CASE SR 160
SKID STEER
AC INSTALLATION INSTRUCTIONS

ARCTIC WOLF ™
BY HAMMOND AIR CONDITIONING LTD.

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EVAPORATOR

The evaporator coil will be installed in the existing heater box. The heater box is located behind the seat.

1. Raise the lift boom to top and secure. Remove two large nuts and washers allowing the cab to tilt open.
2. Open the cab (tilt forward) to disconnect the heater lines from under the cab

Separate the heater lines above the elbows. Lower the cab so inside work can begin.

Move the seat to the most forward position.

Remove the lid from the washer fluid container so the heater cover can be removed.

A simple tool could be made which helps remove the button clips

Removing button clips.

Removing button clips to get access to the heater box.

Remove screw handle so cover can be lifted off

Remove cover and lift over seat to gain access to the heater box.

Remove filter

Remove washer bottle

Try to keep hardware identified.

Disconnect and remove the plastic louver panels. More button clips.

Remove these bolts to disconnect the louver panels from the heater box

1 – Four bolts loosens the heater box from the wall.

3 -Lift and remove heater box and move it to a bench.

2 -Disconnect electrical here

New relay will plug into relay block here.

With the heater box split open, remove the drain area cover to get access to the drain tube holes.


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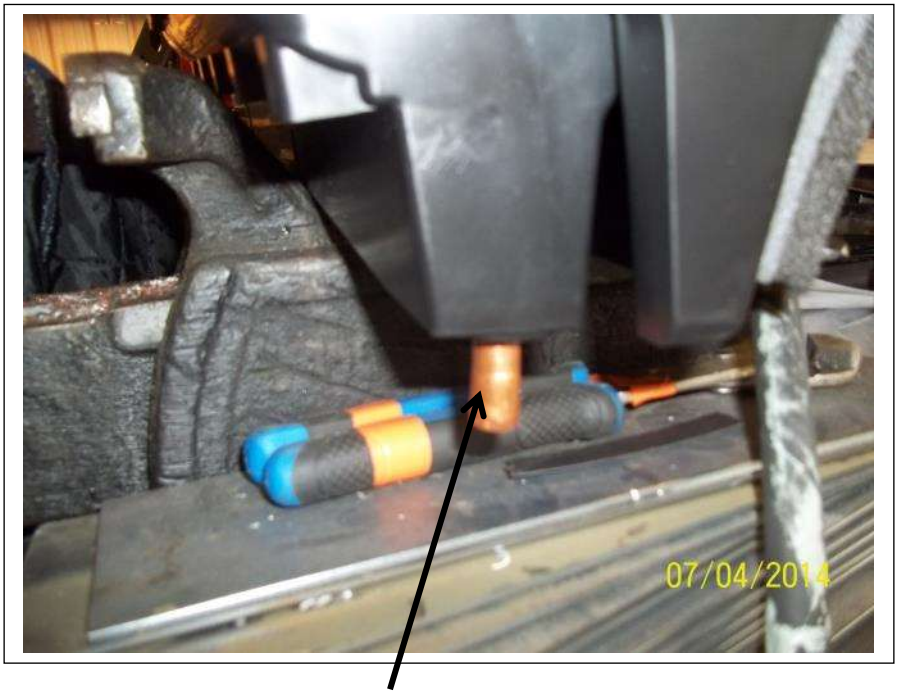
Glue in copper drain tube extensions. 2 required.

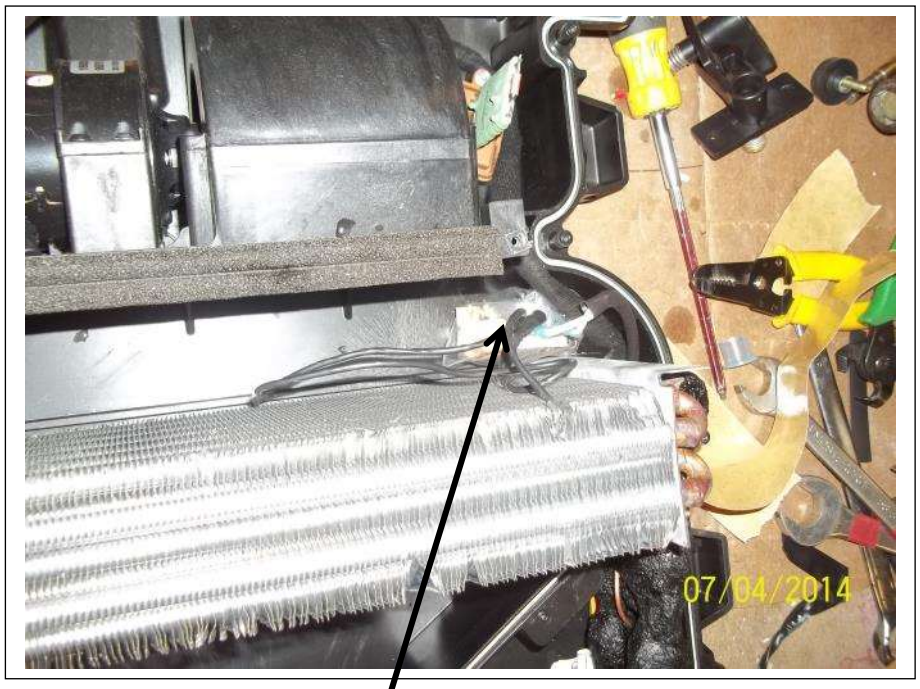


Copper drain tubes protruding from the heater box.

