

INSTALLATION INSTRUCTIONS

FUCHS MHL 320 SCRAPHANDLER



1-800-267-2665

1-888-267-3745 (FAX)

EVAPORATOR COIL: The evaporator assembly mounts into the existing heater/filter/pressurizer setup that is located under the operators seat. It is accessed from under the cab by removing the metal cover panel.

1. Raise the cab up about 2' to allow easier access to the bottom of the cab.
2. Remove the cab entrance step and two metal cover panels from the bottom of the cab.
3. If the heater has been plumbed in, clamp off the heater lines just behind the cab. Remove the heater/lines from the heater coil. The electronic heater control valve can remain in place on the heater coil. Move the heater lines out of the heater box area temporarily.
4. Cut away tie wraps and temporarily move away hydraulic lines that block access to the metal panel, directly behind the heater coil, in the floor of the cab.

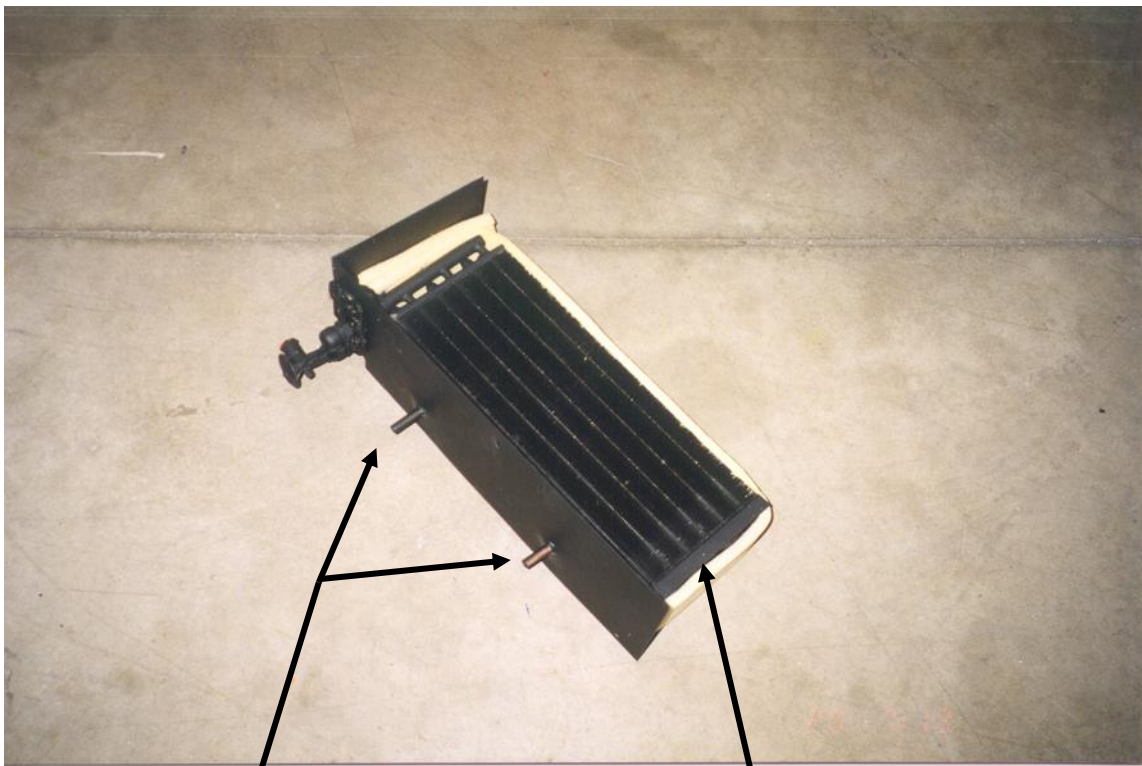


Flex
ducts

Heater hoses
removed

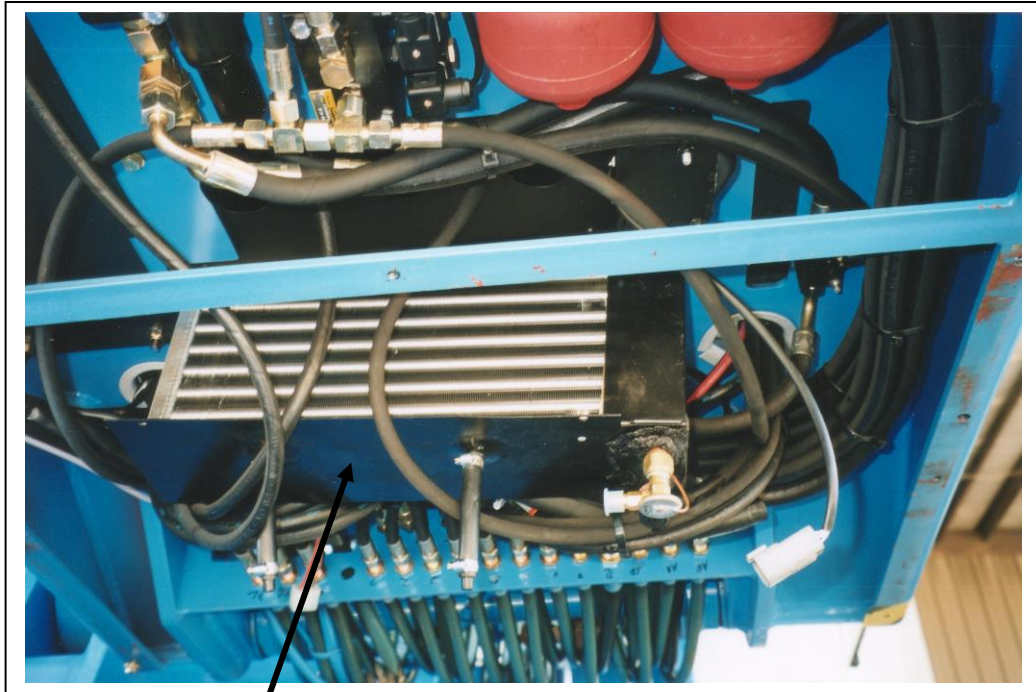
Metal panel
removed

5. Disconnect and move temporarily the electrical wiring harness going to the heater control valve if it is present (newer machines)
6. Remove the four philps screws holding the metal panel, (behind the heater coil) in place and remove it from the machine.
7. Replace the metal panel with the evaporator coil assembly supplied in the kit. Slide the assembly up into place so that the fittings are located on the left side of the cab. (same side as the heater coil outlets)



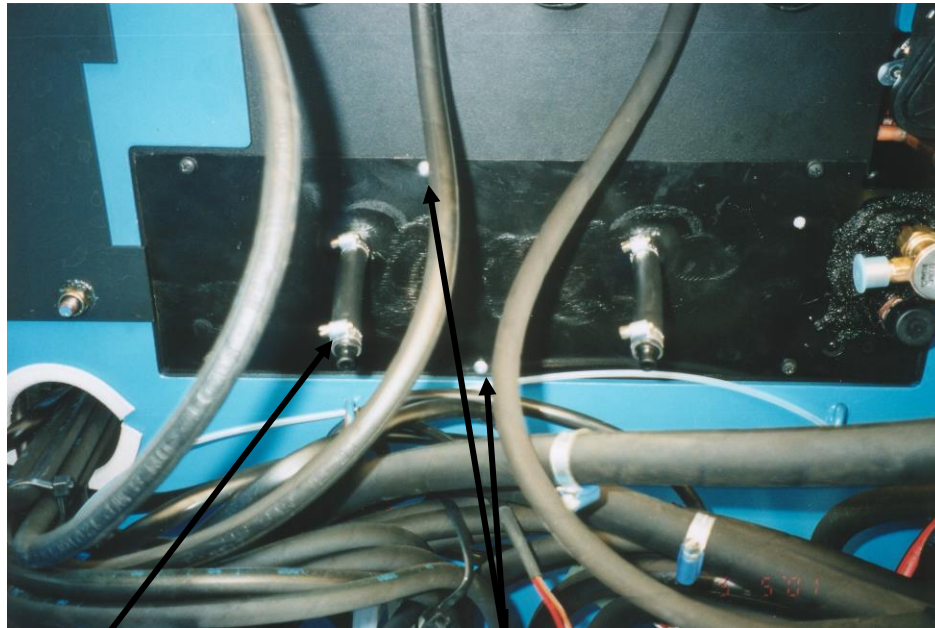
Drain tubes

Evaporator coil
assembled to
access panel



Evaporator coil
assembly sliding
into place

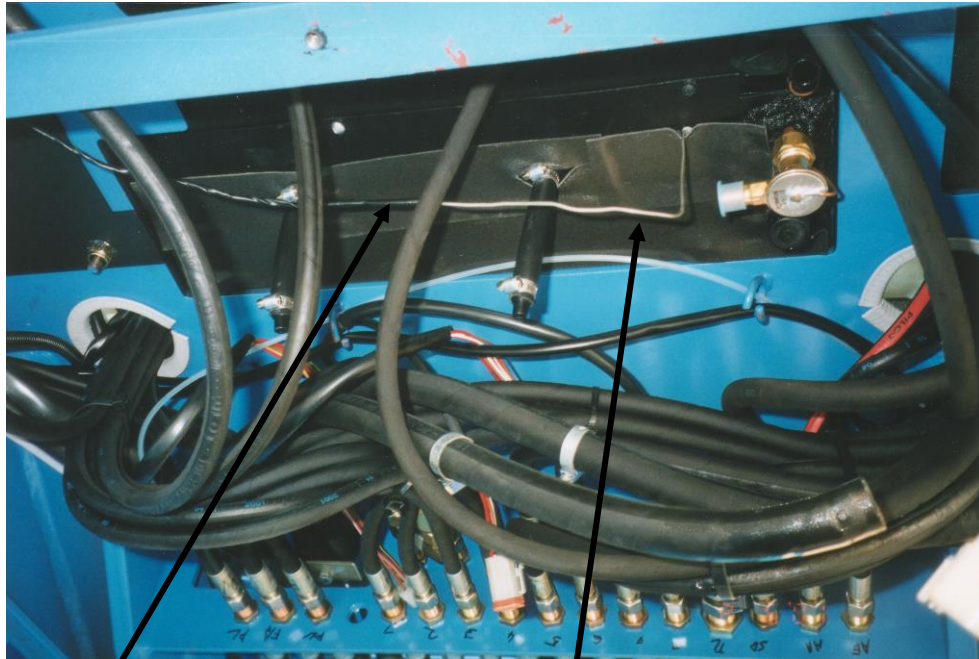
8. Secure the evaporator assembly into place by re-using the four philps screws previously removed. Add two more screws to secure the middle section of the evaporator about half way along the front length of the evaporator coil and the second one on the back side of the evaporator coil. Use the self drilling screws supplied in the kit. This will limit any bowing and air gaps along the bottom of the evaporator coil assembly. If not already done, install short sections of drain tube and a drain tube restrictor to each drain pipe.



