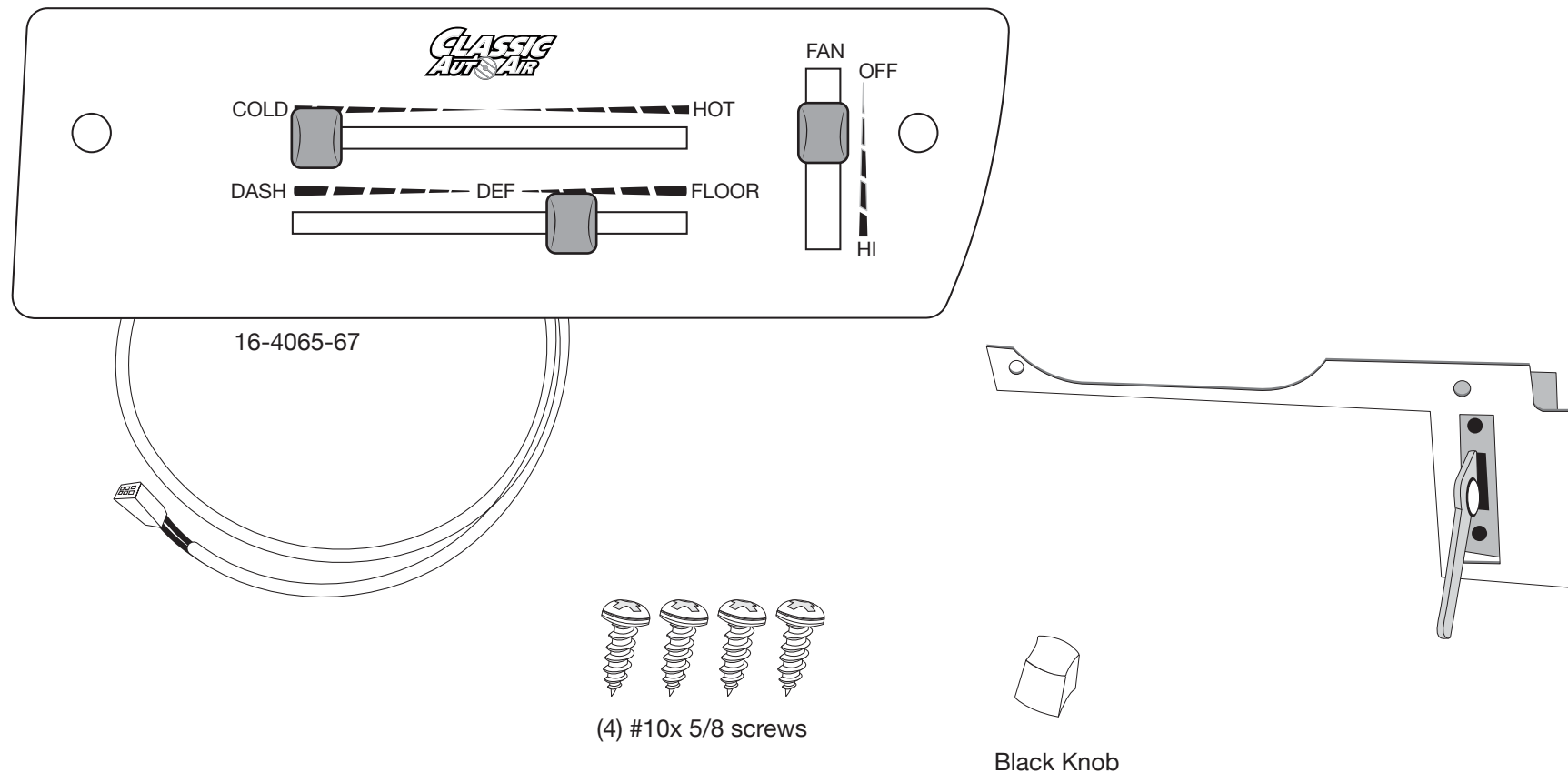


Black Knob



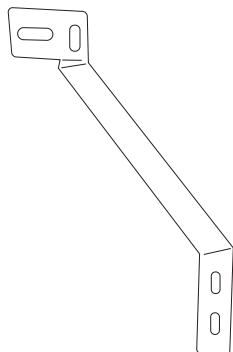
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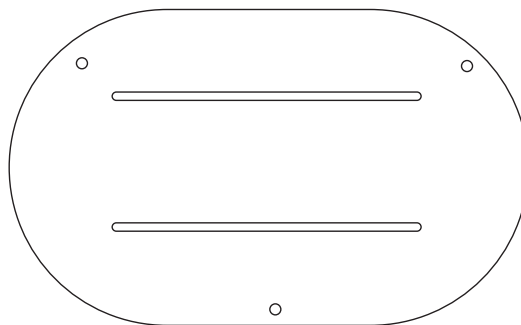


## THESE ARE THE PARTS YOU WILL FIND IN BAG KIT B

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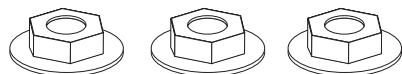
Evap Support Bracket  
PN# 10-1066-21



Fresh Air Inlet Block Off  
PN# 10-1066-2



Two #10 - x 5/8" Phillips Screws



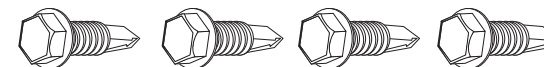
Three #10 - 10 x 5/8" Flange Nuts  
PN#25CNFLZ/S



Two #8 - x 3/8" Phillips Screws



One Male Spade Connector



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



Two Fender Washers  
PN #0113-3

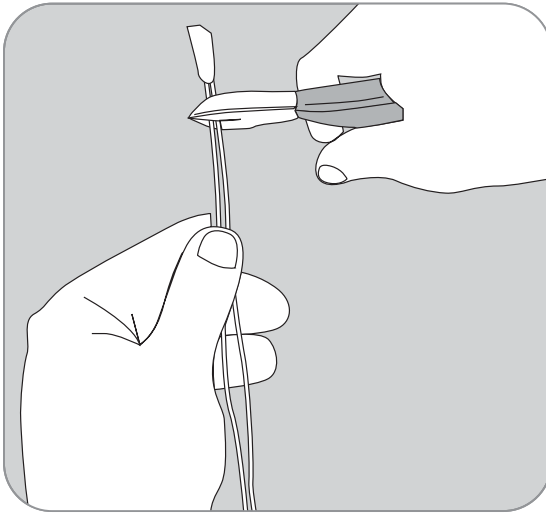


FIGURE 5

Locate the original wiring harness that supplied power to the OEM unit and cut them close to their end. On the OEM power supply wire attach a 1/4" insulated male spade connector (see figure 5).

**Within the OEM fuse box upgrade the factory HEATER fuse with a 20 amp fuse (VERY IMPORTANT)!**

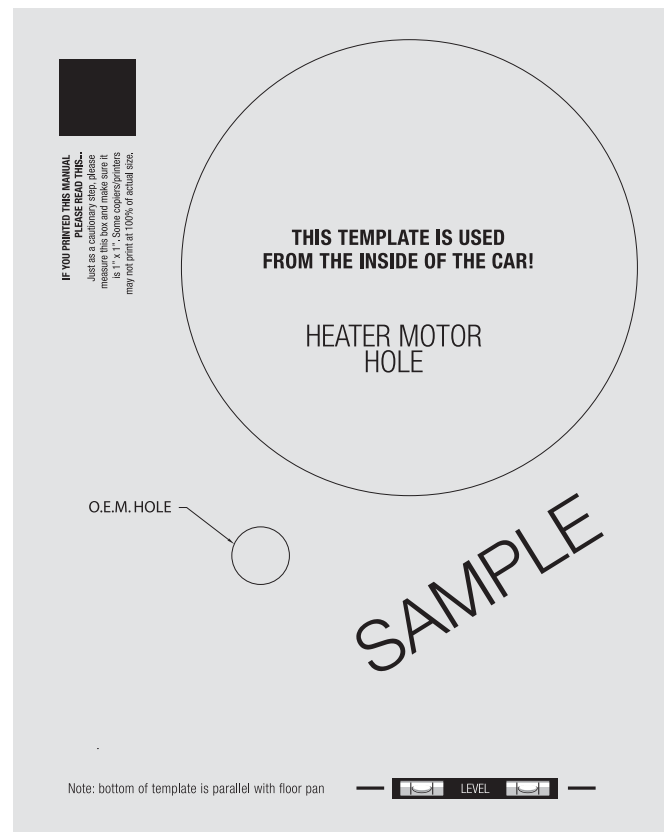


FIGURE 6

Locate behind dash and on firewall the hole that previously mounted the OEM unit.

All preliminary modifications to the vehicle are complete.

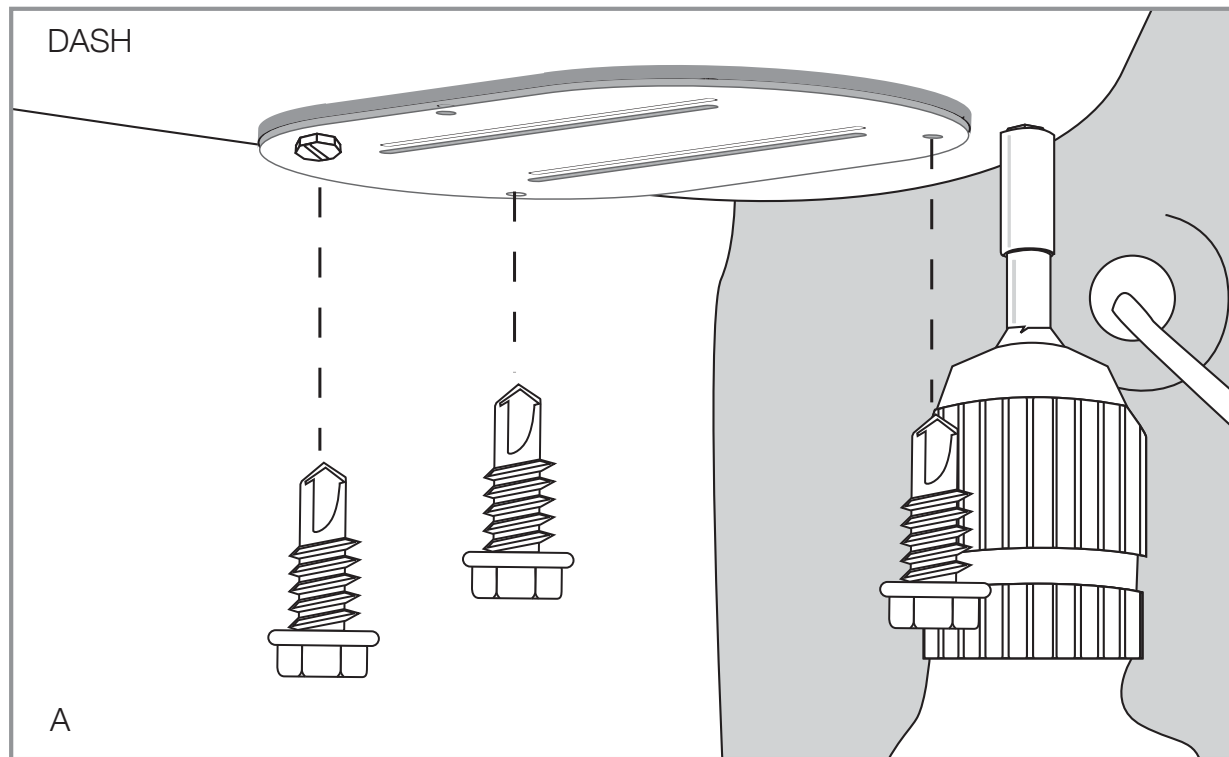
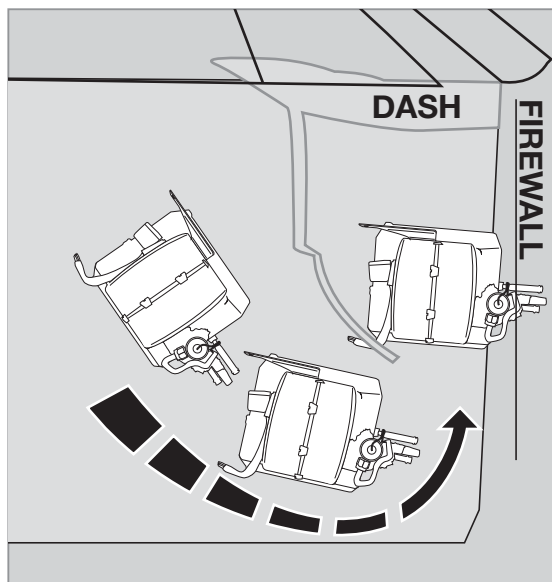


FIGURE 13

Locate the fresh Air inlet block off. Install over hole in inlet cowl as shown. Attach with three #10 - 16 x 3/4" Tek Screws (see figure 13).

Remove evaporator unit from box and place on a clean work bench.



Installing the complete evaporator unit under the dash will go much easier with the help of a friend. One person can take the unit within the car and “roll” up and under the dash while the other person can be ready at the firewall area with one or more of the included flange washers and nuts (the OEM hole are over sized and will require both a washer and flange nut for each). On back side of the evaporator is a mounting bracket with two studs. These studs will protrude thru the OEM holes (see figure 9).

Next, attach the bracket located on the blower motor to the underside of the cowling with a Tek-screw (as shown in figure 10).

