

INSTALLATION INSTRUCTIONS

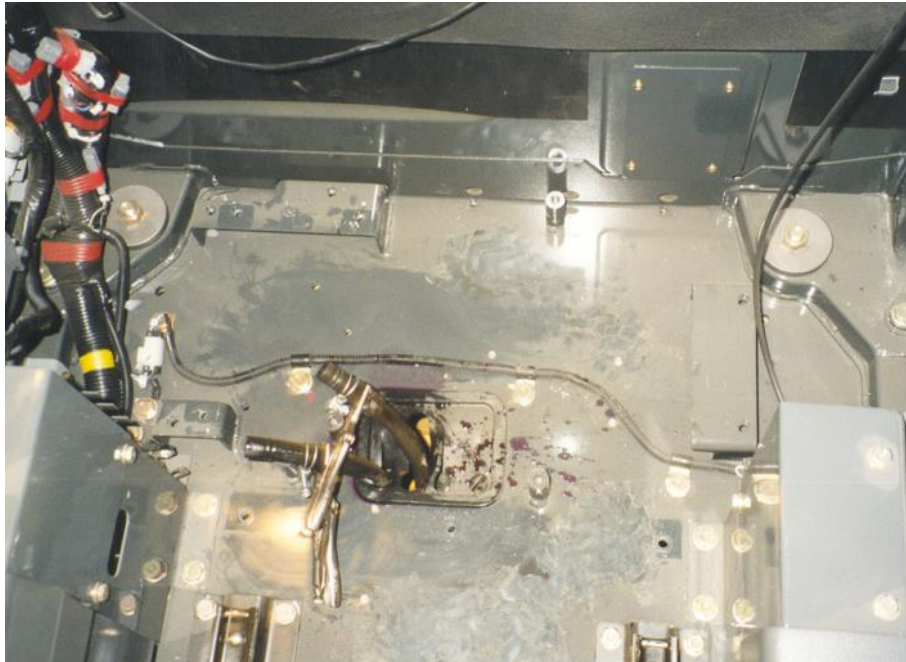
KOMATSU PC400 LC-6 EXCAVATOR

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NOTE: THIS PACKAGE IS FOR THE KOMATSU ENGINES (ENGINE #SA6D125E-2) WITH THE SMALL HEATER ASSEMBLY ONLY.

EVAPORATOR:

The evaporator/heater box mounts under the 'lunch boxes' behind the seat and under the plastic moldings.



Mounting location for evaporator assembly.

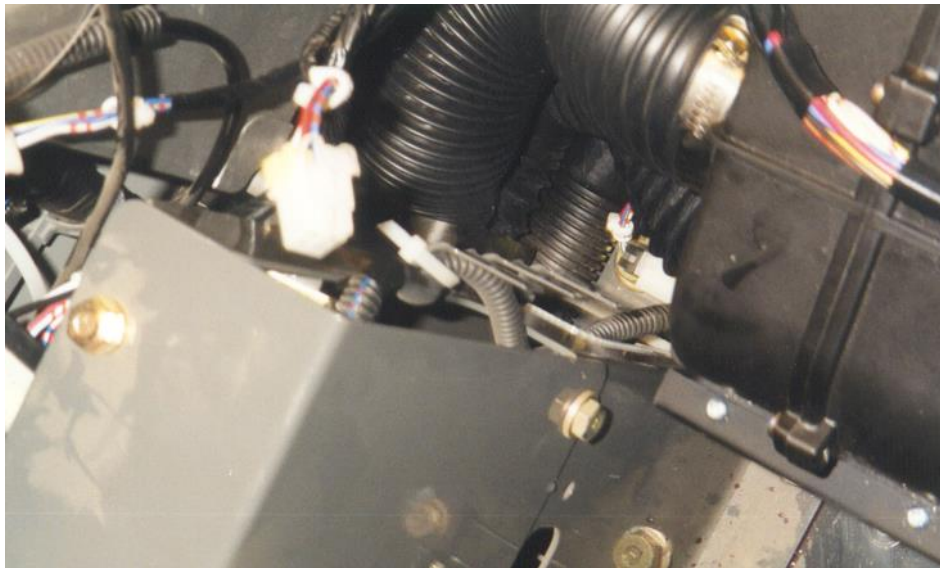
1. Remove the plastic cowling and 'lunch boxes' behind the operator's seat along with the existing heater blower box.
2. Install the air plenum adapter with the two 2½" flex hoses on it onto the forward air channel and secure with self-drilling screws. Seal any air gaps with tar tape sealer.
3. Place the heat/cool box in place and bolt down in place with the hardware removed from the heater mounts. Ensure that the drain hoses run out through the large grommet in the floor of the cab.
4. Connect the flex hoses from the forward air plenum to the two 2½" round hose adapters on the motor side of the heater/AC box. Secure with cable ties to the hose adapters.

