

ZETOR RANGE 3 TRACTORS

10520, 10540

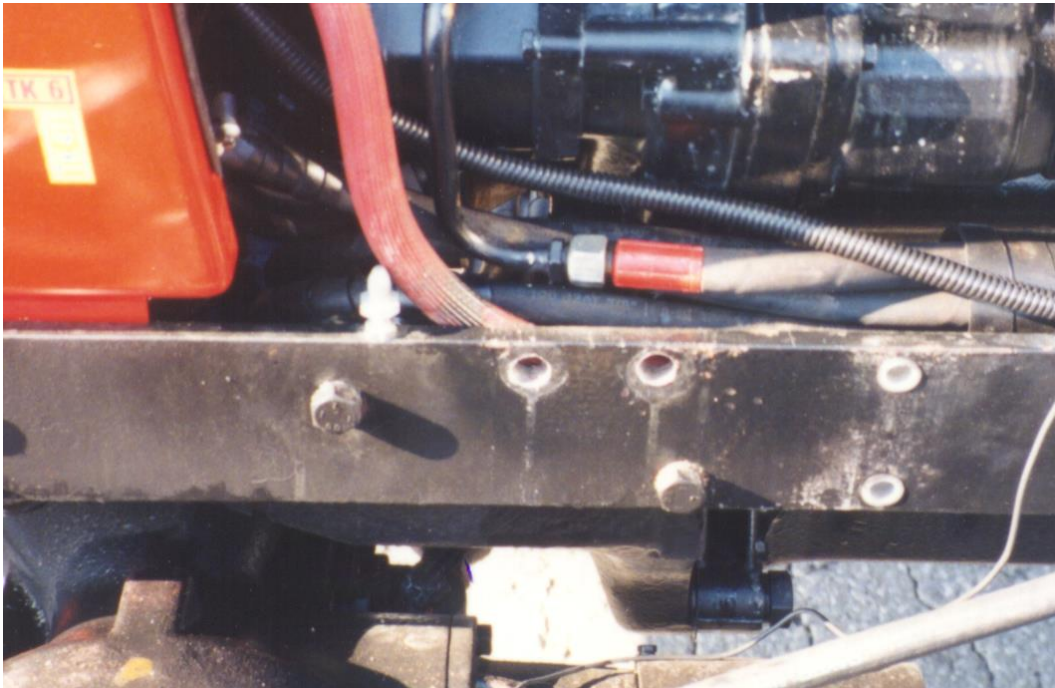
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ZETOR RANGE 3 – 105 SERIES **INSTALLATION INSTRUCTIONS**

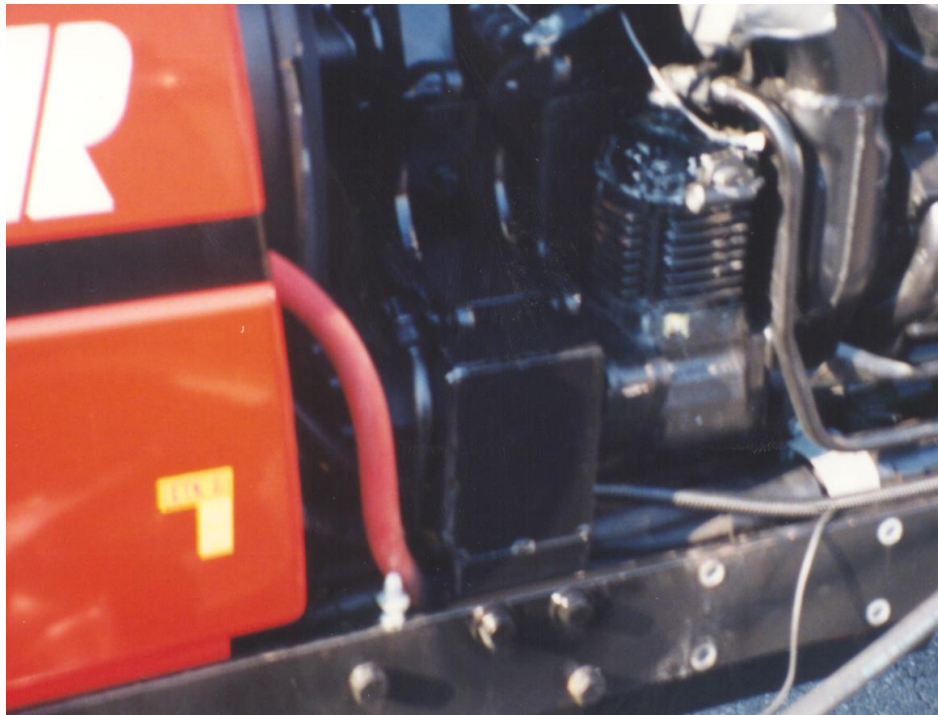
Compressor Mount:

The compressor is mounted on the left side of the engine over top of the hydraulic pump.

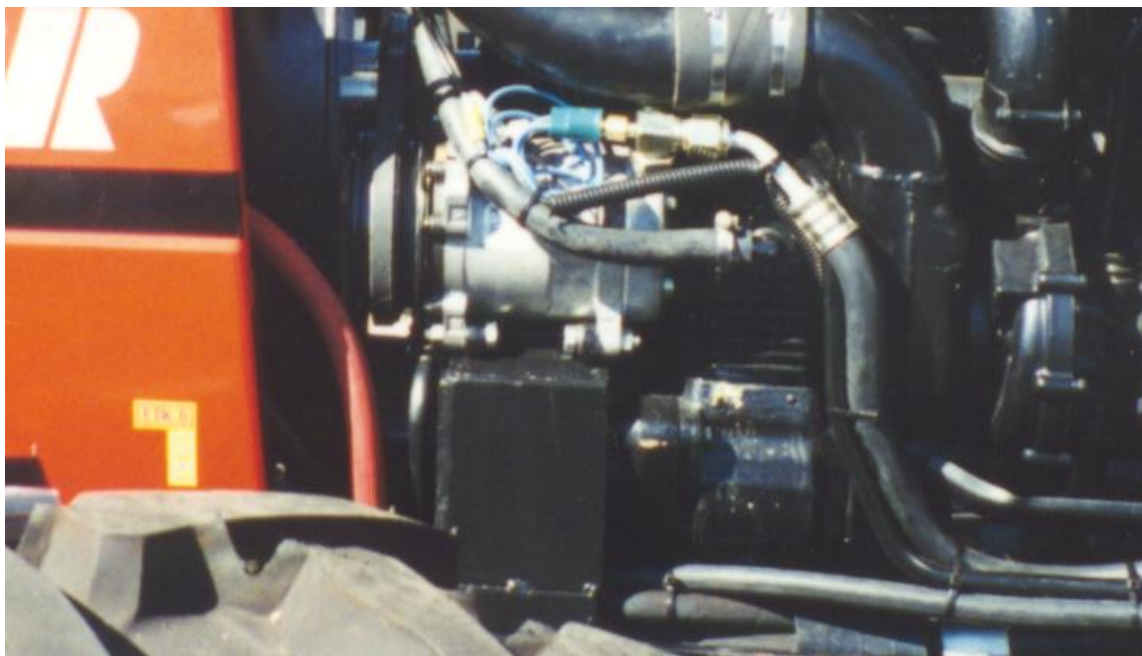
1. Remove the engine cowlings and shields. This will allow for access to the engine and front of the tractor for easier component installation.
2. Early model tractors may not have the second groove on the waterpump/fan pulley assembly. If it is not present on this tractor, it is necessary to order from the factory and install.
3. Install the compressor drive belt (supplied) around the fan hub assembly.
4. Remove the two left-hand side M8 water pump housing bolts and bolt on the rear compressor mount support bracket using the longer M8 bolts provided.
5. Place the main compressor mount into its general location and bolt loosely to the rear mount support. Install the compressor on the tightener ears and line the mount up with the drive pulley and v-belt.
6. Mark the location of the mount on the main frame beam running along the side of the engine. Determine the correct position of the mounting holes and drill the main member for the M12 mounting bolts provided.
7. Bolt the mount in place and install the compressor. Tighten the belt and check for alignment. Small adjustments can be made by moving the mount and re-tightening the mounting bolts.



