

# Installation Instructions

## 1988-94 Chevrolet Truck

### CAP-8894E Hurricane Systems



1201 Forum Way South, Fort Worth TX 76140  
(817) 531-2665 or FAX 531-3257

This system is a combination heat/cool and defrost system. Requires removal of the original ac & heater unit. Installation is straight forward, appearance is neat, and performance is unsurpassed. Basic mechanic tools are required, a 1 1/4" hole saw, and a 3" hole saw. This modular design provides accessible behind dash area not offered by most other systems.

To be effective, an air conditioner must remove heat from the air in a vehicle faster than it is added. It is therefore very important to reduce the "heat added" by insulating the roof, firewall, and floorboards. You should also seal all holes in the firewall, insure airtight door and window seals, and consider window tinting.

For maximum cooling performance a clutch style or steel six-blade fan should be installed with shroud if possible. We DO NOT recommend flex fans. Another alternative and a definite plus for any system is the addition of an electric condenser fan, dedicated to the A/C System. If the vehicle is equipped with only an electric radiator fan, it MUST be wired to engage with the A/C system. A/C head pressure increases much faster than the engine temperature, which can damage the compressor and other components. Steel Fan Blades and High Quality Electric Radiator & Condenser Fans are available from Old Air Products, at a very reasonable cost.

## PREPARATION

1) **Read the instructions prior to starting installation.**

2) **Preparation of engine compartment**

- a) Start by disconnecting and removing the battery.
- b) Evacuate refrigerant from A/C system.
- c) Drain coolant from radiator and remove heater hoses.
- d) Remove air cleaner and air intake box.
- e) Remove coolant overflow reservoir from firewall.
- f) Remove A/C hoses, accumulator and mounting bracket.
- g) Remove two nuts and four bolts securing the inside evaporator case to firewall.
- h) Remove center bolt securing wire harness to firewall, unplug wire harness and remove the 2 screws holding the inside connector to the firewall.
- i) Remove grill, hood latch and center support from front of truck.

3) **Preparation of interior** - *Removal of dash is required to remove factory evaporator/heater from the truck. Refer to a vehicle shop manual if additional information or details are needed.*

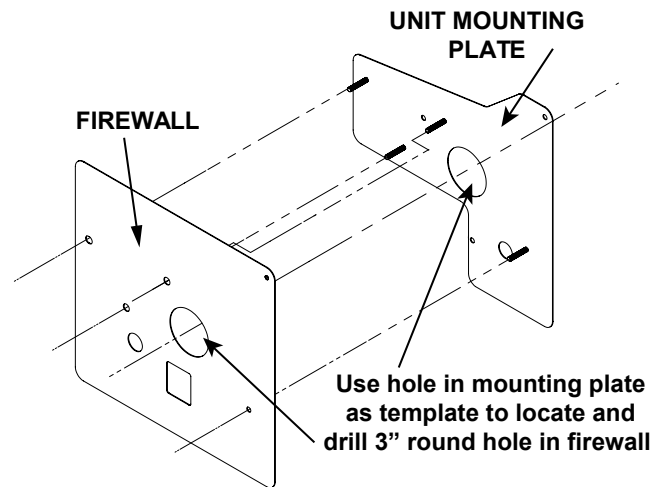
*Note: Removal of front seats is recommended for additional working space but not absolutely necessary for installation.*

- a) Remove trim panel under steering column, remove nuts holding steering column and lower steering column.
- b) Remove center louver housing.
- b) Unclip cables inside glove box, remove glove box door and glove box.

- d) Remove dash trim bezel.
- e) Remove A/C control and radio from dash.
- f) Remove screws in rocker trim panel to loosen kick panels (Both sides) then remove by unclipping it from the back.
- g) Remove speaker covers from top of dash.
- h) Remove the dash mounting bolts from speaker pods and 3 bolts from the top of the defrost outlet.
- i) Remove lower bolts from both sides of dash, move forward to allow access behind and disconnect electrical connections between dash and firewall then remove dash assembly from truck.
- j) Disconnect 3 connections going to stock evaporator, remove last bolt in upper left corner and remove the original evaporator assembly from truck.
- k) Disconnect and Remove ECM and mounting bracket from original location. Also remove the original mounting studs and clips from ECM. *NOTE: ECM will be relocated to kick panel during unit installation.*

## Unit Installation

- 1) Use mounting plate as template for location of 3" hole in firewall.
  - a) To locate firewall hole position temporarily insert studs on mounting plate through holes in firewall. (Photo 1)
  - b) Mark and drill 3" round hole as shown. (Photo 2)



**Photo 1** - Align unit mounting plate to fire wall as template for 3" round hole.



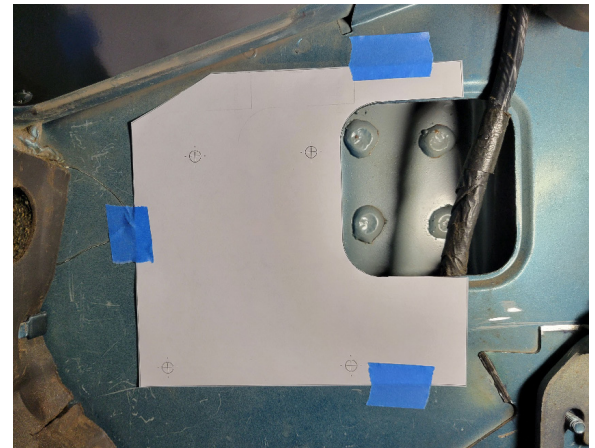
**Photo 2** - 3" Hole in Firewall

2) Install fresh air block off plate using a small bead of silicone for a water tight seal to passenger side cowl. (Photo 3)



**Photo 3 - Install Fresh Air Block-off plate.**

3) Cut out ECM bracket template on Page 15. Align template on passenger side kick panel then mark & drill 4) 1/8" holes as shown on template. (Photo 4)



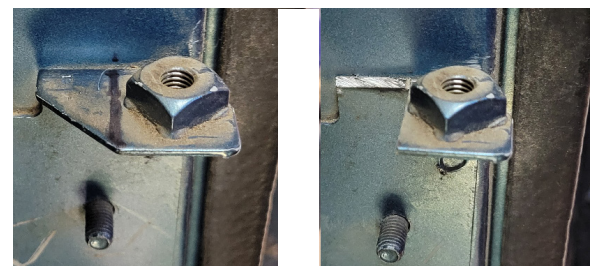
**Photo 4 - Template for ECM Bracket.**

4) Attach ECM bracket to kick panel using using (4) #8x1/2" screws. (Photo 5)



**Photo 5 - Mount ECM Bracket.**

5) Notch lower dash mounting tab. **NOTE:** This step is optional but it will allow additional clearance for the factory wire harness when it is reconnected to the ECM Module. (Photo 6)



**Photo 6 - Notch Dash Mounting Tab.**

6) Align drain tube template (Page 17) on floor as shown, mark and drill 1-1/4" hole for drain tube. (Photo 7)

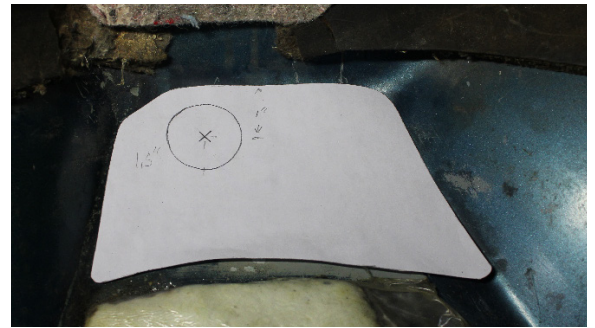


Photo 7 - Template for Drain Tube Hole.