5. Connect the existing heater lines up to the copper heater lines out of the heat/cool box. Use the existing hardware.
6. Connect the power for the heat/cool box to the 20A fused power source. It should be possible to use the fuse from the original heater. Connect the ground wire to any bolt grounded to the cab.
7. Connect A/C lines to the evaporator fittings and tar tape all exposed metal that could sweat from condensation.
8. Install the rectangular louvers in the factory knock out areas on the tops of the plastic cowlings. Cut and drill holes in the right hand cowling for the control panel and thermostat. Install the banjo fitting in the right hand storage box to supply warm and cool air to the inside of the box. During final assembly the 1½" flex duct coming off the heat/cool assembly will be connected to the banjo fitting.
9. Connect the flex hoses from the forward air plenum to the two 2 ½" round hose adapters on the motor side of the heater/AC box. Secure with cable ties to the hose adapters.



Evaporator assembly mounted in place.

10. Connect the existing heater lines up to the copper heater lines out of the heat/cool box. Use the existing hardware.
11. Connect the power for the heat/cool box to a 20A fused power source. It should be possible to use the fuse from the original heater.
12. Connect A/C lines to the evaporator fittings and tar tape all exposed metal that could sweat from condensation.
13. Install the rectangular louvers in the factory knock out areas on the tops of the plastic cowlings. Cut and drill holes in the right hand cowling for the control panel and thermostat. Install the bulkhead fitting in the right hand storage box to supply warm and cool air to the inside of the box for lunches etc. During final assembly the 1" flex ducting coming off the heat/cool box will be connected to the 'lunch box' fitting.
14. Install the 2 ½" flex hose onto the two outlets in the top of the heater box. Cut roughly to length for connection to the rectangular louvers on the cowlings.
15. When the system has been charged and tested for operation (mechanically and electrically) reassemble the cowlings and do the final hookups and mountings to them.