**Now the unit will be easy to level and secure. Leveling the unit is very important to insure proper drainage of condensation (see below).**

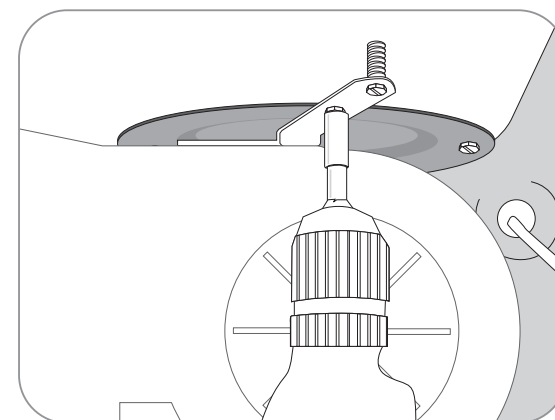


FIGURE 10

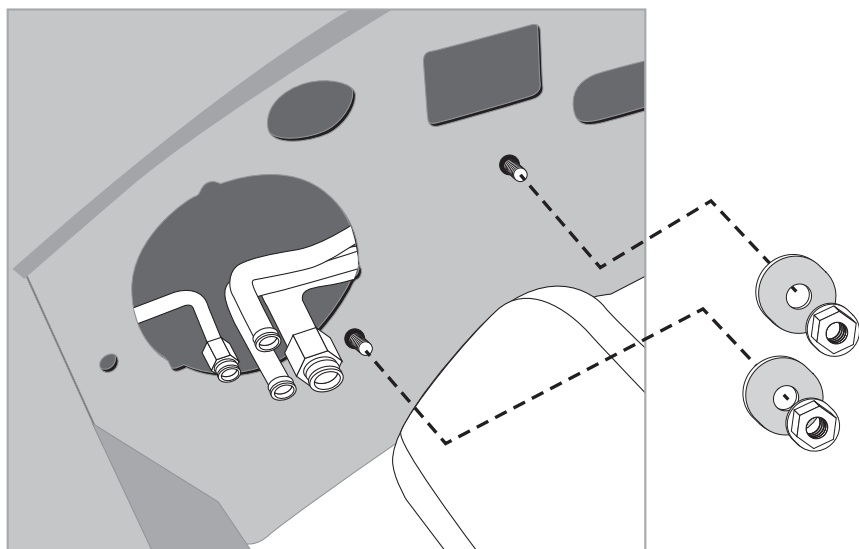
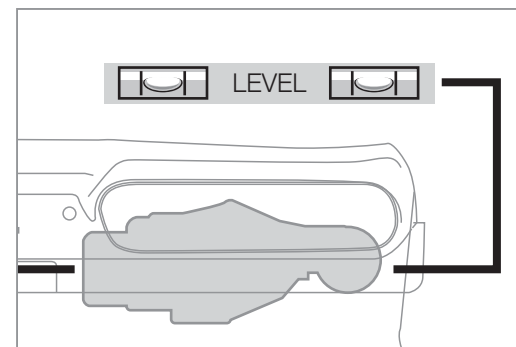


FIGURE 9

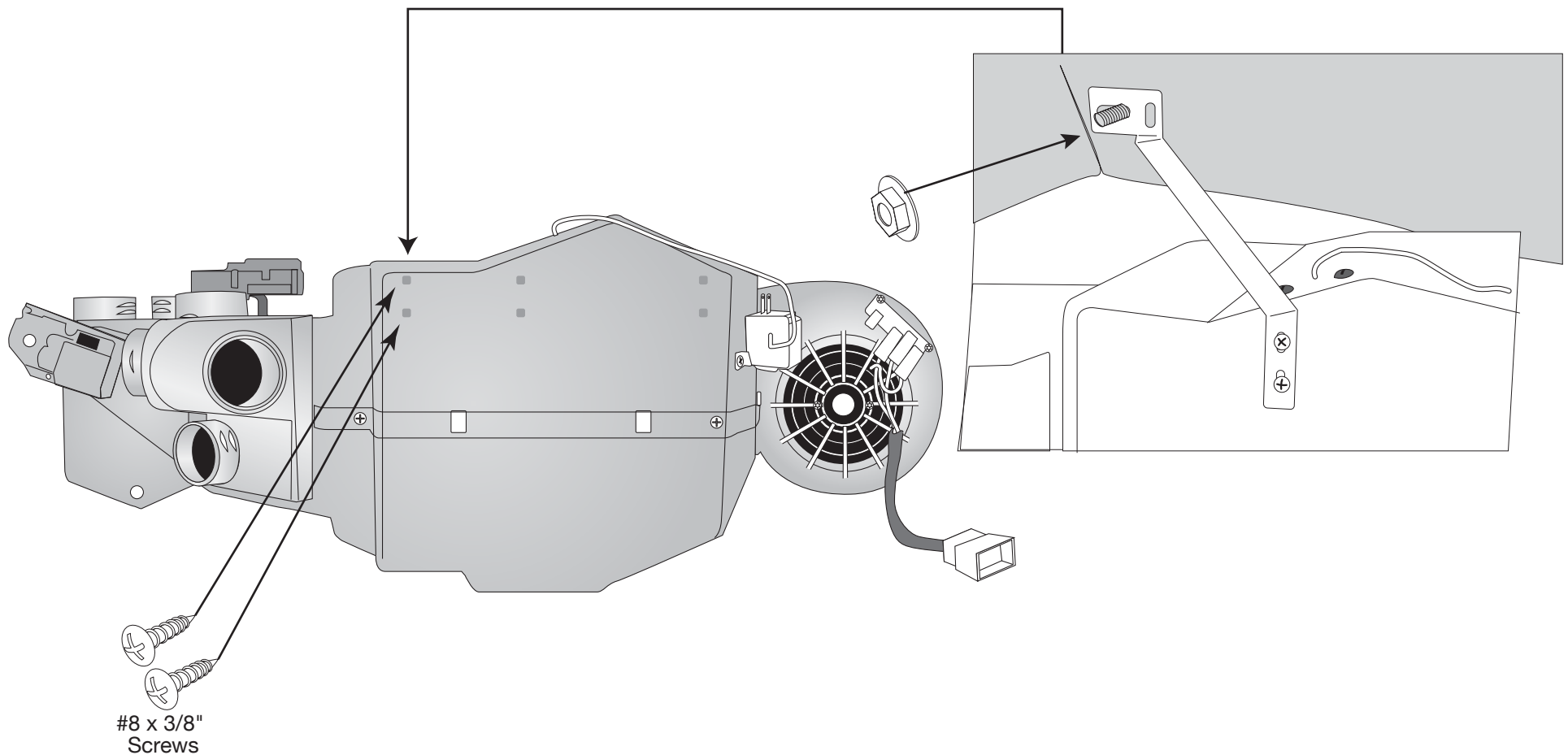


Be sure to align the evaporator unit level with the bottom of instrument panel (assuming the vehicle is sitting level) as shown above, but with a small degree of tilt toward the back to allow proper drain of condensation.



We've included a new under dash evaporator brace to replace the OEM one. Our new brace has a different bend and is an important replacement. Mount the brace to the new evaporator as shown below, and use an included flange nut to secure (there is a OEM stud that you will use to secure the top of the bracket, see figure 11).

**IMPORTANT NOTE:** On the side of the main unit you will see several holes for mounting holes... **ONLY USE THE ONES ON THE FAR LEFT FOR THIS BRACKET!** Do not tap into the other holes for any reason. Also, use a screwdriver and hand-power and do not over-tighten so you don't strip the holes (see figure 12).



We've also included an additional block off plate to cover the OEM hole for the water valve and heater tubes. Use the remaining Tek-screws to secure the new plate (see figure 17).

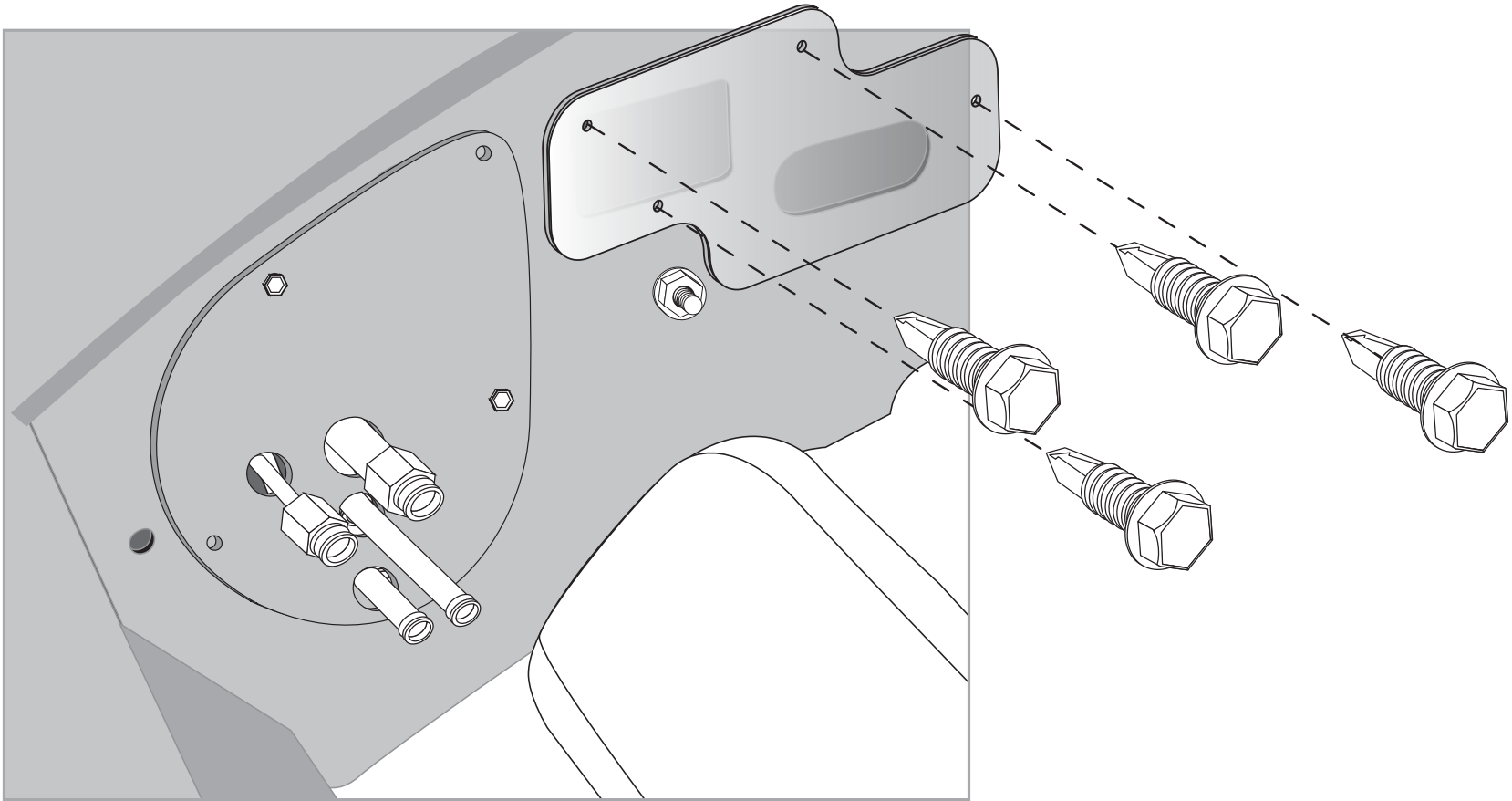
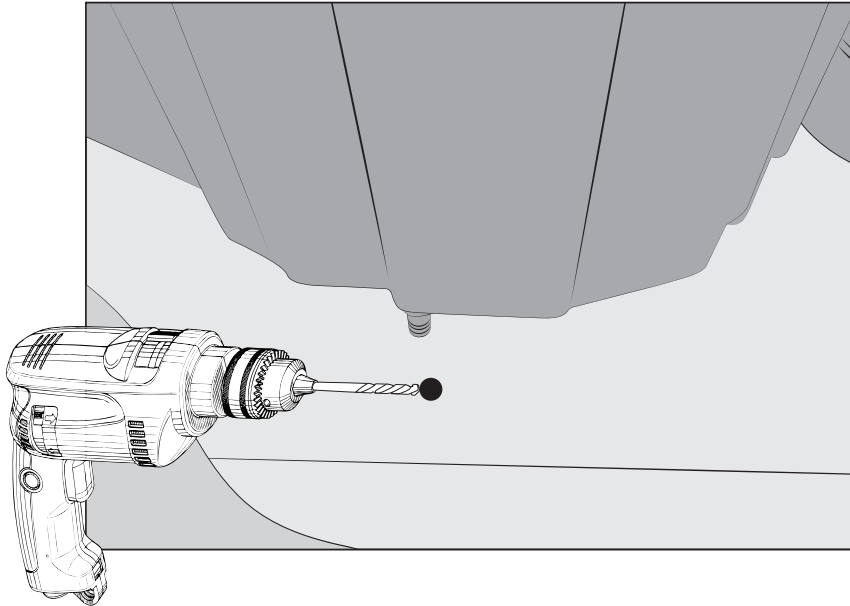


FIGURE 17

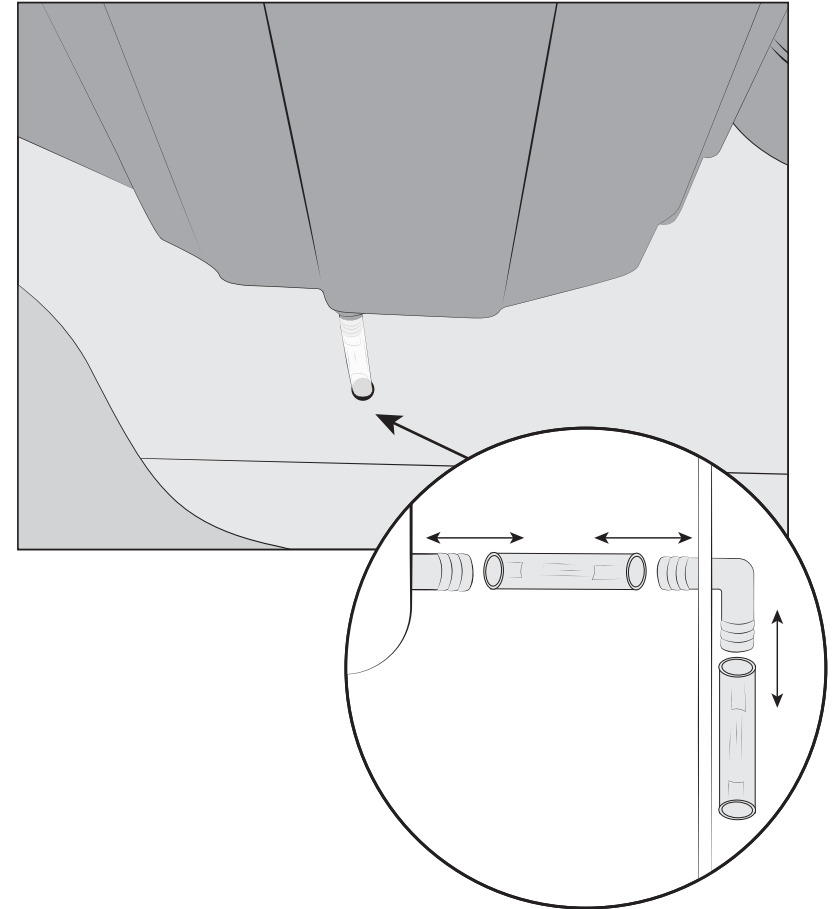
## Installing the Drain tube



THIS IS FROM INSIDE THE VEHICLE!



