

# **310SG/410SG/410G JD BACKHOE**

## **INSTRUCTIONS**

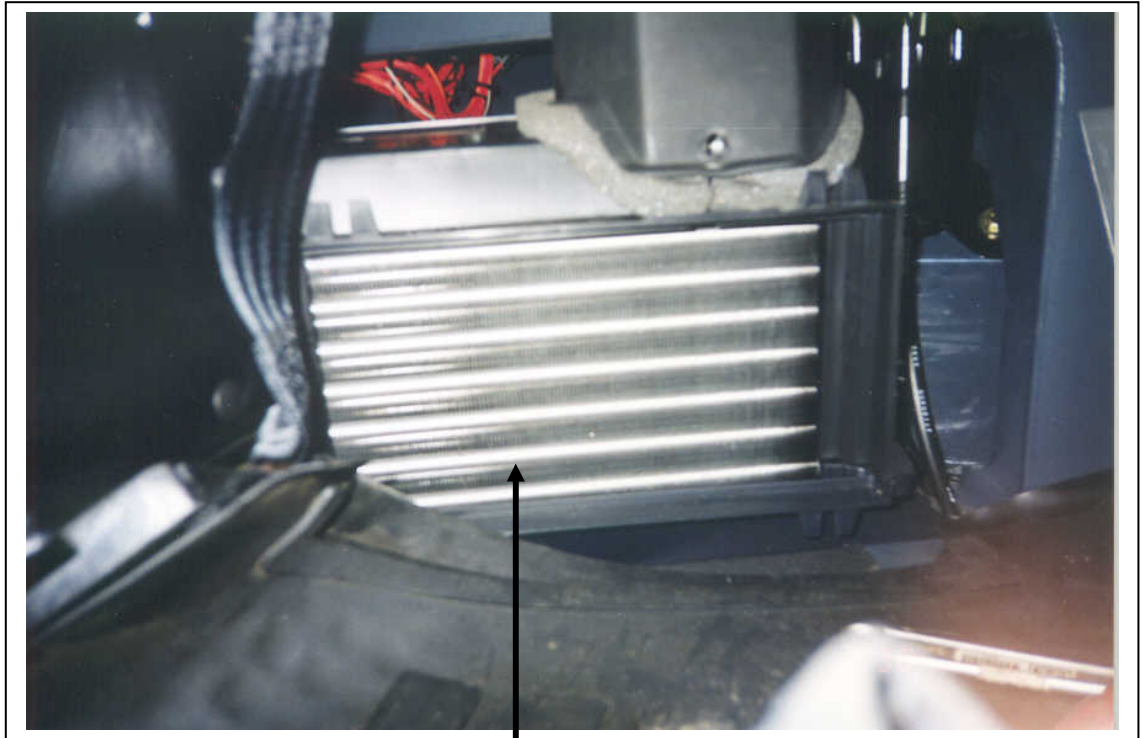


HAMMOND AIR CONDITIONING LTD  
TEL 1-800-267-2665 OR 519-485-5961  
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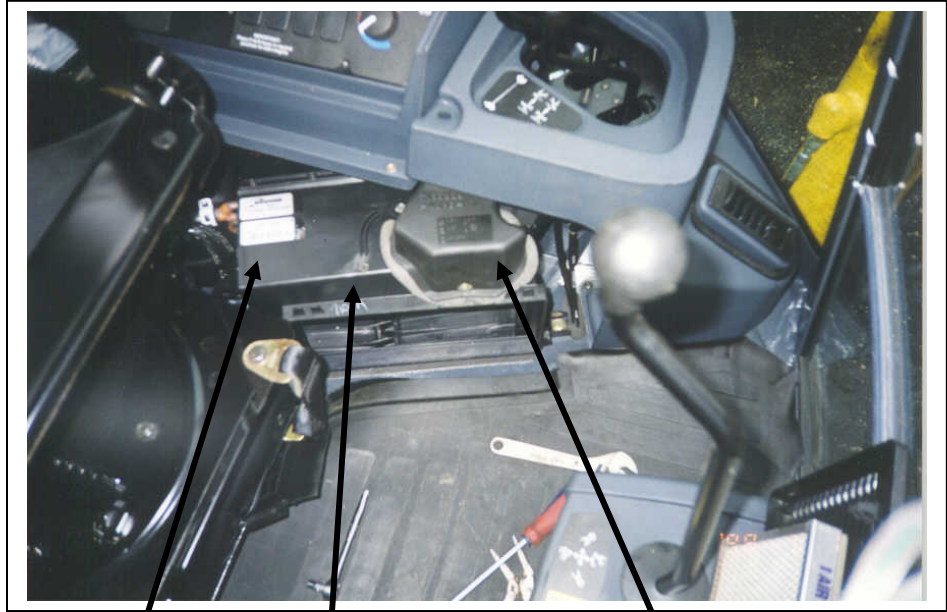
## Evaporator installation:

### Steps:

1. Remove inside air filter from beside the seat
2. Remove plastic panels from around the heater box. The control panel can stay in place but the plastic covers to the front and rear and below it need to be removed.
3. Remove the outside air intake pipe from the top of the box.
4. Remove the front lid of the heater A/C Box
5. Remove the two aluminum brackets from the A/C coil area of the box.
6. Slide the A/C coil into place
7. Replace the heater/A/C box front lid after feeding the thermostat probe in through the hole in the top of the lid and inserting it into the evaporator coil between the first and second row of tubes (closest to heater coil) about 1" from the fitting and of the coil.
8. Connect the fittings to the evaporator coil. The 5/16" 90o fitting goes to the expansion valve and the 1/2" straight fitting goes to the suction outlet.
9. Install drain tube from under the cab if required.



