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ENGLISH

# **REMOTE AUXILIARY AIR CONDITIONING AND AIR DISTRIBUTION SYSTEMS FOR VOLVO L-5 CHASSIS**

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## **INSTALLATION GUIDELINES**

For Volvo Truck Models VN 770, 780, 830, 880

Dometic Environmental Corporation

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## **DOMETIC TRUCK REMOTE AUXILIARY AC SYSTEMS FOR VOLVO L-5 CHASSIS**

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## INTRODUCTION

The instructions that follow represent years of development of parts and procedures that make the system perform well and appear “factory-installed.”



*Figure 1. Typical Control Installation*

## INSTALLING THE CONTROL

Mount the control in a place that provides the driver convenient access. An ideal location would be near the current HVAC controls.

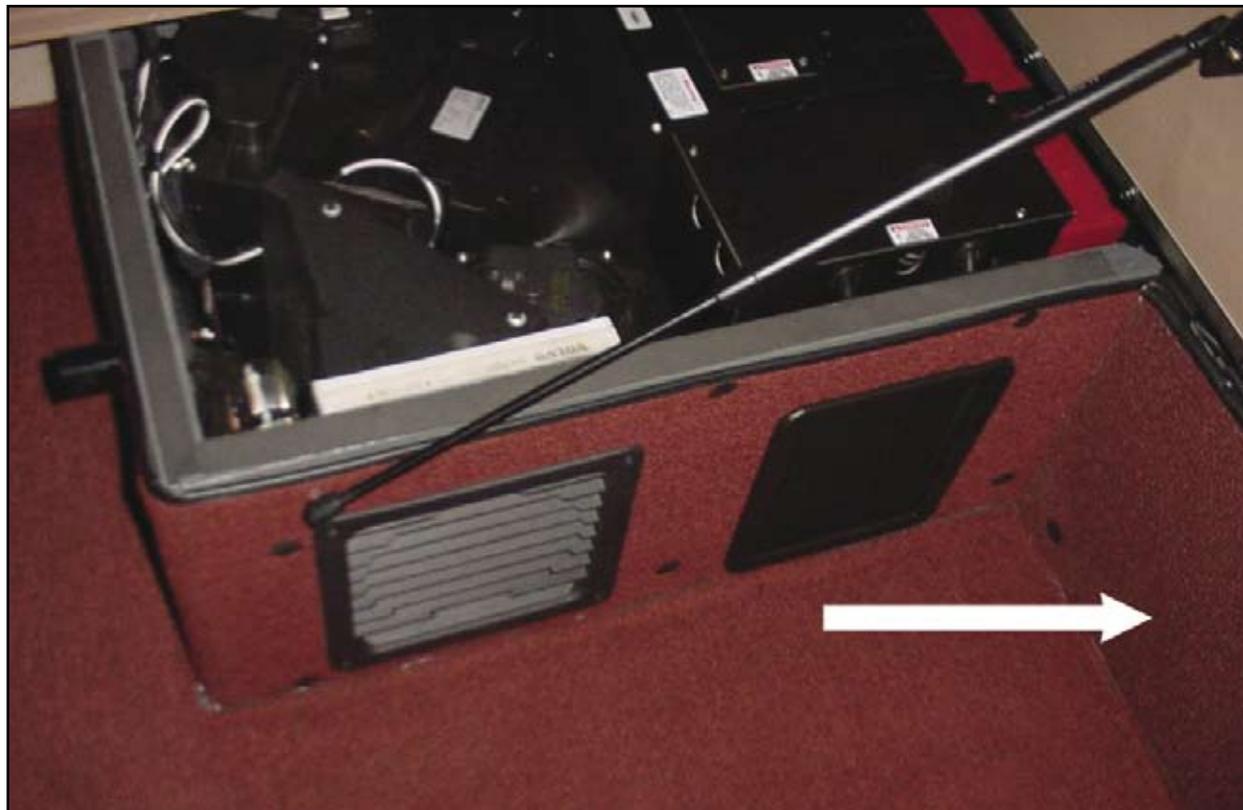
### Required Tools

- Drill motor
- Hole saws: 1-5/8", 1-7/8", 2-1/2", 3.5" (for 10K unit) and 4"
- Drill bits: 1/8", 5/32", 9/32"
- Nut drivers: 1/4", 3/8", 15/16"
- Phillips head screwdriver
- Open-end wrenches: (2) 7/16", (1 each) 5/16", 13/16" & 3/4"
- Torque wrench may be also be required

## Installing the Qt Digital Display

Refer to the mounting instructions and template provided with your kit.

- Route the CXP cable through the wall and into the luggage compartment. Remove the factory HVAC control panel to do this.
- Route the CXP cable to the rear of the bunk for later connection.



*Figure 2. Mounting location for Power Logic Box*

### **Mounting the Power Logic Box**

The Power Logic Box (PLB) will be mounted under the rear, center portion of the bunk (see Figure 2). To accomplish this, first remove the carpeted panel at the rear of the bunk. It is held in place by "Christmas trees" at each corner.

Remove the backing plate from the PLB, by removing the four machine screws at the bottom (see Figure 3).

Place the backing plate on the front of the bunk center area, off center toward the passenger side. Locate the two weldnuts, and place the backing plate between them. Mark the four mounting holes, and remove the plate.

