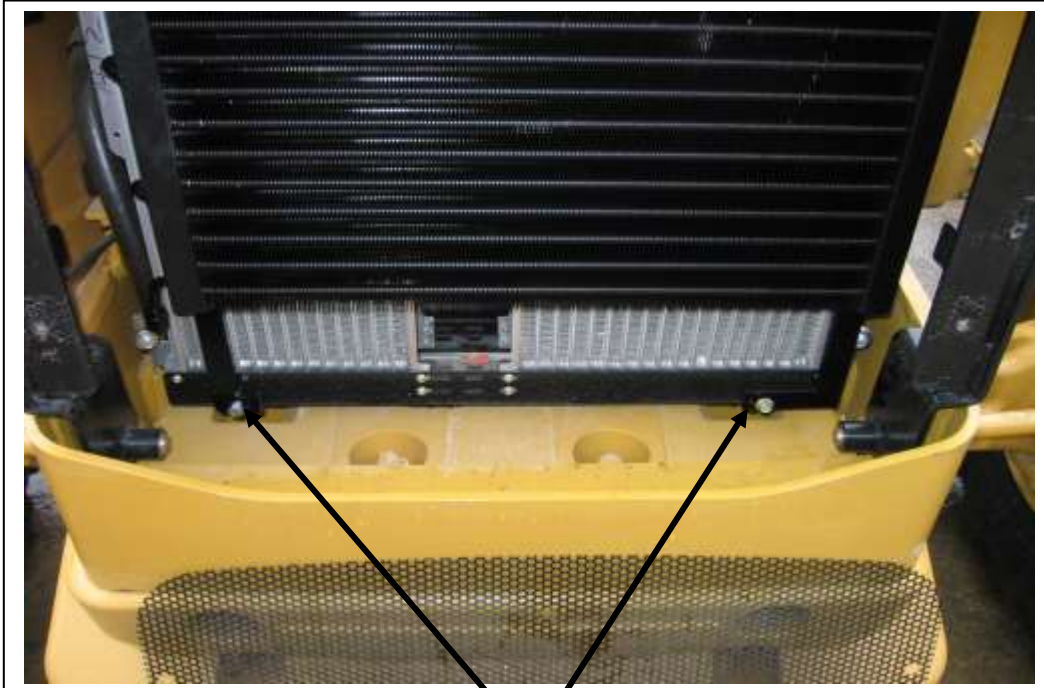


**416 / 420 / 430E
W/3054 ENGINE
CAT BACKHOE
INSTALLATION INSTRUCTIONS**



HAMMOND AIR CONDITIONING LTD
INGERSOLL, ONT.
1-800-267-2665
1-888-267-3745 (FAX)

Condenser: The condenser is a high performance tube and fin unit designed to be mounted in front of the radiator and oil coolers.



