

INSTALLATION INSTRUCTIONS

ZETOR RANGE II

FACTORY AIR COMPRESSOR

Hammond Air Conditioning Ltd.
Ingersoll, Ont., Canada
1-800-267-2665
1-888-267-3745 (Fax)

CONDENSER:

The condenser is mounted between the radiator and oil cooler and is secured to the radiator housing flanges.

1. Remove the main hood and other engine area cowlings to make installation of condenser and other engine area components easier.
2. Slide the condenser coil down between the oil cooler and the radiator. Some tractor models will have less space than necessary between the oil cooler and the radiator. Use the alternate mounting brackets supplied in the kit for these tractors.
3. The condenser coil should be mounted as low as possible on the radiator with the fittings pointed to the left side of the tractor.
4. Using the self-drilling screws provided in the condenser mounting hardware kit, screw the condenser mounting brackets to the radiator side flanges.



Condenser in place with hoses shown.

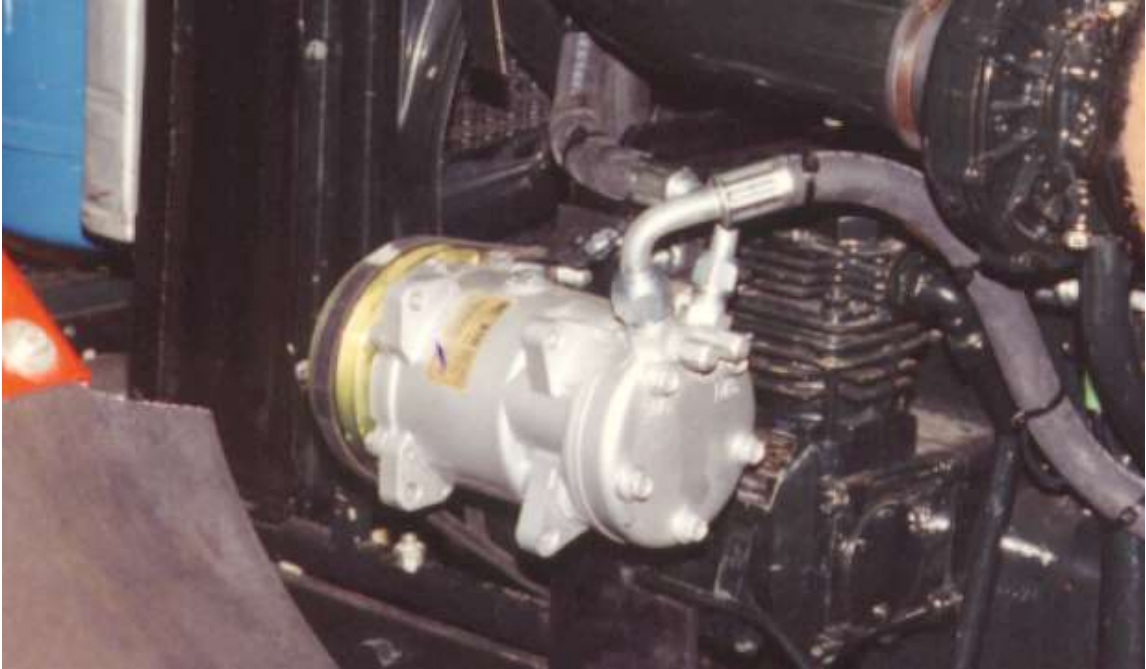
COMPRESSOR:

These instructions are for use when mounting an air conditioning compressor on a tractor that has the factory AIR compressor in place on the left side of the engine.

1. Loosen off the drive belts for the factory air compressor. Remove one belt completely and replace it with the longer belt supplied in the kit. The air conditioning compressor is driven off the rear belt on the engine, which drives the front pulley groove on the compressor. Retighten the one remaining belt on the front groove of the factory air compressor drive.
2. Bolt the mounting frame to the tractor frame member using the three existing threaded holes on the lower frame member and the one existing hole on the end of the engine head.
3. Loosely bolt the compressor tightening plate to the mounting frame using the three slotted holes on the mounting frame.
4. Set the compressor onto the tightening ears and line the pulleys up for the v-belt drive. Once the v-grooves are lined up, tighten down the tightening plate to the mounting frame.
5. Loosely bolt the compressor to the tightening ears and tighten the belt using the slotted adjusting holes. Once the belt is tightened make sure it is still aligned properly and tighten down completely.



Compressor mounted in position.