Connect AC lines to evaporator with “O” rings supplied. Lightly oil the “O” rings prior to hose hook up.
Tighten the fittings and tar tap the suction side lines and expansion valve and small lines to coil.

Install the thermostat with small self drilling screws supplied. Connect two wires and lay cable under and out

Insert about 4” of thermostat probe down through coil



Thermostat

Set coil into place and the re-install the lid

Cut off this rubber gasket.

Seal with tar tape here.

Install short drain tubes over copper tubes.(glue on)

When assembled, reinstall into the cab.
Best to lift the cab to feed the hoses through the floor
Don’t forget to install the relay prior to re-installing the blower box cover

Drain tube restrictors glued into the drain tube.

COMPRESSOR MOUNT AND PULLEY

Drain radiator and engine of coolant

Loosen two bolts (one at each side of rad) Allows rad to tilt toward yourself. Detach top and bottom rad hoses

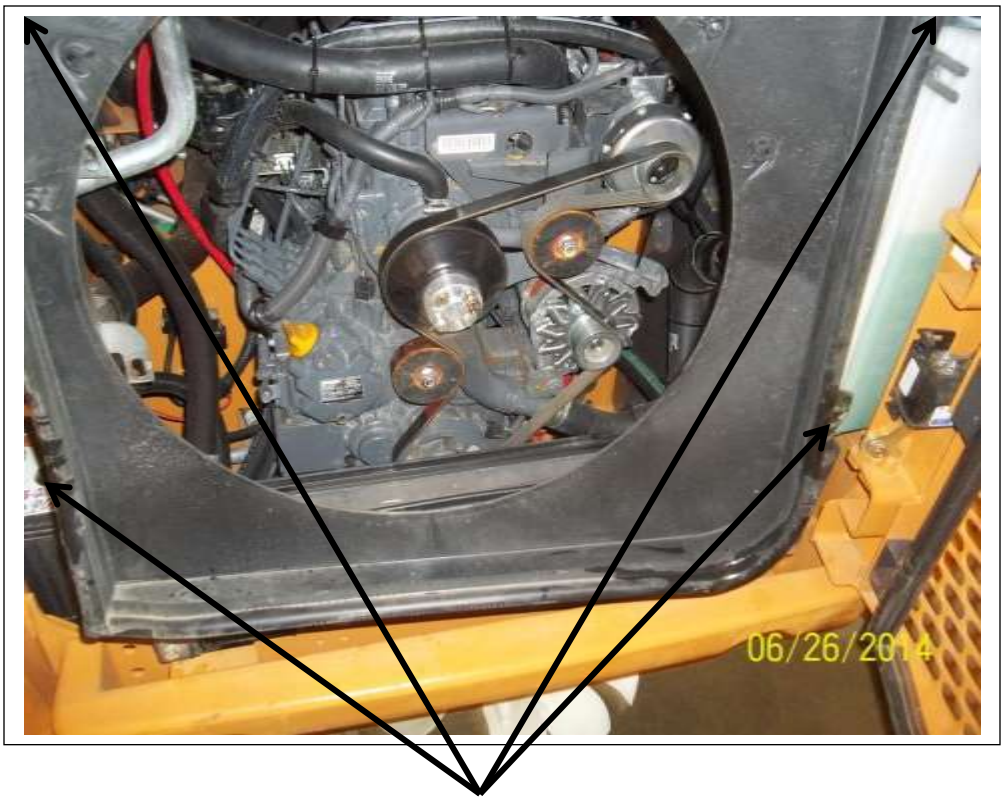
Remove clips and then the pins (one on each side). Tilt rad to remove pins.

Remove the rad exposing the fan. Remove the four bolts holding the fan blade. Remove fan but re0install the bolts to hold the pulley in place.

