

# **Installation Manual**

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## **Custom *Colder* The Climate Control System**

DOCUMENT #1-1090

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# ***Congratulations...***

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

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 During the installation you might find the opportunity to repair or upgrade non-working or out of date components.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

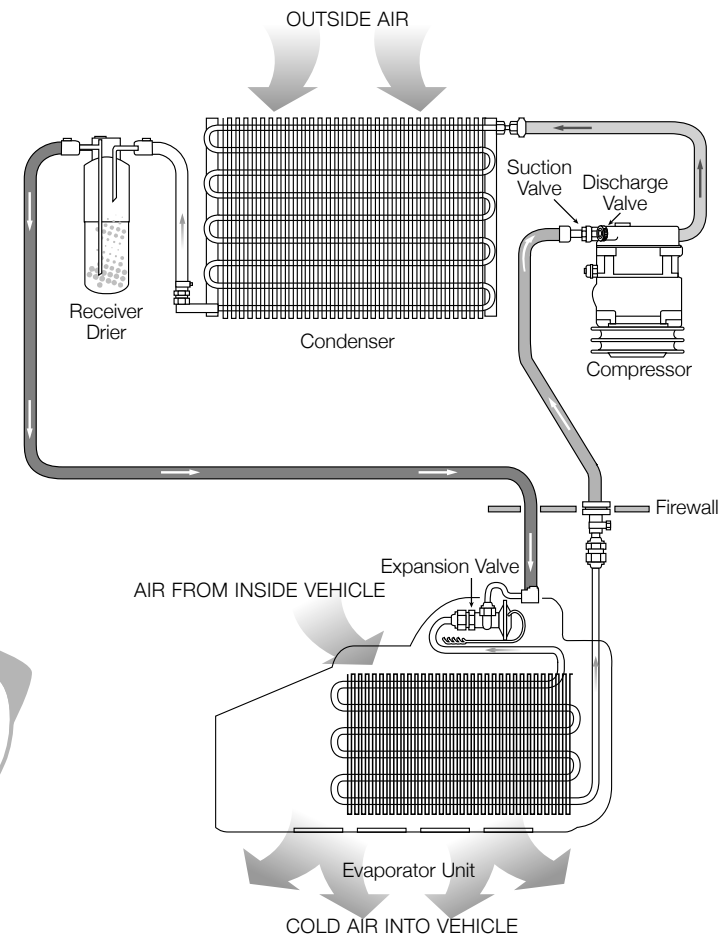
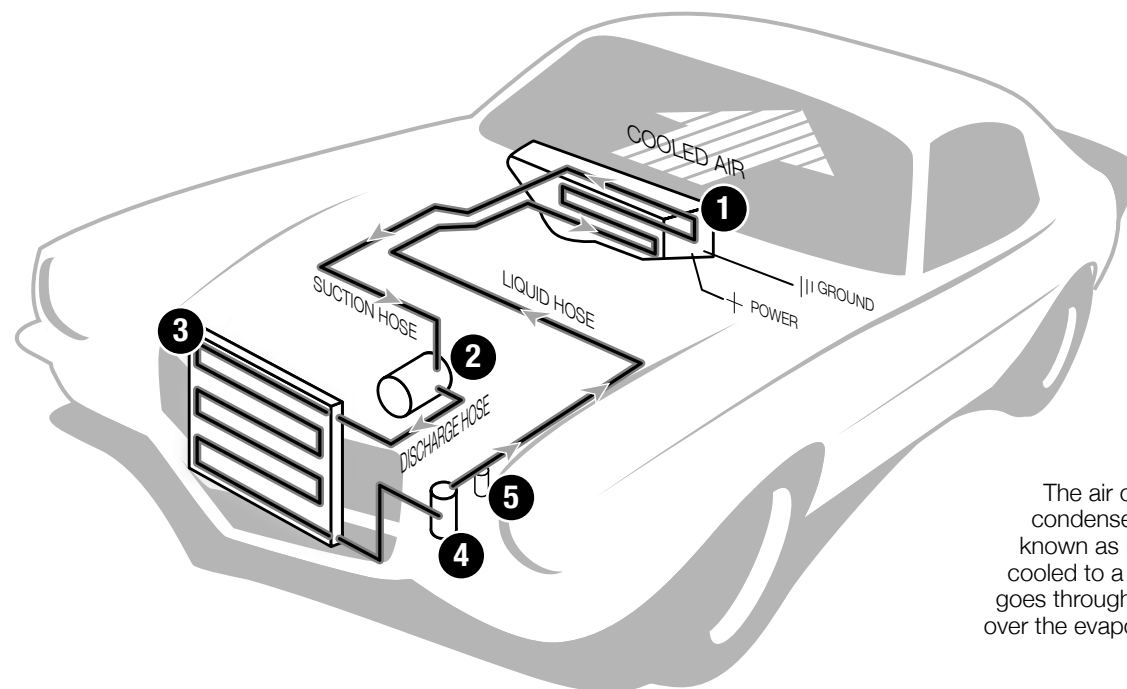
## Procedures, During Installation:

- ☐ 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....

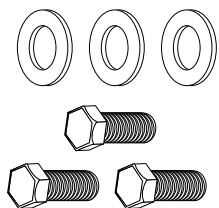
- 1 Evaporator with Blower Fan** In order to remove the heat from the air in the vehicle, the A/C evaporator allows the refrigerant to absorb the heat from the air passing over it. The blower fan moves cool air out into the car interior.
- 2 Compressor** The compressor pumps and circulates the refrigerant 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.



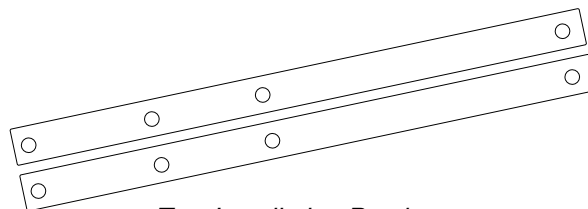
The air conditioning system in your car is comprised of a compressor, condenser, expansion valve, receiver/drier, and evaporator. Refrigerant (also known as Freon) is compressed in the compressor. In the condenser, gas is cooled to a liquid state and travels to the expansion valve. As the liquid refrigerant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

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

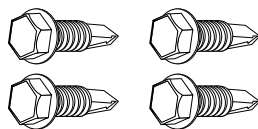
You will use all of these parts and hardware during the next series of installation steps.



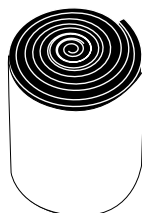
Three 1/4 - #20 x 1" Bolts  
and Washers



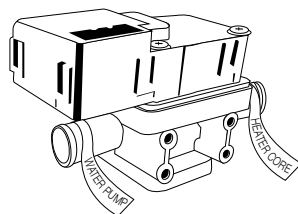
Two Installation Brackets



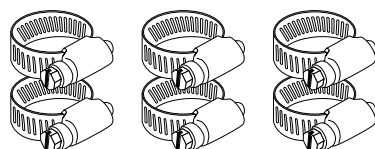
Four #10 - 16 x 3/4" Tek Screws



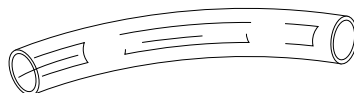
Refrigerant Tape



Electronic Water Control Valve

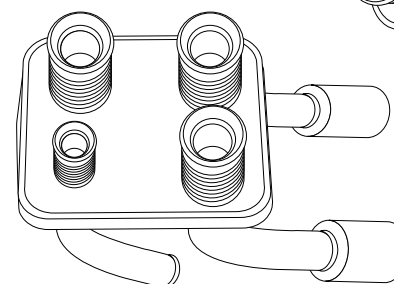
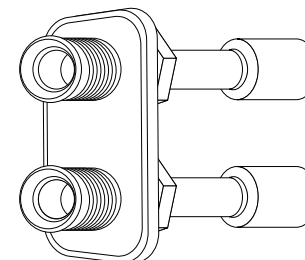


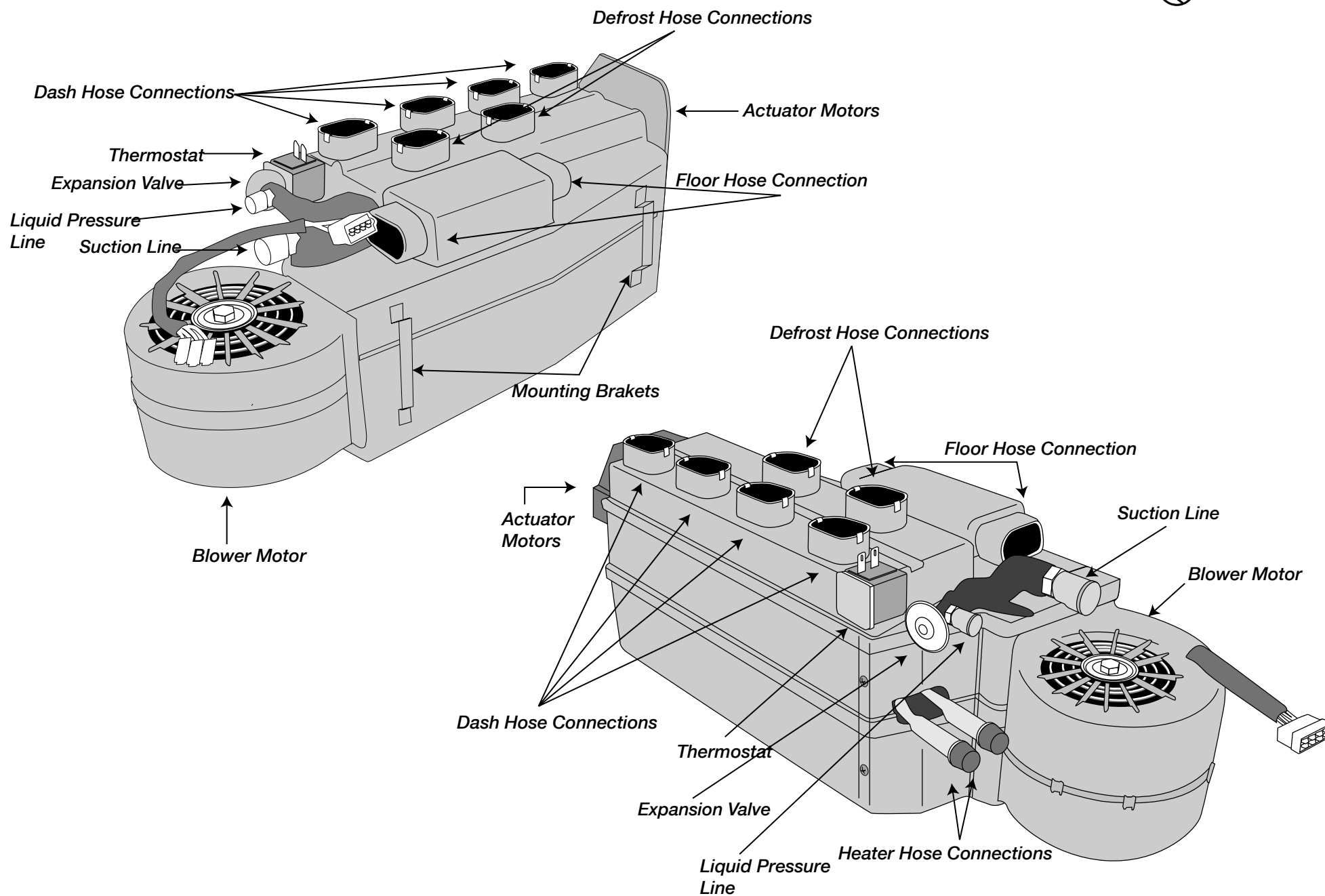
Six Worm Gear Clamps



Clear Plastic Drain Tube

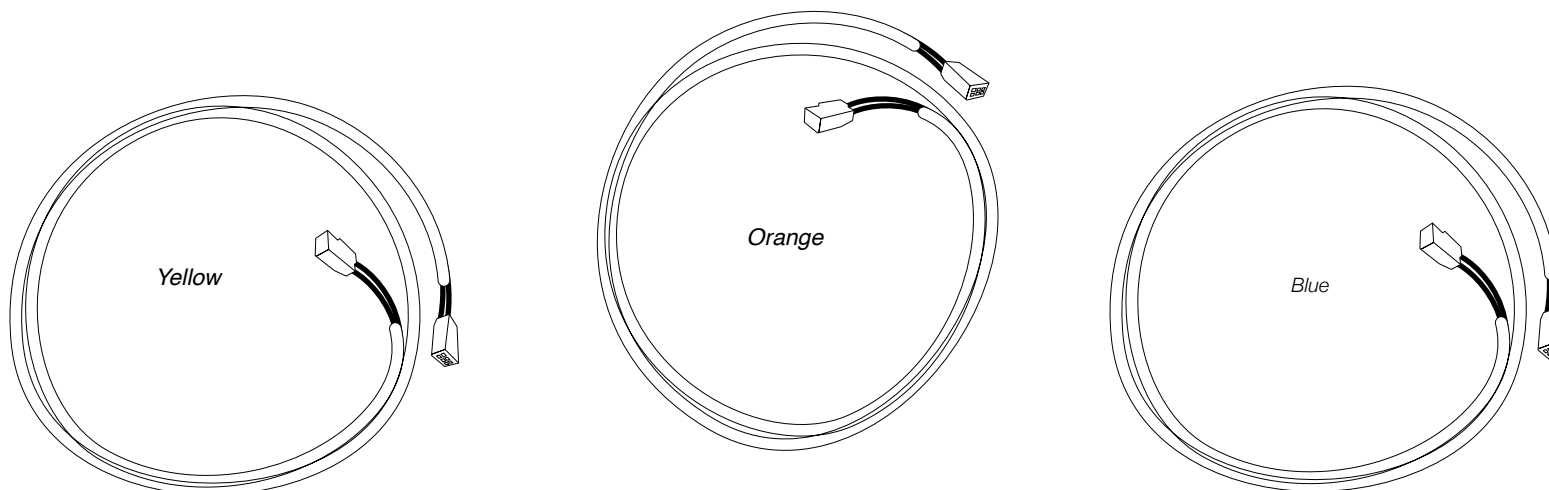
If you purchased these  
OPTIONAL bulkhead plates they  
will be located in unit box.



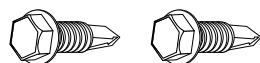


## THESE ARE THE PARTS YOU WILL FIND IN BAG KIT B

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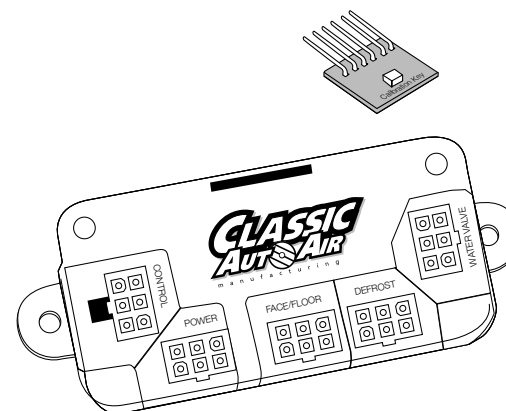


**EZ** Harness System



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

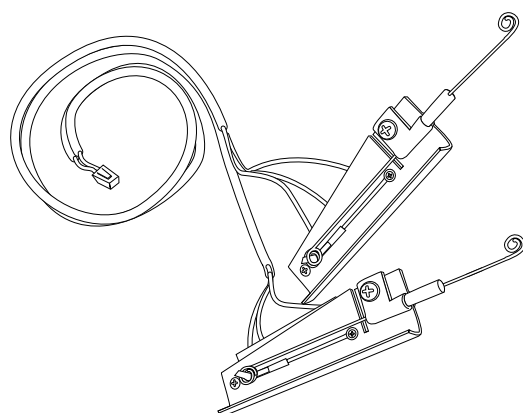
The ECU will be attached for shipping purposes to the body of the main unit. You will need to detach and mount near your evaporator unit.



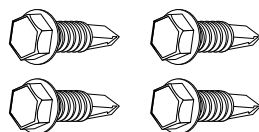
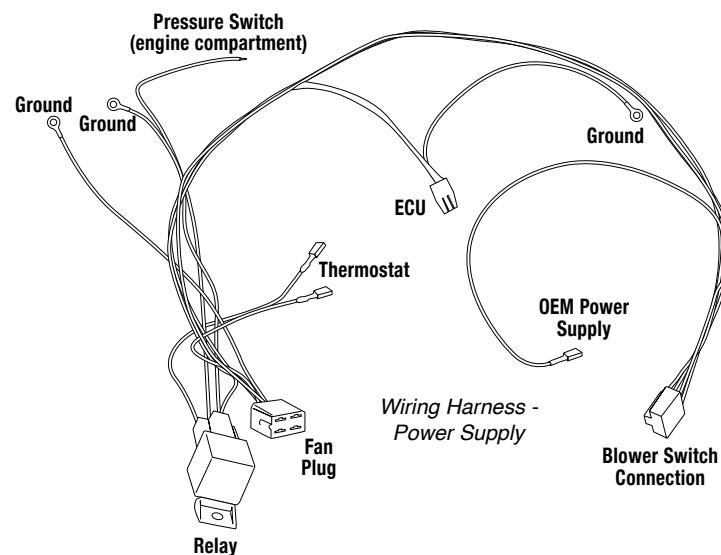


## CONTROLS

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



**EZ** Cable Integrators



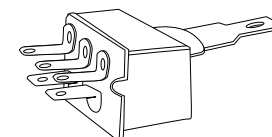
Four #10 - 16 x 3/4" Tek Screws



Two - Cable Clips



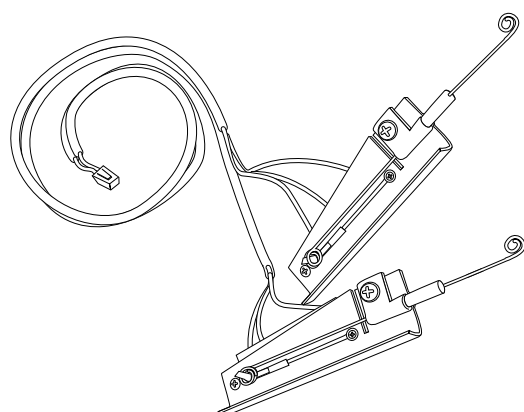
Blower Switch Knob



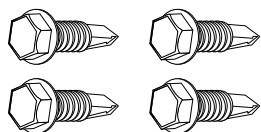
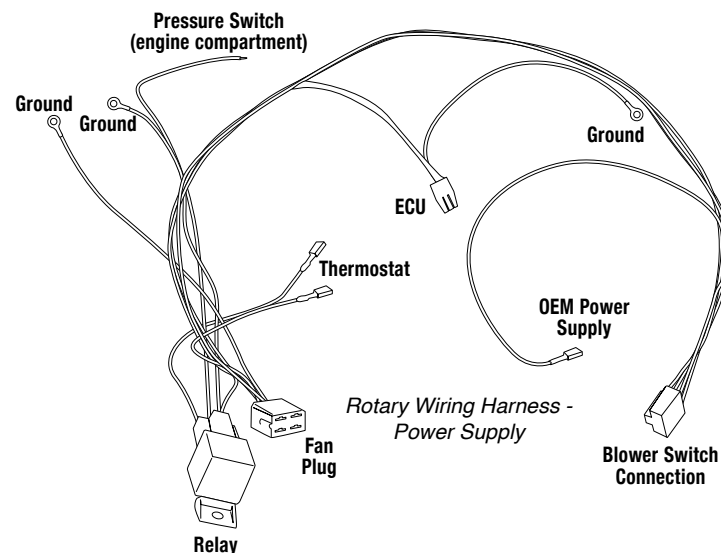
Blower Switch