Drill four diameter 7/32" holes. Use four #10 machine screws to mount the box. The easiest way to do this is to put the machine screws through the holes, and secure with a nut. Replace the mounting plate onto the PLB. Slide the PLB behind the bunk, and push



**Figure 3. Fastener location on Power Logic Box**

onto the machine screws. Secure the box with four nuts and lockwashers. KEPS nuts are easiest to use.

### **Routing Cables**

The box has several different types of cables:

- Wires enclosed in split loom
- Flexible power cables
- “Phone” type cables

The “wires in split loom” will go toward the CHEB unit.

The flexible power cord(s) will go toward the power distribution panel.

The phone cable mounted on the CHEB unit plugs into the hole marked “TSEP.”

The phone cable from the control display plugs into the hole marked “Display.”

For easier installation, it is recommended that the cables be placed in the appropriate direction before mounting the box. All cables should be neatly routed and clipped, to prevent chaffing.

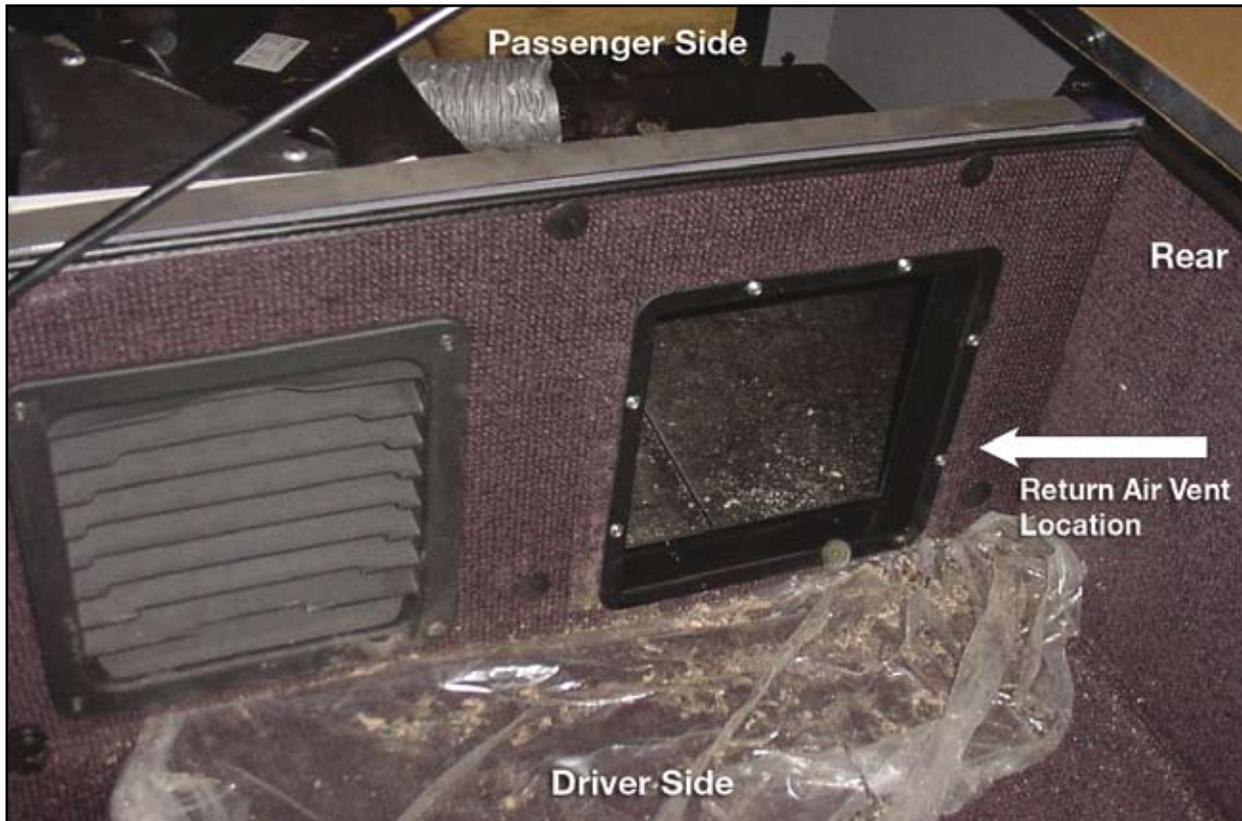


Figure 4. Vent location

## INSTALLING THE RETURN AIR VENT

The supplied return air vent should be installed under the bunk in the side panel, either on the passenger or driver side. The passenger side is recommended as there is less chance that it will get blocked by objects in the luggage compartment, and it will also allow easy access to the refrigerant fitting.

To install, locate the area shown in Figure 4.

The grill should be installed between the panel supports on the backside of the kickpanel. Locate the supports and cut out for the grill. A holesaw and reciprocating saw is recommended to cut out the hole. If your kit contains the 12.5" x 5.5" grills instead of the 10" x 10" grill, use a 4" holesaw to cut at least two holes behind each grill. Use of the reciprocating saw is optional for those grills.

## INSTALLING THE SUPPLY AIR DISTRIBUTION

For this installation, a custom air plenum must be installed, as well as the Volvo ductwork. A 4" duct will feed the Volvo ductwork, and a 6" (for the 14k system) or 4" (for the 10k system) will feed the custom air plenum.

### Volvo Ductwork

To feed the Volvo ductwork, remove the passenger side window footwell and a section of the duct, as shown in Figure 5 and 6.