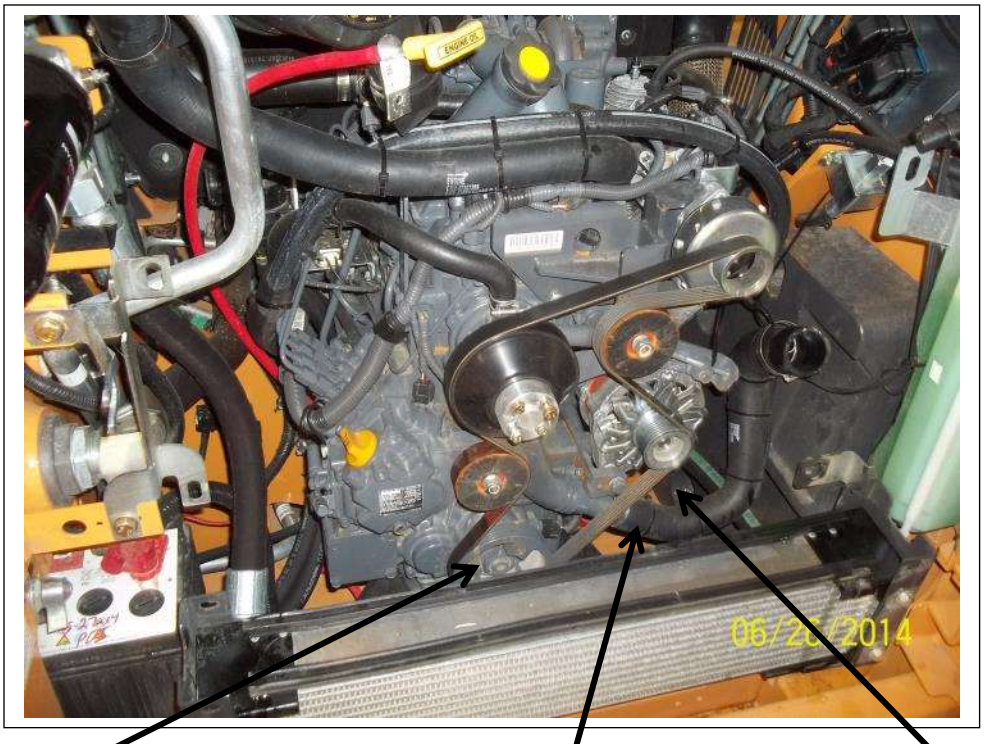
In order to remove the fan shroud , first remove the bolt holding the dip stick tube. Often easiest to save the bolts in the original spot once the dipstick is detached.

Remove fan screen bolts (3).

Cut strap and set hose aside



Remove the four bolts that hold the fan shroud and then remove it.



Add on pulley will mount here (3 bolts)

Loosen lower clamp and remove lower rad hose.

Compressor will mount here.

Pulley install onto the front of the crankshaft as shown. three 12MM bolts provided. Tighten bolts/

Remove and discard the two top bolts from the engine mount on the alternator side of the engine. Picture shows two of the 3 bolts removed from engine mount.

Install compressor mount as shown. New fine thread hardware provided.

New mount bolts onto engine mount bracket. Install and tighten hardware.

Bolt inserts from this side.

Install compressor over mount lug. Install M8 x 90mm bolt and flat washer. Do not tighten bolt excessively yet.

Push this rad hose fitting down slightly

Install the belt and check alignment. Belt should run off the front compressor pulley. If the alignment is good the install the compressor tightener bracket.

New bolt and compressor tightener bracket installed. This bolt has been cut down.

Loosen top alternator tightener and belt prior to removing the lower fastener bolt for the altenator.

New M10 bolt provided with cut down head

Compressor tightener bracket.

One or two 8MM large OD washers may be needed on either side of the adjusted bracket.

Hose adaptor fittings installed. Cap over until needed.

Tighten all belts and compressor but do not reassemble the rad, fan and shroud until all AC hoses have been connected to the compressor.

FAN ASSEMBLY

A small spacer will be added to move the fan slightly closer to the radiator allowing sufficient distance from the pulley for blade flex.

New spacer

This lower rad hose will only be installed over lower tube ½ of the original distance it was. Leaving it slightly longer for clearance around the compressor.

When re-installing the lower rad hose, install NAR sleeve over the area near the compressor prior to installing it.

RECIEVER DRIER

The receiver drier mounts on the right hand side in the transmission area with the cab lifted open. Drill a 5/16" hole in the radius of the plate as shown in the picture.

Installing hardware for drier bracket. The 2nd 8MM nut provided is for the condenser ground wire which will attach to the same bolt so leave it loose for now.