## CONTROLS

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



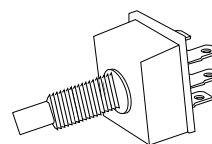
**EZ** Cable Integrators



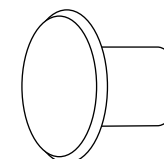
Four #10 - 16 x 3/4" Tek Screws



Two - Cable Clips



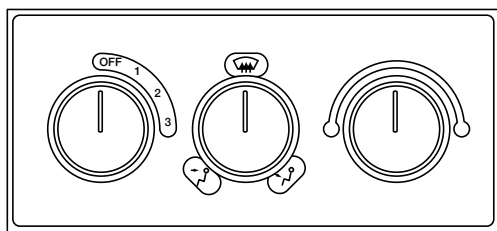
Rotary Blower Switch



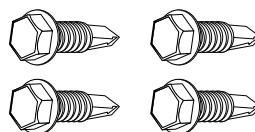
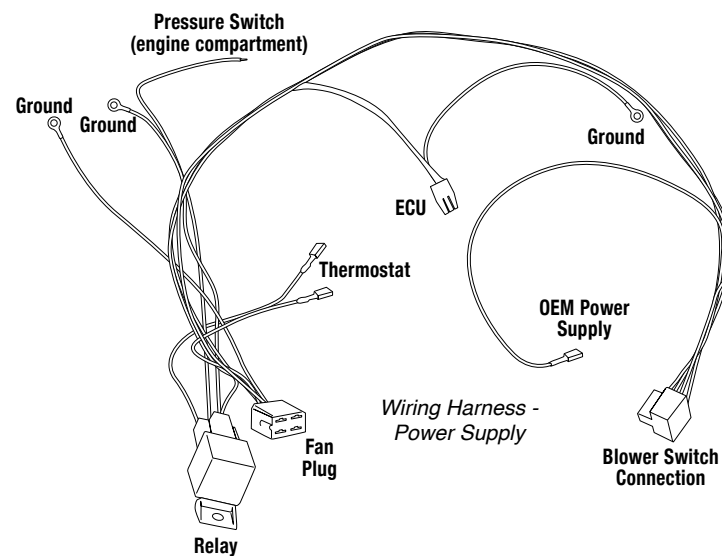
Rotary Blower Switch Knob

## CONTROLS

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

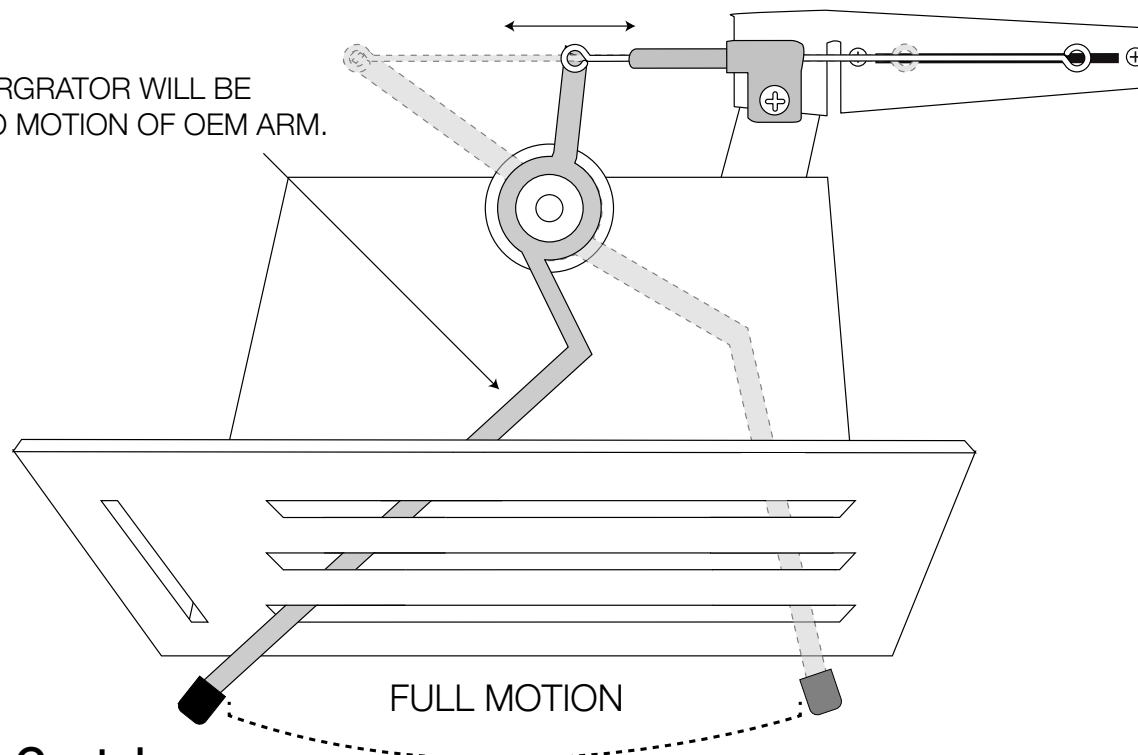


*Billet Controls*



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

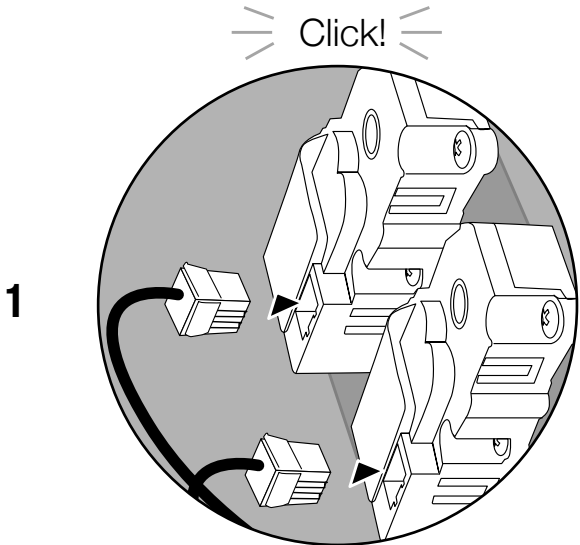
EZ CABLE INTEGRATOR WILL BE  
CALIBRATED TO MOTION OF OEM ARM.



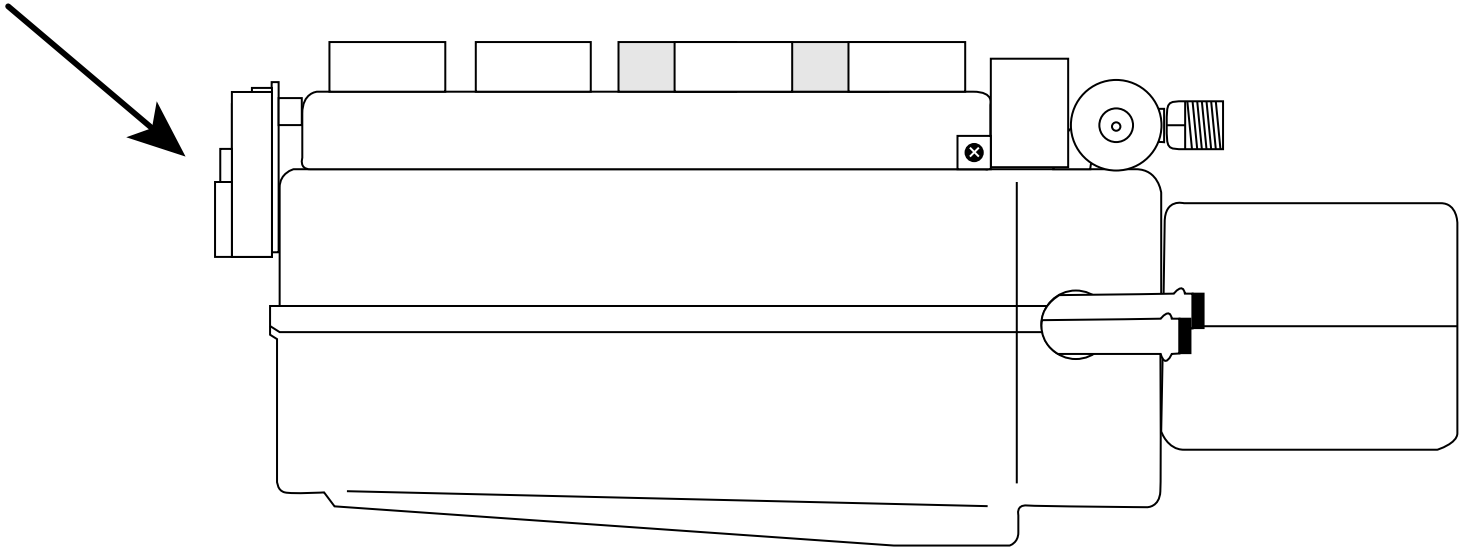
### Adapting to OEM Controls:

If you specified our EZ Wire Cable system, we've included all the parts necessary for you to retain your OEM controls and adapt to your new A/C system. In order to do this, you'll need to remove your OEM temperature control head and move it to a workbench and follow thru the steps listed below. Because there is such a wide variety of controls, these steps may have to be modified to adapt your particular controls. Adhere to some simple rules and you'll be done in a short amount of time.

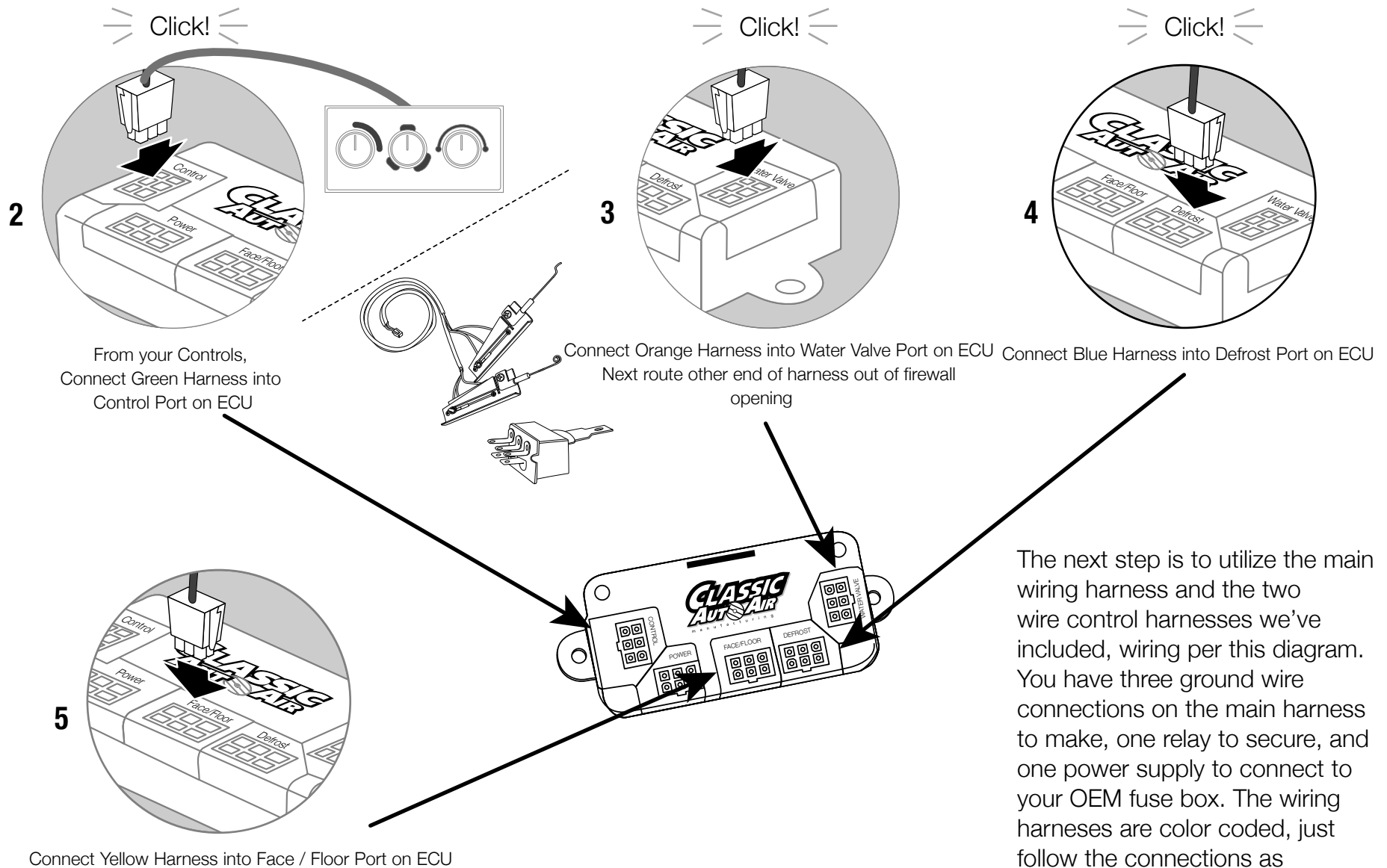
- Step 1: Remove the OEM blower switch and discard. Attach the included blower switch to your control head in place of the OEM switch. This may require some fabrication.
- Step 2: Looking at your OEM controls, identify which lever you want to use to control TEMPERATURE and which to control the MODE. Then from the back of the control head, mark the appropriate levers with masking tape and their intended function (i.e. mode and temp).
- Step 3: Attach the included cable clips to each adaptor as shown in. You'll use these cable adaptors to secure the integrators to your OEM control head, or you may have to attach the integrators in another manner.
- Step 4: Position our EZ Wire Cable Adaptors in a manner that the wire-ends can be secured to the appropriate lever ends, and **when you move the OEM levers from one extreme to the other that the wire can move the actuators in a smooth and straight manner**. The most important aspect is that your OEM levers, which ever two you choose to use, move their entire possible distance of travel (when viewed from the front of the control head).

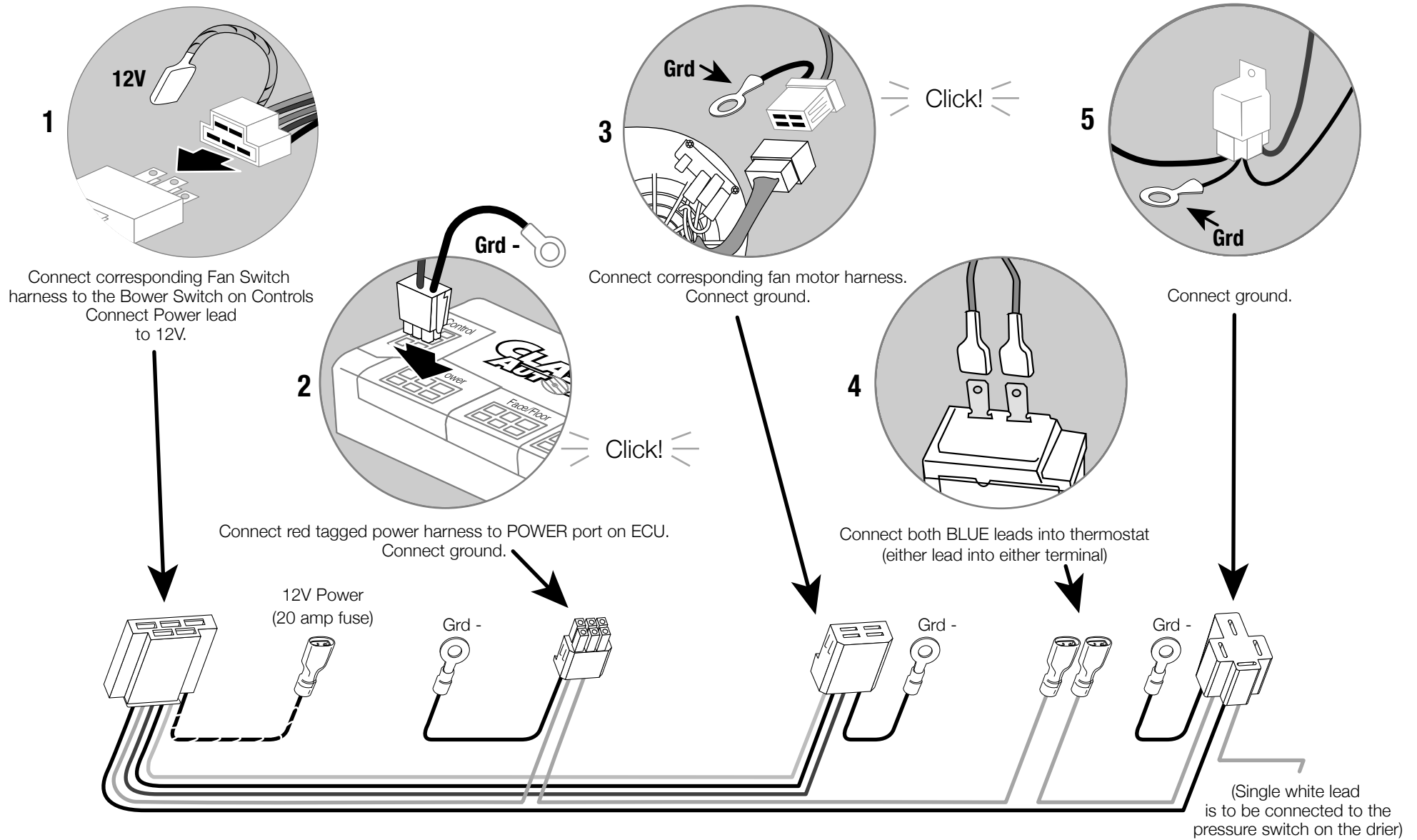


Connect Yellow Harness into Defrost/Heat Servo Motor  
Connect Blue Harness into Dash Servo Motor

