

# IHI COMPACT EXCAVATOR IC50



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## COMPRESSOR INSTALL

The compressor will be mounted above the alternator at the top right side of the engine. Removing the large pan below the engine provides easier access to the lower fan guard bolt, allows for draining some coolant and makes installing the new belt much easier.



Removing the turbo hose provides a little more room.

Remove this bracket

Remove this nut and stud.

Remove the fan guard (5 bolts)

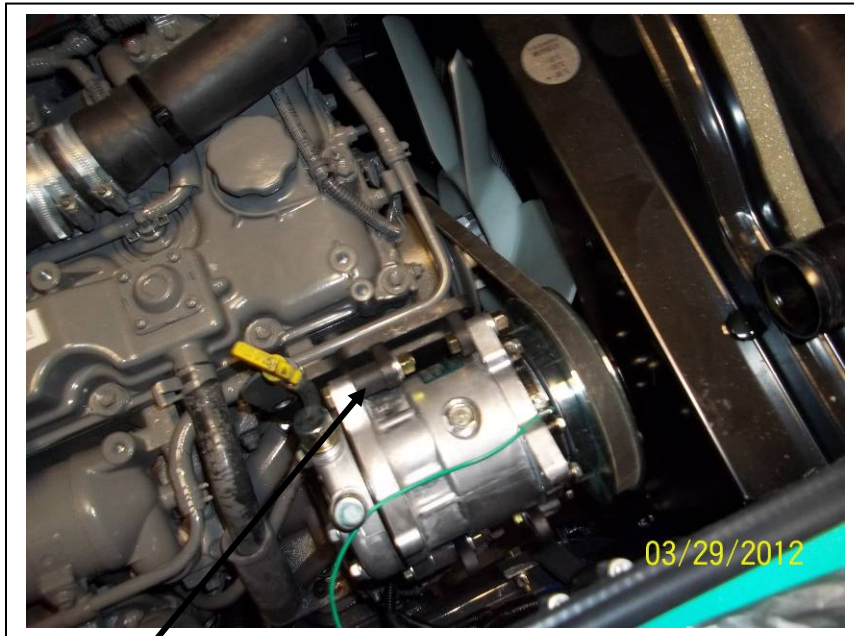
Remove the engine lift bracket and the nut, spacer and stud for the dip stick. These 3 holes are where the mount locates. Draining ½ gallon of radiator coolant allows the removal of the top rad hose and provides easier access to the fan guard.



Compressor mount fastened to engine with three M10 bolts, locks, and flat washers.



Install the compressor mount with M10 bolts, locks and flat washers provided. Check vertical alignment and tighten in place. Some careful bending on the dip stick tube will bring it in closer to the engine. Do not bolt it to the bracket yet.



3/4" spacer

Install the compressor with the hardware and spacer supplied. Install the belt around the fan and crank pulley and then around the compressor pulley. This is easier from the bottom. Tighten belt, ensure correct alignment and then tighten the bolts.



Discard this piece

Cut the fan guard as shown. Paint the edges and re-install. Re-attach the radiator hose and fill the rad. If you removed the turbo hose it can now be re-installed.





Fasten dipstick tube with M8x20mm bolt to engine mount

The dipstick tube can now be bolted with the supplied M8 hardware to the new compressor mount. Bend carefully to ensure it will not rub on the compressor or the engine.

## EVAPORATOR BOX INSTALL

The evaporator box is located low at the front window, leaving enough room under it for the operators feet and still allows for good front window vision. This location provides ample cold air flow directly at the operator.



Drill a 2 ¼" or 2 ½" hole in the side panel as shown for the hoses. CAUTION: THE RADIATOR IS BEHIND THIS PANEL. Be sure the drill bit in the hole saw is short and saw very carefully. There is only about ¾-1" of space behind the panel before hitting the edge of the radiator.



