



Controlled Documentation

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<input type="radio"/> Bill of Material	<input type="radio"/> Drawing (may be attached)	<input type="radio"/> Specification	
<input checked="" type="radio"/> Assembly Instructions	<input type="radio"/> Operating Procedure	<input type="radio"/> Other	

Hot Rod A/C

INSTALLATION INSTRUCTIONS

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Parts Included in Kit



Controls



Wiring and Heater control



Condenser



Evaporator



2" and 2.50" Air Hose



Vents.



Defroster Vents



Evaporator Brackets



A/C Drier and fittings

Tools required

- Philips head screwdriver
- $\frac{1}{8}$ " , $\frac{3}{16}$ " , $\frac{1}{4}$ " , $\frac{25}{64}$ " Drill bit
- 9mm, $\frac{1}{4}$ " , $\frac{9}{16}$ " , $\frac{11}{16}$ " , $\frac{3}{4}$ " , $\frac{7}{8}$ " , 1" wrenches
- $\frac{3}{32}$ " Hex Key
- White Marker
- Ruler
- Hacksaw
- Drill

(2) 2x4 or similar blocks

Scissors

7/8" hole saw

Rivet tool

Rivnut tool

Wire stripper

Wire Crimper

A/C hose crimping tool (possible loaner tool at autoparts store or available online from Vintage Air or www.ertoolsdirect.com Mastercool 71550 Manual hose crimper)



If windshield wipers are to be installed, position the wiper motor after the A/C is installed.



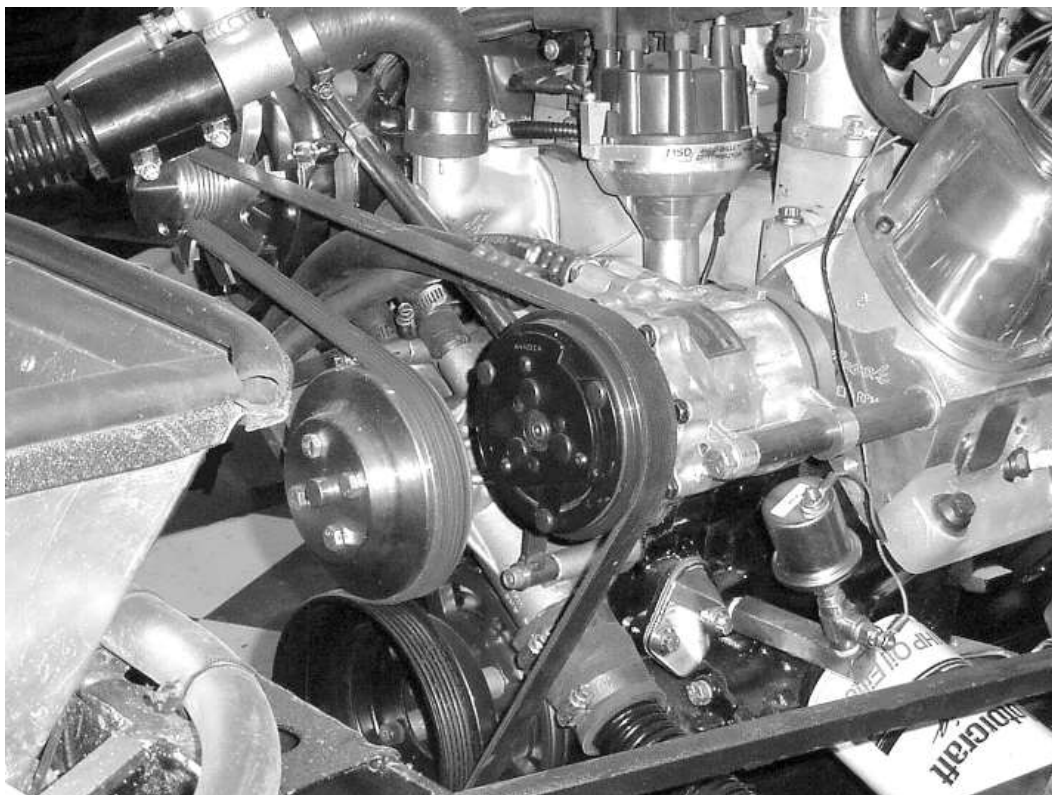
If the firewall has not been installed yet, all of the holes can be drilled with the firewall off the frame.



It is a lot easier to get to all of the parts before the body is put on the frame. Connect and ensure that the A/C system runs correctly (charged and blows cold) before putting the body on.

Compressors

302/351



Factory five has a compressor and steel brackets available for the 302/351 engine that will mount it to the top left side of the engine

COYOTE

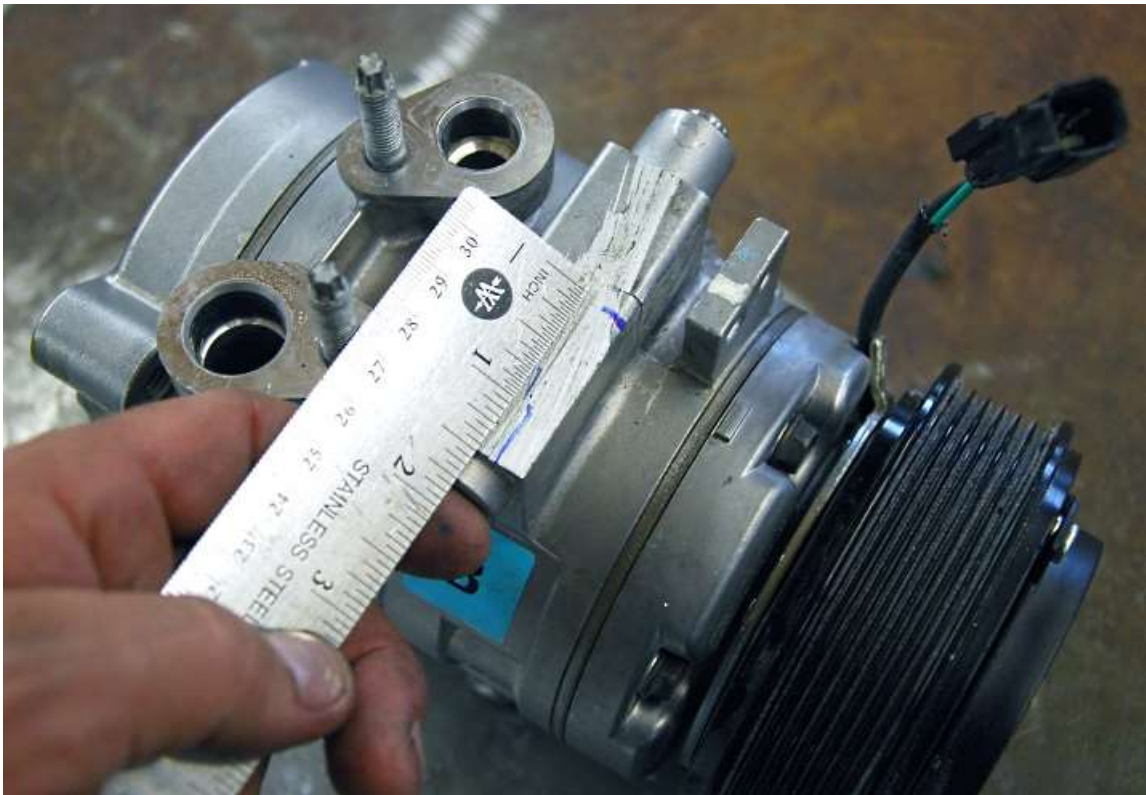


Factory Five offers a compressor that will bolt onto the Coyote engine on the bottom right side of the engine.

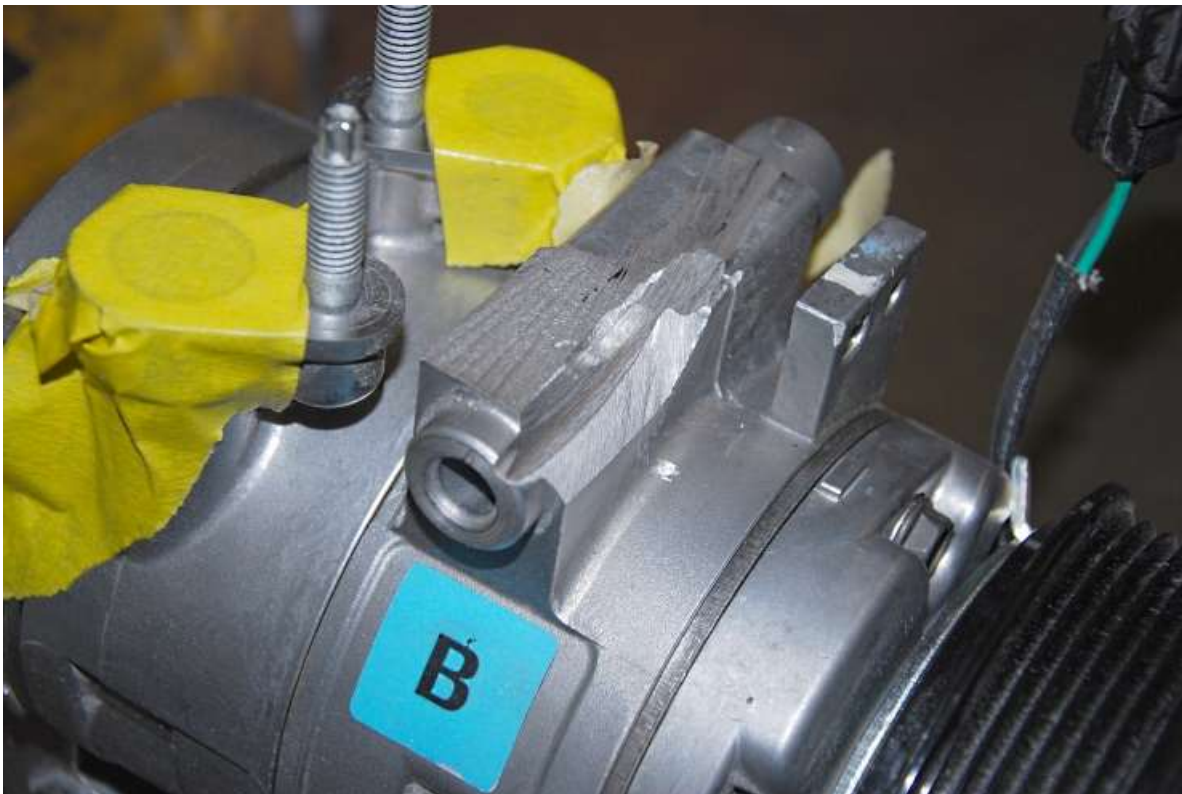
Coyote Compressor preparation



Cut the aluminum section marked off the compressor.



Measure and mark 1.50" x 0.375" wide on the area just cut.



Cut or grind the area down so that the cut just goes into the top of the bolt head area as shown.



Do not install the compressor until after the engine is in the frame.

Keeping the wires as long as possible, cut the connector off, it is not used.

Installation Instructions

CONDENSER INSTALLATION

If installed, remove the radiator from the car.

Place the radiator face up on a work surface using a block of wood under the radiator mount tabs so that it sits flat.



Place and center the A/C Condenser on the front of the Radiator so that the top edge of the Condenser sits on the Radiator fins and the bottom edge of the condenser is up on the lower tank. Note the location of the fittings on the Condenser, the larger #10 fitting is towards the top of the radiator.



The mount brackets will not sit down flush on the radiator; they will be spaced away from it.



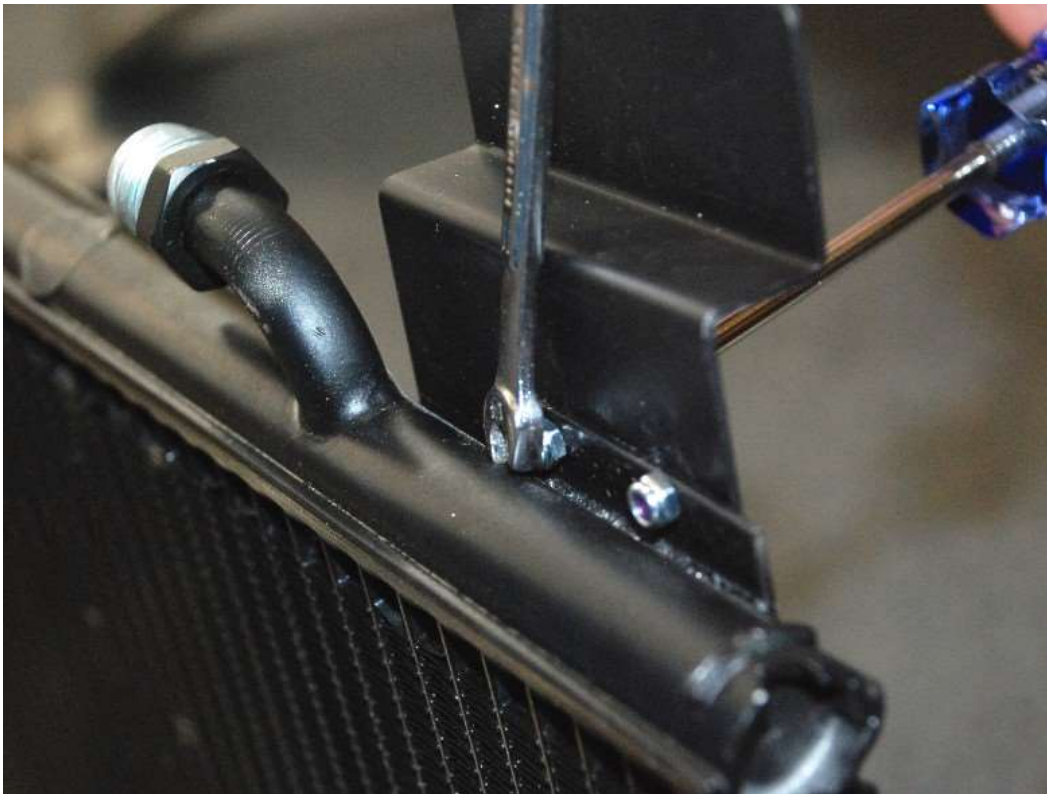
Place the Condenser mounting brackets on the radiator and under the condenser so that the smaller tab on each of the mount is positioned over the correct radiator mount tab. The strange looking brackets are for the bottom.



Mark the centers of the Condenser mount holes on the mounting brackets using a marker.



Remove the mount brackets and drill $\frac{1}{8}$ " holes at the locations marked.