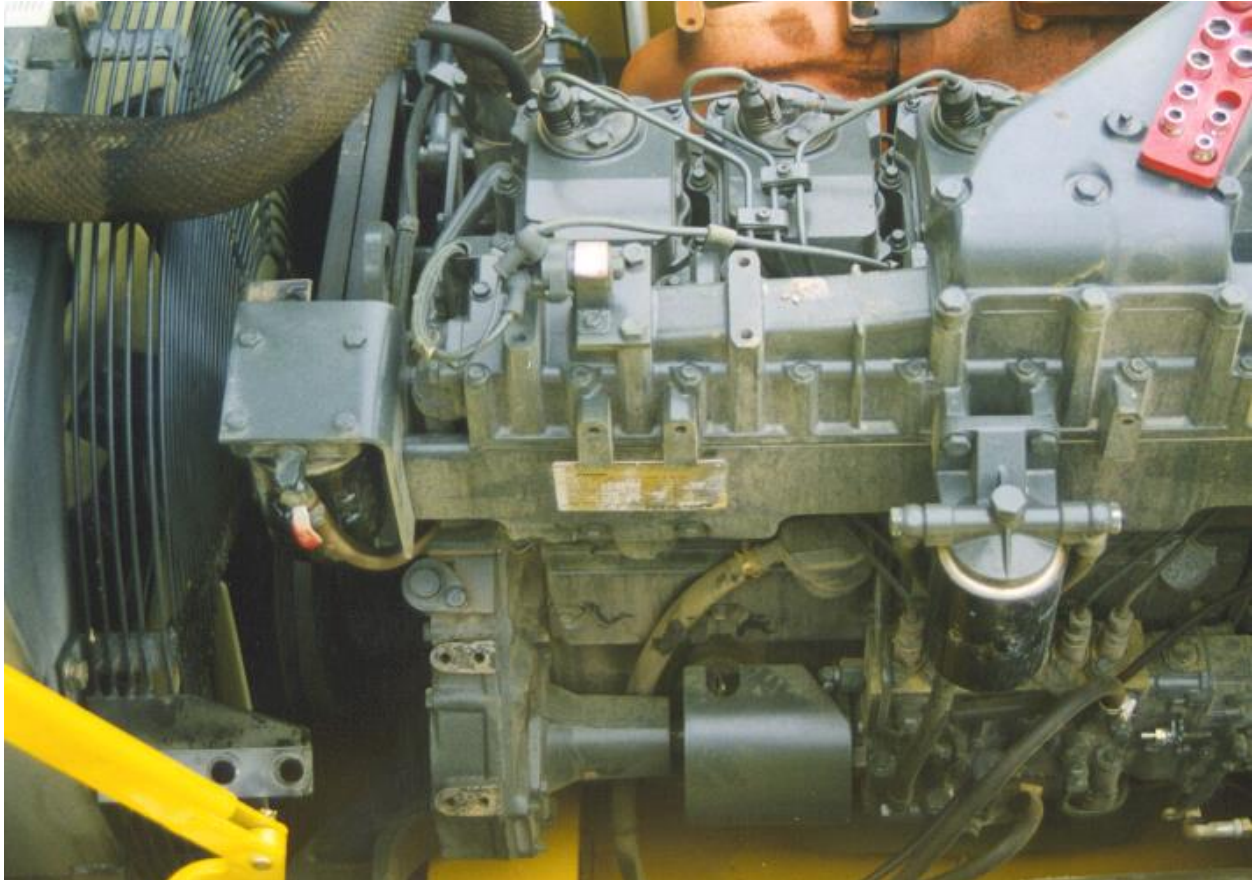
Flex hoses connecting to the forward air duct.



Louvers and controls in place.

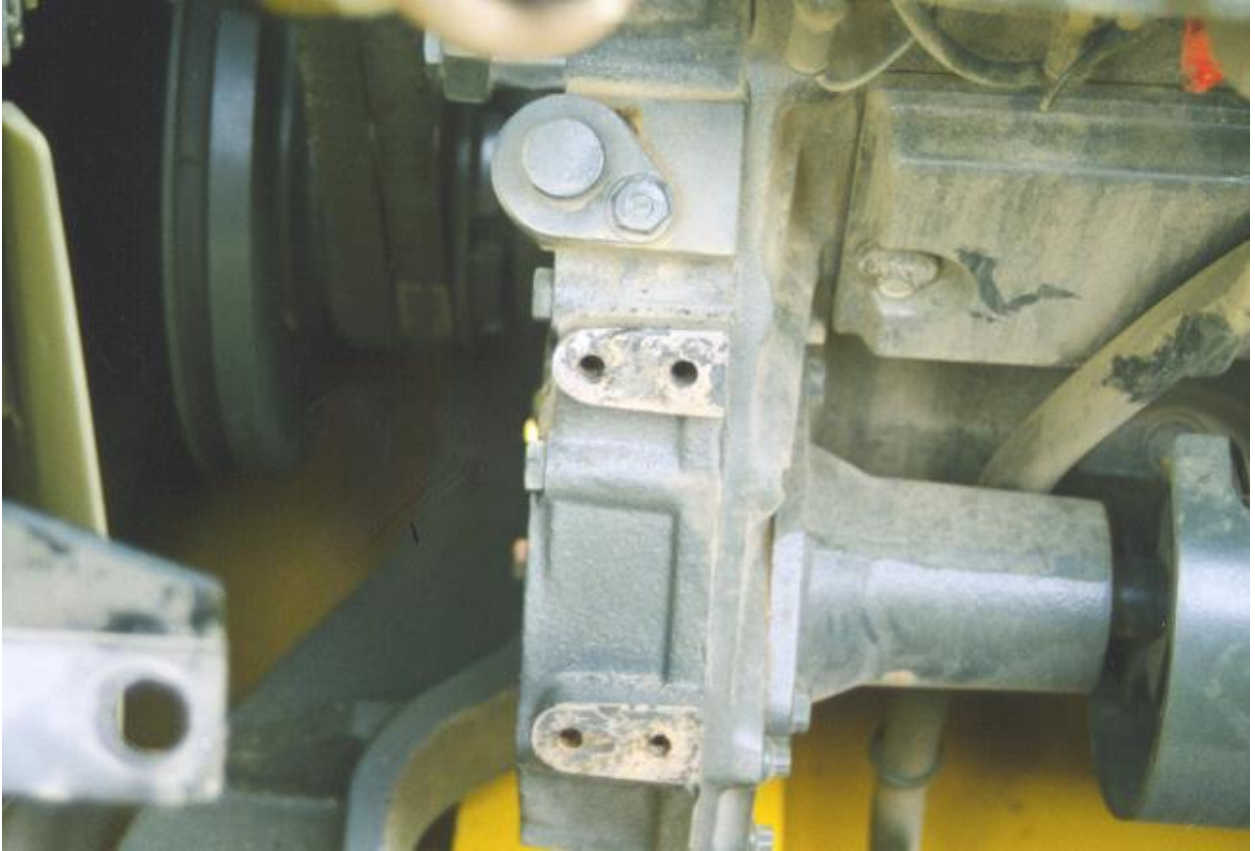
COMPRESSOR:

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



Location of compressor on engine.

1. The mount is bolted to the four 10mm threaded holes open on the lower left of the engine as shown in the pictures.
2. The compressor is driven off the open ½" pulley groove on the crankshaft assembly of the engine. Use an AM-51 belt for this application and tighten the compressor in place. It is important to ensure the oil fill port is oriented 'up'.



Close-up view of mounting area.

CONDENSER MOUNTING:

The condenser is configured for mounting in front of the radiator.

1. Open the access panel to the radiator face and remove any screens in front of the radiator.
2. The condenser mounts are bolted to the frame in front of the radiator and to the floor of the compartment in front of the radiator.
3. Set the condenser assembly (with attached brackets) in place as shown in the pictures and mark the location of the holes for the mounting hardware. Drill the holes out for 3/8" hardware (we recommend using 7/16" or larger holes) and mount the condenser as shown with the hardware supplied in the kit.
4. Make sure the radiator screen (if present) has clearance to slide out for servicing.



Condenser and brackets mounted in location.



Mounting arrangement for lower part of brackets.

Receiver Drier:

The receiver drier is mounted to a bolt point on the radiator access door frame immediately in front of the condenser assembly.

1. Mount the straight drier bracket to the existing bolt on the door frame in front of the condenser assembly (see picture).
2. Mount the drier to the bracket with the two #48 gear clamps provided. The 'INLET' fitting should be pointed to the left as viewed from the access door.
3. Connect the short 5/16" hose with the two 90° fittings to the condenser and to the drier as shown in the picture.



Drier in location with hose from condenser and other hoses in view.

HOSE RUNS:

5/16" Hose Drier to Evaporator:

The 5/16" hose runs from the drier, back into the engine compartment with the 13/32" discharge line. The hose is then run to the evaporator with the 5/8" suction line, under the cab of the excavator and up through the large grommet in the floor to connect to the inlet fitting on the expansion valve. The 90o fitting is connected at the drier and the 45o fitting is for connection at the expansion valve.

13/32" Hose Compressor to Condenser:

The 13/32" hose is run from the compressor to the condenser out of the engine compartment alongside the radiator and out to the condenser. The compressor fitting is already crimped in place on the hose and has the integral charging port. Connect the discharge side rotolock fitting making sure the white nylon seal is properly in place. The binary switch will be on this fitting. Connect the pre-crimped hose end fitting to the rotolock and run out to the condenser. Connect the 90o fitting to the upper fitting on the condenser.