7) Install Thermostat and intake grill. (Diagram 1)

- a) Locate the intake grill w/ thermostat.
- b) Gently feed the thermostat's capillary sensor tube through the small hole in top lip of large inlet air opening (Diagram 1). Gently bend the end of the sensor tube about a 90 degree angle approximately 2" from the end and insert it straight into the fins of the coil about 1/2" up from bottom and centered from front to back of the inlet opening. Correct sensor tube location will be marked with a label and plastic pin on the evaporator coil.
- c) Snap intake grill onto the side of the Hurricane unit.

**NOTE:** Thermostat sensor location is important to cycle the compressor to keep the coil from freezing up and achieve maximum cooling performance. Rotate thermostat completely clockwise then rotate counterclockwise approximately 1/8 turn until you feel the indent. The adjustable thermostat will allow some adjustment for fine tuning the system.

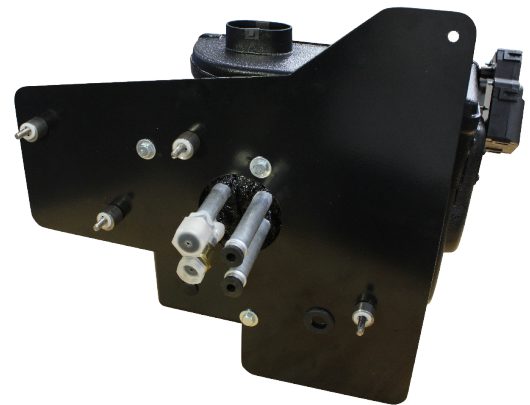
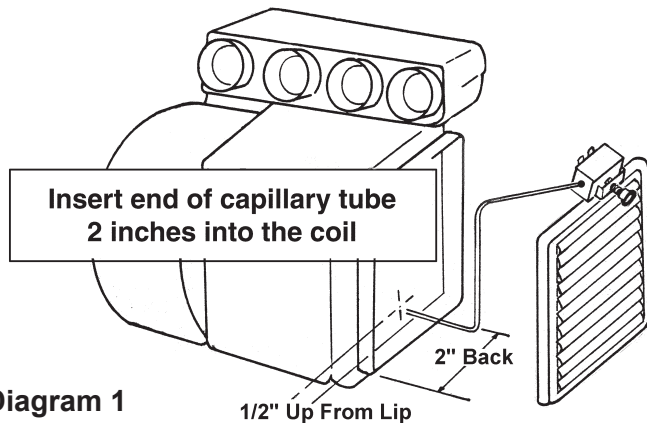


Photo 8 - Install Mounting Plate on Unit.



**For Steps 8 thru 11 - See also exploded view of unit to firewall mounting diagram 2 on page 5**

8) Attach mounting bracket to back of Hurricane unit using (3) 1/4-20 X 1-1/2" bolts and (3) 1/4" flat washers. (Diagram 2 on page 5 & Photo 8)

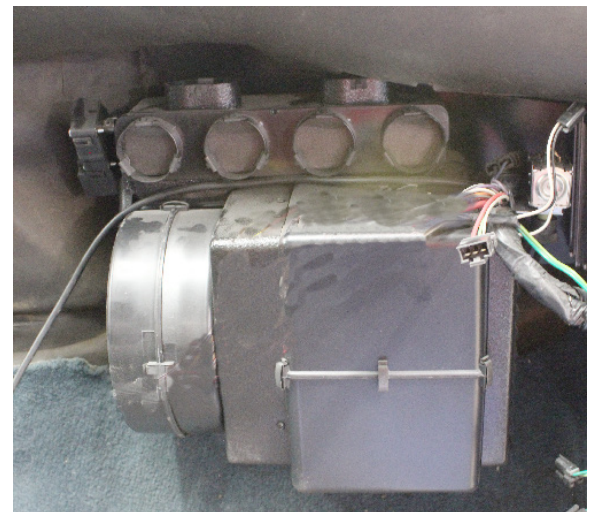


Photo 9 - Attach Unit to Firewall

9) Mount unit to firewall.

- a) Place 1/2" spacers on mounting studs and secure with 1/4" nylon retaining washers. (Diagram 2 on page 5 & Photo 8)
- b) Insert 6mmX1.0x40mm bolt through upper left hole in mounting plate and insert bolt through 1/2" spacer and secure with 1/4" nylon retaining washer.
- c) Align tubes and insert mounting studs on mounting plate through holes in firewall and loosely attach unit to firewall with 1/4" flat washers and 1/4-20 nuts. (Photo 9)
- d) Slide rubber 4 hole grommet over tubes and tuck inner edge of grommet into 3" hole in firewall. (Photo 10) **TIP:** Use a mild soap/water mixture or window cleaner such as Windex to lubricate grommet and tubes with for easier installation.
- e) Tighten bolt and nuts on mounting studs and tuck grommet into round hole in firewall until mounting plate and unit are snug against firewall.



