

KOMATSU  
WB146 BACKHOE LOADER



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## EVAPORATOR



Unbolt and lift up right hand control console to access the heater/evaporator area



Remove all fasteners necessary to allow console to be moved.



Cut the top off this 2 ½” hose adapter so an extra louver can be attached by a 2 ½” flex hose.

Holes in floor for AC lines

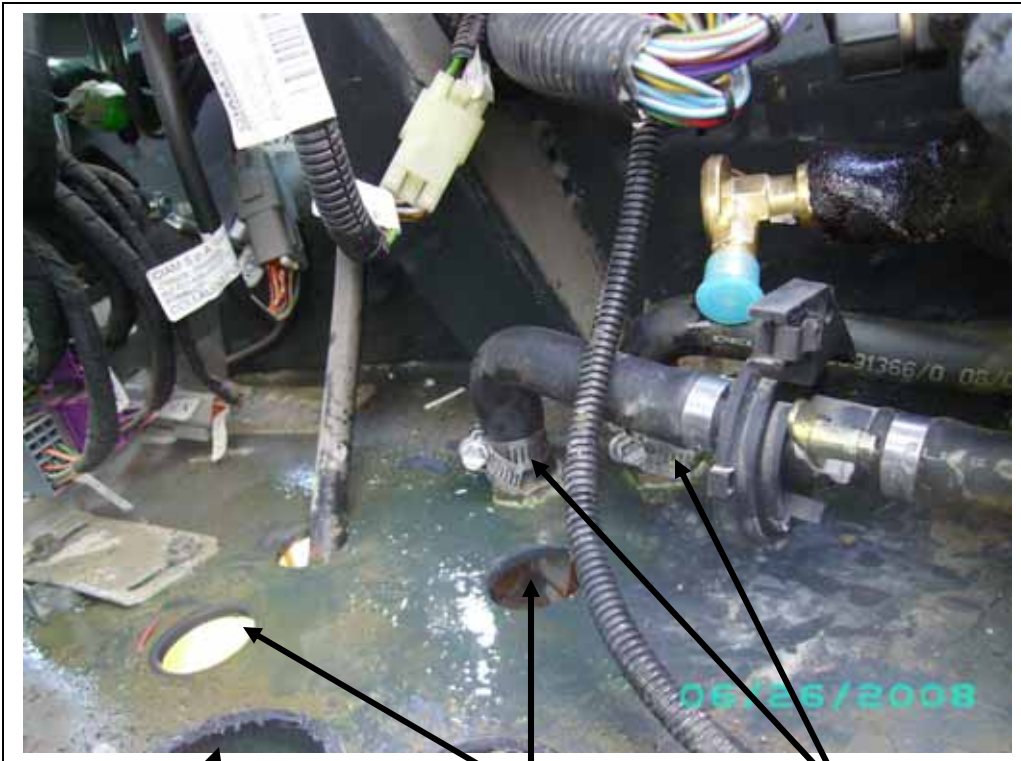


Thermostat

Expansion valve

Heater evaporator box ready for installation.





Top cut off 2 1/2" hose adapter.

Plugs removed from floor.

Heater lines reconnected with evap box in place.



5/16" 90° fitting at expansion valve.

A/C lines connected at expansion valve and evaporator outlet

1/2" straight fitting at evaporator



Inside air intake filter installed in plastic air intake box.



Use 2 1/2" foam tape to restrict at least 50% of the outside air intake hole behind the filter.



New 2 ½" flex duct installed using a #40 gear clamp.

Original 2" flex duct re-installed.



2 ½" flex duct

Drill a 2 ½" hole in the plastic interment box as shown





2 1/2" flex duct

Right hand cab post



Squeeze 2 1/2" flex duct into the bottom of the square plastic duct provided.



Square duct in place over top of the 2 1/2" flex duct.



Use the self drilling screws provided to secure the extra duct to the cab post. The screws are installed behind the rectangular louver.





Rectangular louver installed once the square duct is secured.

## CONDENSER



Remove front intake screen and horn



Pre-assemble lower condenser frame mount brackets as shown. Bracket on right side of machine is notched out to fit around the radiator drain cock.



Install lower clamping bracket as shown. (right bracket)



Left condenser bracket bolted to clamping bracket.