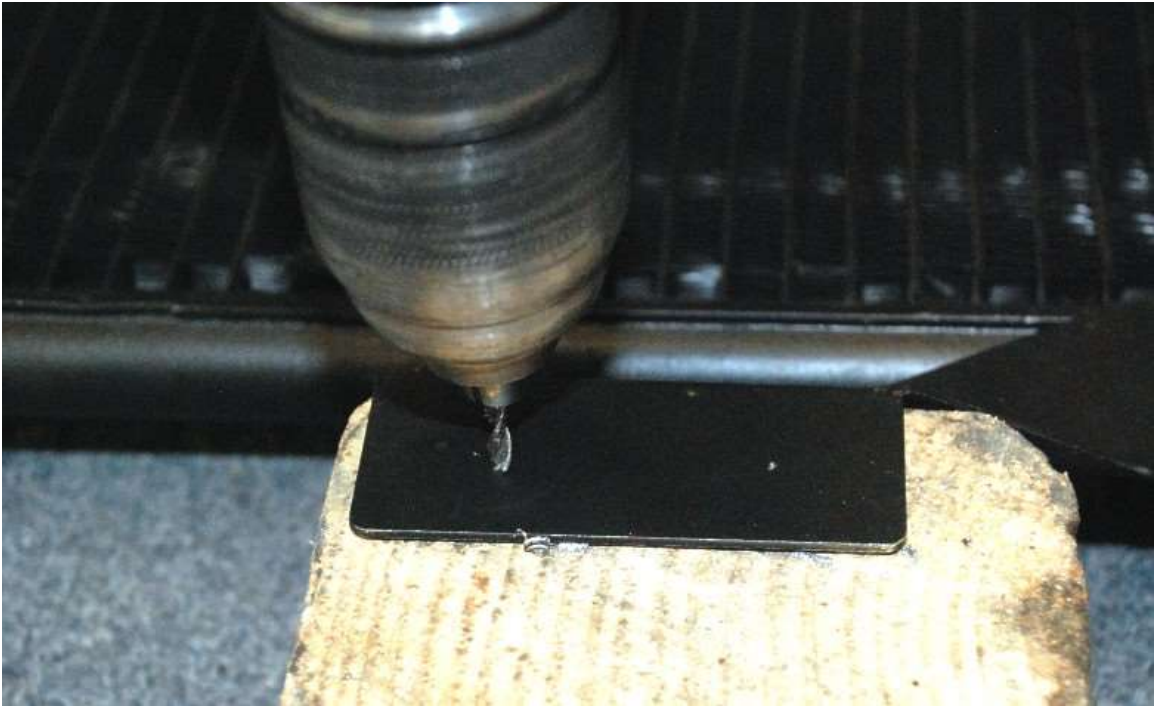
Use the supplied 4-40 x $\frac{5}{16}$ " screws and lock nuts to attach the brackets to the Condenser. Do not fully tighten the screws; leave them so that the brackets can get moved slightly. Use a $\frac{1}{4}$ " wrench and Philips head screwdriver. Note the direction the screws are inserted.



Place the Condenser on the radiator and adjusting the brackets if needed. Once the brackets are correct, remove and fully tighten the screws.



With the Condenser on the radiator, turn the radiator over and use a 1/4" drill bit through the radiator mount holes to mark the location of the holes on the Condenser mount brackets.



Remove the Condenser from the radiator and use a small drill bit and a wood block to drill the locations marked then open them up with a 1/4" bit.



Place the condenser on the Grill lining up the mount brackets then mark the location of the Condenser on the middle Grill cross bar. This bar must have material removed where the condenser hits so that it fits correctly.



Remove the Condenser from the Grill and mark the bottom side of the center cross bar on the Grill with the area to be removed. Measure $\frac{1}{4}$ " in then straight across to the mark on the other side.



Use a saw or grinder to remove the material from the crossbar.





Check the fit with the Condenser until there is about $\frac{1}{16}$ " clearance between the crossbar and the Condenser.



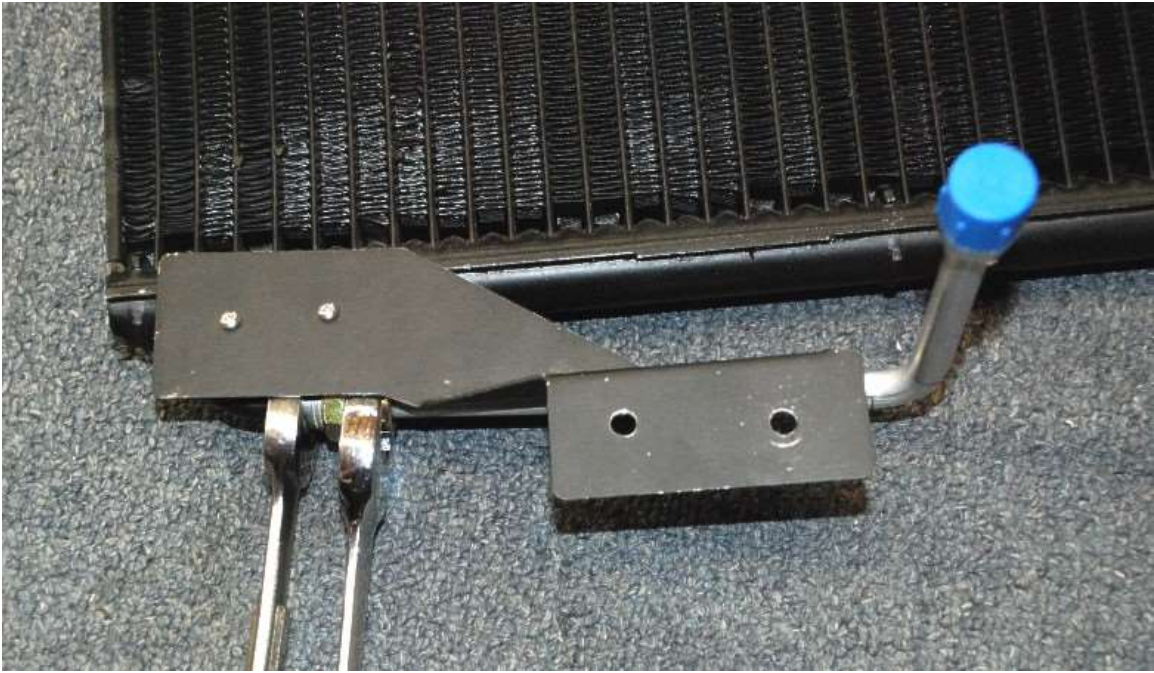
Push on a #8 O-ring on the end of the large #8 hard line.



Attach the large #8 hard line to the Condenser using $\frac{7}{8}$ " and $\frac{3}{4}$ " wrenches so that the fitting on the end is 90° to the condenser.



Push on a #6 O-ring on the long end of the large #6 hard line.



Attach the smaller #6 hard line to the Condenser using $\frac{3}{4}$ " and $\frac{11}{16}$ " wrenches so that the fitting on the end is 90° to the condenser.



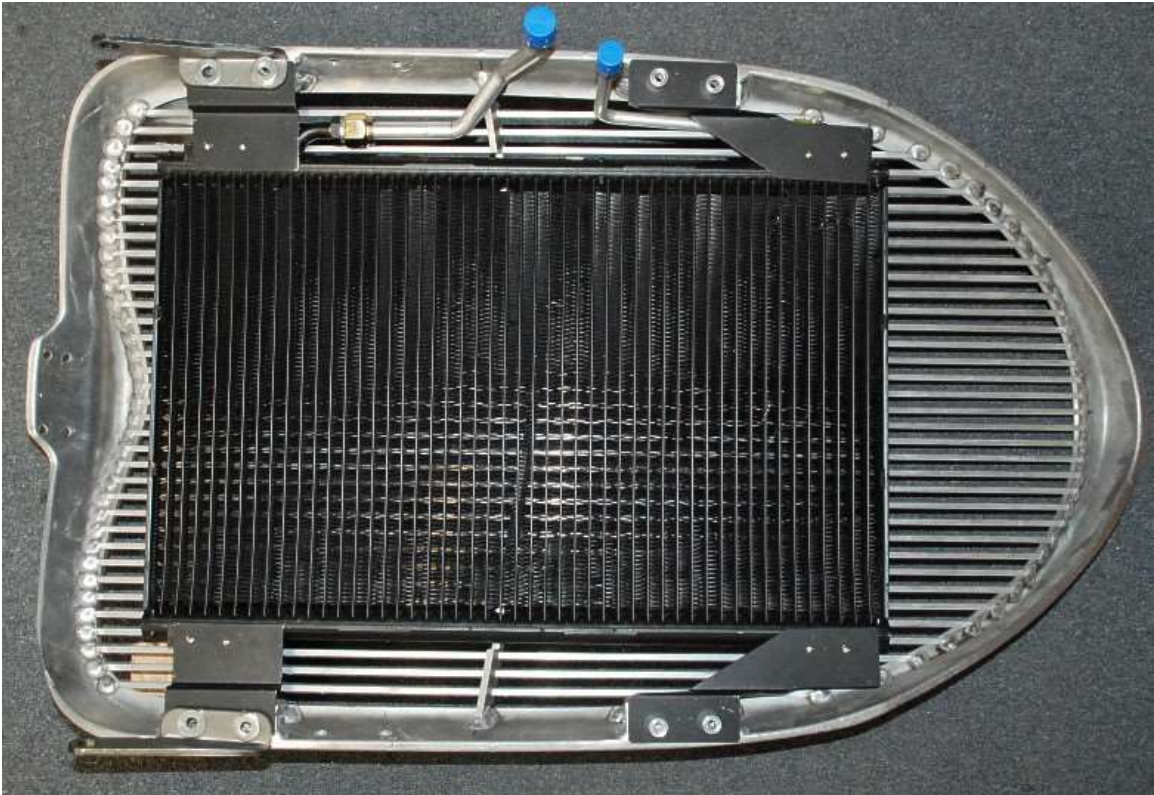
Place the Condenser on the Grill aligning the mount plate and Grill tab holes.



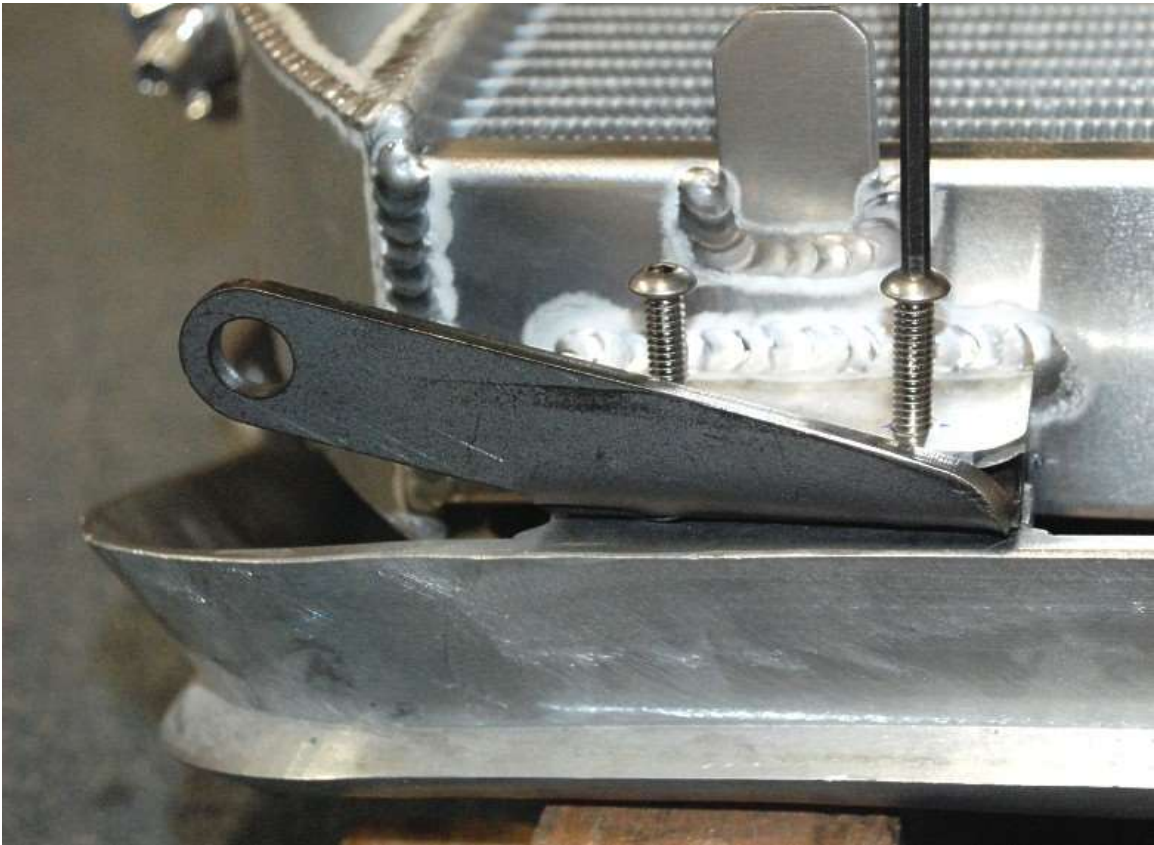
Please the $\frac{7}{16}$ " aluminum spacers on the lower Condenser mount holes.

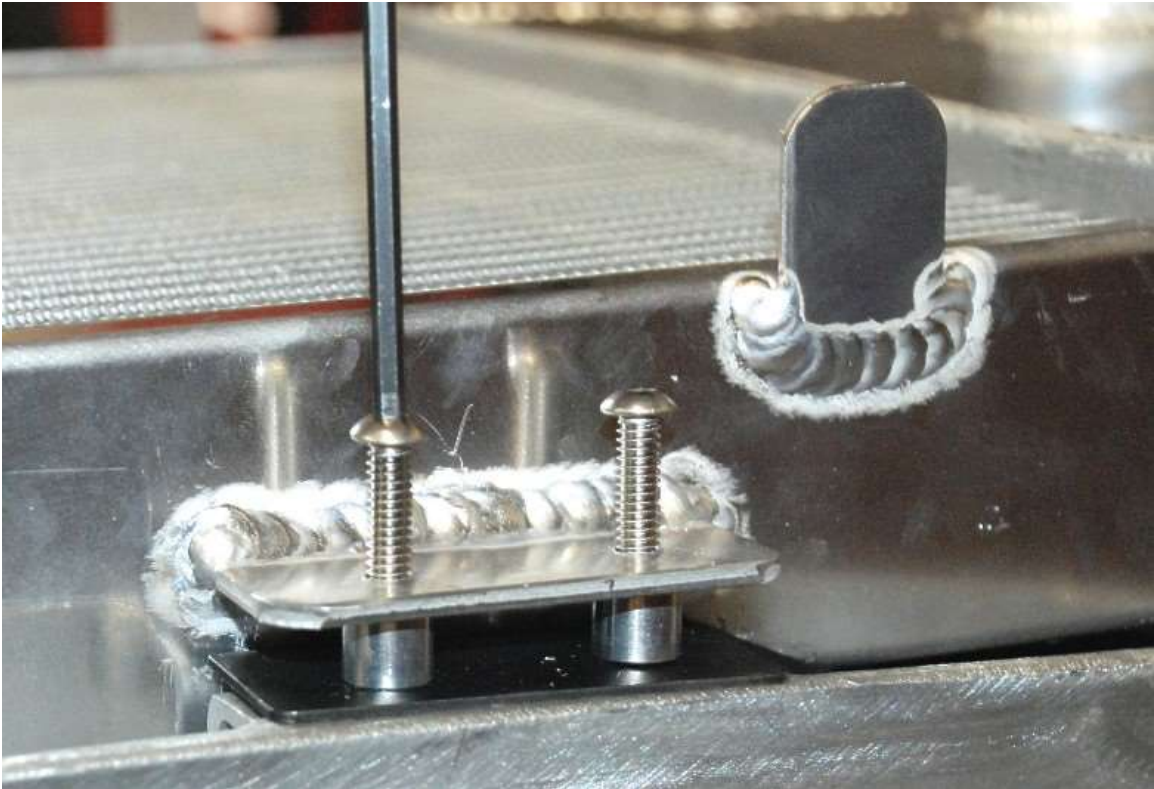


Place the hood Hinge mount plates on the upper Condenser mount plates so that they are opposite from the way installed in the manual. Place one washer over the top hole and two washers over the lower hole.