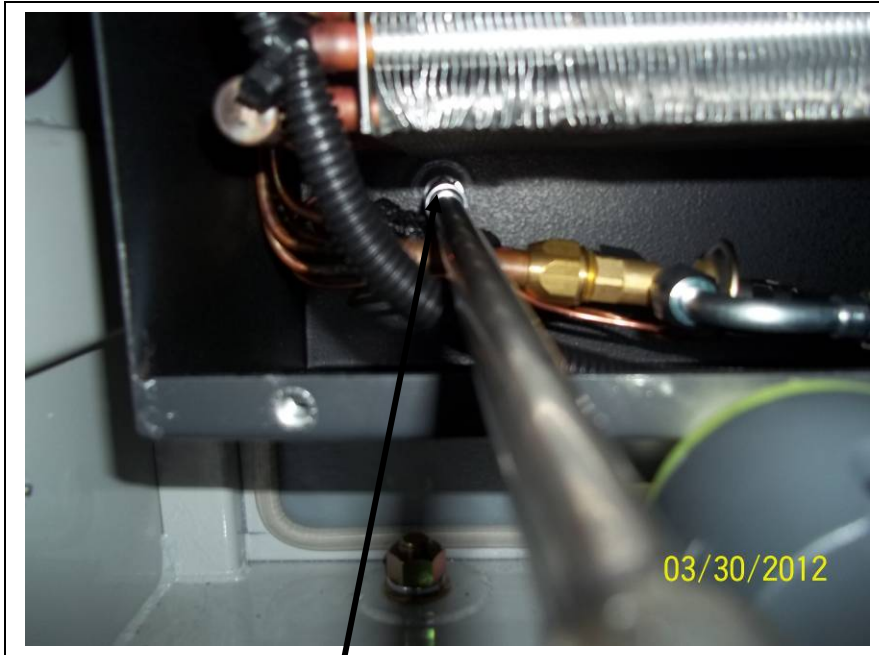
The evaporator box mounts to this flange in 3 places

Drill a 3/4" hole here for the drain tube.

Use edging around this hole to prevent cutting the hoses.

Hole saw a 3/4" hole as shown for the drain tube. Again use caution to not drill through too far and hit the radiator or any other components. A marking template is provided to locate the evaporator box under the window.

Remove the front panel from the evaporator box. Set the evaporator box into place to make sure the three marks from the template align OK with the holes in the back of the evaporator box below the coil. If OK then drill the three 3/8" holes and install the 3 clinch nuts. Self drilling bolts may also be used here.  
Feed hoses and wiring through the hole into the radiator compartment.



One of three mounting points



Mount the right side bracket as shown. Mark and drill a hole for the clinch nut.





Mark the 2 mounting holes for the left side bracket.



Drill and tap the holes for 1/4" hardware for the left side bracket and secure with the hardware provided.

Once the box is completely fastened, carefully re-install the thermostat into the evaporator core, reconnect the electrical connections and install the front panel back on the evaporator box. Connect the drain tube and push it through the drilled drain hole to the radiator area.

## CONDENSER

The condenser mounts below the radiator in the location of where the small fuel cooler is located.



Install the upper condenser brackets as shown. The lower brackets are installed later.



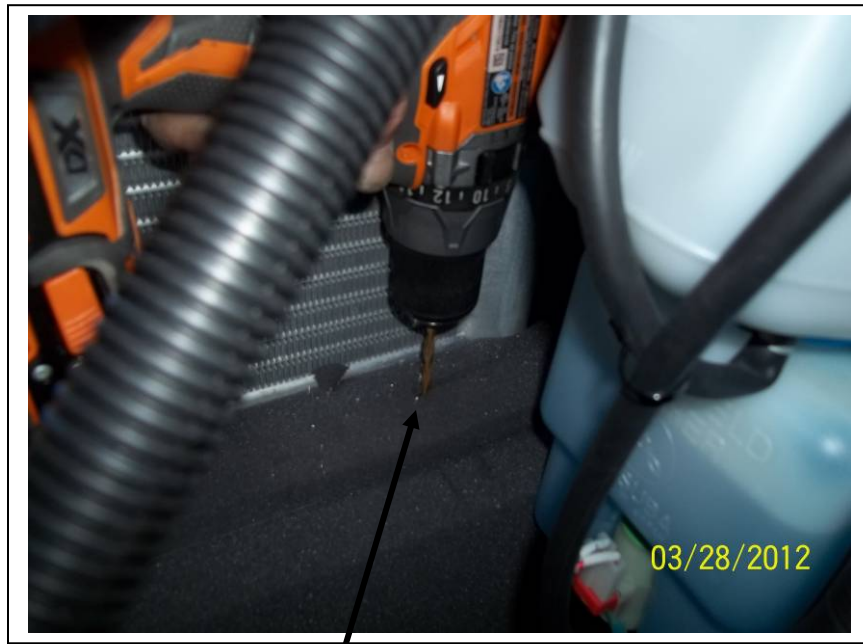
Remove these four bolts

Remove the two bolts from the P clamps and the two bolts holding the fuel cooler. Let the fuel cooler dangle low until the condenser is mounted in that location. Also temporarily remove the washer fluid bottle so it's not in the way. RE-install the right side P clamp bolt but leave loose to allow the condenser flange to slip in behind it.