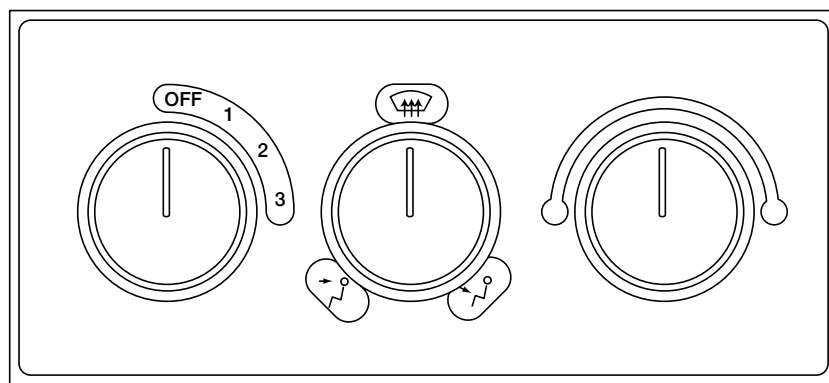


## Bench Calibration Steps 2 thru 5





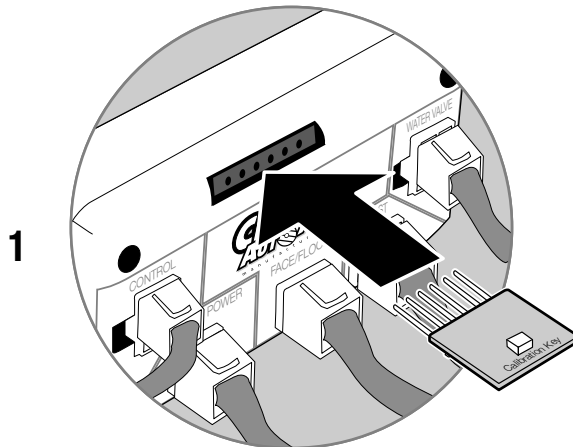
# ATTENTION



**THE FOLLOWING BENCH CALIBRATION & OPERATION PAGES  
ARE FOR BILLET AND SPECIALTY CONTROLS.**

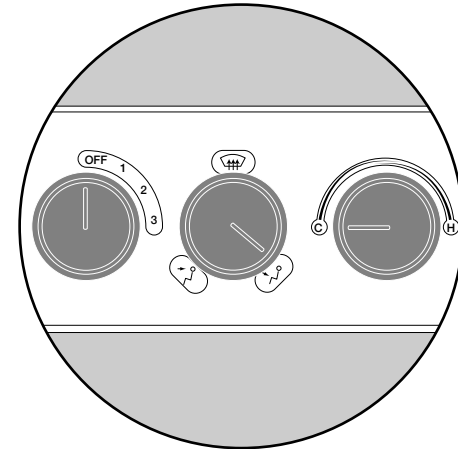
**IF YOU PURCHASED A EZ CABLE INTEGRATOR SET UP  
PLEASE SKIP TO PAGES 20-23.**





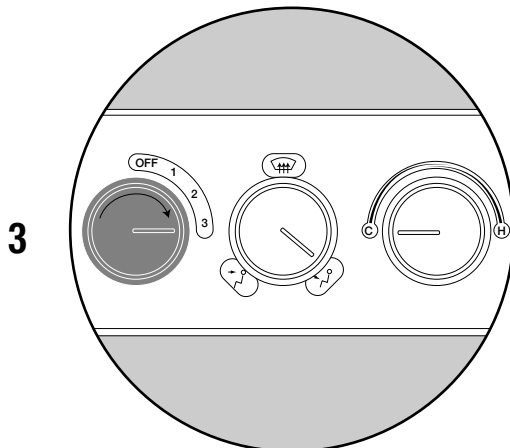
Insert Calibration Key as shown (LED side up) into 6-pin connection in ECU

2



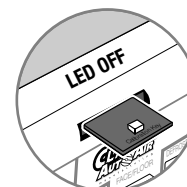
Start by positioning the knobs as shown:

Fan: Off  
Mode: Floor  
Temp: Cold



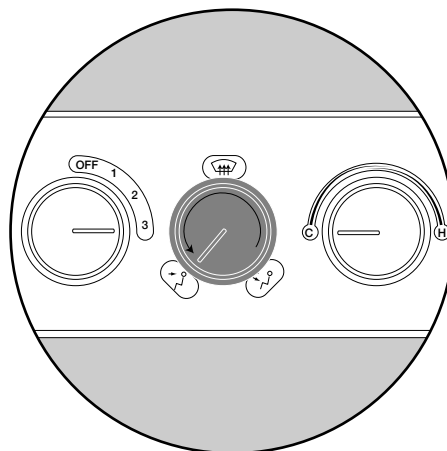
Move Fan Knob to High...

YOU WILL SEE...

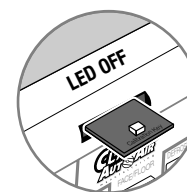


**4**

Move MODE knob to DASH  
in one motion

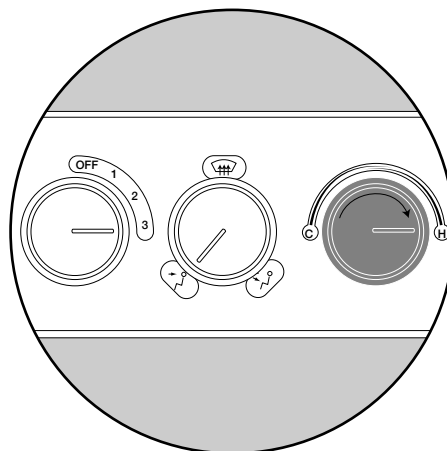


AFTER YOU MOVE THE KNOB YOU WILL SEE...

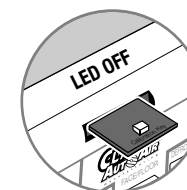


**5**

Move TEMP knob to HOT  
in one motion

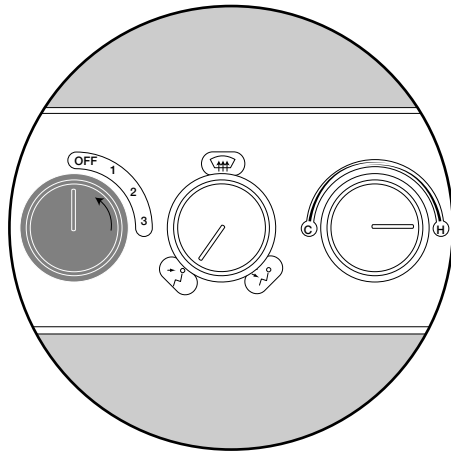
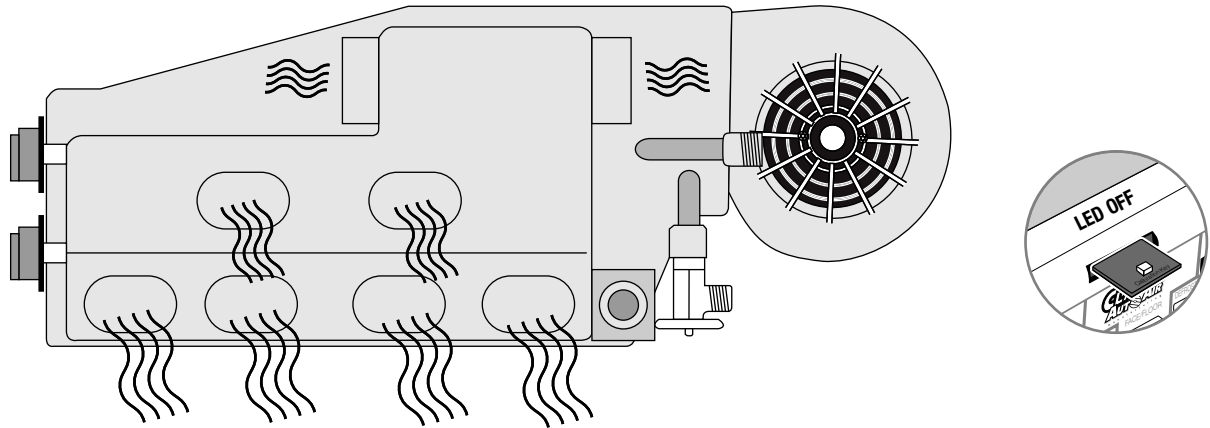


AFTER YOU MOVE THE KNOB YOU WILL SEE...



You will be able to hear the internal door(s) move back and forth and feel air coming out of the outlets

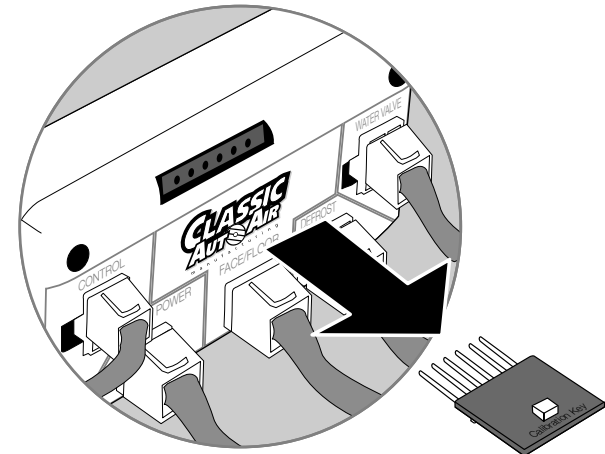
6



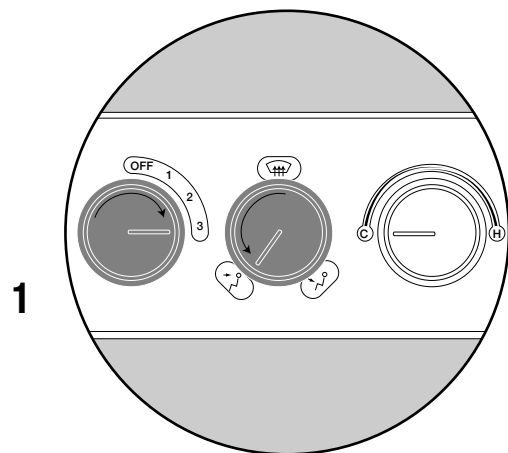
7

Move FAN knob to OFF

8

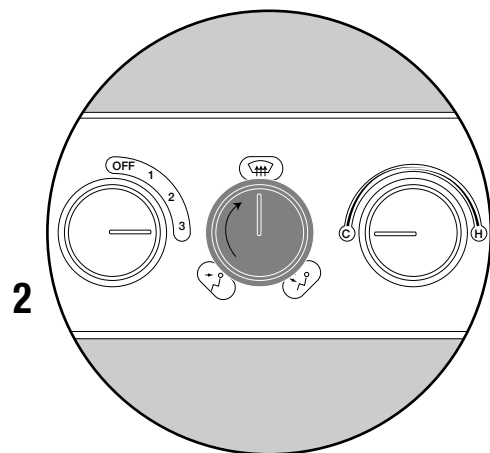
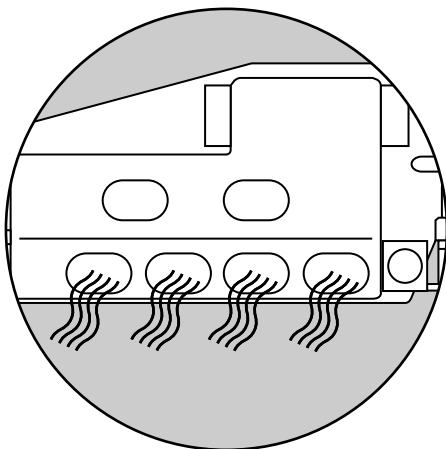


REMOVE CALIBRATION KEY FROM ECU AND  
STORE IN A SAFE PLACE



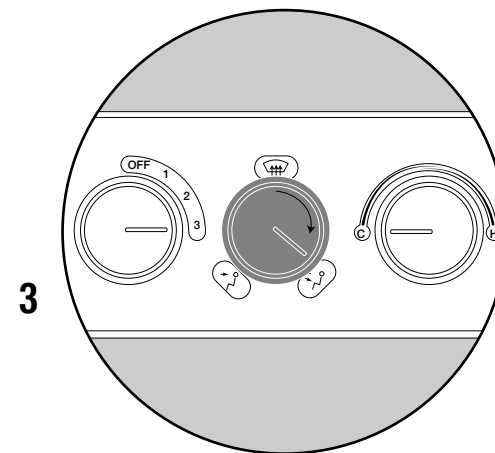
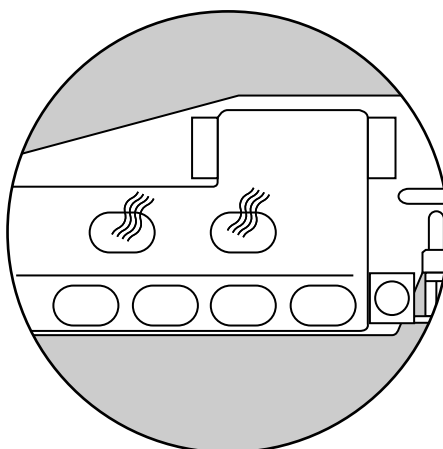
Move FAN knob to HIGH  
Move MODE knob to DASH

AIR OUT OF DASH VENTS



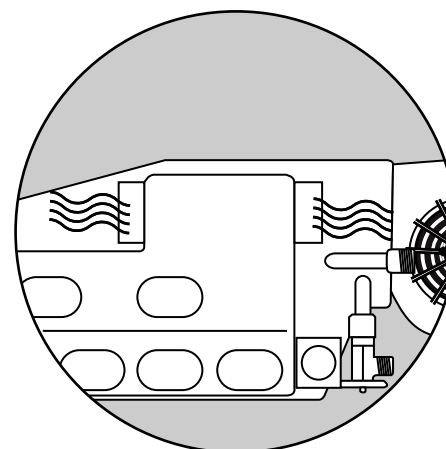
Move MODE knob to DEFROST

AIR OUT OF DEFROST VENTS



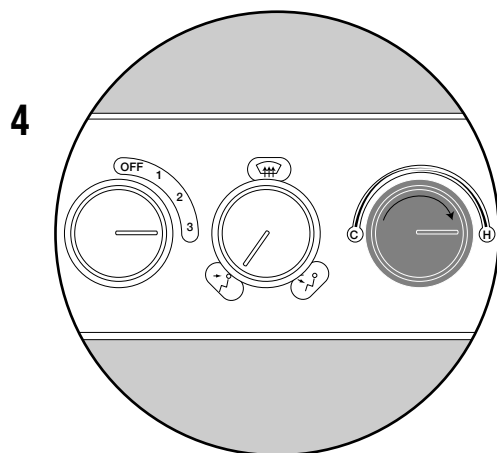
Move MODE knob to FLOOR

AIR OUT OF FLOOR

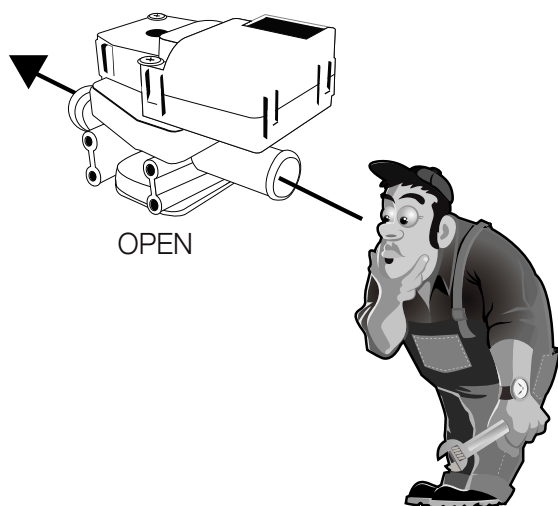


# BENCH CALIBRATION & OPERATION

## • Function Test, Steps 4 and 5

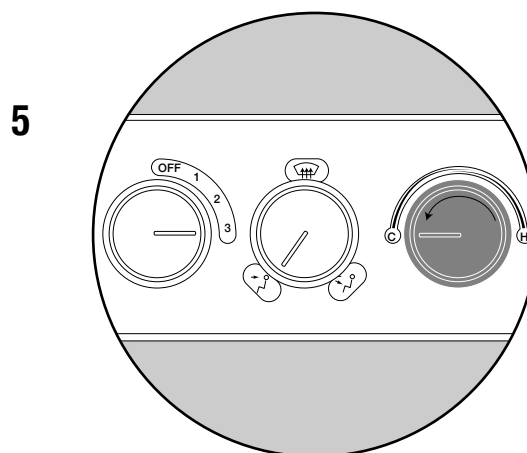


Move TEMP knob to HOT

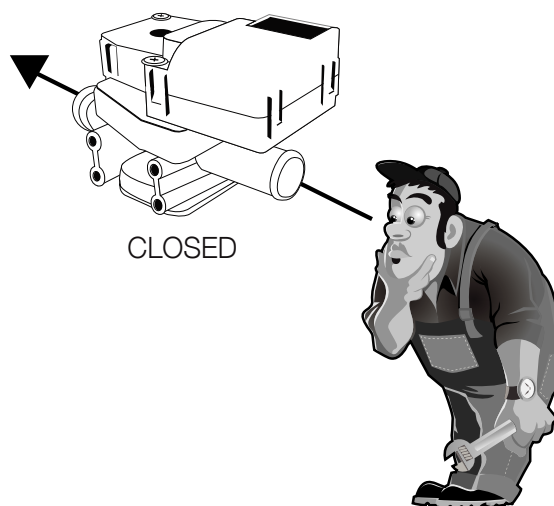


OPEN

You will be able to see through water valve passage



Move TEMP knob to COLD



CLOSED

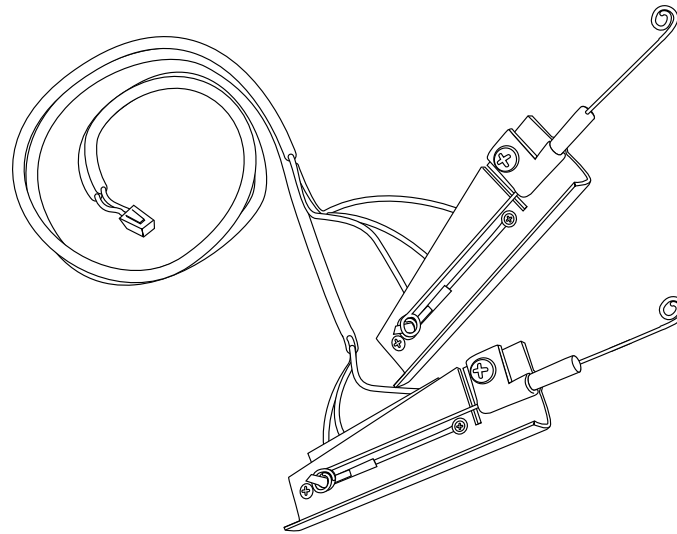
You will NOT be able to see through water valve passage

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.**

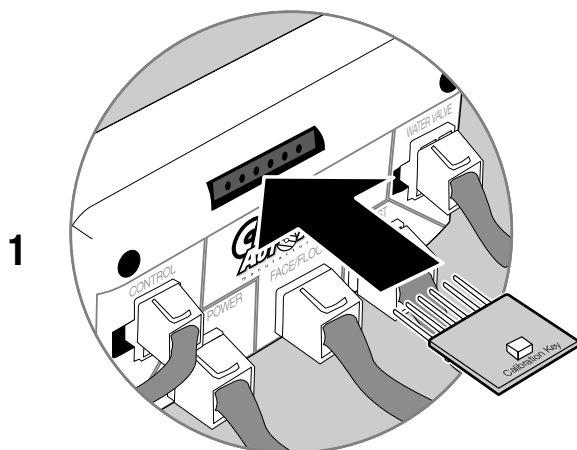
# ATTENTION



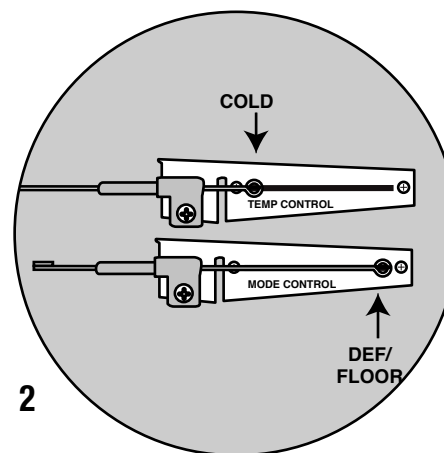
**THE FOLLOWING BENCH CALIBRATION & OPERATION  
IS FOR EZ CABLE INTEGRATORS ONLY.**

# BENCH CALIBRATION & OPERATION

## • Calibration, Steps 1 thru 3

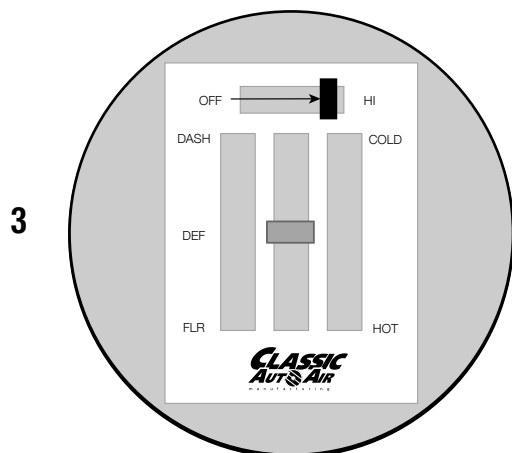
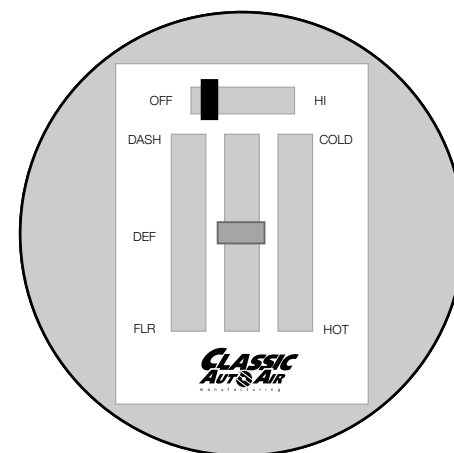


Insert Calibration Key as shown (LED side up) into 6-pin connection in ECU



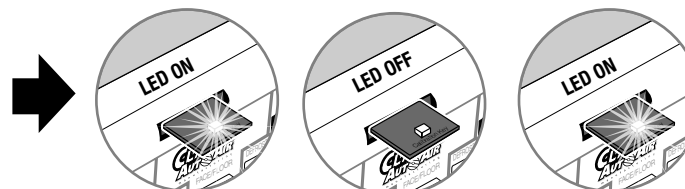
Start by positioning the knobs as shown:

Fan: Off  
Mode: Floor  
Temp: Cold



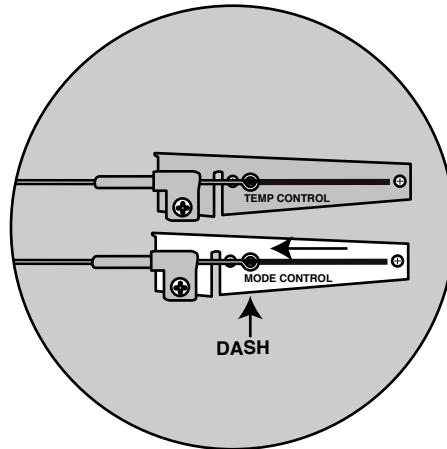
Move Fan Lever to High...