5/8" Hose Compressor to Evaporator

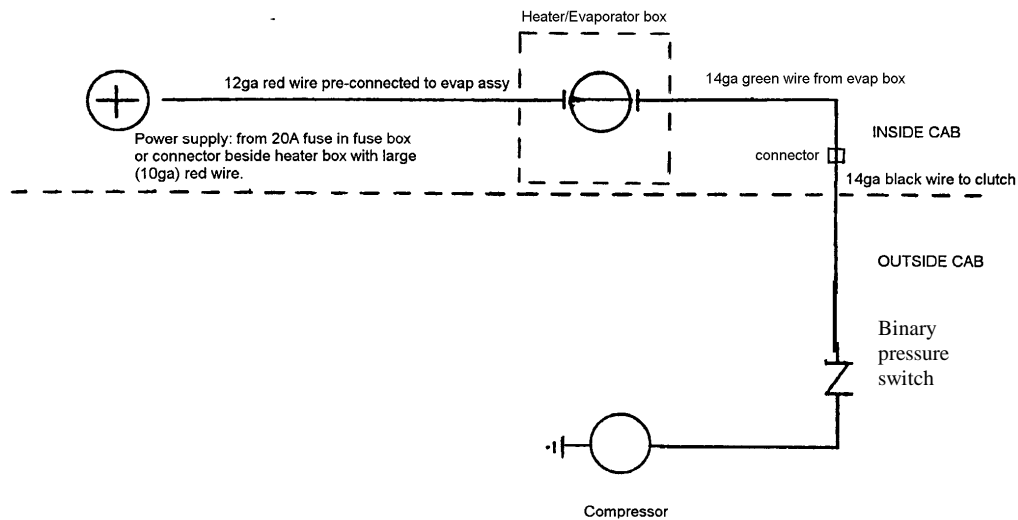
The 5/8" hose runs from the compressor to the evaporator through the engine compartment, under the cab and up to the evaporator fitting through the large floor grommet.

Connect the rotolock fitting on the suction side of the compressor. This fitting will have the 134a charging port on it instead of a 1/4" access port. The fitting at the compressor end of the hose has already been crimped in place. Connect to the rotolock fitting at the compressor and run out under the cab and up to the suction fitting of the evaporator. Connect the 90o fitting to the evaporator coil suction fitting.

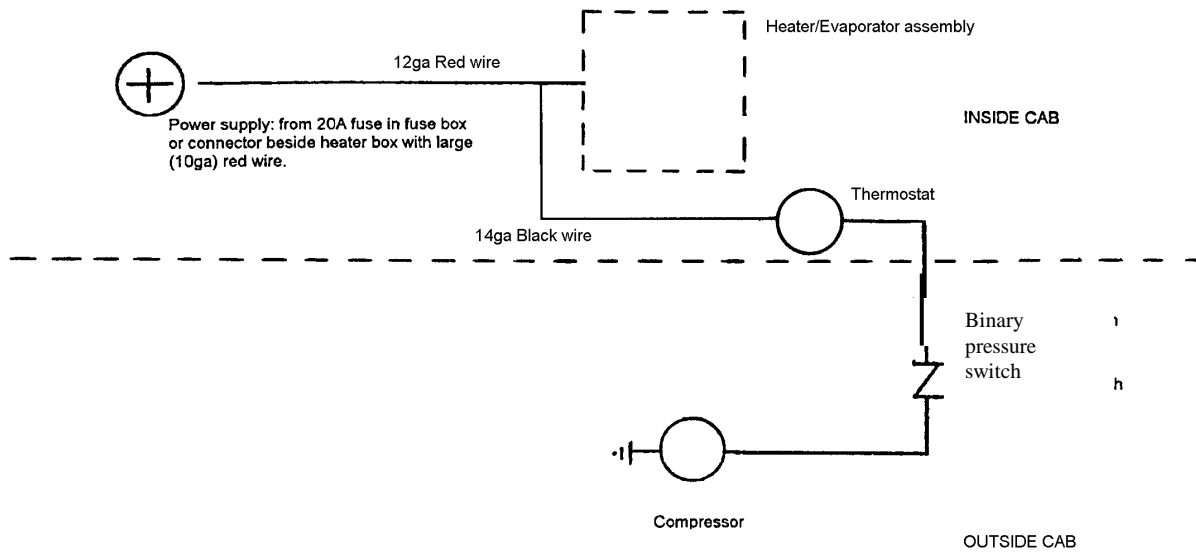
Hose-wrap exposed sections and any places the hoses may rub. Secure using cable ties and clamps where necessary. Use refrigerant oil on the O-rings at the sealing surfaces to ensure a proper seal.