Drain tube and
restrictor

Extra screws

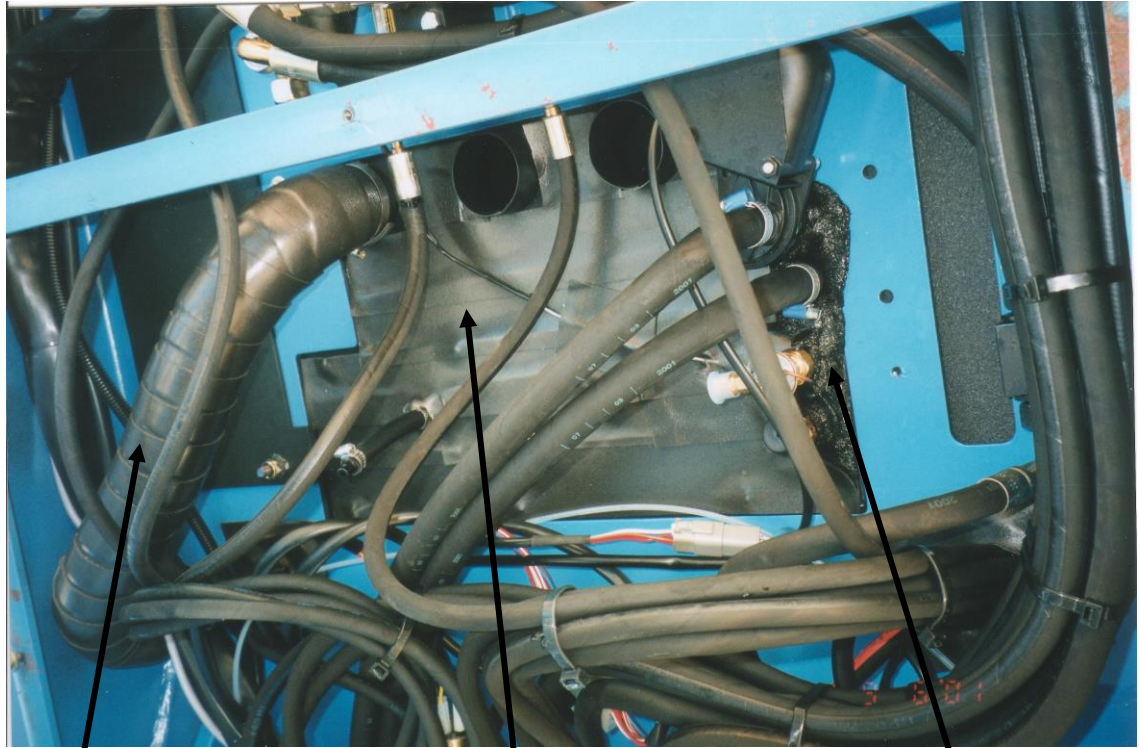
9. Once the thermostat probe has been inserted up into the evaporator coil through the pre-drilled hole in the bottom of the evaporator panel, all holes and gaps around the evaporator and heater coils and outlet pipes can be sealed with tar tape and foam tape to eliminate air loss.



Foam insulation
tape

Thermostat probe
being inserted 5"
to 6" into the coil

10. Put a layer of foam tape insulation on the metal bottom of the heater/A/C box to limit heat transfer from hot air under the floor.

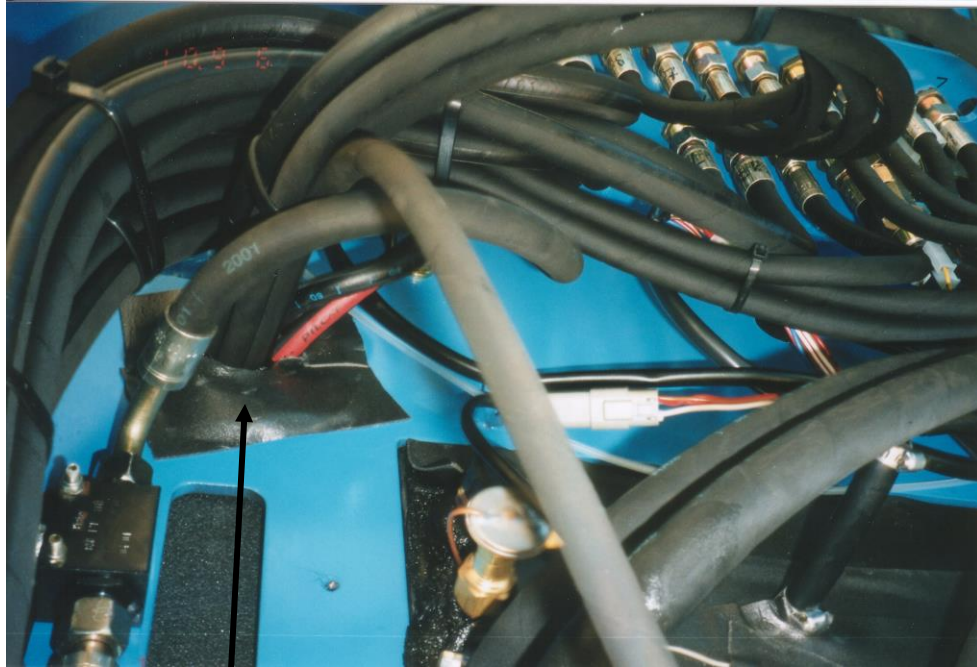


Insulated flex duct

Insulated bottom of box with foam tape

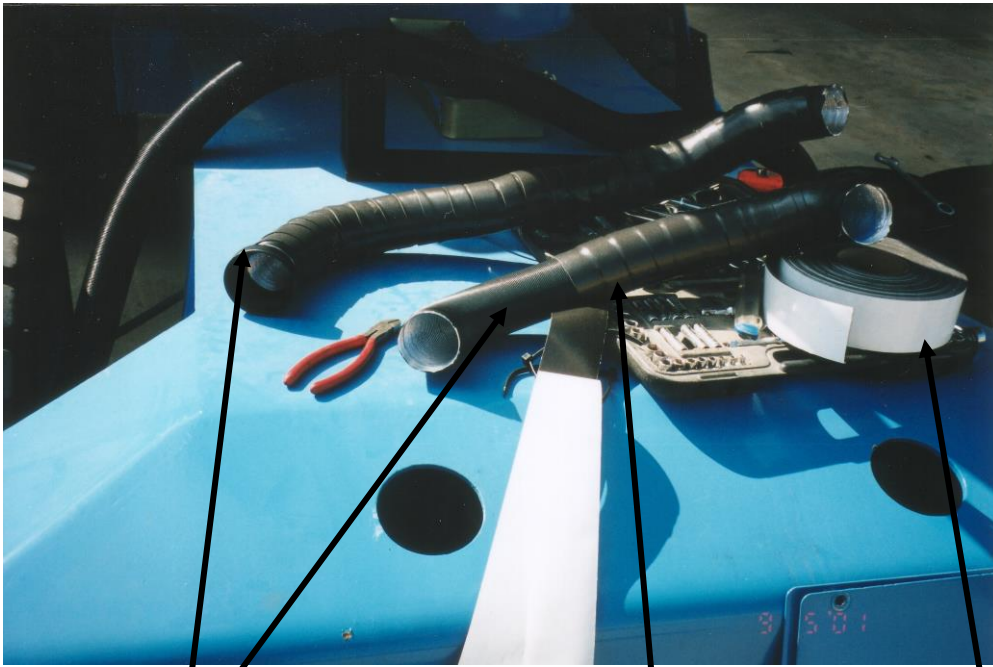
Gaps around heater and A/C lines sealed with tar tape

11. Seal all holes in the floor of the cab as well as possible using foam tape and tar tape to limit the hot air incursion into the cab from the hot hydraulic components mounted below the cab floor. Big areas that can be sealed are: 1) the hydraulic control line holes on either side of the operators seat. 2) The large rectangular hole beneath the front right electrical console in the cab. 3) All other small openings for wires or hoses



Foam tape around hyd. Lines
entering the cab floor

12. Remove the three flex ducts that carry air from the heat/A/C box to various louvers around the cab.

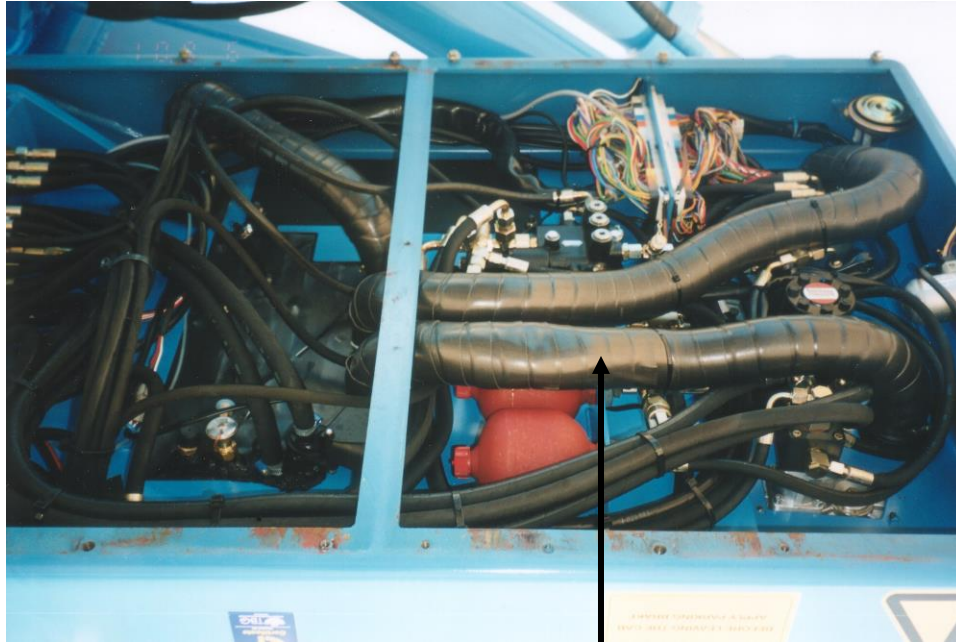


Flex ducts

Spiral wrap
pattern

Insulation tape

13. Using the insulation tape supplied in the kit put a double layer of foam insulation on the flex ducts. A spiral overlaying tape pattern works well. Leave two to three inches at each end bare to allow for reclamping of the flex ducts to their outlets. On the first 24" of duct on the largest length that passes up through the front right corner of the cab, only put a single non-overlapping layer of foam to make re-installation easier.
14. Re-attach the three insulated flex ducts back to their original positions.