YOU WILL SEE...

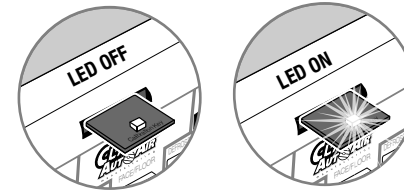


4

Move MODE arm to DASH  
in one motion

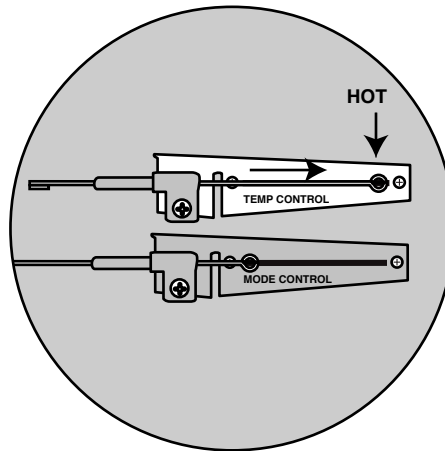


AFTER YOU MOVE THE KNOB YOU WILL SEE...

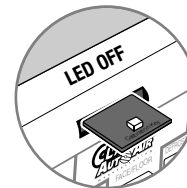


5

Move TEMP arm to HOT  
in one motion



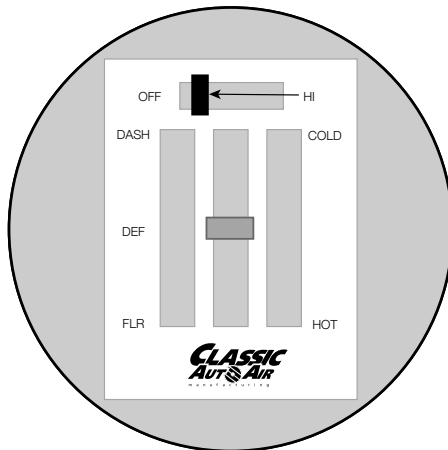
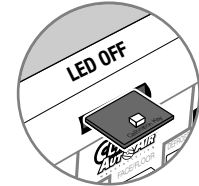
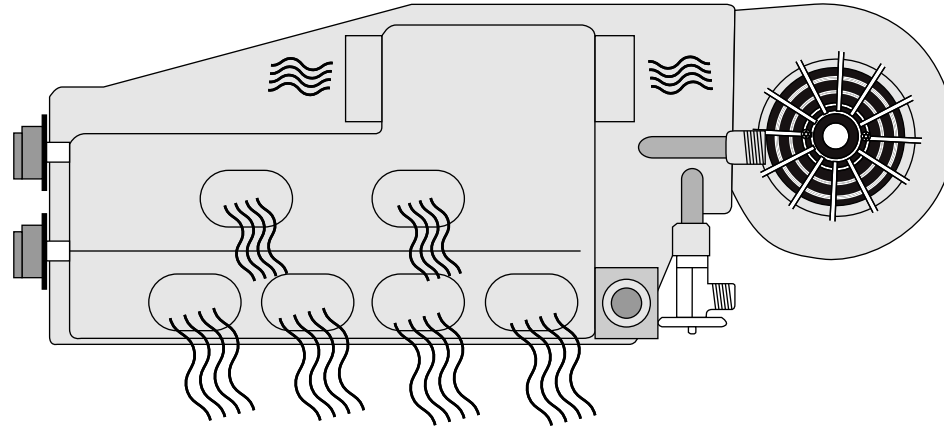
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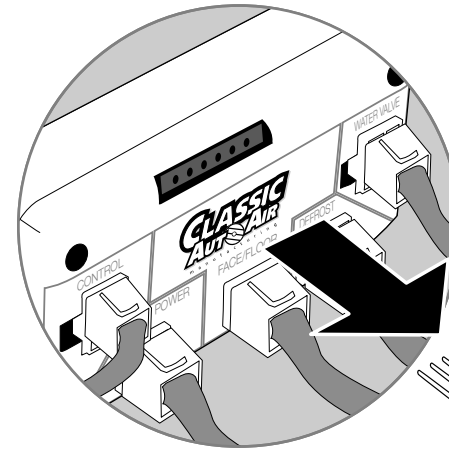
6



7

Move FAN lever to OFF

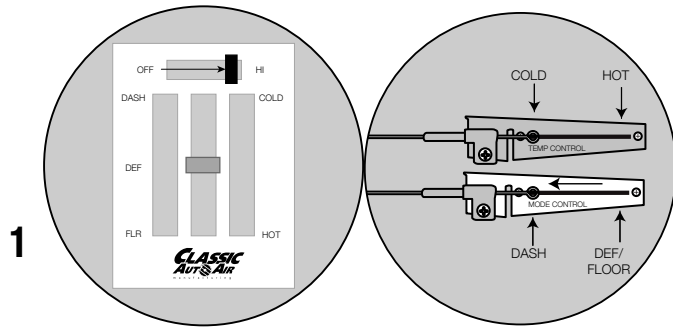
8



REMOVE CALIBRATION KEY FROM ECU AND  
STORE IN A SAFE PLACE

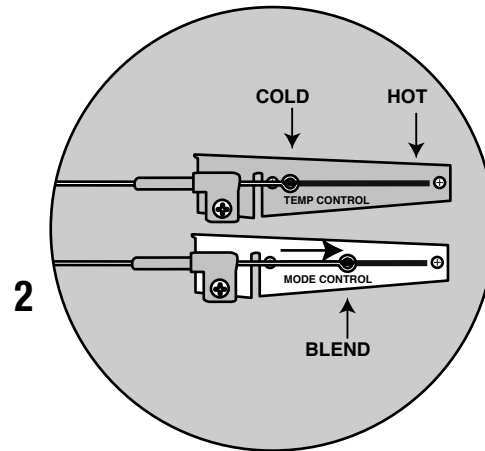
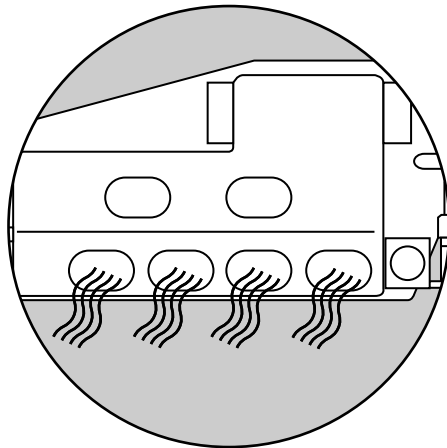
# BENCH CALIBRATION & OPERATION

## • Function Test, Steps 1 thru 3



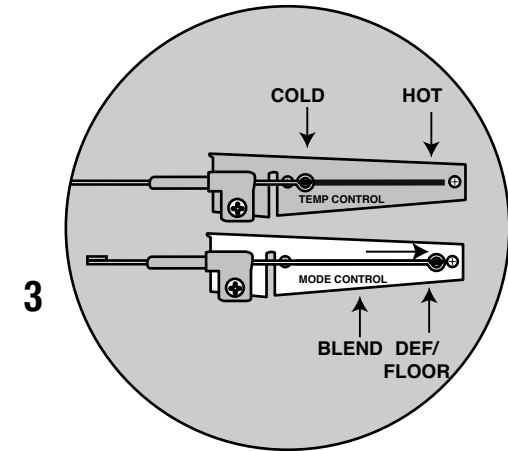
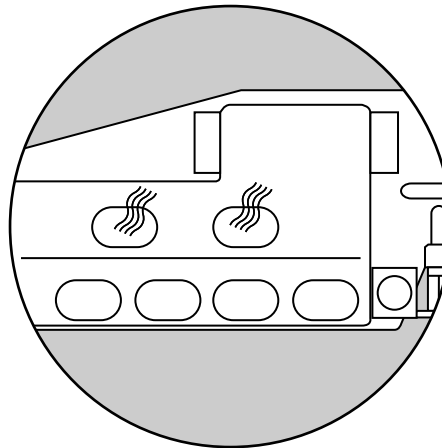
Move FAN lever to HIGH  
Move MODE arm to DASH

AIR OUT OF DASH VENTS



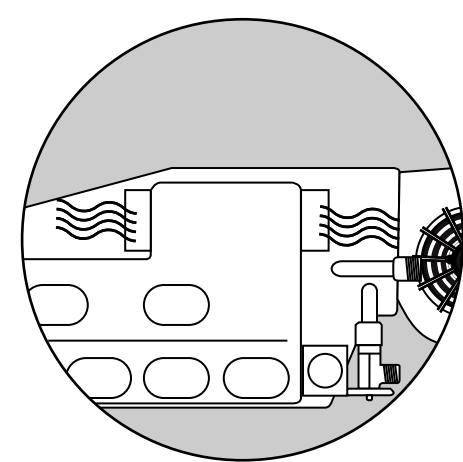
Move MODE arm to DEFROST

AIR OUT OF DEFROST VENTS



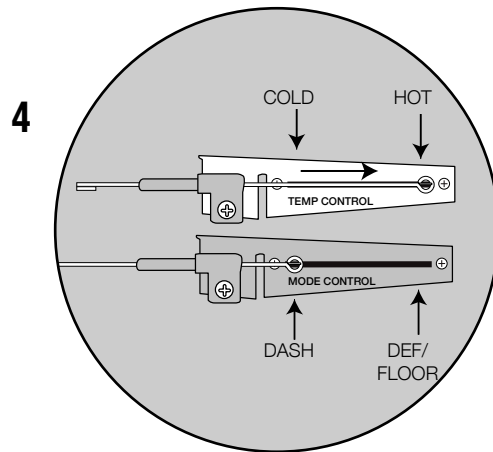
Move MODE arm to FLOOR/DEFROST

AIR OUT OF FLOOR/DEFROST VENTS

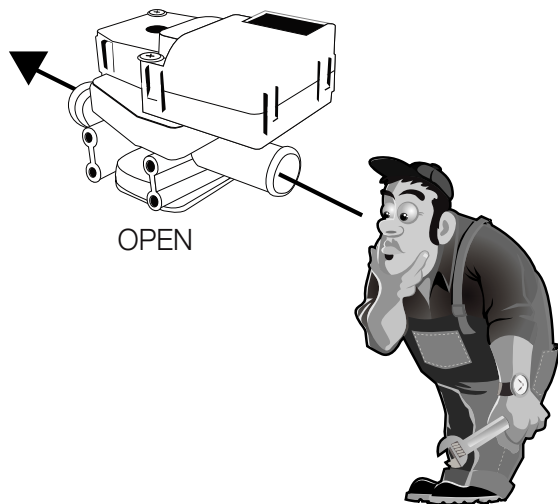


# BENCH CALIBRATION & OPERATION

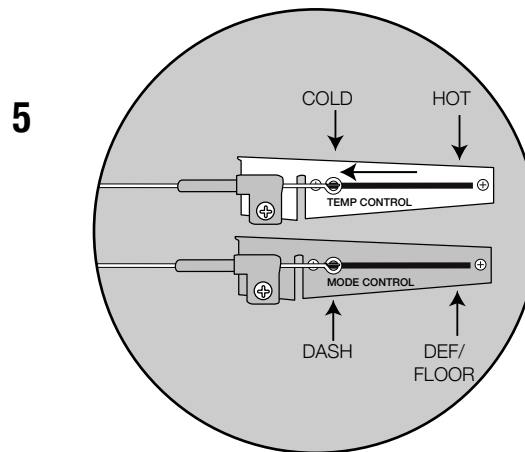
## • Function Test, Steps 4 and 5



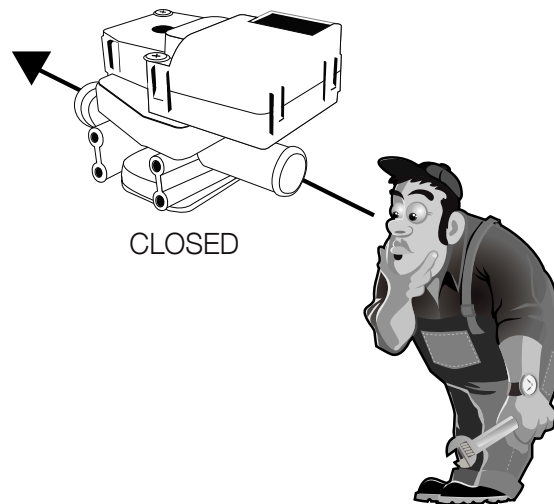
Move TEMP arm to HOT



You will be able to see through water valve passage



Move TEMP arm to COLD



You will NOT be able to see through 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.

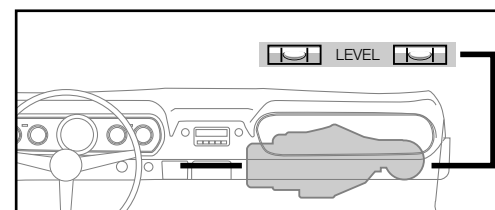
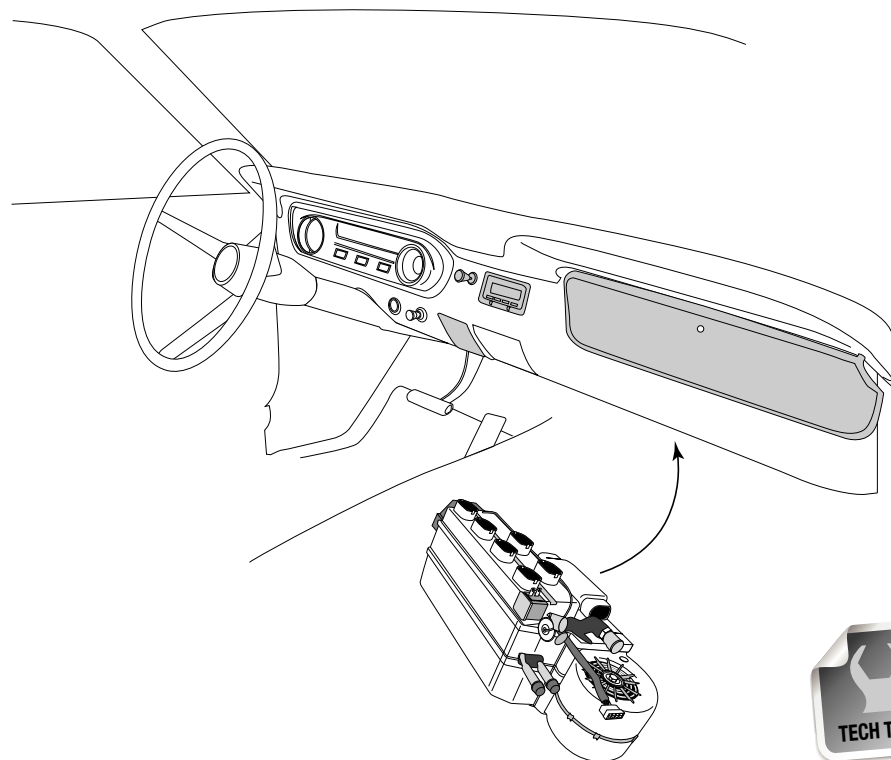
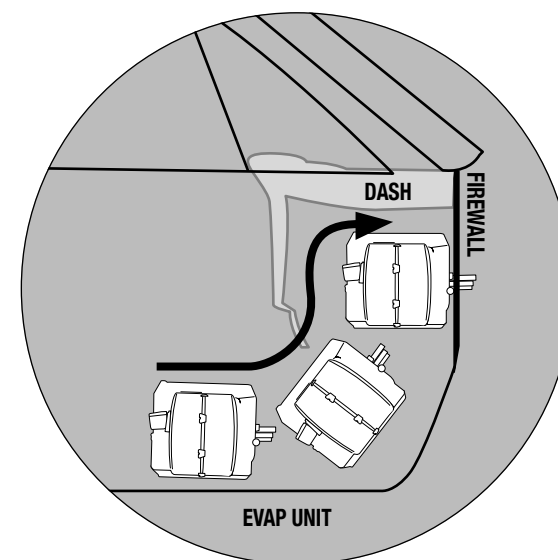
**NOTE: IF DURING ANY OF THESE STEPS YOU DO NOT GET THE CORRECT OUTCOME, PLEASE CALL TECH SUPPORT BEFORE INSTALLING INTO VEHICLE.**

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

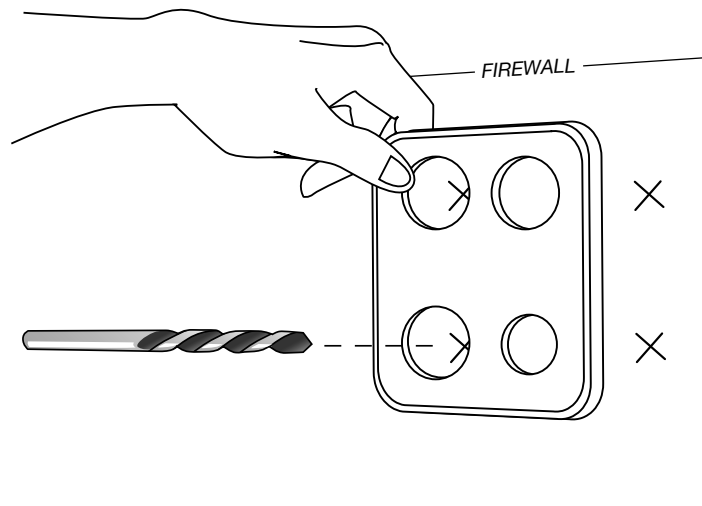
Place evaporator unit on floor panel. Roll unit up behind glovebox opening, mock up the four mounting points on your firewall ;where the j-clips are located aswell as the hole for the drain tube.\

**Beware any hoses or hardlines on the engine bay side of your fire wall.**

Locate a mounting place for the ECU in a location..