90 ^{o} drier bracket

Receiver drier with trinary pressure switch

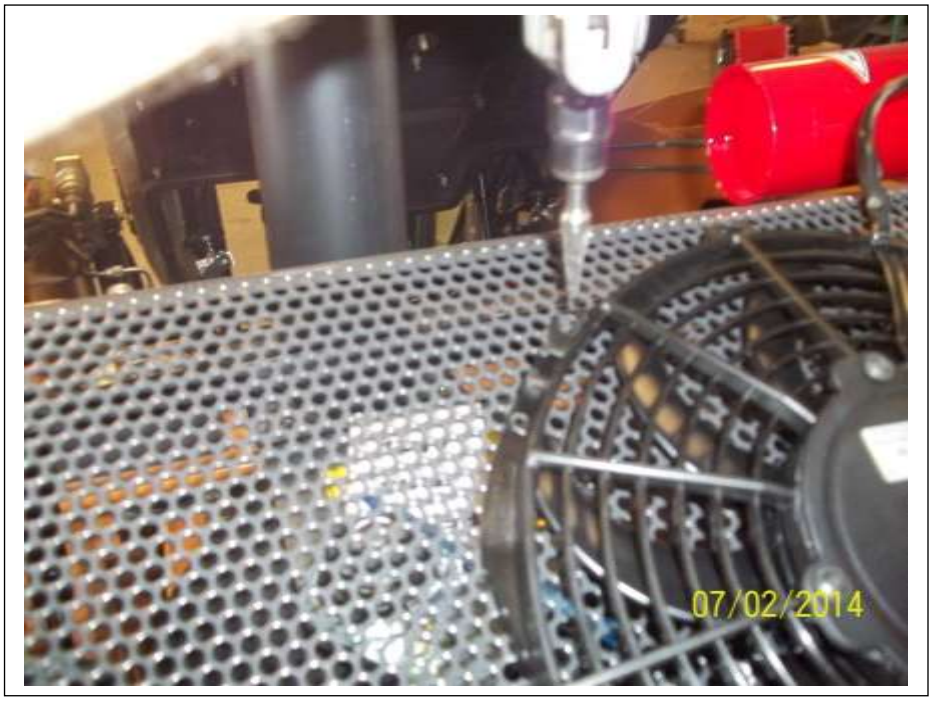
8mm bolt and nut holds 90 ^{o} drier bracket .

Mount the drier bracket with the bolt supplied.
Secure the drier to the bracket with the two # 48 gear clamps supplied.
Tighten clamps.

CONDENSER

The condenser will mount on the underside of this lid and the two 10” fans will mount above.

Set fans side by side centered on the lid as shown.
Insert the bolts up from under the lid. Most will align with existing holes on the lid. (1/4” x ¾” button head bolts)



Some minor die grinding may be required so each fan has four bolts securing it to the lid.

With all bolts through and flat washers and nuts installed, then tighten the bolts.

Next set the condenser up under the lid. Each hole that requires a bolt through it has been drilled on the condenser. Insert the 1/4" x 1 ½" bolts through the condenser flange, then install ¾" spacers and set up through existing holes in the lid directly under the fans.

¾" spacers between the coil flange and the lid. 4 places.

At least a couple of holes should line up and some minor die grinding may be required to align the last one or two.

With all four nuts installed, tighten condenser into place

ELECTRICAL

Most of the harness' are prepared for the installer so electrical becomes comfortable. The fuses already exist in the fuse panel. We will tie into some of the existing electrical

By now you have already installed the relay into the block near the evaporator box hookup.
Also the thermostat wires are now hooked up and ready for connections.
Remove the first small black cover beneath the blower switch and find a black connector with 3 wires. Orange, white and black.

Cut off the black connecting block and strip the ends of the three wires and install the supplied blue female quick disconnects. NOTE: use a good quality crimping tool to ensure no difficulty.

Connect those three connectors to the new AC on/off switch as shown. Black to red of switch (ground)
Orange to solid blue on switch (power in)
White to blue/red wire (power out)

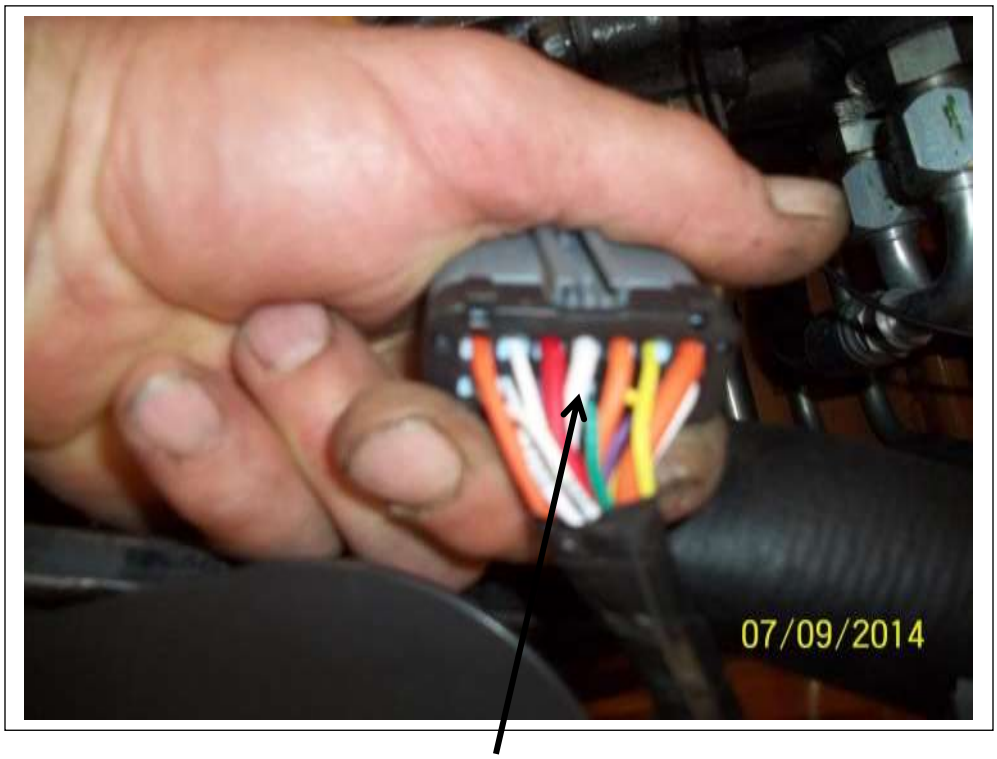
Next drill a hole in the small black knock out block for the AC on/off switch