Photo 10 - Install Round Grommet

# Exploded view of unit and mounting plate

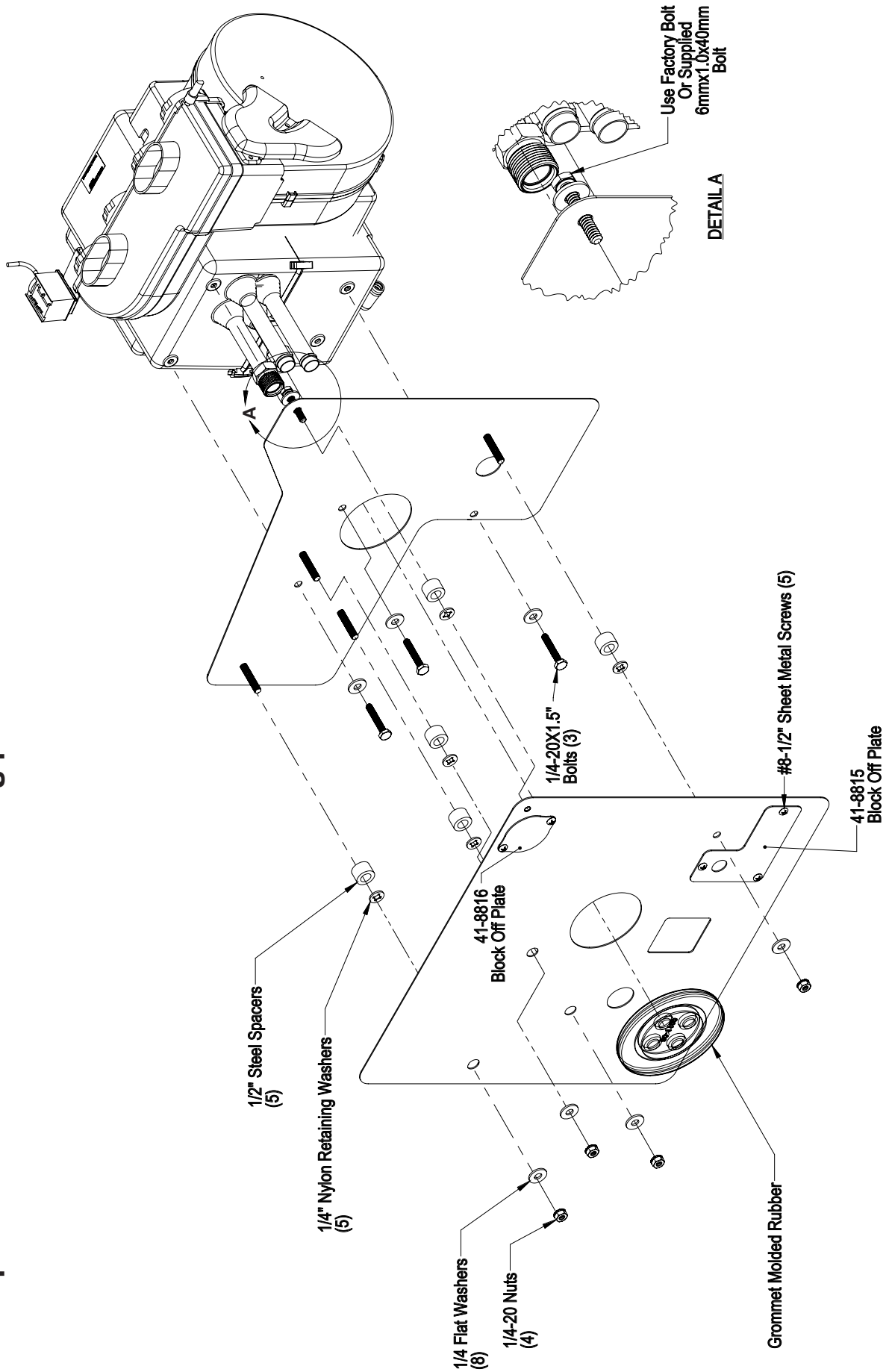


Diagram 2

11) Install original ECM into bracket and secure with 2 keps nuts provided. (Photo 11) Bracket studs will slide into place where original ECM studs were removed

12) Route original wire harness as needed and reconnect to the ECM module. (Photo 11)

13) Install Drain Tube. (Photo 12)

a) Cut approximately a 5-1/2" long piece of drain tube and a 3" long piece w/ staple at end. Insert 90 degree fitting to connect tubing. **Note:** exact lengths of tubing may vary due to hole location and carpet/pad thickness.

b) Insert rubber grommet in drain tube hole made in step 5.

c) Place tube over drain nipple on bottom of unit and insert drain tube assembly through grommet in floor. (Photo 12)

14) Install blockoff plate #41-8816 to firewall. Mark and drill two 1/8" holes and secure to firewall with 2) #8x1/2" sheet metal screws. Use thin bead of silicone for water tight seal. (Photo 13)

15) Install blockoff plate # 41-8815 to firewall. Mark and drill (3) 1/8" holes and secure to firewall with (3) #8x1/2" sheet metal screws. Use thin bead of silicone for water tight seal. (Photo 13) **NOTE:** Wire harness and grommet will be installed into hole in block-off plate later...

16) Install expansion valve onto the lower A/C fitting with a lubricated #8 oring seal. Tighten the fitting using a 7/8" and 5/8" wrench. Use caution not to over tighten and crush or damage the O-ring seal. (Photo #14)

**Note:** The expansion valve in this kit may have a 134-A label. This refers to the refrigerant used in the sensor tube, not the refrigerant to be used in the system. The expansion valves included with our systems are compatible with both R-12 and 134-A systems.

17) Gently bend the "pig tail" sensor that is attached to the expansion valve so that it is parallel and against the upper A/C tube on the unit. Use the clip provided to secure the end of sensor to the tube between the firewall and the brass fitting. Wrap the clip & sensor tube with the black insulating tape provided. (Photo #14)

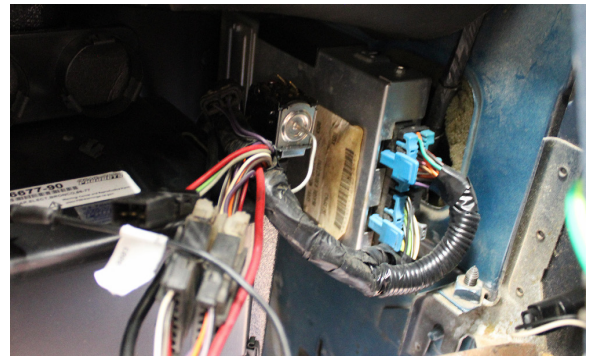


Photo 11 - Install ECM into bracket & Connect Factory Wire Harness.



Photo 12 - Install Drain Tube

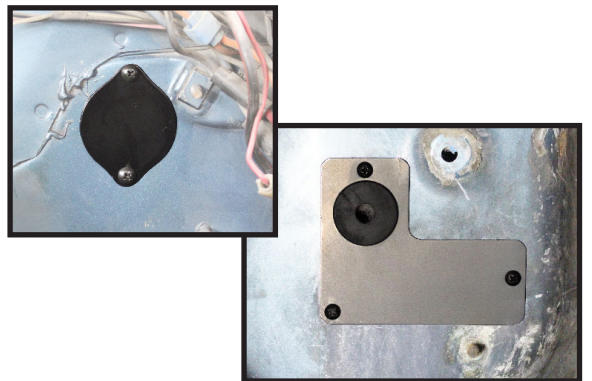


Photo 13 - Install Block-Off Plates

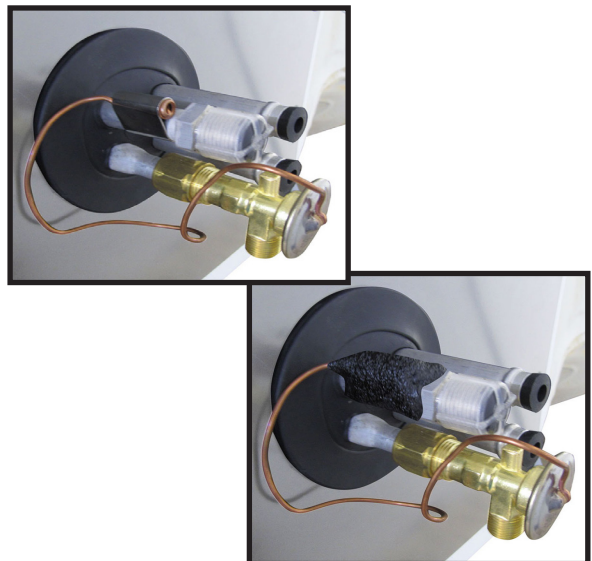


Photo 14 - Install Expansion Valve

## INSTALL DEFROST ADAPTER

- 1) Remove OE duct work to factory dash louvers.
- 2) Attach defrost adapter to factory defrost duct by inserting edge with clips onto duct then secure by pressing supplied plastic push pins into defrost duct on the other side. (Photo15)