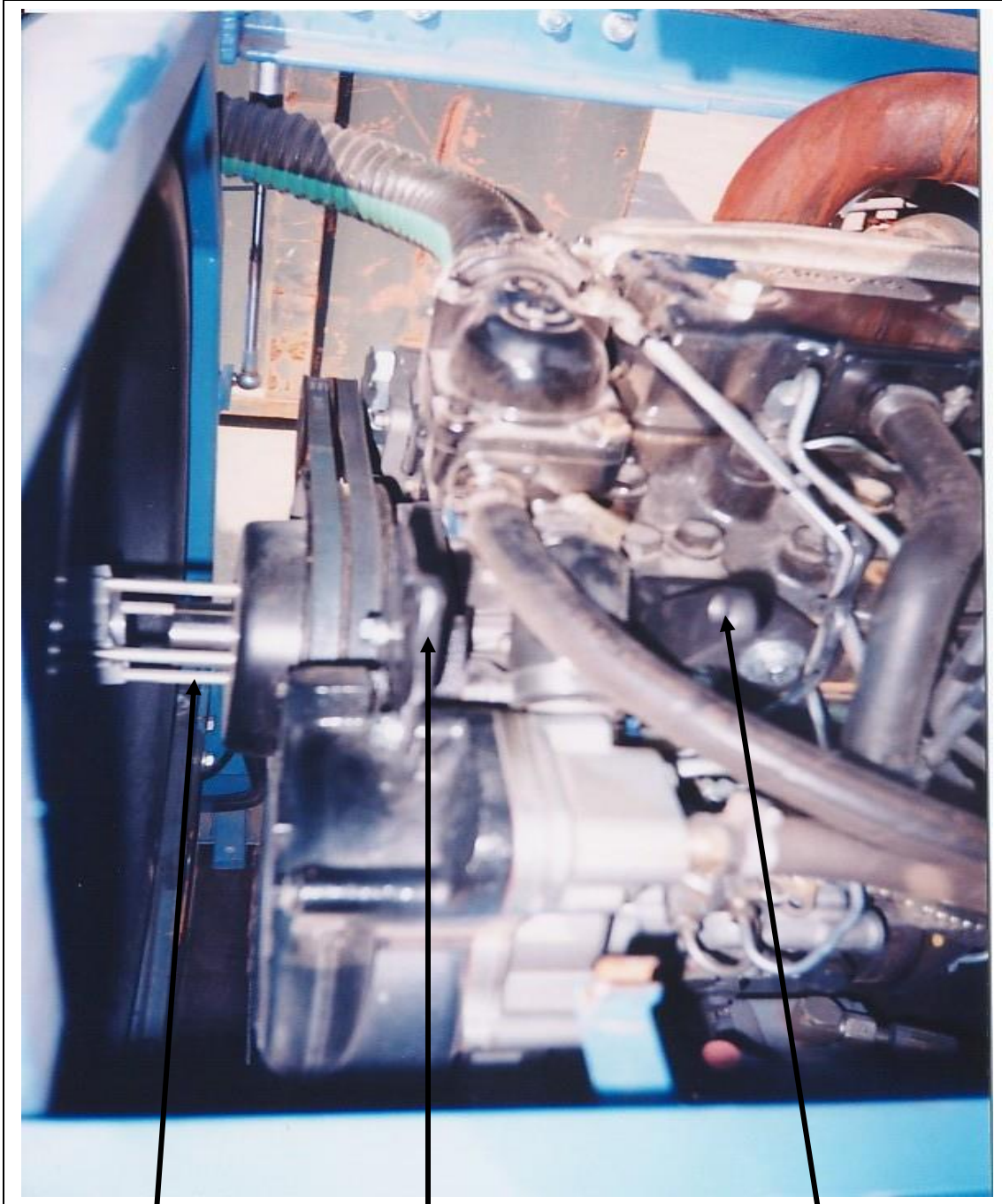
Insulated flex
duct re-installed

15. On older machines that have a diesel fired cab heater there are a number of splices and “Y” connectors on the flex ducts. If this diesel heater is no longer being used. (ie. Replaced with hot water heater) remove the extra duct and “Y” connectors to maximize the cab air flow by reducing the restrictions.
16. From inside the cab, through an access panel behind the seat, the evaporator coil assembly needs to be sealed to the heater/A/C box walls all the way around. This will ensure that all the air flow from the blower assembly passes through the A/C coil.
17. Pull the seat all the way forward to gain access to the panel directly behind the seat and ahead of the inside air intake vents. Remove the seven philps screws from the panel and lift the panel off the heater/A/C box. This same panel also accesses the heater/A/C filter assembly for cleaning and service. Remove the air filter and frame by pulling it straight up.
18. Unbolt the blower assembly frame by removing the four philps screws that secure it. There are two on each vertical surfaces on either side of the heater A/C box. Slide the blower assembly towards the rear of the cab to access the evaporator coil.
19. Using foam, foam tape and or tar tape, seal any air gaps around the sides and top of the evaporator coil and frame.

20. Re-install the blower assembly and filter. ****Note**** If the filter is dirty, remove it from its frame and wash it. Shake it dry and re-install it into the frame and replace the frame behind the blower assembly. Replace the access panel and seven screws.
21. Once all the A/C hoses are connected, all moved components are replaced, the thermostat tested, and the bottom of the heater/A/C box is checked for a air leaks, the two metal panels and the step can be replaced.

Compressor: The compressor is an engine driven Sanden 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:

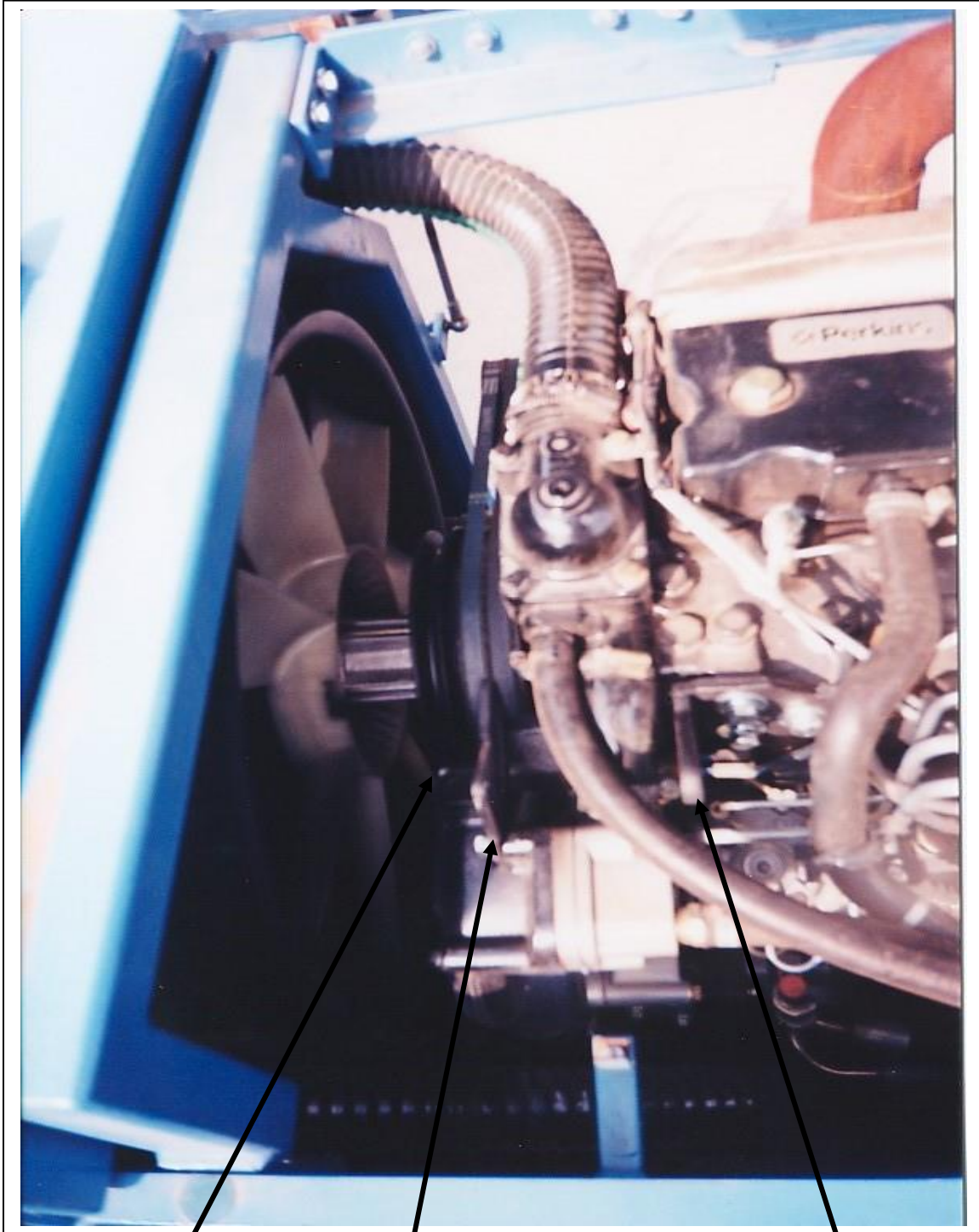


Fan spacer unbolted to allow the addition of compressor drive pulley

Front compressor mount bracket

Rear compressor mount bracket

3. Place the supplied drive belt over the pulley and then re-install the fan spacer and fan. Ensure that the fan bolts are tight.
4. Bolt the front compressor mount bracket onto the engine. This bracket bolts to the open M8 mounting lug on the water pump and the water pump bolt to the left of it. Remove the existing bolt from the water pump and replace it with the longer M8 bolt in the compressor mount hardware bag.

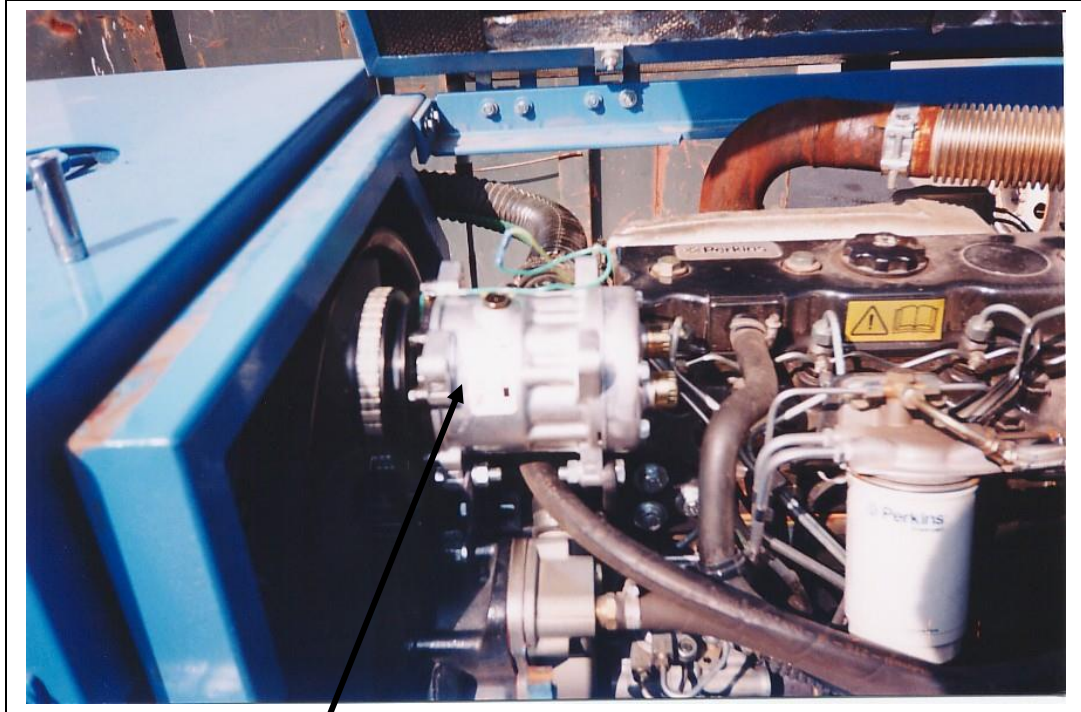


Add on pulley

Front compressor mount bracket

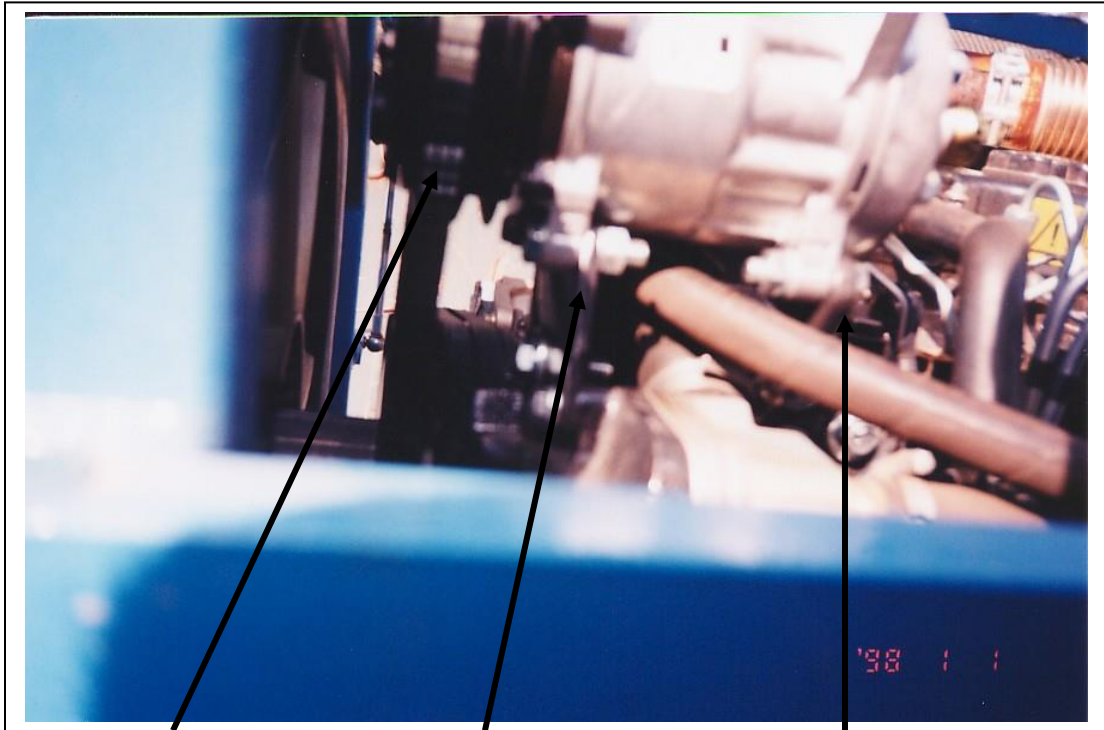
Rear compressor mount bracket

5. Loosely bolt the rear compressor mount bracket onto the engine head directly behind the water pump and overtop the injector pump. Do not tighten down yet.
6. Attach the compressor tightener arm to the rear of the front mount bracket using the threaded end of the tightener arm. The tightener arm should be bolted to the long curved hole in the front mount bracket.