Mount points on frame member.



Mount assembly in place on tractor.



Compressor in place on mount.

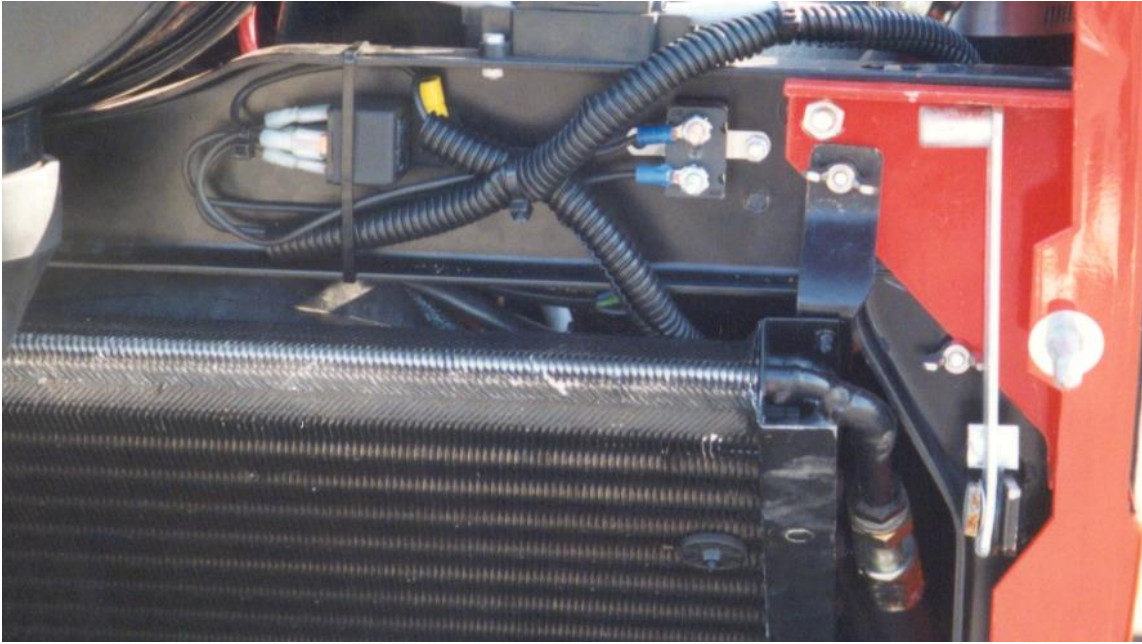
Condenser Mounting:

The condenser assembly is mounted on an angle in the location of the original battery. The condenser has a 14" puller fan assembly attached to provide airflow.

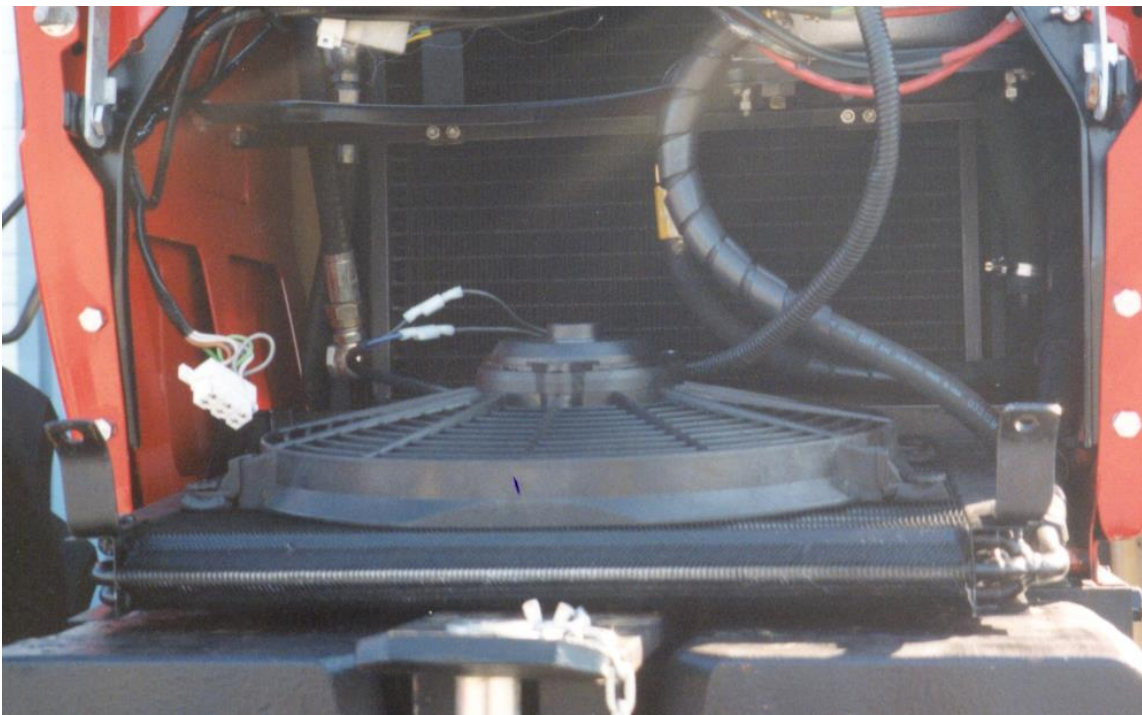
1. Remove the battery, battery tray and hold-downs. Also, remove the existing battery cable.
2. Slide the condenser into place until the back edge of the condenser is tight to the back of the battery compartment when the condenser is in its maximum upright position.
3. Center the condenser to allow for maximum height at the front of the condenser.
4. Mark the holes on the lower half of the hinges. Remove the condenser and drill holes to accommodate the M6 self-tapping bolts provided. The hole should be no larger than 4.5mm in diameter (or 11/64").
5. Re-install the condenser and bolt the hinges down to the bottom of the battery compartment.
6. Mark and drill the holes for the top mounting brackets when the condenser is in the maximum upright position. Drill the holes to 4.5mm (or 11/64") and tap for the M6 x 20mm bolts provided.
7. Run the M6 x 20mm bolts through the tapped holes from the radiator side of the bracket and tighten into place. Hook the top condenser mounting brackets over the M6 bolts and secure with the 6mm wing nuts provided.