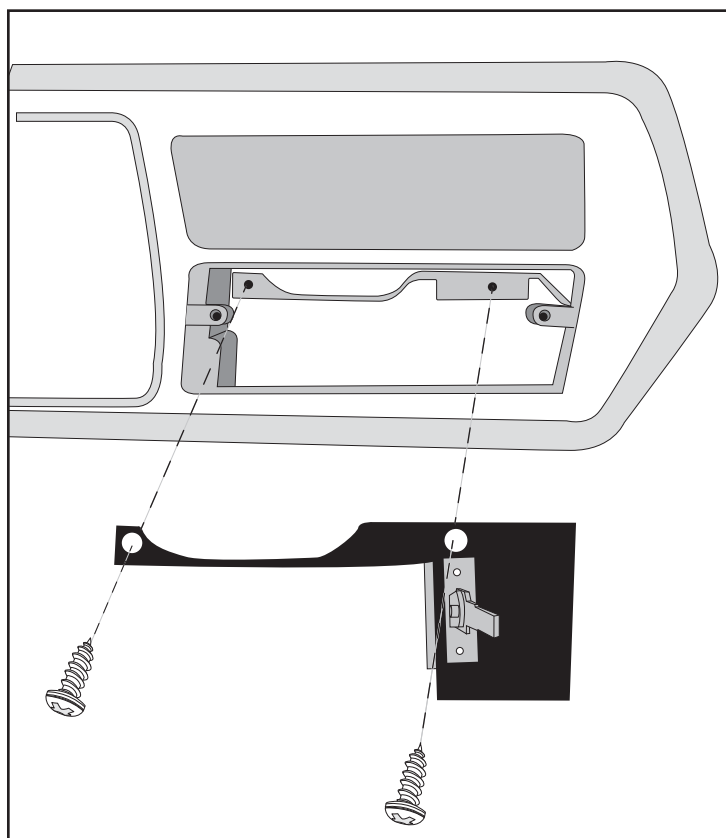
Locate Drain nipple on Evaporator and drill a 3/4" hole below the nipple on the firewall. This will allow condensation to drain properly.



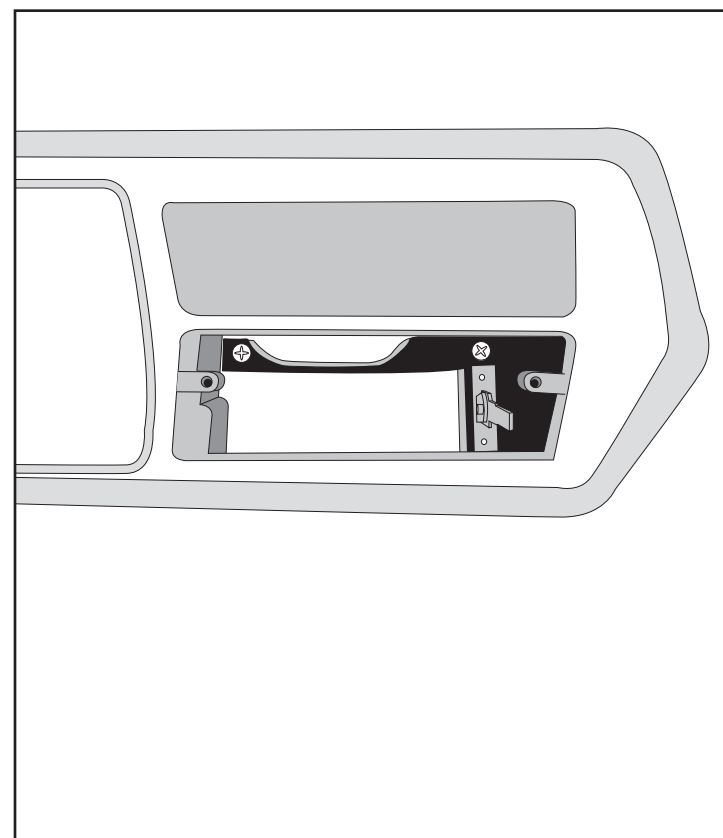
Attach 1/2" clear drain tube to Evaporator nipple and run through 3/4" hole you just drilled.

All condensation will now drain out into the engine bay.

1

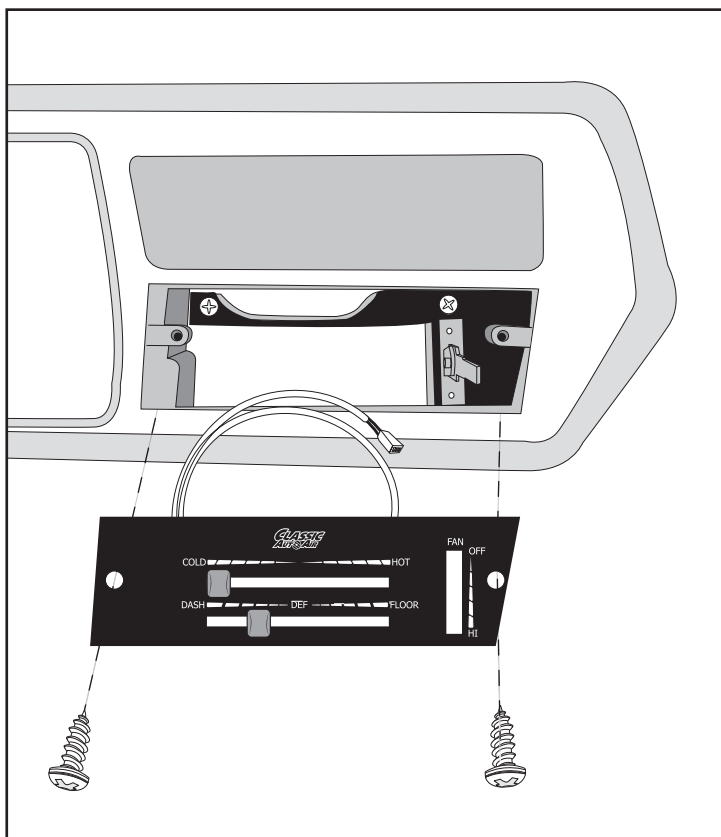


2



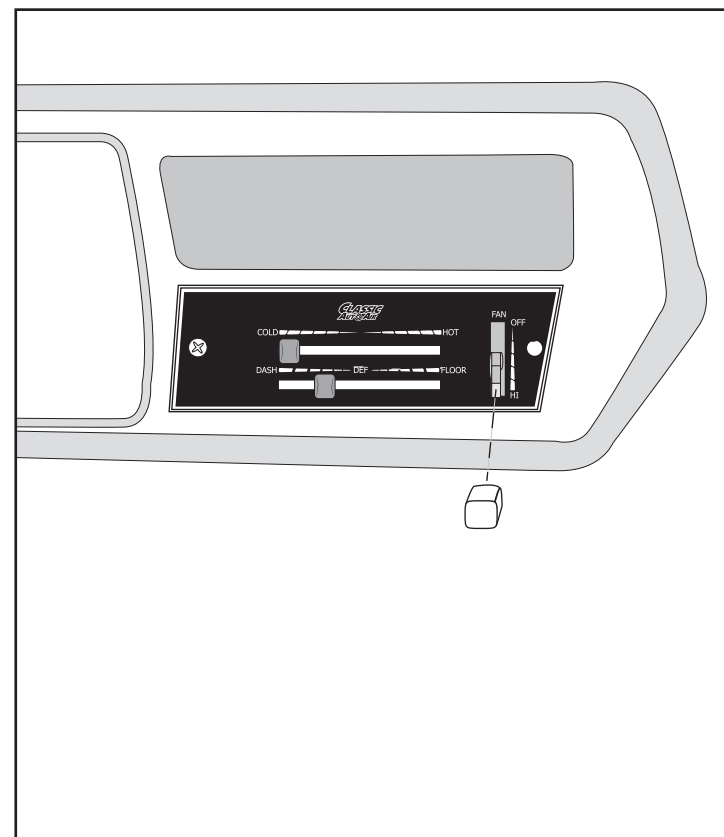
Attach Blower Switch Assembly to the dash mounting bracket with (2) #10x 5/8 screws.

3



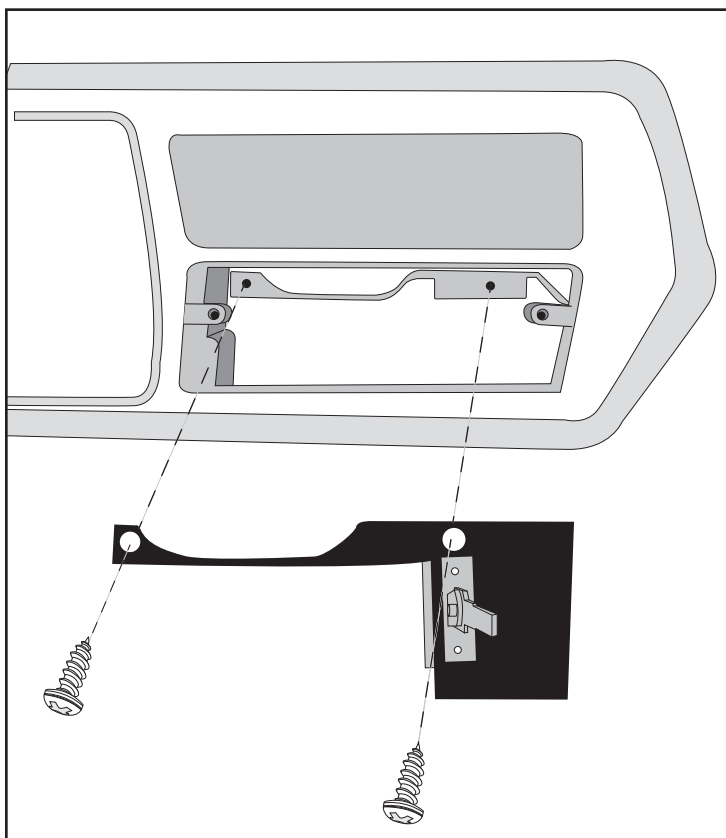
Feed D.E.R. cable through the opening of the dash. Next attach D.E.R. faceplate (2) #10x 5/8 screws.

4

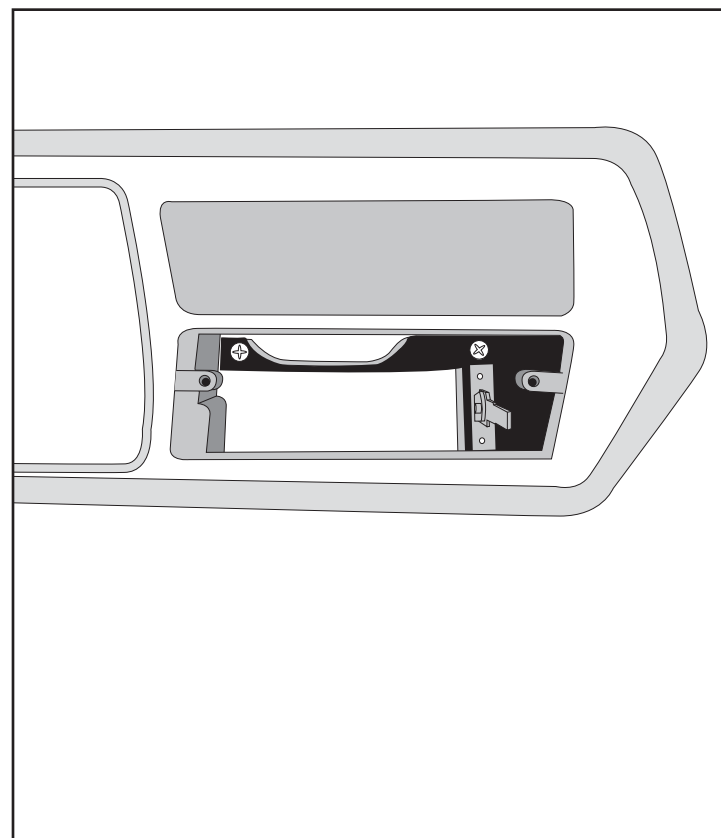


Attach black knob to the Blower Switch.

1

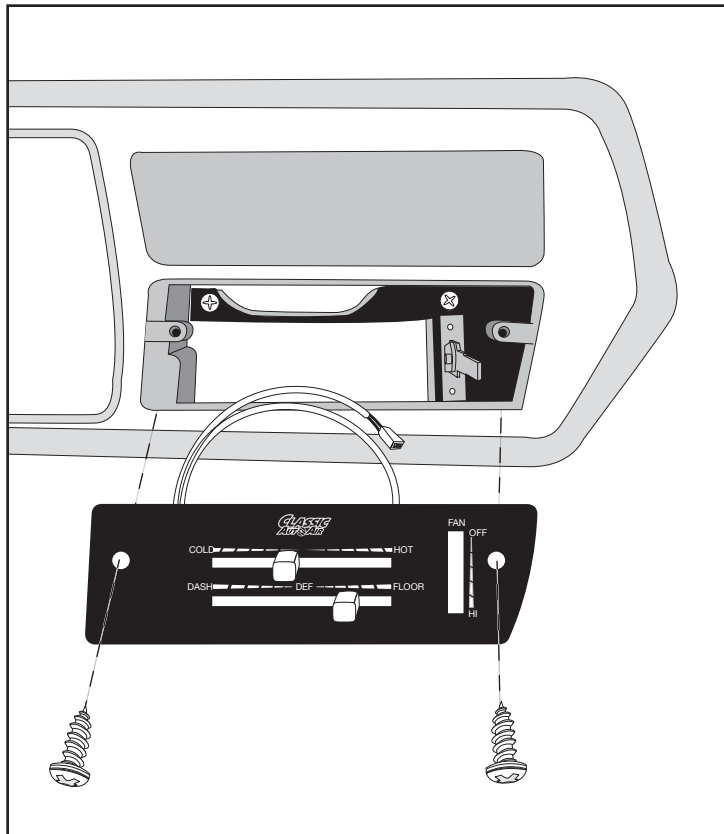


2



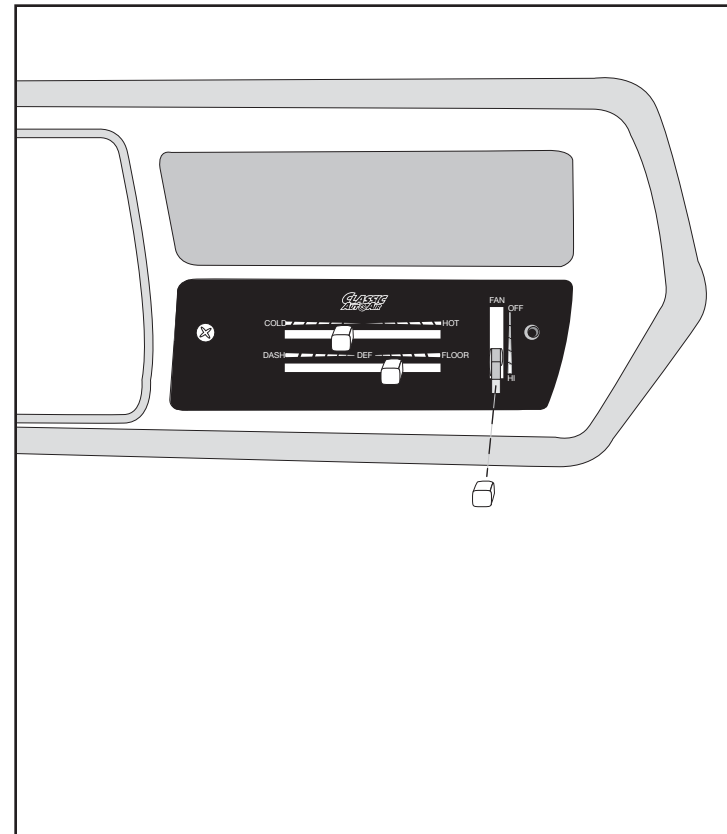
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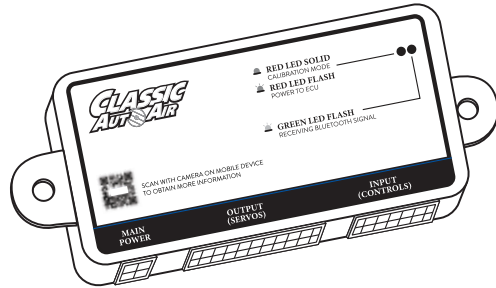
4



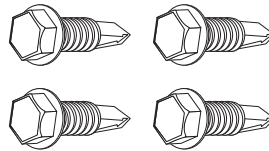
Attach black knob to the Blower Switch.