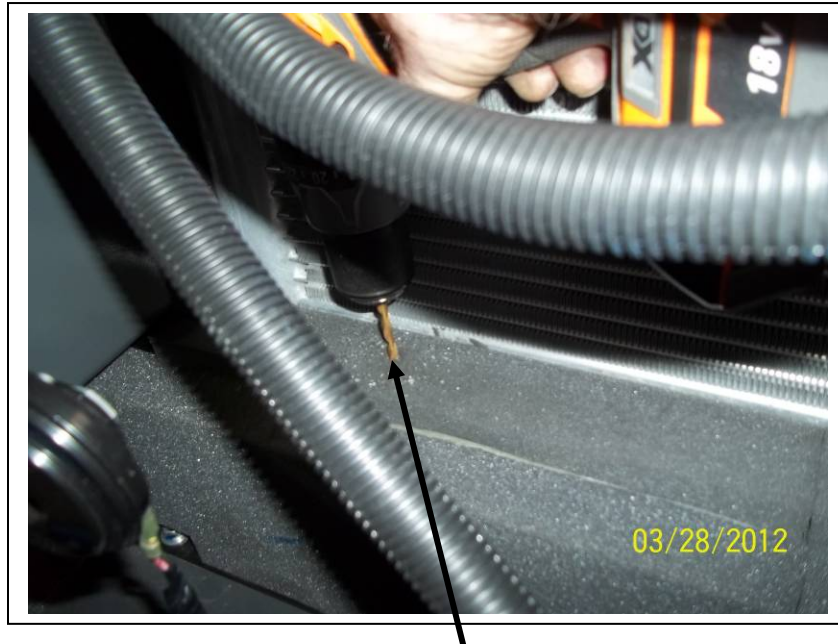




Set the condenser in place and loosely fasten the two upper bolts. Mark the frame where the lower flange meets the condenser and then remove the condenser. The mounting hole for the lower bracket will be 1" back from the front of the condenser location.



Right side condenser mounting location.



Left side lower mount point.

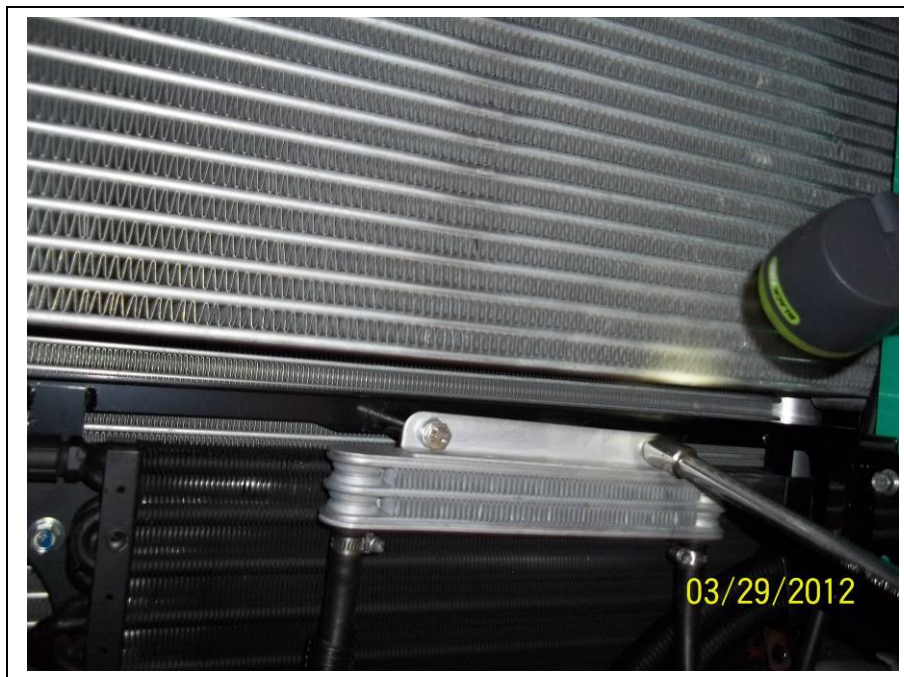
Drill two 5/16" holes 1" back from the mark made in the foam for the lower condenser brackets. Install the two lower "L" brackets using the 1/4" x 3/4" countersunk bolts and install washers and nuts from underneath.