Left lower clamping bracket





Left condenser bracket

Left condenser bracket secured to existing bracket using M8 bolt provided.



Right condenser bracket

Horn reinstated over right condenser bracket.



1/4" bolts in threaded holes on condenser bracket.

Condenser



1/4" hole on lower end of condenser bracket.



## RECIVER DRIER

Bolt straight drier bracket to existing M8 hole on the right side air intake screen.



5/16" hose from  
condenser

Clamp drier to bracket  
using the #48 gear  
clamps provided.

5/16" hose to  
evaporator



## COMPRESSOR



The compressor installs on the left side of the engine directly under the air cleaner.



Remove the fan screen

Unbolt the existing air cleaner and exhaust support brackets from these bolts.



Install the 17440 belt provided in the kit.



Compressor mount bracket

Air cleaner bracket

Exhaust support  
bracket

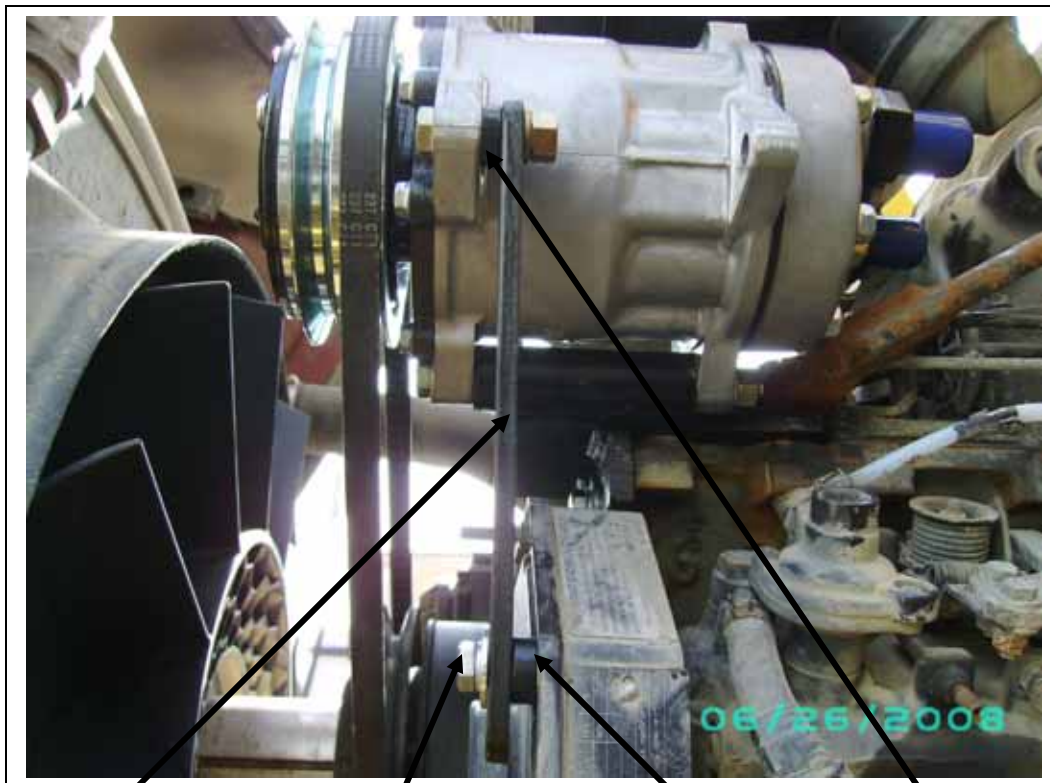
Slide the compressor bracket under existing brackets and bolt in place using longer bolts provided.





Front fourth bolt on  
compressor mount bracket

Remove this stud to make room for  
compressor tightener bracket.



Tightener bracket

M8 bolt and large OD  
flatwasher.

1/2" spacer

1/4" spacer





Horizontal O-ring pad fitting c/w binary pressure switch installed on back of compressor.

Wire to compressor clutch.

Fender washer spacers MAY have to be placed under the air cleaner to achieve compressor clearance.



Overall view of the mounted compressor before re-installation of the fan screen.



Fan screen

Position the screen into place and mark the area to be removed to make space for the compressor and belt.



Fan screen notched out and bolted back in its original position.