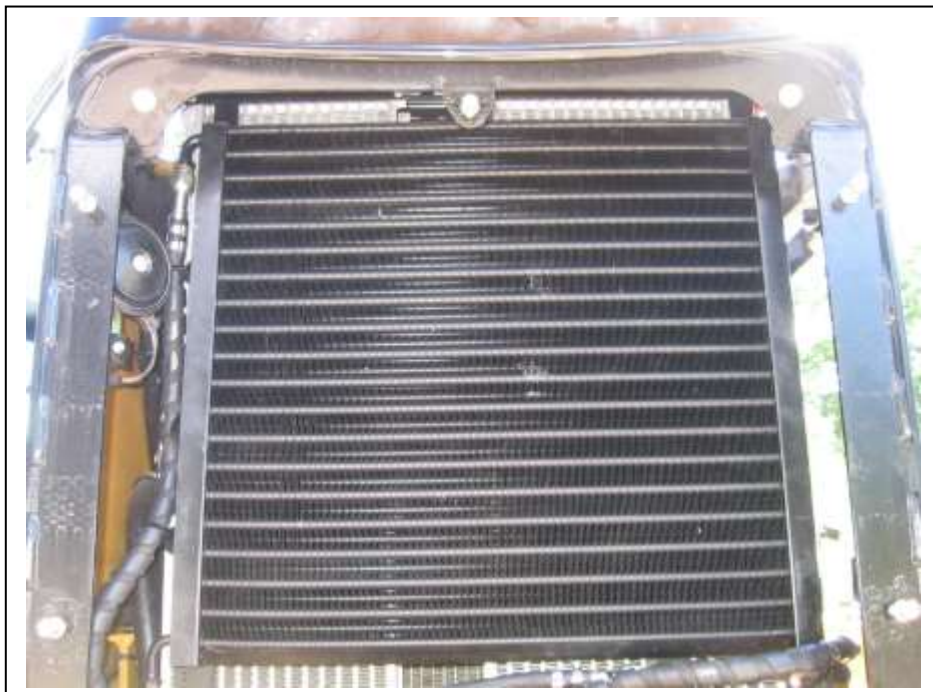
Lower mount points



420D set up. Should be identical for the E series



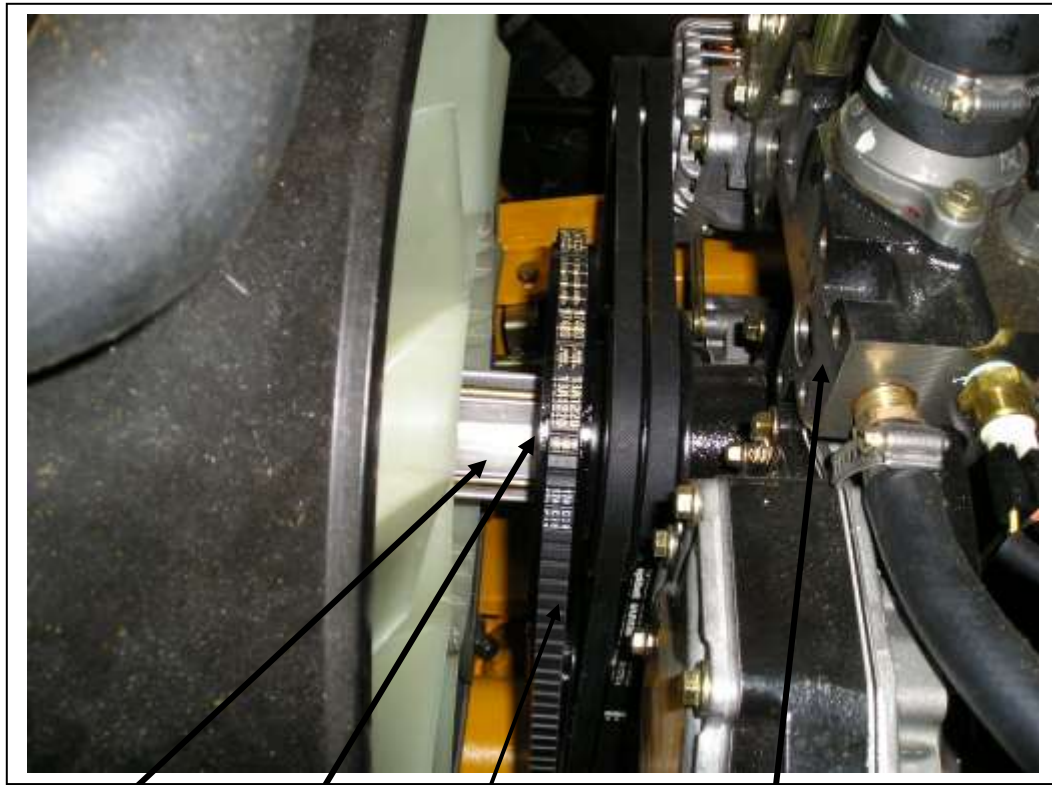
Condenser and drier with all hoses connected.



Compressor: The compressor is an engine driven Sanden compressor similar to the Caterpillar factory compressor. The mount bracket is designed with integrated tightening features for ease of service. The compressor is driven by an A groove belt running independently of other engine functions.

Steps:

1. Remove the side panels from both sides of the engine.
2. Remove the fan screen and the bolts securing the fan shroud to the radiator. This will make it easier to remove the fan hub bolts.
3. Remove the fan hub bolts and slide the fan spacer towards the radiator as far as possible.
4. Install the auxiliary pulley over the fan hub with the flush side of the pulley towards the radiator.



Fan spacer

Add on pulley

Drive belt

Three M10 mount
holes on engine head

*NOTE *- Perkins Tier II engine shown but not in Cat unit.