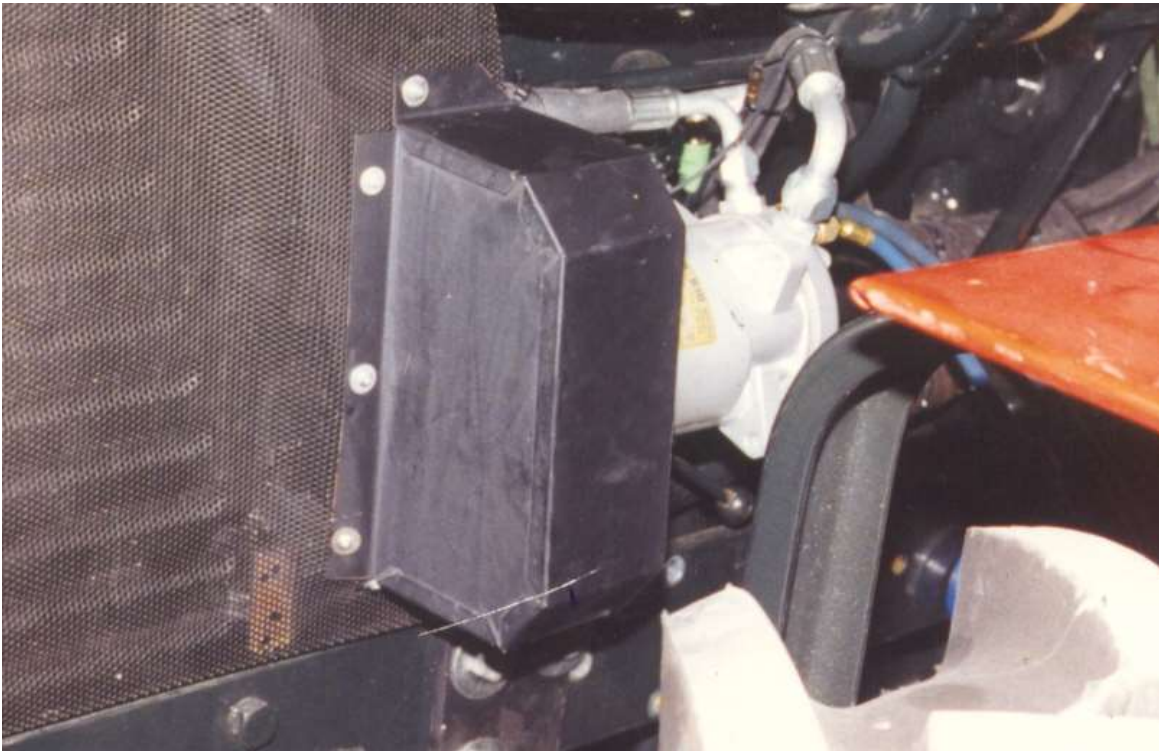


Back view of compressor mounted in location.

Compressor Cover Shield:

The compressor cover shield is designed to be attached over the compressor pulleys to provide protection in case of a v-belt separation or foreign objects being thrown.

1. Hold the cover shield up against the side cover (perforated) to mark out the required cut-out. Trim this area to allow the compressor to extend through the side cover.
2. Mark the holes in the cover shield onto the side cover and drill out. Bolt the cover shield to the side cover with the hardware provided.



Cover shield in place over compressor.

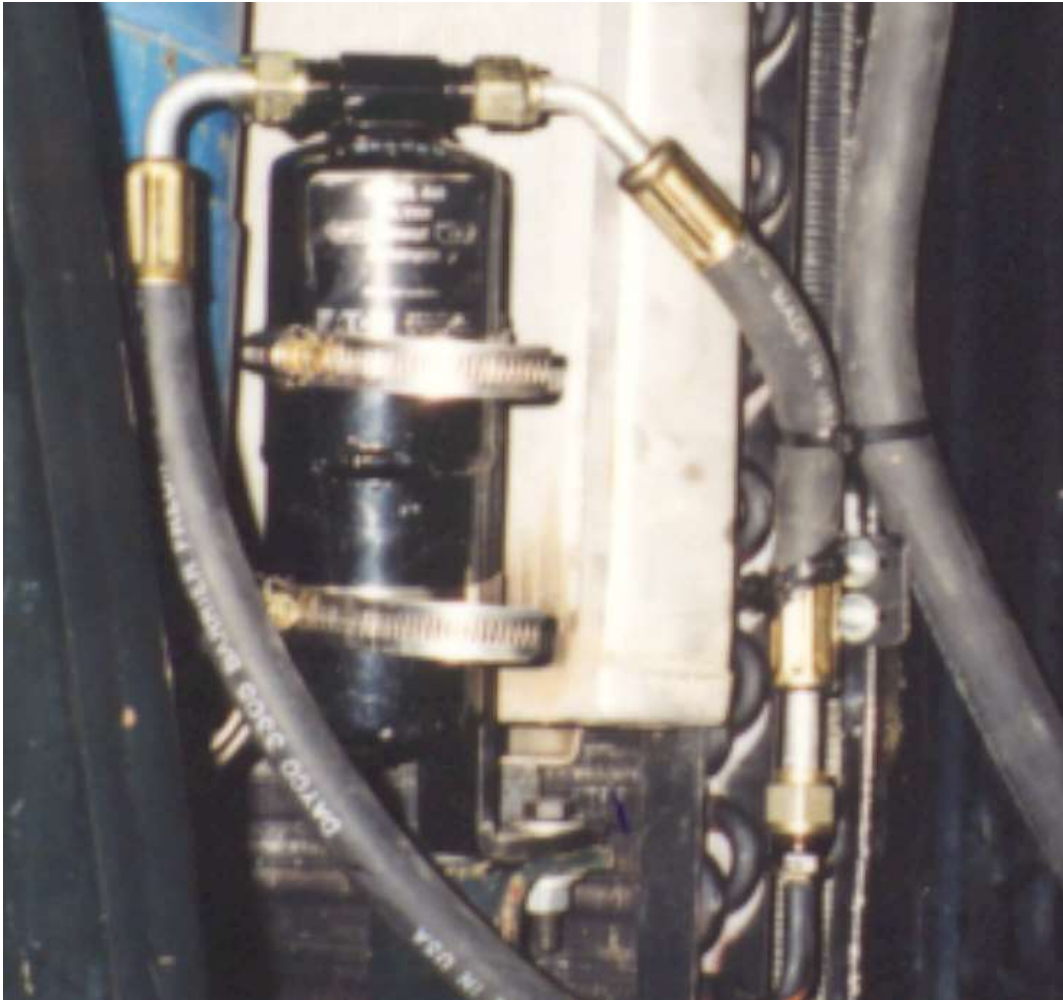
RECEIVER DRIER ASSEMBLY:

The drier is mounted in front of the radiator, coming off the lower oil cooler mounting bracket on the left-hand side.

1. The drier bracket is mounted to the side of the oil cooler mounting bracket using the hardware supplied.
2. The bracket extends upwards from the lower oil cooler mounting bracket. The drier is secured to the drier bracket with the two #48 gear clamps provided. Orient the drier as shown in the picture below.

******NOTE******

Newer tractors will have additional hose to run from the condenser to the drier and as a result the drier has been relocated to the top right of the oil cooler assembly. The same brackets can be used for either arrangement.