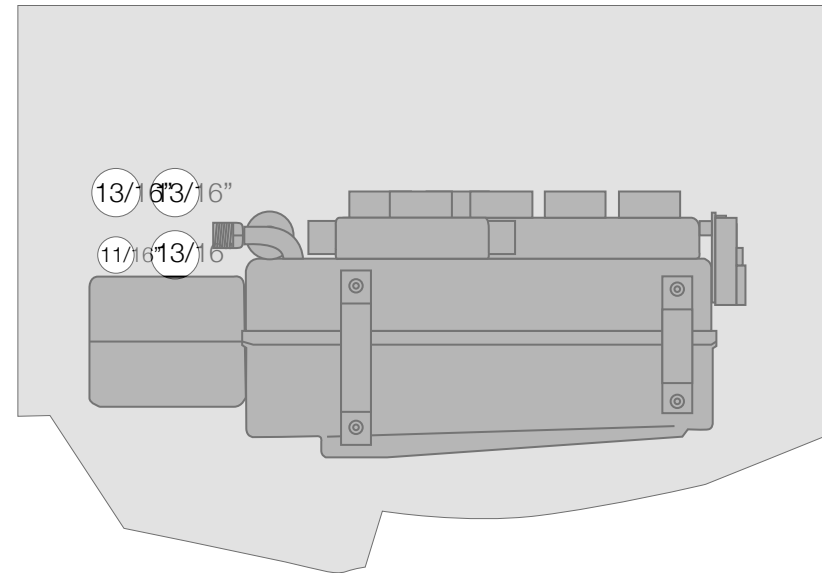


Be sure to align the evaporator unit level with the bottom of instrument panel as shown above.

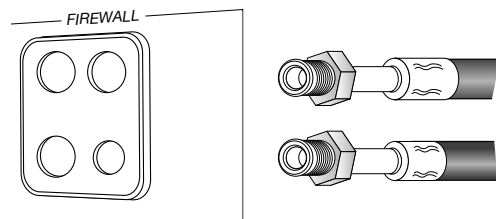


Find a nice flat surface to install your bulk head and make sure that the area you selected is clear of any obstructions or components that can be damaged. Use the bulkhead to mock your holes for the hoses.

TIP: When installing the bulkhead make sure to follow the instructions for your particular bulkhead.



Standard sizes for the fittings are 13/16" for the heater and suction hoses. The liquid hose needs a 11/16" hole.



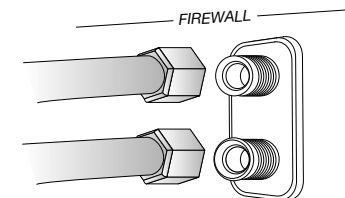
When installing your bulkhead plate make sure to use the supply backup plate as shown above.



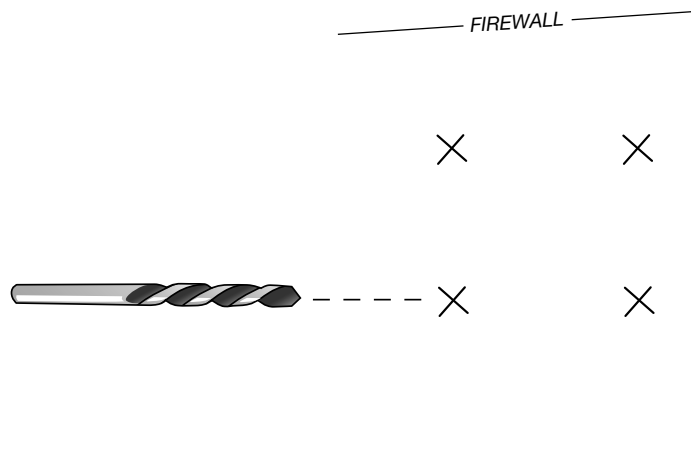
After drilling any holes, carefully deburr them to eliminate any potential snags.



Reminder... Use two wrenches to tighten o-ring fittings and a few drops of mineral oil on the rings also.

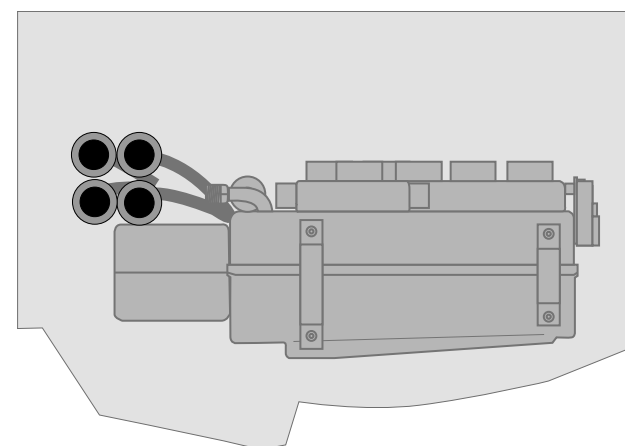
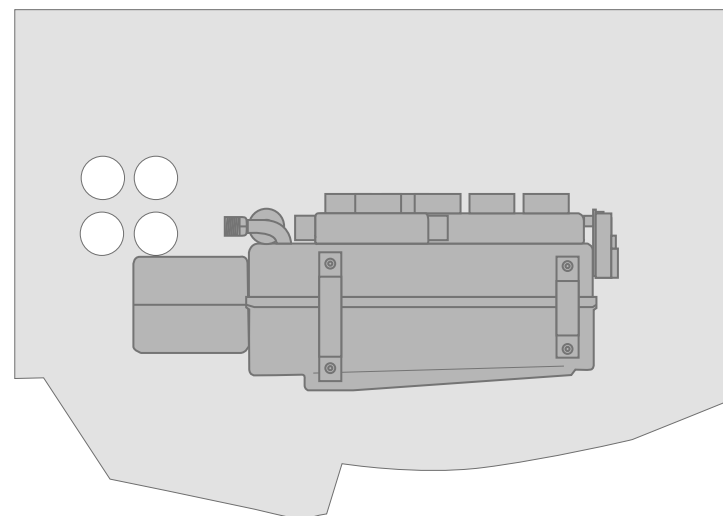
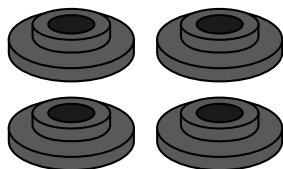


When final installation of hoses is done be sure to use the proper o-rings and a few drops of mineral oil in each connection.



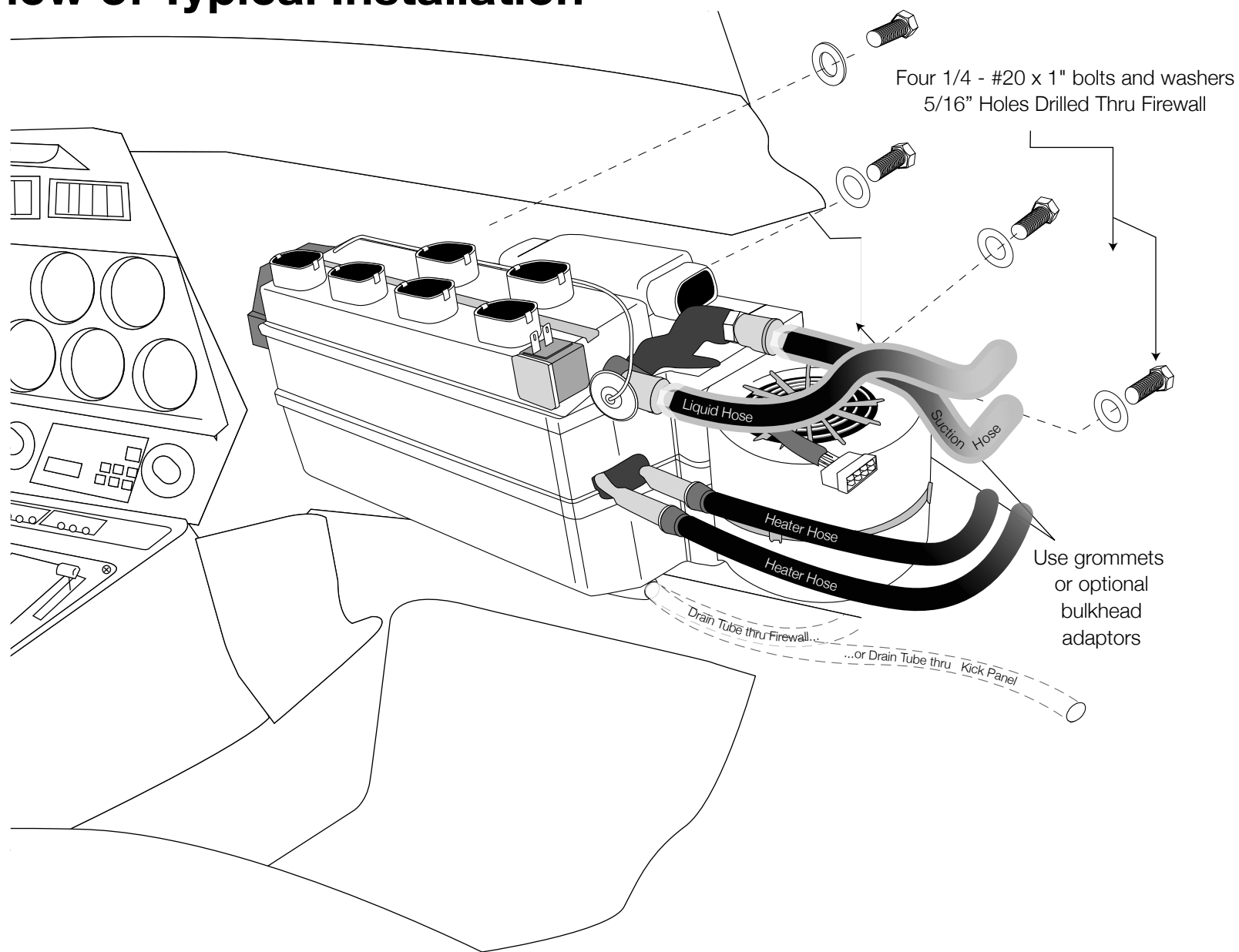
When drilling make sure to check for obstructions on either side of the firewall.

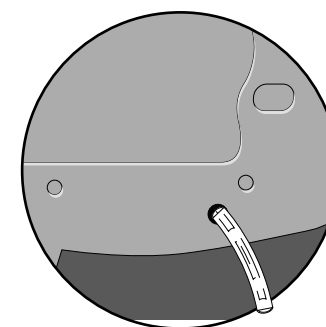
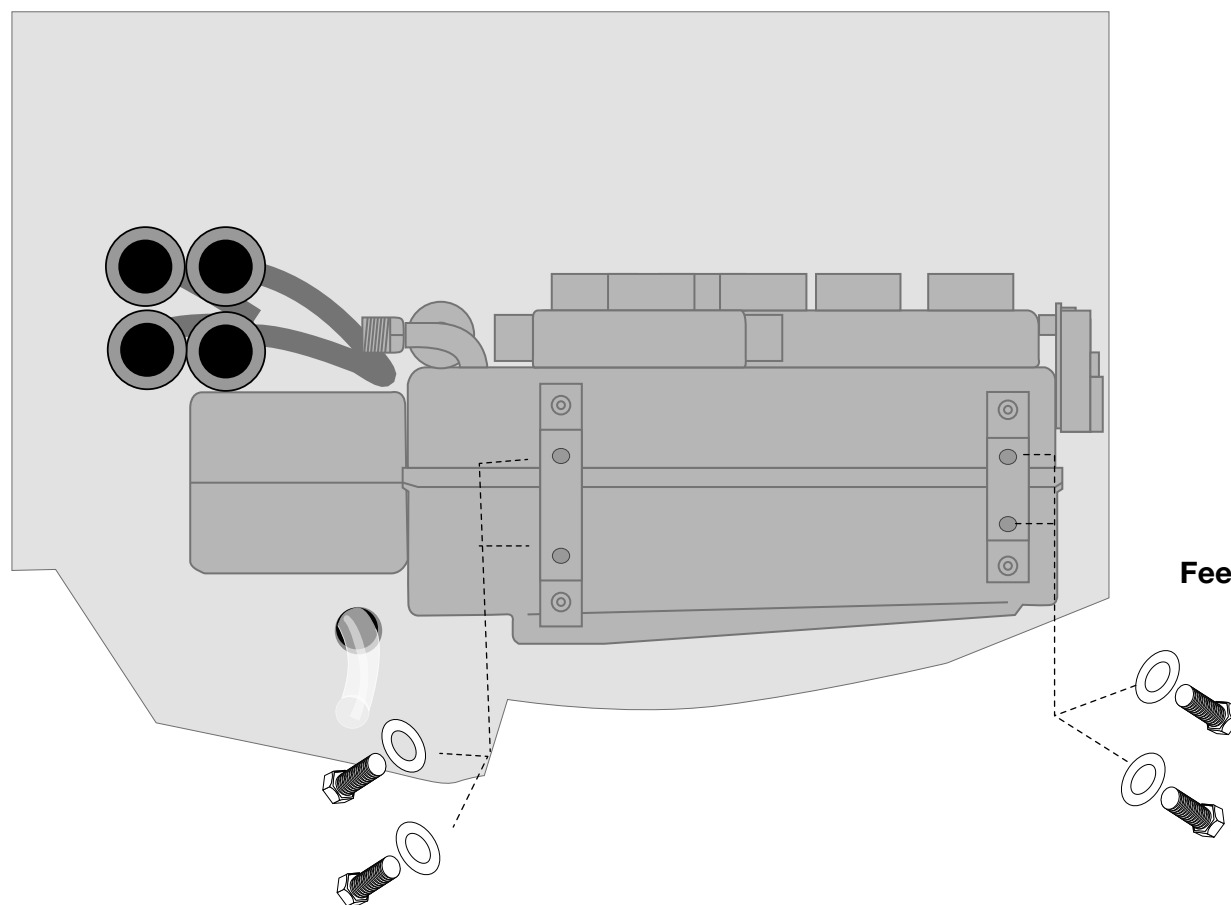
We recommend using grommets if a bulkhead plate is not utilized.



Route the hoses thru the fire wall into the engine bay.

## Exploded View of Typical Installation





**Feed drain tube thru the hole drilled earlier.**



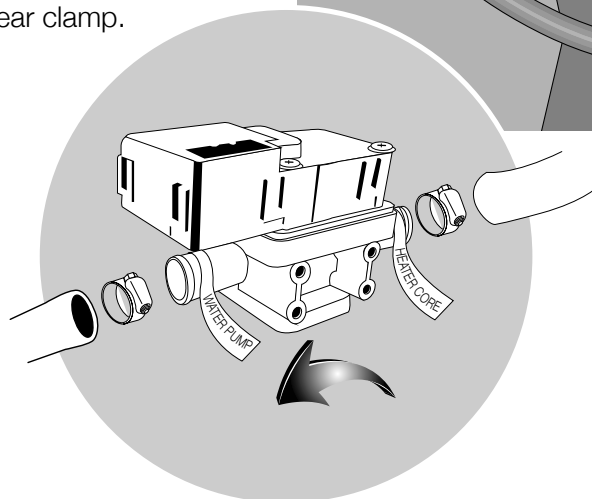
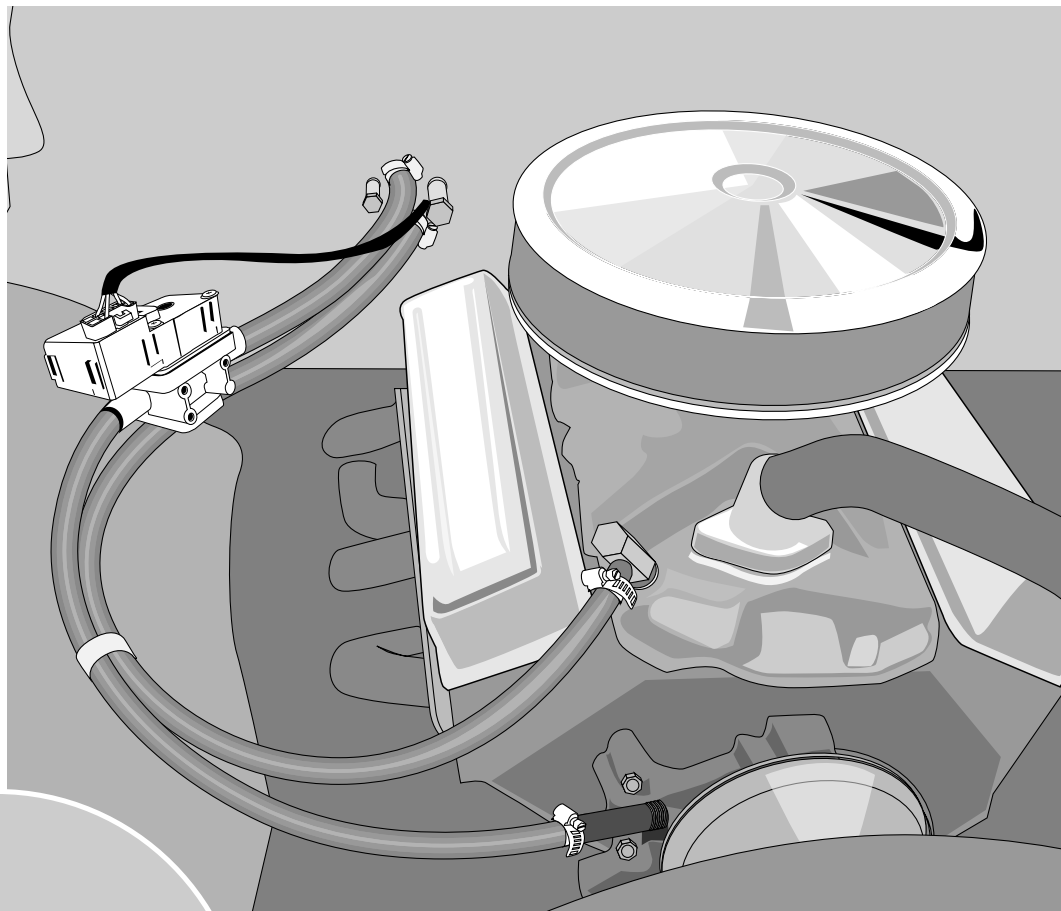
### IMPORTANT NOTICE: PROPER INSTALLATION OF WATER VALVE

**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.

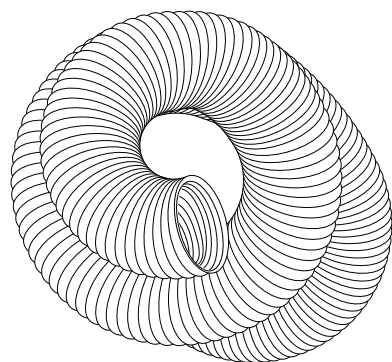
Connect the remaining outlet on water valve labeled **water pump** to the water pump using 5/8" dia. heater hose with the supplied worm gear clamp.