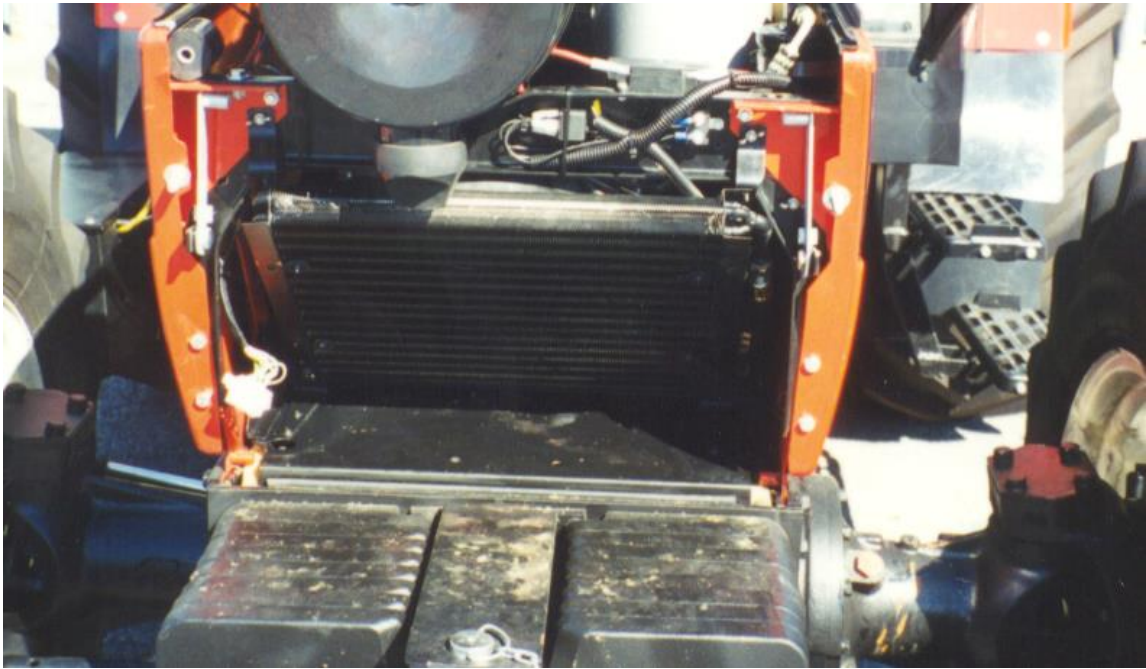
Condenser in place showing lower brackets (hinges).



Upper condenser mounting bracket with wiring shown above.



Condenser folded down showing fan assembly, wiring and hoses at back.

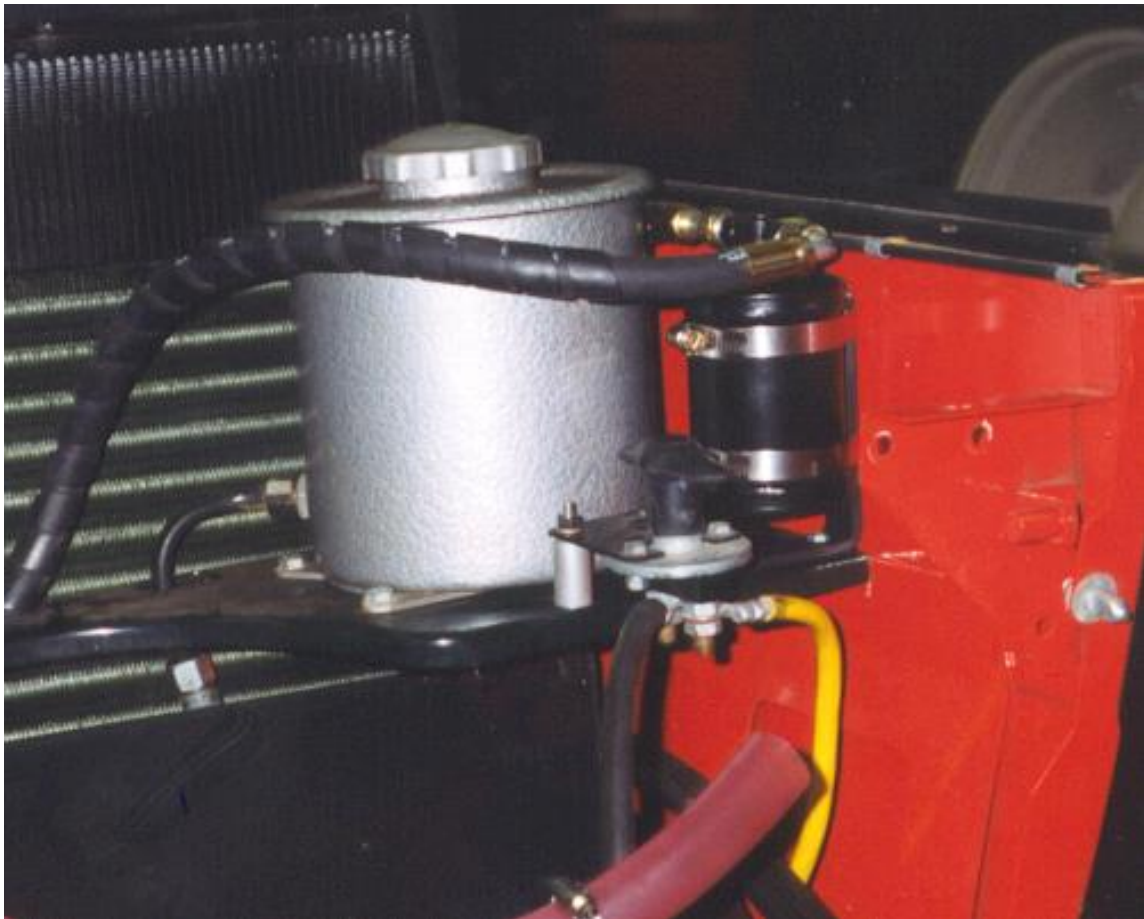


Condenser assembly in place on tractor.

Receiver-Drier Mount:

The receiver drier is mounted in front of the power steering tank at the front of the tractor.

1. Remove the disconnect switch from the mounting holes at the front of the tractor in front of the power steering tank.(not all machines)
2. Install the 90o dryer bracket in front of the power steering tank using the two existing holes from the disconnect switch. The upright arm of the bracket is toward the side of the tractor. Bolt on the supplied adapter bracket for the battery disconnect switch, if present.
3. Secure the dryer to the mount using the two #48 gear clamps provided. The inlet side of the dryer is connected to the hose coming from the condenser bottom fitting. The outlet side is connected to the hose running back toward the cab.
4. Remount the disconnect switch beside the dryer by bolting it to the adapter bracket. (not shown in picture)



Drier mounted on bracket. (Disconnect switch not as shown)