Install the condenser, sliding it so the right top flange slot is behind the loose 8MM bolt on the black bracket and the lower part of the condenser is behind the two “L” brackets loosely fastened.

Install the left side 8MM bolt and the two ¼” bolts to the “L” bracket. Raise the condenser as much as the brackets will allow and tighten the top bolts. From under the equipment tighten the ¼” nuts from the “L” brackets and the two front lower bolts on the face of the condenser.



Install the drier to the condenser bracket as shown using the two #48 gear clamps.



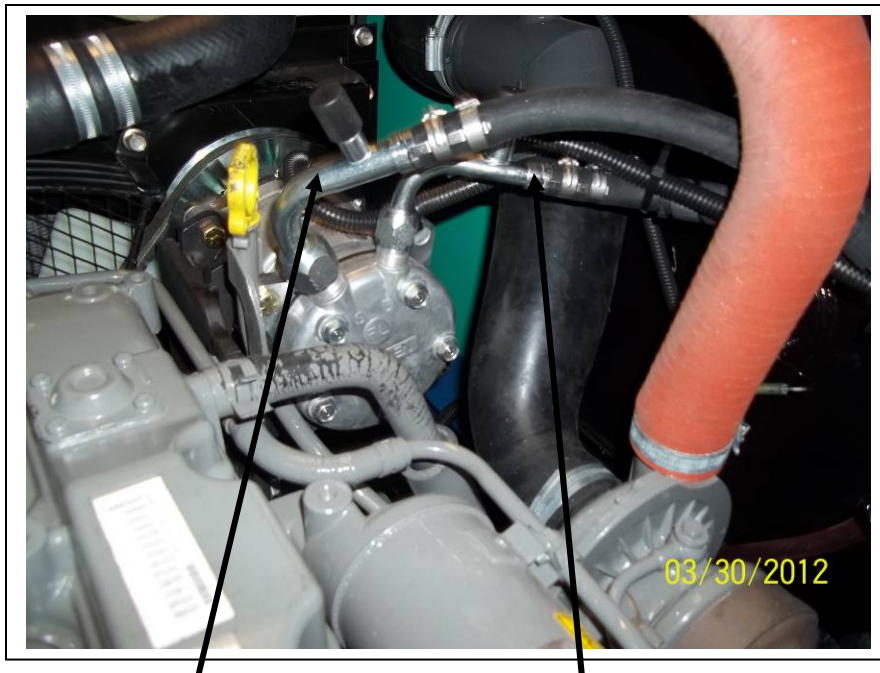
With the two 2.5" long spacers and M8x 80mm bolts and flat washers install the fuel cooler into the same two mounted holes it came off of.



## HOSES



Install the short #6 hose from the bottom fitting of the condenser to the “in” side of the drier as shown.