Compressor

7. Install the compressor onto the front and rear brackets. The lower left front mount ear (B) on the compressor bolts to the front mount bracket and the lower left rear mount ear (F) on the compressor bolts to the rear compressor mount bracket.

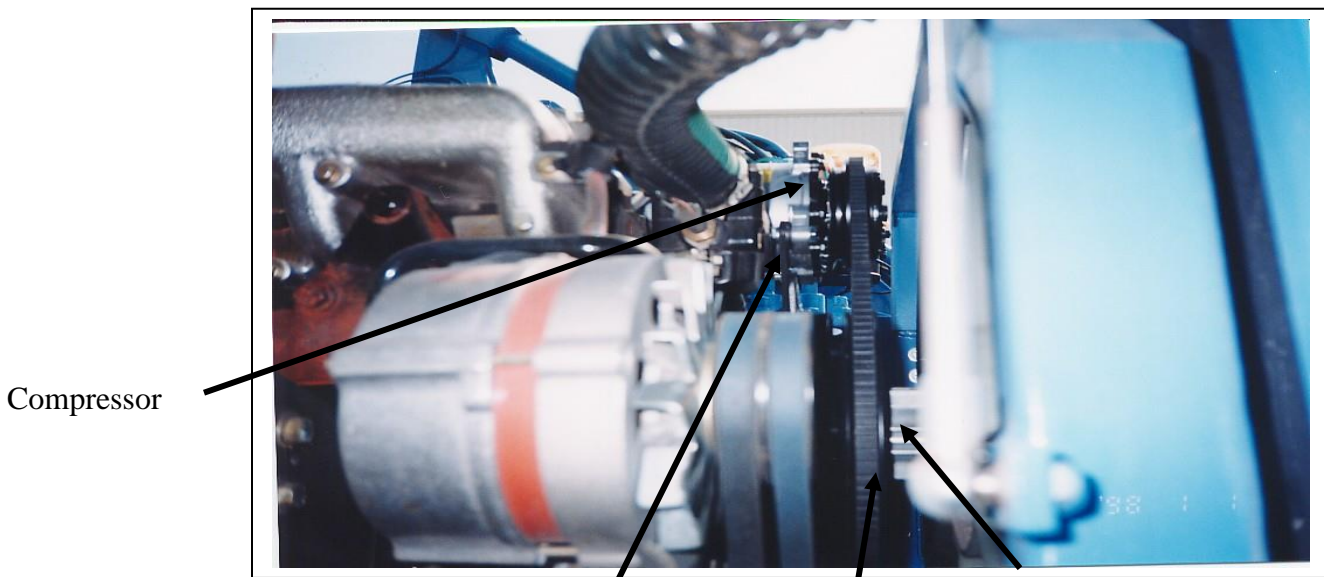


17430 belt

Front compressor
mount bracket

Rear compressor mount bracket

8. The tightener bracket bolts to the lower right front mount ear (C) on the compressor. Install the drive belt around the aux. Pulley and the front pulley on the compressor and snug up the belt. Tighten all the front mount bolts to secure the compressor in place and properly align it.