WIRING:

Wiring for the PC400 LC-6 Excavators is set up in one of two configurations. The first is with an integrated thermistor type thermostat which can be determined by the A/C 'snowflake' on the control panel. The other has a controllable thermostat mounted on or under the rear cowling near the control panel. In both cases the only wiring required to the heat/cool box is to connect the 12ga red wire (with a connector already on it) to the power supply. With the integrated thermistor assembly there is a green wire running from the box with a connector already on it. This is connected to the 14ga black clutch wire running out of the cab. For the thermostat type arrangement the 12ga red power wire is hooked up the same except that a 14ga black wire is tied in with the connection at the supply wire and runs to the thermostat. From the thermostat another 14ga black wire runs out of the cab to the compressor.

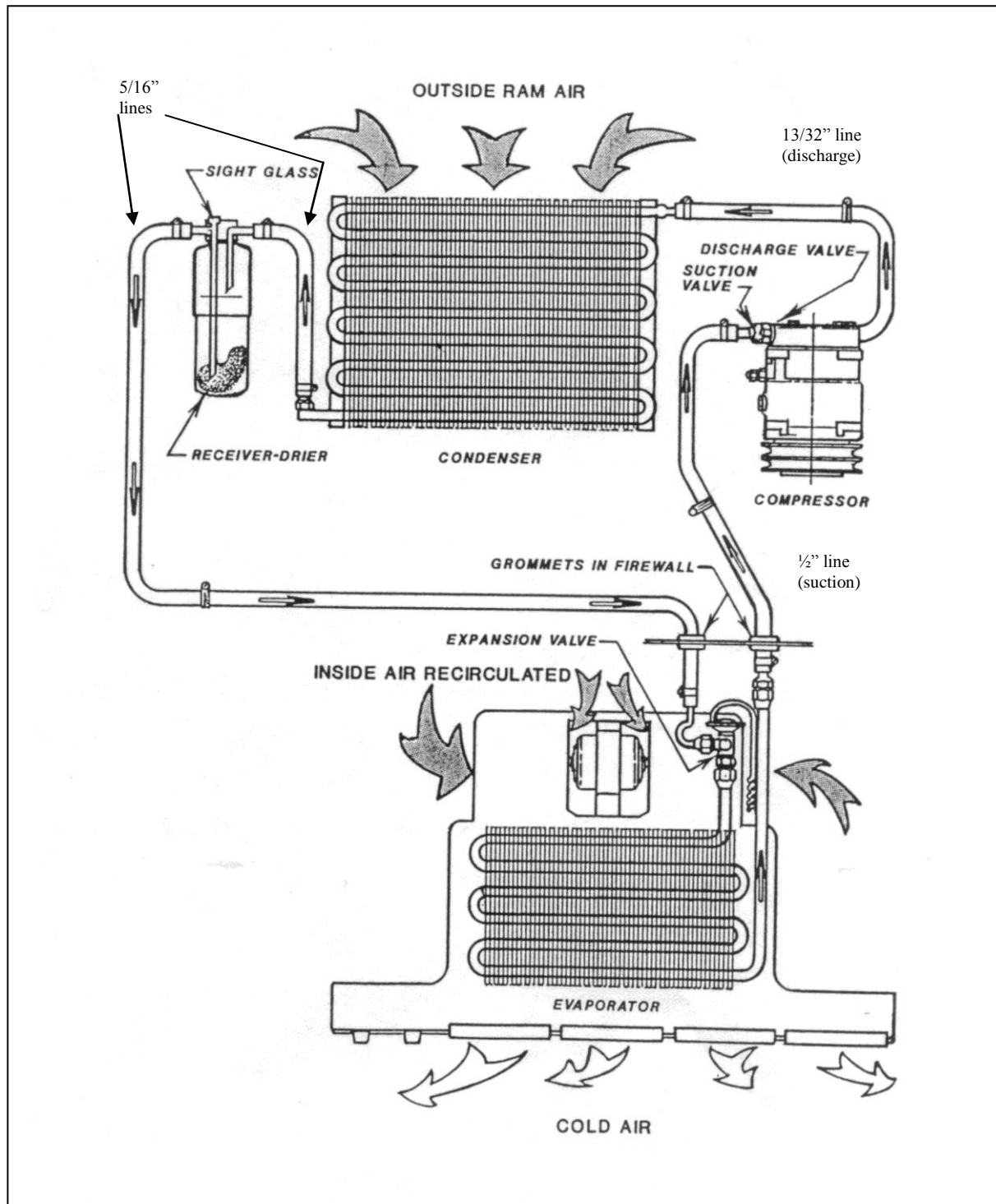


Integrated thermistor arrangement.