1/2" hose to the evaporator  
in the cab

13/32" hose to the  
condenser





13/32" line going into radiator compartment

ELECTRICAL



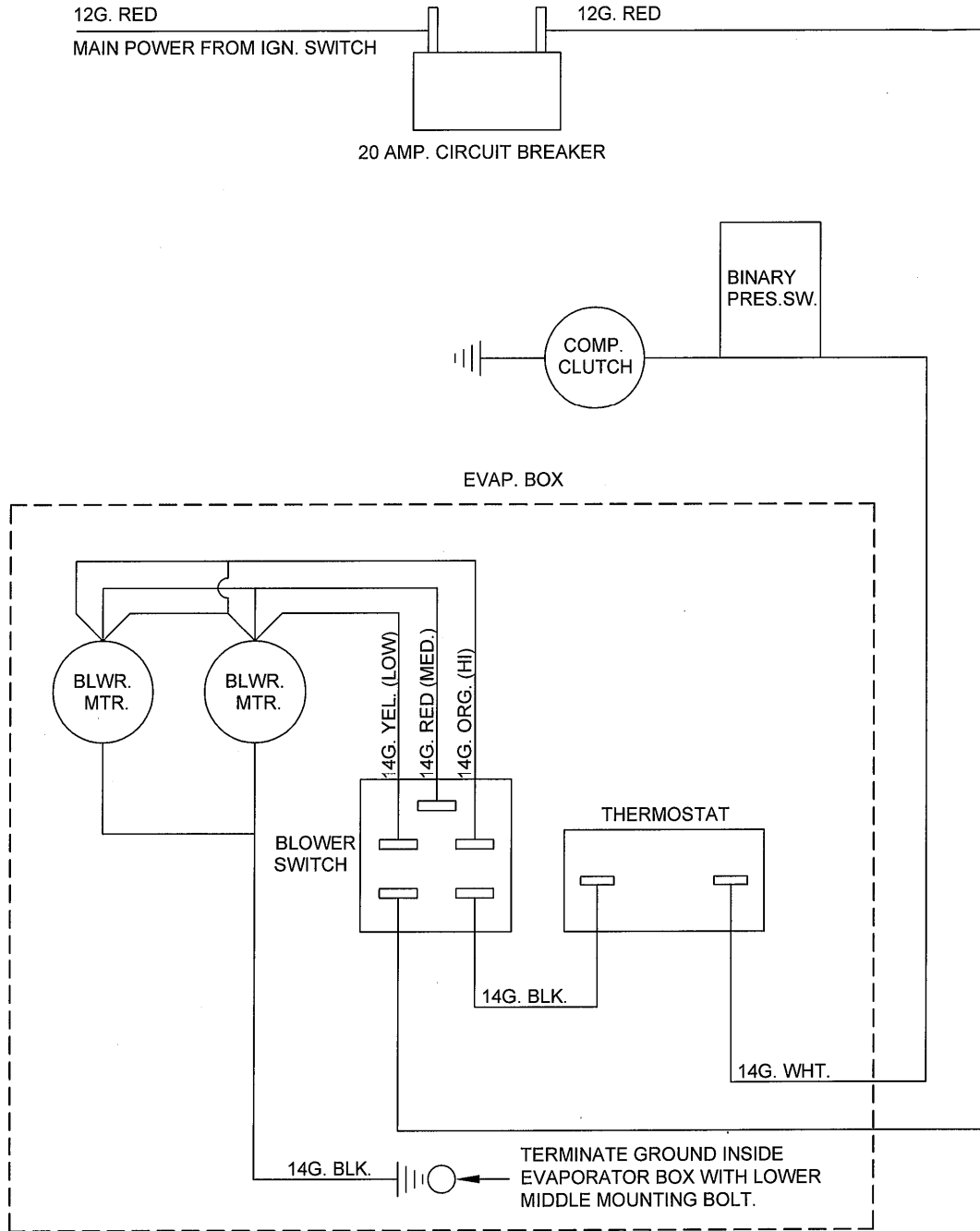
20 amp circuit breaker



Binary pressure switch mounted on the drier.