Place the radiator on top of the spacers.



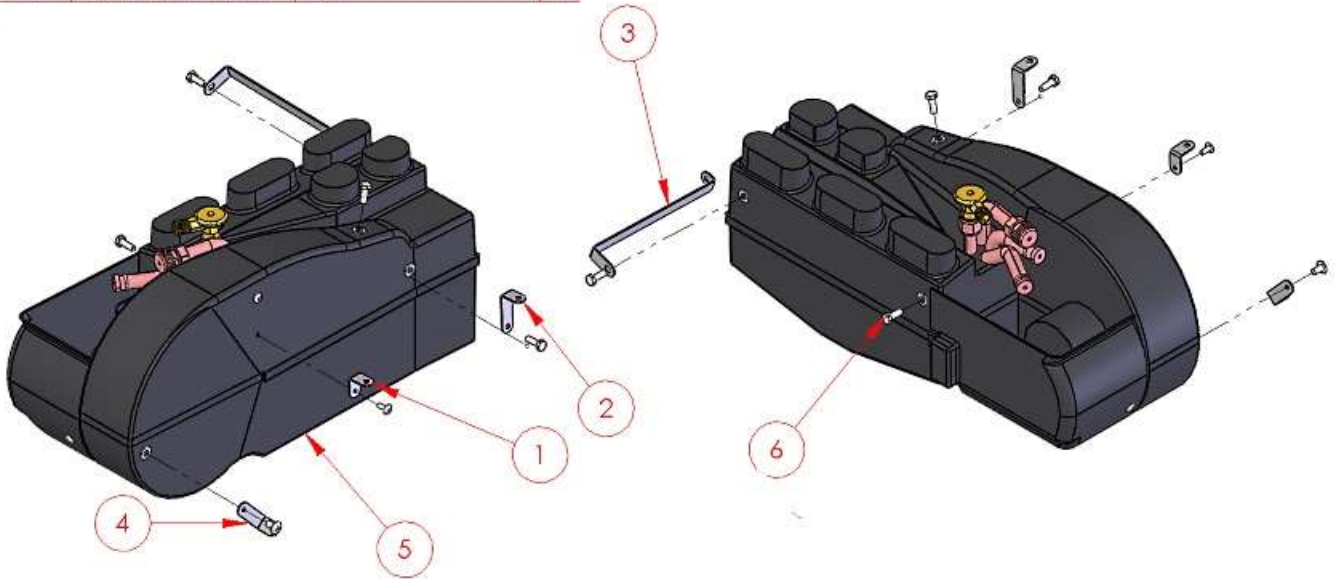


Attach the Radiator and Condenser to the grill using the $\frac{1}{4}$ "-20 x 1.5" screws provided. Insert and start all of the screws before tightening all of the screws.

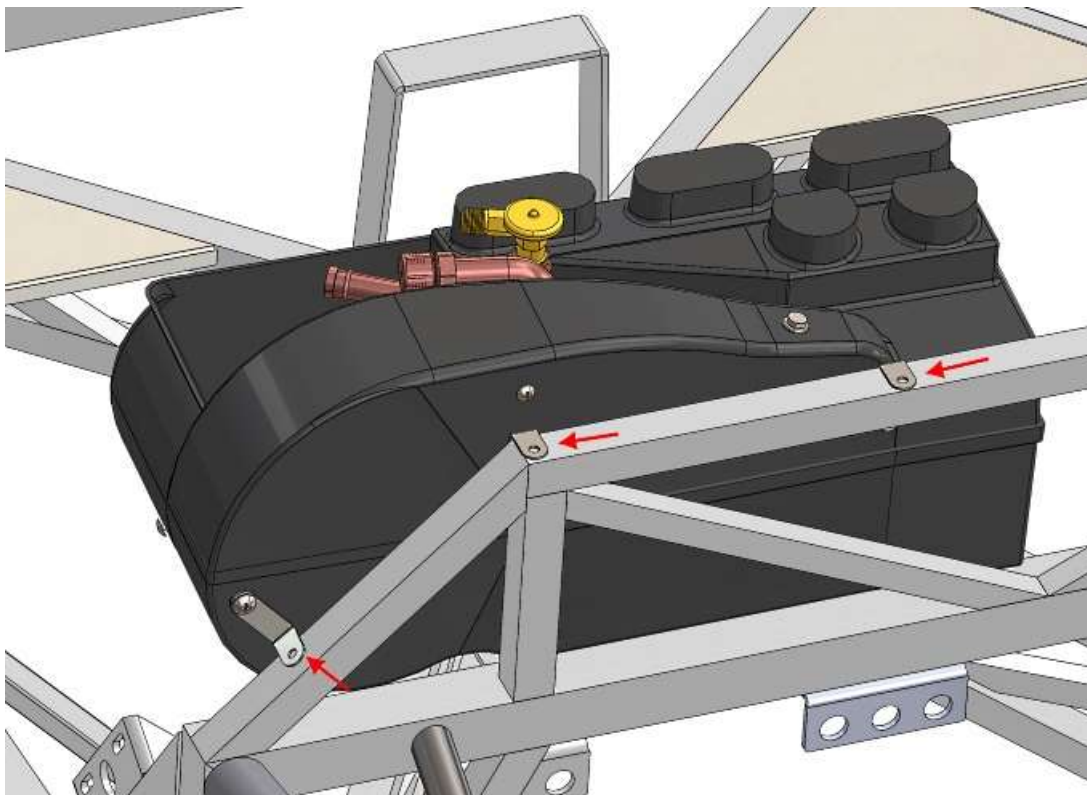
EVAPORATOR INSTALLATION

✂ Philips head screwdriver, $\frac{7}{16}$ " wrench, drill, $\frac{3}{16}$ " , $\frac{25}{64}$ " drill bits, Rivnut tool

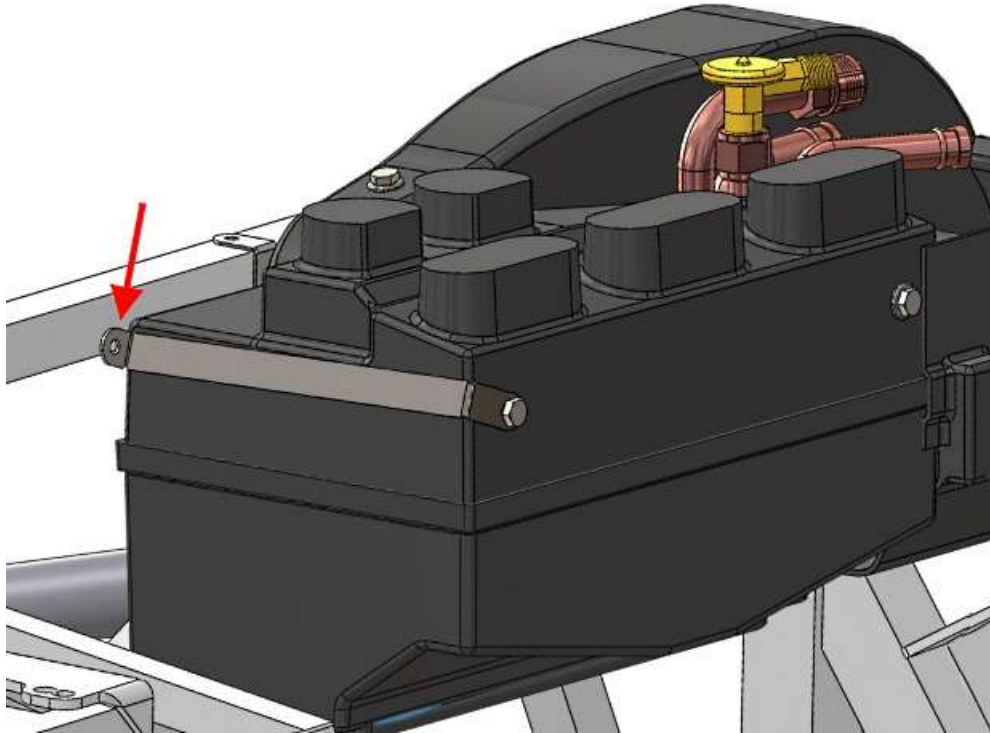
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AC TOP MOUNTS	34102 - OUTSIDE TOP MOUNT	1
2	AC TOP MOUNTS	34101 - INSIDE TOP MOUNT	1
3	34104	LEFT SIDE MOUNT BRACKET	1
4	AC TOP MOUNTS	34103 - OUTSIDE LOWER MOUNT	1
5	Vintage Air AC-Heater	A/C EVAPORATOR	1
6	HFBOLT 0.25-20x0.75x0.75-N	80539	4



Attach the mount brackets to the Evaporator using the pictures above for proper placement. Insert screws with silicone on into the unused open holes.



Hold the evaporator up to the frame on the right side of the firewall so that the Evaporator is oriented as shown with the top vents towards the passenger and the small top mounts are as far over on the top firewall as possible and the right side lower mount is on the angled tube.



The inside mount will attach to the back side of the tubes.

Use a white marker to mark the mount holes on the frame.

Remove the Evaporator from the frame.

Drill $\frac{3}{16}$ " holes on the marks then open up the holes using a $\frac{25}{64}$ " drill bit.

Install rivnuts using the rivnuts provided and the tool provided with the kit



Run the wires with the connector that will attach to the controls out of the bottom front of the motor area.



Run the wires across the front of the evaporator over to the left side of the unit.

Either drill $\frac{3}{16}$ " holes and use the enclosed screws or extra kit rivnuts and $\frac{1}{4}$ " bolts to hold the evaporator to the frame.

FIREWALL/BULKHEAD HOSE ADAPTER

- ✂ Drill, $\frac{7}{8}$ " hole saw, $\frac{3}{16}$ " drill bit, silicone, masking tape, scissors, razor knife, $\frac{5}{16}$ " socket, ratchet or $\frac{1}{4}$ " drive handle, tin snips.

Find a good location for the Bulkhead adapter fitting. We chose next to the vertical 1.50" tube on the right side of the frame.



Cut out and tape the drill template to the inside of the location picked.



Drill the center locations with a small drill bit then follow up using the correct size hole saw.



This install used the top and third down for the A/C and the 2nd down and bottom for the heater core.



Test fit the fittings and hose connectors so that they all fit if you would like to change the order.

From the engine bay side, attach by hand only the top, bottom and one of the middle bulkhead fittings in the order you would like.
Remove the lower fitting.



Install the next fitting up using silicone around it to seal the cockpit and hold the nut in place.

HOSES AND FITTINGS - INSIDE

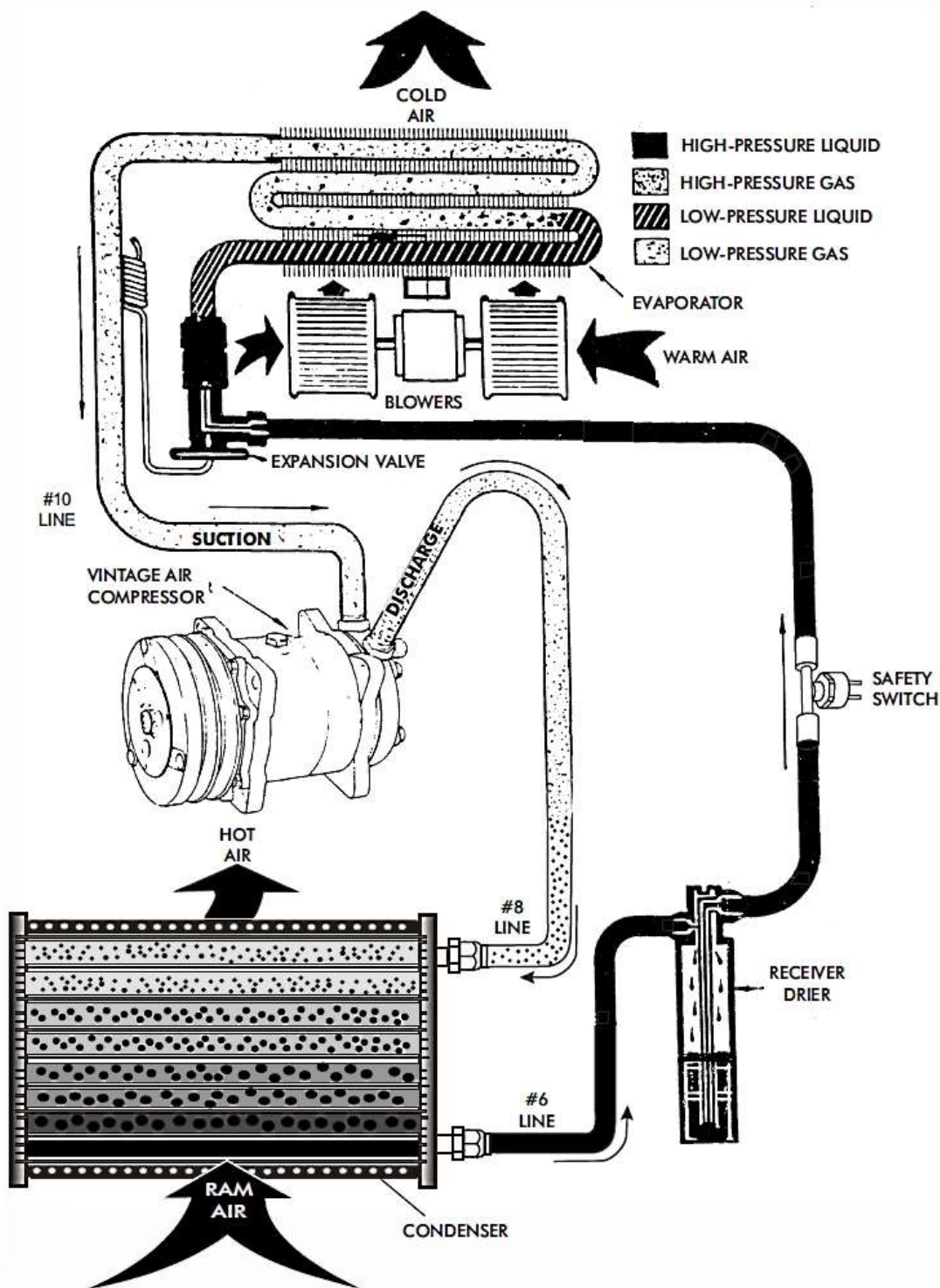


This install used the top and third down for the A/C and the 2nd down and bottom for the heater core.