The duct is secured from the top by "star" screws. Below the bunk, there is a sensor which must be removed. Access the sensor from the passenger luggage door. Remove the duct from the truck, and cut a 4" hole into it as shown in Figure 7 & 8.



*Figure 5. Location of installed ductwork*



*Figure 6. Footwell removed*

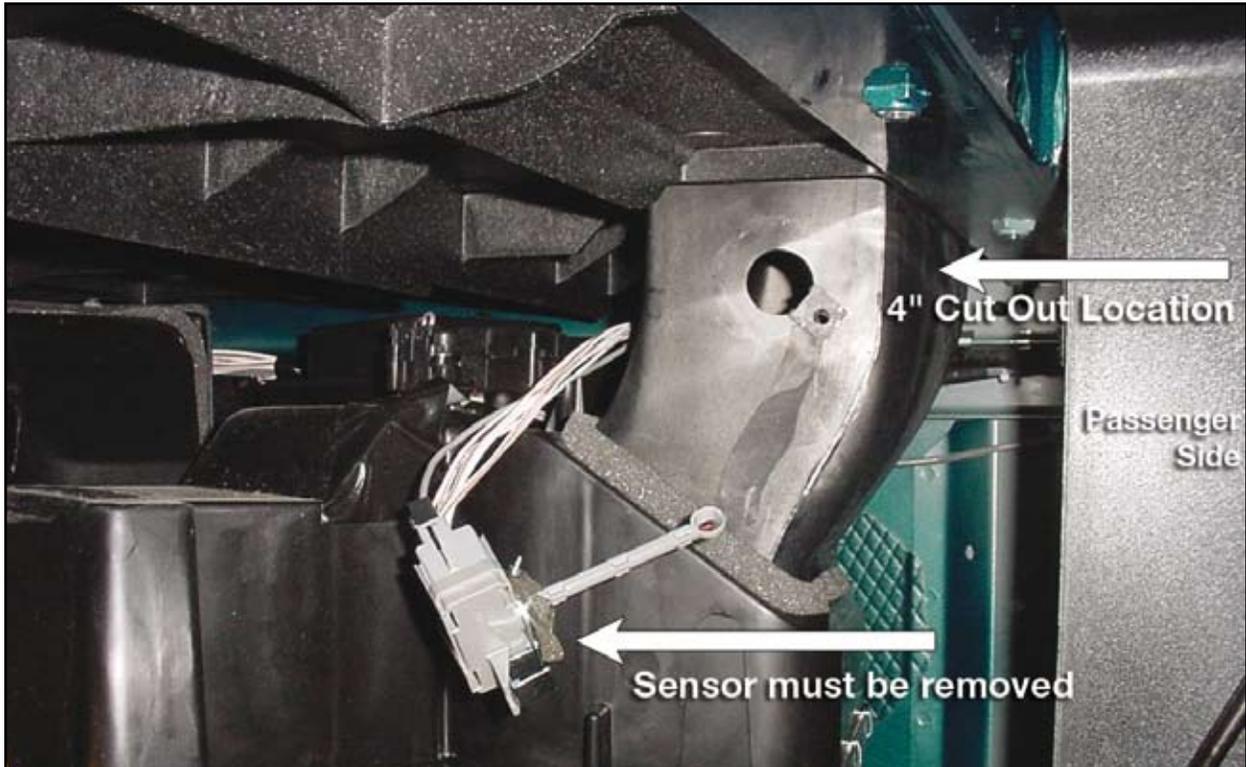


Figure 7. Removal of sensor.



Figure 8a. Four inch hole cut in Volvo duct.



Figure 8b. Installation of grill and ducting.



**Figure 9.** *Installing the weatherstripping on the custom plenum.*

Locate the V4 RND BLACK 4" grill. Using two cable ties, secure the vanes so that they will not turn. See Figure 8a and 8b. Use a length of the supplied weatherstripping under the lip of the grill to prevent air from leaking after installation. Install the grill from the inside of the duct, with the vanes pointing upward. Push the duct and grill back into the hole from which it came. With assistance from outside the truck, reach into the luggage compartment and push the length of 4" duct and one hose clamp over the grill. Push the duct over the grill until the grill is tight up against the duct, then tighten the clamp. Replace the duct, and tighten the screws.

### **Custom Air Distribution Plenum**

Find the metal custom plenum and the passenger side window footwell.

Locate the four (4) V4 RND BLACK grills and line up on the window footwell to mark for hole cutting. See Figure 10. Use a 4" holesaw to cut the holes.

Line the flanges of the plenum with the weatherstripping. See Figure 9. Place the plenum on the back of the footwell and secure with the 6-32 screws. Trim the

carpet at the bottom of the plenum duct so that the carpet will fold up.

### **Preparing for mounting the footwell and air plenum**

Before the footwell is mounted back into the truck, the cut out for the duct must be made to allow the duct to extend below the bunk surface. Use the template, as provided in Figure 12a or 12b, to cut the hole. Use a 1/8" bit to drill locator holes from under the bunk. Go to the passenger side luggage door, and look up to the rear corner of the bunk. See Figure 11. Find the metal support that holds the bunk, and drill right at the edge at the side of the truck, and towards the rear of the truck.