# IHI IC-50 WIRING DIAGRAM

APR. 10, 2012

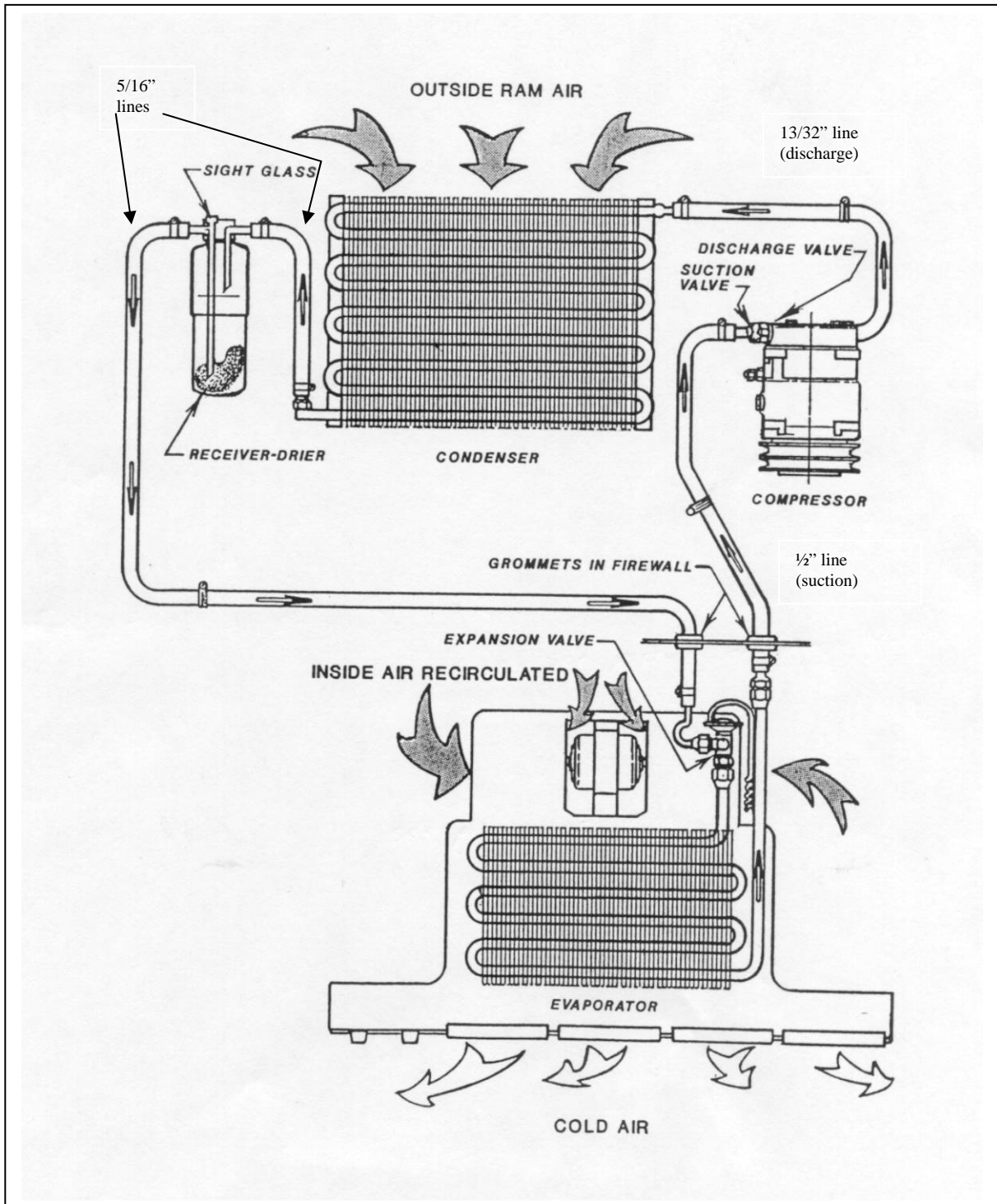


## **CHARGING AND TESTING**

- 1) Pressure test the system using nitrogen to a pressure of 250 psi. Check for leaks.
- 2) Add 2oz of SP20 Sanden PAG oil to the system.
- 3) Vacuum the system for at least ½ hour.
- 4) Check that the vacuum holds.
- 5) Fill the system with 2.25 lbs of R134a refrigerant. **DO NOT USE ANY OTHER TYPE OF REFRIGERANT OR IT WILL VOID THE WARRANTY.**
- 6) Test the system. Check the cycling temperature of the thermostat. Adjust the thermostat settings if required to avoid coil freeze up problems. See the thermostat setting procedures at the end of these instructions.



## 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.
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- 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.

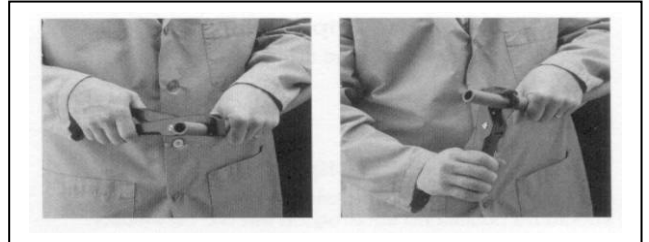
By looking at all these different factors, the area of an evaporator coil most likely to be the coldest can be determined.

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.