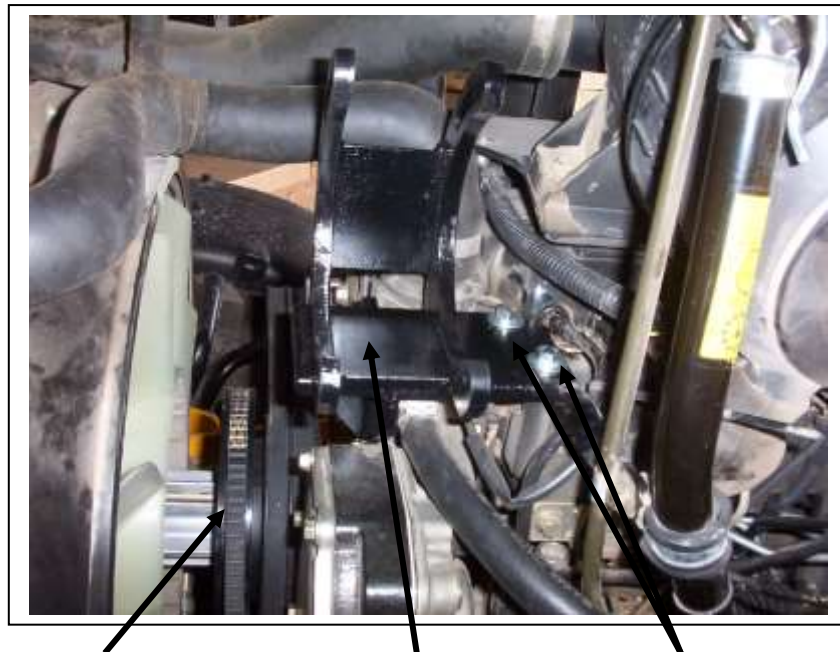
5. Place the supplied drive belt over the pulley and then re-install the fan spacer and fan. Ensure that the fan bolts are tight.
6. Bolt the compressor mount bracket onto the engine. This bracket bolts to the open M10 mounting holes on the engine head on the left side of the engine. Loosely bolt the compressor mount bracket onto the engine head using the three M10 bolts.



Three M10 x 30mm bolts and large OD flat washers.

NOTE- Perkins Tier II engine but not in Cat unit

7. Install the two M8x30mm bolts into the M8 holes on the top of the engine head. Tighten all five bolts down



Add on pulley and 17480 belt.

Compressor mount

Two M8 x 30 mm bolts.

NOTE: Perkins tier II engine but not in Cat unit.

- Place the compressor onto the tightener ears and loosely install the 3/8" x 1 1/2" bolts provided. Install the 17460 drive belt and tension the compressor. Tighten the compressor bolts.



13/32" line

Compressor installed
on mount bracket.

Horizontal "O"
ring pad with
binary switch

5/8" A/C line

13/32" fitting
at compressor

- Remove the caps on the back of the compressor and install horizontal "O" ring pad onto the compressor ports. Ensure that the binary switch is on the discharge port side.

Horizontal "O" ring pad complete with binary switch.

13/32" straight fitting



1/2" 90° fitting

Bend this clamp up a bit to move the dipstick away from the 1/2" suction line access port.