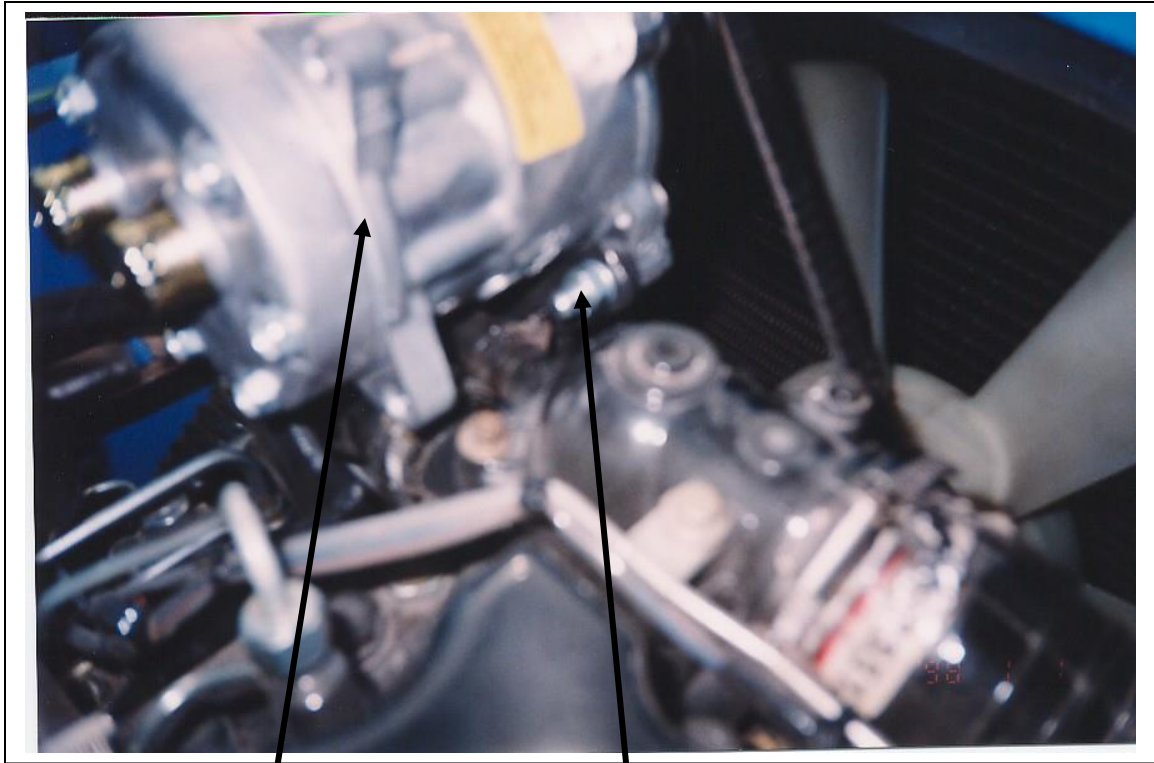


Compressor

Tightener bracket for compressor

17430 belt

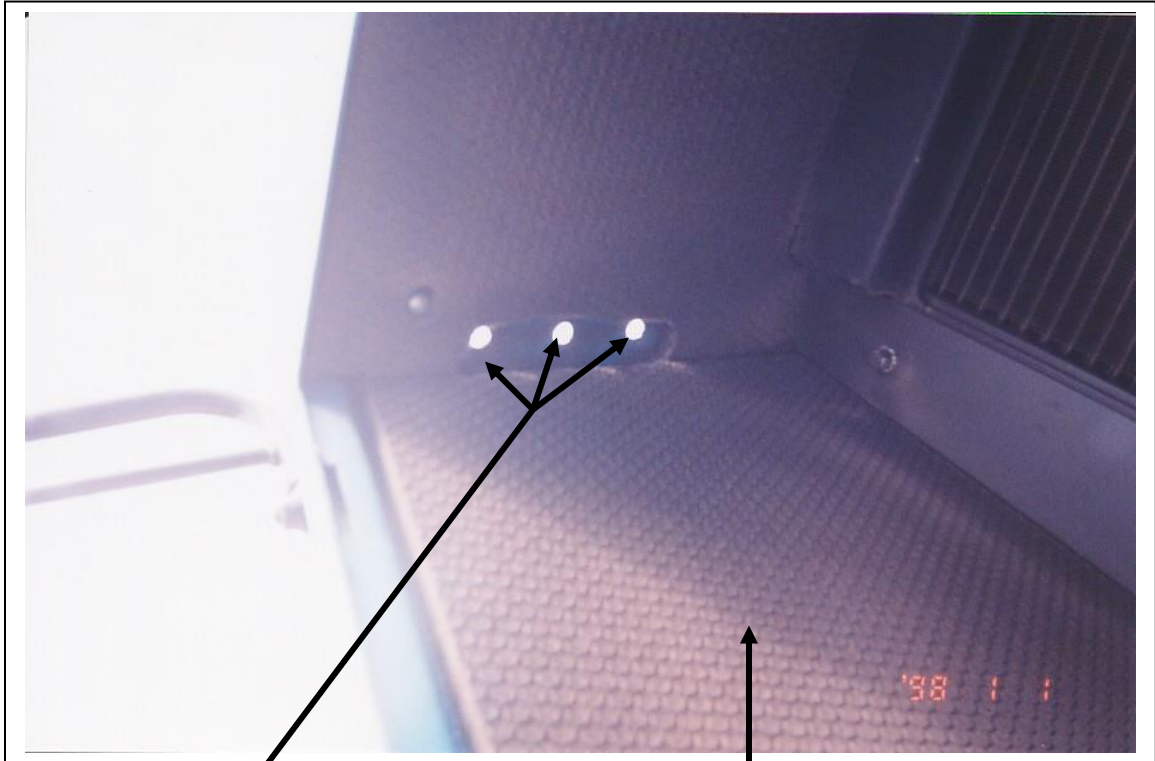
Add on pulley



Compressor

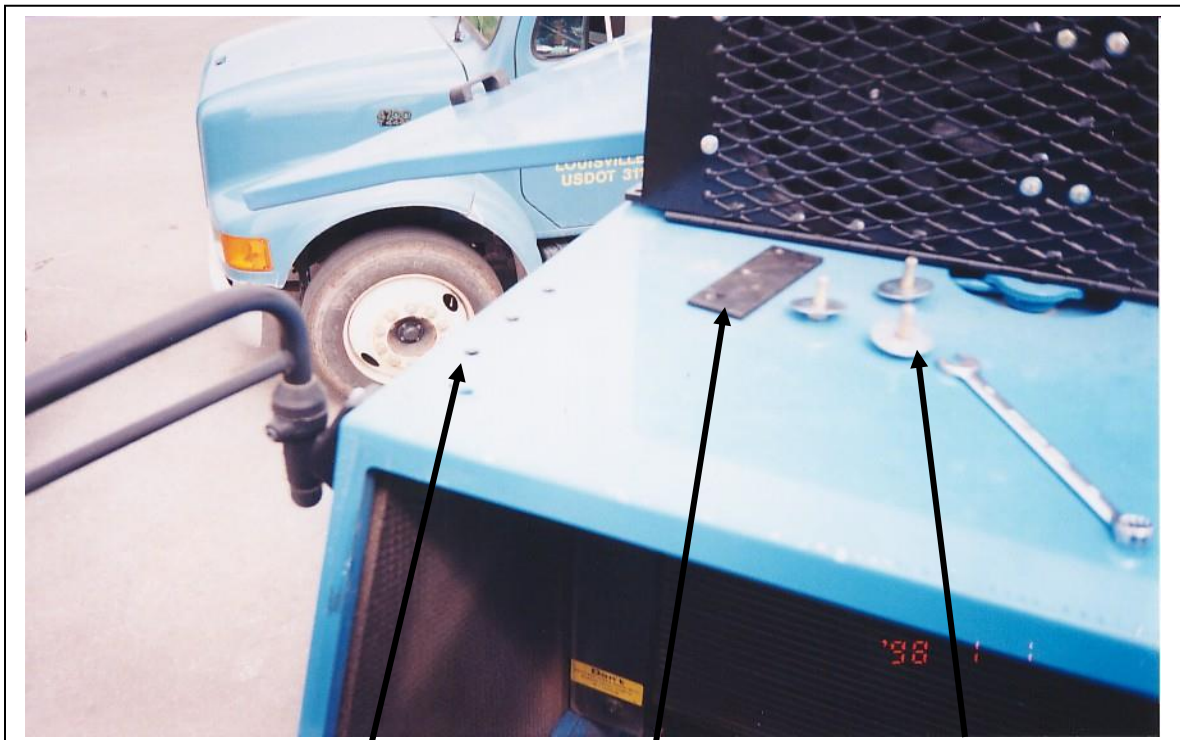
Tightener bracket for compressor

9. Tighten the rear bracket to the ear of the compressor so that the rear bracket is pulled into place on the engine. Fully tighten the three bolts on the engine head for the rear bracket.
10. Loosen the bolts on the compressor and fully tension the belt. Re-tighten all the mount bolts.
11. Install the rotolock fittings onto the back of the compressor with the nuts pointing down and about 45° to the left side. Remove the caps on the back of the compressor and install the white nylon gaskets into the grooves on the rear of the compressor ports. Oil the contact surfaces of the rotolock fittings. Install the 13/32" rotolock fitting onto the right hand port (1) of the compressor with the binary pressure switch on the top pointing to the right at about 45°. Install the 1/2" rotolock fitting onto the left hand port (s) of the compressor with the 134A access port on the top pointing to the right at about 45°. Ensure the rotolocks are firmly tightened.



Mount holes drilled for the condenser (1/2" holes)

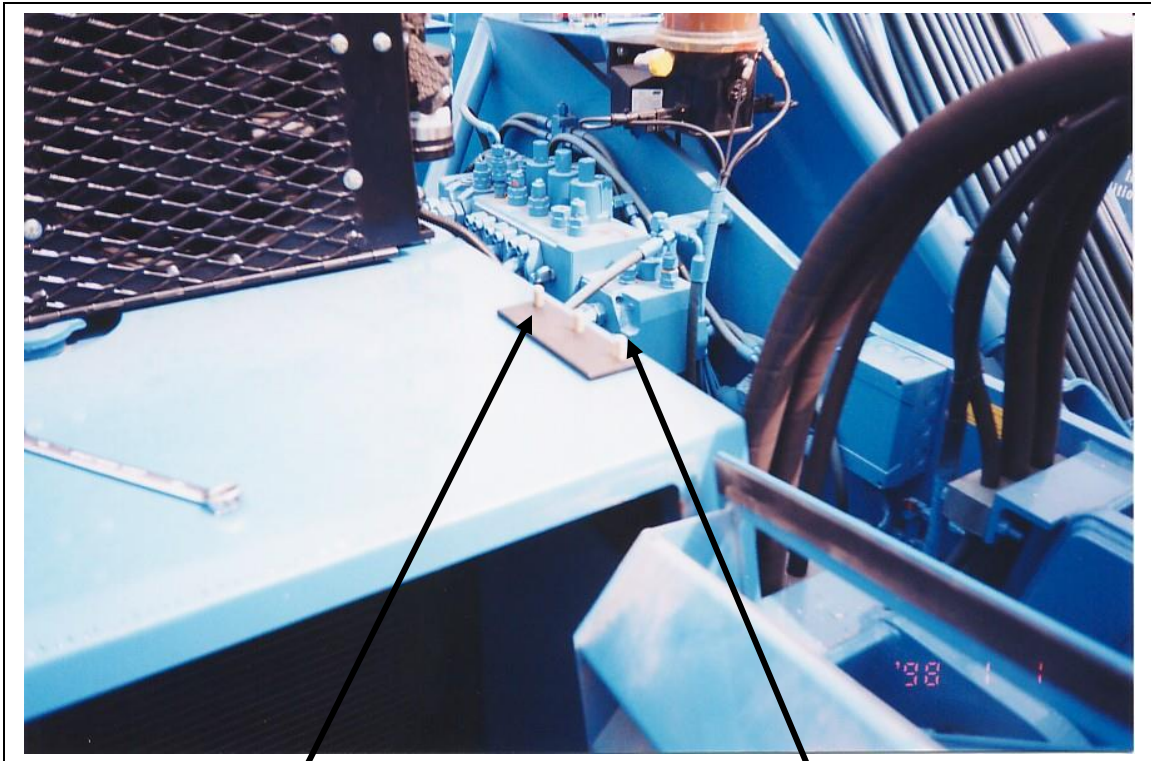
Radiator shroud



1/2" holes for condenser mount

Threaded spacer plate

3/8" mounting hardware for condenser

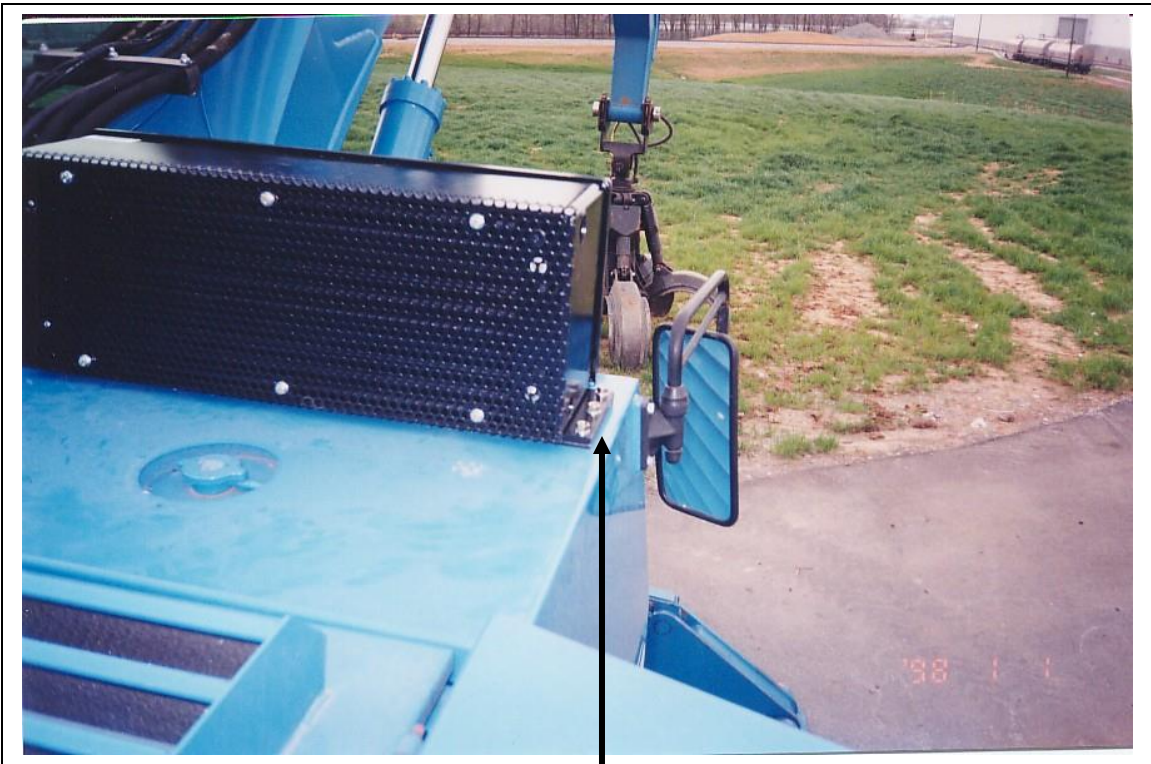


Threaded spacer plate

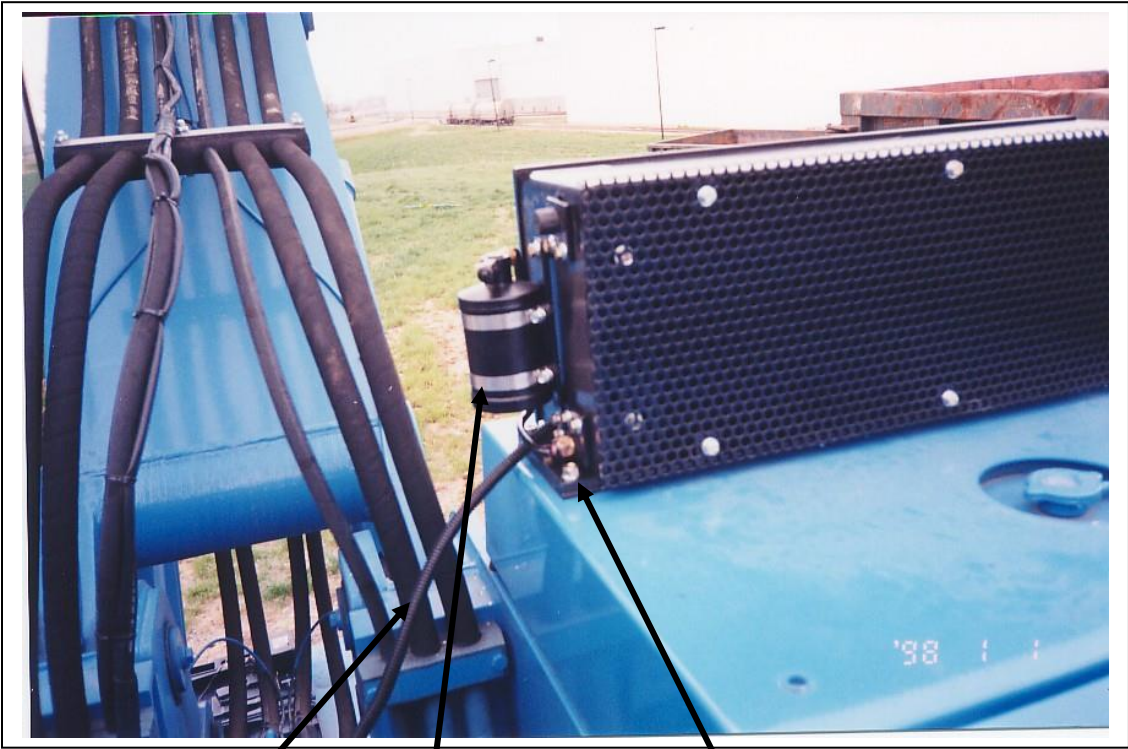
3/8" bolt up through bottom of radiator shroud.