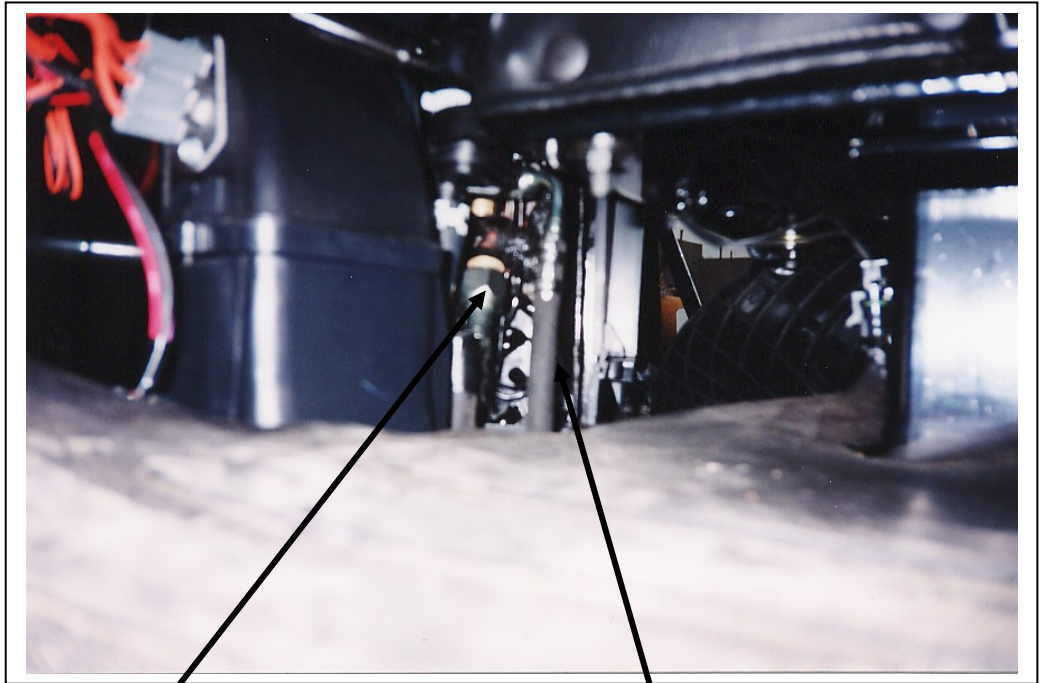
Evaporator coil in place with the lid on the box



Box Lid

Hole for thermostat probe

Outside air intake pipe



1/2" fitting at  
evaporator

5/16" hose at evaporator



5/16" 90o fitting at expansion valve

Evaporator coil in place

Mount A/C on off  
pushbutton switch here

**Right hand air vent upgrade** – It's possible to add a louver to the top of the right hand console. Either of the two cup holders can be converted to air outlets.

Steps:

1. Underneath the cab there is a 4" rubber cap coming out of the air distribution ducting
2. Remove the rubber cap and cut a 2 ¼" round hole in the center of it. Install a 2 ½" hose adapter into this hole – seal with silicon.
3. Run 2 ½" flex duct towards the right side of the cab towards the 3" knockout in the floor
4. Bring the flex duct up into the cab.
5. Remove the metal bottoms of the cup holder to allow the 2 ½" flex duct to pass through.
6. Run flex duct up through the cup holes and attach it to the louver assemblies.
7. Place the louver assemblies down over the holes and secure in place with self drilling screws.

NOTE: Underneath the cab the flex duct has to pass over top of a moving linkage – there may be a space problem – a special splice section has been included to accommodate this linkage. It can be screwed to the floor using a self drilling screw.