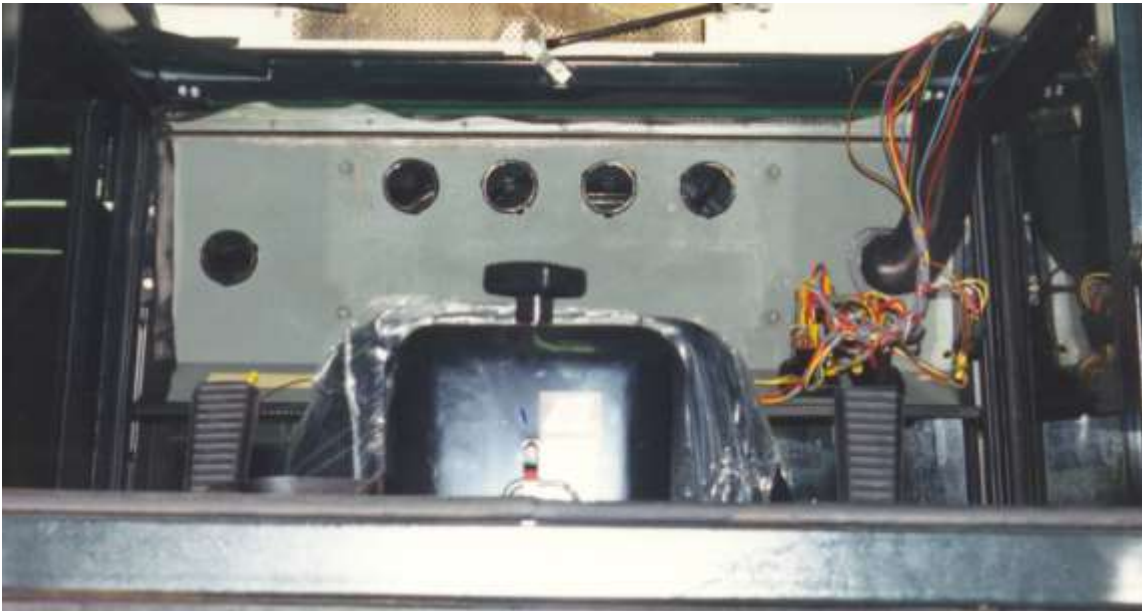


Drier and mount bracket in place.

EVAPORATOR:

The evaporator assembly is a complete heat/cool box assembly designed to replace the factory heater box.

1. Lower the hinged headliner at the front of the cab and remove the existing heater box and the four louvers under the heater box.
2. Remove the blowers and resistors from the heater box and re-install them onto the new heat/cool box supplied.
3. Install the new heat/cool box onto the two existing rear mounting bolts. Remove the other mounting bolts.
4. Mark holes for new mounting bolts and drill holes for 5/16" bolts (drill to 3/8"). Mount using the hardware supplied.
5. Remove the dome light before final installation. To be re-installed with the extension wire supplied.
6. Extend the heater hoses and connect to the heater coil outlets on the left side of the box.
7. Bolt the relay mount back onto the heat/cool box using the 1/4" bolt provided.
8. Reconnect all wiring to the blowers.
9. Screw the triangular shaped air distribution panel into place where the original louvers were removed. Use the self-drilling screws supplied.



Heat/cool box mounting location. Existing heater assembly removed.



Heat/cool box in position with blowers remounted.



Heat/cool box showing refrigerant hose routing.



Heat/cool box showing heater side and necessary heater hose extensions.

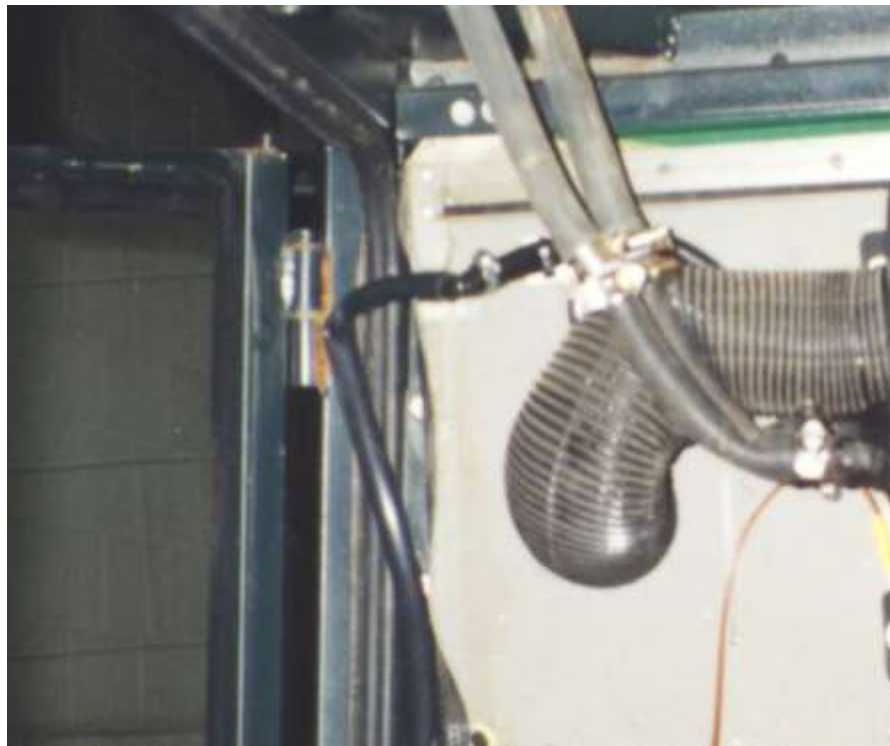


Air distribution panel also showing the recirculation louvers (chrome louvers no longer used – just factory louvers originally in place).

DRAIN TUBES:

The drain tubes carry condensation from the evaporator assembly out of the cab.