Condenser in place



Right side mount for condenser

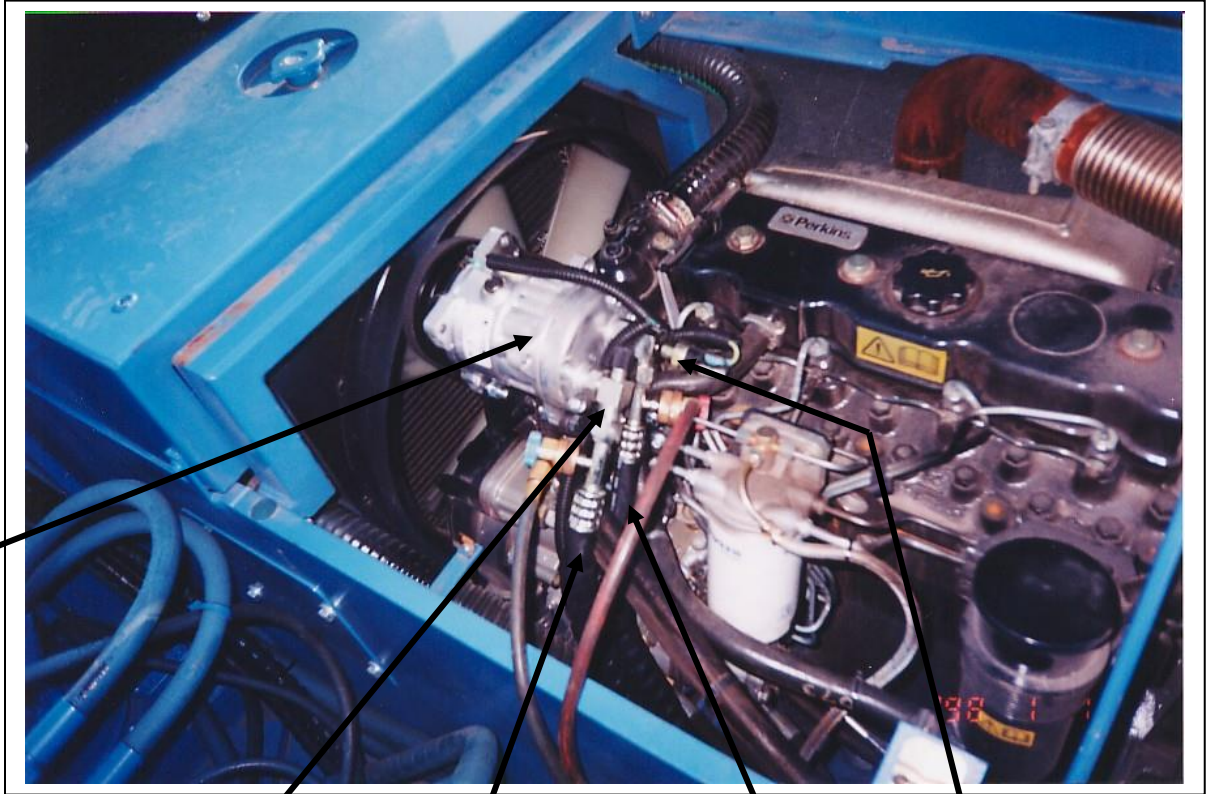


Electrical power and ground wires

Receiver drier

Left side mount for condenser

Compressor

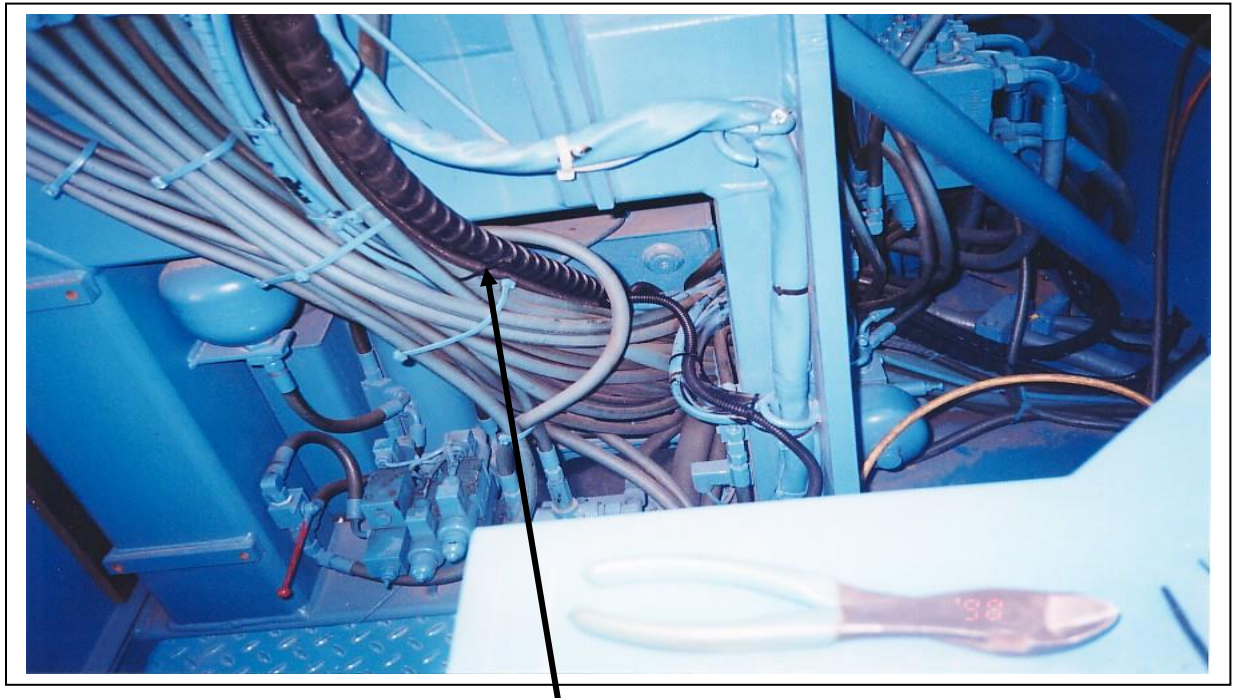


Suction side 1/2" rotolock fitting

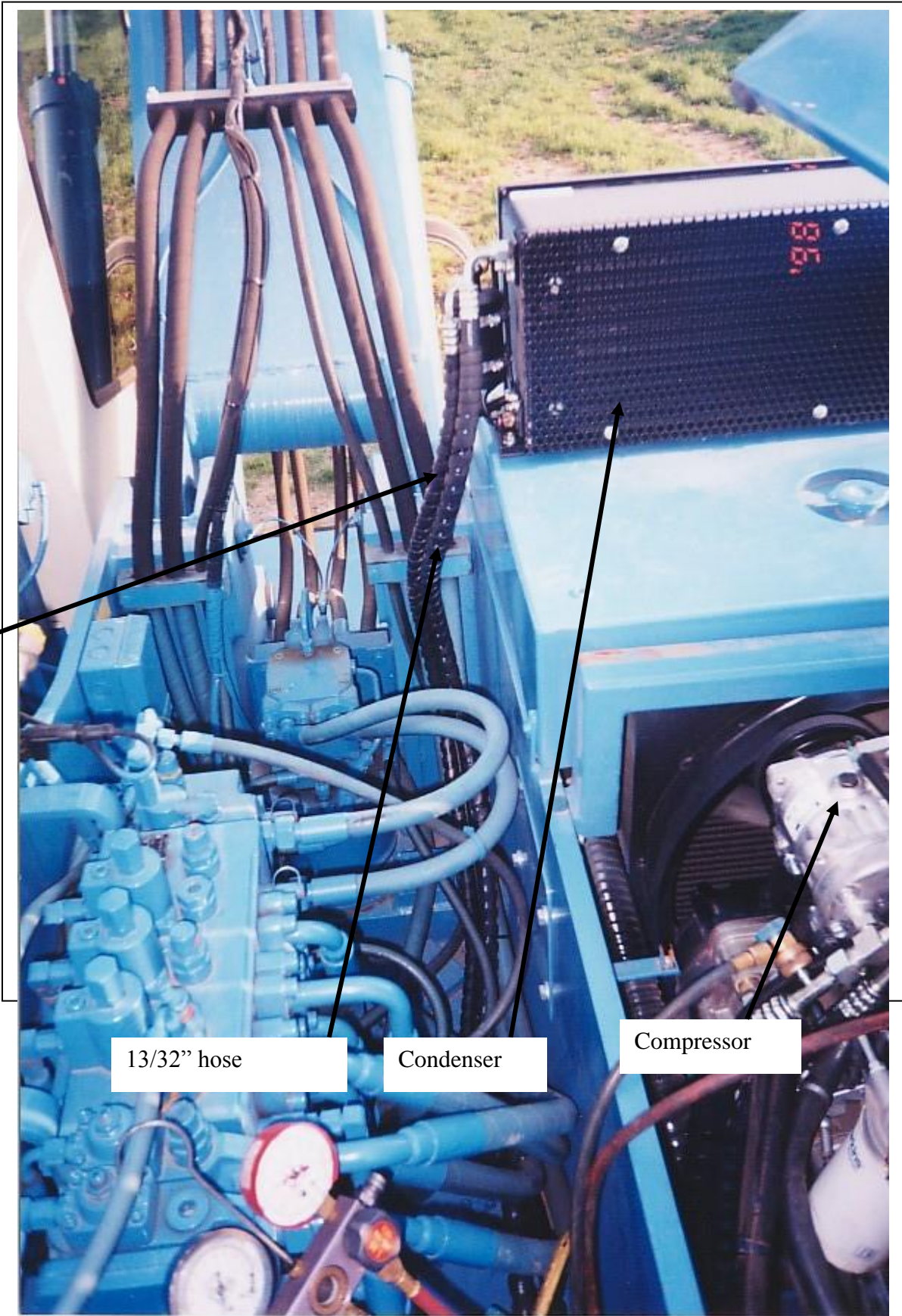
5/8" hose

13/32" A/C hose

Discharge side 13/32" rotolock with binary pressure switch.



Wire bundle, 5/16" hose and 5/8" hose routed up the hydraulic hoses to the pivot point of the cab lifting boom