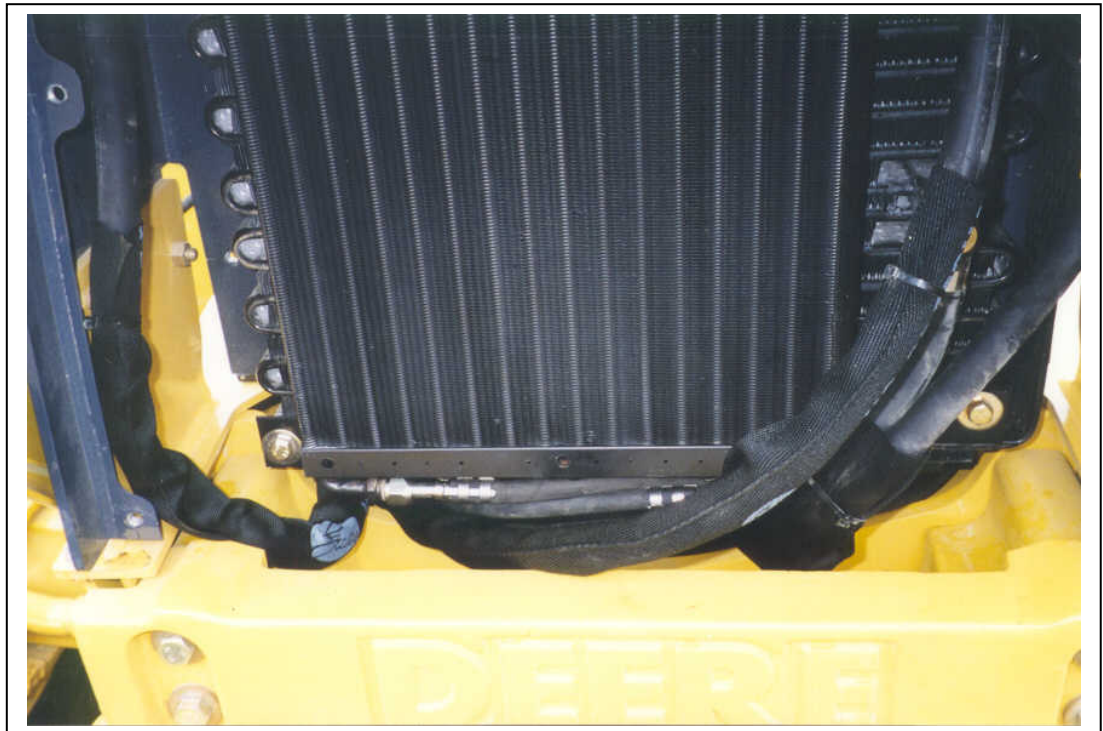


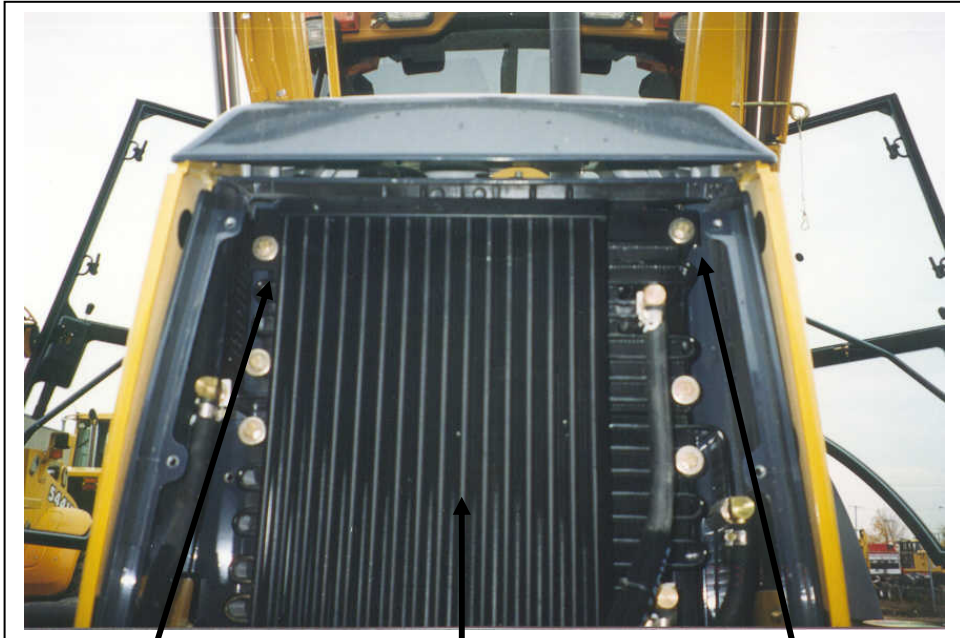
Vent can be installed in either cup holder location.

## Condenser installation:

### Steps:

1. Remove grill from front of radiator
2. Condenser mounts to the top two oil cooler bolts and the bottom two oil cooler bolts.
3. Oil cooler lines need to be loosened and pointed straight down and then retightened
4. Remove the four oil cooler mount bolts, leaving the spacer pipe and rubber isolator in place.
5. Install the condenser over top of the oil coolers with the fittings at the bottom of the condenser.
6. Bolt the condenser in place using the original oil cooler mount bolts.