## HOSE RUNS



13/32" 90° female fitting on discharge side of compressor.

Clutch wire from thermostat to the binary switch

1/2" straight female fitting with 134A access port on suction side of the compressor.



1/2" hose and clutch wire





13/32" hose from compressor to condense crossing the top of the engine. Keep tied away from hot exhaust and turbo areas.



13/32" hose following heater lines down the right side of the engine and forward under the radiator to the condenser area.



5/16" 90° female fitting at the top of the condenser.

13/32" straight female fitting with 134A access port at the top of the condenser.



5/16" 90° female fitting at drier inlet from condenser.

5/16" 90° female fitting on the drier outlet running under the radiator and back along the side of the frame to the evaporator.





5/16" hose just behind the radiator.



5/16" hose running along the right frame back towards the evaporator.





5/16" line heading up towards the evaporator under the cab.



1/2" line and clutch wire running down beside the engine, on the left, and back towards the evaporator.



1/2" hose and clutch wire running under the rear engine mount on left side.



1/2" line and clutch wire running up under the cab towards the cab towards the evaporator.





1/2" line and clutch wire under floor.

5/16" line under cab floor.



Top cut off 2 1/2" hose adaptor for flex duct to extra louver in cab.

Hoses and clutch wire up through existing holes in floor.

5/16" 90° female fitting at expansion valve.

1/2" straight fitting at evaporator.





Add the supplied heater line shut off tap in-line near the alternator.

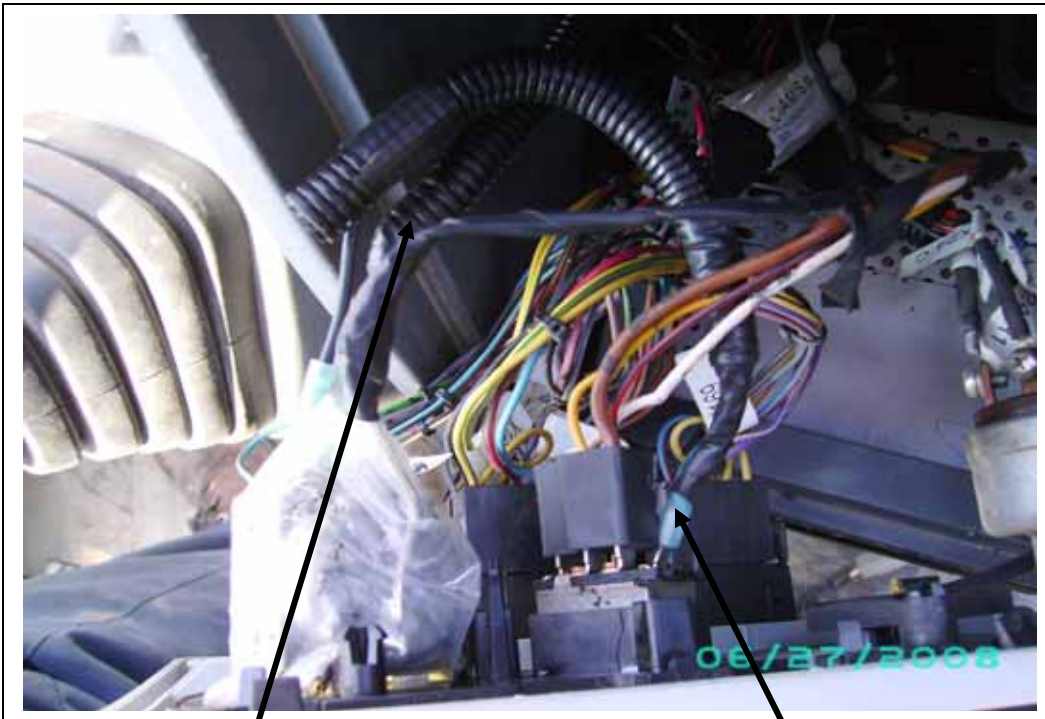
## ELECTRICAL



Thermostat- Drill out the top hole in the climate control panel to at least 7/16" to install the rotary thermostat.



Disconnect the blower switch plug and cut off the plastic from around the empty clutch wire terminal hole as shown.



Clutch wire out to compressor with 1/2" hose

Short wire from clutch terminal on the blower switch to the thermostat.