Tighten up and re-insert into column

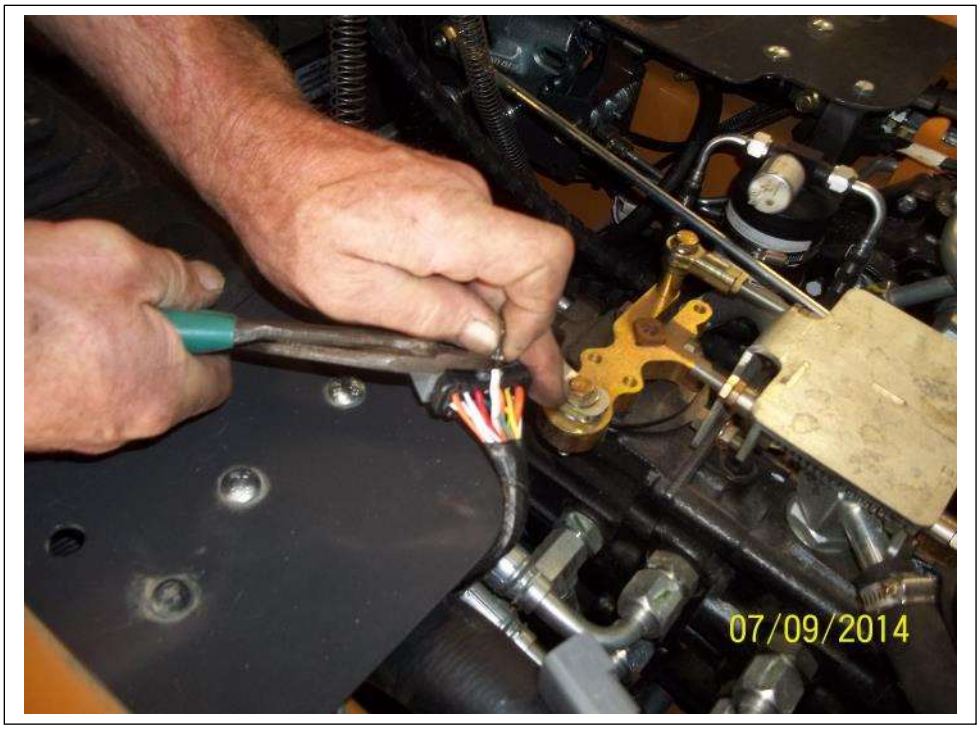
With the cab tilted up again, find a large bundle of wires along the left side with a number of quick disconnects. Identify a larger multi pin grey disconnect and pull it apart from the rest.

A closer look at the grey disconnect which we require to connect to separated from the other disconnects in the same area.

Open the disconnect and hold in your hand the half as shown. Many more wires going into it. Identify the largest white wire located in the middle of the disconnect. (14G white wire # 237a)