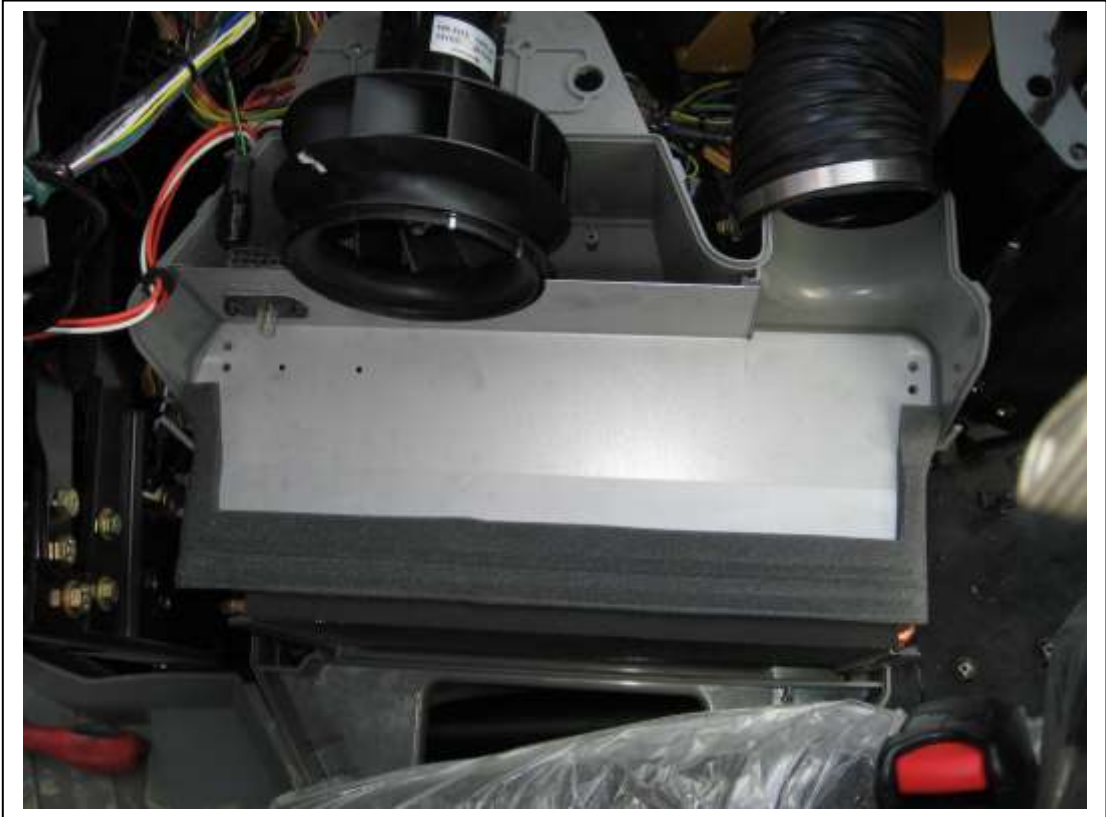
Evaporator:

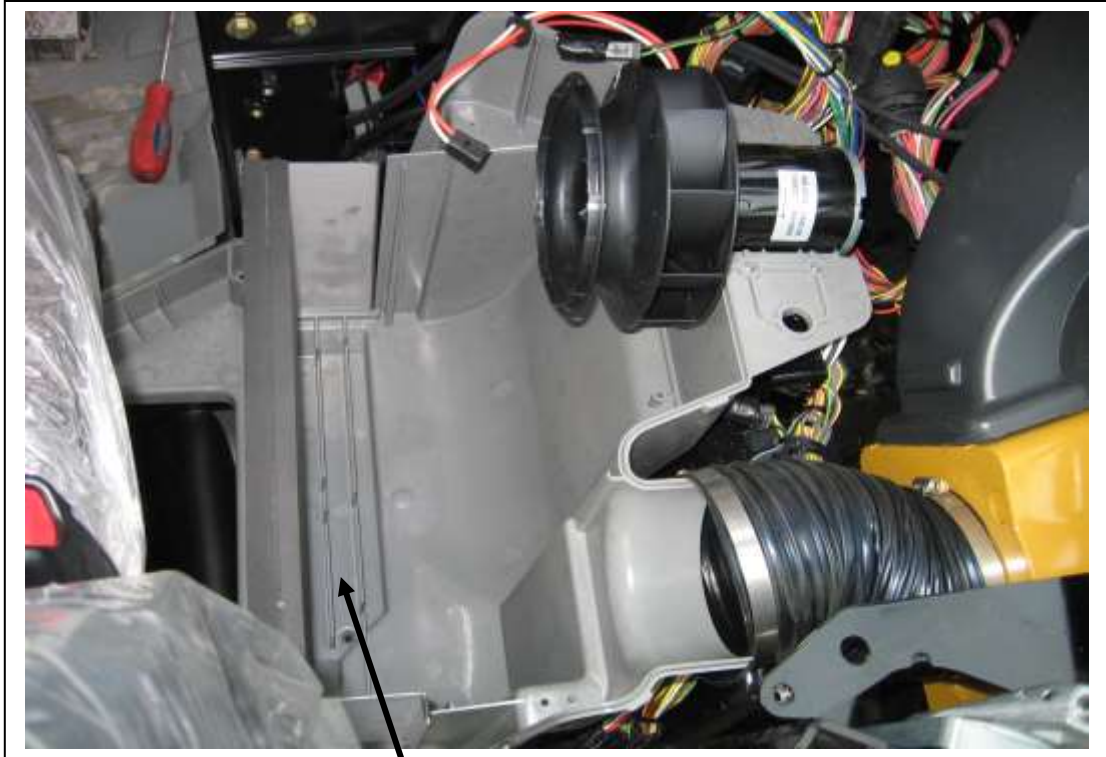


Remove these panels



Remove this cover





Remove the heater coil



Drain tube exists at bottom of plastic housing. Be sure the tube is not obstructed. Install small piece of drain tube and restrictor beneath equipment.



Hoses are pre attached to new Heat/Cool coil. Remove the OEM heater coil and install new heat/cool coil.



Heat/cool coil in place with hoses attached. Seal coil in box with foam or tar tape.

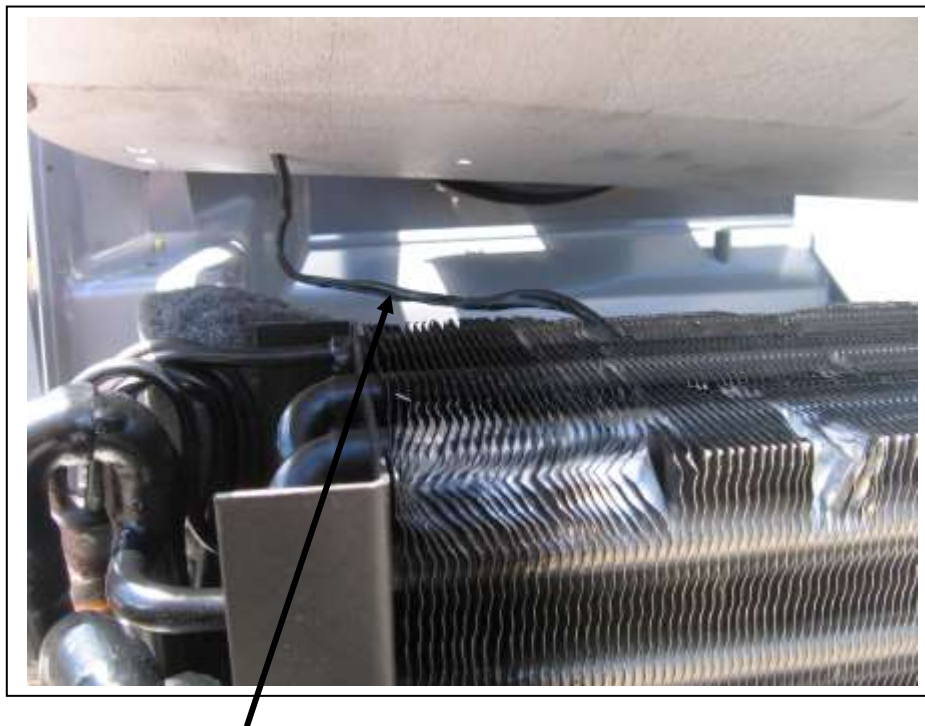


Drain tubes installed

Evap in place with heater and AC lines extending approx 3' out of box.



Thermostat probe coming into box. Run down through metal plate. Thermostat body gets tied up outside the evaporator box under the switch console. Find the white factory AC wire and cut and attach it to the thermostat.



Thermostat probe passing through the metal plate and into the cooling area of the heat/cool coil.

Heater control valve



Drain tube

Cut the heater lines to length and connect to original heater lines running to the engine and to the heater control valve.



Clutch wire running up into the console area and connected to the thermostat.

AC lines cut to length and spliced to lines running from the compressor and drier.