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

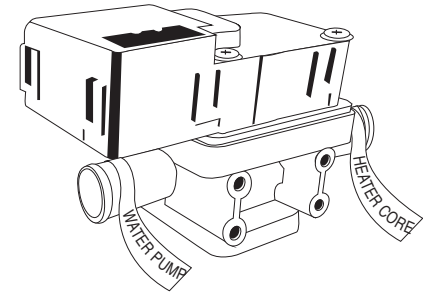
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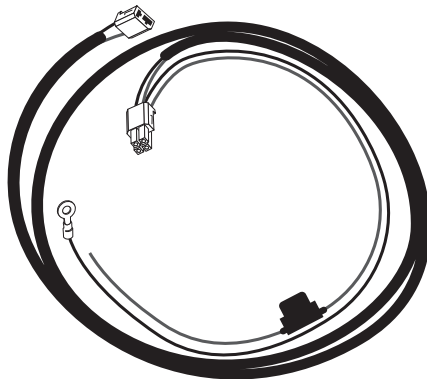
*ECU  
16-2500*



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



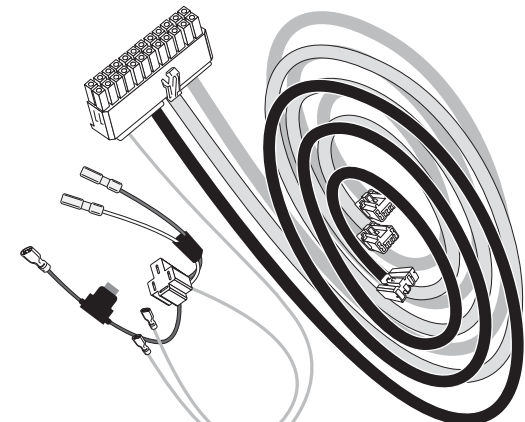
*Electronic Water Control Valve  
PN# 16-1023*



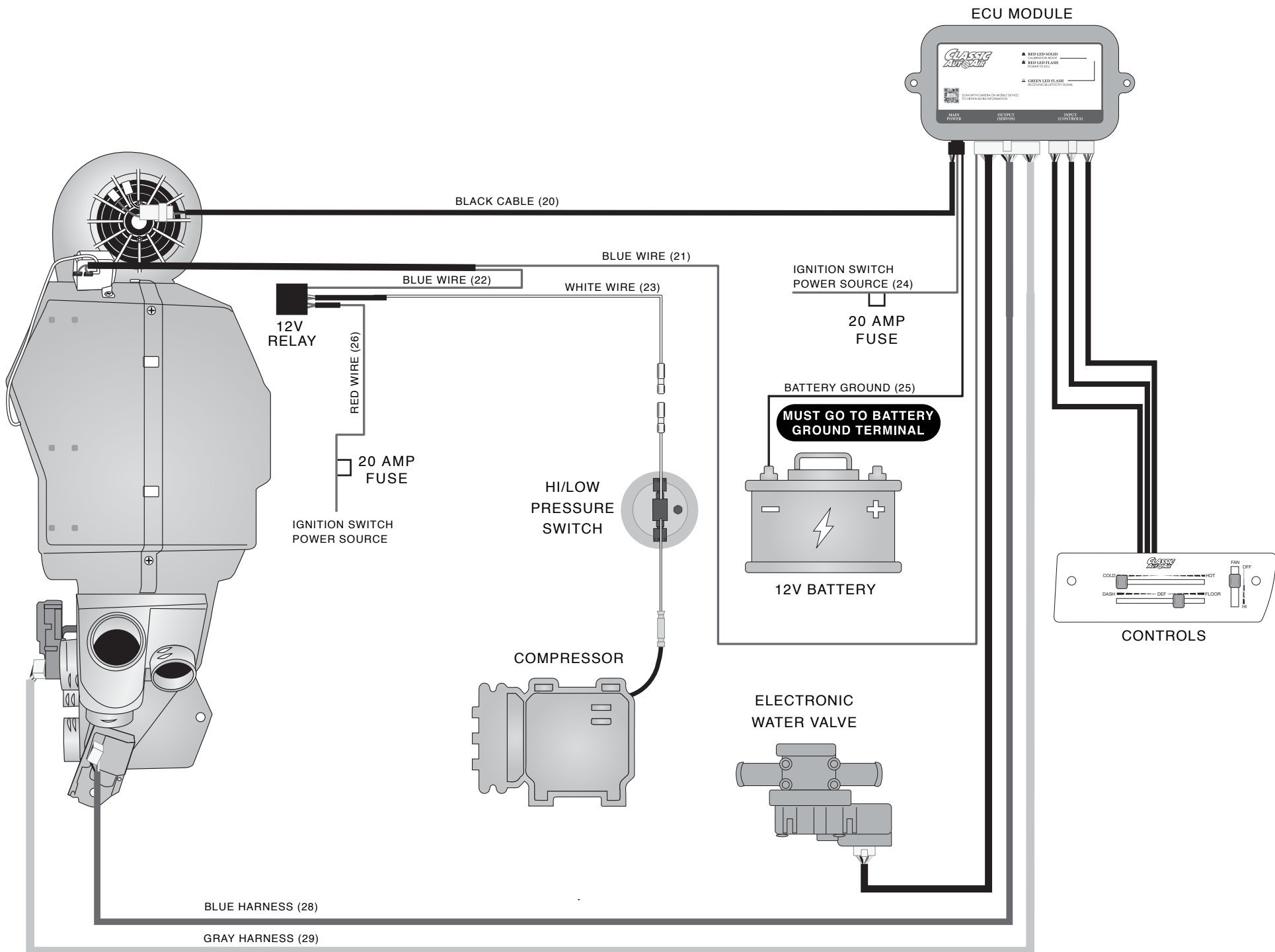
*HARNESS POWER SUPPLY  
0125-5*



*Relay  
30-13373*

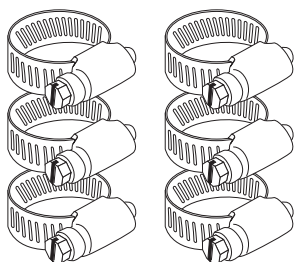


*HARNESS  
0125-6A*

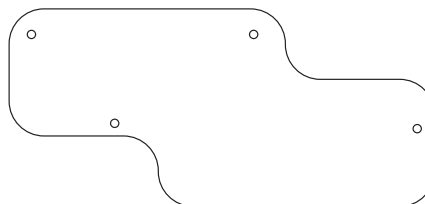


## THESE ARE THE PARTS YOU WILL FIND IN BAG KIT D

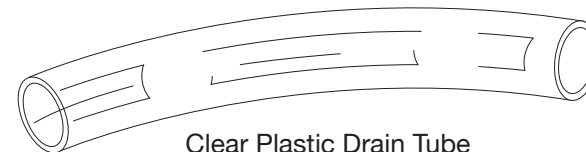
You will use all of these parts and hardware during the next series of installation steps.



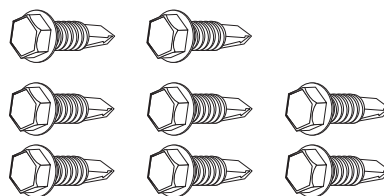
Six Worm Gear Clamps



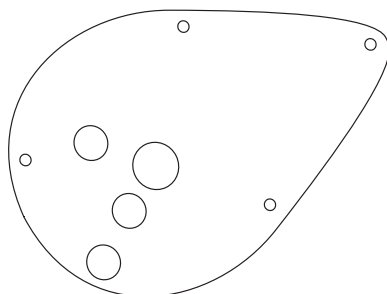
Firewall Block Off Plate  
PN #10-2066FA-2



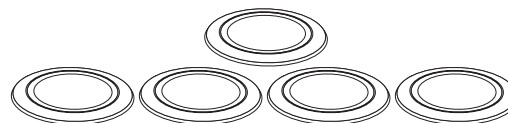
Clear Plastic Drain Tube



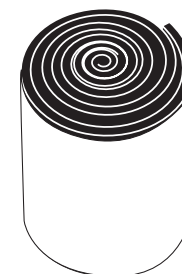
Seven #10 - 16 x 3/4" Tek Screws



Firewall Block Off  
PN# 10-2066FA-1



Five Cap Plugs



Refrigerant Tape

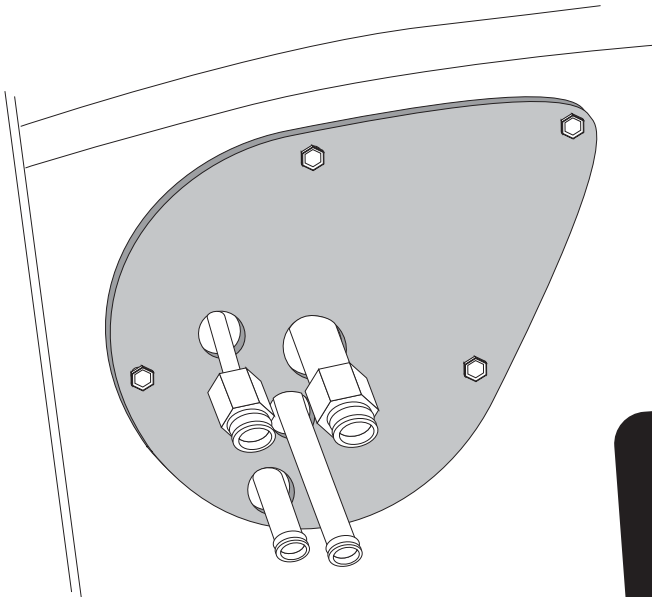


FIGURE 13

## IMPORTANT NOTICE: PROPER INSTALLATION OF WATER

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 four Tek screws (see figure 13). **TIP: This would be a good time to "jump" ahead a bit, and remove the ORANGE cable from Bag Kit D and route it thru one of the OEM bolt holes (it will be plugged into the electronic water valve). Use the included cap plugs and seal off the remaining OEM holes.**

Classic Auto Air has done extensive testing on the correct method to install the water valve in order to get a repeatable and progressive temperature control. **Your water valve MUST be installed per these instructions!... (if not, your system will not work properly... and that's an absolute fact).**

The **lower** connection on the tubes coming thru the block off assembly is going to be routed to the water outlet on the intake manifold. Attach your hose with cable clamps on both ends and route where it will not interfere with linkage or come in contact with exhaust manifolds or headers.

The **upper** port coming thru the firewall will be routed to and thru your new your electronic water valve (the water valve is marked for easy installation, see figure 14). First Attach a 6" piece of 5/8" dia. heater hose with the supplied worm gear clamp. Attach to the inlet side of the water valve using another supplied hose clamp. Attach a heater hose from the outlet side of the electronic water valve and route to the connection on the water pump.