This one



Pull that white wire out of the socket or cut it very close to the socket

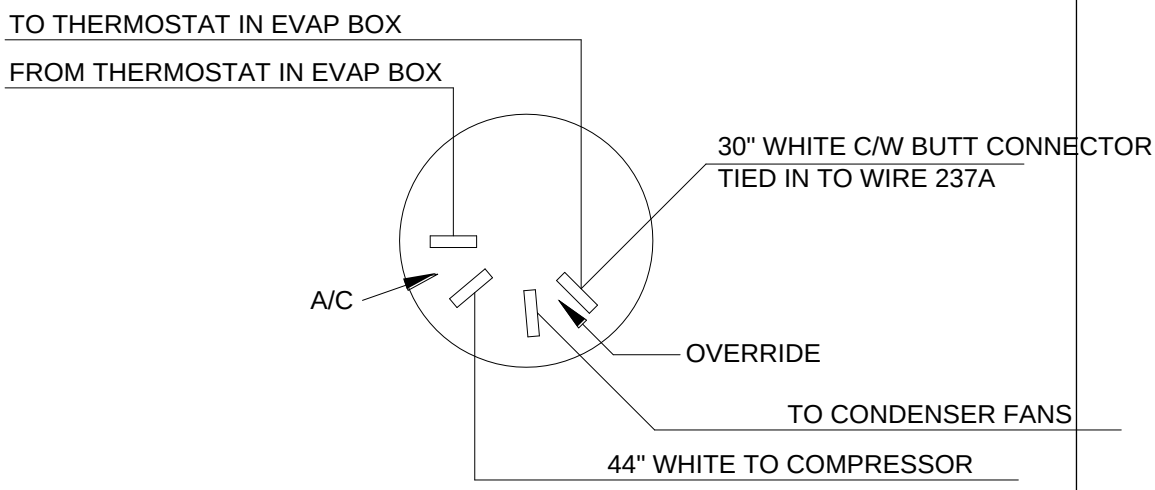
Strip end to make connection

Follow simple wiring diagram to determine which 30” lead connects to # 237A
Shrink wrap fitting after proper crimp

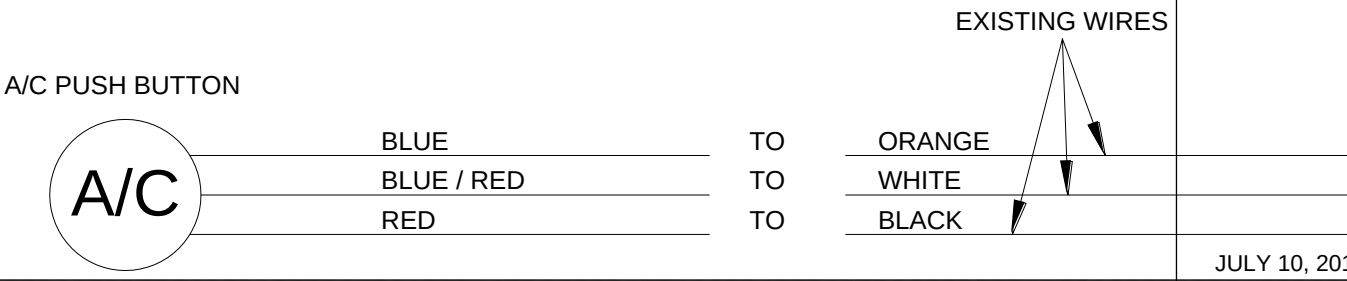
New wire connection secured in place

Picture of the wires at the trinary switch.
FYI The trinary switch allows the condenser fans to run only when pressure builds higher to minimize power requirements.