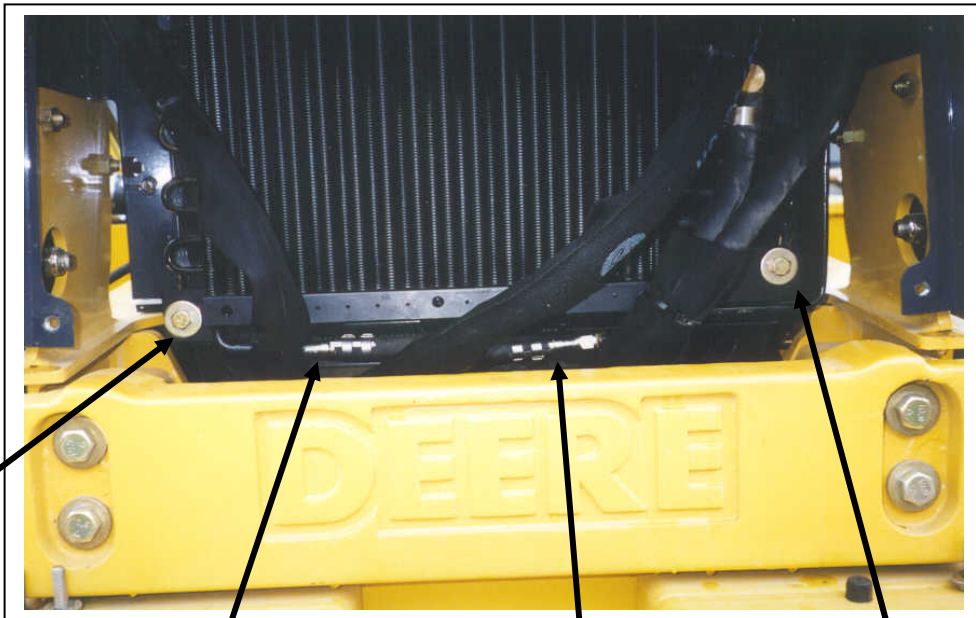




Top mount bolt

Condenser

Top mount bolt



Bottom  
mount  
bolt

13/32" fitting

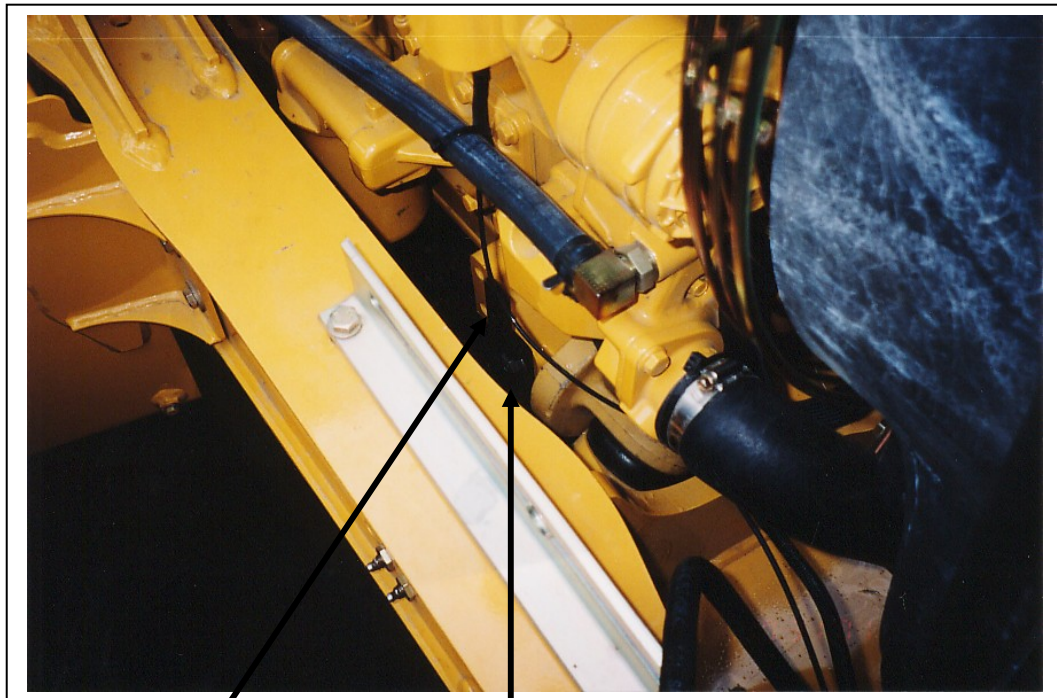
5/16" fitting

Bottom mount bolt

## Drier installation:

### Steps:

1. The drier bracket mounts to the right side of the engine just behind the front right engine mount.
2. Bolt the bracket in place using the 12mm hardware supplied in the kit.
3. Use the two #40 gear clamps to mount the drier to the bracket ensuring that the inlet points towards the radiator.
4. The two hydraulic lines should run between the drier and main frame rail.