## INSTALL DASH LOUVER ADAPTERS

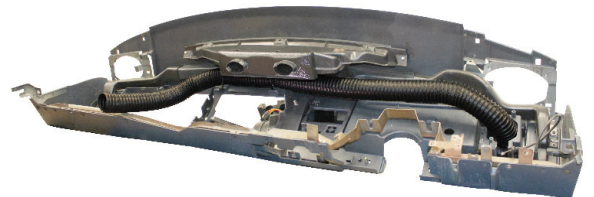
- 1) Align and secure louver adapter for driver side with original screws. (Photo 16)
- 2) Connect a 60" long piece of 2" duct hose to driver side louver adapter. Route hose through the dash opening and along inside of dash where original ductwork was removed. Secure 2" duct hose to dash as needed with zip ties. (Photo 17)
- 3) Attach passenger side louver adapter to back side of dash with original screws. (Photo 18)
- 4) Install dual louver adapter on back side of the original center louver by pushing adapter over original louver until it is secured by the clips on adapter. (Photo 19)
- 5) Re-install dash into truck.



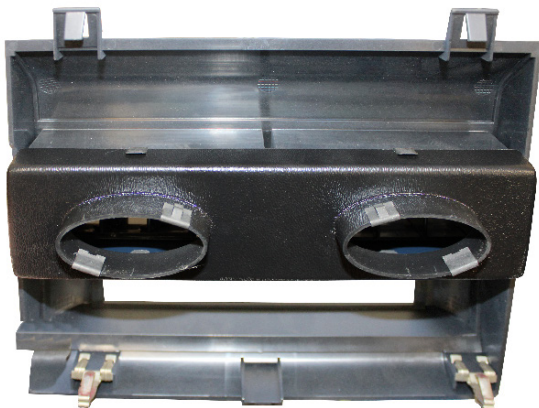
**Photo 15 - Install Defrost Duct**



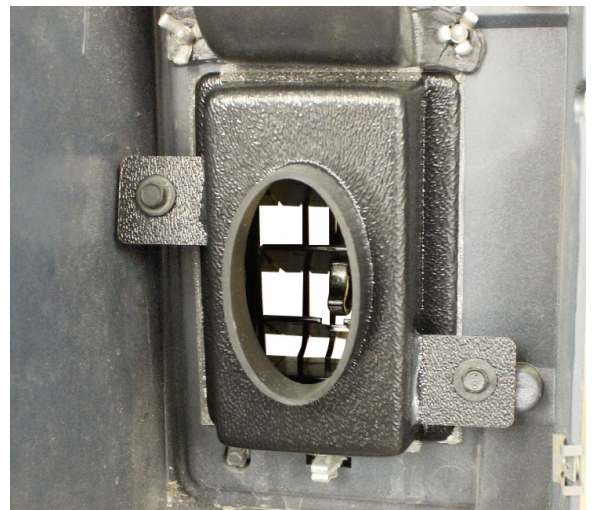
**Photo 16 - Install Driver Side Duct Adapter**



**Photo 17 - Install Duct Hose Driver Side**



**Photo 19 - Attach center louver adapter**



**Photo 18 - Attach louver templates to dash**

# Install Control Assembly & Wire Harness.

(For reference see wiring diagram on page 13)

- 1) Install control assembly.
  - a) Feed wire harness through dash opening and connect 5 terminal plug to blower switch.
  - b) Wire harness section 22-3369 Match 3 terminal connectors with red & green dots to the flat 3 terminal connectors for heater valve and dash/defrost functions.
  - c) Plug connector with red & black wire into matching connector on main wire harness.
  - d) Plug connector with single black wire into matching connector with black wire w/white stripe.
  - e) Connect Red wire w/bullet connector to matching connector in wire harness.
  - f) Connect Black wire with female spade connector into black wire with male connector in wire harness.
  - g) Connect Black wire with ring terminal to ground.
  - h) Control Illumination (optional) There are 3 bulbs with orange wires in the back of the control. Connect 1 wire from each bulb to (-) ground. connect the other orange wire from each bulb to the (+) power to the instrument panel lights. This will allow the control panel to operate (bright & dim) along with the instrument panel lights.
  - i) Secure control into dash with original screws. (Photo 20)



Photo 20 - Install Wire Harness and Control



Photo 21 - Connect Harness to OAP ECU

## Refer to Wiring Diagram on Page 14 for Steps 2-4

- 2) Connect wire Harness to Hurricane Unit.
  - a) Orange wire w/ 30Amp Fuse, connects to 12V+ ignition "Key-On" Power source.
  - b) Orange wire w/ 20Amp Fuse connects to 12V+ (IE Battery) Power source.
  - c) Flat 3 terminal connector connects to mating connector on Hurricane Unit.
  - d) Black wire with ring terminal from relay will connect to ground.
  - e) Two green wires taped together connect to the two terminals on the thermostat located at the top of the intake grill.
  - f) Route Green Wire w/ bullet connector through firewall to be connected to safety switch and compressor during installation of under-hood components.
- 3) Connect wire harness (section #22-3369) to OAP ECU (Photo 21)
  - a) Plug 4 terminal connector (Black, Red & Black w/ white stripe) into A/C Relay/12V/Ground connection on OAP ECU.
  - b) Plug 3 terminal connector w/ green dot (Red, Black & Brown Wires) into MODE connector on OAP ECU.
  - c) Plug 3 terminal connector w/ red dot (Red w/white stripe, Black & Brown Wires) into TEMP connector on OAP ECU.
- 4) Connect Servo Motors to OAP ECU (Photo 21-24)
  - a) Using the shorter wire harness connect the flat black 5 terminal plug into the MTR-1 connector and route the other end to the Servo motor on the defrost plenum on top of Hurricane Unit. (Photo 21-22)
  - b) Insert small connector of heater valve harness through hole in firewall plate #8815 then place grommet around wire and insert into firewall plate to seal hole. (Larger connector will plug into servo when heater valve is installed). (Photo 23-24)



Photo 22 - Connect to Defrost Servo Motor



Photo 23 - Route Heater Valve Wire Harness through Block-off plate & grommet

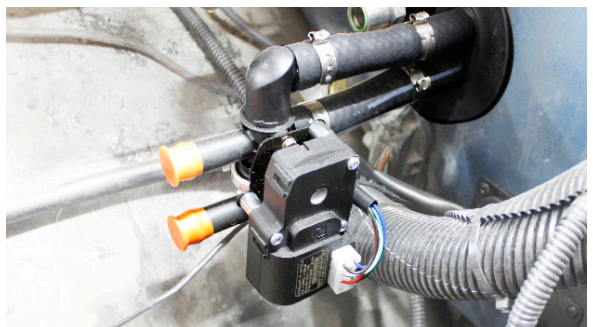


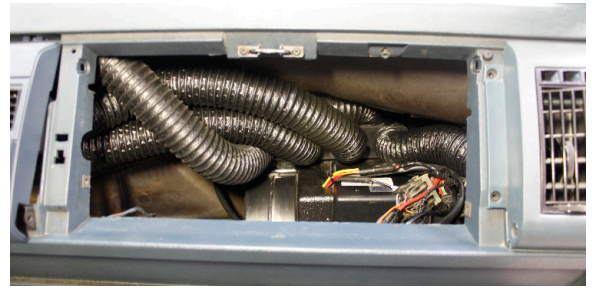
Photo 24 - Connect Wire Harness to Heater Valve Servo Motor

- c) Connect small connector to mating connector on wire harness then connect the flat black 5 terminal plug to the MTR-3 connector on OAP ECU. (Photo 21)
- d) After wire harness connected to OAP ECU secure OAP ECU to the inside bottom portion of dash below glovebox with Velcro strips provided.