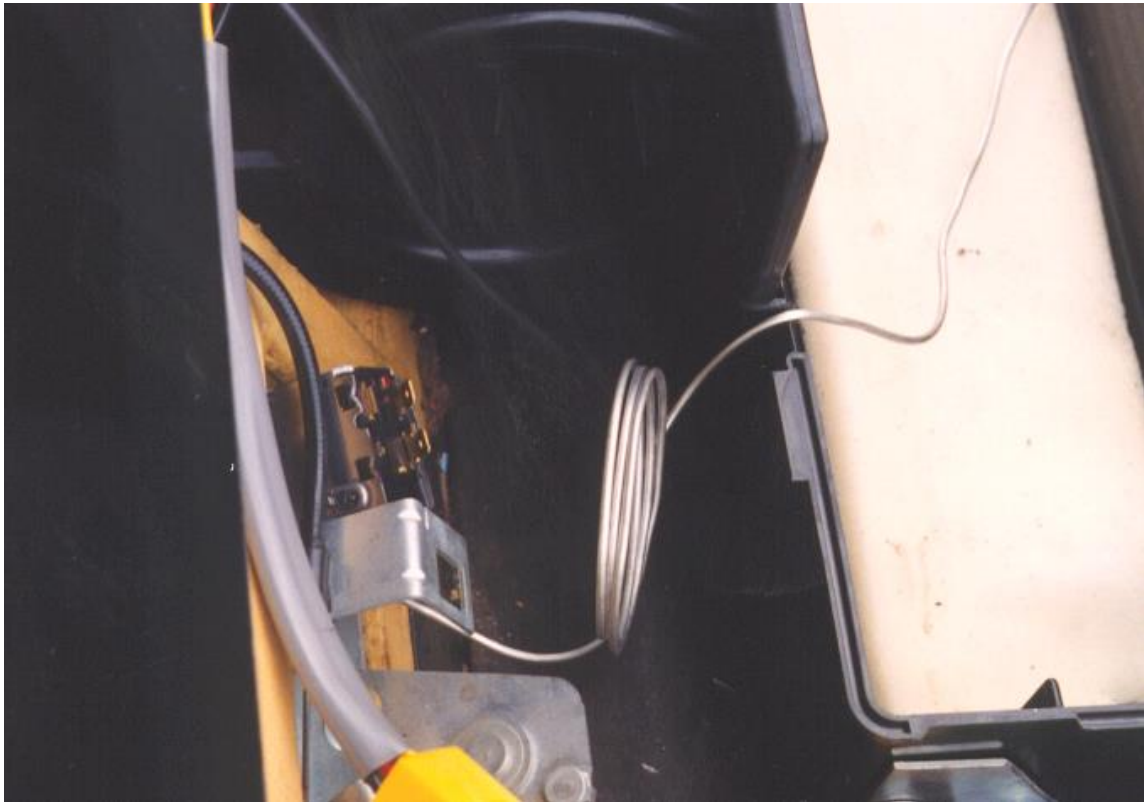


Receiver drier in place viewed from top.

Evaporator Coil Installation:

The evaporator coil is mounted in the existing heater box alongside the heater coil. The factory blowers and controls are utilized for this system.

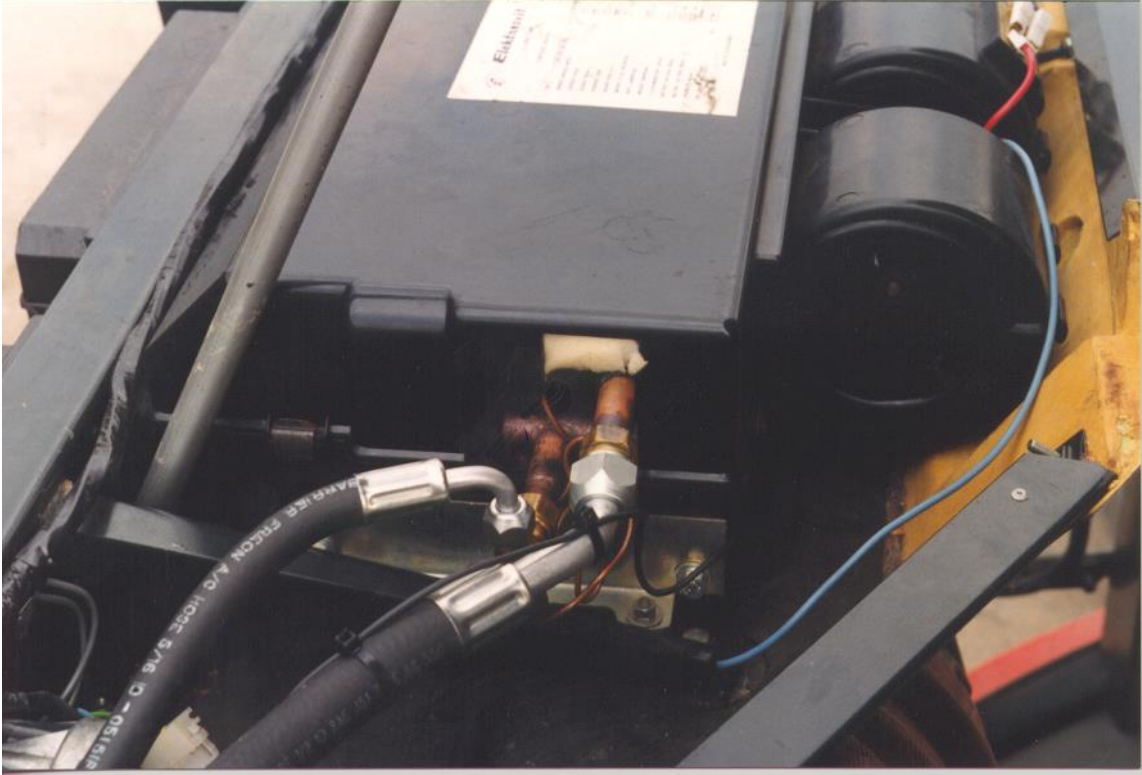
1. Access the heater assembly by raising the roof panel and propping open.
2. Remove the cover to the heater box by removing all the spring clips around the box.
3. Slide the evaporator coil into the box with the fittings pointing out the left-hand side. The coil should slide down the inside existing ridges in the box and does not need any further securing.
4. File a small groove in the box just to the right of the blowers to give the thermostat probe access to the interior of the box. Insert the thermostat probe into the coil approximately 2" up from the bottom and approximately 1/3 of the way down the coil from the expansion valve end.
5. Notch out the lid of the box to accommodate the evaporator fittings. Use the template supplied at the end of the instructions.
6. After the system has been installed and leak tested, reinstall the lid and tar tape around the notch and fittings to seal the box and to prevent condensation from forming on the lines outside the box.



View showing routing of thermostat probe into box.



Open evaporator heater box showing heater core in place.



Evaporator/heater assembly with core reinstalled.

Copper Tube Assembly:

The copper lines allow the refrigerant to be run up the left-hand column line without any problems.

1. Slide the complete tubing assembly, including the clutch wire, down the left front column.
2. Install the 1/2" nylon tube clamp as shown in the installation picture below.
3. Stuff foam in around the tubes at the top and bottom of the column.
4. Make the hose connections at the evaporator coil fittings. The lines and fittings are already crimped onto the column lines. Make sure the O-rings are in place on the fittings at the evaporator. The evaporator connections are shown in the evaporator installation pictures above.



Column lines at top of column with nylon clamp and clutch wire shown.

Battery Box Relocation:

The battery is moved from in front of the radiator and into a steel box located in place of the right hand step on the tractor.