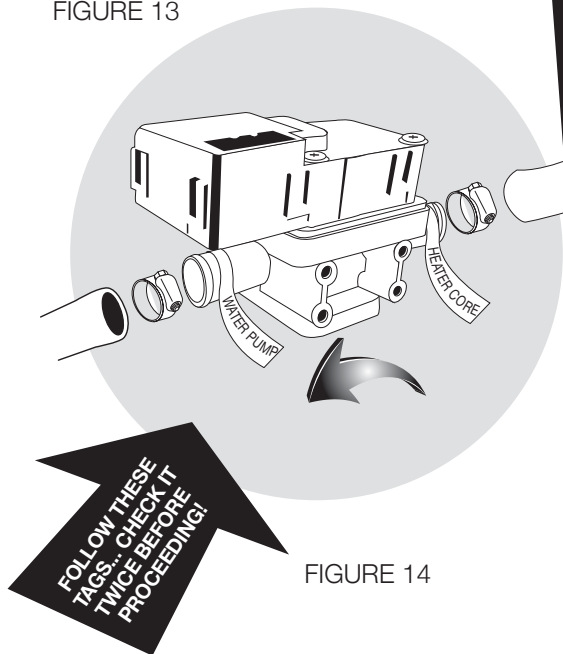


FIGURE 14

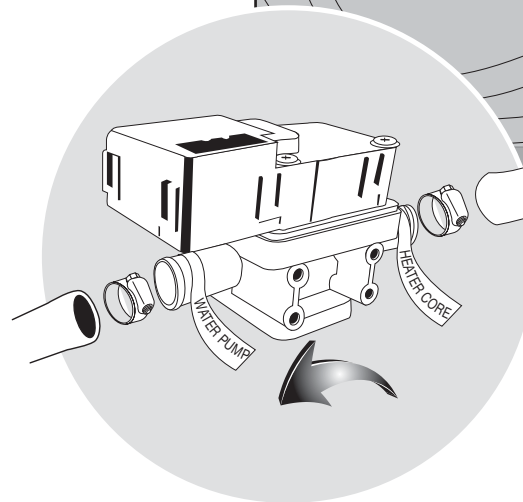
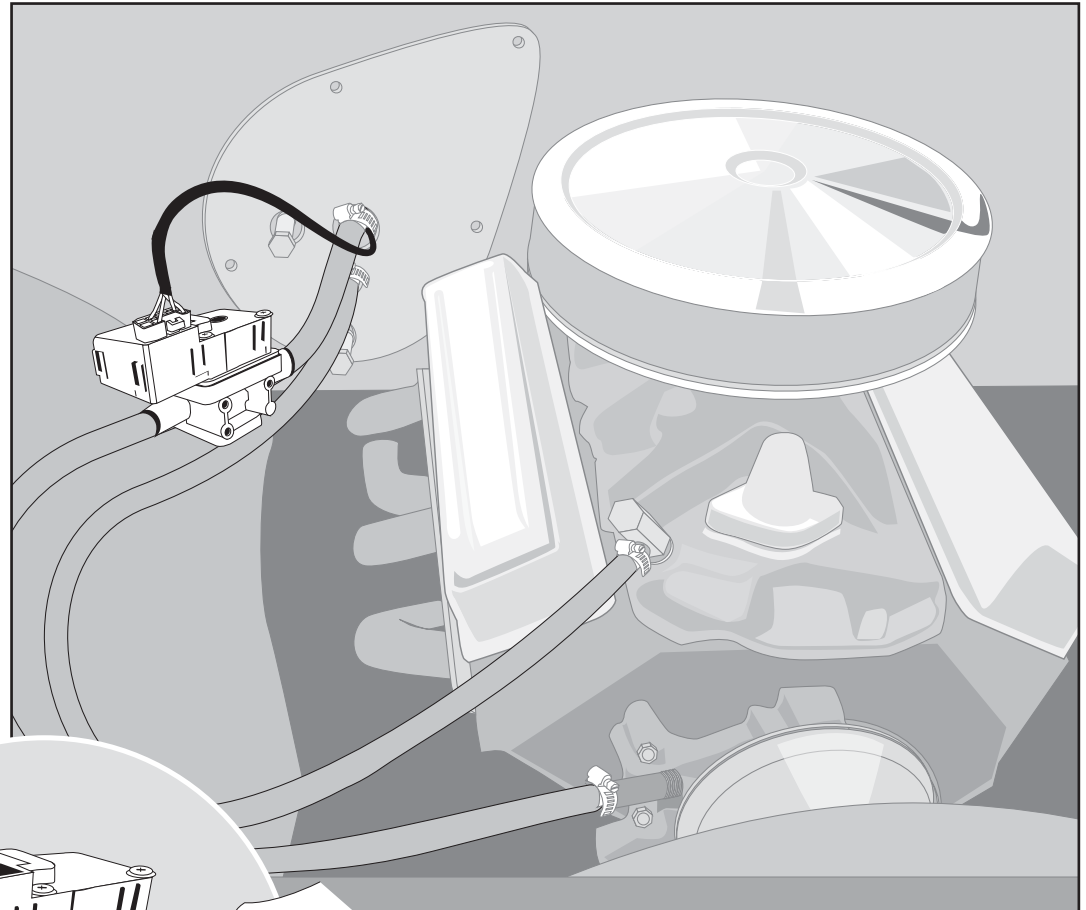
## IMPORTANT NOTICE: PROPER INSTALLATION OF WATER VALVE

**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.

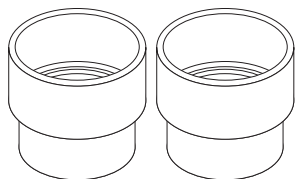


**FOLLOW THESE  
TAGS... CHECK IT  
TWICE BEFORE  
PROCEEDING!**

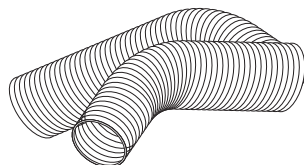
## THESE ARE THE PARTS YOU WILL FIND IN BAG KITS E, F, and G

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

### Bag E



Two Defrost Duct Adapters  
PN #069-10

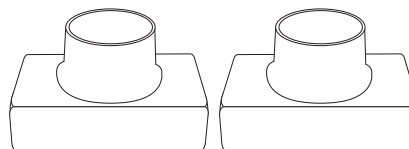


Two Duct Hoses, 2" I.D.

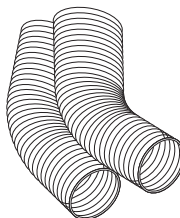


Four Zip-Ties

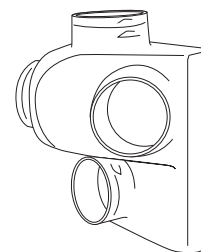
### Bag F



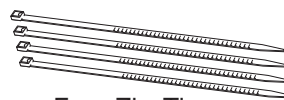
Two Duct Adapters  
PN# 2-2065FA-1



Two Duct Hoses, 2" I.D.

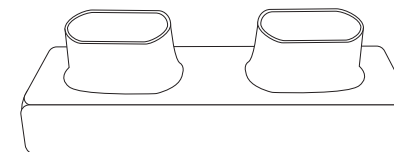


Face Duct Assembly  
PN# 2-2025-1

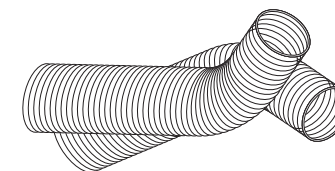


Four Zip-Ties

### Bag G



Center Louver Adapter  
PN# 2-2065FA-2

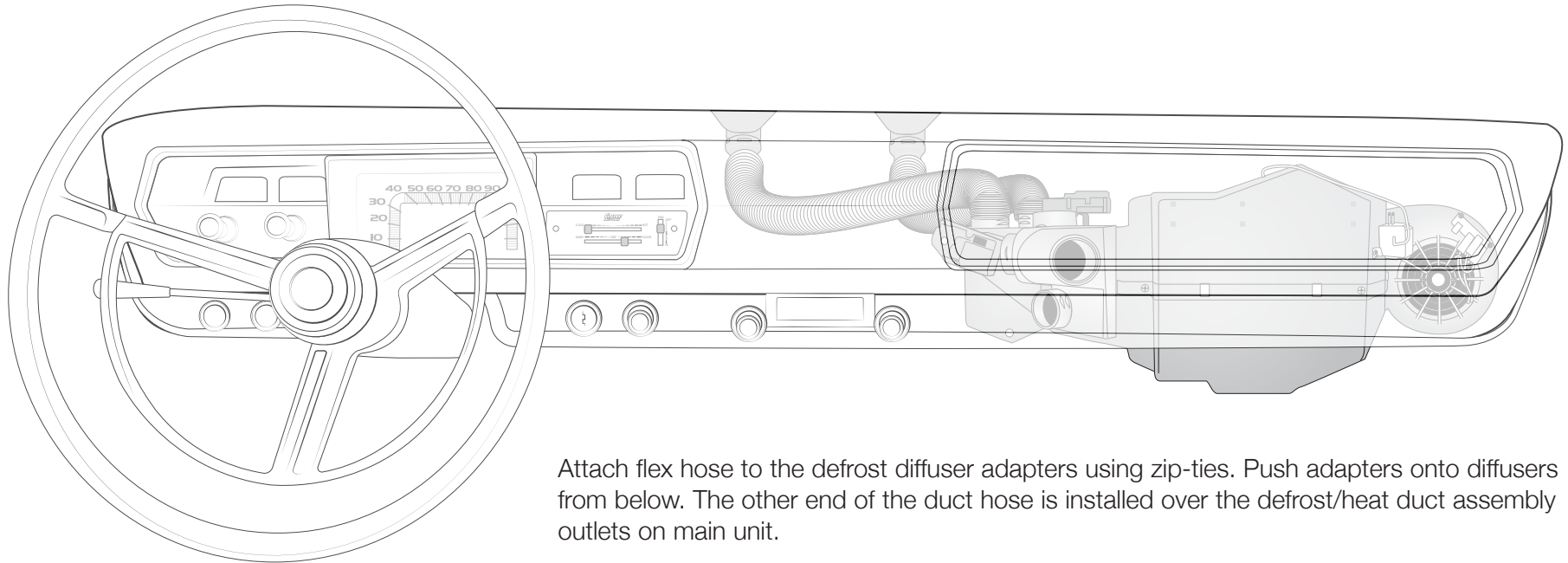


Two Duct Hoses, 2" I.D.



Four Zip-Ties

**Bag Kit E: The following steps are for left and right Defrost Diffusers:** Locate and route the duct hoses from the defrost/heat duct assembly (see figure 18) 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.

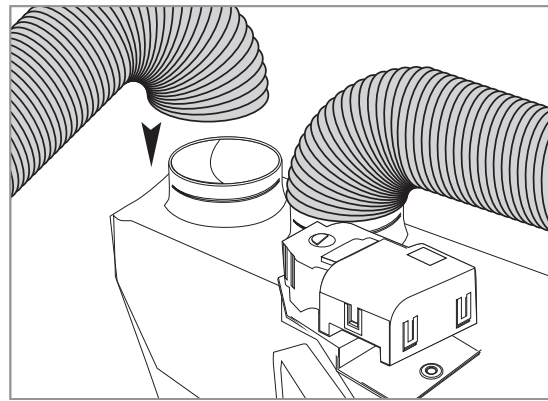
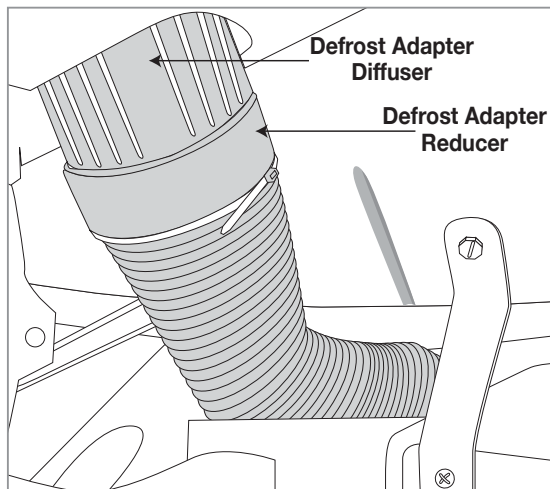
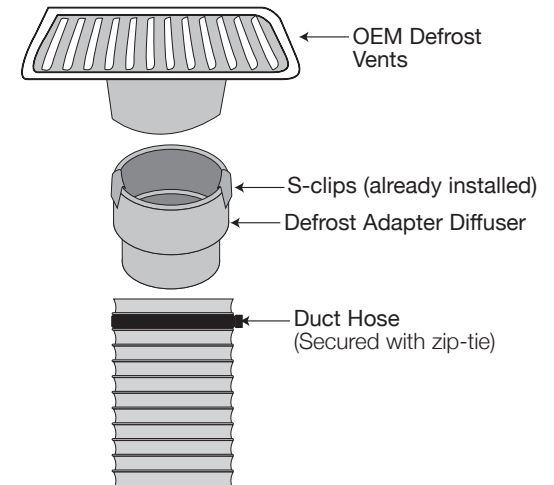
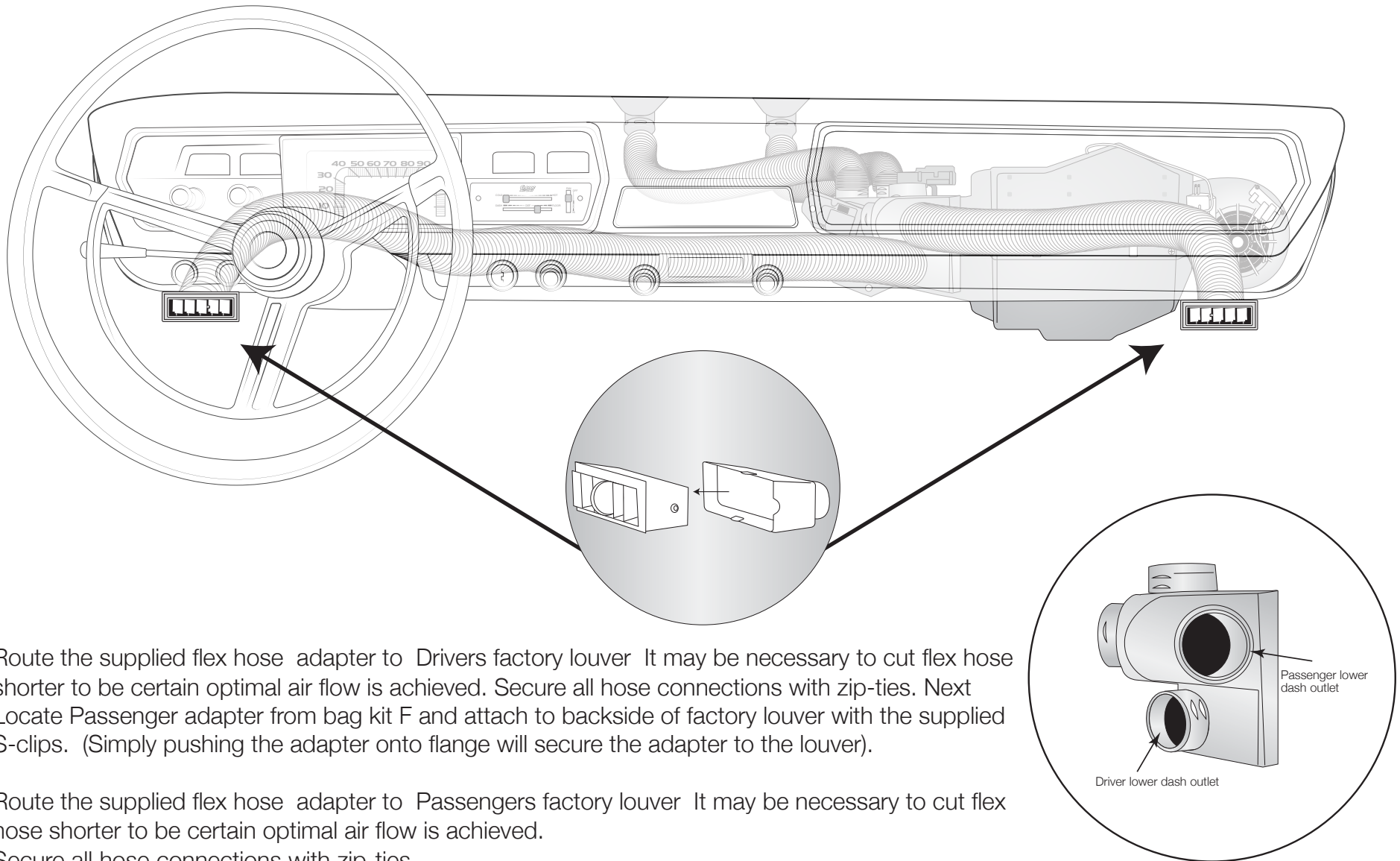