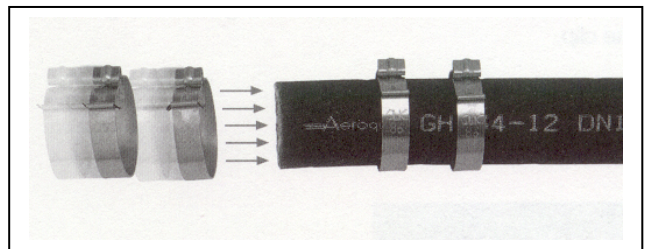
If the thermostat doesn't cycle off after a reasonable cool down period, and the air outlet temperature has dropped below 40° F, the cut in and cut out settings should be adjusted until the compressor is cycling on and off regularly. Let the system run for a decent time period (at least 15 min) and then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

## Aeroquip E-Z Clip Assembly Instructions

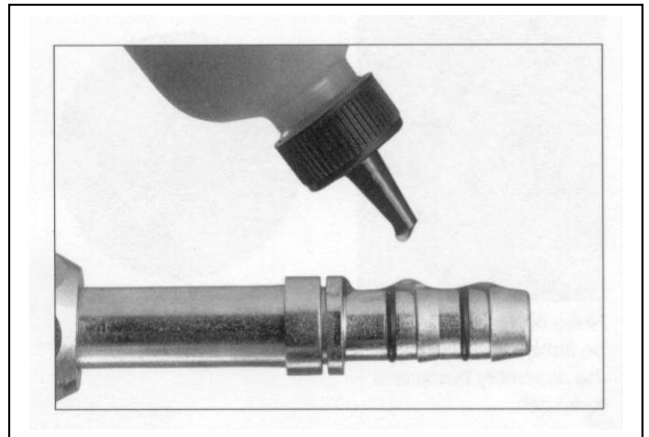
Step 1. Cut the hose to proper length with an appropriate cutting tool. Aeroquip's hand held hose cutter has been specially designed for cutting all non-wire reinforced hose, such as GH-134 Multi-Refrigerant hose. Be sure the cut is made square to the hose length.



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.



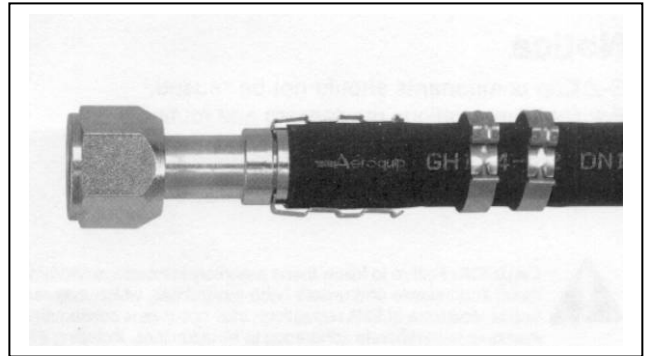
Step 4. Insert the nipple into the hose. To ensure that the nipple is fully inserted, check the gap between the cut end of the hose and the shoulder on the nipple. Care should be taken to avoid kinking or other damage to the hose during nipple insertion. NOTE: Be sure to wipe excess oil from the nipple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



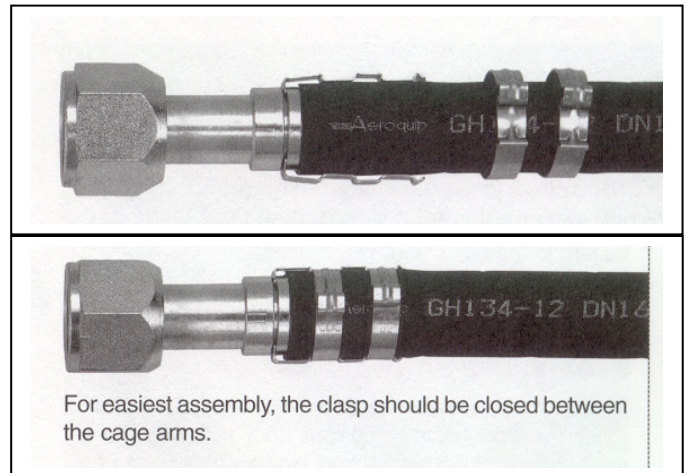


Step 5. Snap the cage into the groove on the nipple. The arms should extend over the hose length. When the cage has been correctly installed in the cage groove, the cage will be able to rotate in the groove. This step **MUST** be performed to ensure:

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.