Drier mount bracket

M12 mount bolt



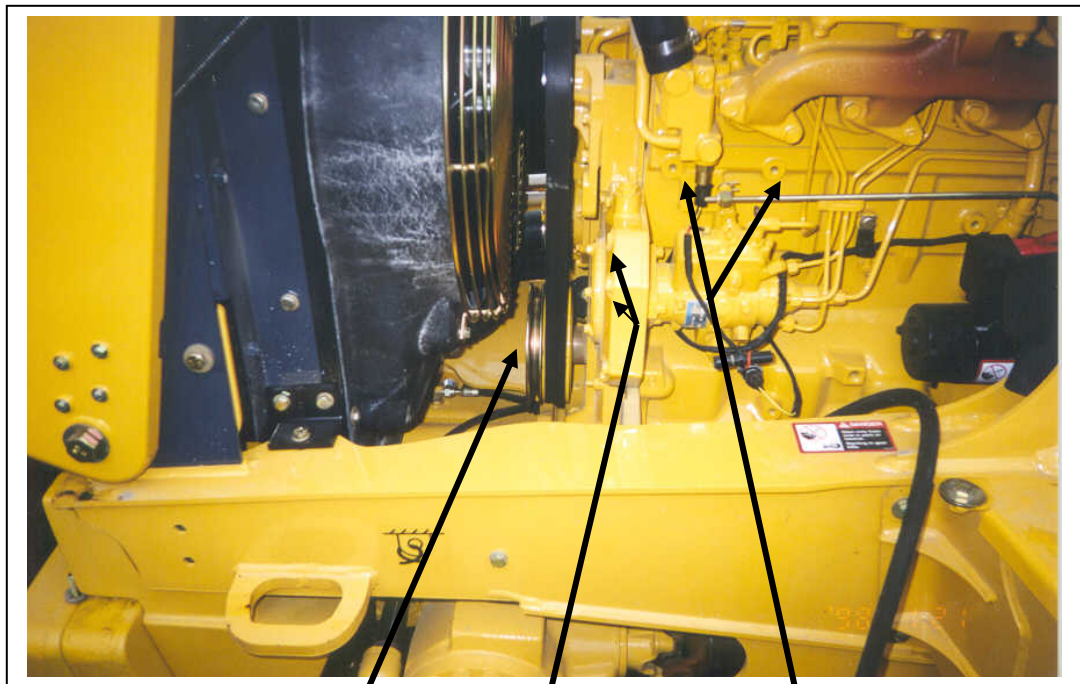


Receiver drier

## Drive pulley installation:

### Steps:

1. An auxiliary pulley is mounted to the crank pulley to drive the compressor. This allows the operation of the A/C compressor to be independent of all other engine functions. The machine will be operable even in the event of a compressor or clutch failure
2. Remove the four bolts holding on the crank pulley
3. Remove the tension from the drive belt
4. Install the spacer plate and aux. pulley over top of the original crank pulley and spacer.
5. Align the four bolt holes
6. Bolt the assembly back together using the M10 x 70 x 1.25 thread bolts provided. Use a lock and 2 flats on each bolt. Use medium lock tight on all threads.
7. Re-install tension on main drive belt.



Add pulley on crank

Bolts to remove for main  
mount bracket

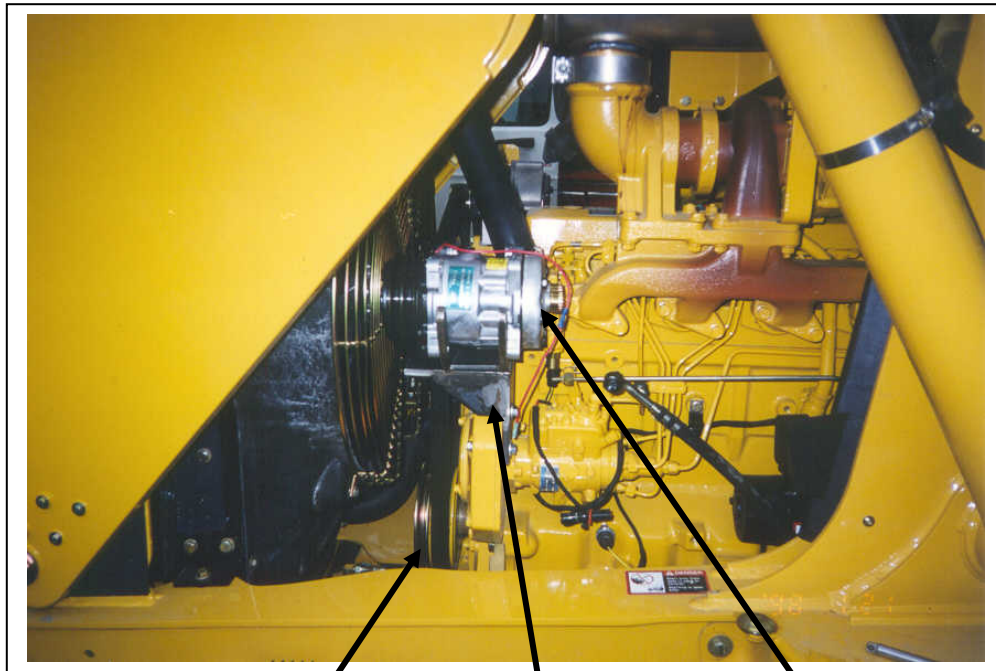
Mount holes for angle mount  
support bracket

## Compressor installation:

### Steps:

1. The compressor mounts on the left side of the engine just above and ahead of the injector pump.
2. Loosely bolt the angle mount support bracket to the engine above the injector pump using the existing holes in the engine block. The bracket must be slid in behind the temp sensor from the front of the engine.
3. Remove the two front upper bolts from the injector pump gear housing and replace them with the longer M8 bolts supplied. Install a lock washer and flat washer on the bolt before threading them into place, otherwise the thread will run out before the bolt is tight.
4. Install the main mount bracket over the two M8 bolt studs on the injector side of the gear housing and loosely fasten into place using the large OD flat washers and M8 nuts.
5. Bolt the two brackets together using the 3/8" hardware provided. Tighten these bolts and then tighten all the other mount bolts.
6. Install the compressor onto the tightener ears using the 3/8" x 1 1/2" hardware provided.
7. Install the 1/2" drive belt around the aux crank pulley and the front groove on the compressor
8. Tension the belt and secure the compressor mount bolts.

NOTE: The fan screen may have to be bent in slightly to allow for clearance on the compressor clutch nut.



