

# **INSTALLATION INSTRUCTIONS**

## **CAT M-318 WHEELED EXCAVATOR**



**Hammond Air Conditioning Ltd.**

**1-800-267-2665**

**1-888-267-3745 (FAX)**

## EVAPORATOR:

The evaporator is mounted in the heater/blower assembly alongside the existing heater coil.



Underside of evaporator/heater area showing evaporator lines, heater control valve, drain tubes and filter housing.

Remove the cover on the bottom of the heater assembly. It may be necessary to remove the heater control assembly to do this. Slide the evaporator up alongside the heater coil and hold in place. It will be necessary to notch out the lower pan to allow the evaporator fittings to extend outside the compartment. Before replacing the bottom plate install the drain lines on the integral drains.

Replace the lower panel and secure using the original hardware. It will be necessary to use tar tape to seal the hole through which the evaporator fittings extend. This should wait until after the system has been pressure tested for leaks.

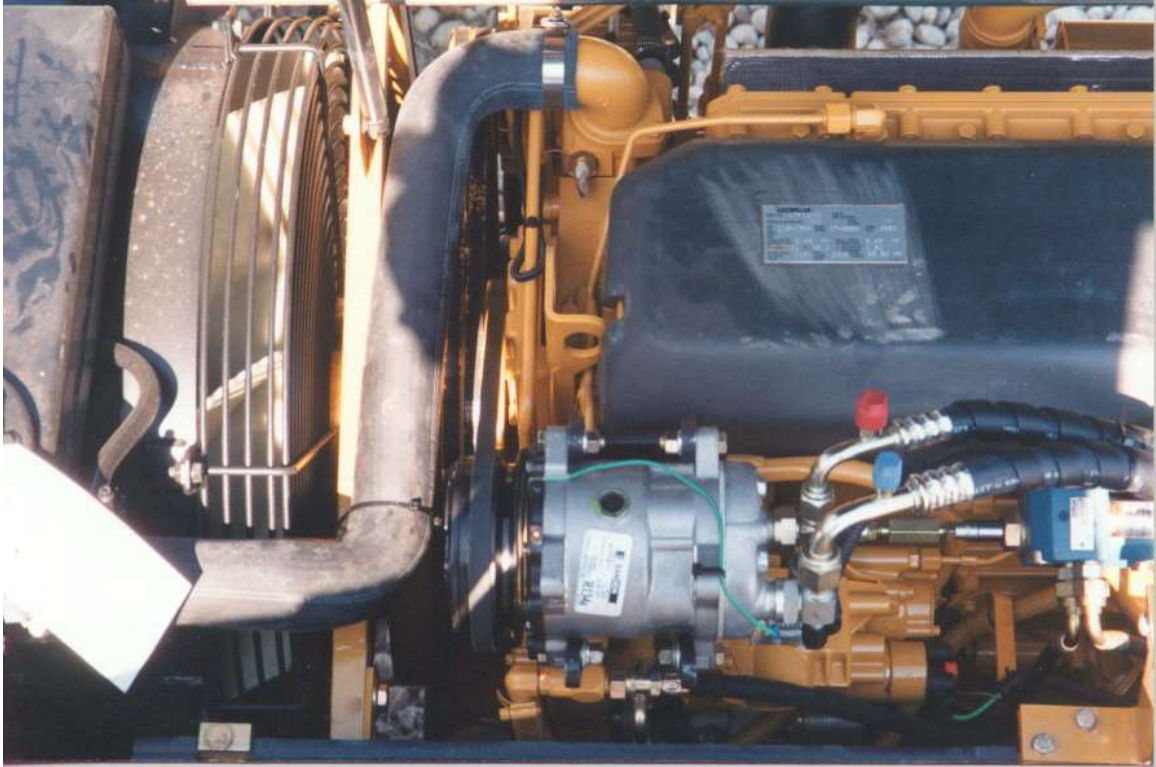
## COMPRESSOR:

The compressor mounts to the engine on the location shown in the pictures, on the top toward the left when facing down the engine toward the fan.

Mount the compressor mount onto the location shown using the metric hardware provided. Do not tighten the mounting hardware down completely until checking the alignment with the compressor in place. Once the alignment is checked, tighten down the bolts and mount the compressor. Place the drive belt in place and tighten up the compressor to take up the tension.



Compressor location on engine with hoses in place.



Side view of compressor location on engine.

## CONDENSER MOUNTING:

The condenser is configured for mounting on the radiator as shown in the pictures.



Condenser in place on frame with radiator cowling removed.

For ease of installation it is suggested that the radiator cowling be removed. The condenser frame is mounted to the frame around the radiator using the 1/4" hardware provided. If the mounting holes are not present they will have to be drilled into the steel frame around the radiator.





Condenser in place with radiator cowling installed.



Lower area of condenser showing hose routing.

Receiver Drier:

The receiver drier is mounted to the 90o bracket provided in the kit.



Drier in place alongside engine.

The drier bracket mounts on an existing bolt point using existing hardware. This point will be in the engine compartment in the area indicated in the picture. Secure the bracket into place and attach the drier to the bracket with the #48 gear clamps provided.