It is highly recommended that you have the A/C hoses hydraulically crimped to ensure that they are done correctly and will not leak. It is hard to get to the fittings once the body is on.

REFRIGERATION FLOW



Courtesy of Vintage Air

Attach fittings to the inside of the bulkhead adapter so that the hoses will all reach.
 Put the straight #6 hose fitting on the top evaporator fitting.
 Attach the 90° #6 hose fitting to the firewall.



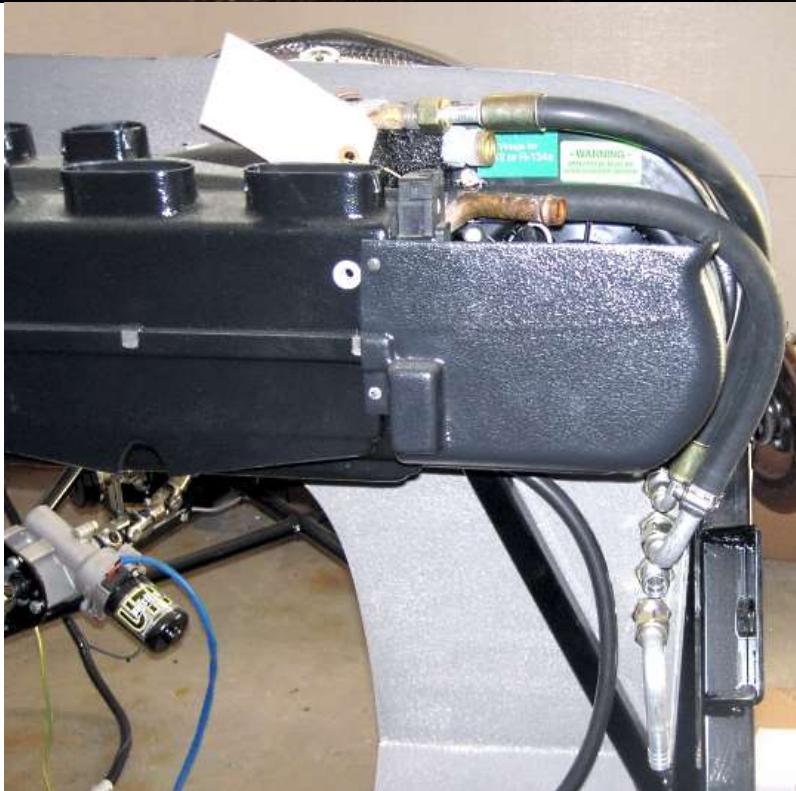
Try and use the natural curves of the hoses where possible to prevent kinks in the hoses



Start with the top fitting on the firewall, run the hose from the evaporator to the firewall and cut to length.



Attach the heater hose to the inner heater core tube with a hose clamp and $\frac{5}{16}$ " socket.



With a 90° heater hose fitting on the firewall, route the hose to the firewall. If necessary, cut the plastic cover on the evaporator with tin snips or a razor knife so that the hose does not kink or rub on the sharp edge.



Cut and attach the heater hose to the hose fitting on the firewall.

Connect a straight #10 fitting to the evaporator.



Route the #10 hose down to the firewall.



Cut the plastic cover again where the hose will touch it.



Attach the second heater hose to the heater core with a hose clamp and a $\frac{5}{16}$ " socket.



Route the hose down to the firewall and attach with a $\frac{5}{16}$ " socket.



Attach the drain hose to the bottom of the evaporator and run it along the 1.50" tube to the side of the frame attaching it to the frame using a $\frac{5}{8}$ " insulated line clip and $\frac{3}{16}$ " rivet from the kit.



Run the drain hose down above the 1" tube and out the side of the aluminum.



Run the hose down and under the floor so the drain will drip on the ground.

If not already in, install the engine.

COYOTE COMPRESSOR



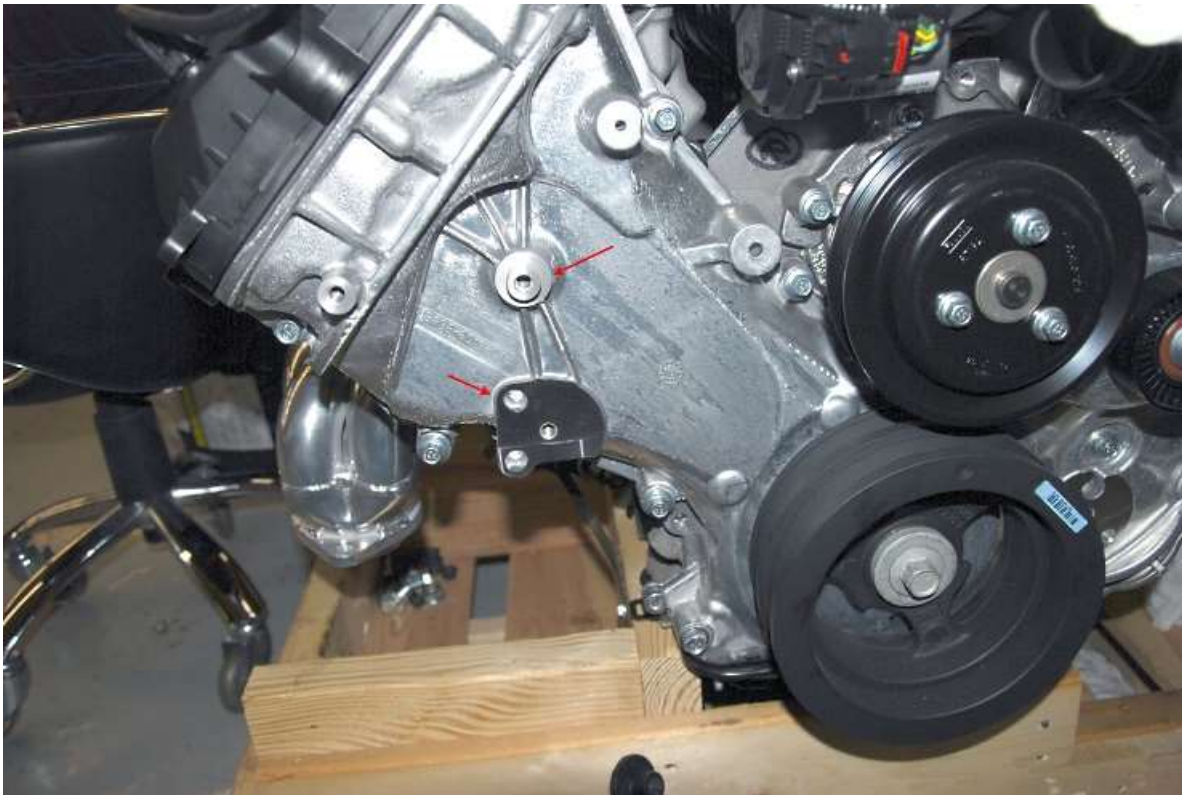
Cable tie, belt



ratchet, socket, extension, wire cutter.



The belt used is a special elastic belt that is designed to stretch for install and then keep the correct tension which is why Ford does not use a belt tensioner on the A/C belt.

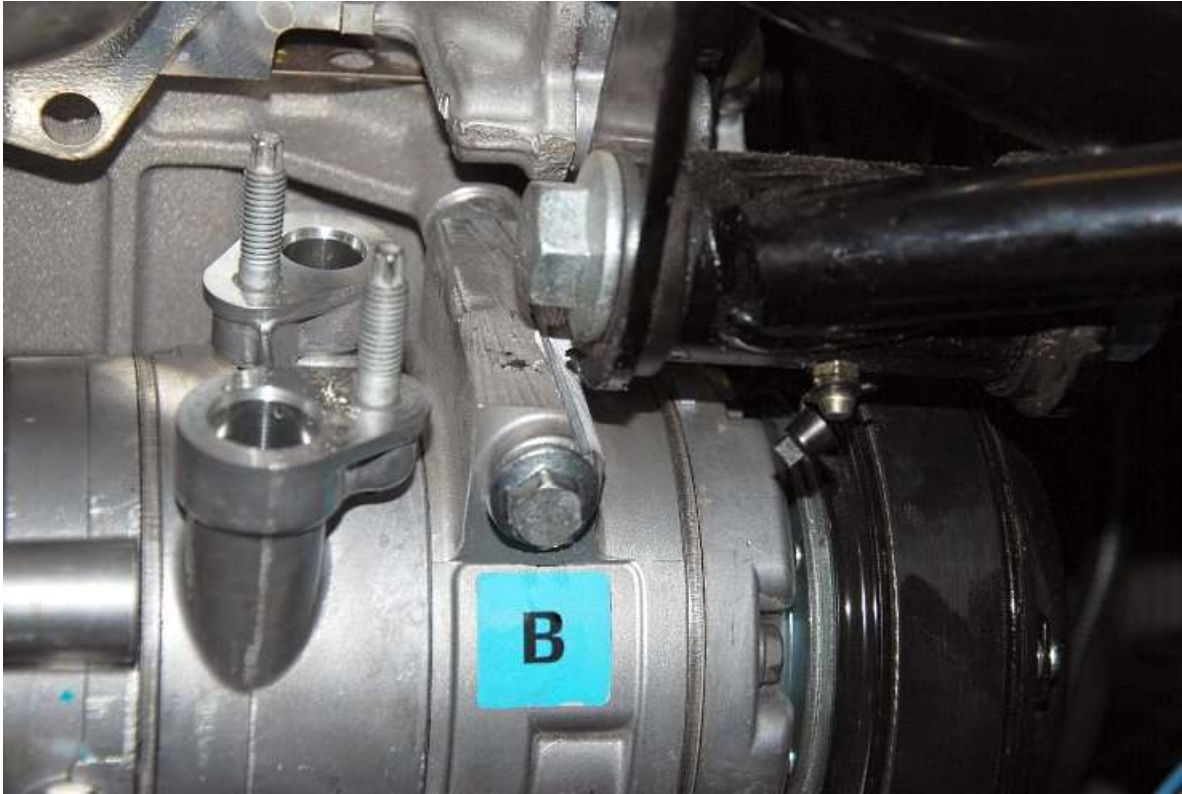


If your timing chain cover has a machined boss and mount area below it as shown above, this is the set-up used by the F150 Coyote which does use a tensioner. The Alternator bracket is not designed to use the truck set-up. It is recommended to use the Mustang set-up.



Use a 15mm socket and ratchet to loosen the belt tensioner and remove the belt from the tensioner.

Remove the alternator if installed.



Install the compressor on the engine using the included washers and bolts, make sure the plug and wires stick up and are not pinched by the engine.

Check the clearance to the upper control arm mount brackets, there should be $\frac{3}{16}$ " or more.



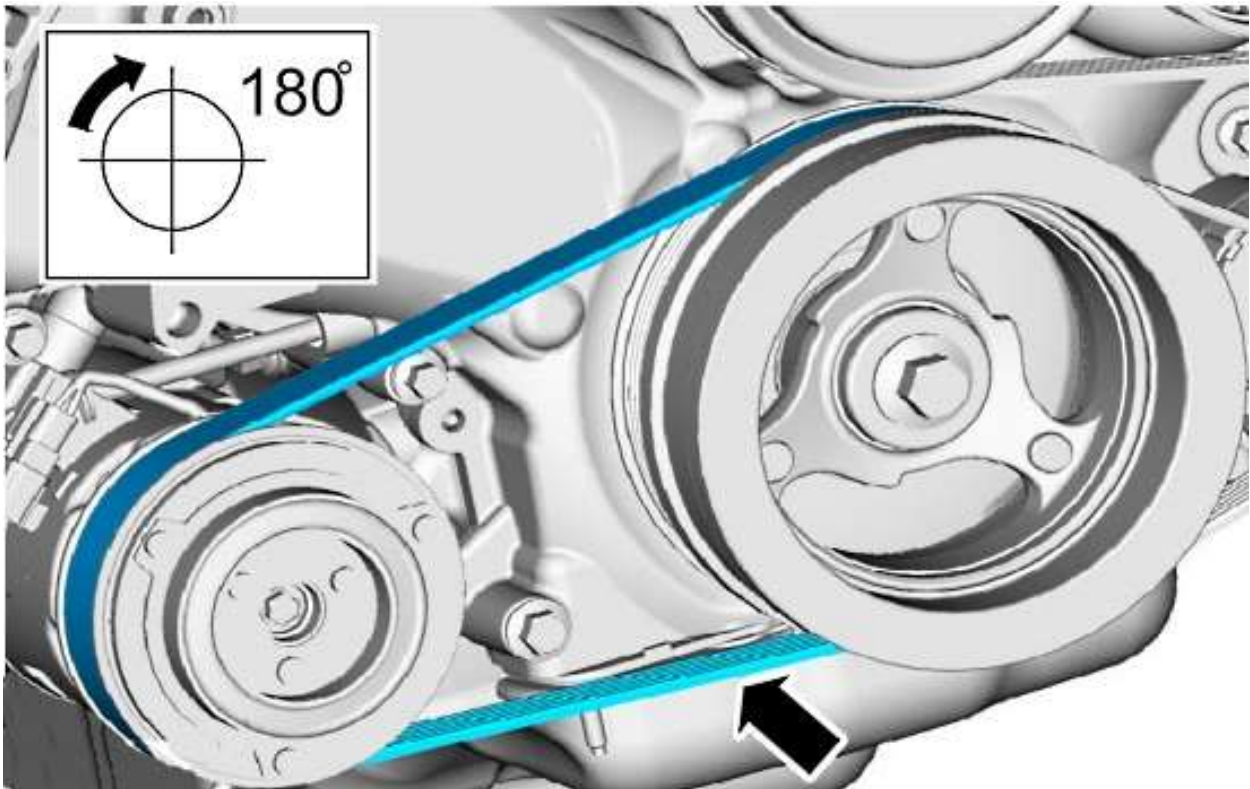
Put the A/C belt behind the crankshaft pulley with the accessory drive belt ribs facing towards the front of the vehicle and the belt on the A/C compressor.



Feed a cable tie through the crankshaft pulley spokes, up and over the A/C belt and tighten the cable tie.