Thermostat in place with switch console reinstalled.

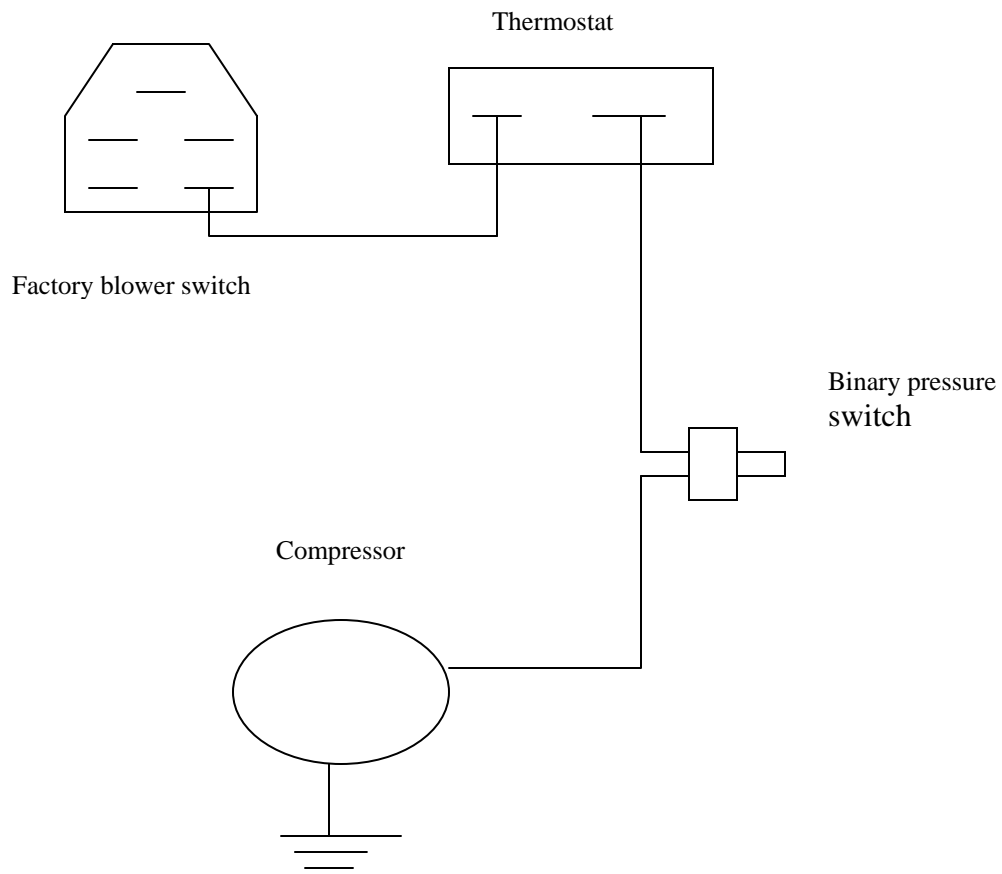
Inside air filter can be accessed through this storage compartment by pulling out the inside tray.





Clutch wire connected to the binary switch at the compressor.