1. Remove the battery and hardware from in front of the radiator. Remove the steps on the right hand side of the tractor. The frame from the steps is required to mount the battery box assembly.
2. Mount the battery box on the lower step bracket of the tractor and bolt into place. Bolt the spacer provided into place to secure the side of the box to the frame with the hardware provided.
3. Install the battery into the box with the hardware provided. Connect the existing negative lead to the terminal on the battery. Reroute the positive lead over to the battery, hook up to the positive terminal and run to the starter post.
4. The lid to the battery box can now be bolted into place.



Battery box support frame (existing from step assembly).



Battery box in place on frame.



Battery in place in box.

Electrical Assembly:

Steps 1 through 7 are in the headliner of the tractor.

The control side of the air conditioning system draws power from the blower switch in the factory panel.

1. Mount the thermostat as shown in the panel with the blower controls.
2. Remove the knockout plug and bevel the inside of the hole with a knife or round file to accommodate the recessed mounting washer for the thermostat.
3. Install the thermostat through the hole from the backside and place the recessed washer over the end of the thermostat. Thread the nut onto the thermostat and tighten down. Install the knob.
4. Determine the blower live wire at the blower switch. This is the wire that is live in any of the blower 'ON' positions.
5. Unplug the green wire from the blower switch and plug the double spade terminal adapter onto this terminal. Reconnect the wire from the blower switch onto one of the double spade terminals.
6. Connect the 8" 14ga red wire supplied to the double spade terminal and then to the thermostat. On this terminal of the thermostat, install a double spade terminal as on the blower switch.
7. Connect the red wire from the copper tube assembly to the open side of the double spade terminal adapter on the thermostat. Connect the black wire from the copper tube assembly to the open terminal on the thermostat.



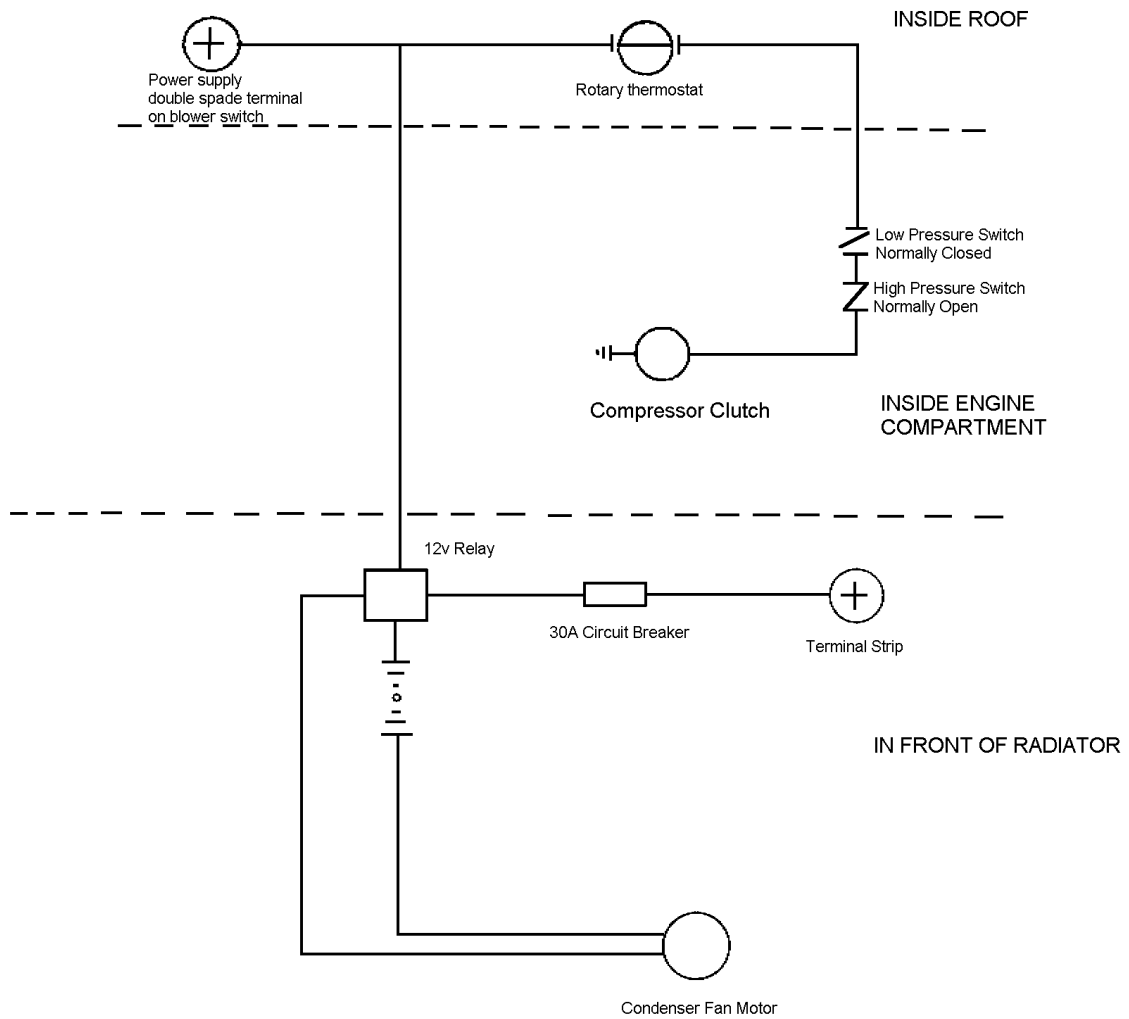
Thermostat location on panel.

Steps 8 and 9 are in the engine compartment.

8. Bring the red and black wires from the copper tube assembly, along with the hoses up the side of the engine block. Just before the compressor, split the black clutch wire off and run up to the compressor area with the suction hose.
9. Connect the black clutch wire to one of the blue leads from the low-pressure switch. Connect the other lead to one of the leads from the high-pressure switch. Connect the remaining lead on the high-pressure switch to the wire from the compressor clutch.

The remaining wiring steps are to provide power to the condenser fan and to extend the battery wiring harness.

10. Continue the red wire forward with the 5/16" liquid line ahead of the radiator and up in front of the cross brace with the upper condenser brackets.
11. Relocate the black box on the backside of the cross brace up 2.5cm to 3cm to make room for the condenser fan.
12. Mount the terminal strip to the left of the black box and attach the new double 10ga battery lead coming from the starter to it.
13. Connect all other wires originally connected to the battery to this terminal strip and include an extra length of 14ga wire to supply power for the condenser fan.
14. Mount the 30A circuit breaker to the front of the cross brace using the left bolt mounting the black box.
15. Mount the 12v relay to the front of the cross brace using the right bolt securing the black box. Also, include the ground wires for the relay and condenser fans on this bolt.
16. Run the red wire from the copper tube assembly to the coil terminal of the relay (usually post #85 or #86). Ground the other terminal (#85 or #86) to the tractor (see step 15).
17. Run the power wire from the terminal block to the circuit breaker and then connect to the inlet terminal for the relay (terminal #30).
18. Connect a wire from the other terminal on the relay (#87) to the power side of the condenser fan motor.
19. Connect the condenser fan ground wire to the tractor (see step #15).
20. Check the condenser fan for correct rotation direction. The fan should be pulling through the coil. If necessary, reverse the leads to get the correct fan rotation.