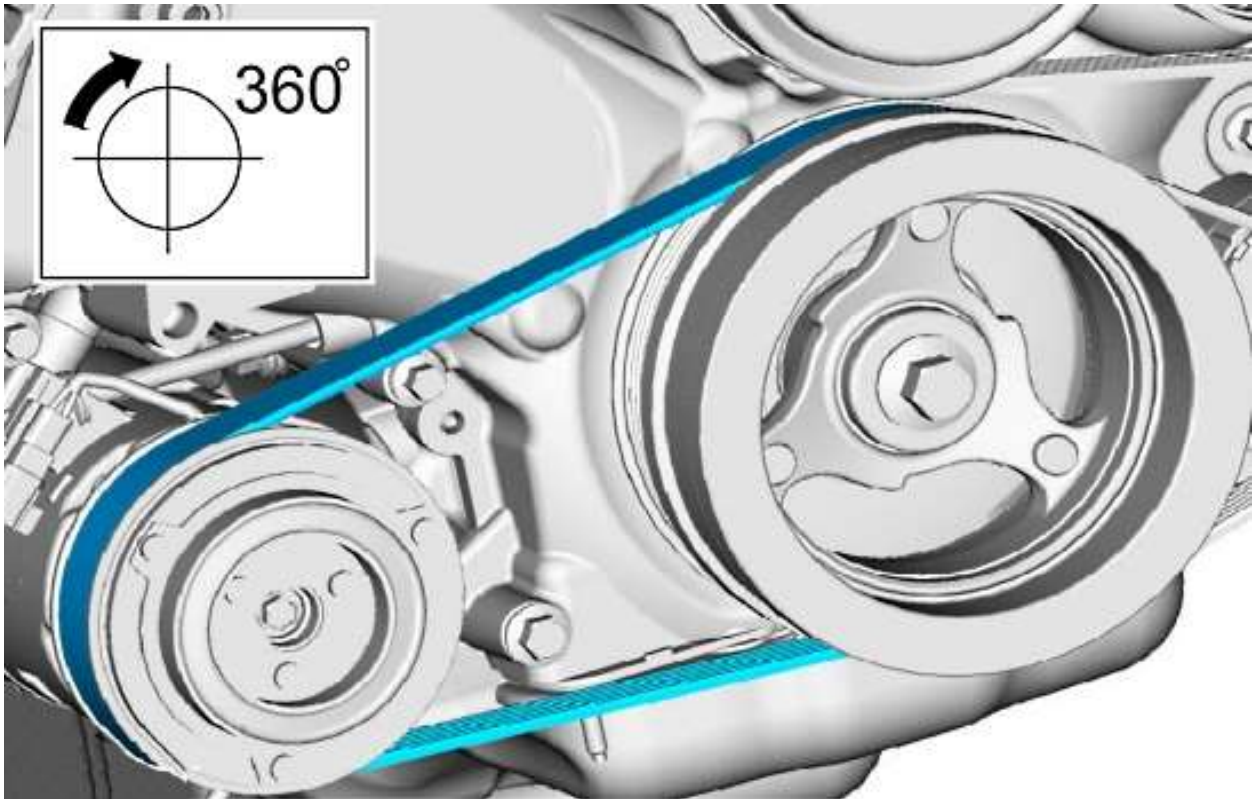


Make sure the belt is above the oil pan flange otherwise the belt or engine could get damaged.



Use a socket and ratchet to turn the crank over 180° so the belt is seated on top of the crank pulley.

Cut and remove the cable tie.



Rotate the engine 360° to make sure that the belt is fully seated all the way around the crank pulley.



Lubricate the green O-ring and surface of the adapter blocks.



Use a 13mm socket and ratchet to tighten the blocks to the compressor.



Reattach the alternator and bracket to the engine making sure to keep the wiring harness in front of the bracket.



Reinstall the main serpentine belt.

DRIER

✂ Drill, wrenches



Locate and drill the mounting holes for the Drier on the firewall or frame in the engine bay. For this install, the drier was located in front of the compressor on the frame.

Lube the O-ring and attach the trinary switch to the Drier keeping in mind the flow direction and how you intend to run the hoses to the Drier.

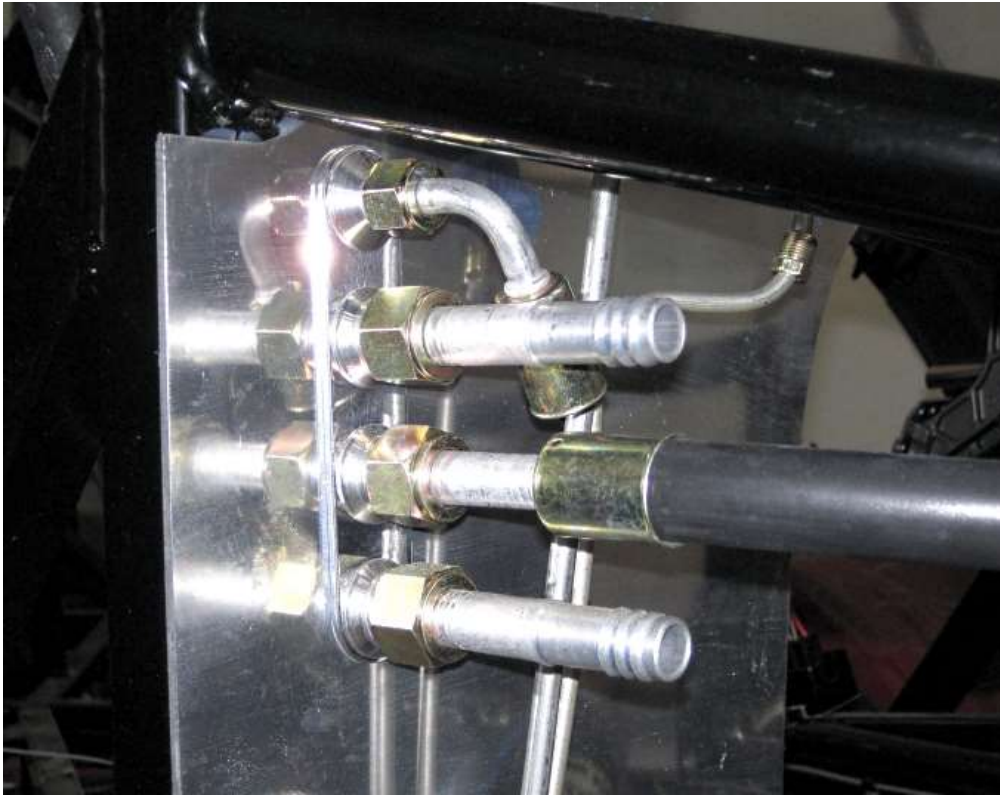
Mount the Drier.

HOSES AND FITTINGS – ENGINE BAY



Marker, masking tape, 3/4", 1" wrenches, razor knife

Wait to do the following steps until the engine and compressor are installed on the frame.



Attach the fittings to the engine bay side of the firewall adapter.



If you have not run fuel lines or mounted a fuel pressure regulator if needed, do this now.



Attach the fittings to the condenser and the compressor.

Run the heater hose lines to the correct locations on the engine.

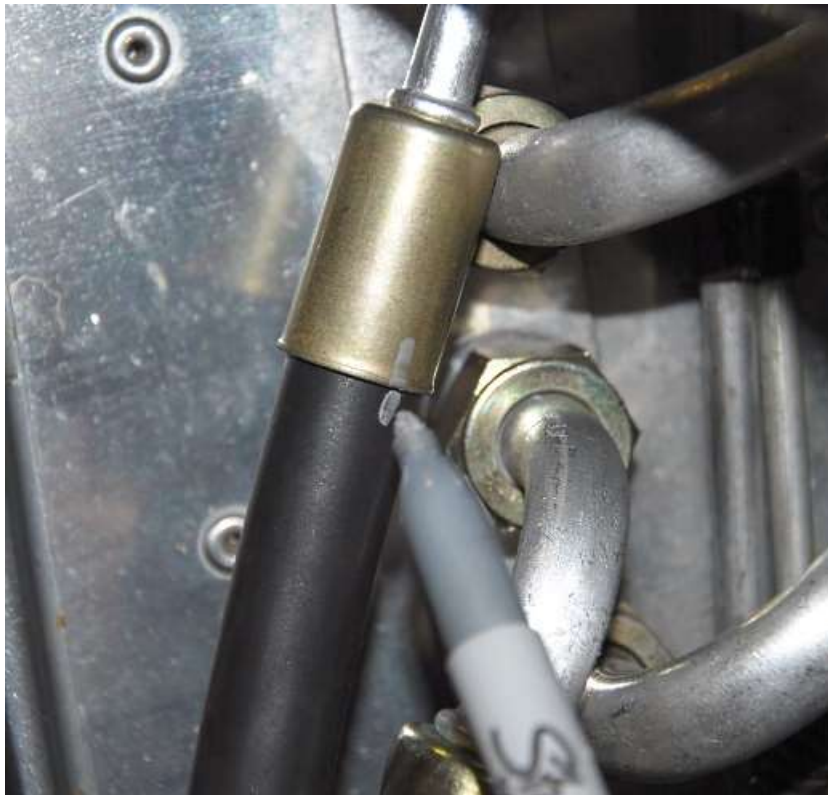


Cut and insert the heater control valve in one of the heater hoses.





Route the hoses to the firewall adapter, dryer, compressor and condenser using the Vintage air hose diagram for the hose and fitting sizes.



With all of the A/C hoses now routed and fit, put a small dot on the hose and on the fitting so the correct orientation can be kept.

Use masking tape on each hose and a marker to note the location of each hose.
Remove the A/C hoses and fittings

Final hose installation



$\frac{9}{16}$ " , $\frac{3}{4}$ " , $\frac{7}{8}$ " , 1" wrenches, bead lock tool



It is highly recommended that you have the A/C hoses hydraulically crimped to ensure that they are done correctly and will not leak. It is hard to get to the fittings once the body is on.



Crimp the hoses in the fittings using a beadlock crimp tool making sure to push the hoses all the way into the fitting and line up the alignment dots made earlier on the hose and fitting.



If manually crimping the hoses like above, make sure that the tool is tightened per the instructions.

FIREWALL INSIDE



Starting with the top hose on the inside of the cockpit, push the o-rings onto the end of the fitting.



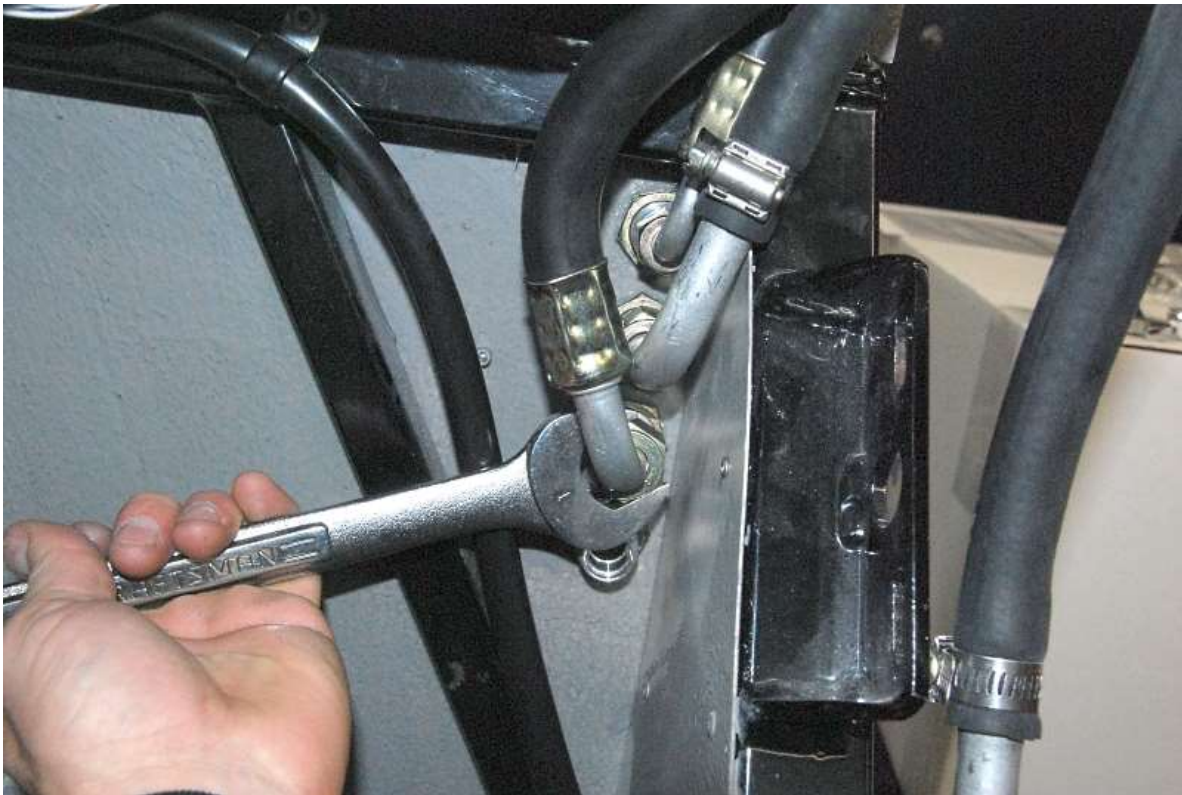
Lubricate the o-ring with the oil included.



Screw on the top inside A/C fitting by hand then tighten using a $\frac{3}{4}$ " wrench.



Screw on the second down inside heater fitting by hand then tighten using a 1" wrench.



Screw on the third inside A/C fitting by hand then tighten using a 1" wrench.



Screw on the bottom inside heater fitting by hand then tighten using a 1" wrench.

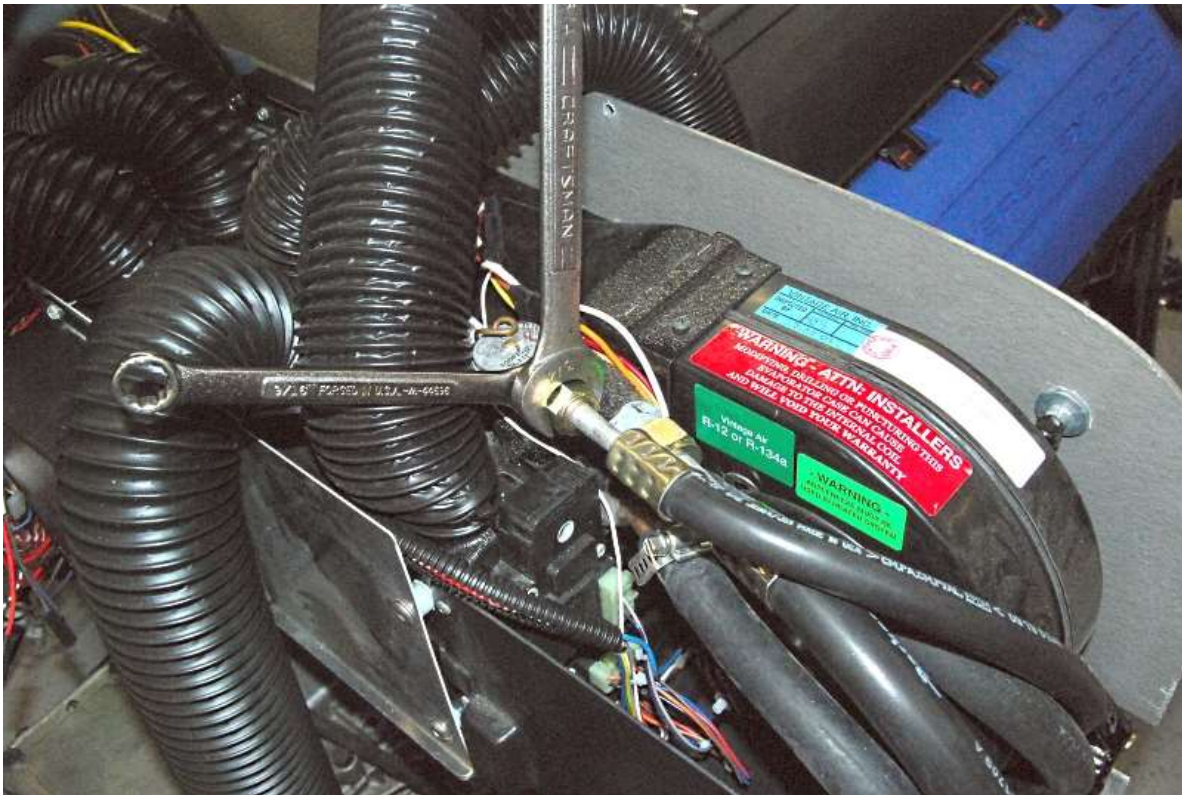


If the heater hoses were not tight and they rotated from the original positions so that the hose is flattened slightly, loosen the hose clamp and twist the hose so the hose is round again then tight the clamp.