Adjustable thermostat arrangement.

Refrigerant Flow Pattern in a Standard Air Conditioning System



- 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.

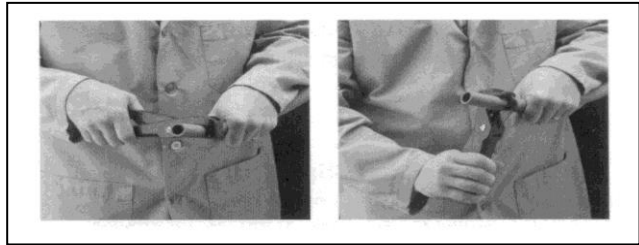
By looking at all these different factors, the area of an evaporator coil most likely to be the coldest can be determined.

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.

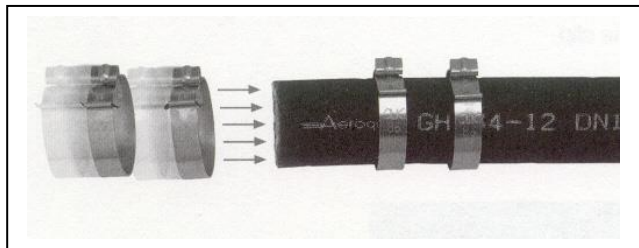
If the thermostat doesn't cycle off after a reasonable cool down period, and the air outlet temperature has dropped below 40° F, the cut in and cut out settings should be adjusted until the compressor is cycling on and off regularly. Let the system run for a decent time period (at least 15 min) and then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

Aeroquip E-Z Clip Assembly Instructions

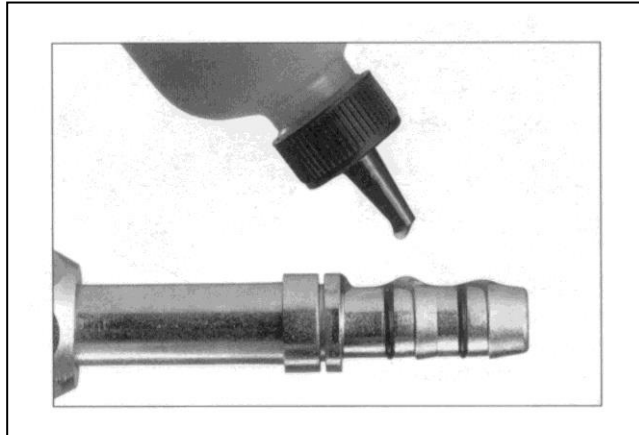
Step 1. Cut the hose to proper length with an appropriate cutting tool. Aeroquip's hand held hose cutter has been specially designed for cutting all non-wire reinforced hose, such as GH-134 Multi-Refrigerant hose. Be sure the cut is made square to the hose length.



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.



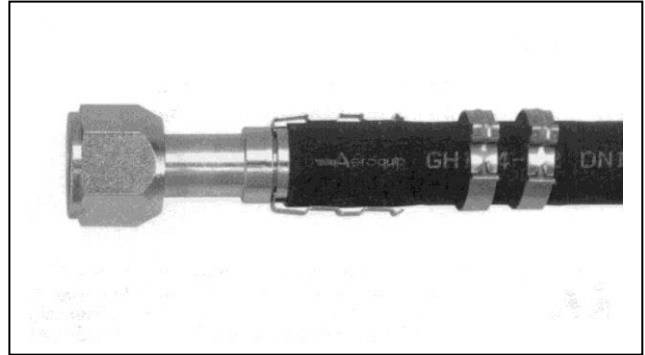
Step 4. Insert the nipple into the hose. To ensure that the nipple is fully inserted, check the gap between the cut end of the hose and the shoulder on the nipple. Care should be taken to avoid kinking or other damage to the hose during nipple insertion.

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.