Wiring diagram for 10520/10540 with electric fan condenser assembly.

Drain Tubes:

The integrated drain pan in the heater/evaporator box has the drain tube extensions in place but no lines leading out of the cab.

1. Connect the straight drain tube to the left side outlet and the 90o elbow tube to the right side outlet.
2. Route the tubes out of the cab through the existing holes along the front wall of the cab.
3. Drill holes in the handrails running down the outside front columns of the cab and thread for 1/8" NPT pipe. Install the pipe nipples in the handrails and insert the drain tubes over them and connect them using the clamps provided.



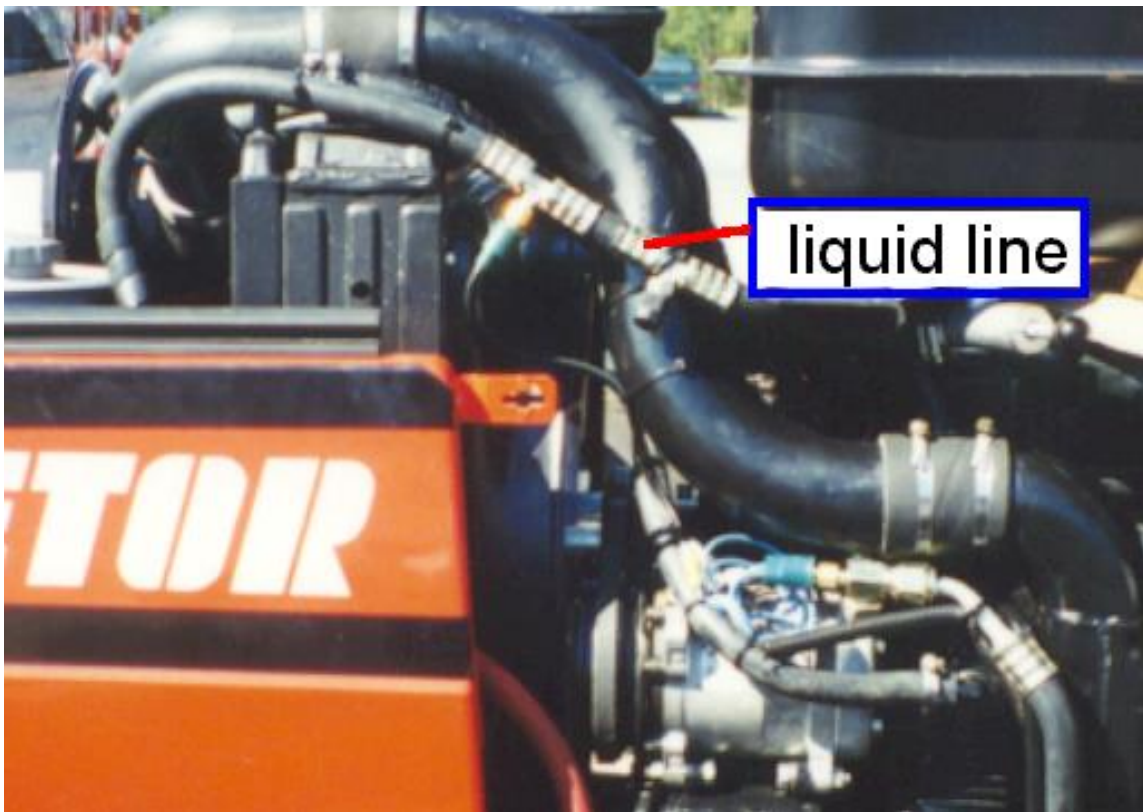
Drain tube locations and set-ups.

Hose Runs:

ALL FITTINGS ARE 'O' RING FITTINGS AND REQUIRE AN 'O' RING SEAL TO BE PLACED OVER THE END OF THE PILOT TUBE ON THE FEMALE FITTING. ALL SEALS SHOULD BE LUBRICATED WITH REFRIGERANT OIL TO MAKE A POSITIVE SEAL.

13/32" Hose Compressor to Condenser:

1. Install the 13/32" rotolock fitting on the discharge port of the compressor with the white teflon O-ring in place. The white ring fits into the recessed groove on the discharge fitting on the compressor cylinder head.
2. Connect the 90o fitting to the rotolock fitting and run the hose up over the top of the radiator and down to the condenser.
3. Attach the straight fitting on the hose to the top (when in upright position) fitting on the condenser. It is probably easiest to hosewrap the hose prior to installation.



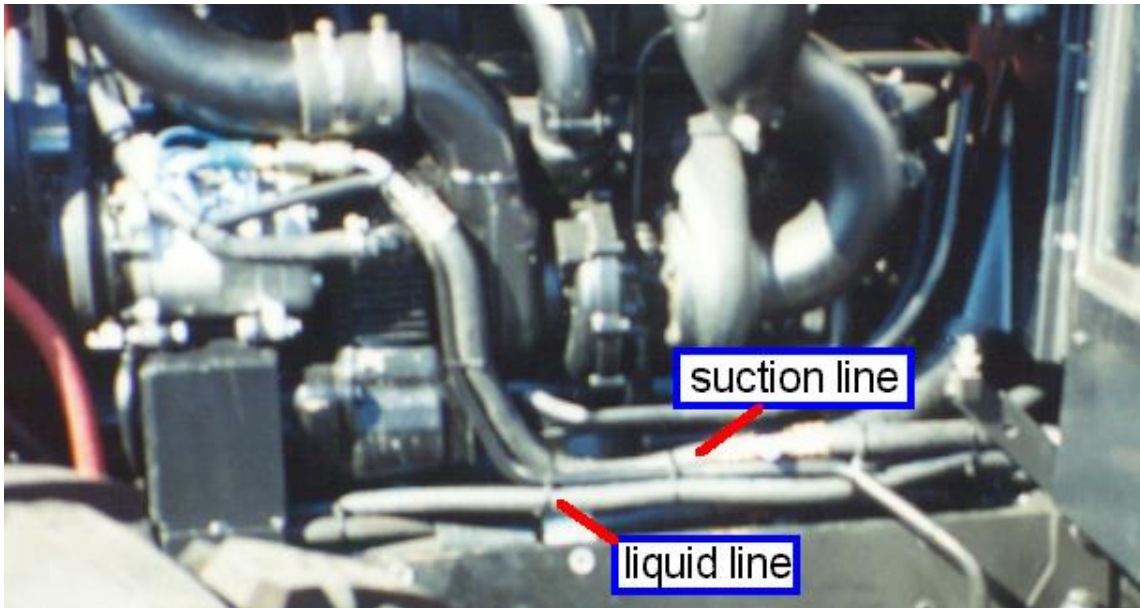
Discharge line routing to condenser from compressor.