EVAPORATOR



Attach the forward A/C hose by hand then tighten with a 1" wrench



Attach the smaller rear A/C hose using a $\frac{1}{16}$ " and $\frac{3}{4}$ " wrenches.

Charge the system per the Vintage air instructions.



With the A/C in the location described, there will be 2" above the unit to the body



There is also a large amount of room between the evaporator and the dash.

ENGINE BAY



Starting with the top hose on the inside of the cockpit, push the o-rings onto the end of the fitting.



Lubricate the o-ring with the oil included.



Reconnect and tighten the engine bay firewall hoses.



Connect the hoses to the compressor.

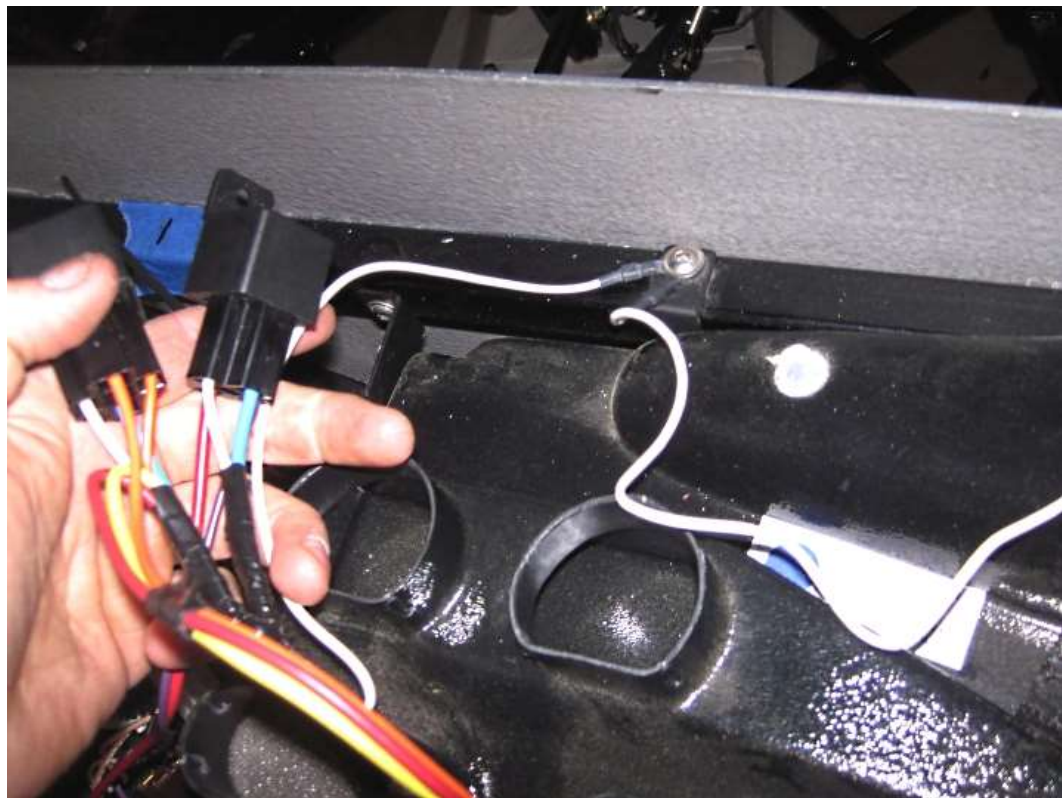
Wiring



Run the motor wires up between the heater hoses.



Connect the relay harness plug to the motor wires plug and push it down between the case and the pressure fitting.



Attach the motor and relay white ground wires to the evaporator mount screw.



Undo the left evaporator screw and slide the relay wires under the mount.



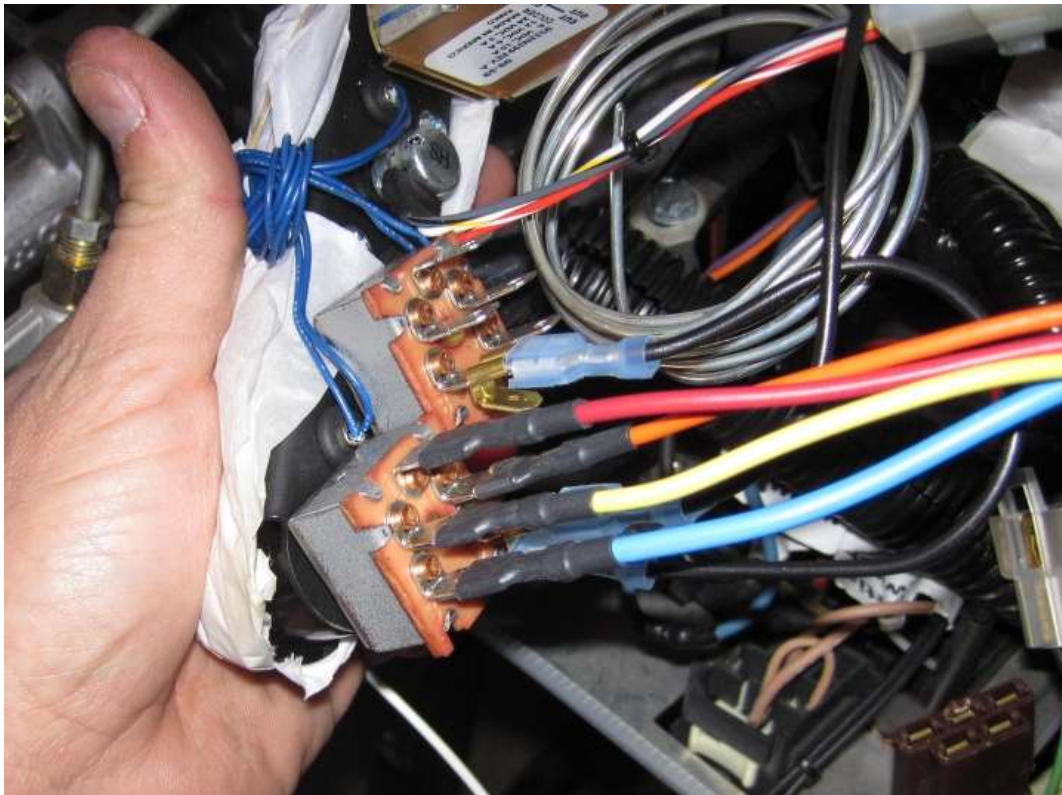
Reattach the mount screw.



Attach the relays to the frame next to the evaporator mount using some of the self tapping screws that held the aluminum to the frame or the screws included with the A/C.

Locate and cut the hole for the controls in the dash area of the body using the template included with the A/C.

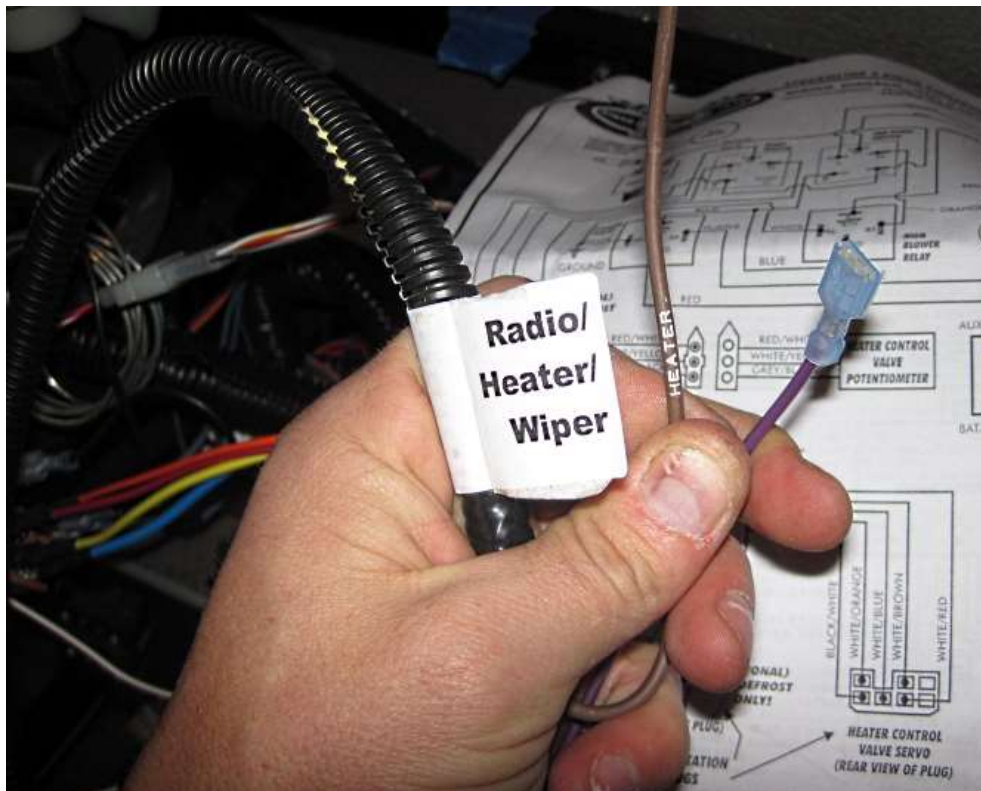
Connect the wires with the plug to the controls.



Using the wiring diagram from the A/C, attach the relay wires to the fan speed switch.

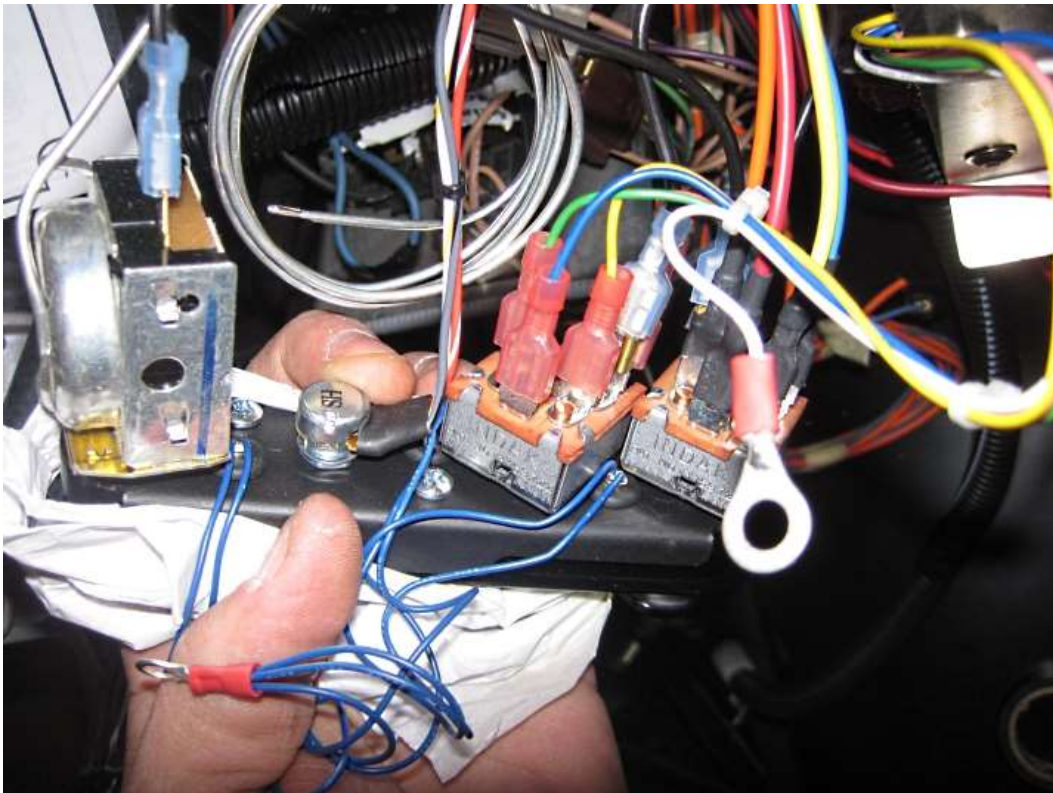


The next step can be done a couple of ways. As shown or by connecting both the purple and red wires to the heater wire and changing the fuse to 30A.



Attach the purple power wires to the brown chassis harness "Heater" wire.

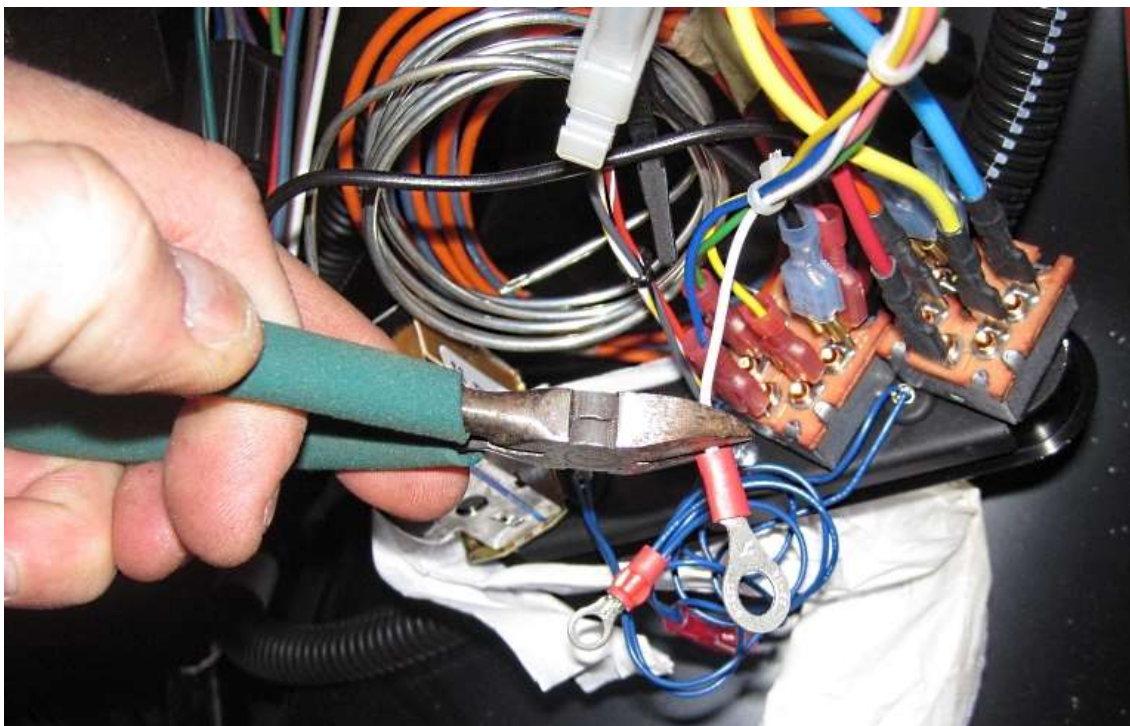
Attach the red power wire to the starter solenoid post.