TRINARY PRESURE SWITCH



A/C ON / OFF SWITCH WIRING



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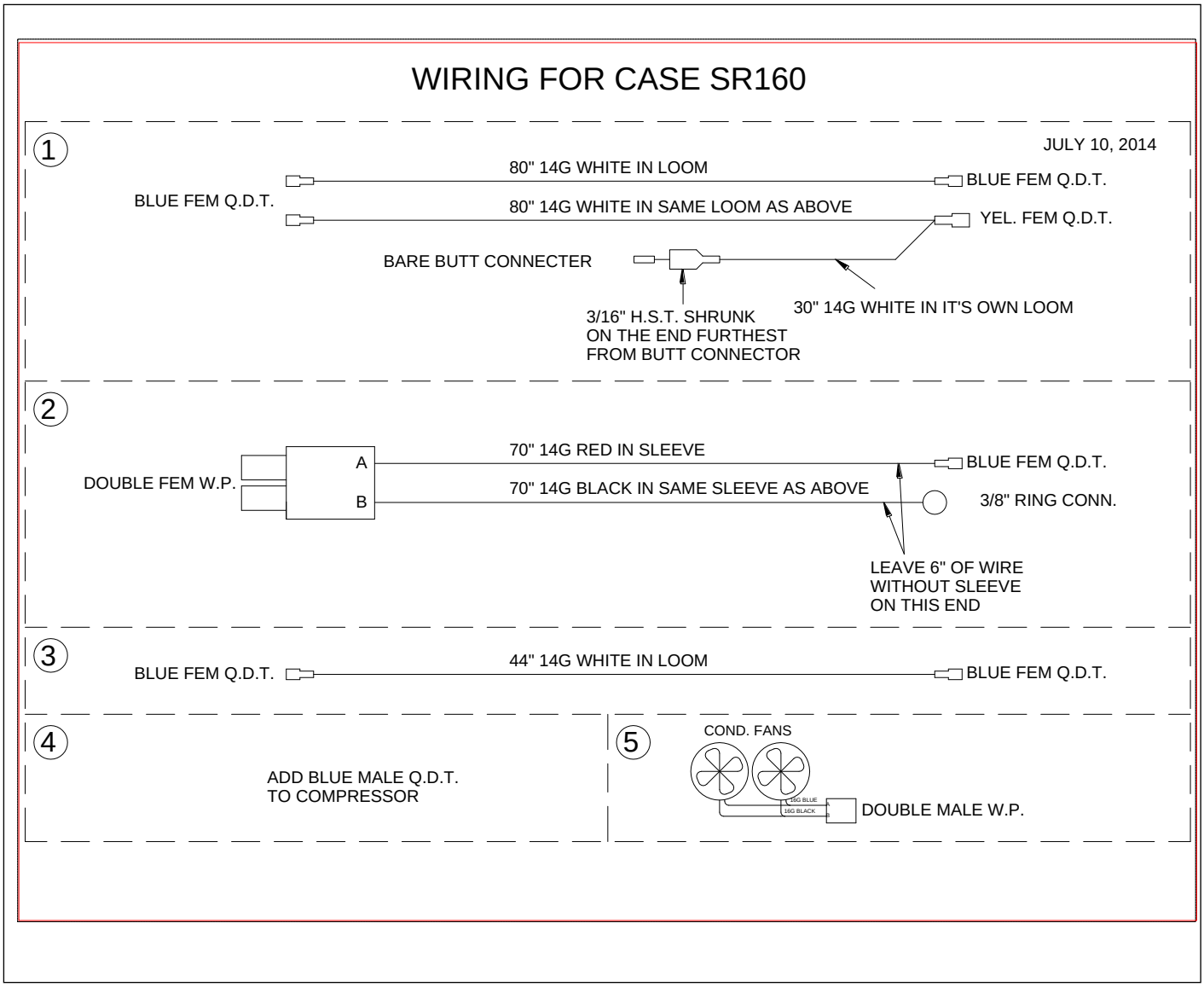
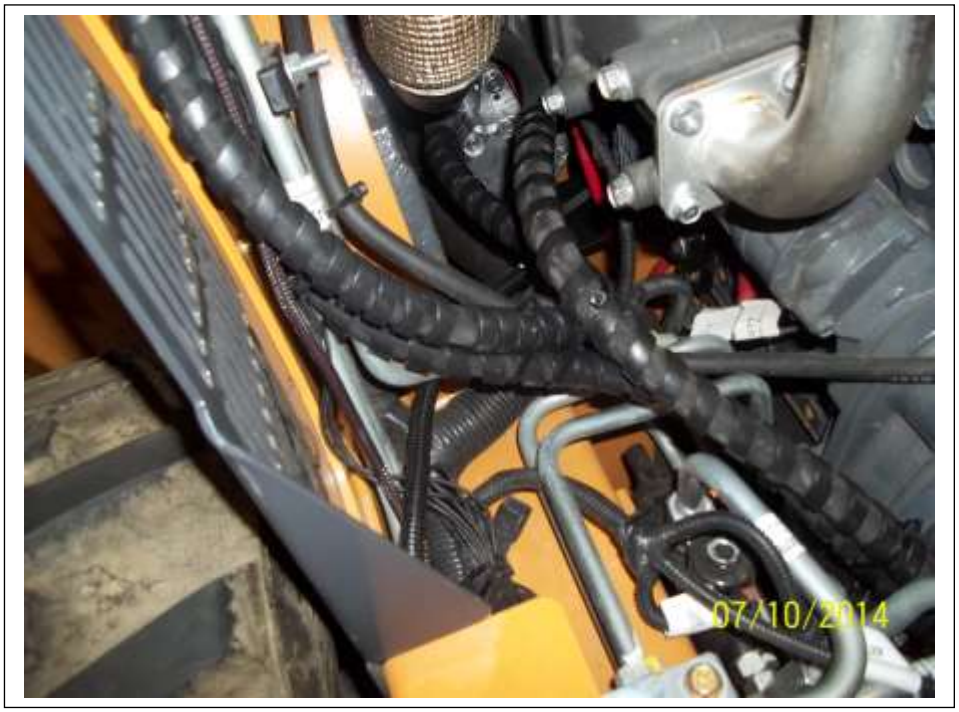
Bring wires from the condenser and wires from the evaporator and wire #237 all to the trinary switch and follow the diagram to see the connection.
The ground wire (black one from the condenser fans) can be connected to the bolt used to fasten the drier bracket. An extra nut was included just for that purpose.
Once all the hoses are run and fastened, cable tie the electrical wires neatly along with them.



HOSE RUNS

Hose connected at the compressor
Picture show gauges connected to the access ports