Aux pulley on crank

Main mount bracket

Compressor

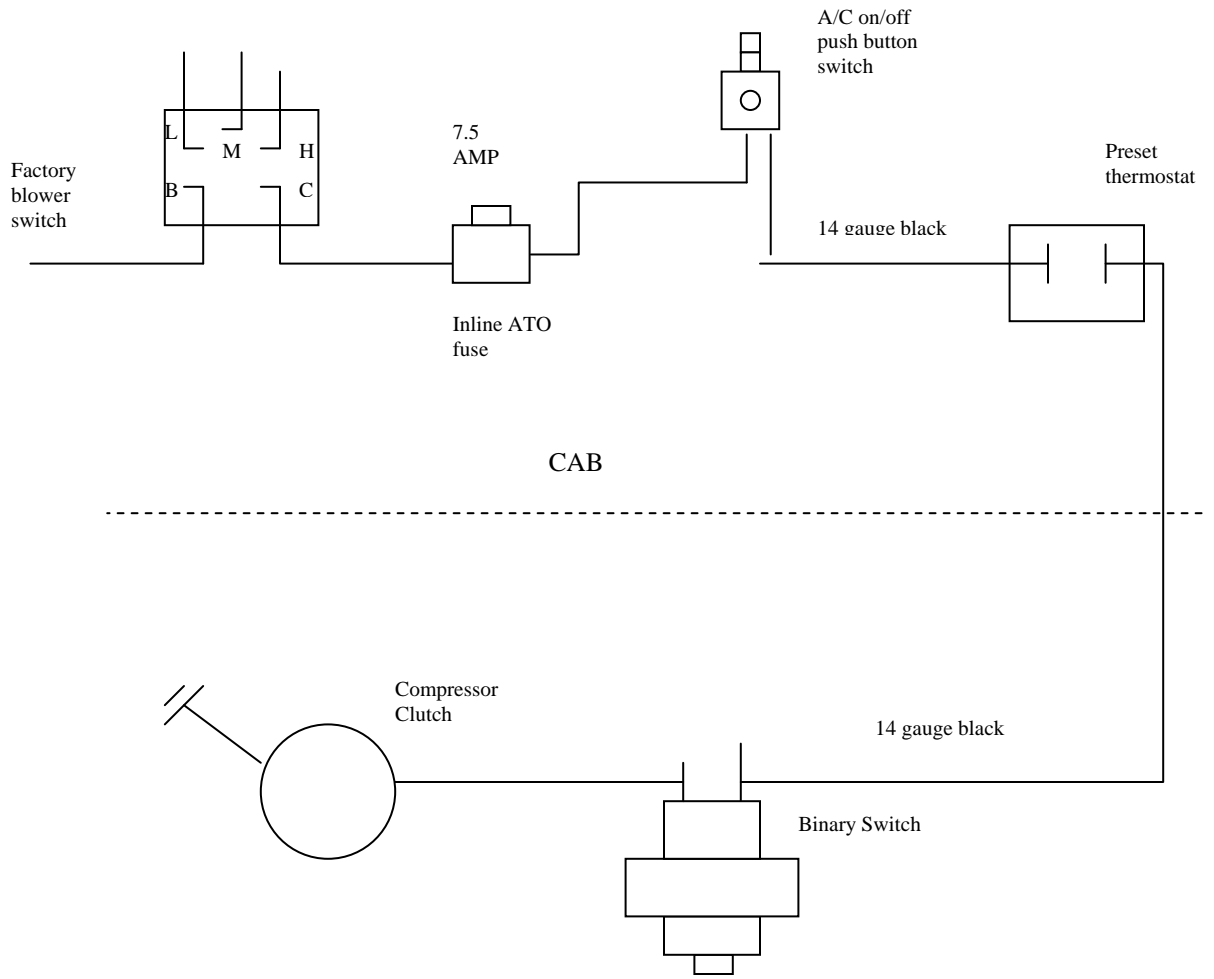


## **Electrical installation:**

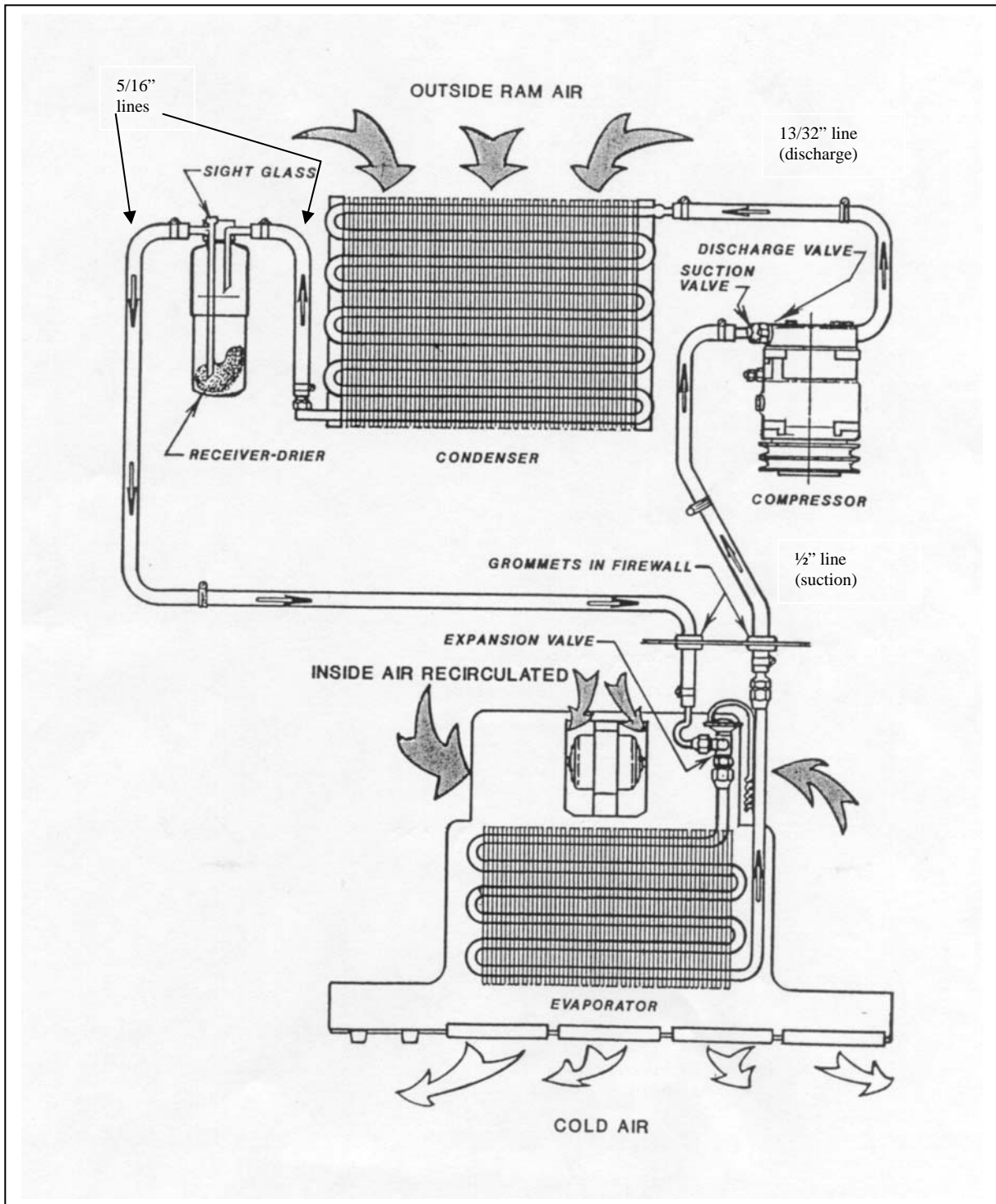
### Steps:

1. Power for the compressor clutch should come from the clutch terminal on the factory blower switch. If no specific clutch terminal exists, determine which wire had full 12volt power on it when the blower switch is turned to any speed and splice into it with the inline ATO fuse holder.
2. Connect the other end of the ATO fuse holder to one terminal on the A/C on/off push button switch.
3. Run a 14 gauge black wire between the other terminal on the push button switch to one terminal on the preset thermostat located near the heater box.
4. Ground the ground wire on the push button switch so it lights up when depressed. If it lights up all the time, switch the two wires around on the terminals.
5. Connect the remainder of the 14 gauge black wire in loom to the other terminal on the preset thermostat and run it out of the cab with the ½" A/C hose.
6. Run the wire in loom along with the ½" A/C hose up to the binary switch and connect the wire coming from the compressor clutch to the other terminal
7. Test the electrical system when there is pressure in the system.

**ELECTRICAL**



# Refrigerant Flow Pattern in a Standard Air Conditioning System



## Thermostat Setting Procedures

- 1) Thermostat types
  - a) preset
  - b) adjustable
    - a) A preset thermostat is adjusted to its specific cut in and cut out temperatures when manufactured and does not have a rotary adjustment for the operator.
    - b) An adjustable or rotary thermostat has been manufactured to a predetermined cut in and cut out temperatures, but it is also operator adjustable to achieve the desired comfort level.

Both types of thermostats can have their factory settings adjusted by turning the setting screws on the body of the thermostat. One body type has the setting screws mounted externally and labeled for direction of rotation. The other body type requires the removal of the plastic end plate to expose the set screw.

- 2) Thermostat probe location: The location of the thermostat probe in an evaporator coil can be very important to achieve the maximum cooling potential of the coil while also preventing coil freeze-up. There is no set location for the thermostat probe to be put that will be optimum for all systems, but several rules of thumb may be followed:
  - a) Insert the probe in the coldest area of the evaporator coil.
  - b) Insert the probe from the top of the coil down, if possible.
  - c) Make sure that at least the last 3" of the thermostat probe are in the coil.

To find the most likely area where the coil is the coldest, consider these factors:

- 1) Direction of air flow through the coil.
  - 2) The coil area likely to have the lowest air flow.
  - 3) The inlet locations of the refrigerant into the coil.
  - 4) The inlet of the hotter outside air into the coil area.
- 
- 1) Usually the coldest side of the evaporator coil will be the air outlet side. Often the thermostat probe can be inserted between the last and second last row of tubes.
  - 2) The lower air flow area of the evaporator coil in most systems tends to be near either end of the coil. These areas will be colder
  - 3) The area of the coil that the refrigerant inlet tube(s) occupy should be the coldest part of the coil.
  - 4) If the system is equipped with an outside air intake, where and how that air is brought into the evaporator area can have a large effect on the coil temperature. If all the outside air is piped into the evaporator in one area, that area will be considerably warmer in hot weather.

By looking at all these different factors, the area of an evaporator coil most likely to be the coldest can be determined.

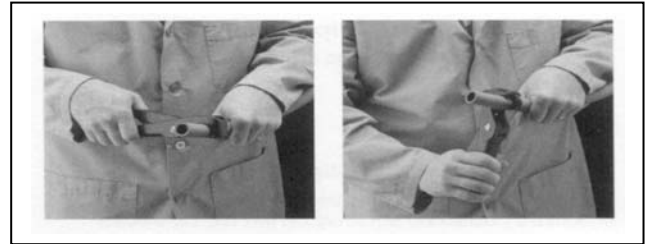


Once the probe is inserted, the A/C system needs to be tested. Run the system to ensure that the thermostat is cycling the compressor off at the appropriate temperature. A core temperature ranging between 25° and 30° F should cause the thermostat to cycle off. The air temperature at the vent outlet closest to the evaporator coil should be between 38° F and 45° F when the compressor cycles off.