### **Re-installing the Footwell**

Gently insert the duct into the hole. Direct it downward, while pushing the footwell toward the window. Once it is all the way down, put the top flange of the footwell behind the window fascia. Fasten the footwell to the wall and floor.



Figure 10. Preparing to install grills in footwell cover.



Figure 11. Location of cut out for ductwork.

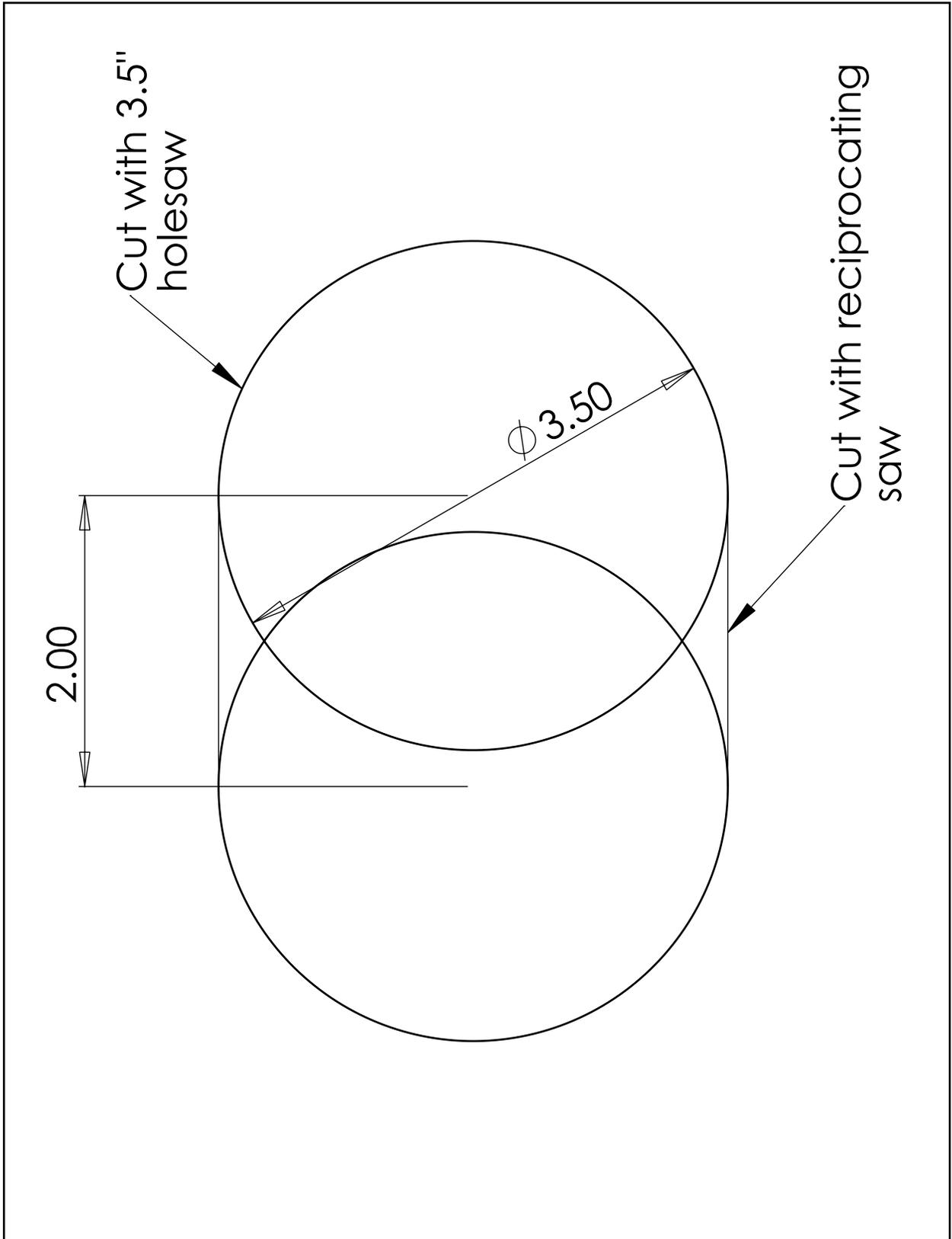


Figure 12a. Template for 4" duct for 10K unit

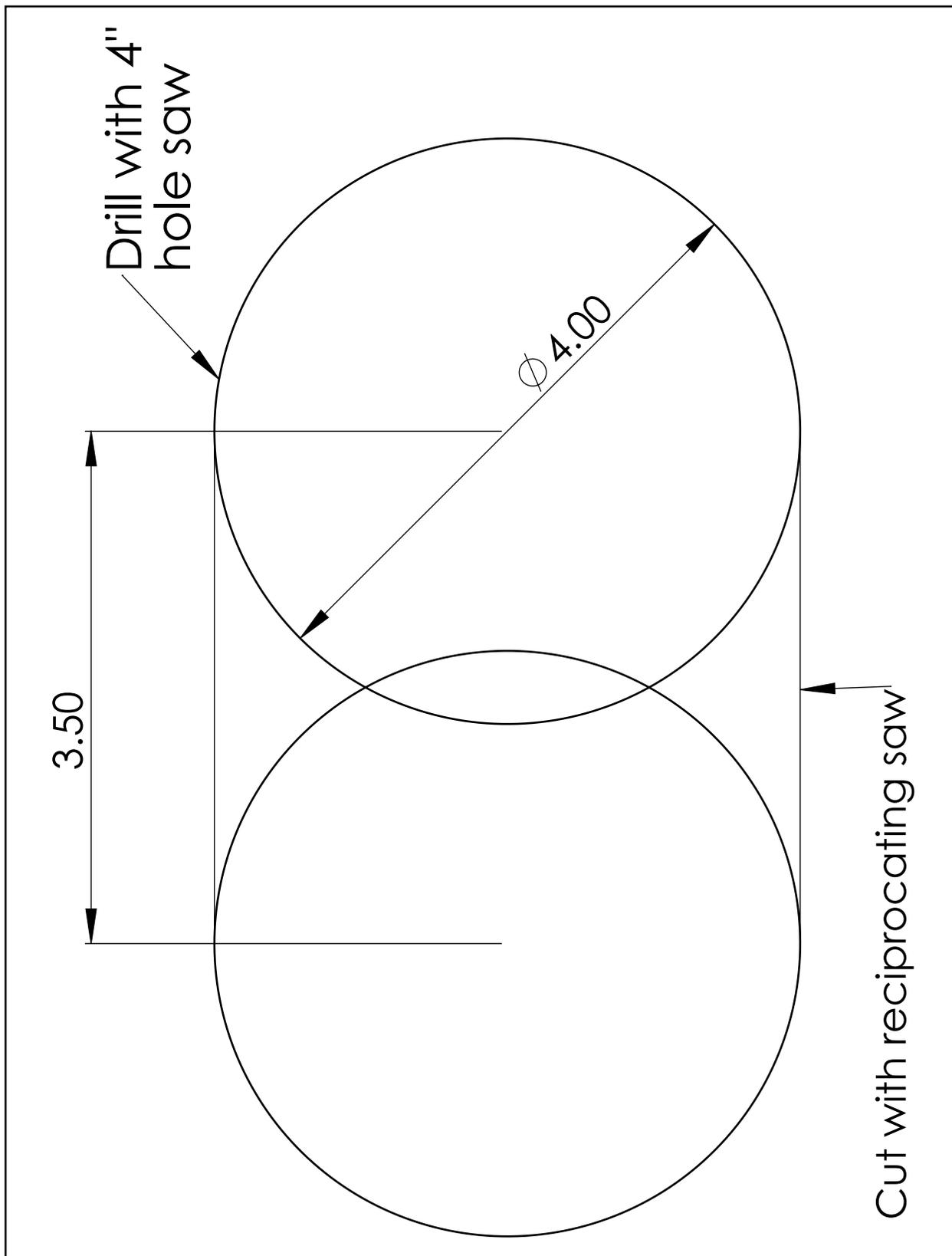
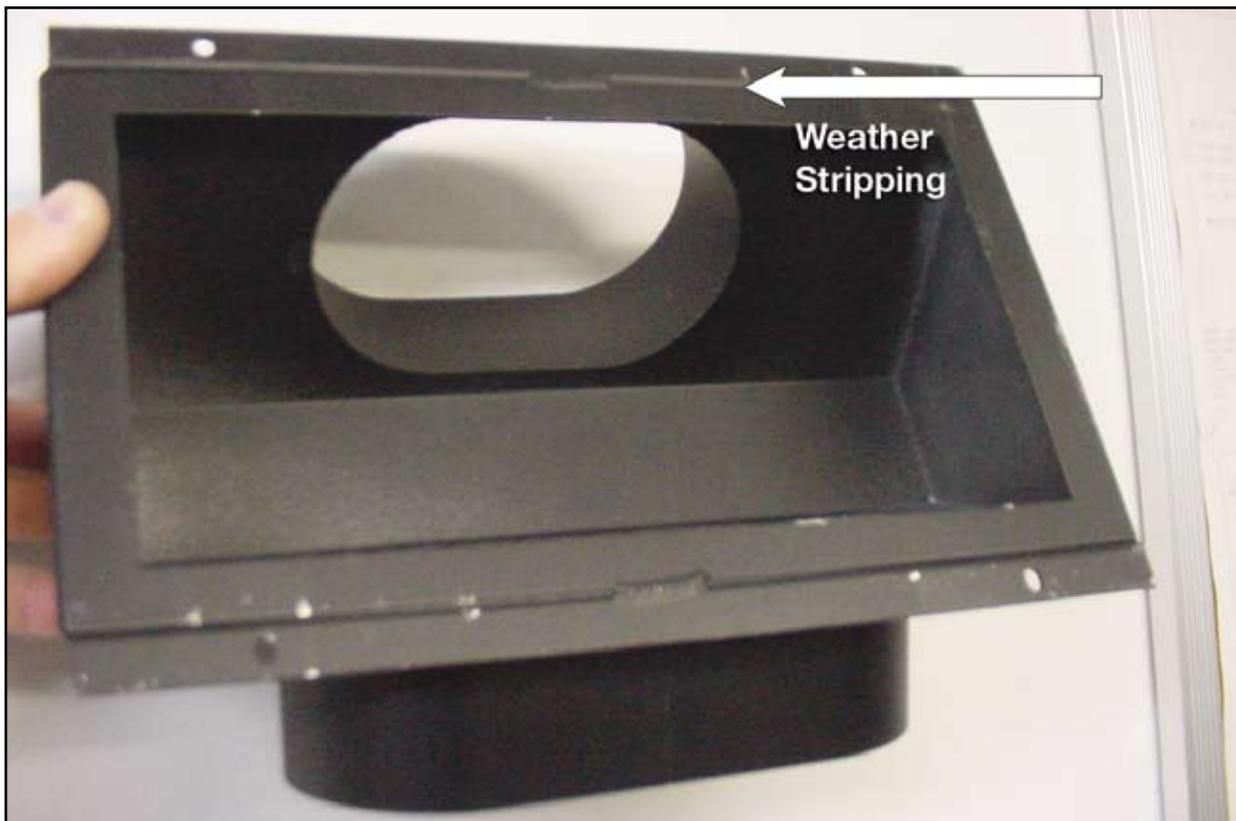