WB 146 Komatsu Backhoe Wiring

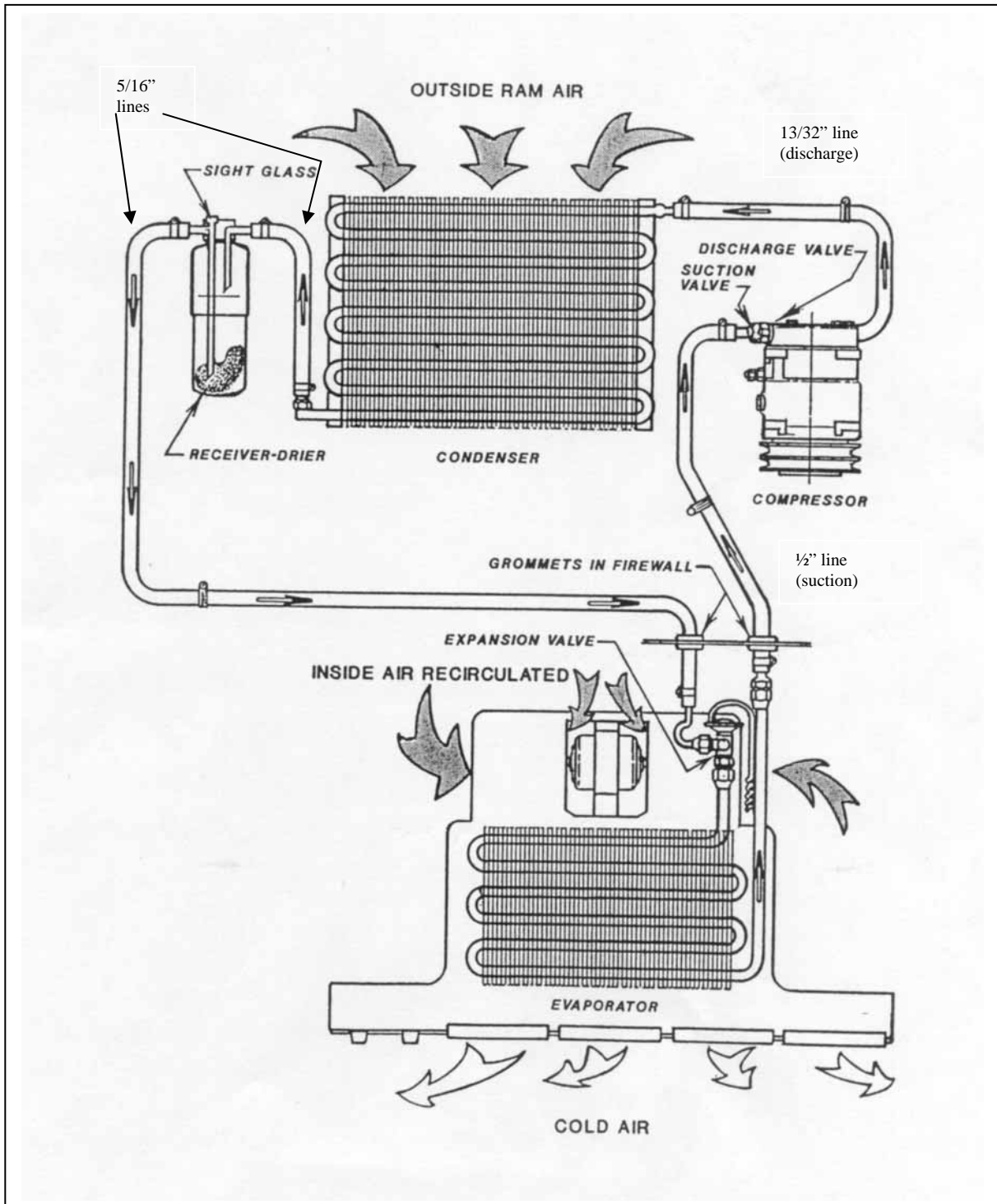


## **CHARGING AND TESTING**

- 1) Pressure test the system using nitrogen to a pressure of 250 psi. Check for leaks.
- 2) Add 2oz of SP20 Sanden PAG oil to the system.
- 3) Vacuum the system for at least ½ hour.
- 4) Check that the vacuum holds.
- 5) Fill the system with 2.75 lbs of R134a refrigerant. **DO NOT USE ANY OTHER TYPE OF REFRIGERANT OR IT WILL VOID THE WARRANTY.**
- 6) Test the system. Check the cycling temperature of the thermostat. Adjust the thermostat settings if required to avoid coil freeze up problems. See the thermostat setting procedures at the end of these instructions.



## 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.

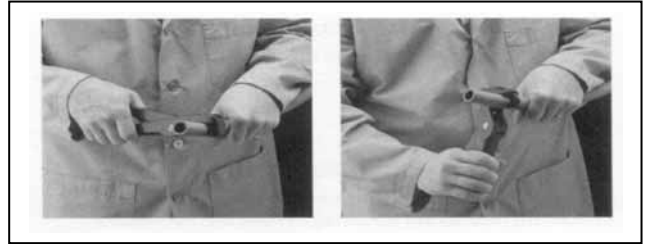
Once the probe is inserted, the A/C system needs to be tested. Run the system to ensure that the thermostat is cycling the compressor off at the appropriate temperature. A core temperature ranging between 25° and 30° F should cause the thermostat to cycle off. The air temperature at the vent outlet closest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