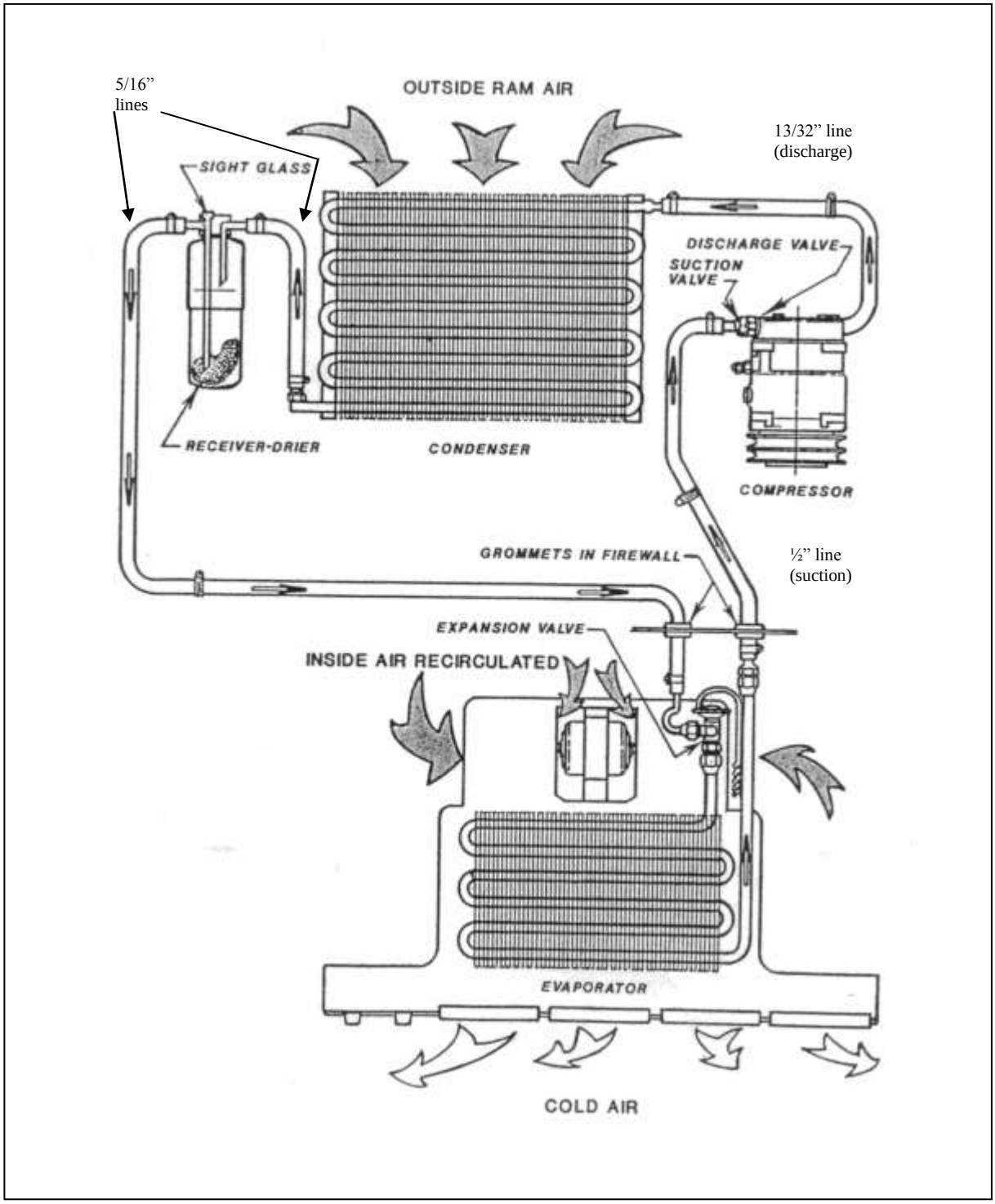
See how the hoses are tied away from very hot surfaces and secured to minimize rubbing through.

A/C lines fastened along with the heater hoses.
Allow sufficient slack (similar to the heater hoses) to be able to open and closed the cab

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 1.75lbs 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.

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.

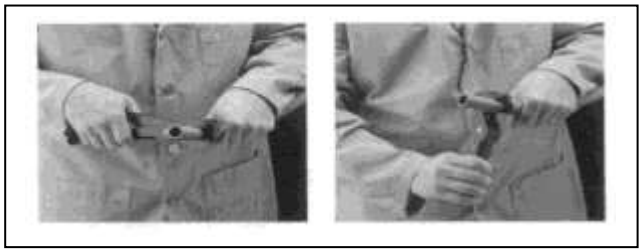
Once the probe is inserted, the A/C system needs to be tested. Run the system to ensure that the thermostat is cycling the compressor off at the appropriate temperature. A core temperature

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.

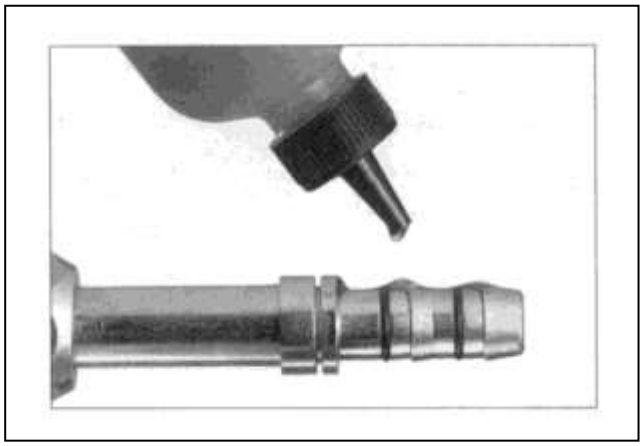
Aeroquip E-Z Clip
Assembly Instructions

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.