Figure 12b. Template for 6" duct for 14K unit



*Figure 13. Supply Air Distribution Plenum.*

### **Installing the Plenum on the Front of the CHEB**

Using a ¼" nutdriver, remove the plastic 5" or 7" oval hose adaptor. Find the 4"x 6" (or 4"x4") distribution plenum. Install the weather stripping on the contact surfaces and place over the hole on the unit. Reinstall the screws into the new plenum.

### **INSTALLING THE CHEB**

Install the CHEB on the passenger side of the truck.

Locate the CHEB template (supplied with the unit) and position it with the "edge of the unit" 1-1½" from the factory HVAC unit mounting foot. The "edge of the

unit" line with the notations for the quick connections should be nearest the bunk wall. The line of the "edge of the unit" should be approximately 5" from the bunk wall.

Mark for the two quick connect holes 3½" off the "edge of the unit" using the construction lines. Drill through the rubber mat with a 2½" hole saw (DO NOT DRILL THROUGH THE METAL). Then drill through the metal with a 1-7/8" holesaw.

Drill the drain hole with a 1-5/8" hole saw.

Drill for mounting brackets for the CHEB using the following recommendations:

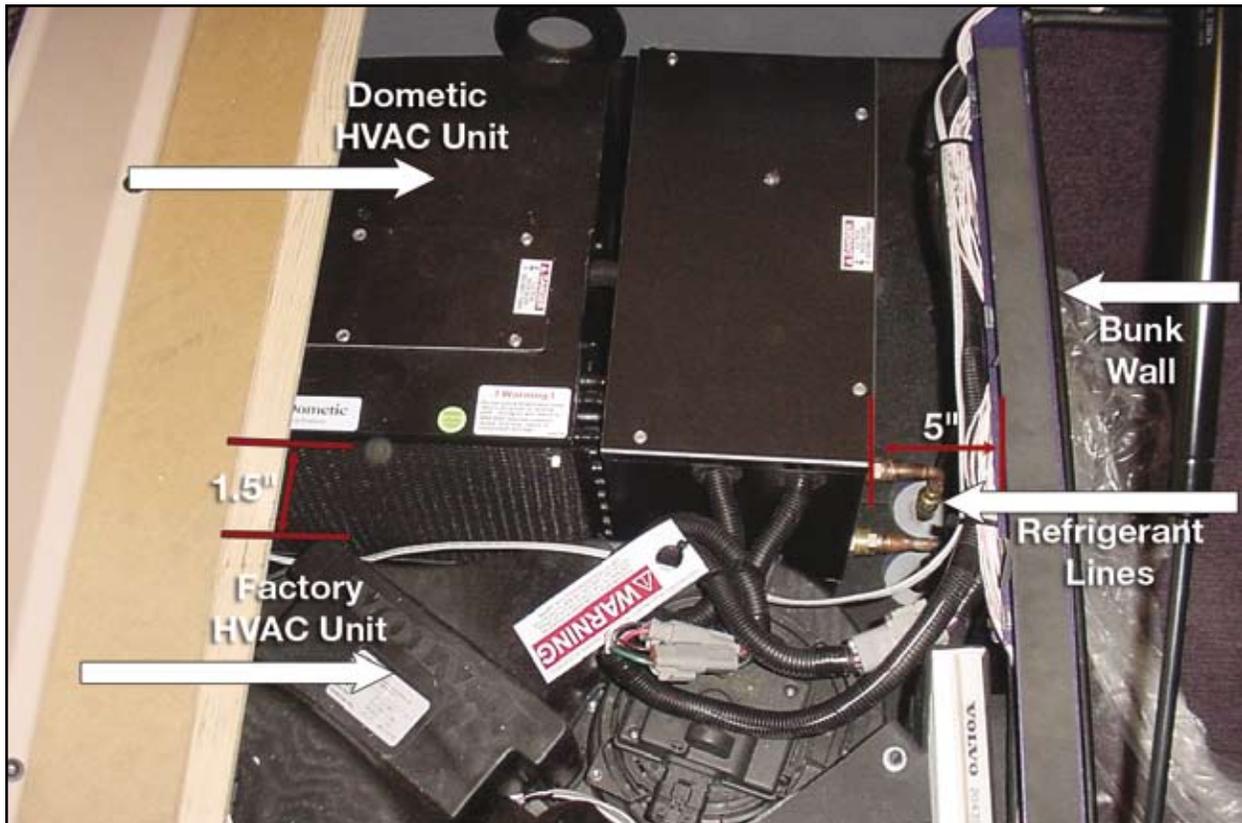


Figure 14. CHEB installed in passenger luggage box.