1. Cut a ¾" wide by 1" deep notch on both sides of the hinged headliner panel just behind the hinge mounting brackets.
2. Install a length of ½" (ID) drain tube onto the evaporator drain pan drain tube extensions (at the ends close to the bottom of the headliner panel) and run the tubes over to the notches.
3. Connect the drain tubes to the drain elbows so that the elbows extend down through the notches cut in the headliner. The barbed end of the elbow should be extending down. Connect the other end with the #4 gear clamps supplied.
4. When the headliner is raised back in place run the drain tubes up the front corner posts and secure to the self-adhesive backed cable tie blocks with the small cable ties supplied.
5. Drill 5/8" diameter holes in the corners of the tractor floors near the front corner posts, making sure to avoid heavy channels and any lines running underneath, to allow the drain tubes to exit the cab. Allow 4" to 6" of drain tube to extend beneath the cab.
6. When the headliner is raised into position the tops of the drain lines are pushed onto the barbed ends of the elbows. To lower the headliner simply pull the tubes off the elbows.

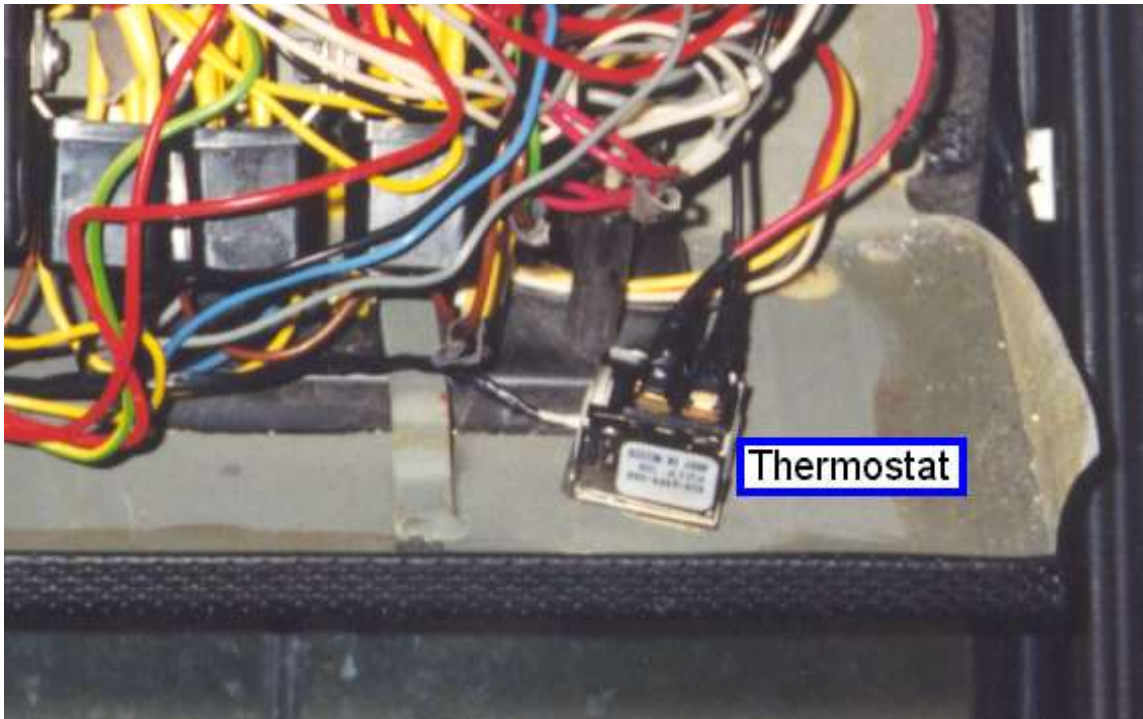


Left side drain line in place.

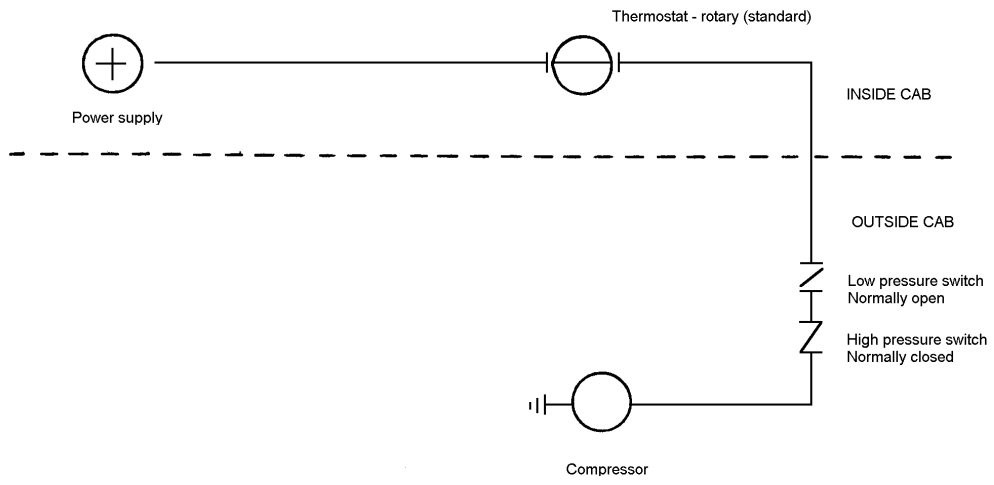
ELECTRICAL:

Some of the air conditioning system electrical components are located in the drop-down panel in the cab while the remaining ones are in the engine compartment at the compressor.

1. The thermostat switch is mounted in the vertical panel of the drop-down headliner in the cab, just above the existing electrical panel. To mount the thermostat drill a 7/16" hole through the panel (easiest from inside if possible) and mount the thermostat.
2. The thermostat probe is already inserted into the air conditioning coil in the box and should not be removed.
3. Draw power for the air conditioning system from the blower switch. Find a lead that is live any time the blowers are on and not live when the blowers are off. Splice a power wire into this lead and connect to one of the thermostat terminals.
4. From the other thermostat terminal run the 14ga black clutch wire out with the refrigerant hoses and down to the pressure switches at the compressor.
5. Connect the pressure switches in series and then connect the compressor clutch wire to the open pressure switch lead.