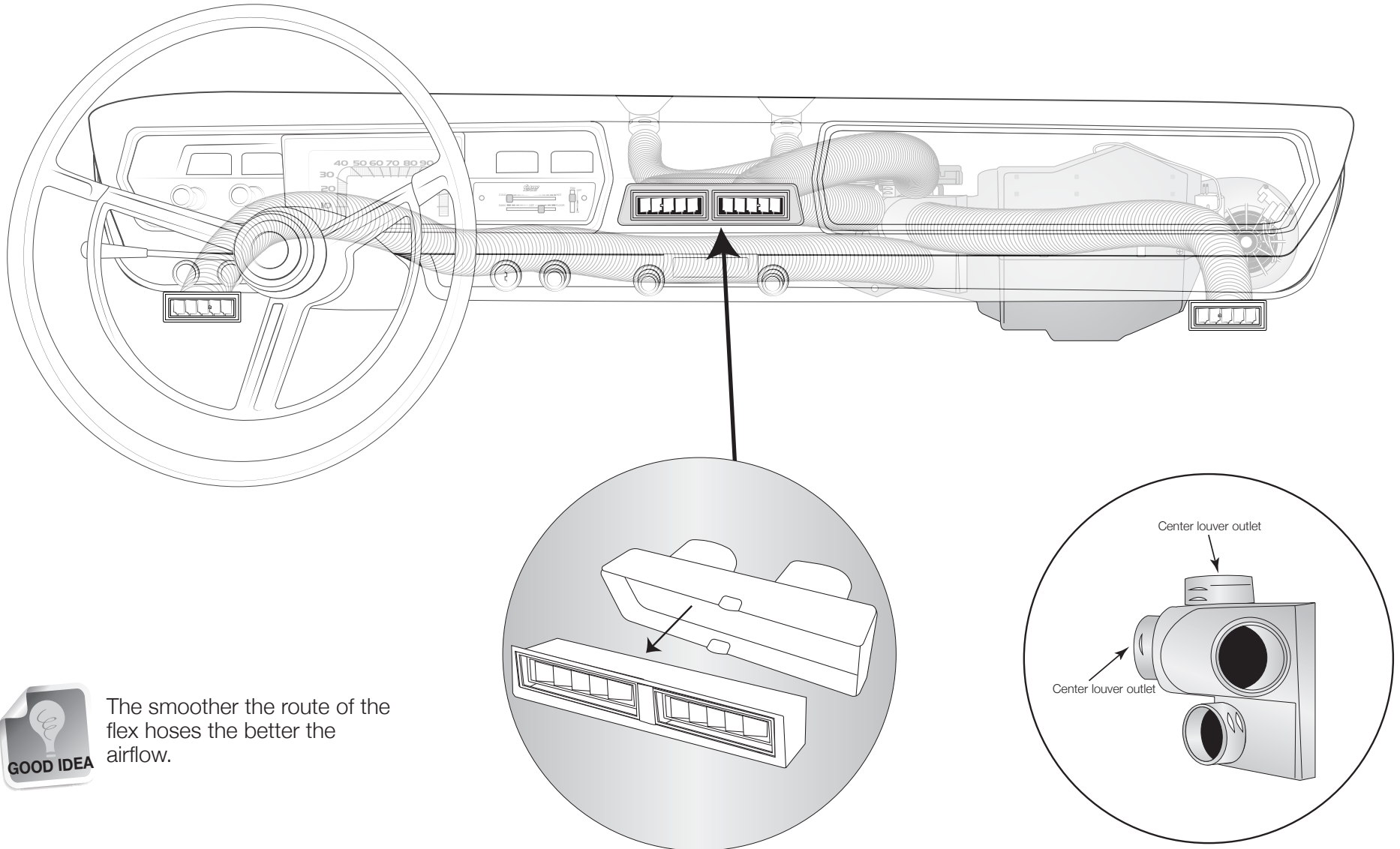
FIGURE 18



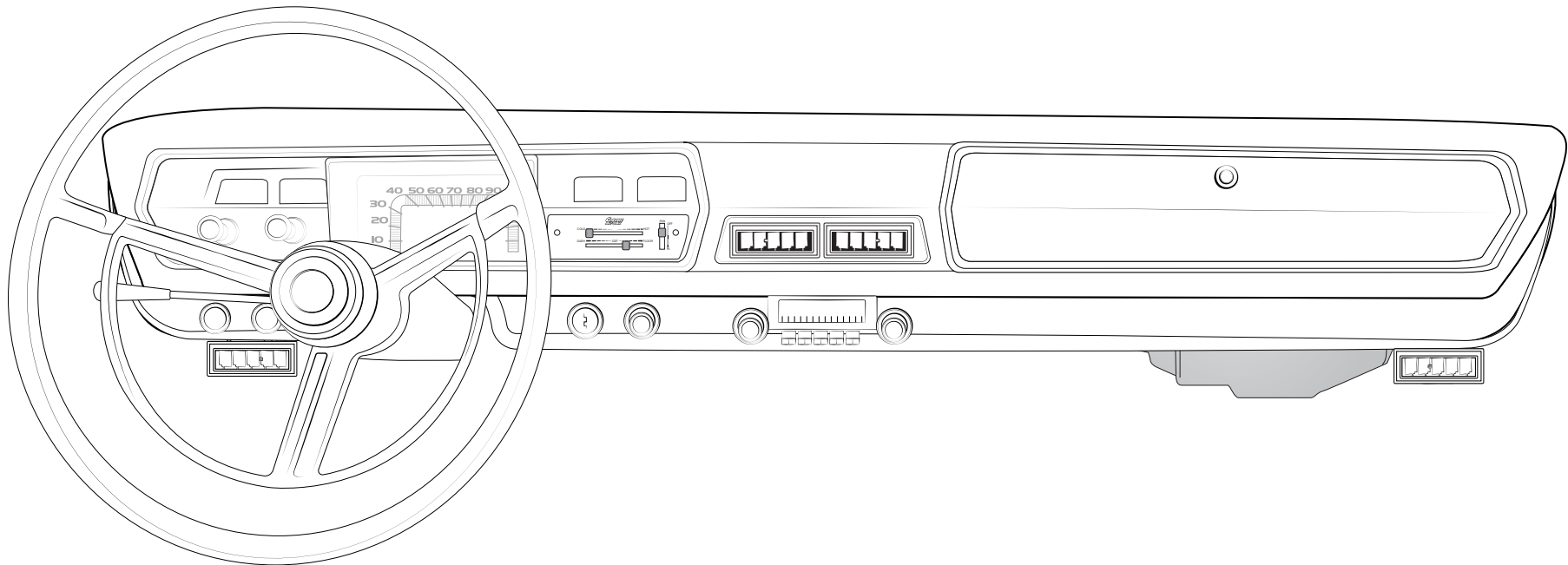
**Bag Kit F:** Route hoses to the OEM Driver and Passenger louvers. We've included two louver adapters. Locate Drivers louver adapter from bag kit F and attach to backside of factory louver with the supplied S-clips. (Simply pushing the adapter onto flange will secure the adapter to the louver)



**Bag Kit G:** Route last hose to the OEM center louver. We've included a center louver adapter, which you will push over the opening on the OEM air plenum. Attach to backside of factory louver with the supplied S-clips. (Simply pushing the adapter onto flange will secure the adapter to the louver). (Take your time and route so it won't become kinked or torn).



Reinstall any of the interior you may have removed. 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. This completes the interior portion of the **Smart Series** installation process.



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.

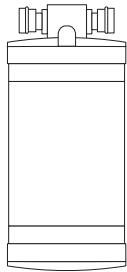
Good Job... Let's move on to the major components within the engine compartment....



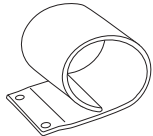
Retaining all the non-resintalled OEM parts is a good idea, but that's your choice.

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

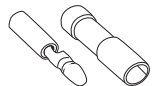
You'll find all of these parts within the main box



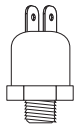
Drier  
PN# 12-1008



Drier Bracket  
PN# 19-1003



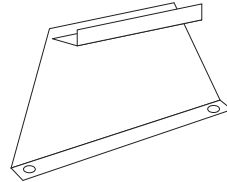
Splice and  
Bullet Connector



Pressure Switch



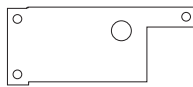
Bag of O-rings and  
Mineral Oil Tube



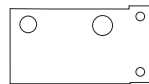
Condenser Bracket  
PN# 0066-52



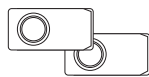
MDS-03 Insulation



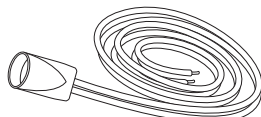
Condenser Bracket  
PN# 0066-51



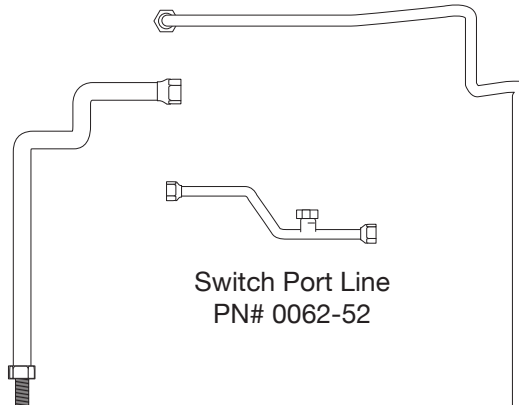
Condenser Bracket  
PN# 0066-50



Two J-Clips



Pressure Switch Harness



Switch Port Line  
PN# 0062-52

#8 Discharge Tube  
PN# 0066-53

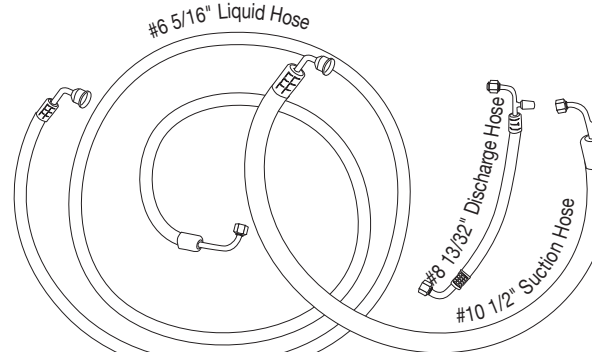
#6 Liquid Tube  
PN# 0062-50



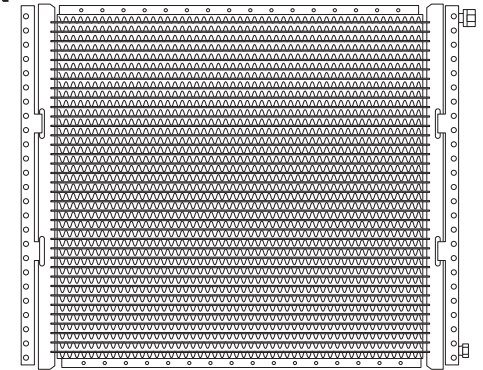
#6 Hose  
Clamp



#8 Hose  
Clamp



Three Refrigerant Hoses



Condenser  
PN# 11-1042



Four #10 X 1/4 Hex Head Screws



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



Four #1/4" 20 X 5/8" Bolts



Two #1/4" x 20 Flange Nuts

## ENGINE COMPARTMENT INSTRUCTIONS

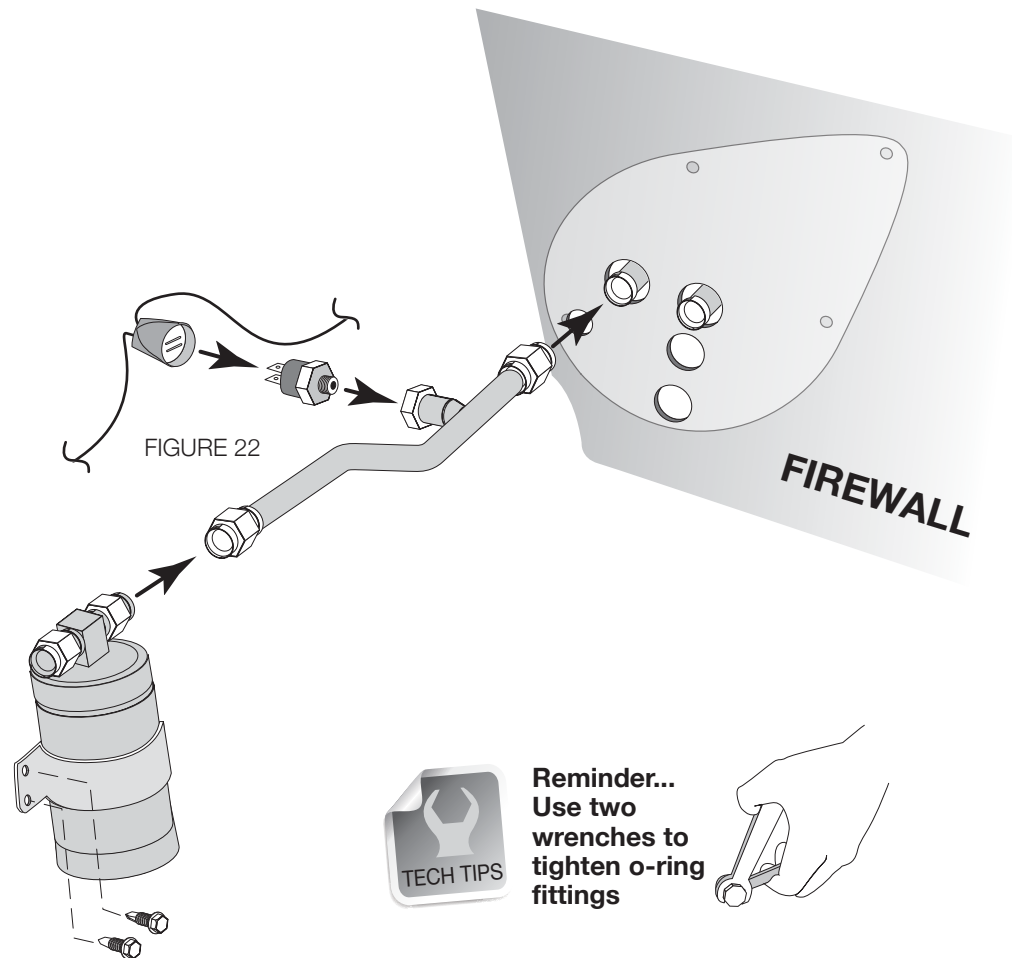
STEP ONE: IF YOU HAVE NOT ALREADY, DISCONNECT THE BATTERY.

STEP TWO: During the next installation section 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. Be sure to retain all the mounting screws – you'll reinstall these pieces in the exact reverse order with the OEM screws.

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.

STEP FOUR: Install the Switch Port Line at the tube coming thru the firewall. Install the high pressure switch into the port on the Switch port line. **NOTE:** Tighten connections at either end using supplied o-rings on both ends and a few drops of mineral oil to each o-ring. Go ahead and plug the pressure switch harness into the switch at this time (black electrical boot with two long white wires. See figure 22).

This will give you the correct location for installing the drier. Place the included drier bracket over the drier, and mount the drier to the inner fender using the included Tek-screws.