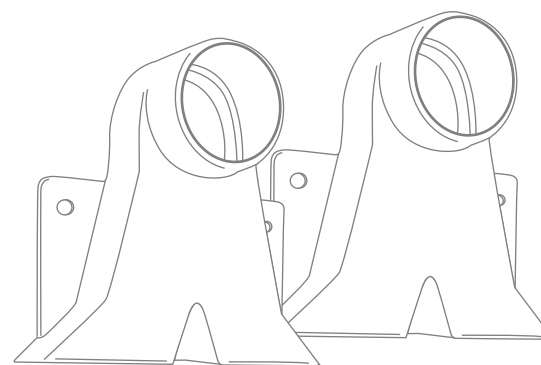
**FOLLOW THESE  
TAGS... CHECK IT  
TWICE BEFORE  
PROCEEDING!**

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

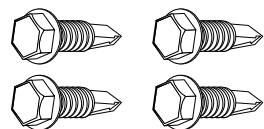
You will these parts and hardware during the next series of installation steps.



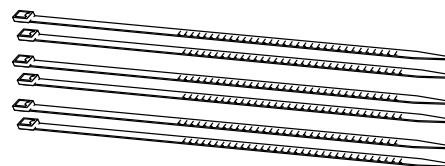
*One Duct Hose, 2" I.D., 15' Long*



*Two Remote Heat Dump*



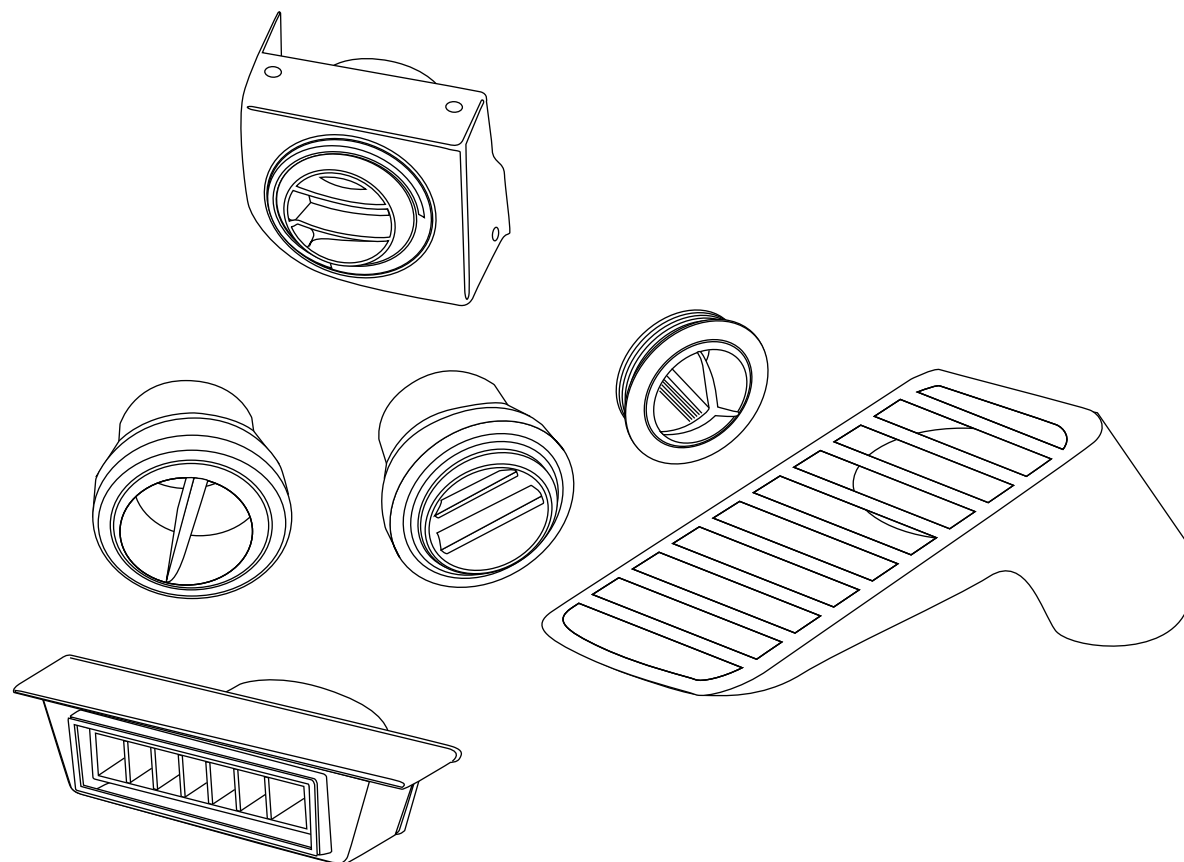
*Four #10 - 16 x 3/4" Tek Screws*



*Six Zip-Ties*

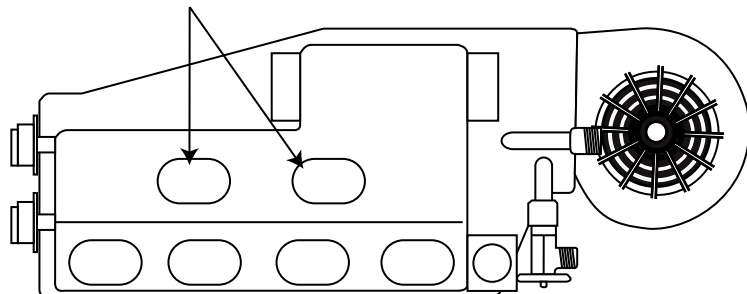
## THESE ARE THE PARTS YOU WILL FIND IN BAG KIT E

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

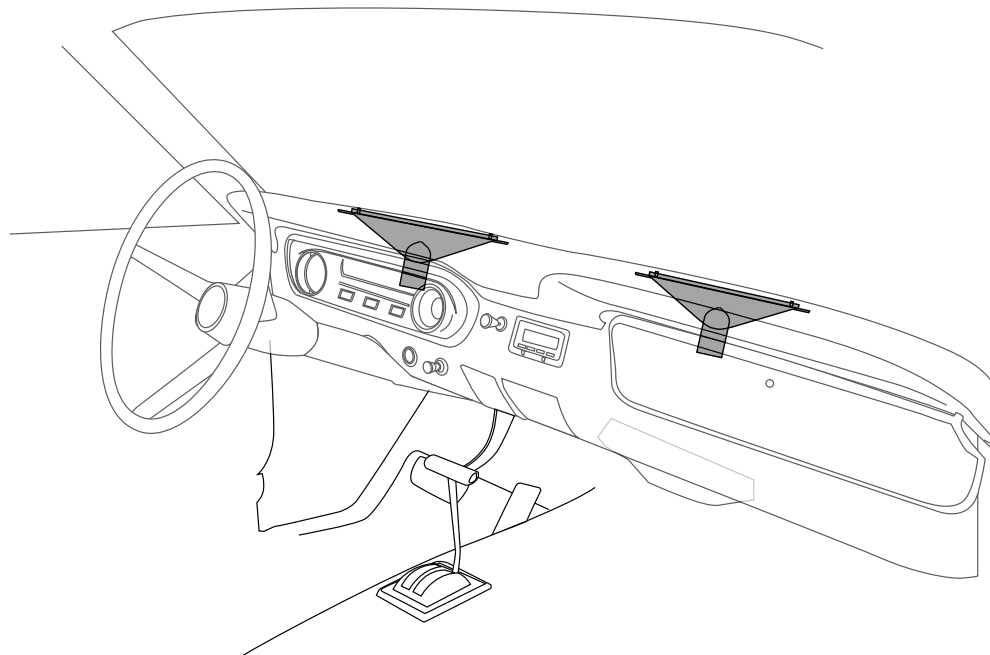
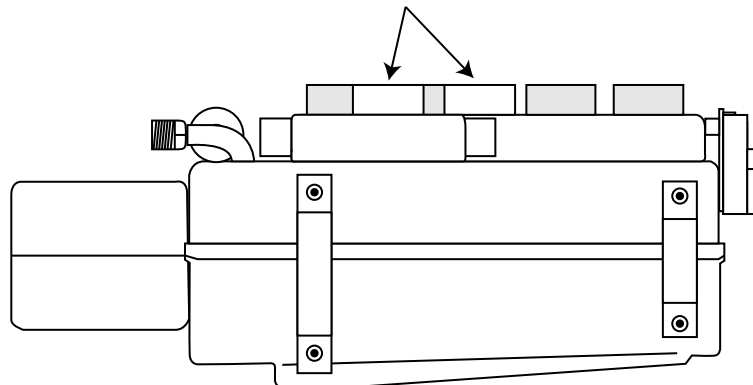


*Your choice of vents and defrost vents will located with Bag Kit E*

Defrost Hose Connections



Defrost Hose Connections



Depending on your vehicle and weather you are using the OEM defrost deffusers or ours, your instaslition the idea is the same here are some tip:

- 1) When routing the hose the less bend on the hose teh easier air will flow.
- 2) Do not kinck the hose.
- 3) Test fit before final instaltion.
- 4) Use zip ties to fassen the hose to any adaptor/ vent.

## Installing Vents, a Quick Primer:

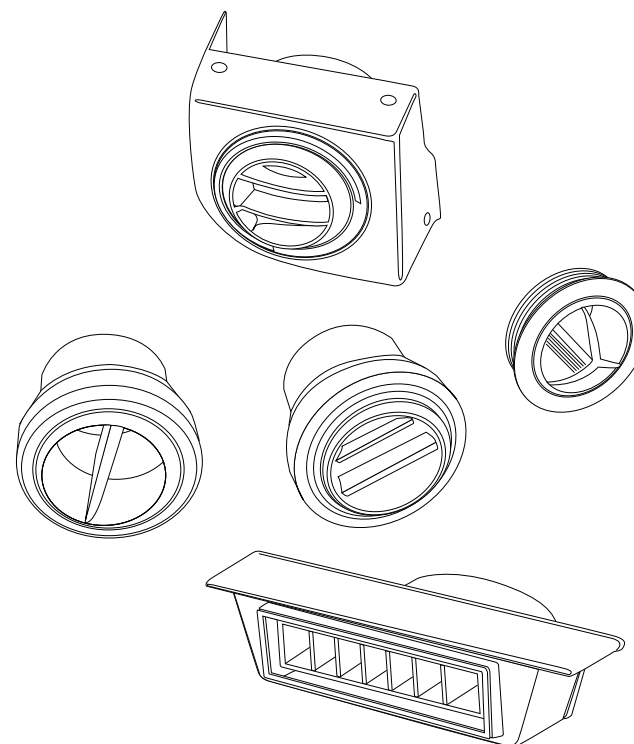
When you ordered your new system, you had a choice of vents to choose from. Installing them will go very easily if you plan ahead and take your time. In some cases you may be able to use factory installed vents, if not, follow the following steps:

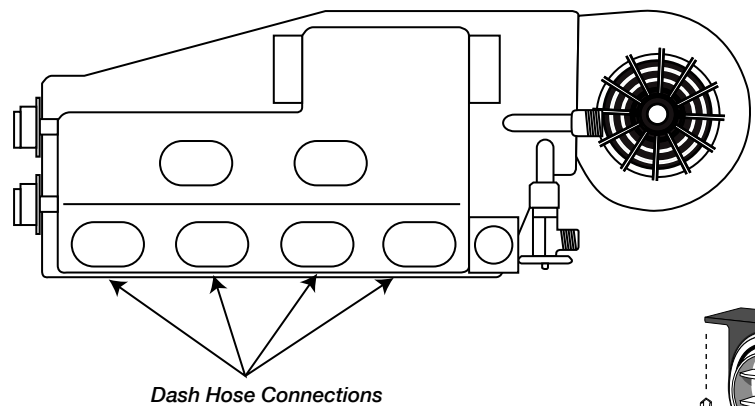
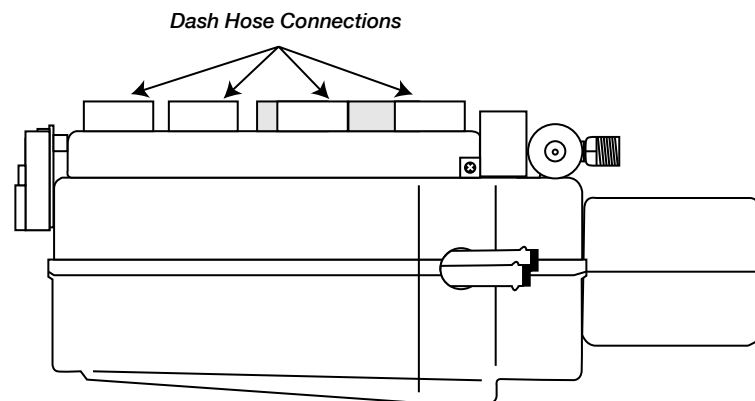
A: While sitting in the vehicle, make a plan of where the vents will be located, situating them for maximum airflow and convenience. Make sure the location of the vents will not interfere with actions like shifting gears, or that the vents will not be subjected to excessive impact.

B: Many of the vents will require some drilling thru the lower dash to attach. Mark the drill hole(s) location first, and drill pilot holes (i.e. with a small bit like 9/32") before attaching the vents with the included Tek Screws. Also make sure that you don't drill thru wires or other mechanisms when drilling the pilot holes.

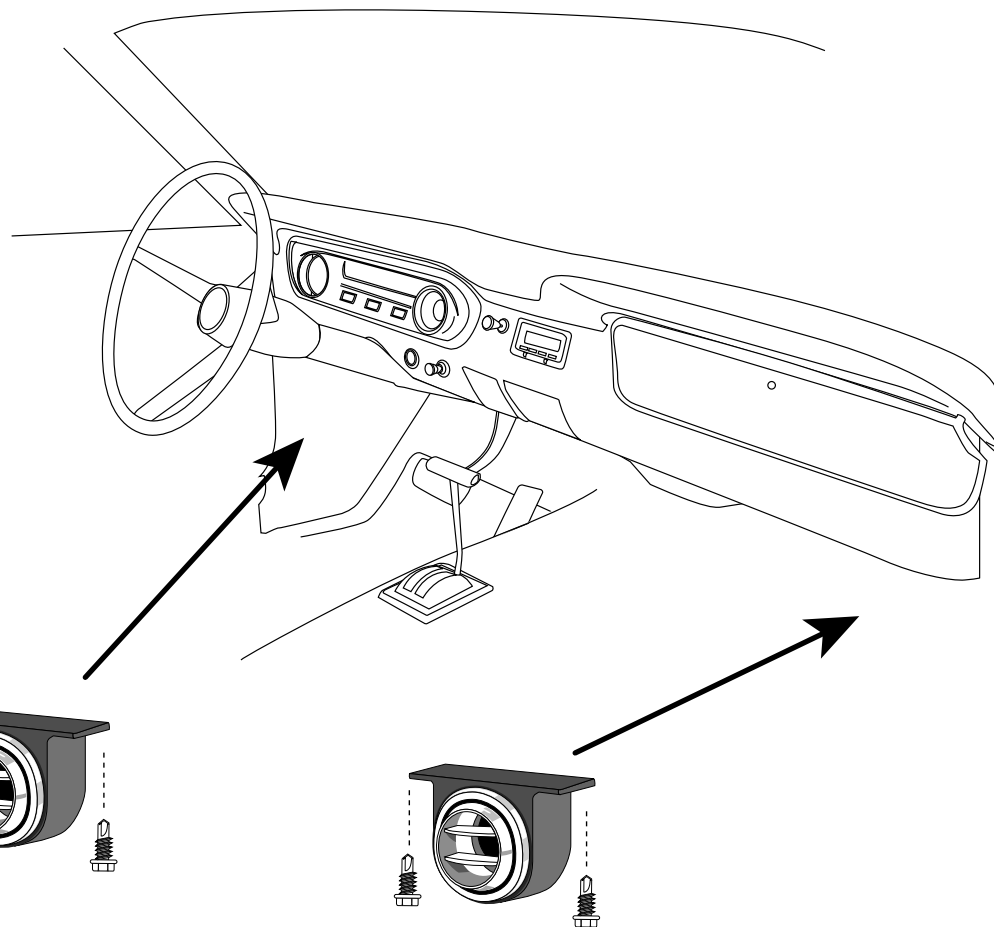
C: Some vents can be inserted into OEM vents holes, or you may need to cut-out holes within the dash... measure twice - cut once.

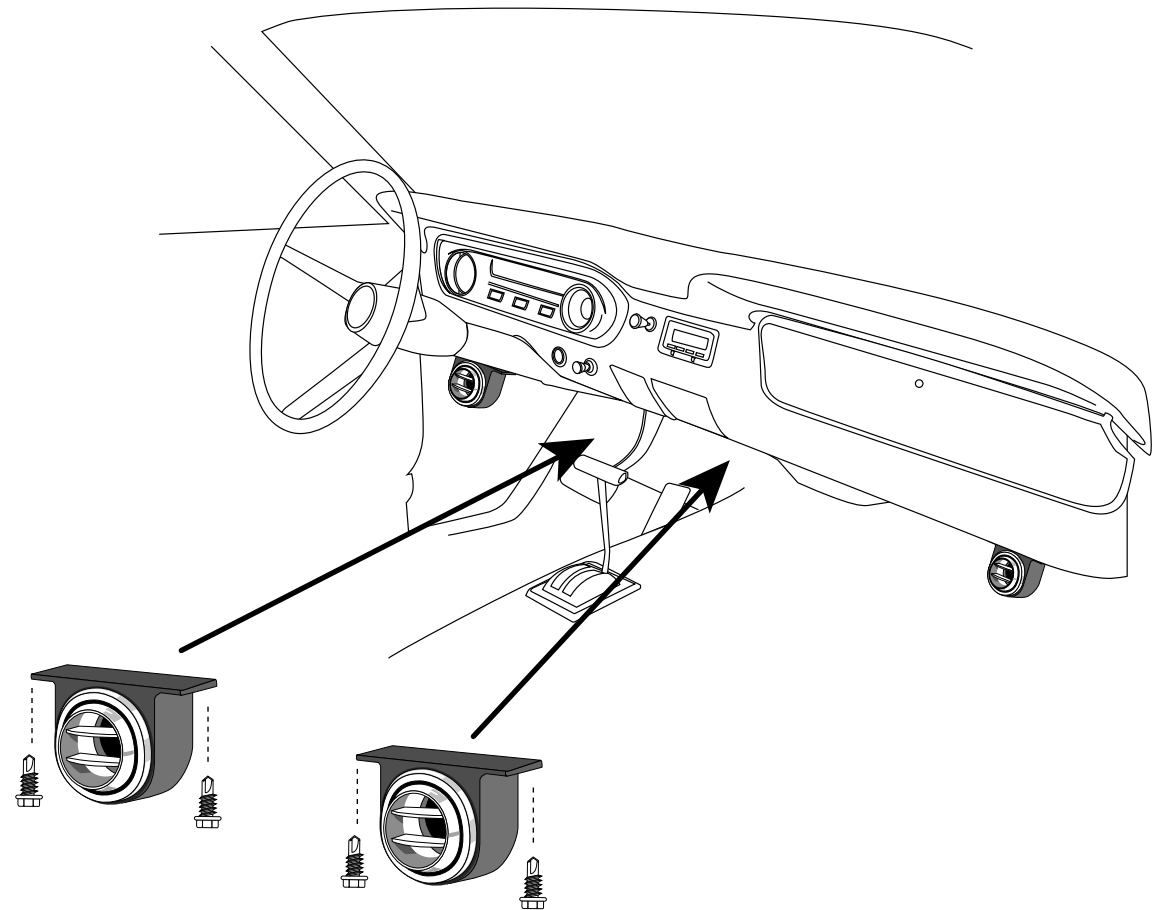
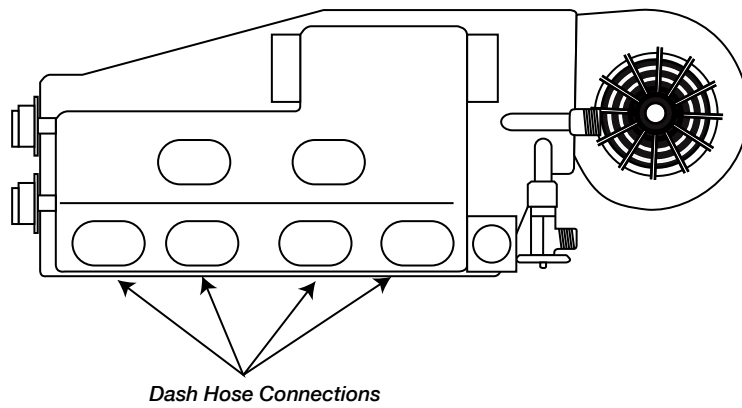
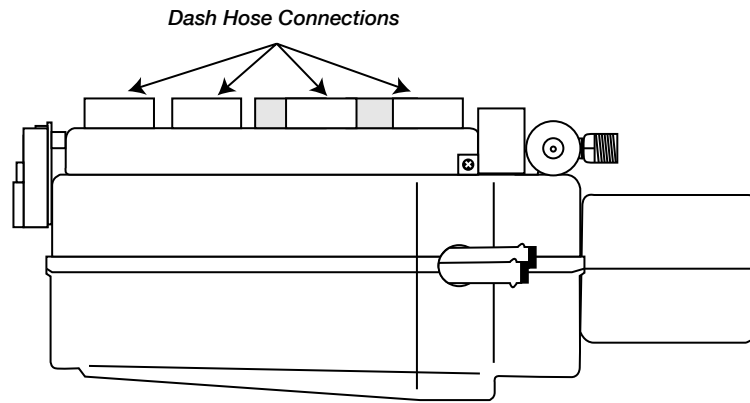
D: Use zip-ties to connect the flex hoses to the back of the vents.