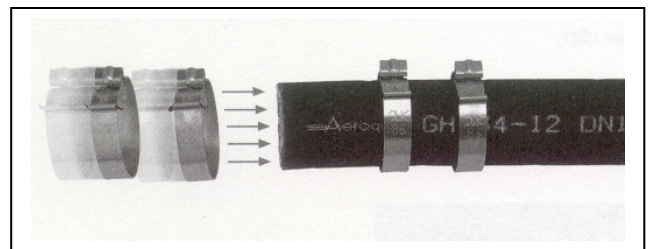
If the thermostat doesn't cycle off after a reasonable cool down period, and the air outlet temperature has dropped below 40° F, the cut in and cut out settings should be adjusted until the compressor is cycling on and off regularly. Let the system run for a decent time period (at least 15 min) and then check the evaporator coil for any signs of freezing.

## Aeroquip E-Z Clip Assembly Instructions

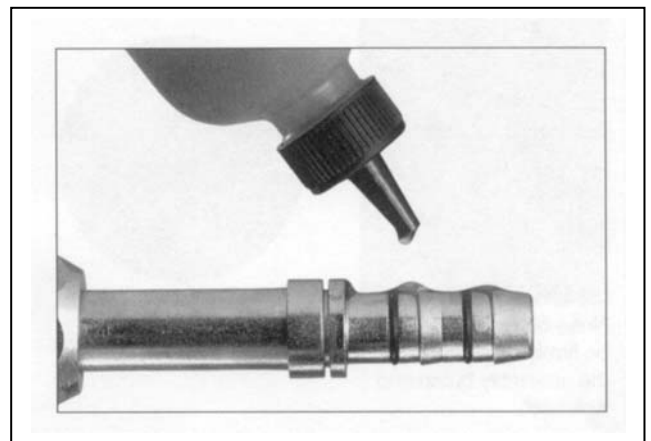
Step 1. Cut the hose to proper length with an appropriate cutting tool. Aeroquip's hand held hose cutter has been specially designed for cutting all non-wire reinforced hose, such as GH-134 Multi-Refrigerant hose. Be sure the cut is made square to the hose length.



Step 2. Install two proper-sized clips onto the cut end of the hose. Orientation of the clips does not affect the performance of the connection. However, for ease of assembly, both clips should have the same orientation. NOTE: Failure to slide the clips over the hose at this time will require the clips to be stretched over the hose or fitting later. This may permanently damage the clip.



Step 3. Lubricate the nipple with a generous amount of the refrigeration or A/C system's compressor lubricating oil. This MUST be done to lower the force of nipple insertion.

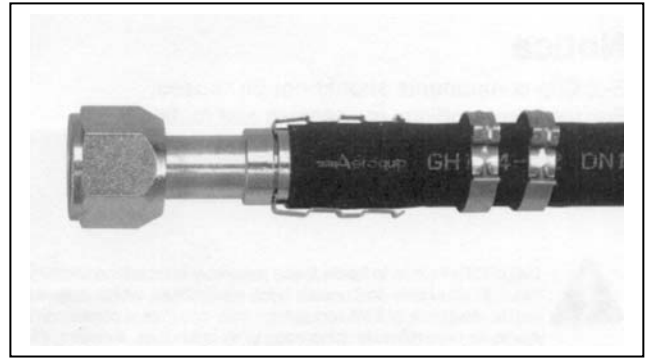


Step 4. Insert the nipple into the hose. To ensure that the nipple is fully inserted, check the gap between the cut end of the hose and the shoulder on the nipple. Care should be taken to avoid kinking or other damage to the hose during nipple insertion. NOTE: Be sure to wipe excess oil from the nipple and hose.

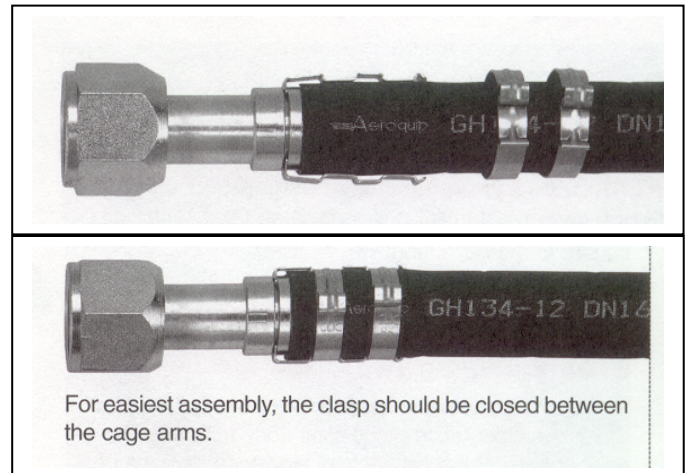


Step 5. Snap the cage into the groove on the nipple. The arms should extend over the hose length. When the cage has been correctly installed in the cage groove, the cage will be able to rotate in the groove. This step **MUST** be performed to ensure:

1. The clips will be located over the O-rings on the nipple.
2. The connection will be compatible with the connection's pressure rating.



Step 6. Slide the clips over the cage arms and into the channels on each arm.



Step 7. Use the pliers to close the clips. The pliers should be positioned squarely on the clip connection points and should remain square during the closing of the clip.

**NOTICE:** E-Z Clip components should not be reused.