- One inboard on the CHEB at the corner nearest the rear of the truck
- One on the front, outboard
- One on the outboard near the air distribution plenum
- One on the front of the CHEB, inboard (near the factory HVAC unit)

Use the “edge of unit” line to situate one of the mounting brackets for hole marking. Be sure your bracket is located in an area noted on the mounting template by “XXXXX”. This notation provides locations available for mounting.

Install the watertight grommets (gray) into the two 1-7/8" holes. Push in until they lock in the hole.

Insert the CHEB unit into the truck. Make sure that the drain fitting is lined up with the hole. Install the brackets by using one 1/4"-20 x 2 1/2" bolt (provided) and one small washer from the top. Secure underneath the truck with one large washer, and one nylok nut. Snug all bolts, to the point where the bracket just starts to bend, then stop.

Push the condenser fan cord down through one of the gray grommets. Then insert the refrigerant lines into their respective grommets. Lightly lubricate one side of each coupling with light oil or refrigerant oil.



*Figure 15. View of supply ducting connected.*

Be sure to get the face and the threads. Hand tighten the quick connect, making sure they thread correctly. Tighten with the correct wrenches (13/16", 3/4", and 15/16"). Tighten to 10-12 ft-lbs.

**Note:**

Any hissing that is heard during the tightening process, is caused by the fittings that are not quite in line. **DO NOT STOP TIGHTENING.** Keep tightening, and the hissing will stop.

Connect the TSEP (temperature sensor cord located on CHEB) to the PLB. Connect the electrical connec-

tors between the CHEB and PLB (the ones in the split loom). Route and clip to prevent chafing.

Connect the ductwork to the CHEB, use the hose clamps to secure. It may be difficult to get the 6" duct on, but it will connect. Use only as much duct as you have to, as extra duct will impede air flow.

Install the 3/8" drain fitting into the bottom of the CHEB from the under side of the truck, finger tighten. Place the hose clamp over the end of the P-trap. Push the end of the P-trap over the drain fitting, and tighten clamp.



*Figure 16. Condenser installed on mounting plate.*

## INSTALLING THE CONDENSER

The Dometic condenser may be installed either under or behind the sleeper. These installations (and the parts in the kit) are for an installation underneath the sleeper. If you plan on mounting the generator and/or generator radiator underneath the sleeper fairings, we recommend mount the HVAC condenser on the rear of the sleeper.

Mount the condenser to the mounting plate provided. The quick connects should be on the end of the mounting plate with the side extension. Use the nylok nuts provided and snug all bolts. This mounting plate is specially designed to fit under the Volvo L-5 chassis. It mounts midline of the truck, just behind the transmission and in front of the exhaust pipe. The “fingers” of the plate fit up under a cab support. The rear flange slips over another support. Mount with the four stainless steel self-tapping screws provided.



*Figure 17. Routing of refrigerant lines.*

### **ROUTING THE REFRIGERANT LINES AND CONDENSER POWER CABLE**

The refrigerant lines will pass over the exhaust pipe, then over top of the condenser mounting plate, and back around to the quick connect. Connect the quick connects in the manner described previously. Secure the refrigerant lines as shown, with one cushion clamp on the mounting plate side extension, and one on the

opposite side to prevent movement and chafing. Use cable ties to secure the refrigerant lines to each other and to the condenser power cable. After connecting the condenser power cable, secure power cord in such a manner that the connections are pulled in a linear fashion, not to the side.

Install the heat shield as shown, using two 6" hose clamps.