**CAUTION** - OAP ECU is not waterproof - Do not locate where moisture or condensation can come in contact with the OAP ECU. Example, Moisture can enter vehicle through leaks in firewall, cowl or fresh air vents that are not sealed properly. Excess moisture can condensate and drip from duct hose or Hurricane Unit.

**INSTALL DUCT HOSE**

- 1) Install 2” Duct hose from the 2 defrost outlets on top of Hurricane unit to the 2 duct hose inlets on the defrost adapter. (Photo 26)
- 2) Connect the duct hose (Installed in Install Dash Louver Adapters Section Step 2) from the driver side louver adapter to the left side outlet on the Hurricane unit. (Photo 26)
- 3) Connect 2 pieces of 2” duct hose to the 2 center outlets on Hurricane unit and route through the factory center vent opening in the dash. Connect the 2 duct hoses to the inlets on the center vent adapter then install factory center louver into original dash opening. (Photo 27)
- 4) Connect the outlet on right side of Hurricane unit to the duct adapter on the passenger side louver adapter. (Photo 28)
- 5) Re-install original driver side louver w/ dash bezel.
- 6) Re-install factory glove box and glovebox door. (Photo 29)



**Photo 26 - Install Duct Hoses**



**Photo 27 - Install Duct Hose & Center Vent**



**Photo 28 - Passenger Side Louver**



**Photo 29 - Reinstall Glove Box & Door**

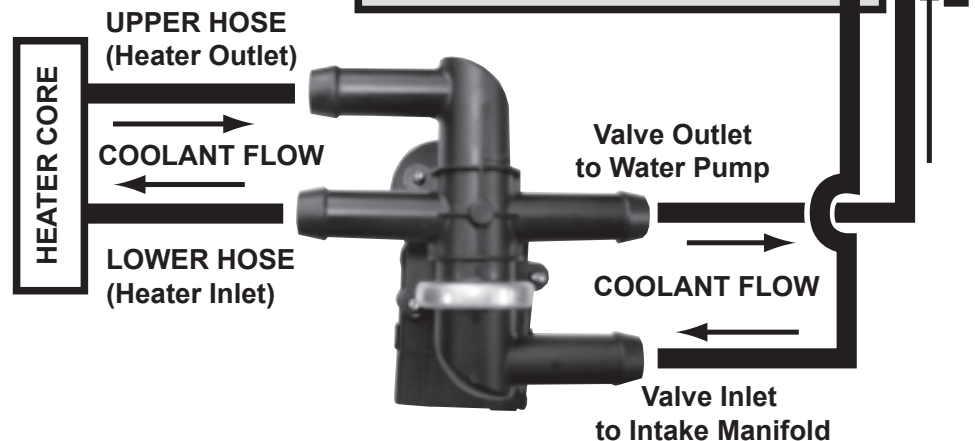
## HEATER HOSE & VALVE INSTALLATION

NOTE: For vehicles with 3/4" heater hose use adapter sleeve over heater valve nipple to step up from 5/8" to 3/4" hose size. If you prefer not to use the adapter sleeve, 5/8" hose nipples are available from your local auto supply. During installation we recommend installing the heater hose then let the wire harness length determine the best location for the heater valve. Routing of heater hoses should be close enough to incorporate both hoses through one heater valve.

- 1) Route a section of heater hose from the engine heater outlet (usually on the intake manifold) to the heater inlet fitting (bottom tube) on the unit.
- 2) Route a second section of heater hose from the heater outlet fitting (top tube) on the unit to the heater return fitting on the engine (usually on the water pump).
- 3) Position heater valve in location away from exhaust manifold. Be sure connector to heater valve wire harness installed in Step 4b of Installing Control and Wire Harness section on page 8 will reach. Splice into heater hoses and connect as shown in diagram on page 10.

*Tip: We recommend gear type clamps be used to fasten the heater hoses and caution should be taken not to over torque the clamps creating damage to the heater valve.*

5. Refill radiator with antifreeze that will provide freezing protection for at least -10 degrees fahrenheit. Failure to have adequate antifreeze may allow a/c system to freeze heater core and rupture tubing in heater core.
6. Check to make sure that all hoses and wires are secured away from radiator fan and other moving parts to prevent damage to hoses.



*This completes the installation of the inside package, if you purchased a complete system please refer to the instruction sheets included with the compressor bracket, condenser and A/C hose kit to complete the installation of this custom A/C & heater system. The following pages may also be used as a general reference guide if existing or other aftermarket underhood components will be used to complete your installation.*

# CAUTION

**This is not a blend system.**

**You must maintain an adequate antifreeze mixture in the cooling system for protection to -10 degrees Fahrenheit.**

**During installation the heater valves must be opened to allow antifreeze to flow into the heater core before operating the A/C system to prevent possible freezing and damage to the heater core.**

**The heater valve should be closed while operating the air conditioning system for maximum cooling.**

**Neglect of these cautions will cause damage to A/C & heater system and Void Manufacturers Warranty.**

## COOLANT FLOW CHART

This should complete the installation of the Inside Package, If you purchased a complete system continue with the condenser, compressor and a/c hose instructions.

## CONDENSER INSTALLATION

Refer to the instructions included with the condenser assembly for installation.

## COMPRESSOR & BRACKET INSTALLATION

Locate the compressor and the mounting bracket. Refer to the instructions in the bracket hardware bag for installation. During installation the compressor may mounted with fittings pointed up or rotated to either side for easier hose routing but **DO NOT MOUNT COMPRESSOR UPSIDE DOWN**. We recommend waiting until the system is ready for the refrigerant charge before making this connection to the compressor clutch to avoid compressor damage.

**NOTE:** New compressors from Old Air Products are filled with adequate oil for the complete system, unless it is being installed for use with dual evaporator system.

## A/C HOSE & PRESSURE SWITCH INSTALLATION

**NOTE:** Depending on the compressor and bracket combination used this kit may contain either a pre-cripped or universal a/c hose kit. This kit is designed to work with rotary vertical o-ring style compressors. If using a factory or other type compressor an adapter or other fittings may be required to connect hoses to the compressor. All o ring fittings will require using an o ring seal. Use refrigerant oil to lubricate the o-rings on all hose fittings and connections. Protective caps and plugs should not be removed until refrigerant hoses are ready to be connected. O-Ring fittings should be tight, although excessive over tightening will crush o-ring seal. Avoid sharp bends when installing hose. Hoses should not be too close to the compressor clutch, or touch hot or moving parts of the engine. Slide necessary grommets on hose before routing through firewall and core support. Grommets will help prevent cutting hoses on sharp metal edges. **Hose Clamps should not be used with R-134A Refrigerant, a beadlock crimper is required to secure fittings to the hoses. (use of linear hose crimping tool will void warranty)** Even though hose clamps are acceptable for use with R-12 refrigerant, it is recommend that all hose fittings be crimped for neatness, and to facilitate easy conversion to another refrigerant if desired, at a later date.