Location of thermostat above electrical panel.



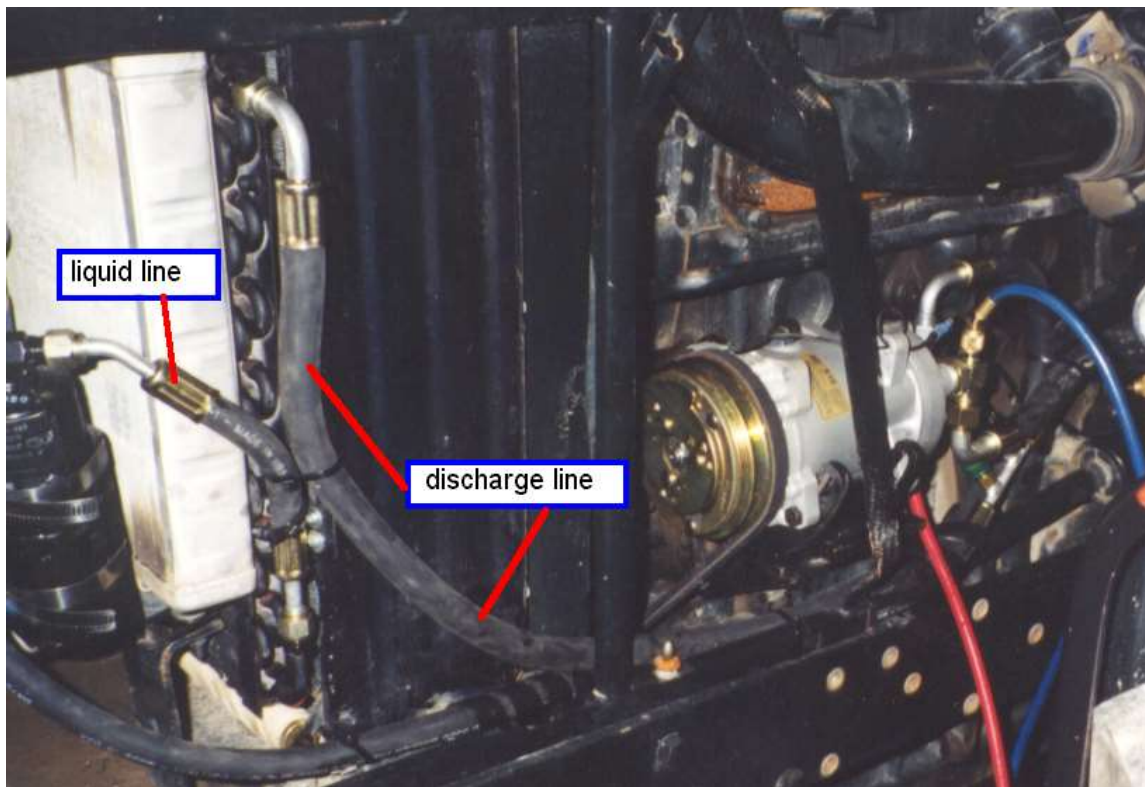
Standard wiring diagram for Zetor Range II tractors.

HOSE ROUTING:

The hoses are mostly pre-crimped with the fittings installed on both ends, when possible, and pressure tested prior to being included in the kit. Where necessary refer to the pictures in the other parts of the installation instructions for routings.

13/32" Compressor to Condenser:

1. The hose is pre-assembled with all fittings in place and oriented correctly. With the ½" spiral cut hosewrap wrap the length of the hose where it may chafe or wear before installing.
2. The 90o fitting closest to the charging port tee is connected to the rotolock fitting on the compressor with the high pressure switch (black leads). Check the pictures for proper orientation of the fitting.
3. Route the hose forward as shown and connect the other 90o fitting to the top fitting on the condenser as shown.
4. Secure as required with clamps or cable ties.



Discharge line from compressor and liquid line to drier from condenser.

5/16" Condenser to Receiver Drier:

1. The shorter of the 5/16" hoses is designed to run from the outlet fitting on the condenser to the receiver drier.
2. Connect the straight fitting to the condenser and run the hose up to the drier as shown in picture on previous page.
3. Connect the 45o fitting to the drier (make sure it is connected to the 'INLET' fitting).

5/16" Receiver Drier to 90o Elbow:

1. The hose from the drier to the 90o-elbow splice is run up to the bottom of the right hand front corner post first along with the suction return line.
2. Connect the 90o fitting to the 'OUTLET' fitting on the drier and run the hose down and back to the compressor. From the compressor run the liquid line and the suction line back along the side of the engine just over the top of the starter.
3. Run the hoses around the back of the engine and over to the base of the column. Run the hoses up the column to the top where the 90o elbow splices will be exposed exiting the headliner are through the front as shown below.
4. Here the liquid line must be crimped onto the 90o splice with a beadlock crimp.