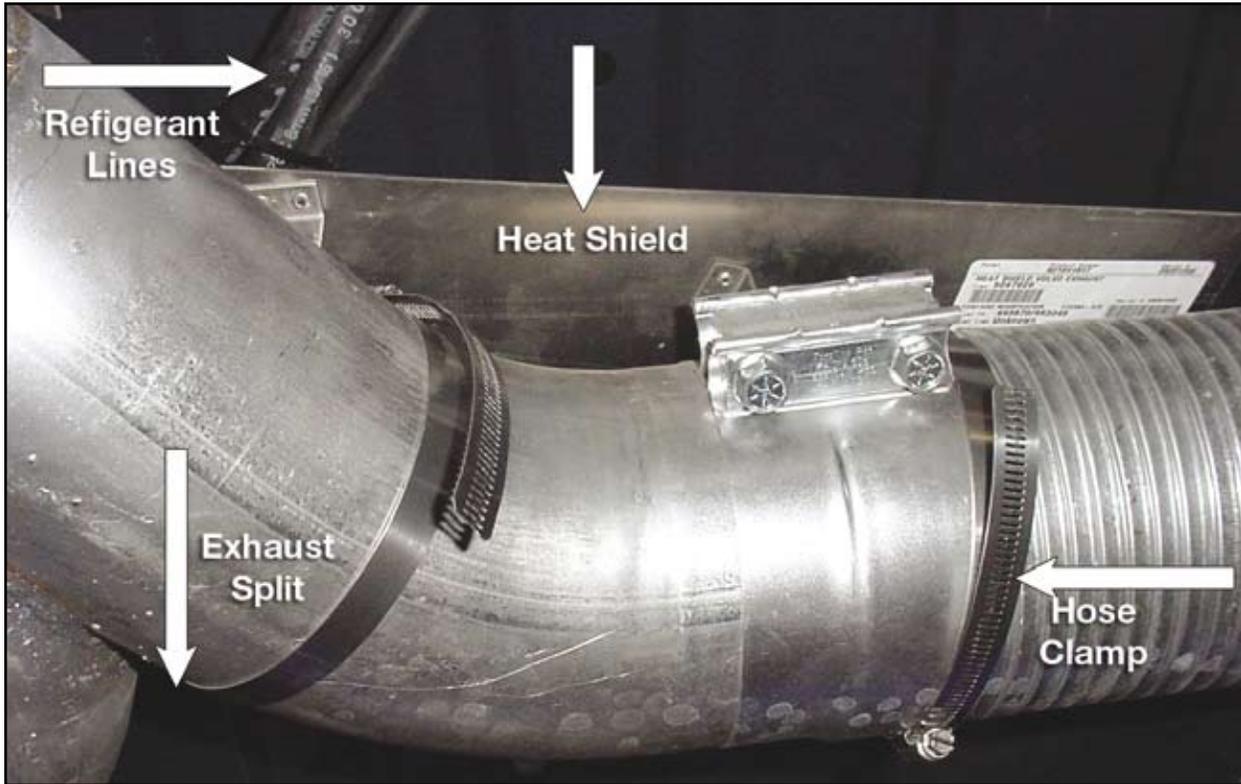


Figure 17. Heat shield installed.

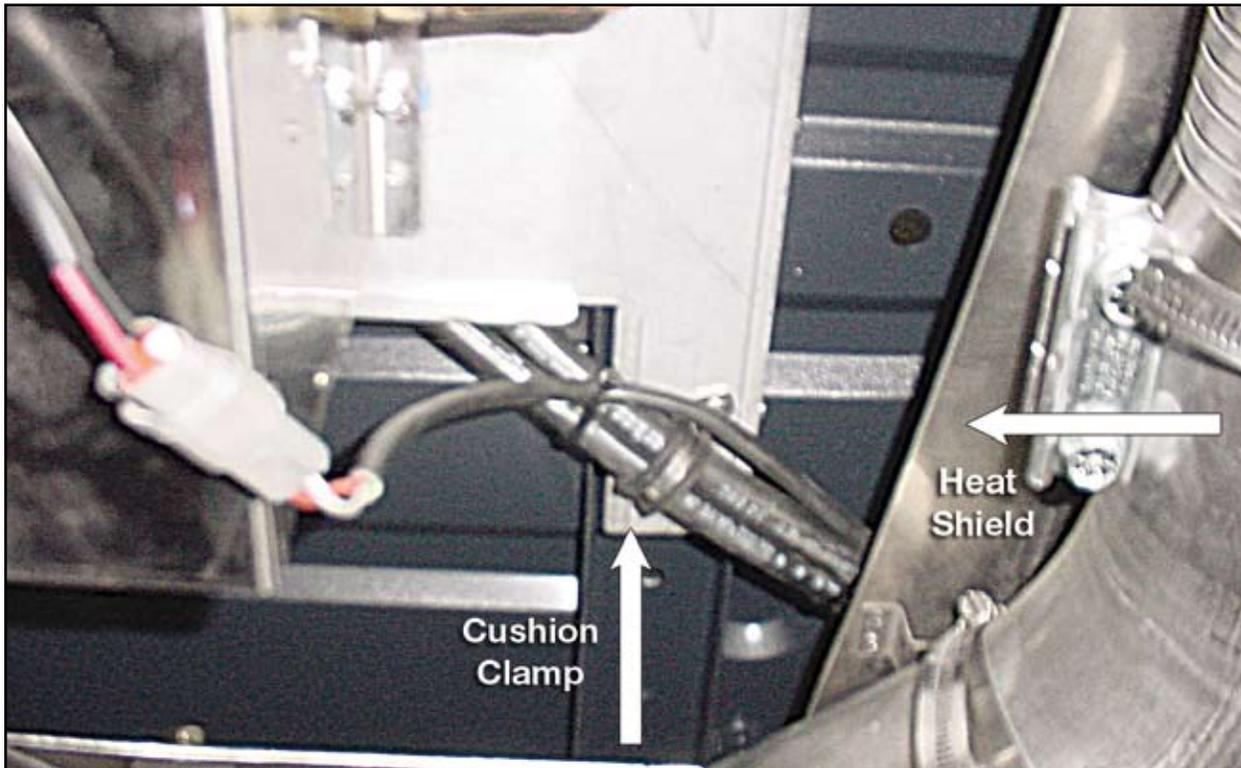


Figure 18. Routing of refrigerant lines



*Figure 20. Routing of refrigerant lines.*

## TESTING THE INSTALLATION

Supply power to the power distribution panel with either shorepower or generator power. Look at the display panel and confirm that the display is lit up. Press the FAN button to activate the fan in manual mode. Check for airflow from all vents. Next, press the HEAT button and run the SETpoint up sufficiently for the unit to come on in heat mode. The HEATING LED should illuminate. The air should start warming up. To confirm heating quicker, manually lower the fan speed at the lowest setting.

Next, check the cooling mode. Press the COOL button, then run the SETpoint down sufficiently for the unit to come on in the cool mode. The COOLING LED should illuminate. The air should start cooling down.

Check to make sure the condenser fan is running. If it is cool, it may take a few minutes for the condenser fan to come on. This is normal. Shut down the unit by pressing OFF. You are now finished with the installation.









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