## HOSE RUNS:

### 5/16" Hose Condenser to Drier:

The 5/16" hose comes off the lower fitting on the condenser with the 90o fitting pre-crimped on the hose. Route the hose from the condenser back along the outside of the radiator to the drier. Cut to length and crimp on the 90o fitting provided loose in the kit.

### 5/16" Hose Drier to Evaporator:

The 5/16" hose runs from the drier back around the engine and meets up with the 1/2" hose. The hoses then run to the evaporator fittings under the cab and connect. Cut the hose to length and crimp on the 90o fitting provided in the kit.

### 13/32" Hose Compressor to Condenser:

The 13/32" hose is run from the compressor down around and forward to the condenser. The fitting pre-crimped onto the hose is the 90o with a 134a access port. This fitting is attached to the rotolock fitting at the compressor as shown in the compressor pictures. Route the hose forward to the condenser and cut to length. The 13/32" hose runs to the top fitting on the condenser. Cut to length and crimp on the 90o fitting provided in the kit for this line.

### 1/2" Hose Compressor to Evaporator

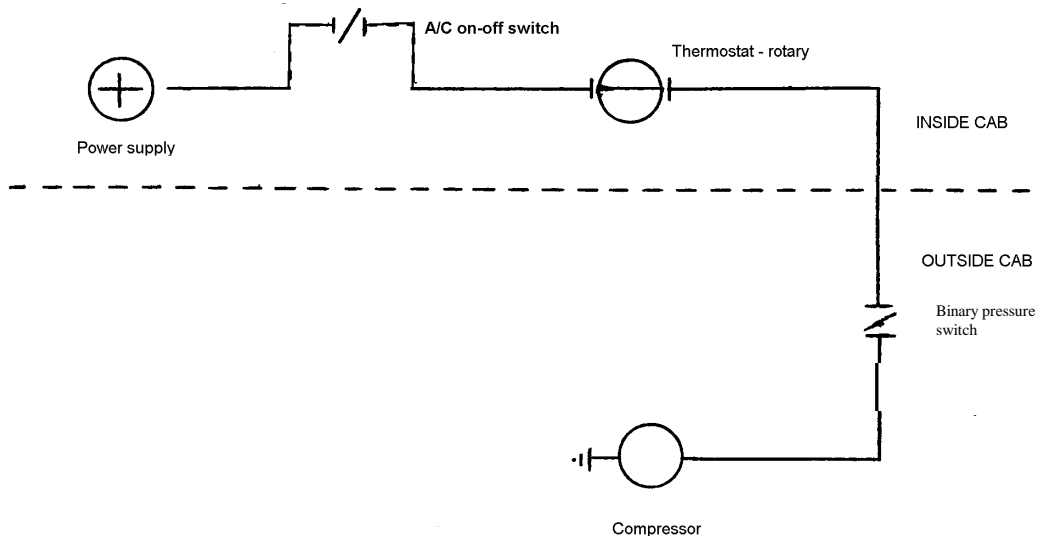
The 1/2" hose runs from the compressor to the evaporator back along the engine where it joins the 5/16" line from the drier and runs in under the cab to the evaporator fittings. Connect the pre-crimped fitting on the 1/2" hose to the suction rotolock on the compressor as shown in the pictures and route the hose back along the engine. Cut to length at the evaporator fitting and crimp on the 90o fitting provided in the kit for this hose.

Hose-wrap exposed sections and any places the hoses may rub. Secure using cable ties and clamps where necessary. Use refrigerant oil on the O-rings at the sealing surfaces to ensure a proper seal.