If installing with a universal hose kit the hoses may be cut and assembled to desired length. Most A/C shops or auto supply stores can also crimp the a/c hoses for a modest fee or We will crimp them at no charge.

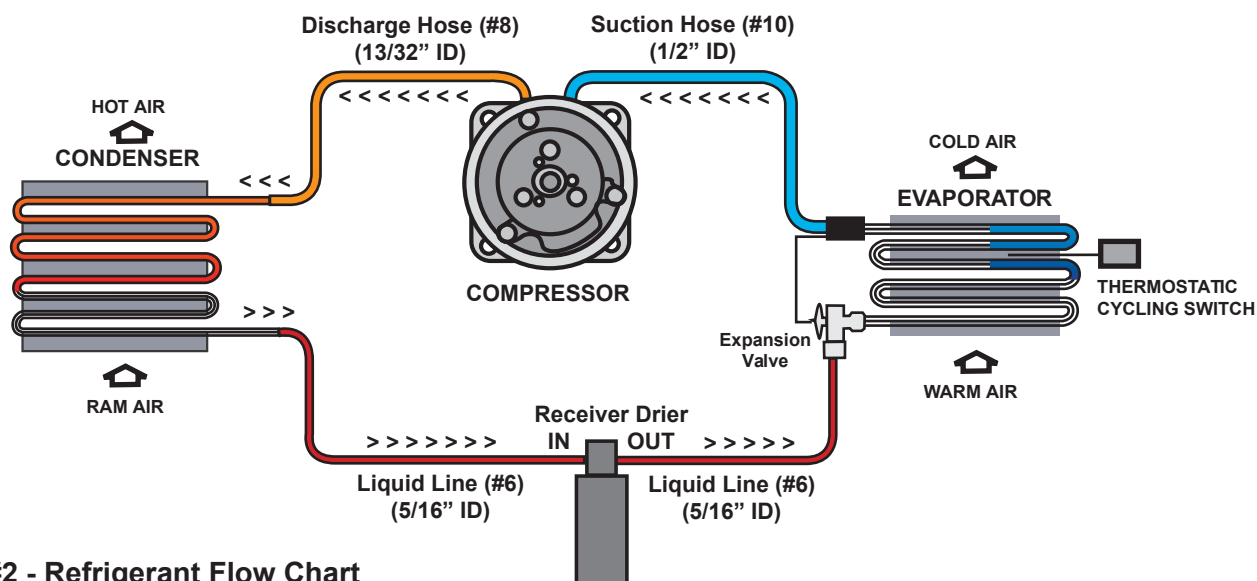


Diagram #2 - Refrigerant Flow Chart

Refer to Diagrams #2 & #3 for the Following Steps 1-5.

**NOTE:** This hose kit includes reduced barrier A/C hose. It is smaller in diameter and more flexible than standard A/C hose. When routing hoses use caution not to kink the hose. Kinking the hose can create a weak spot in the wall of the hose and cause a restriction for the refrigerant flow. **All A/C hoses will need to be cut to length and crimped before final assembly. Make sure to use the correct crimping tool and dies to fasten the fittings to the end of the hoses.**

1) Route the #6 (5/16") hose from the condenser outlet tube to the expansion valve. Use the #6 straight fitting with switch/port on the condenser outlet tube and #6 90 Degree fitting at to the expansion valve. Route the #6 A/C hose and cut to length as needed. Use lubricated # 6 O-Rings with a 3/4" and a 5/8" backup wrench to secure fittings.

**IMPORTANT NOTE:** a straight #6 fitting with a port for the pressure safety switch is included with the condenser kit. It is intended to be installed on the condenser outlet tube where it passes through the core support on the passenger side.(Photo 14)

3) The #8 (13/32") discharge hose routes from the outlet of the compressor to the condenser inlet tube. Use the #8 straight fitting with 134a service port on the condenser inlet tube and #8 90 Degree fitting at to the discharge port on the compressor. Route the #8 A/C hose and cut to length as needed. Use lubricated # 8 o-rings with a 7/8" and 3/4" backup wrench to secure fittings.

4) Use the #10 (1/2") suction hose routes from the inlet of the compressor to the outlet of the evaporator. Use the #10 straight fitting with 134a service port on the evaporator outlet tube and #10 90 Degree fitting to the suction port on the compressor. Route the #10 A/C hose and cut to length as needed. Use lubricated # 10 O-Rings with a 1" and a 7/8" backup wrench to secure fittings.

5) Place connector with rubber boot on safety switch. (make sure switch terminals go into electrical connectors) Connect one wire to green wire from thermostat and other wire to compressor clutch.

6) Install wrap-around hose clamps or pull-ties as necessary to secure all wires and hoses away from sharp edges, moving parts and exhaust manifold or headers to avoid damage to wires and/or hoses.