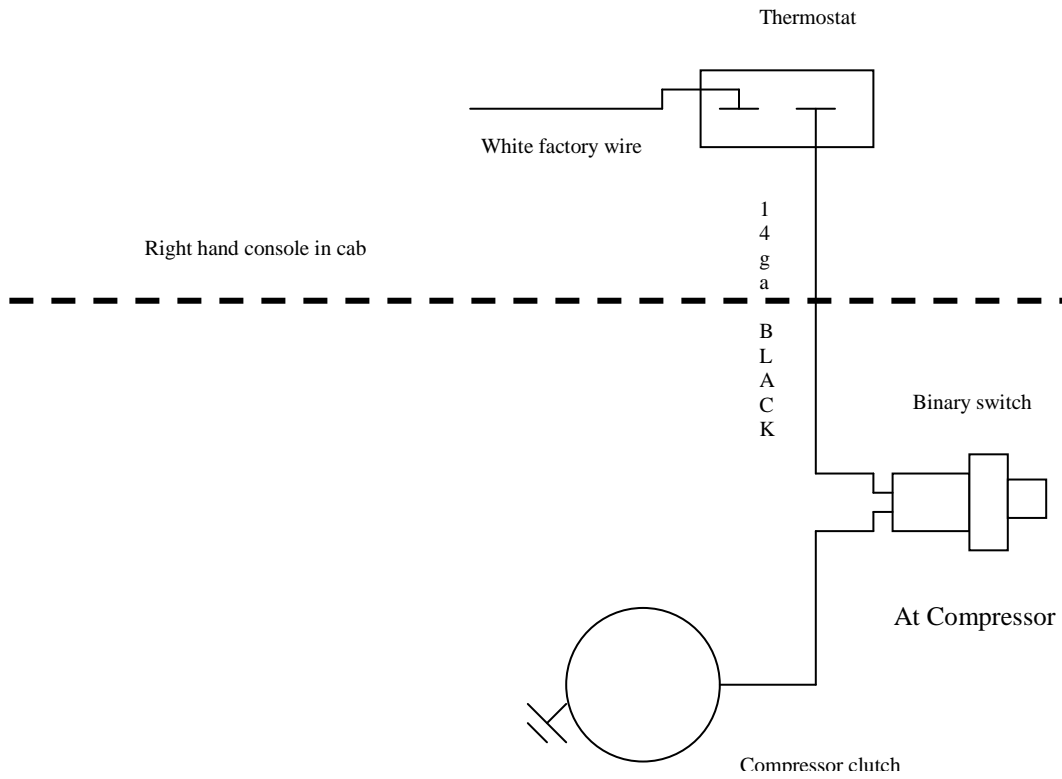
Electrical:



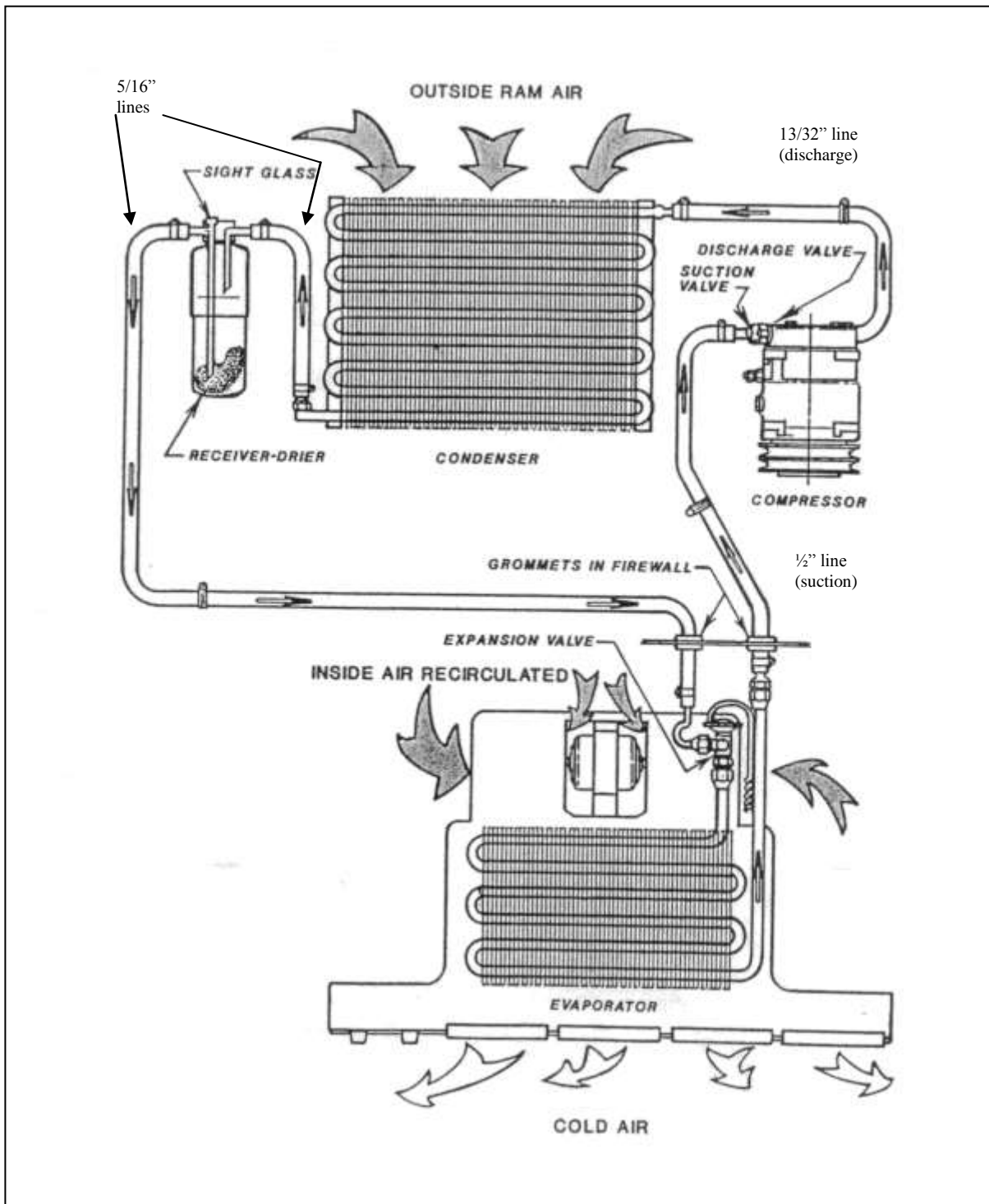
Replace this switch with supplied part.

**416/420/430E CAT
BACKHOE**

12 Volt System



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.

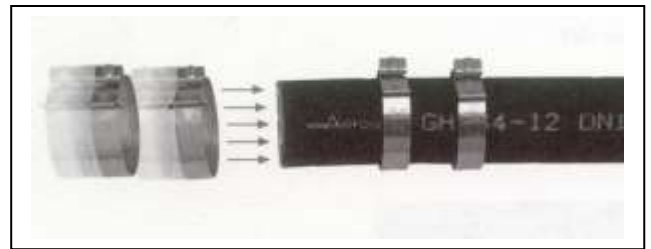
If the thermostat doesn't cycle off after a reasonable cool down period, and the air outlet temperature has dropped below 40° F, the cut in and cut out settings should be adjusted until the compressor is cycling on and off regularly. Let the system run for a decent time period (at least 15 min) and then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

Aeroquip E-Z Clip Assembly Instructions

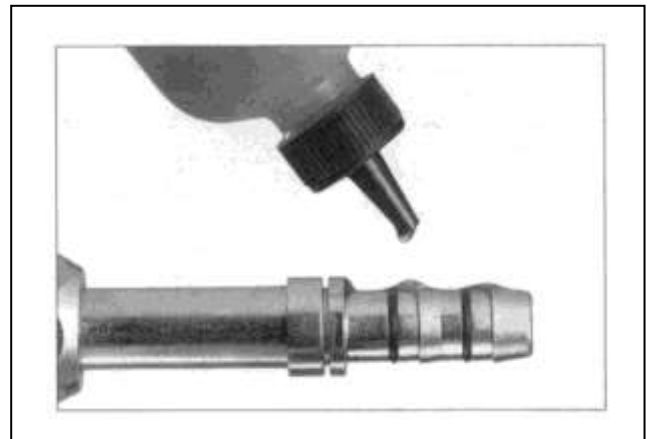
Step 1. Cut the hose to proper length with an appropriate cutting tool. Aeroquip's hand held hose cutter has been specially designed for cutting all non-wire reinforced hose, such as GH-134 Multi-Refrigerant hose. Be sure the cut is made square to the hose length.



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.