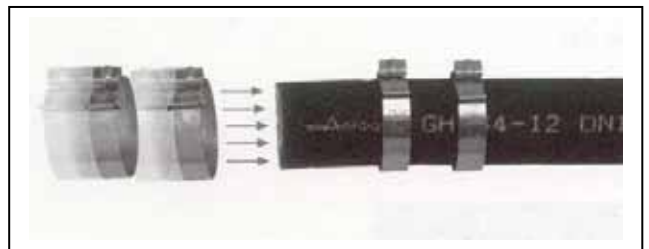


## Aeroquip E-Z Clip Assembly Instructions

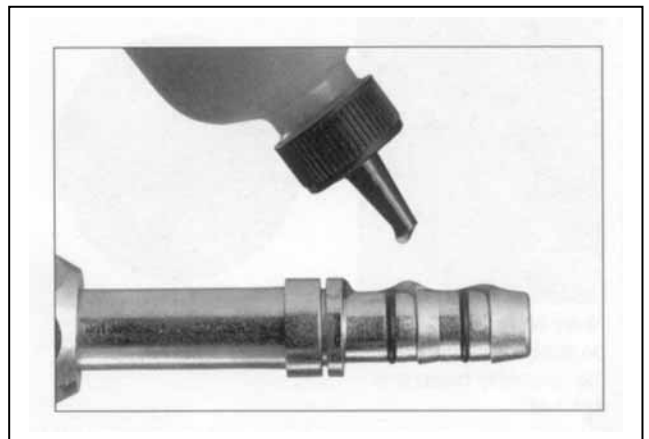
Step 1. Cut the hose to proper length with an appropriate cutting tool. Aeroquip's hand held hose cutter has been specially designed for cutting all non-wire reinforced hose, such as GH-134 Multi-Refrigerant hose. Be sure the cut is made square to the hose length.



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.



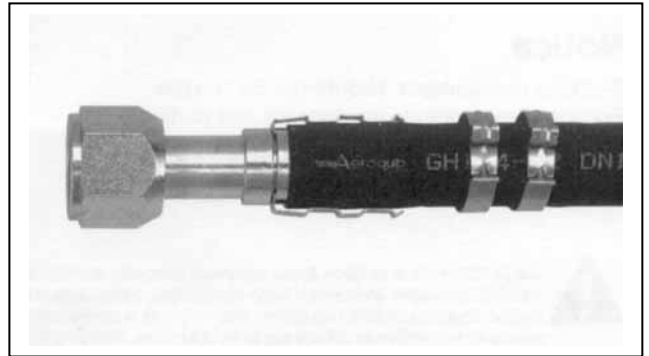
Step 4. Insert the nipple into the hose. To ensure that the nipple is fully inserted, check the gap between the cut end of the hose and the shoulder on the nipple. Care should be taken to avoid kinking or other damage to the hose during nipple insertion.

NOTE: Be sure to wipe excess oil from the nipple and hose.

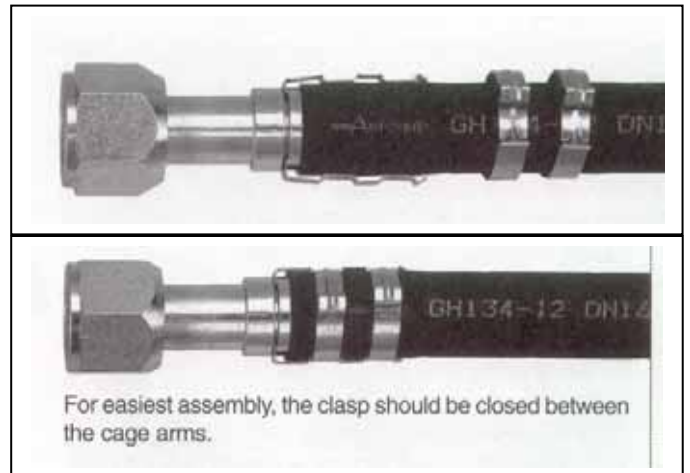


Step 5. Snap the cage into the groove on the nipple. The arms should extend over the hose length. When the cage has been correctly installed in the cage groove, the cage will be able to rotate in the groove. This step **MUST** be performed to ensure:

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.