5/16" 90o Splice to Expansion Valve:

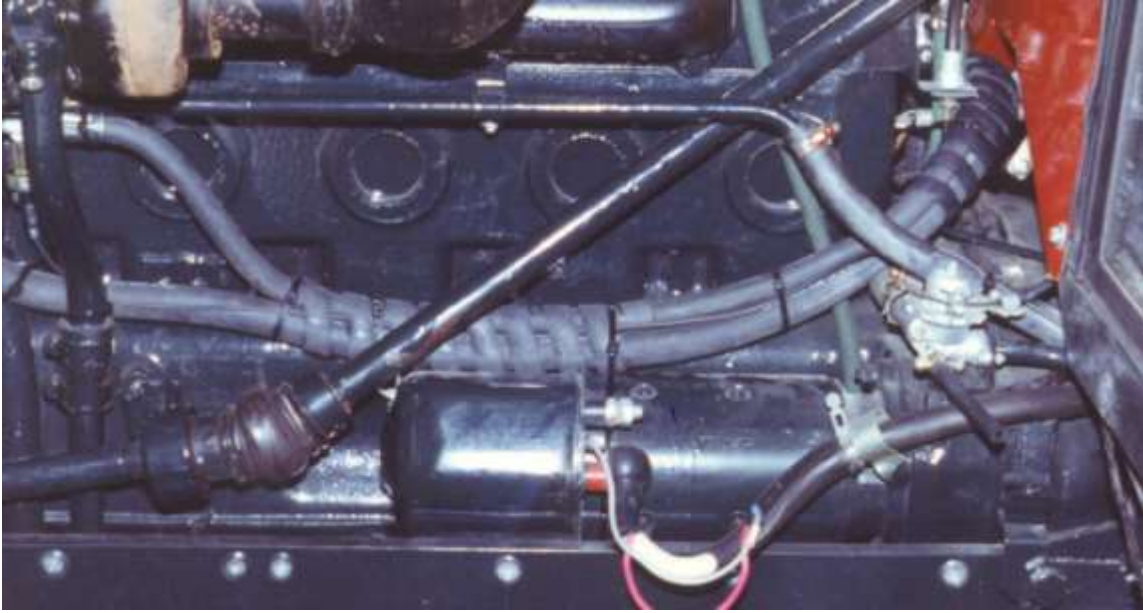
1. Drill two 1 1/4" holes in the wall of the roof to allow the refrigerant hoses to exit from the evaporator box area.
2. Install the two rubber grommets into the holes.
3. Run the 5/16" hose from the expansion valve up to the hole and route the 90o splice through.
4. Crimp to the hose run up the column from the drier.

1/2" Compressor to 90o Splice:

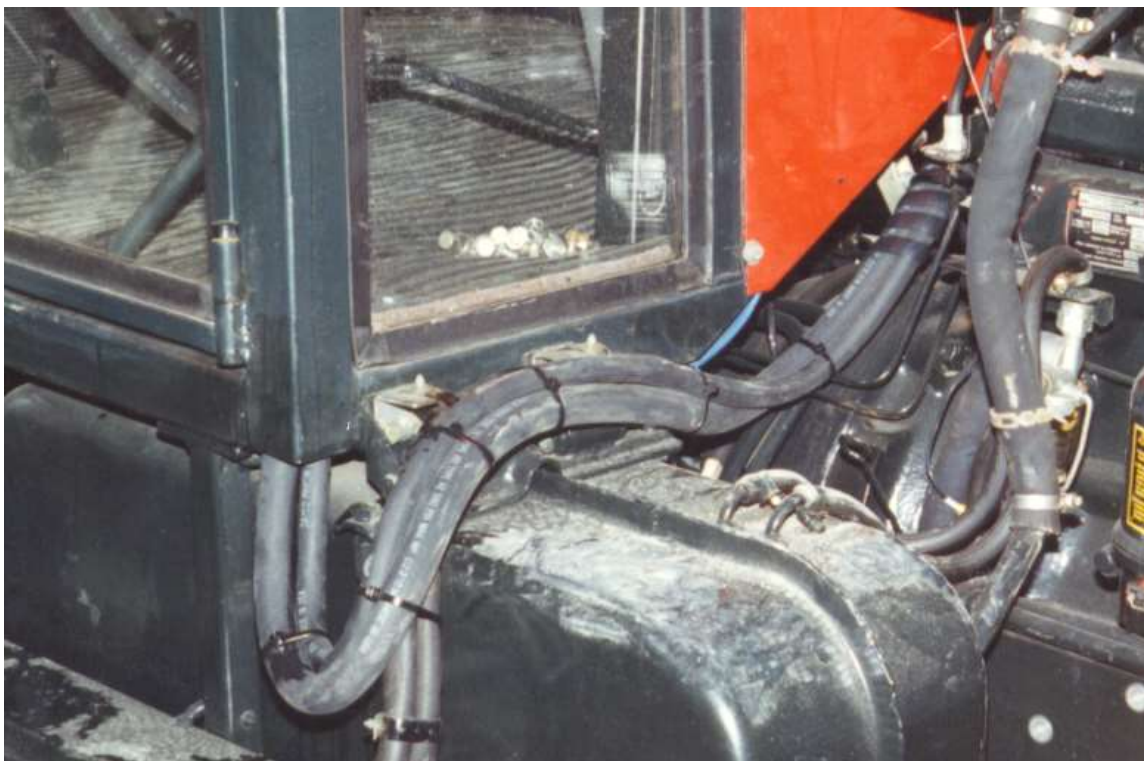
1. The 90o fitting pre crimped onto the hose is connected to the rotolock fitting at the compressor. (see photo on previous page for orientation)
2. Run the suction line back with the 5/16" liquid line as outlined above.
3. At the top of the column crimp to the 90o splice from the evaporator as in the directions above.