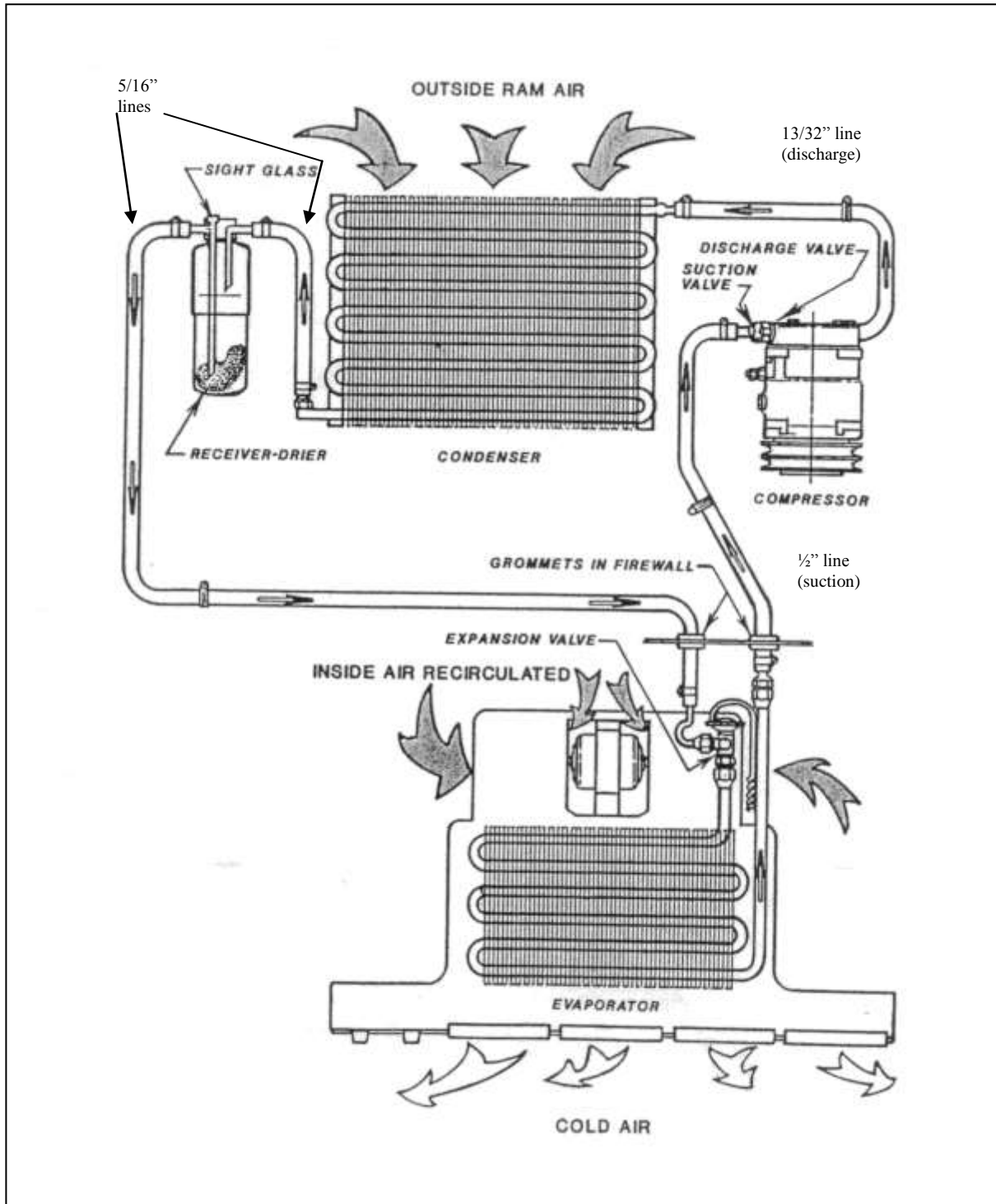


ELECTRICAL:

Power to control the thermostat and clutch comes off the heater



## 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.

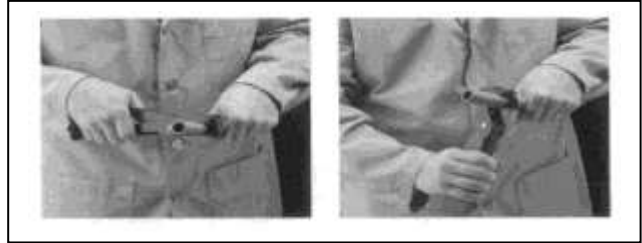
Once the probe is inserted, the A/C system needs to be tested. Run the system to ensure that the thermostat is cycling the compressor off at the appropriate temperature. A core temperature ranging between 25° and 30° F should cause the thermostat to cycle off. The air temperature at the vent outlet closest 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.

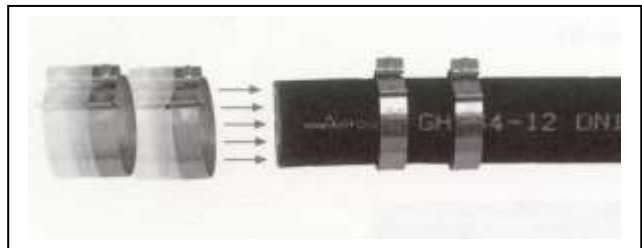


## Aeroquip E-Z Clip Assembly Instructions

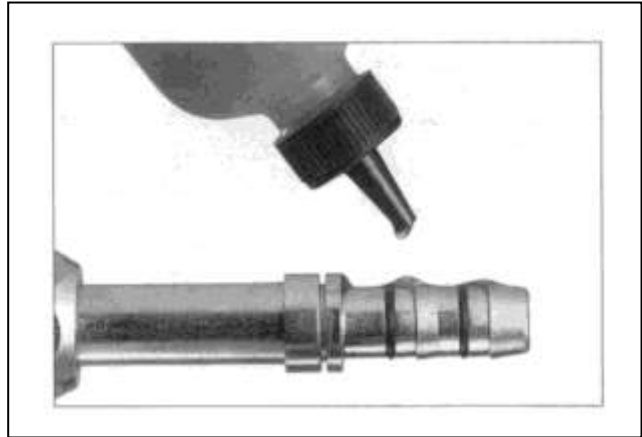
Step 1. Cut the hose to proper length with an appropriate cutting tool. Aeroquip's hand held hose cutter has been specially designed for cutting all non-wire reinforced hose, such as GH-134 Multi-Refrigerant hose. Be sure the cut is made square to the hose length.



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.