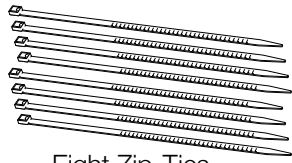
This shows the simplest vent installation underdash vents. As the name implies mount to the bottom of your dash with a pair of screws. You will also have the choice of indash vents which will require measuring and cutting into your dash.



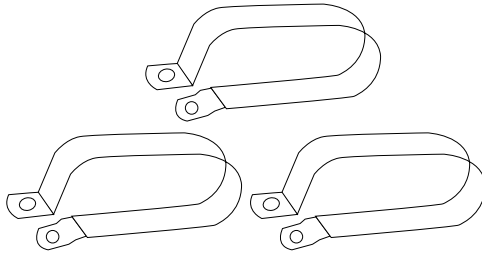


## THESE ARE THE PARTS YOU WILL NEED FOR THE ENGINE COMPARTMENT INSTALLATION

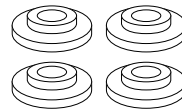
You'll find all of these parts within the hose box



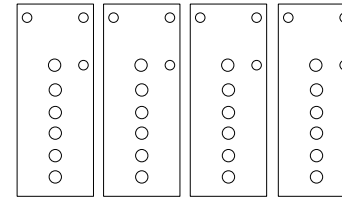
Eight Zip-Ties



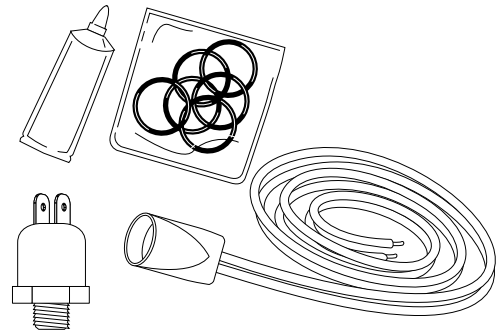
Three #10 Hose Clamp



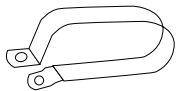
Four 1" Grommets



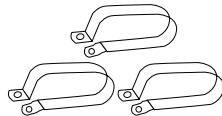
Condenser Brackets  
PN# 0029-2



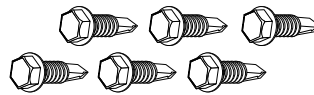
Pressure Switch Kit



One #8 Hose Clamp



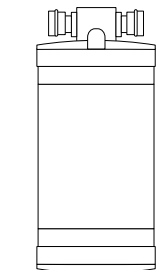
Three #6 Hose Clamp



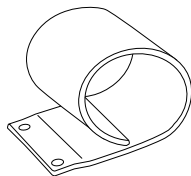
Six #10 - 16 x 3/4" Tek Screws



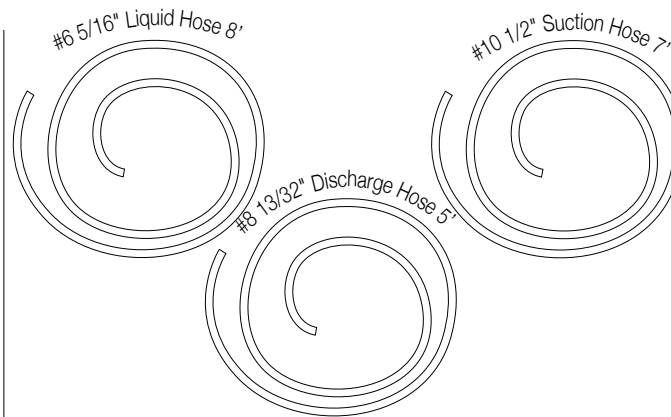
Twelve #10 - 10x3/8" Hex Screws



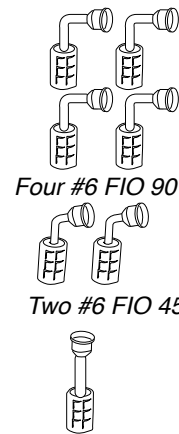
Drier  
PN# 12-1008



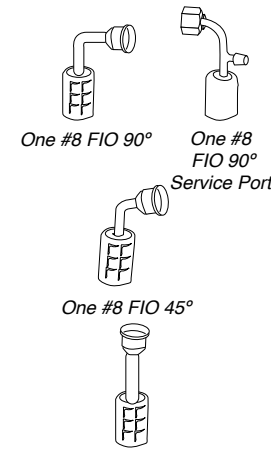
Drier Bracket  
PN# 19-1003



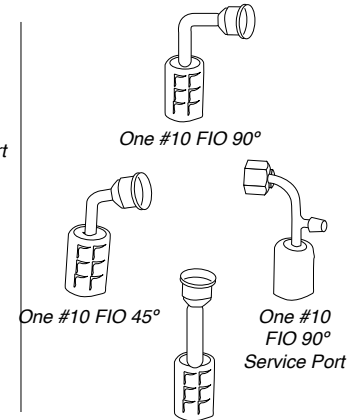
Three Refrigerant Hoses



One #6 FIO Straight

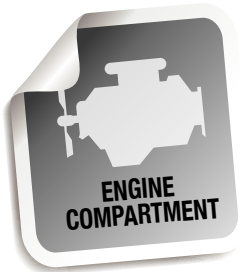


One #8 FIO Straight



One #10 FIO Straight



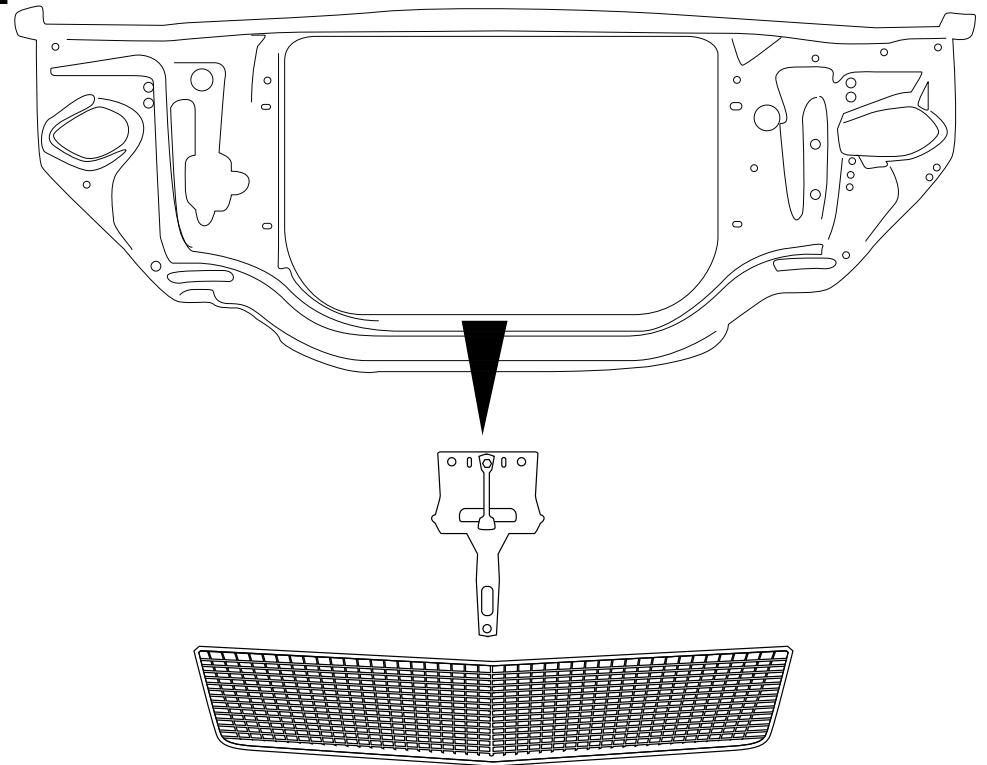


## ENGINE COMPARTMENT INSTRUCTIONS

**IF YOU HAVE NOT DONE SO ALREADY, DISCONNECT THE BATTERY.**

During the next steps you'll be installing the condenser, drier \*, and routing the pressure switch\* wire and the A/C lines. Since much of this is installed in the OEM location for the condenser, you'll probably need to remove the center grill section, horn(s), and latch support assembly (see figure 37). Be sure to retain all the mounting screws – you'll reinstall these pieces in the exact reverse order with the OEM screws.

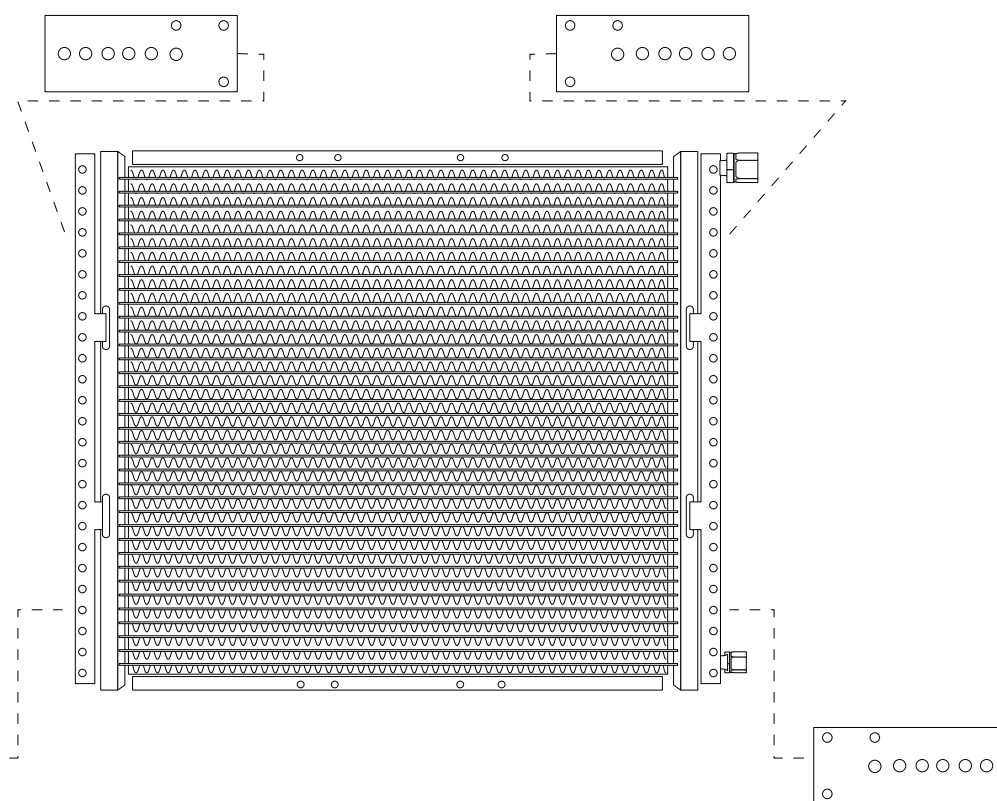
\*If Applicable.



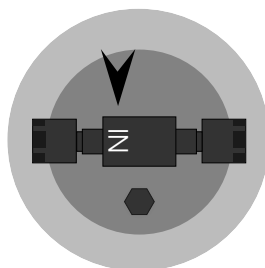
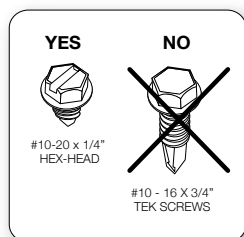
**CONDENSER PREPARATION.** Attach brackets using supplied #10-20 x 1/4" HEX HEAD screws to condenser mounting holes found on each side of condenser. The condenser must be mounted to vehicle so that the larger fitting is on top  
**(FAILURE TO DO SO WILL CAUSE AIR CONDITIONING SYSTEM TO FUNCTION INCORRECTLY).**

**DRIER PREPARATION.** First insert the drier into the drier mounting bracket (it's basically a sleeve for the drier). Screw the high-pressure switch into the port at the drier. Go ahead and plug the pressure switch harness into the switch at this time (black electrical boot with two long white wires). Mount Drier in preferred location with connections upward. Keep in mind the threaded connection labeled "IN" will connect to the lower connection of condenser.

**PRESSURE SWITCH:** Install the supplied pressure switch to the port on the top of the drier (Looks like a bolt head). Remove dust cover and attach wiring harness to electrical connections.

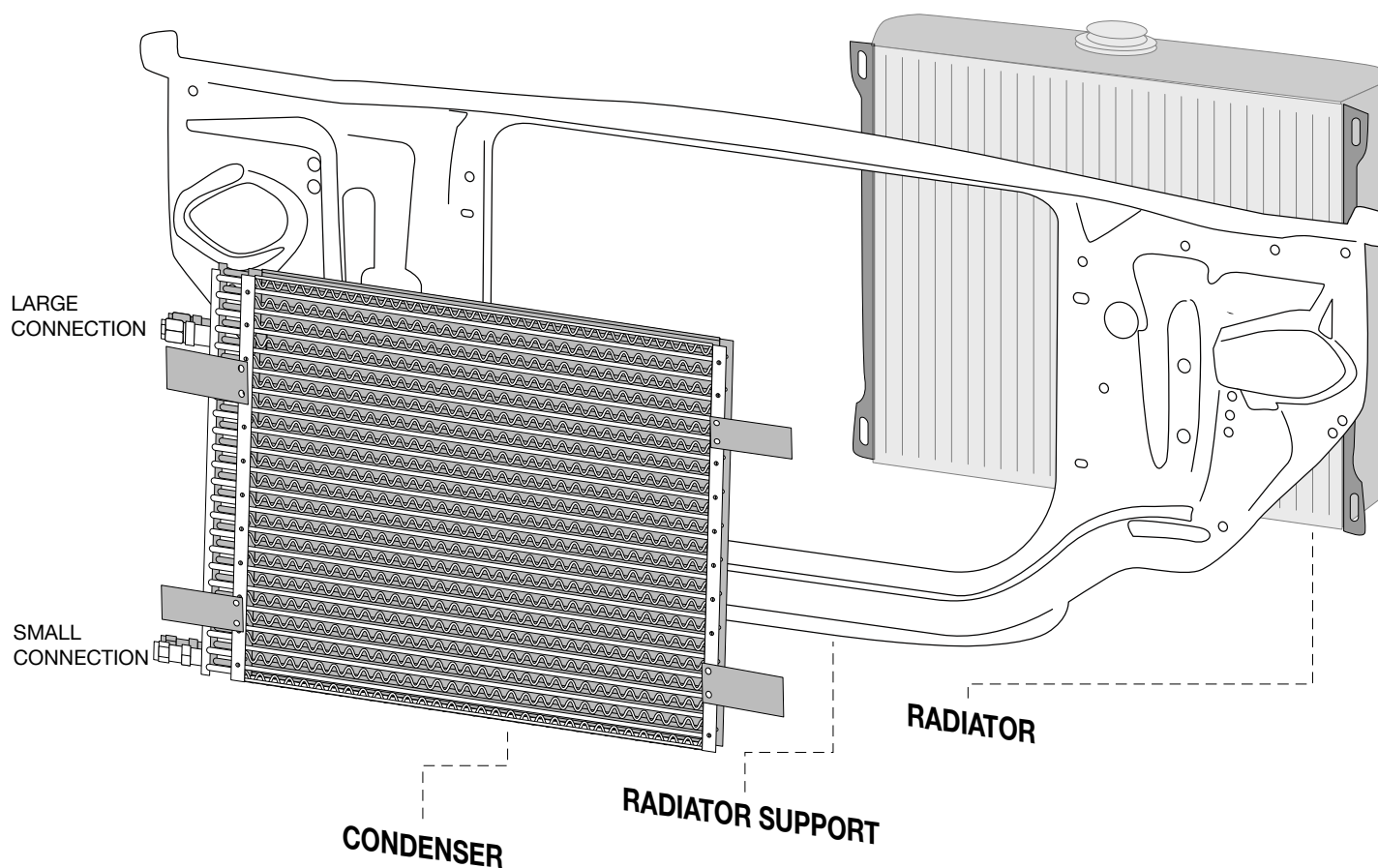
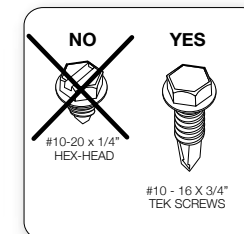


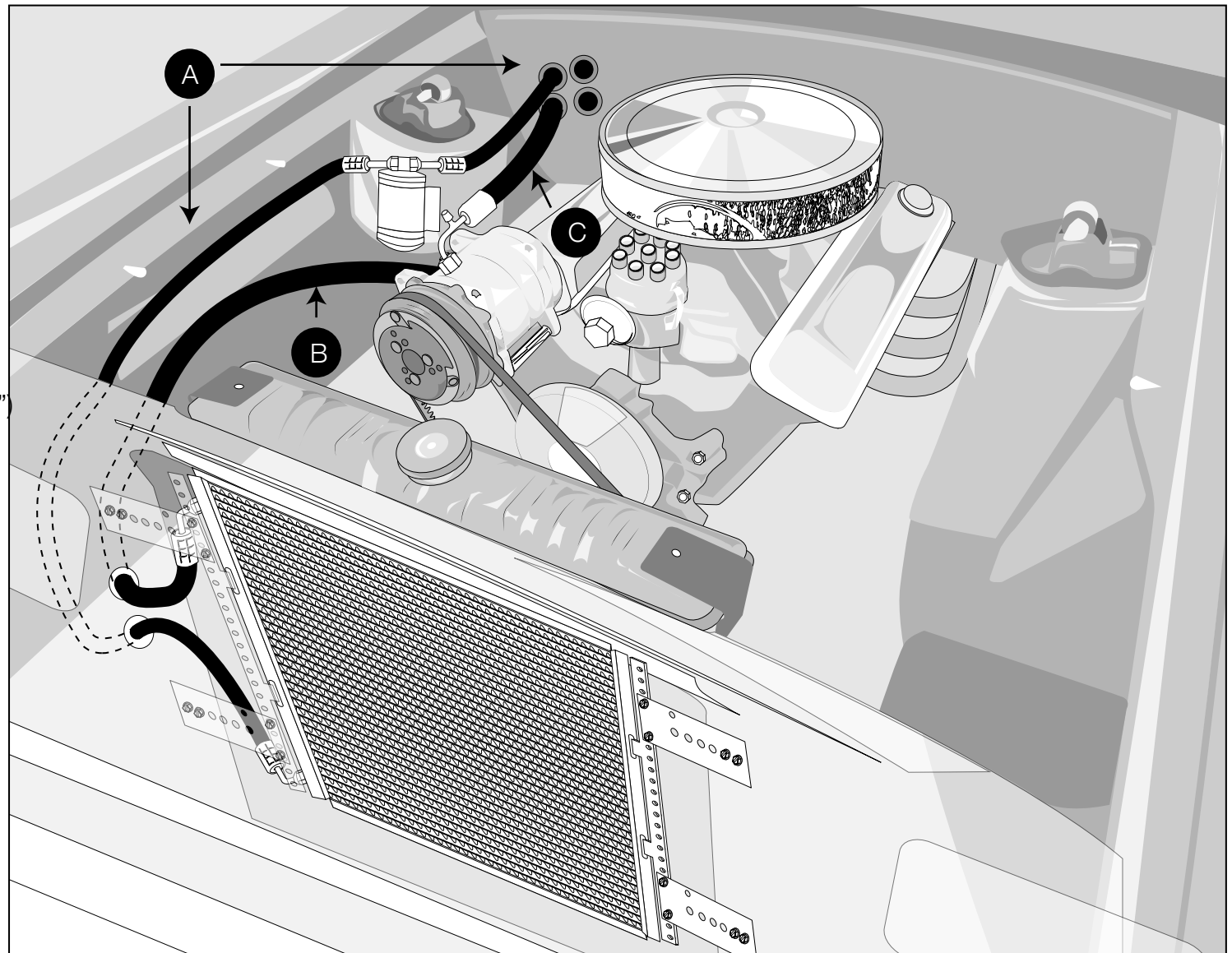
**TOP VIEW OF DRIER**



Be sure to mount drier vertically with fittings to top.