1/2" 90o Splice to Evaporator:

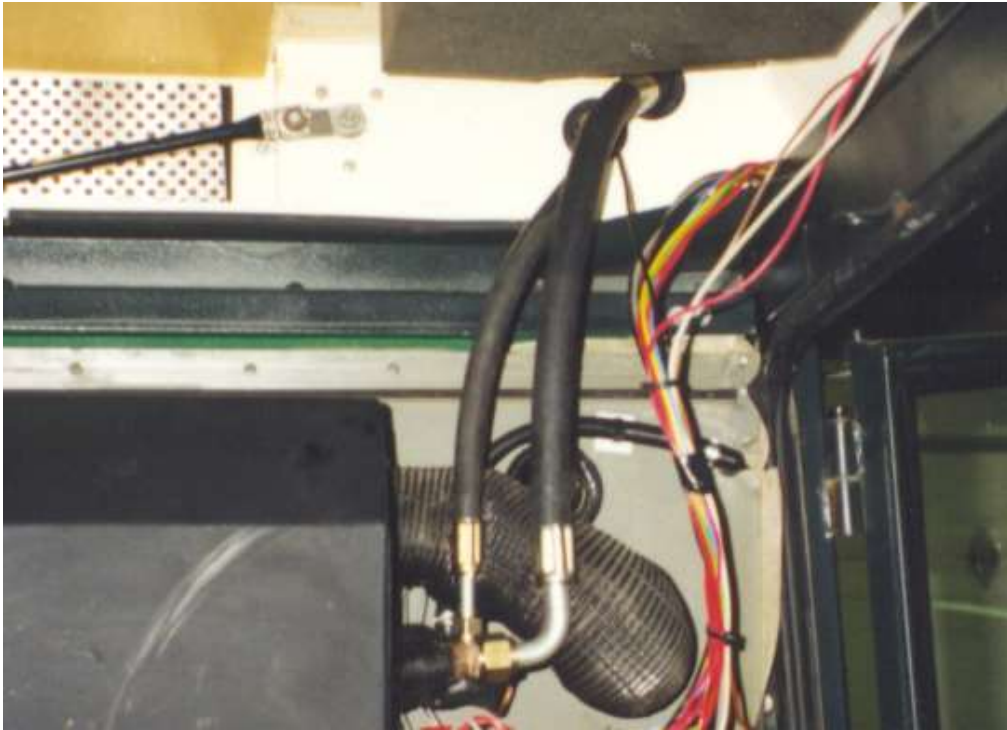
1. Run and crimp the fittings as outlined in the instructions for the liquid line above.



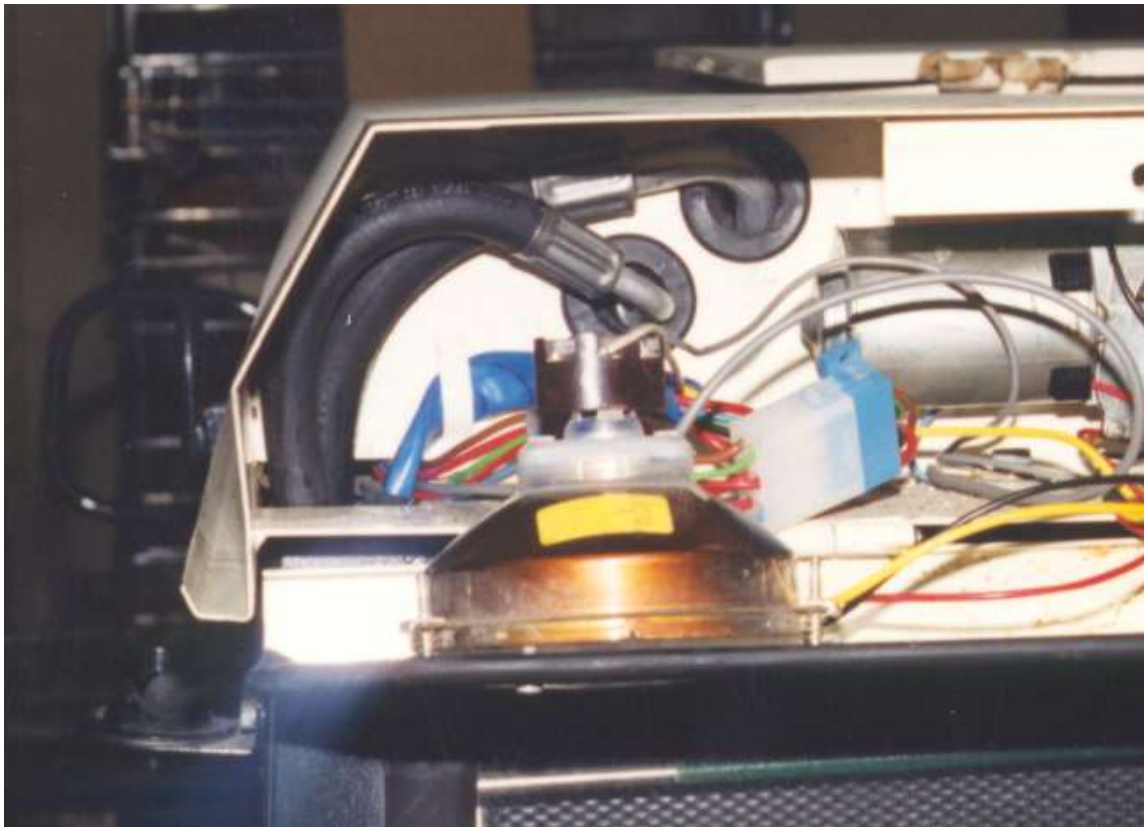
Liquid and suction lines routed back along engine and behind engine.



Hoses routed from around back of engine and up right hand front corner post.



Hose routing from evaporator to 90o splices at front of cab.