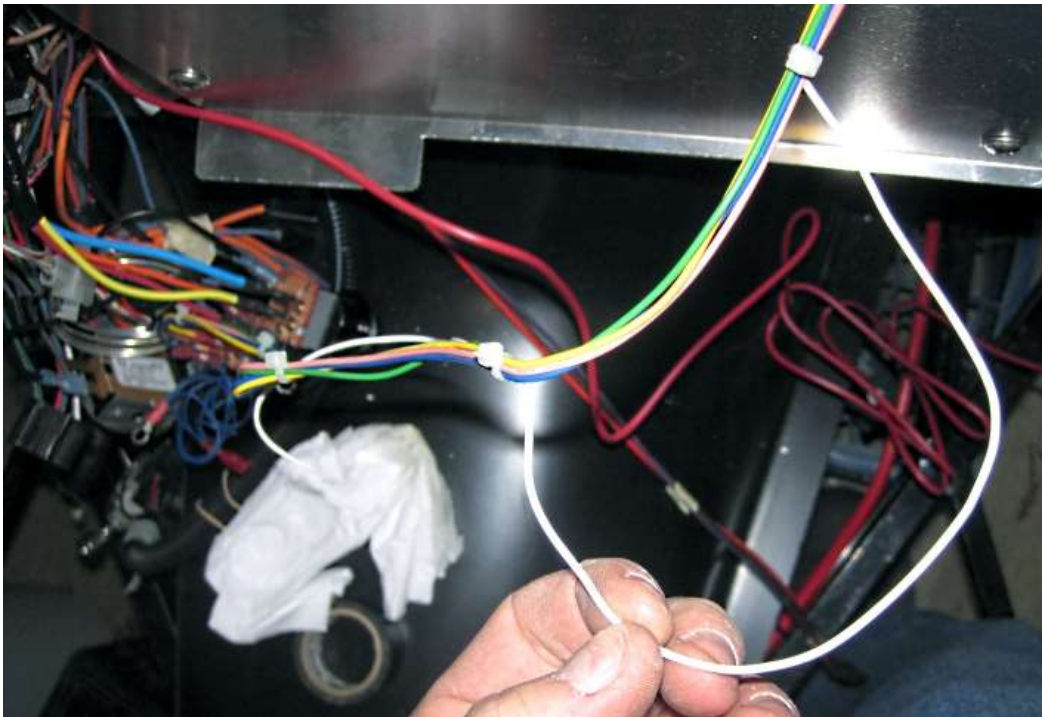
Run the small valve control wires to the control panel and connect them to the Mode switch.



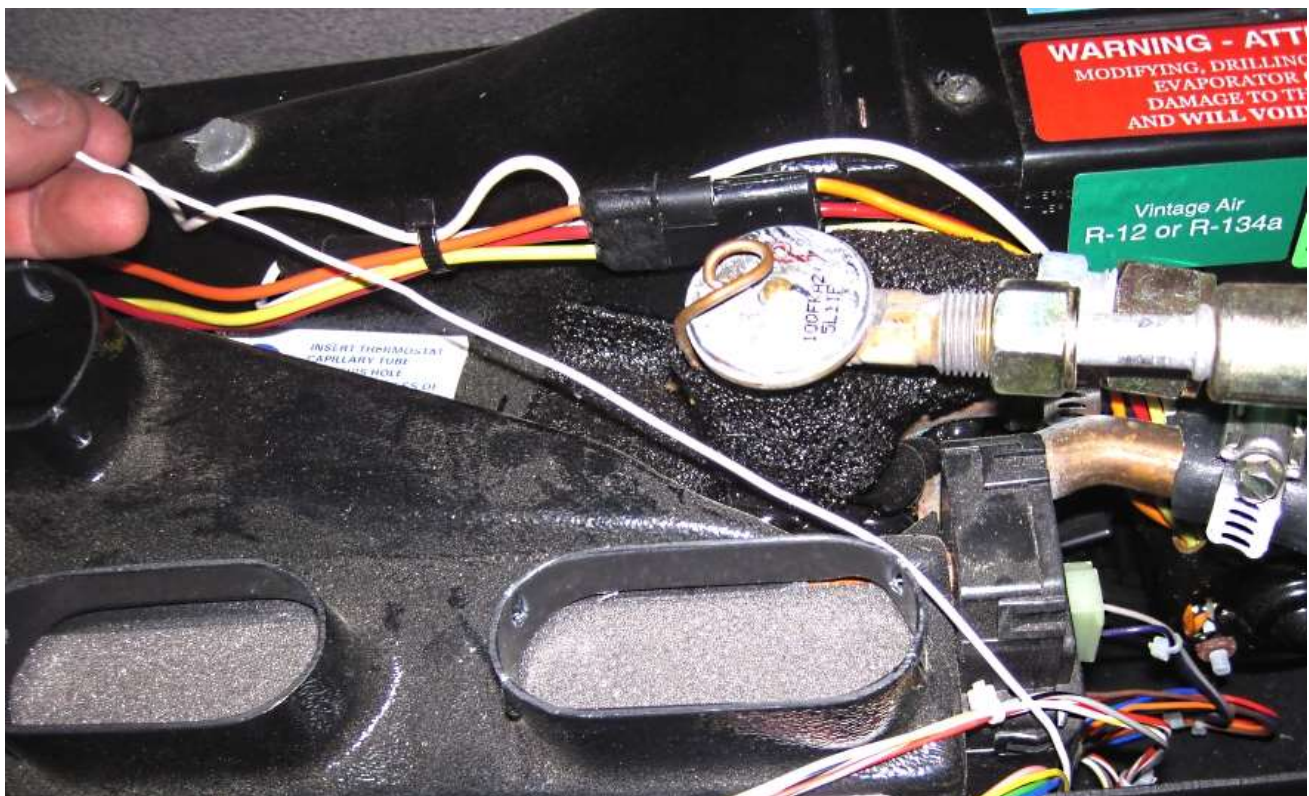
The next step can be done a couple different ways, as shown or by connecting the white ground wire to a dash harness ground wire or by cutting the small zip ties and reroute as shown.



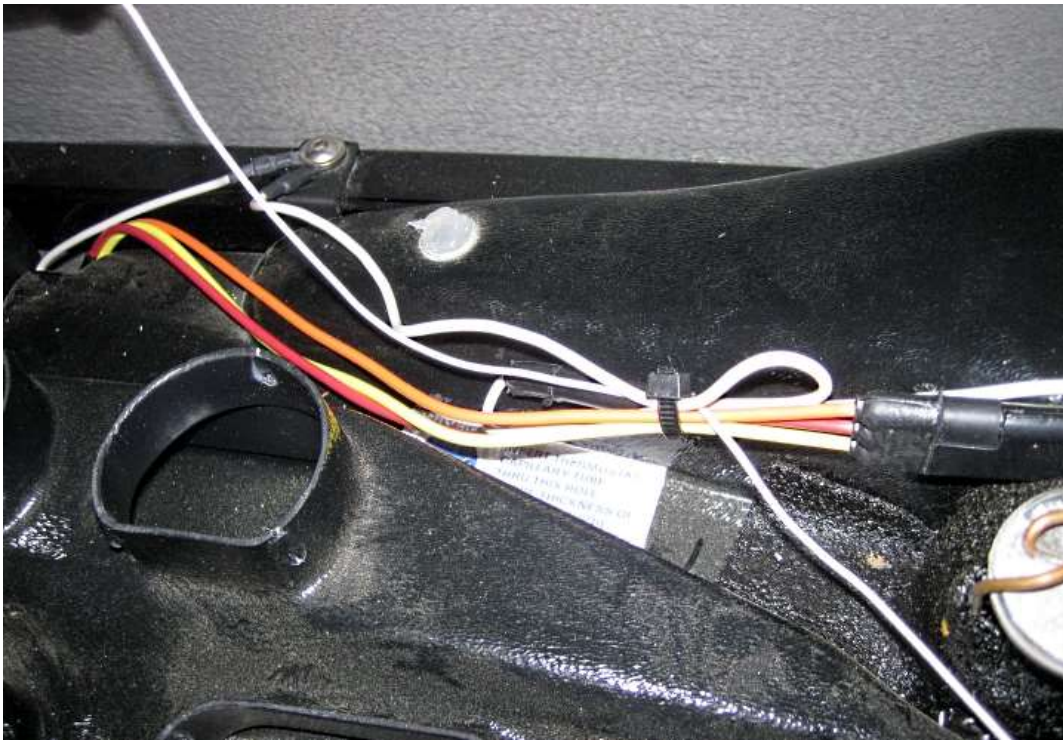
Cut the ground ring terminal off the white ground wire.



Pull the white wire back through the zip ties to where it leaves the motor area.

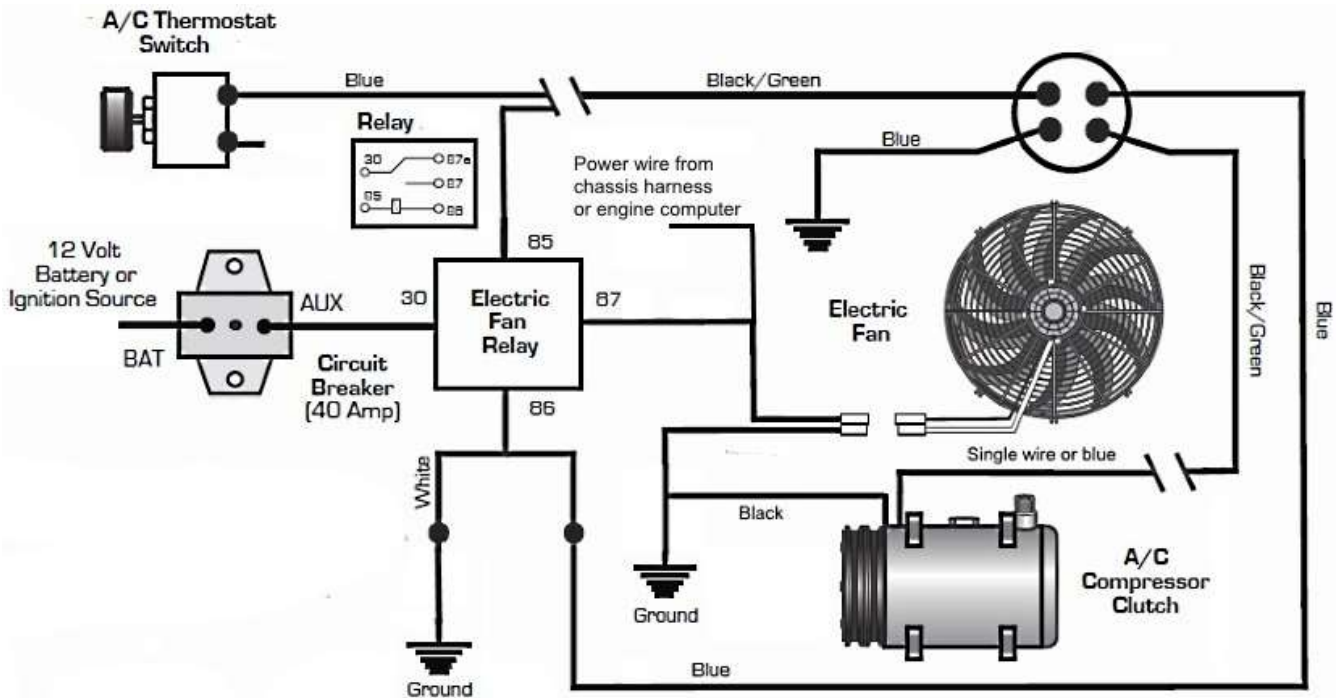


Route the ground wire on the other side of the vent holes.



Run the ground along with the motor wires and ground it to the evaporator mount.

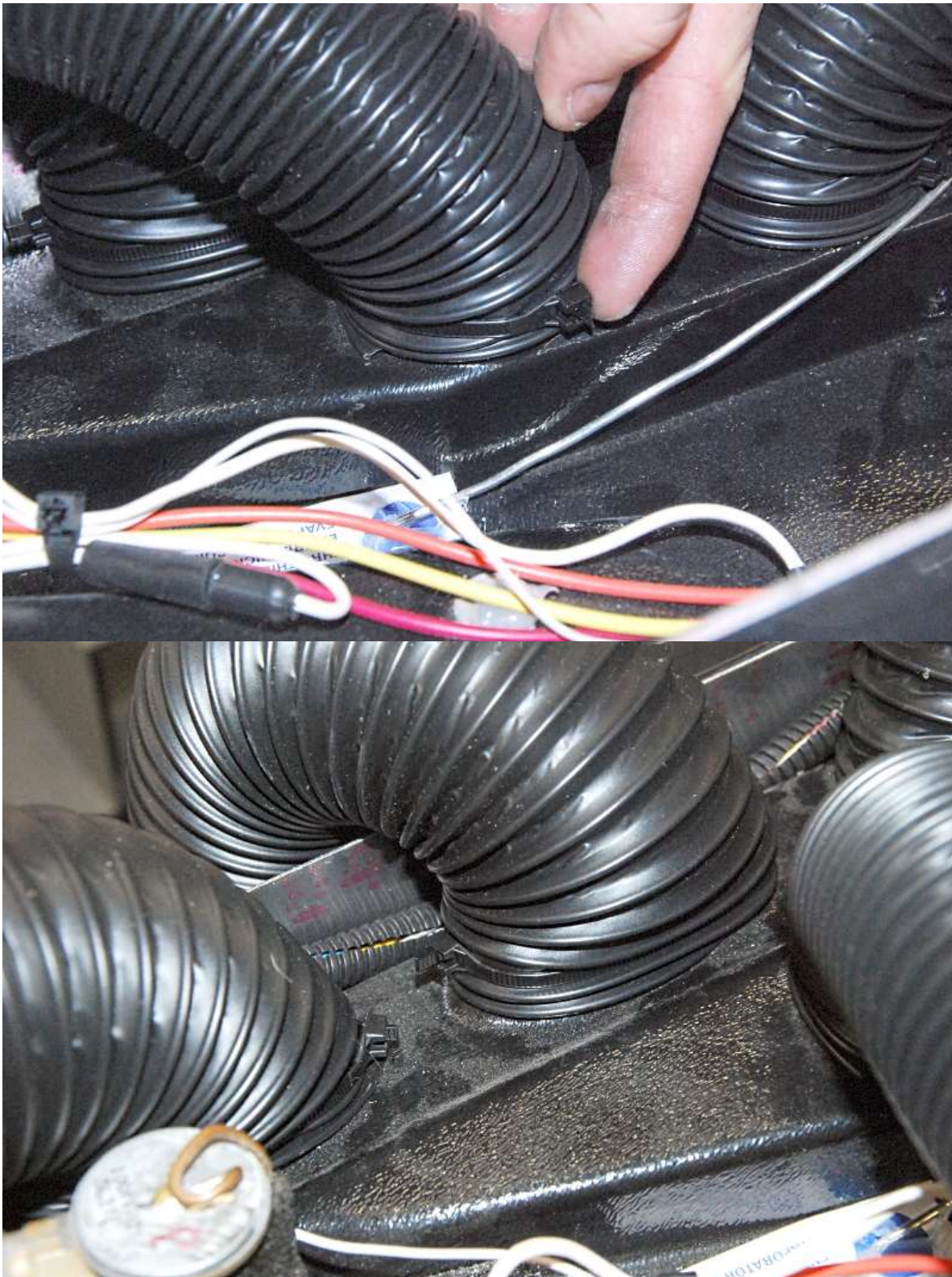
Run the blue wire from the cold knob on the controls out of the firewall and to the trinary switch on the drier.