5/16" Hose Condenser to Drier:

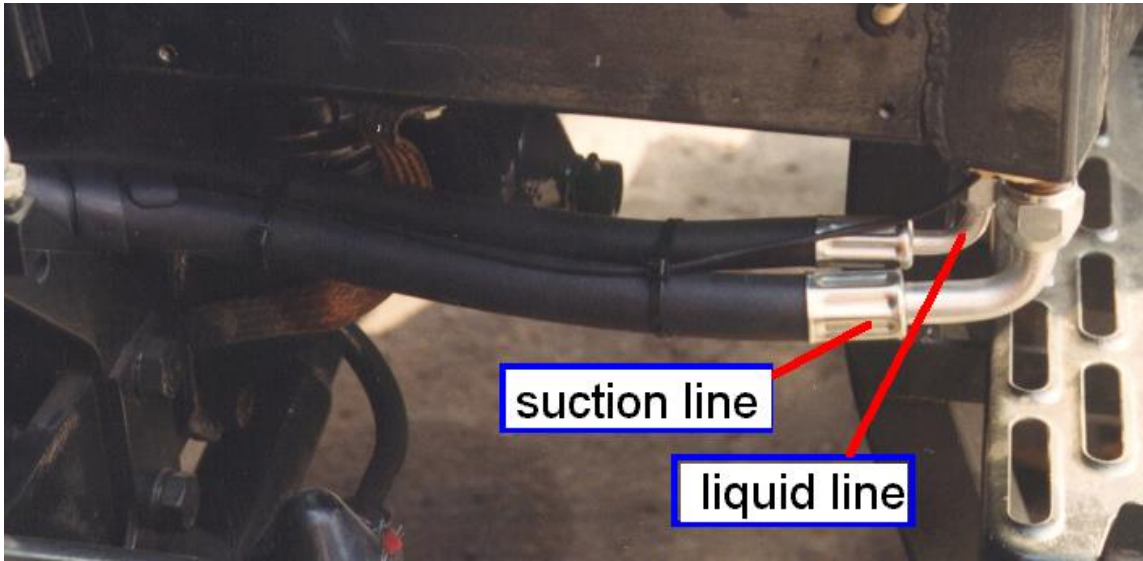
1. Connect the 45o fitting to the bottom fitting on the condenser so that the hose comes up across the back of the condenser to the drier.
2. Connect the 90o fitting to the inlet side of the drier. (see the drier installation pictures)

5/16" Hose Drier to Bottom of Column Line:

1. Connect the 45o fitting to the outlet side of the drier and run the hose down along the side of the radiator. Route the hose back alongside the engine with the hydraulic hoses and over the starter. Loop the hose around back of the side cover mount and over to the bottom of the column.
2. Connect the 90o fitting to the smaller copper fitting at the base of the column.



Routing of liquid line and suction line along engine.



Lines at base of column showing set-up.

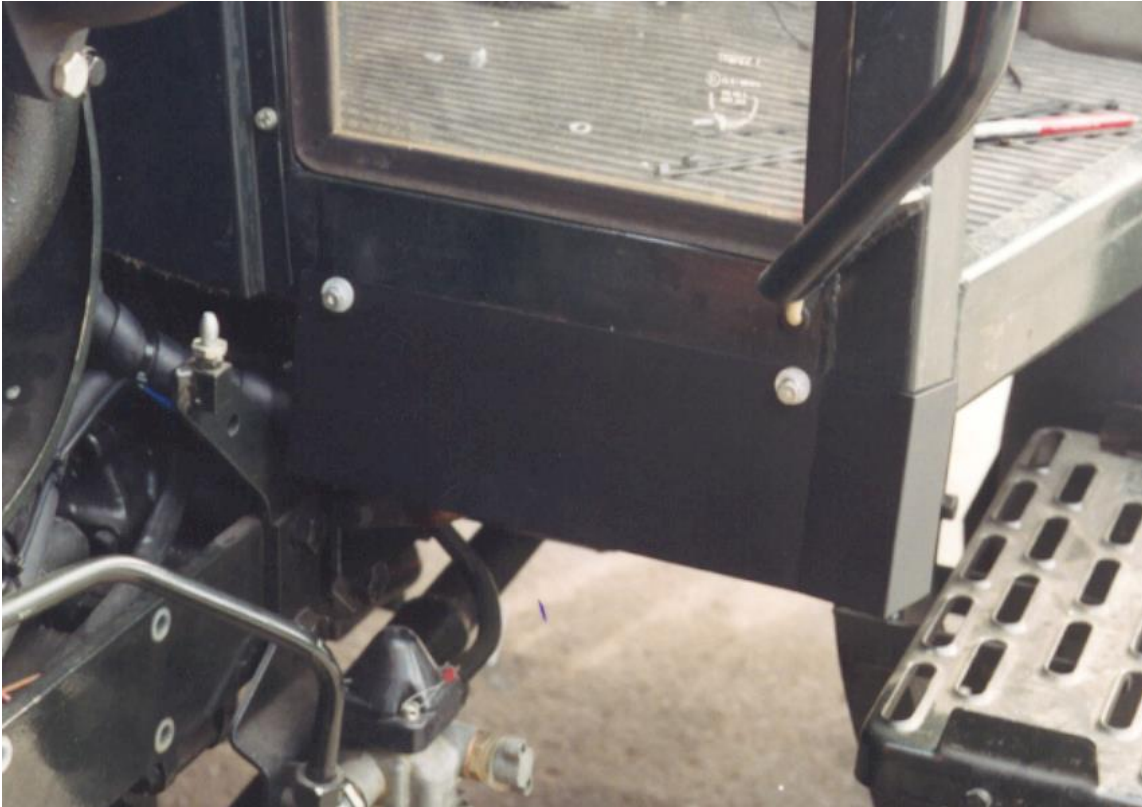
1/2" Hose Compressor to Bottom of Column Lines:

1. Install the 1/2" rotolock fitting on the suction port of the compressor with the teflon gasket in the same manner as the 13/32" discharge port fitting.
2. Connect the 45o fitting to the rotolock fitting and run the hose back along the engine with the liquid line and back to the column lines. (see picture on previous page)
3. Connect the 90o fitting to the larger copper fitting at the base of the column.

Hose Cover Shield:

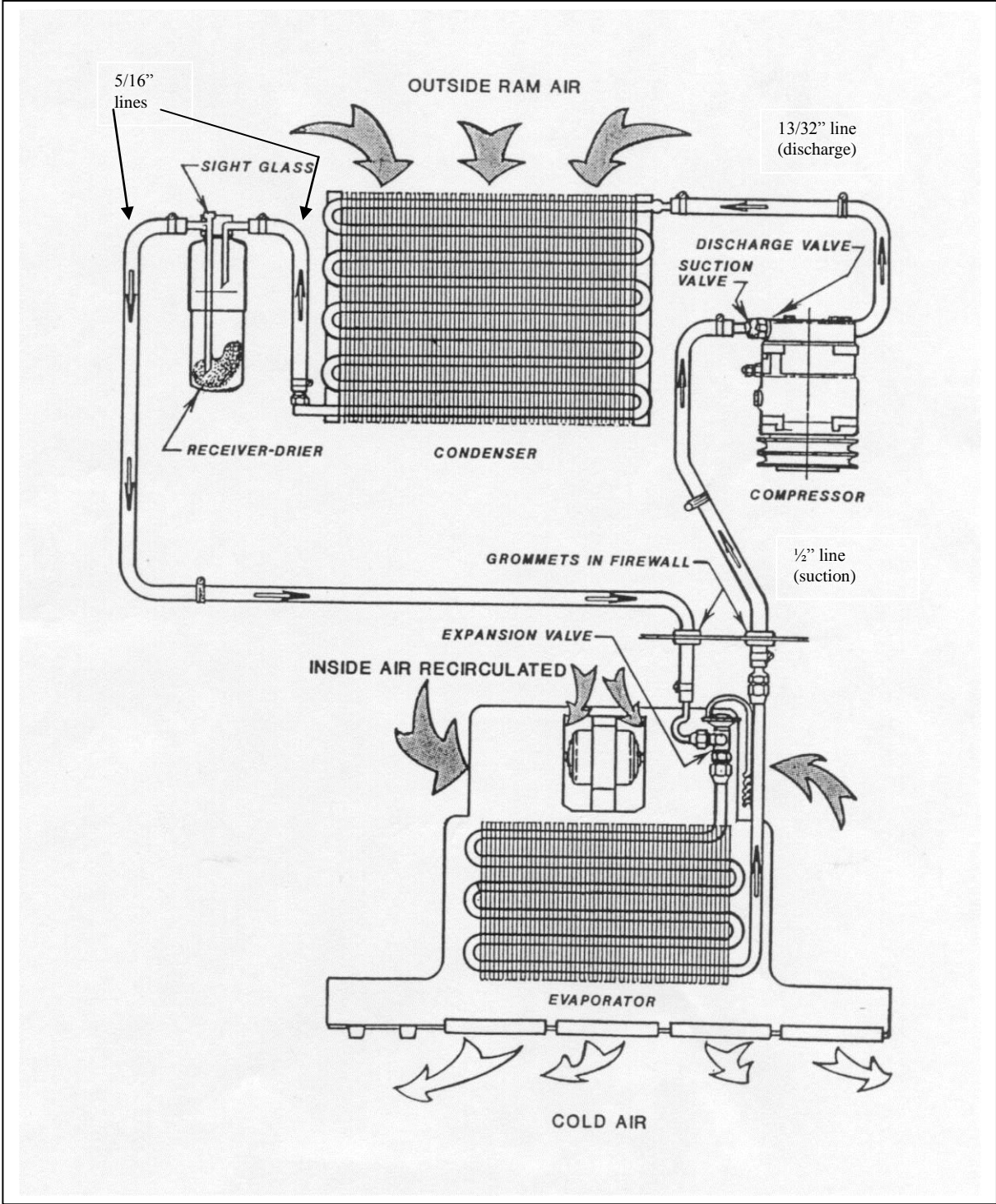
The hose cover shield is mounted on the left of the cab below the glass to protect the hoses and fittings at the bottom of the column.

1. Line the cover as shown in the pictures and mark the mounting holes on the bottom rail below the window on the cab.
2. Drill and tap for the M6 bolts supplied.
3. Mount the cover shield and tighten the bolts in place.



Hose cover shield in place on tractor.

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.

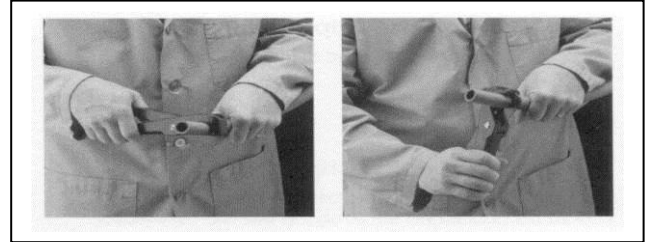
By looking at all these different factors, the area of an evaporator coil most likely to be the coldest can be determined.

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.

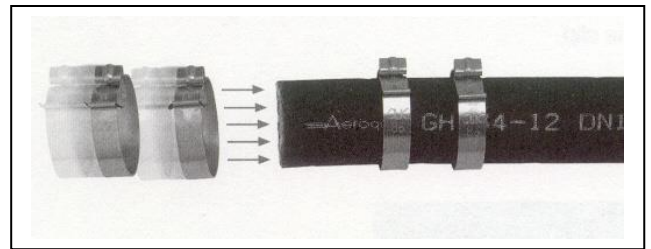
If the thermostat doesn't cycle off after a reasonable cool down period, and the air outlet temperature has dropped below 40° F, the cut in and cut out settings should be adjusted until the compressor is cycling on and off regularly. Let the system run for a decent time period (at least 15 min) and then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

Aeroquip E-Z Clip Assembly Instructions

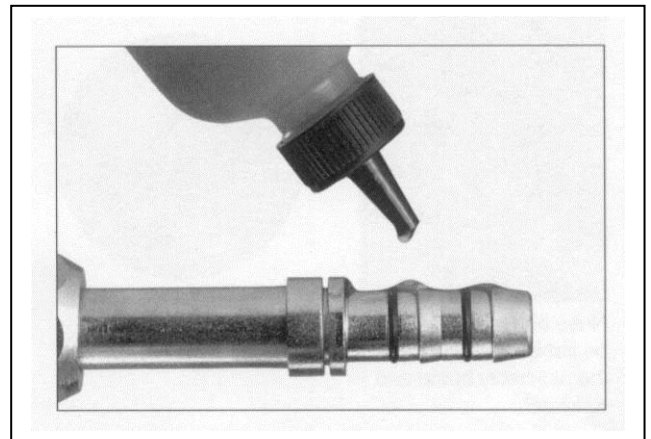
Step 1. Cut the hose to proper length with an appropriate cutting tool. Aeroquip's hand held hose cutter has been specially designed for cutting all non-wire reinforced hose, such as GH-134 Multi-Refrigerant hose. Be sure the cut is made square to the hose length.



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.



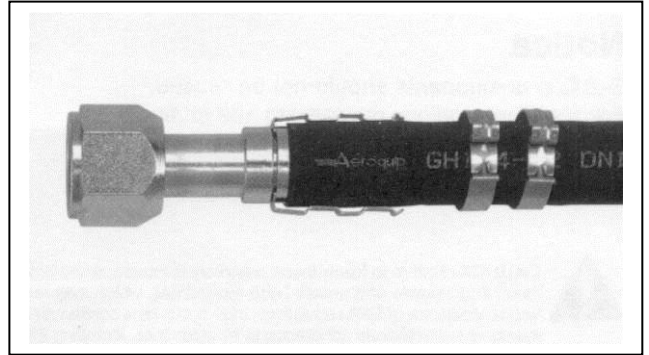
Step 4. Insert the nipple into the hose. To ensure that the nipple is fully inserted, check the gap between the cut end of the hose and the shoulder on the nipple. Care should be taken to avoid kinking or other damage to the hose during nipple insertion. NOTE: Be sure to wipe excess oil from the nipple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



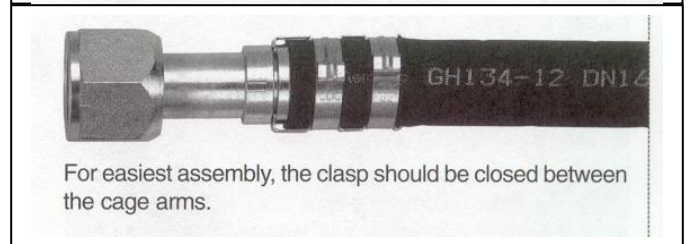
Step 5. Snap the cage into the groove on the nipple. The arms should extend over the hose length. When the cage has been correctly installed in the cage groove, the cage will be able to rotate in the groove.

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.