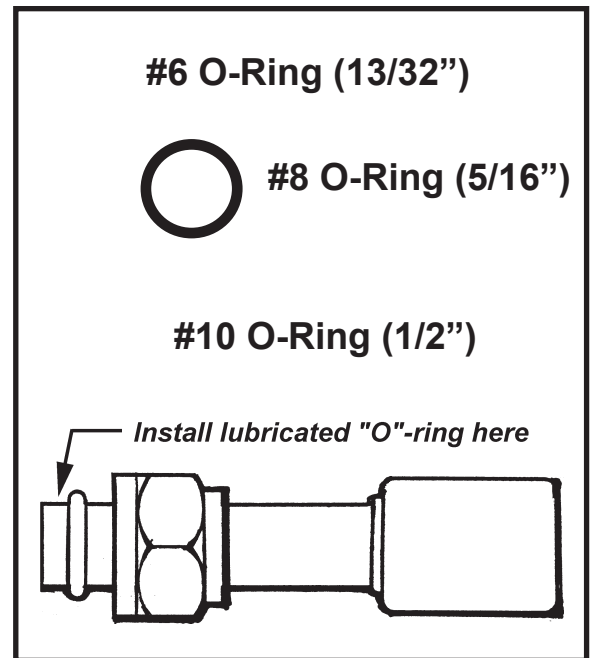


Diagram #3 - O-Ring Seals

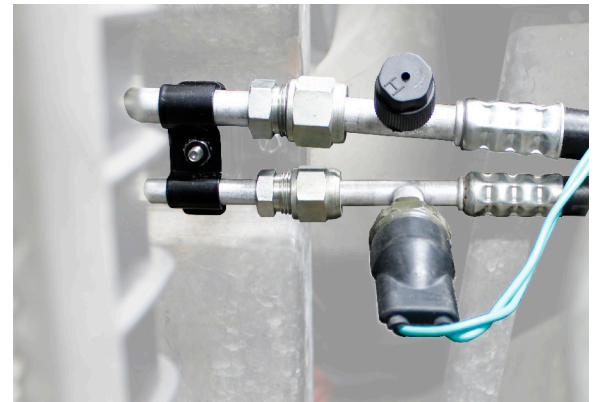


Photo 13 - Condenser Inlet/Outlet Tube

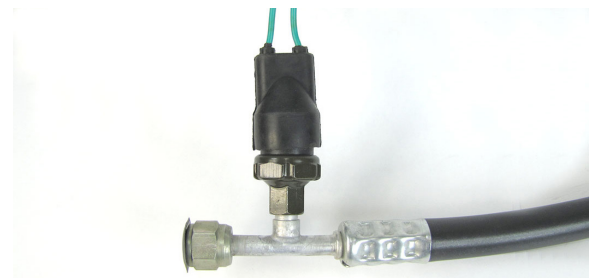
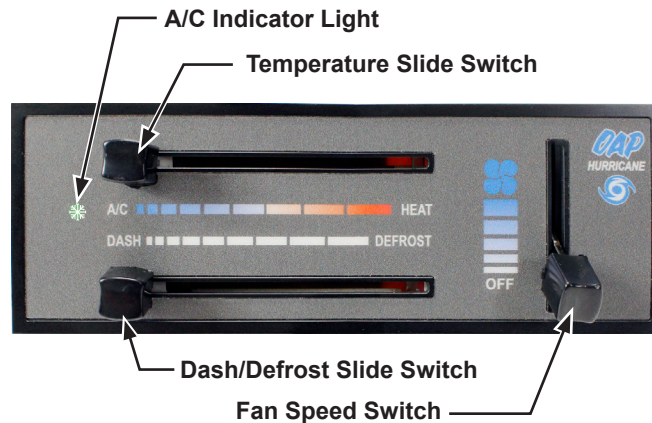


Photo 14 - Pressure Switch Port

# 48-8812E - Electronic Control Operation Instructions 1988-94 Chevrolet & GMC OBS Trucks



## 48-8812E Control Operation.

### A/C Operation -

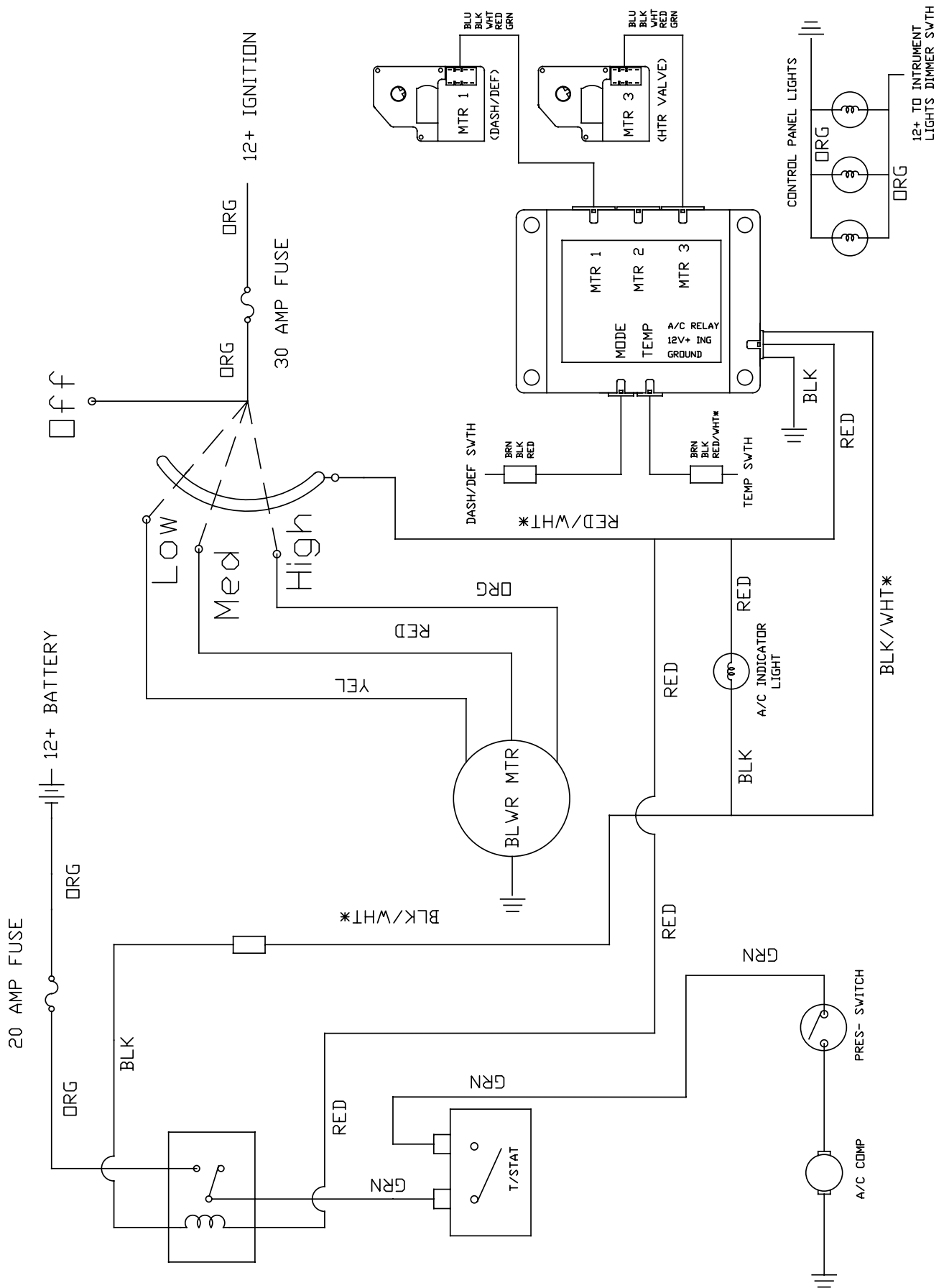
- Move Fan Switch to desired Speed.
- Move temperature slide switch all the way to the left to engage compressor (Snowflake Indicator light will turn green when compressor engaged) then slide can be moved toward the right to adjust to desired A/C temperature.