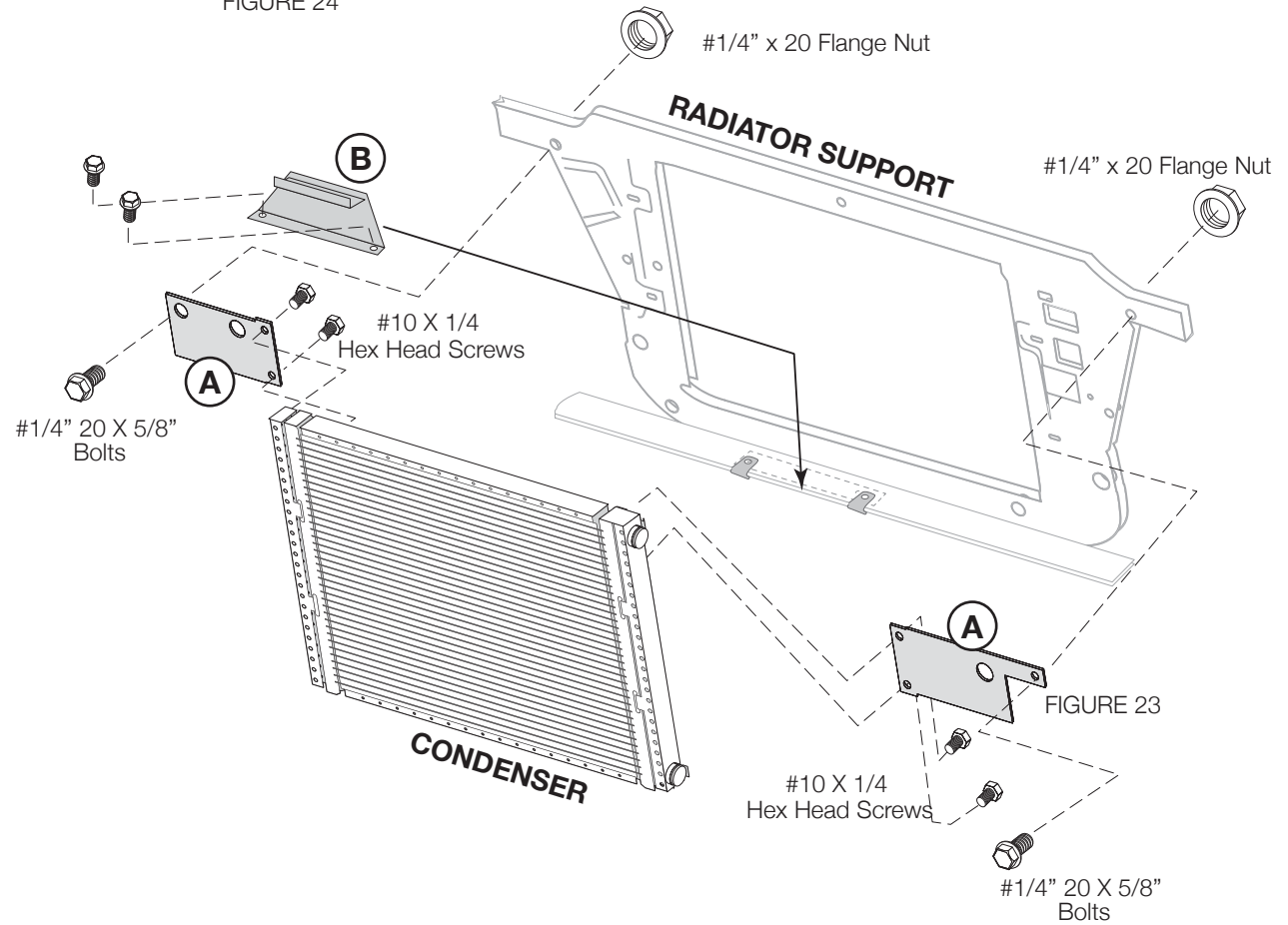


**STEP FIVE:** You can perform most of the following steps on a clean flat surface like a workbench. Lay the condenser down so that both hose connections are on the left side (the larger connection will be on top). Install the upper condenser brackets (A) using the included #10 x 1/4 hex screws. Both brackets are installed at the very top of the condenser, and from the backside. These brackets have holes that exactly correspond to bolts that are in the OEM radiator support (see figure 23).

**STEP SIX:** We've included a new lower condenser bracket (B). Locate the lower mounting bracket to bottom rail in front of the radiator. Attach two 1/4"-20 j-clip to the frame rail over the existing holes, and secure with two 1/4" x 20 x 5/8" hex screws. Peel the backing off of MDS03 insulation and attach to bracket channel.

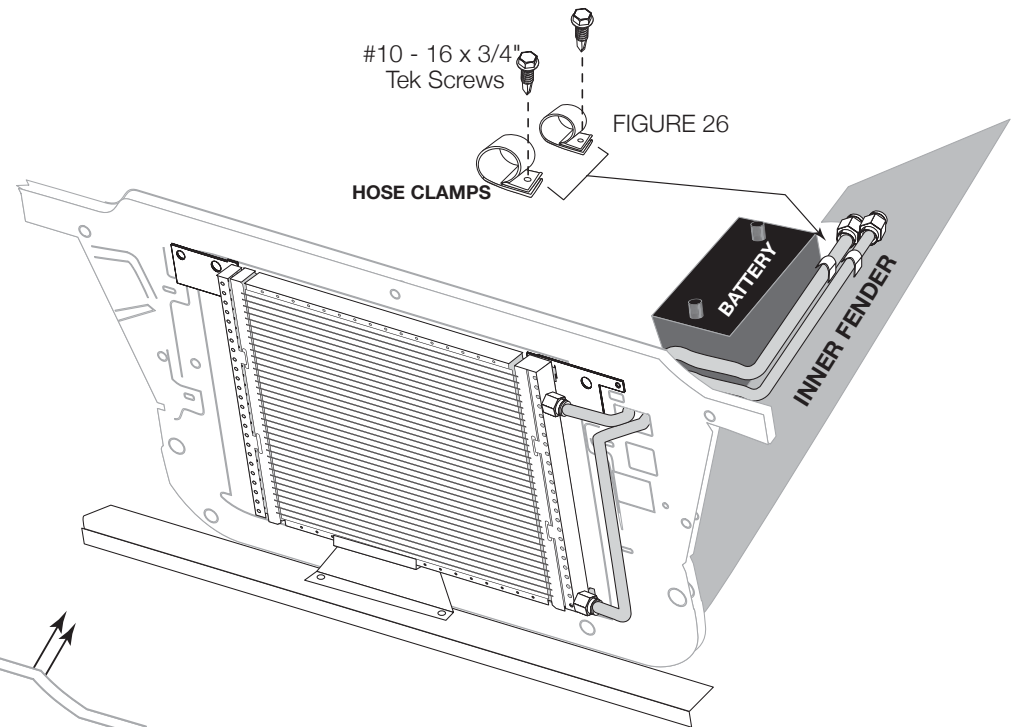
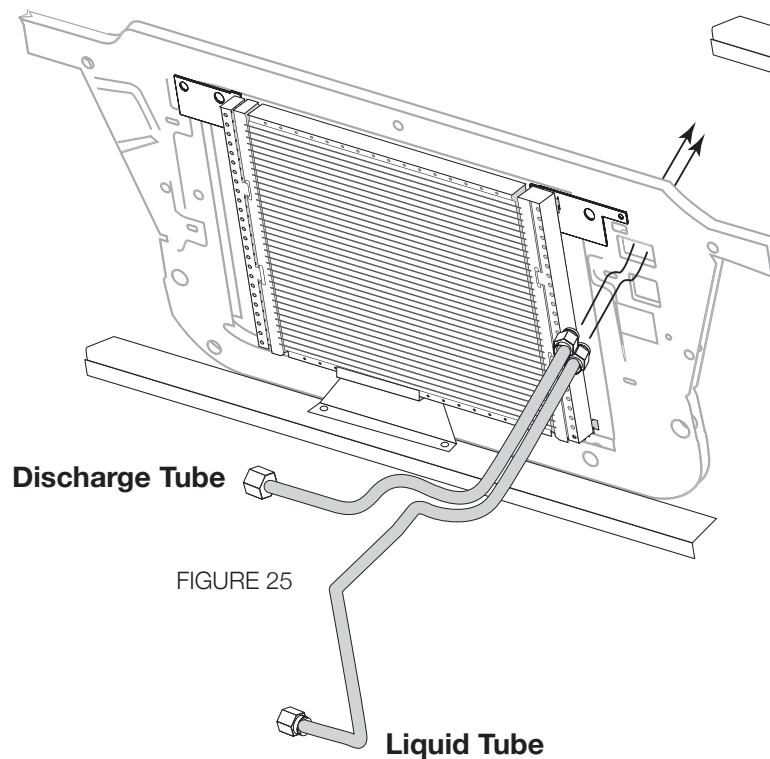
**STEP SEVEN:** Place the condenser into place and secure with a 1/4"-20 x 5/8" hex head screw and a 1/4 x 20 flange nut thru the existing holes in the radiator support on both sides (both brackets are secured in the same way).

FIGURE 24



**STEP EIGHT:** You can now jog the discharge and liquids lines thru the existing upper rectangular hole in the radiator support, and then secure to the condenser. The longer line will be attached to the lower port on the condenser. The shorter line is attached to the upper port on the condenser. Test fit the routing before securing the fittings (see figure 25). **NOTE:** Tighten connections at either end using supplied o-rings on both ends and a few drops of mineral oil to each o-ring.

We've included two hose clamps which you can use to secure the lines to the drivers side inner fender area. Secure clamps with two #10 x 3/4" Tek-screws (see figure 26).



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



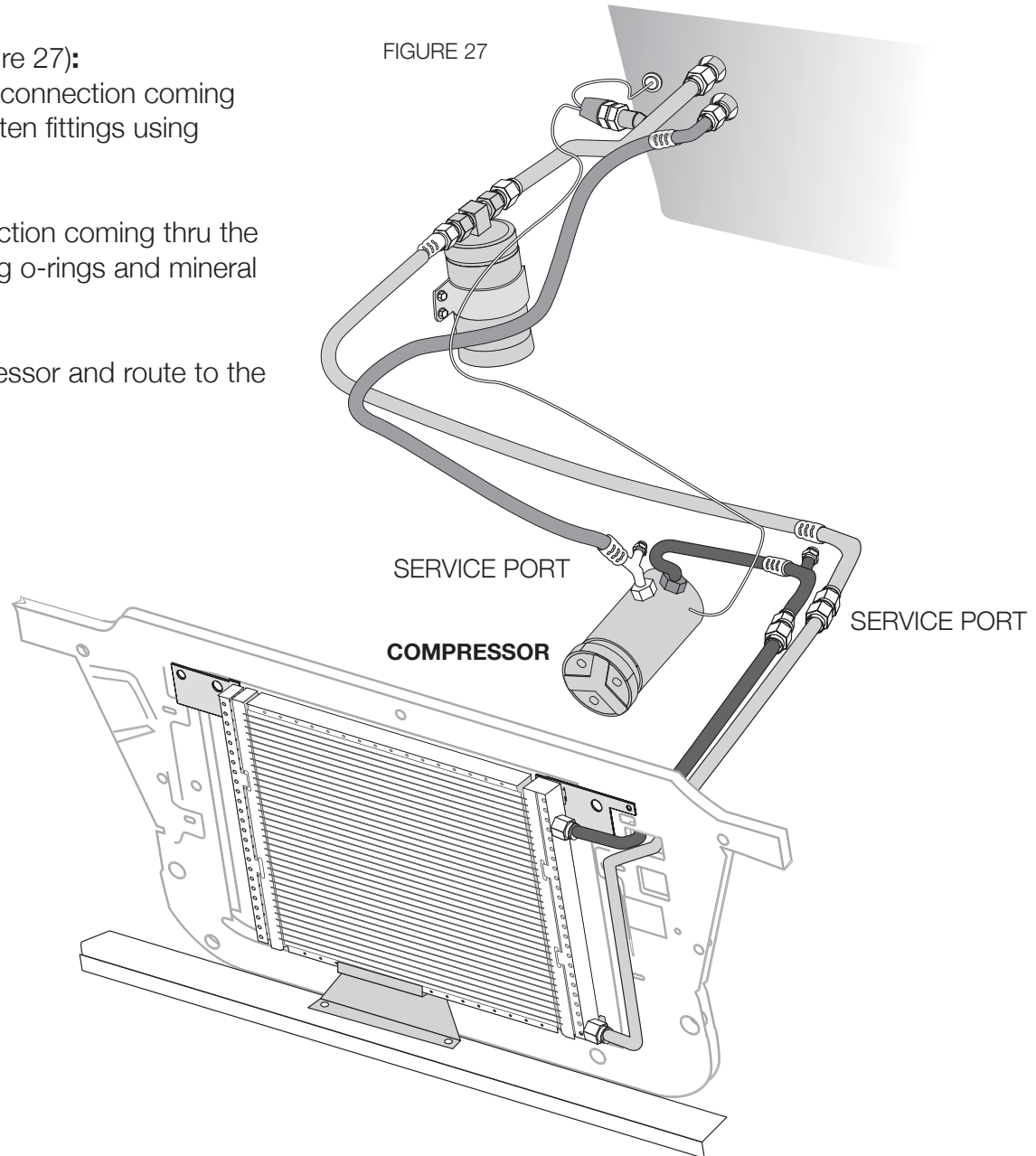
**STEP NINE: CONNECTING THE HOSES** (see figure 27):

- 1) Attach the #8 Discharge Hose (13/32") from the connection coming thru the support and route to the compressor. Tighten fittings using o-rings and mineral oil provided.
- 2) Attach the #6 liquid hose (5/16") from the connection coming thru the support and route to the drier. Tighten fittings using o-rings and mineral oil supplied in kit.
- 3) Attach the #10 suction hose (1/2") to the compressor and route to the last remaining connection coming thru the firewall. Tighten fittings using o-rings and mineral oil supplied in the kit.

**TIPS:** Route your lines so they will not interfere with moving parts or fall onto excessively hot components.

Double check all fittings before the initial servicing of your system. Loose fittings are the number one cause of leaks.

FIGURE 27





**STEP TEN:** Connecting the wires from the pressure switch will be done as follows, connect one wire to the connection on the compressor, and the other wire will be routed along with the liquid hose and connected to the blue lead you left unconnected during the interior installation. We've included a bullet and splice connector to make these connections, use a crimp tool to secure these properly. You must run the white switch wire thru the firewall and connect to the blue wire from the main harness.

**FINAL STEPS:** You can now complete this portion of the installation by reinstalling any of the exterior components you removed. Take a look around at your installation and check all fittings and bolts for tightness, check the heater hose clamps for tightness, and make sure nothing is routed in a way to obstruct any moving parts.