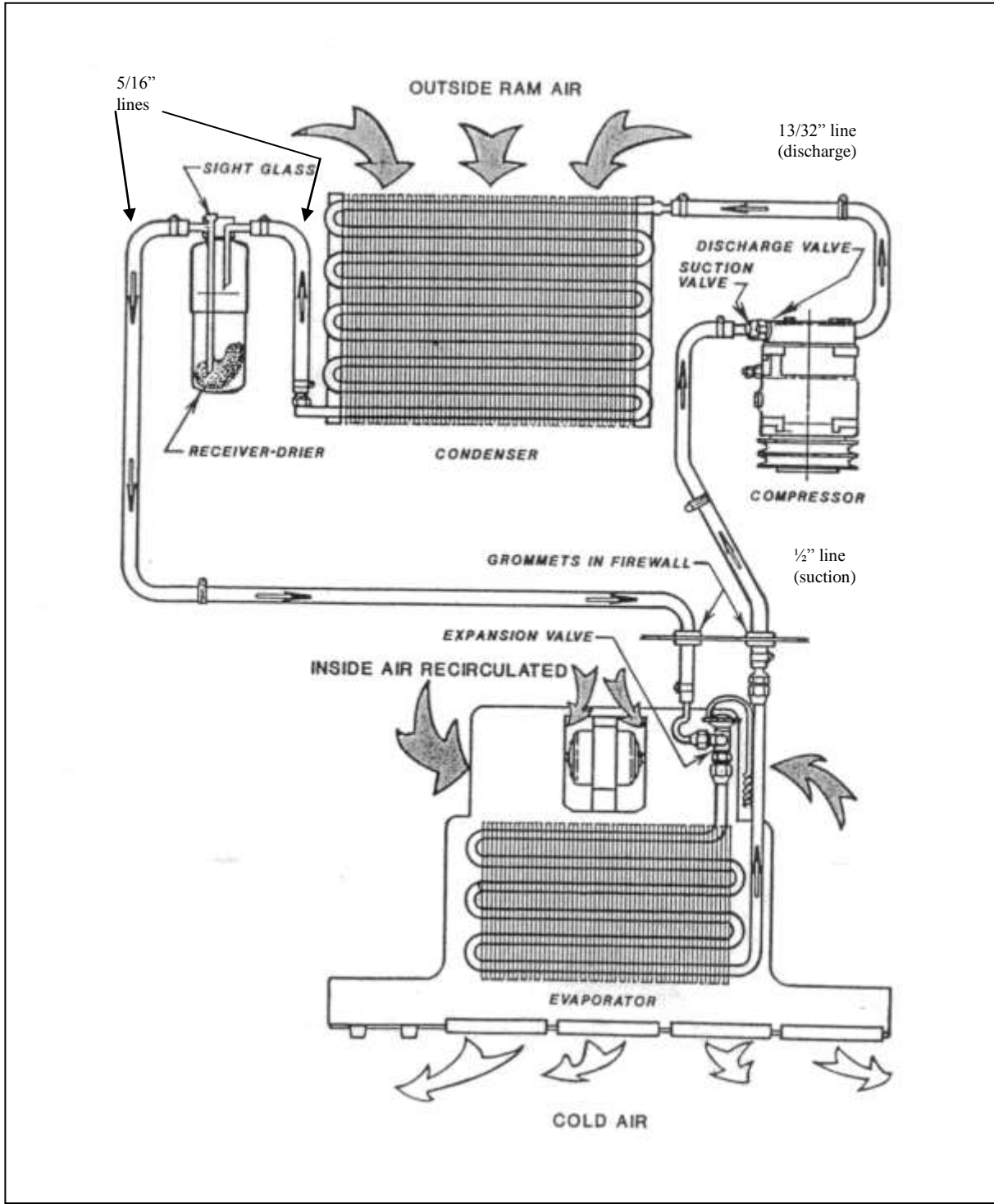


Hoses crimped to 90o splices at front of cab behind headlight panel.

NOTES:

- 1. All pre-crimped assemblies are tested for leaks. If you suspect a leak in a fitting contact Hammond Air Conditioning Ltd.**
- 2. Hosewrap and cable ties are included in the kit for use protecting the hoses from damage. Hoses wearing through are not warrantable, as they are a preventable installation related failure.**
- 3. At the top of the column the 90o splices should be secured together and to the frame of the cab. The 1/2” fitting and hose at the compressor as well as to 1/2” 90o splice fitting should be wrapped in insulation tape to prevent condensation from forming.**
- 4. Use the O ring seals provided in the kit on all fittings and lubricate with refrigerant oil to ensure a correct seal.**
- 5. Do not re-assemble the tractor until the air conditioning system has been tested for mechanical and electrical operation and leak tested.**

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.

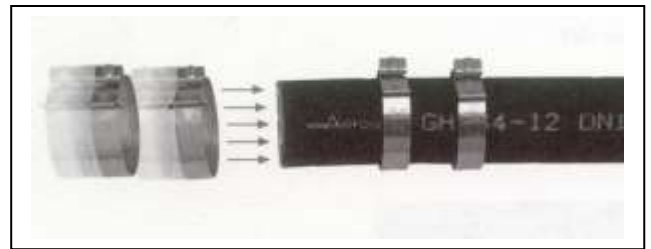
If the thermostat doesn't cycle off after a reasonable cool down period, and the air outlet temperature has dropped below 40° F, the cut in and cut out settings should be adjusted until the compressor is cycling on and off regularly. Let the system run for a decent time period (at least 15 min) and then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

Aeroquip E-Z Clip Assembly Instructions

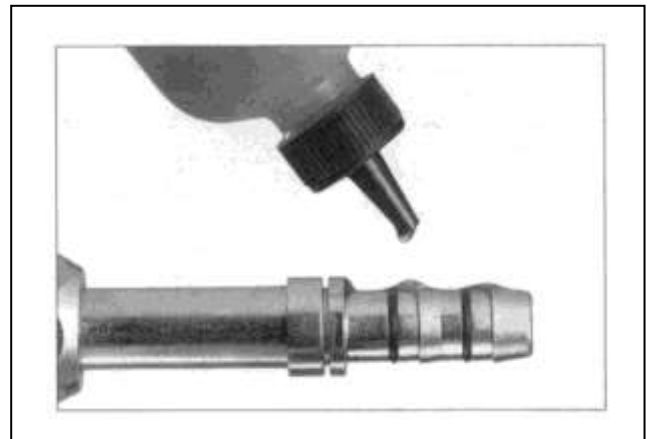
Step 1. Cut the hose to proper length with an appropriate cutting tool. Aeroquip's hand held hose cutter has been specially designed for cutting all non-wire reinforced hose, such as GH-134 Multi-Refrigerant hose. Be sure the cut is made square to the hose length.



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.