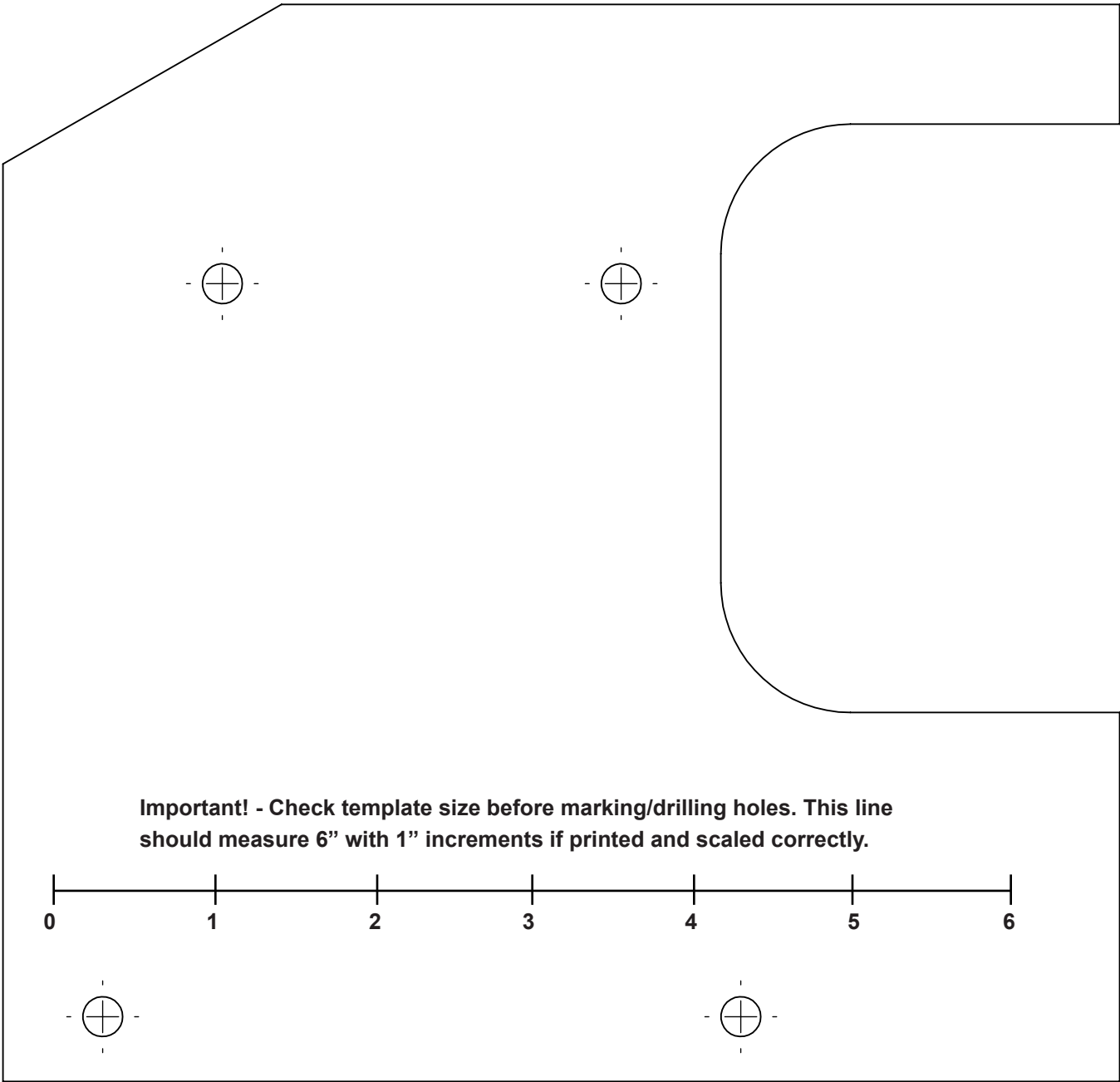
### Heater Operation -

- Move Fan Switch to desired Speed.
- Move temperature slide switch all the way to the right to disengage compressor then slide can be moved toward the left to adjust to desired heater temperature.

### Dash / Defrost Functions -

- Slide Dash/Defrost slide switch toward left side to direct airflow to dash louvers. Move slide switch to right to direct airflow to the defrost outlets. Airflow can be blended between dash and defrost outlets in both A/C and Heater functions

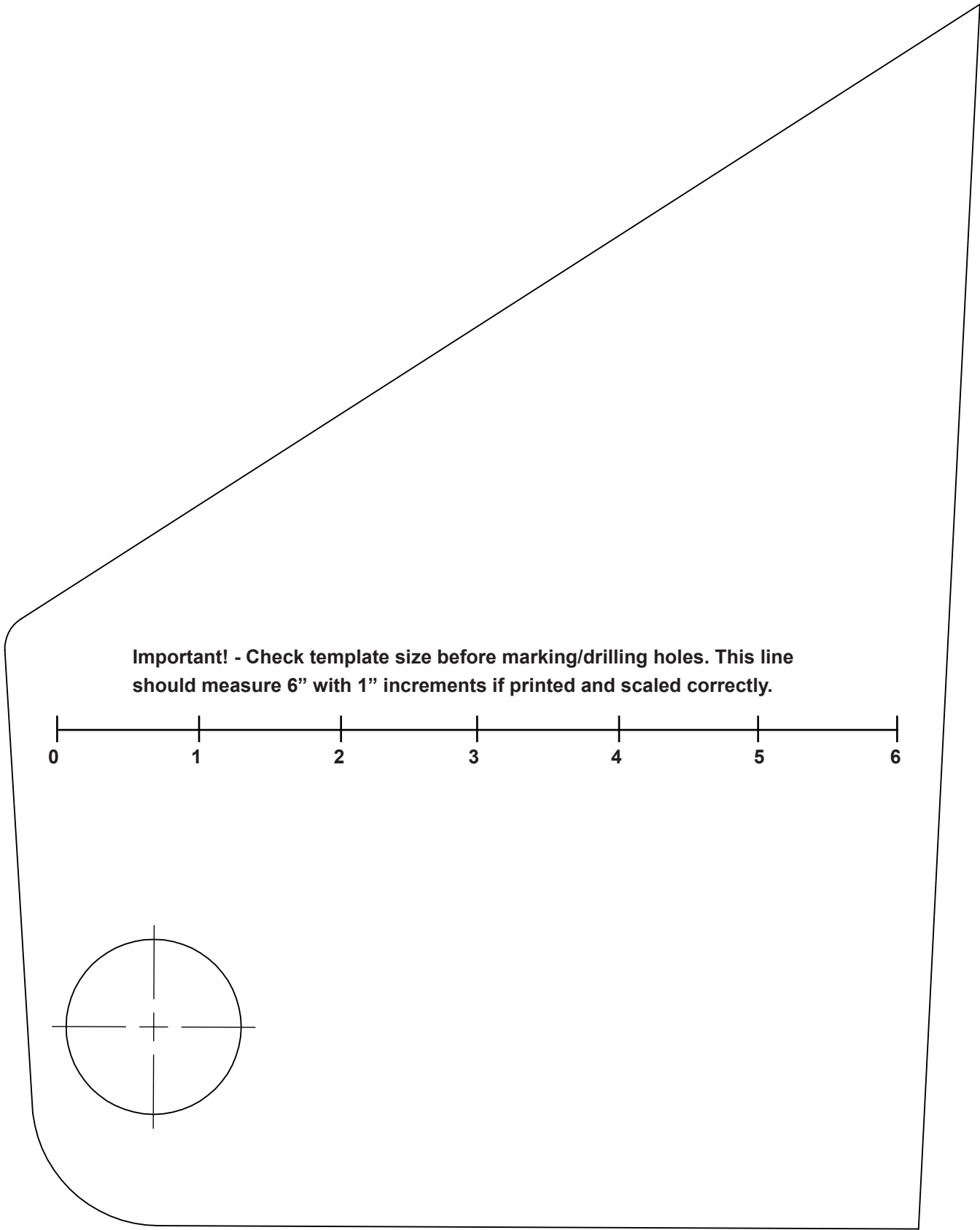




**Important! - Check template size before marking/drilling holes. This line should measure 6" with 1" increments if printed and scaled correctly.**



This Page Intentionally Left Blank For Template On Page 17



**Important! - Check template size before marking/drilling holes. This line should measure 6" with 1" increments if printed and scaled correctly.**