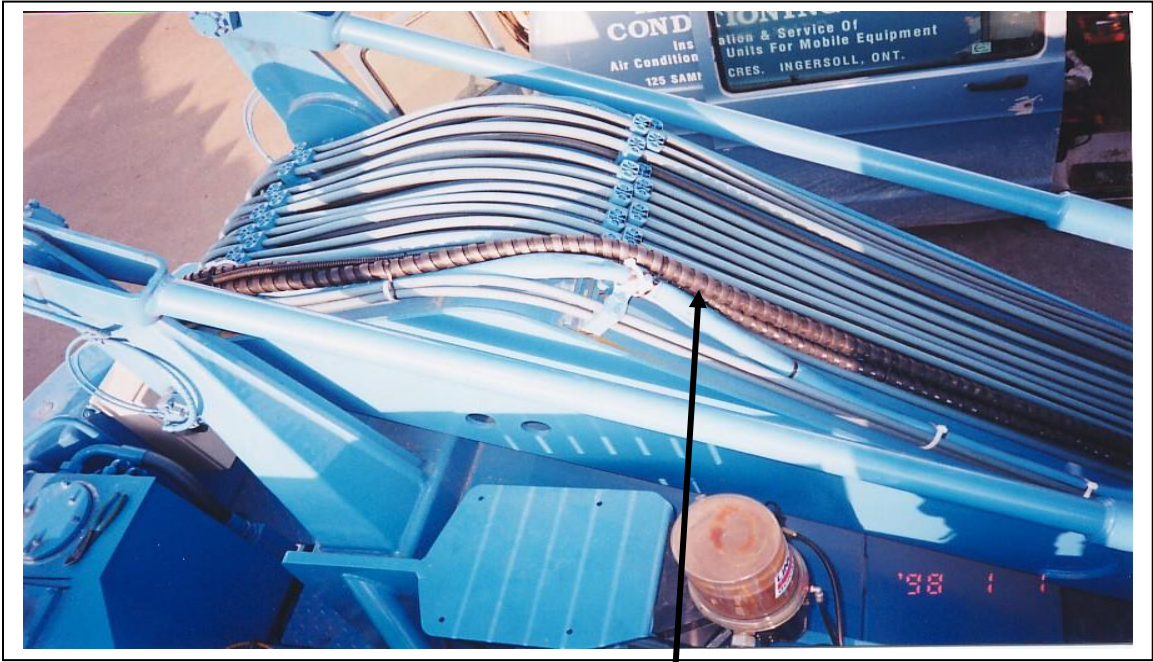


5/16" hose

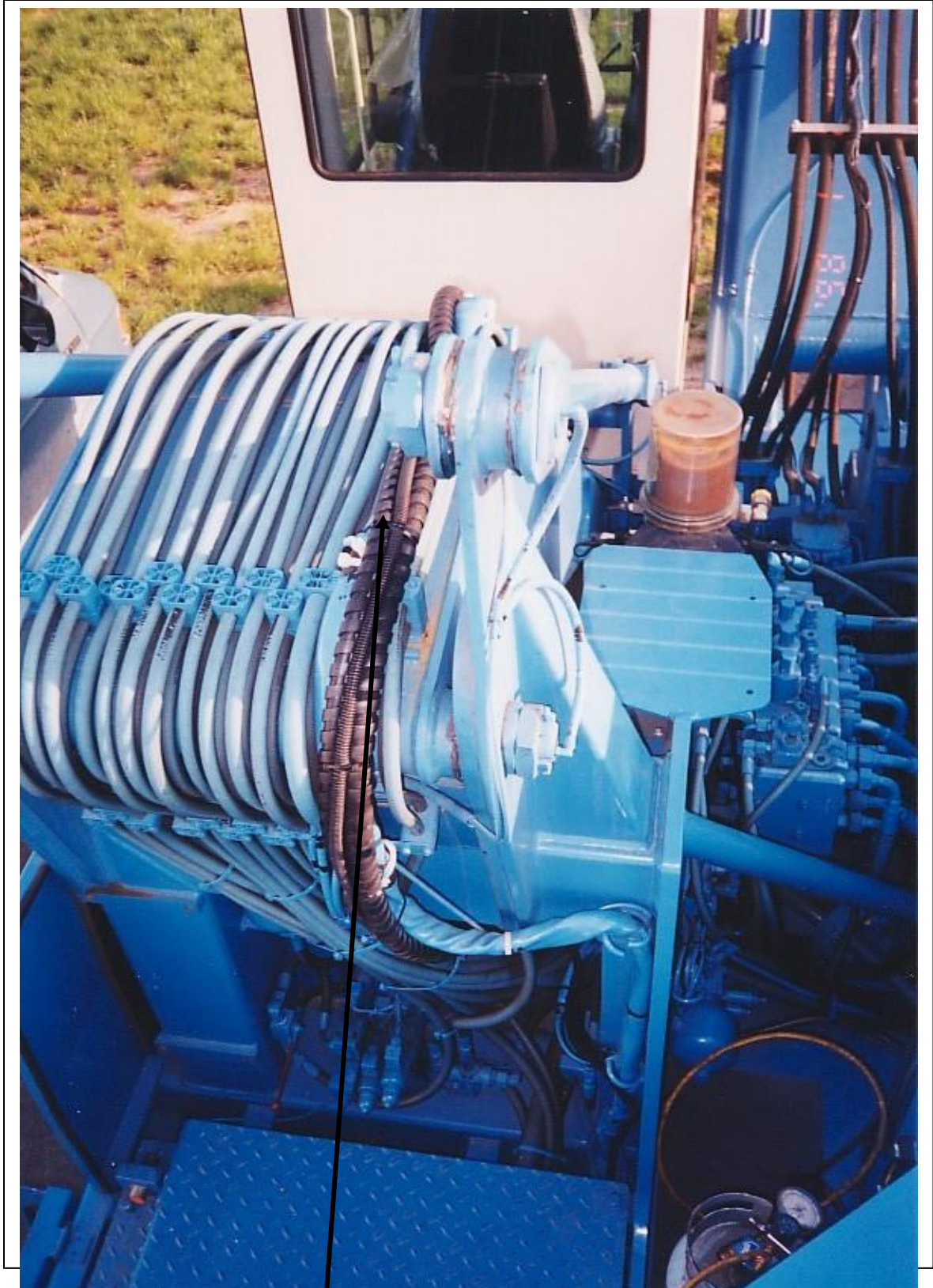
13/32" hose

Condenser

Compressor

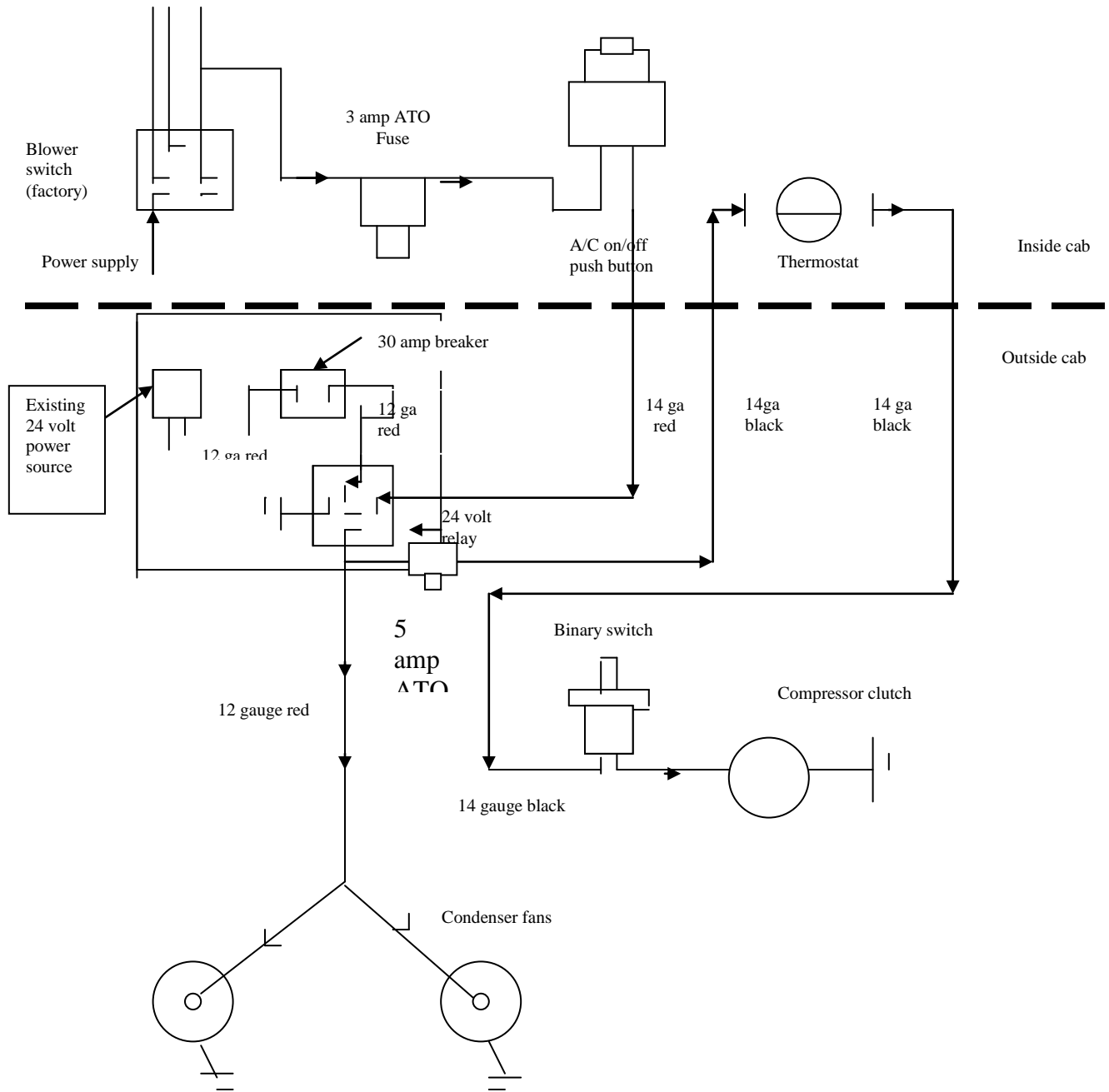


A/C hoses and electrical bundle routed down the cab lifting boom



Electrical bundle, 5/16" hose and 5/8" hose following factory wire harness down the cab lifting boom

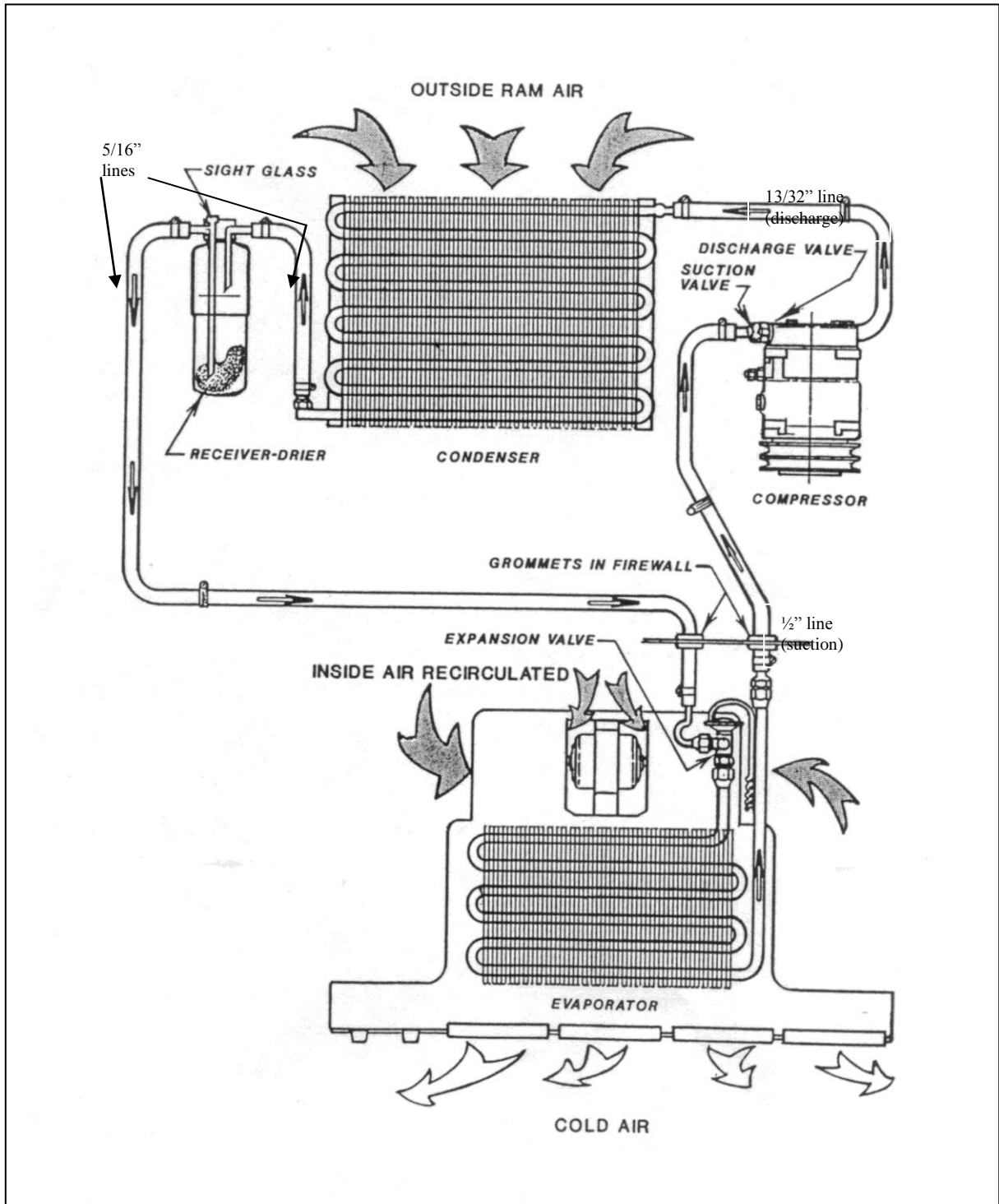
ELECTRICAL:



Final checks and charging:

1. Pressure test the system with nitrogen to at least 250 PSI and check all fitting and connections for leaks. The complete electrical system can be tested while there is pressure in the system as well.
2. Vacuum the system out with a good vacuum pump for ½ hour to 45 minutes. Ensure the system holds a vacuum to double check it for leaks. Add 4 oz of PAG oil to the system. Charge the system with 3 lbs of new 134A refrigerant. Run the system to test it. Check the temperature at the louvers. Add 134A refrigerant in 2 oz increments and check the air temp. A charge of 3 lbs 8 oz should be about right.
3. Check that the thermostat is cycling the compressor off before coil freeze up problems can occur. The thermostat can be adjusted with the adjustment screw under the plastic cap on the body of the thermostat. See the thermostat setting procedures at the end of this instruction manual.

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.

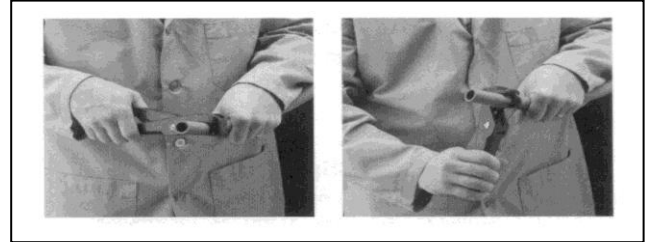
By looking at all these different factors, the area of an evaporator coil most likely to be the coldest can be determined.

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.

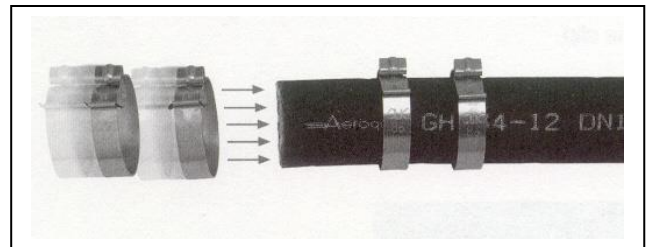
If the thermostat doesn't cycle off after a reasonable cool down period, and the air outlet temperature has dropped below 40° F, the cut in and cut out settings should be adjusted until the compressor is cycling on and off regularly. Let the system run for a decent time period (at least 15 min) and then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

Aeroquip E-Z Clip Assembly Instructions

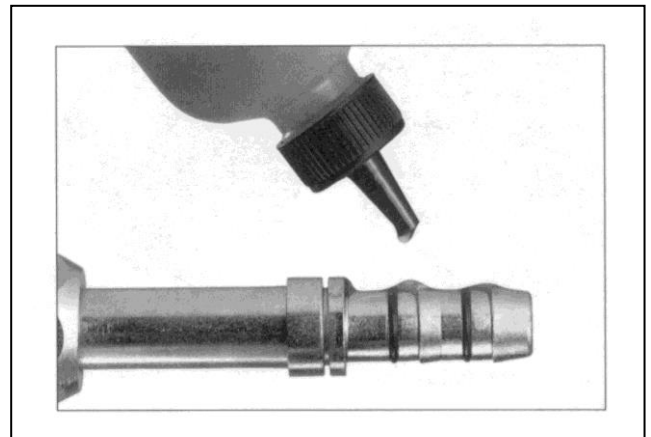
Step 1. Cut the hose to proper length with an appropriate cutting tool. Aeroquip's hand held hose cutter has been specially designed for cutting all non-wire reinforced hose, such as GH-134 Multi-Refrigerant hose. Be sure the cut is made square to the hose length.



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.

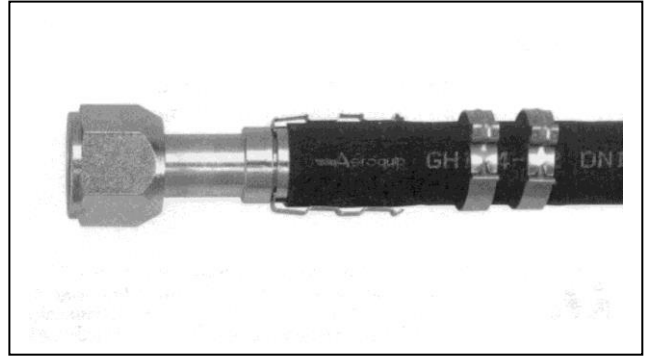


Step 4. Insert the nipple into the hose. To ensure that the nipple is fully inserted, check the gap between the cut end of the hose and the shoulder on the nipple. Care should be taken to avoid kinking or other damage to the hose during nipple insertion. NOTE: Be sure to wipe excess oil from the nipple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

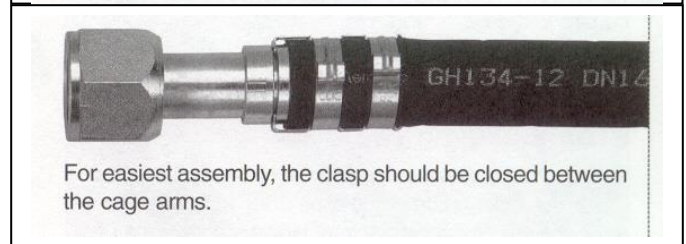


Step 5. Snap the cage into the groove on the nipple. The arms should extend over the hose length. When the cage has been correctly installed in the cage groove, the cage will be able to rotate in the groove. This step **MUST** be performed to ensure:

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.

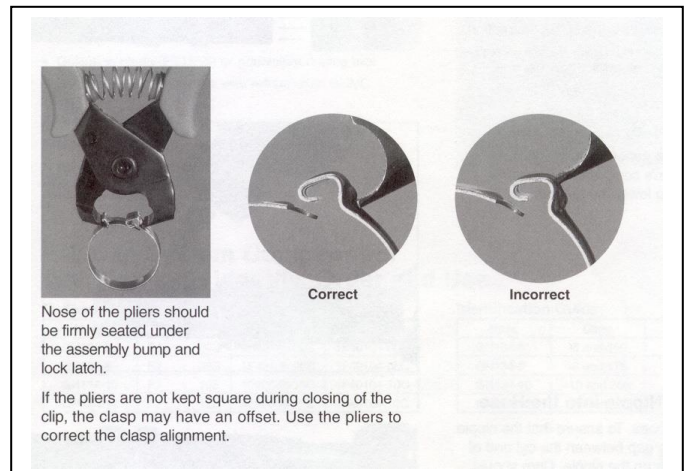
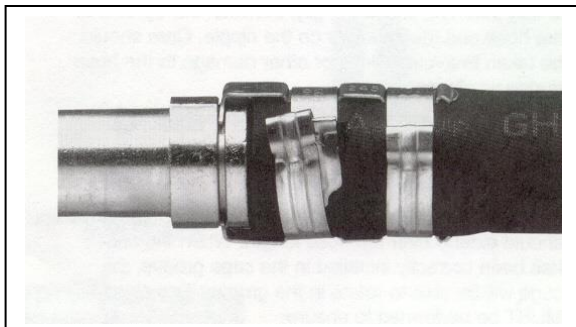


Step 6. Slide the clips over the cage arms and into the channels on each arm.



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.



**SERVICE BULLETIN FOR ALL FUCHS MHL
MACHINES WITH NEW CABS**

SUBJECT : CAB AIR FILTER SERVICING

The heat/ac pressurizer systems in the newer Fuchs cabs, on all sizes of machines, have an air filter in the cab that must be serviced regularly. The filter is a washable foam type of media mounted in a removable metal frame. **(The location of this filter is not visible from inside or outside the cab)** and must have an access panel, in the cab, removed to access it. If an operator is complaining about a lack of airflow from the heater/ac systems, a plugged filter is likely the problem.

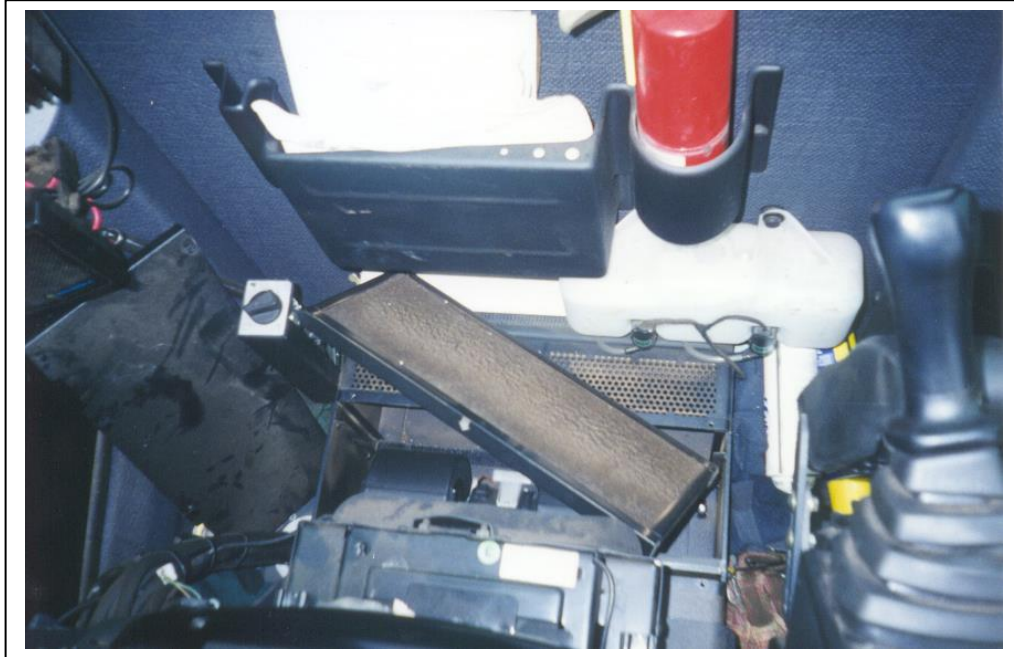
Service procedures:

- 1) Pull the operators seat forward and tip the seat back all the way down. This will give access to the filter service panel located directly behind the operators seat and ahead of the inside air intake vents. Remove the seven philps screws holding the filter service panel in place and then remove the panel.



- 2) Remove the filter and metal frame from the blower box by pulling the metal frame straight up. Check the back of the filter for dirt buildup that would cause reduced airflow.





- 3) If the filter is dirty, remove it from its metal frame and wash it out with warm water. Shake it dry and re-install it back into the metal filter frame. Slide the metal frame back into the blower box. Take care to locate the air flow direction arrow at the top of the box pointing towards the blowers. Re-install the access panel and seven philips screws.

The frequency of the service will be determined by the environment a particular machine is working in. The badly plugged filter shown here was in a machine with 600 hrs on it.

For replacement filter media please contact your local Fuchs parts supplier.