There are a couple of ways to wire the electric fan so that it will turn on with the A/C compressor. One way is to follow the instructions included with the trinary switch. The other way shown above has an additional relay which can be mounted next to the drier and will not change any of the chassis wiring.

Connect the blue wire to one of the black/green trinary switch wires as shown in the Vintage air diagram or follow the diagram above.
Connect the other trinary switch wires.

Vent Hoses



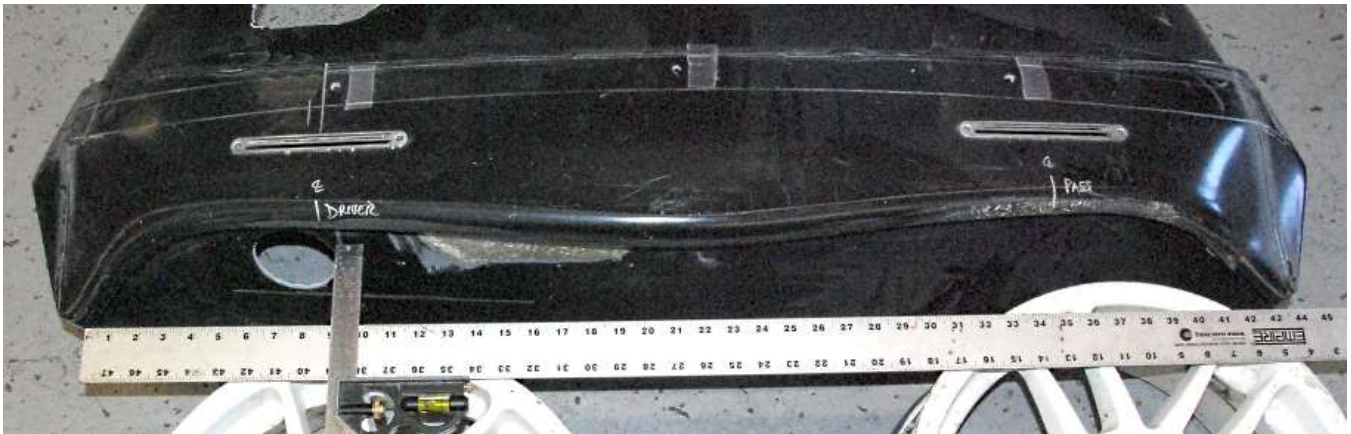
Attach the vent hoses to the evaporator unit. Use zip ties around the base of the hose to ensure that they do not blow off.



Route the hoses to the general locations.

Defroster vents

- ✂ Long straight edge, marker, square, Drill, $\frac{5}{32}$ " drill bit, silicone gun, Philips head screwdriver, ratchet, $\frac{5}{16}$ " deep socket.
- 👤 The vents and trim piece will look different than some of the pieces in the picture, the parts have been changed.
- 👤 Only install the defroster ducts after the gauges are mounted in the dash.



Use a long straight edge touching the edges of the dash and a square to find the center the location of the vents in front of the driver and passenger, this is $8\frac{7}{8}$ " in from the inside corner of the dash.



If doing an alternative gauge layout to the layout shown on the dash template, make sure to locate the vents so that there is no interference with the back of the gauges.



At the center mark, measure in from the edge of the dash 3.00" and place a dot, this will be the center of the slot. This puts the vent about 1.50" away from the windshield.

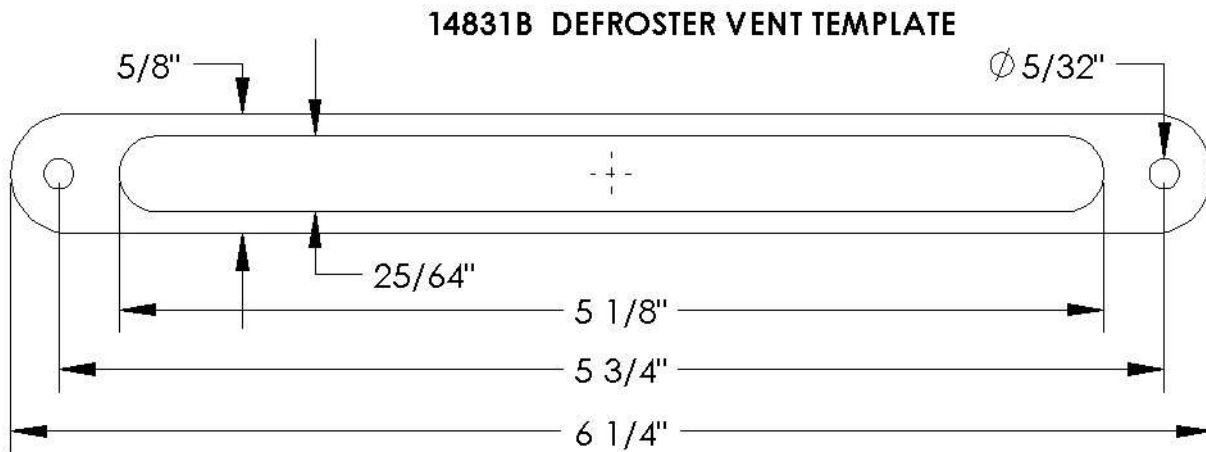
Repeat this for the other vent.

Use a long straight edge to connect the dots and draw a line at each of the dot locations so the vents are in line with each other.

from the vent line forward to the firewall.

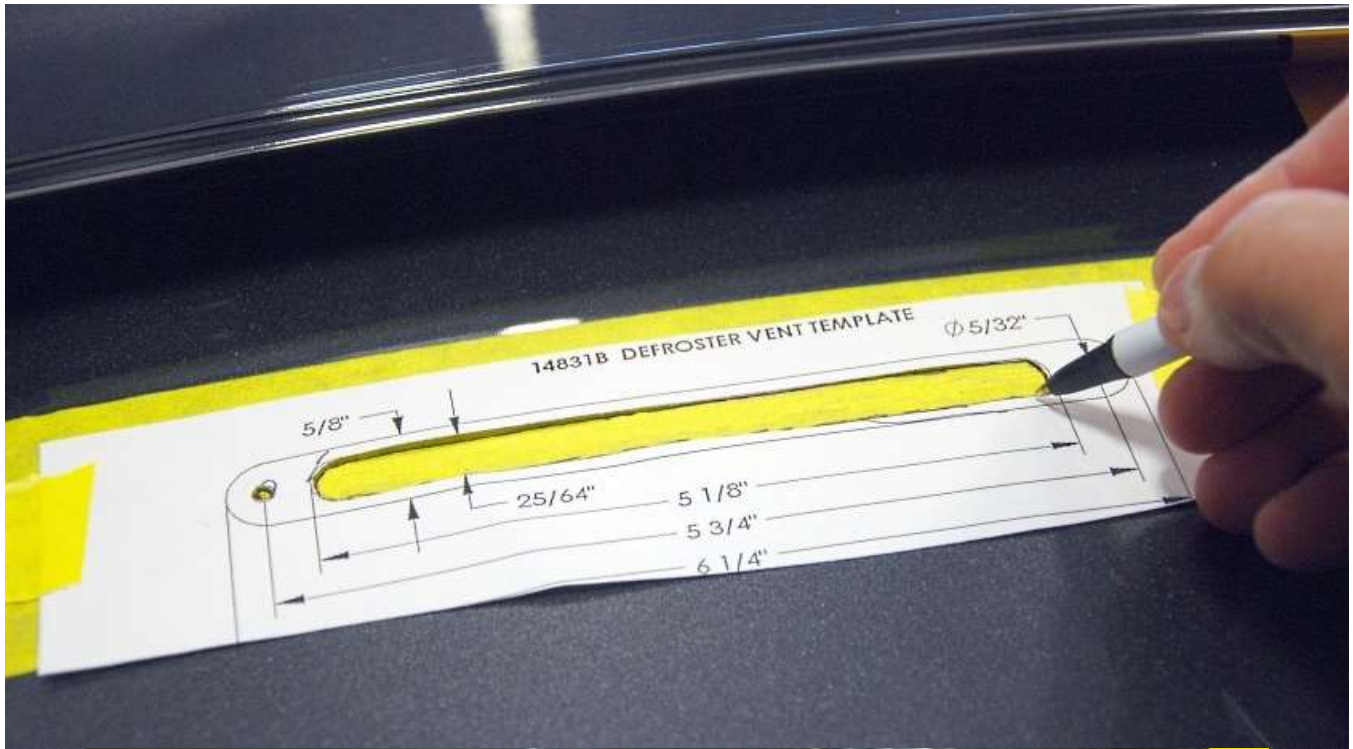


From the underside of the body, hold up the defroster duct to the body and measure from the front side of the duct to the firewall. Make sure that there is no interference between the duct and the gauges.



Use the template above to mark the slot size to cut and the hole mounting locations.

Find the center of the vent trim template and place it on the center point and line made.

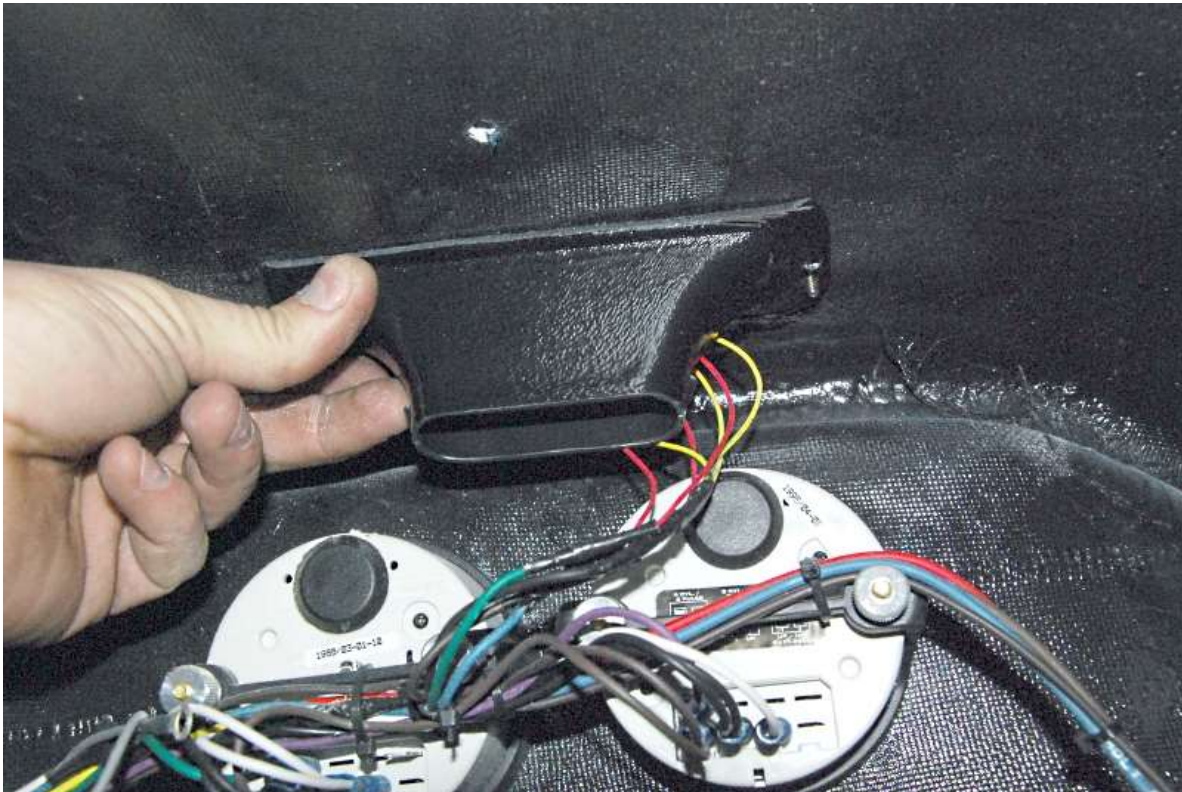


Cut the center of the template and screw holes out then tape it onto the body so that the close side of the hole is on the duct line drawn before and at least one of the screw holes is on the mounting hole line drawn then use a pen and mark the screw holes and duct hole.



Drill the two $\frac{5}{32}$ " screw holes and $\frac{25}{64}$ " holes at each end of the slot then cut the marked center area out using a jig saw or hacksaw blade.

Screw the vent trim screws into the duct so that they make threads in the duct holes.



Put the vent trim screws through the body and hold the defroster duct up to the underside of the body to check clearances with gauges if necessary.



If the vent is tight against the gauges or other parts, on one long side of the vent, sand some of the mounting surface off at an angle so that the duct can angle away from the part.



The following steps should be done after the body is back from the paint shop before the body is put on the frame.



If the slots are cut after the body is back from paint, use a marker on the edge of the fiberglass cut out so that it disappears behind the vent trim.



Place the vent trim on the body with the mounting screws.



Run a bead of silicone around the vent duct inside where the mount holes are.



Push the duct against the underside of the body on the mounting screws making sure that the duct is oriented correctly if it was angled or modified.

Screw-in the duct/vent trim screws so the ducts tighten against the body.



When attaching the body, Attach the vent hoses to the ducts and zip tie before the body is set in place.



Make sure that the hoses do not get crushed when putting the body on.