Place condenser in front of radiator and mount to radiator support with supplied #10-16 x 3/4" TEK screws or desired hardware. Condenser can be mounted with fitting connections to either driver or passenger side. (MAKE CERTAIN LARGE FITTING CONNECTION IS TO THE TOP. FAILURE TO DO SO WILL CAUSE SYSTEM TO FUNCTION INCORRECTLY)



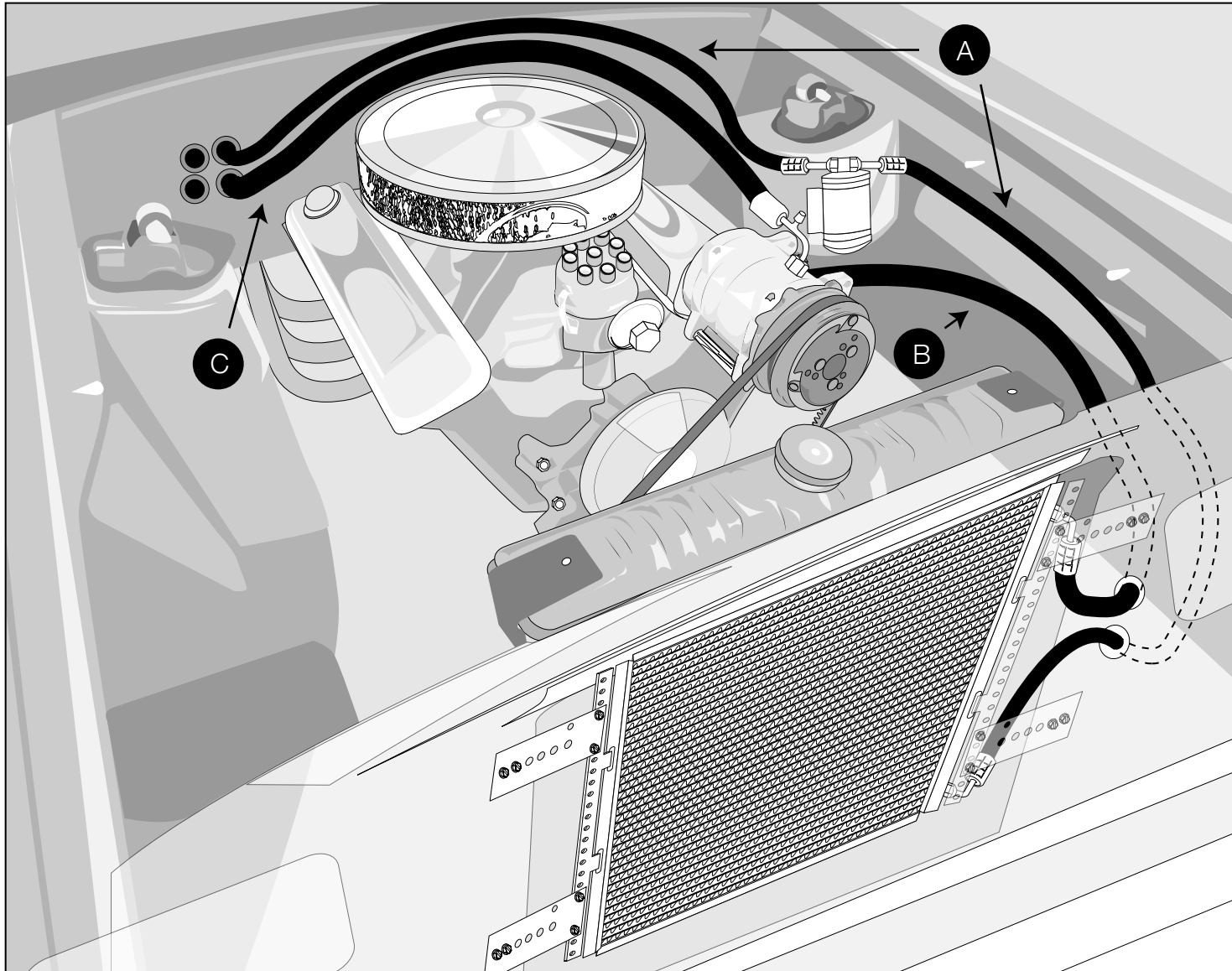


A: #6 Liquid Hose (5/16")  
B: #8 Discharge Hose (13/32")  
C: #10 Suction Hose (1/2")



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





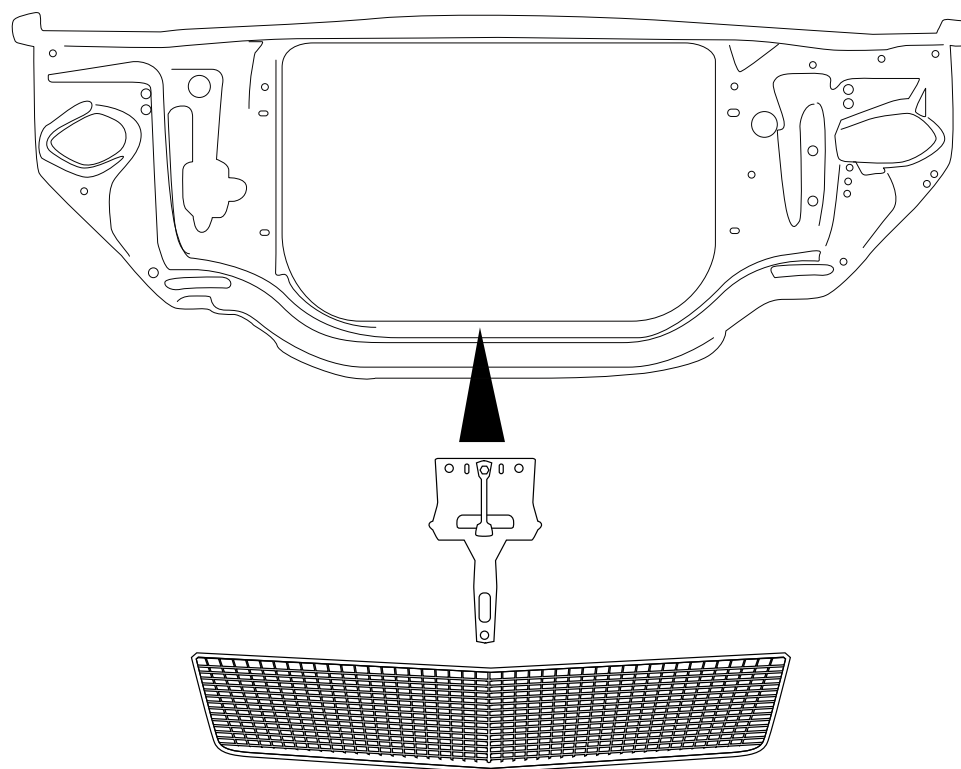
- A: #6 Liquid Hose (5/16")  
B: #8 Discharge Hose (13/32")  
C: #10 Suction Hose (1/2")



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



Re-intall any componets that had to be removed during the instalation such as hood latch or grill.





# 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!**

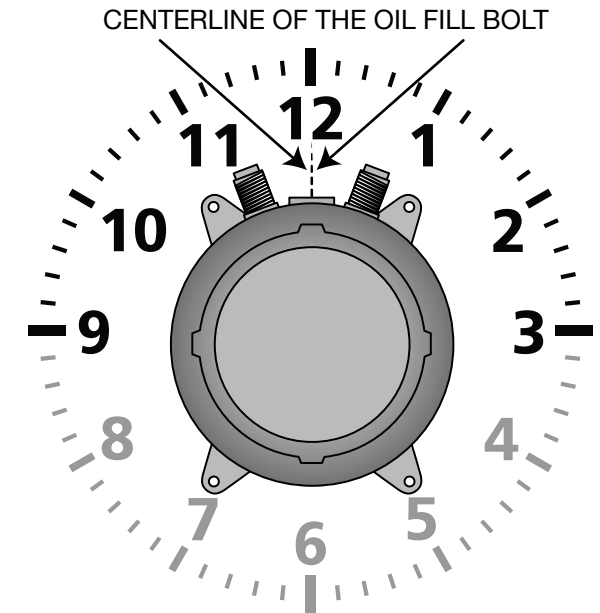
**RECOMMENDED TEST CONDITIONS:** (After system has been fully charged and tested for basic operation)

- 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

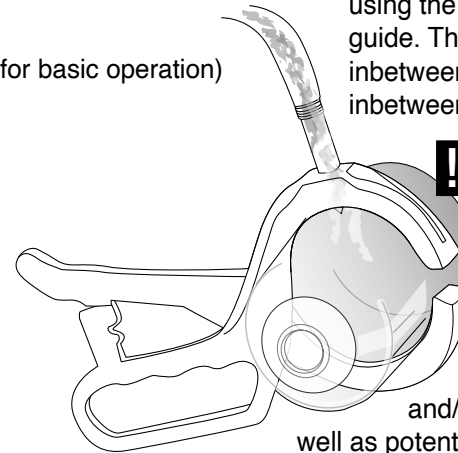
**ACCEPTABLE OPERATING PRESSURE RANGES:**

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.

## 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)...

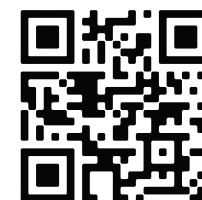
There is a blockage in the system. Remove hoses and blow compressed air through in both directions. If pressures don't change its possible that your expansion valve is stuck closed and would have to be replaced.

### \*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

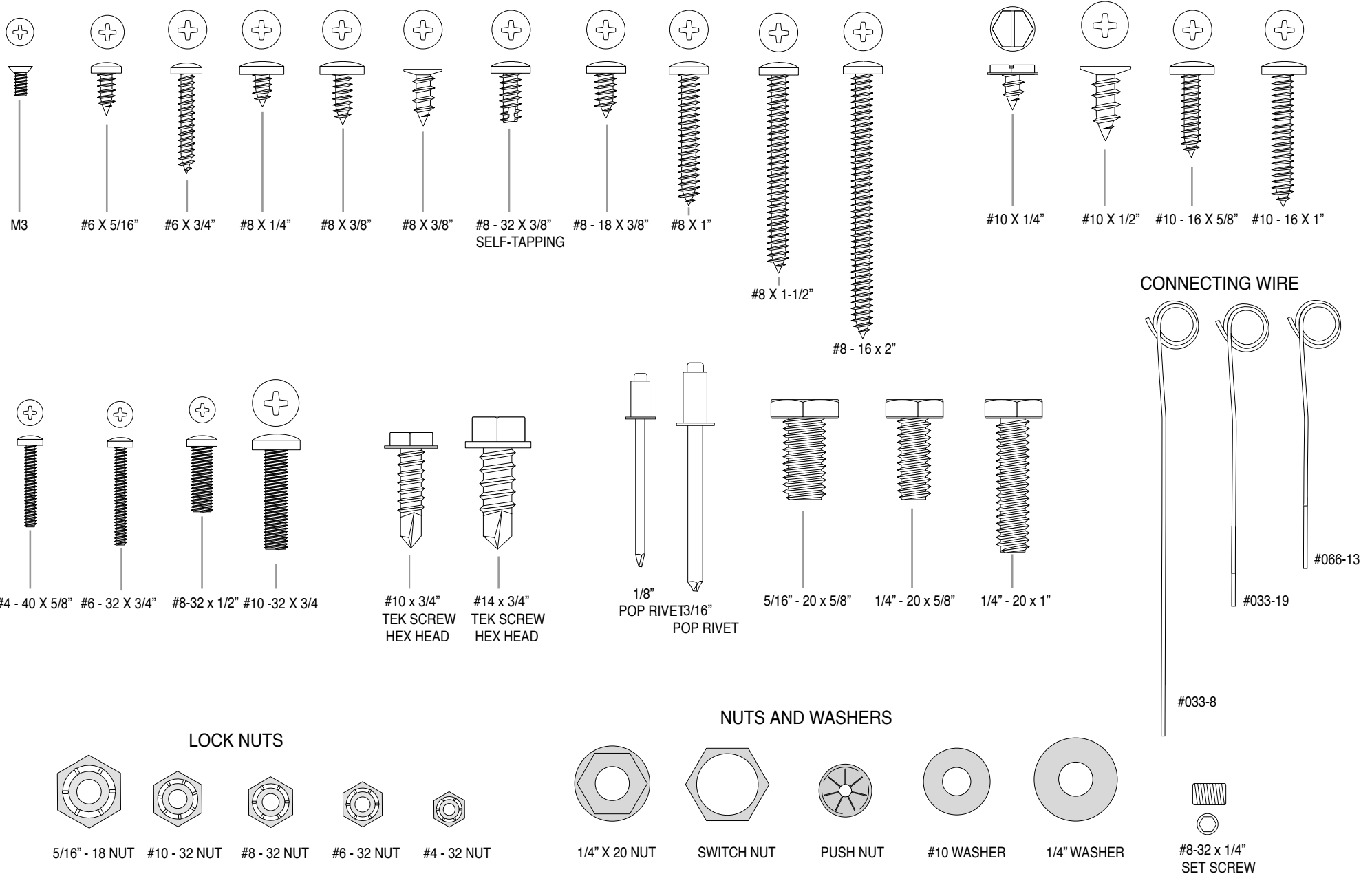
Get the technical support you want the moment you need it, with no wait times. Simply **SCAN** the **QR code** and be directly taken to our support section to troubleshoot all things A/C.



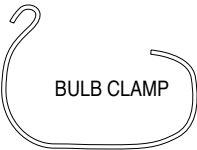
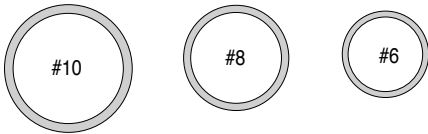


## Classic Auto Air Hardware Reference Guide

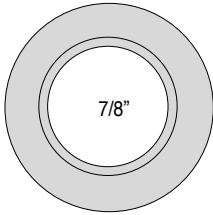
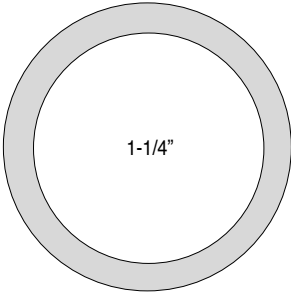
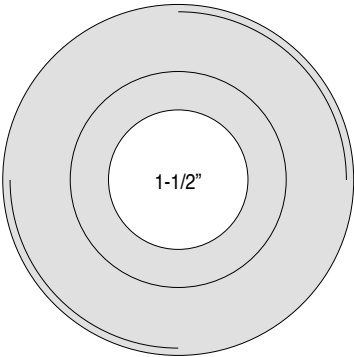
This is our basic line-up of hardware. No single kit will not contain all of these, but you can use this guide to match-up hardware for shape and size (all of these are actual size.)



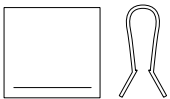
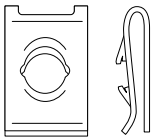
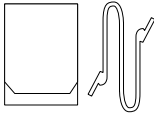
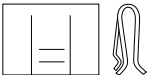
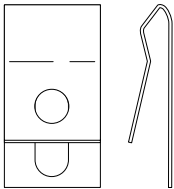
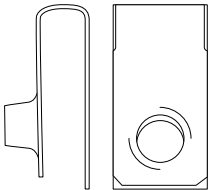
ORINGS



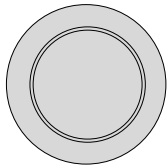
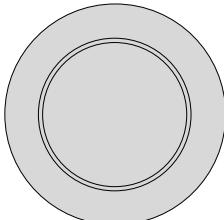
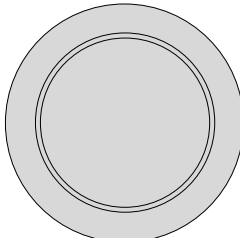
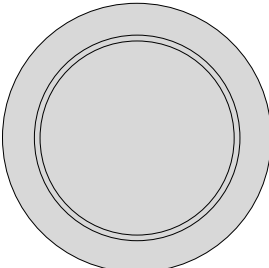
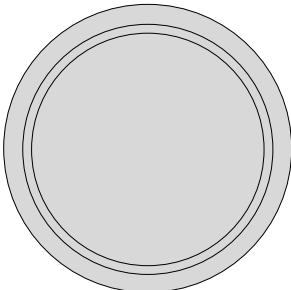
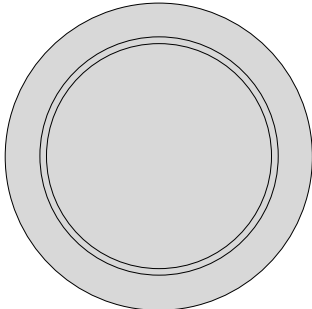
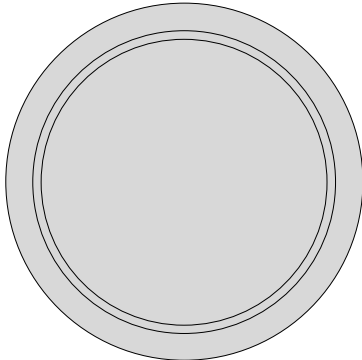
GROMMETS



CLIPS



HOLE PLUGS



HOSE CLAMPS