**You can refill the radiator and reconnect the battery at this time.**

**WAY TO GO! You've just completed the installation of your new A/C system.**

**The final step is to fully charge and test your new system.**

**On the next page you'll find specifications for proper final preparation for your A/C technician.**

# New A/C System Preparation... A MUST READ!

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

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



- 1) Your radiator/cooling system is an integral part of your new system. Please insure that you have a 50/50 mix of distilled water and antifreeze. The heater coil **MUST** be purged (cycle heater control valve) to make sure no water, without antifreeze, is in the heater coil before you charge the A/C system.
- 2) Evacuate the system for 45 minutes (minimum).
- 3) **Your new compressor MUST be hand-turned 15-20 revolutions before and after charging with liquid. Failure to do this may cause the reed valves to become damaged** (this damage is NOT covered by your warranty).
- 4) Your new system requires 134a refrigerant. It will require 1.5 lbs (or 24 oz).
- 5) Your new compressor comes charged with oil - NO additional oil is needed.
- 6) Insure that the new belt is tight.
- 7) **DO NOT CHARGE SYSTEM WITH LIQUID REFRIGERANT!**

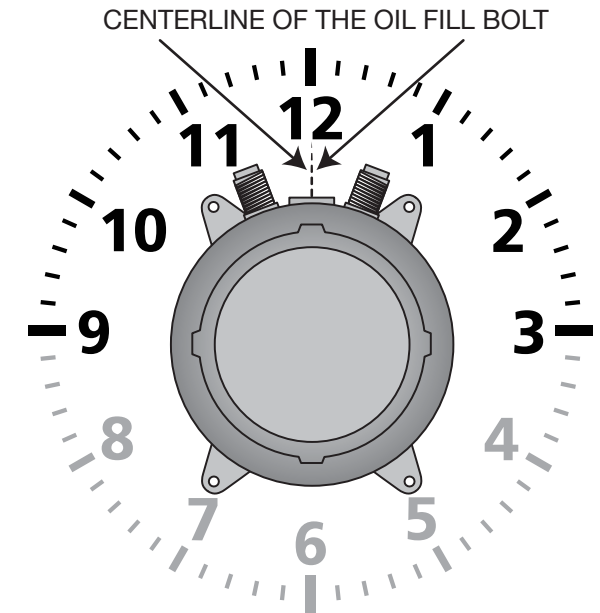
**RECOMMENDED TEST CONDITIONS:** (After system has been fully charged and tested for basic operation)

- Determine the temperature outside of the car
- Connect gauges or service equipment to high/low charging ports
- Place blower fan switch on medium
- Close all doors and windows on vehicle
- Place shop fan directly in front of condenser
- Run engine idle up to approx. 1500 rpm

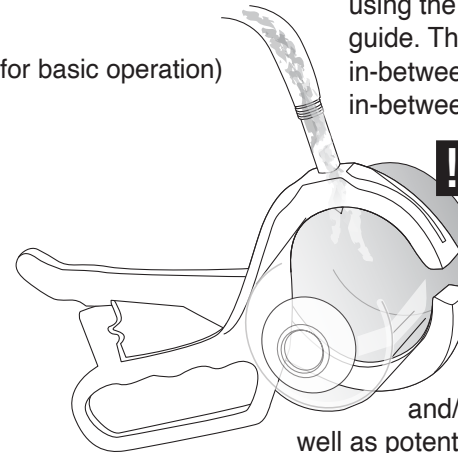
**ACCEPTABLE OPERATING PRESSURE RANGES:**

1. HIGH-SIDE PRESSURES (150-275 PSI)
2. LOW-SIDE PRESSURES (10-25 PSI in a steady state)

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



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



**Do NOT tilt, shake or turn refrigerant can upside-down OR use a charging station to install refrigerant while the engine is running.** Doing so will direct liquid refrigerant into the compressor piston

chamber, causing damage to reed valves and/or pistons and/or other components, as well as potentially seizing the compressor. Allow a minimum of 30 minutes for liquid to "boil off." You must hand turn the compressor hub (not the pulley) a minimum of 15 complete revolutions prior to starting the engine with the clutch engaged.

## 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

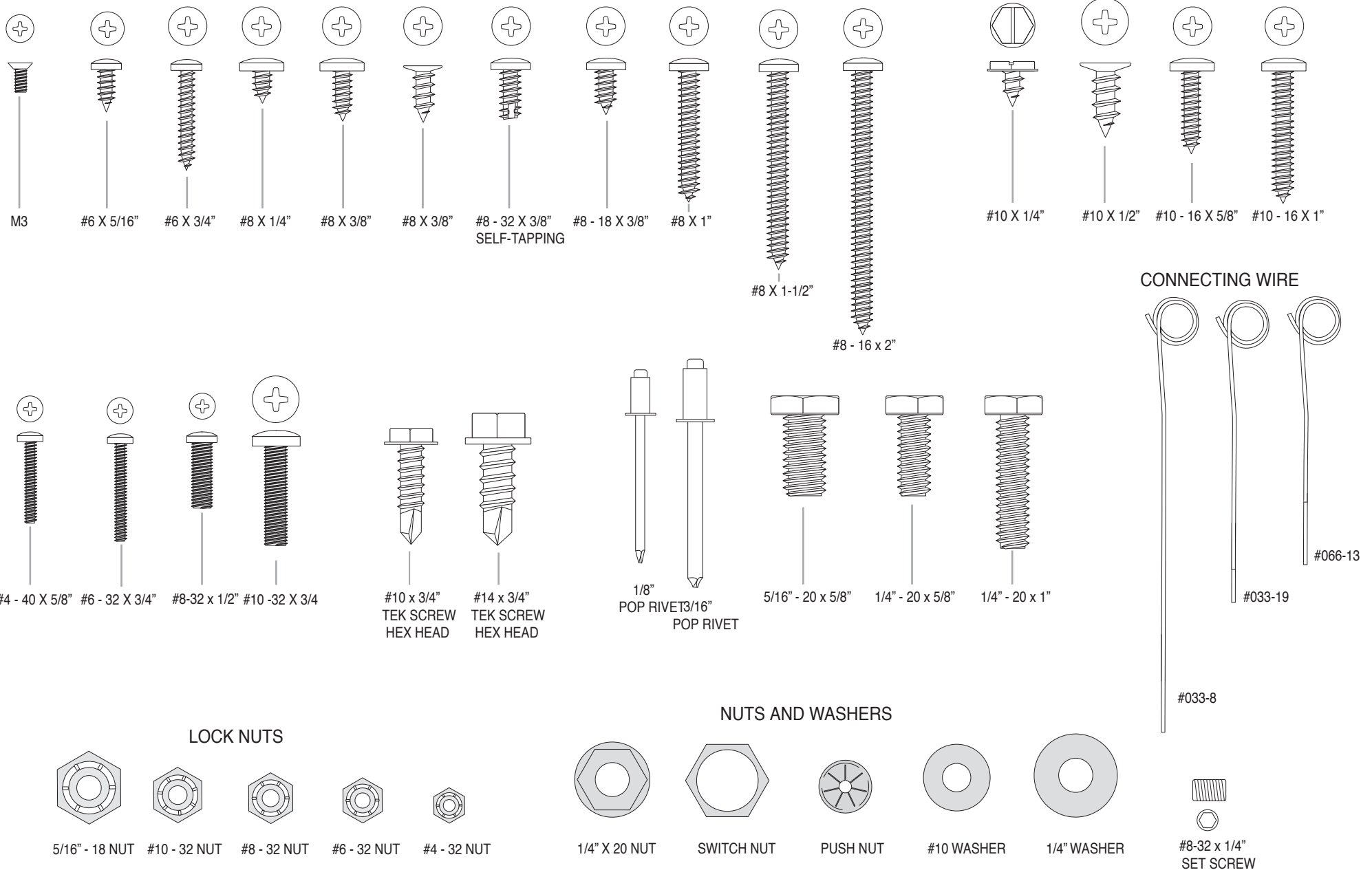
Get the technical support you want the moment you need it, with no wait times. Simply **SCAN** the **QR code** and be directly taken to our support section to troubleshoot all things A/C.



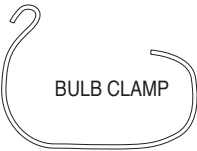
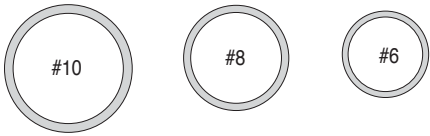


## Classic Auto Air Hardware Reference Guide

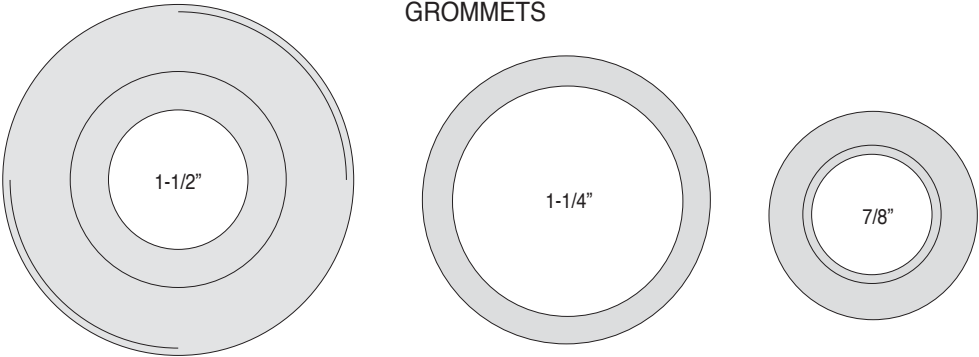
This is our basic line-up of hardware. No single kit will not contain all of these, but you can use this guide to match-up hardware for shape and size (all of these are actual size.)



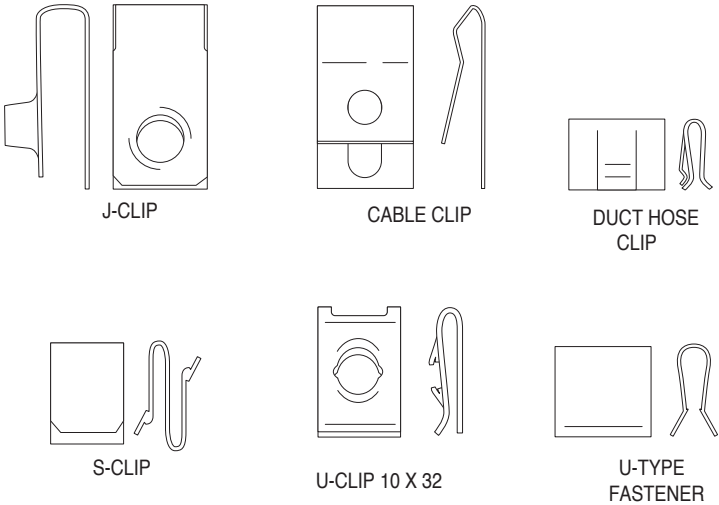
O-RINGS



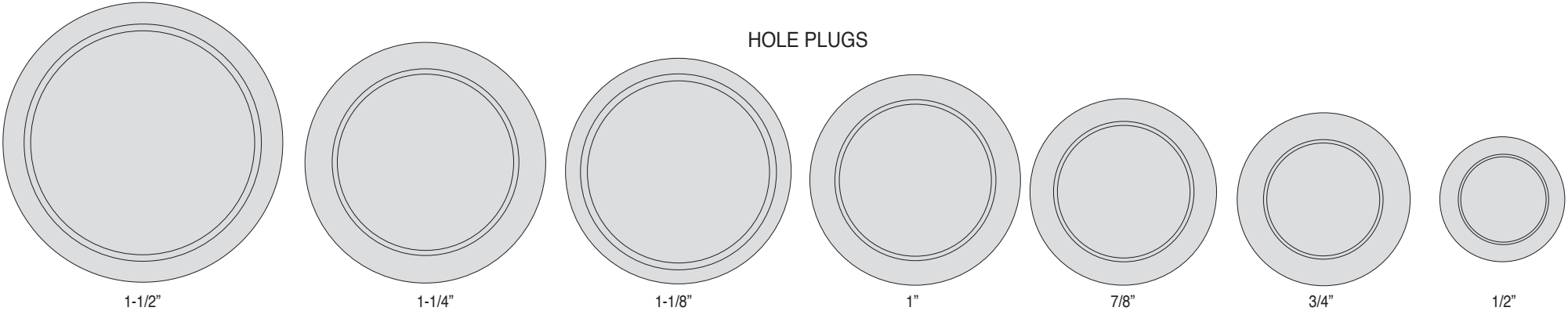
GROMMETS



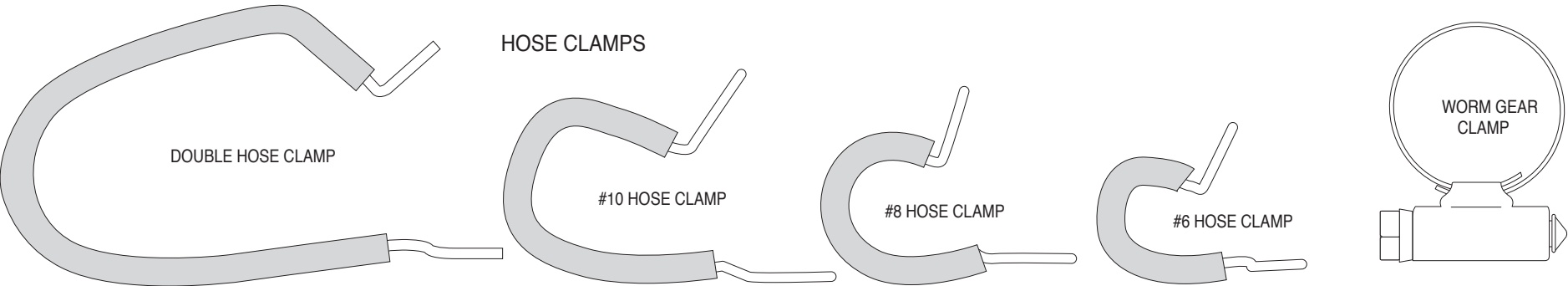
CLIPS



HOLE PLUGS



HOSE CLAMPS





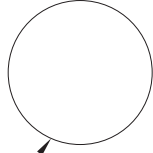


**IF YOU PRINTED THIS MANUAL  
PLEASE READ THIS...**  
Just as a cautionary step, please  
measure this box and make sure it  
is 1" x 1". Some copiers/printers  
may not print at 100% of actual size.

**THIS TEMPLATE IS USED  
FROM THE INSIDE OF THE CAR!**

**HEATER MOTOR  
HOLE**

O.E.M. HOLE



Note: bottom of template is parallel with floor pan



