

CSL 31 Aftermarket heater Install instructions



Step 1: Removal of Hunter heater

- a) Disconnect power at auto reset breaker in engine compartment. Breaker is located on the driver side Firewall. (figure 1)
- b) Open heater enclosure and disconnect power at battery. Disconnect all wire connections in the enclosure. Discard all wires with the exception of the harness running from extra blower inside cargo area (if equipped).
- c) Remove fuel line clamp, then remove the fuel line.
- d) Remove exhaust pipe from heater on outside of enclosure (exhaust tube may need to be cut off) (figure 2)
- e) With exhaust removed loosen 4 nuts on bottom side of enclosure holding heater down and heater should be able to be removed.



Figure 1



Figure 2



Figure 3

Hunter heater removal (cont.)

- f) Remove power connection in enclosure (figure 4).
- g) Disconnect duct work and save one piece and two clamps for later use (figure 5).
- h) Remove fuel pump mounted on the cargo body on the passenger side (figure 6).
- i) Remove and discard as much fuel line as as possible. This line will not be required for the installation.
- j) Leave fuel standpipe in fuel tank.
- k) The enclosure should be ready to install the Webasto heater.



Figure 4



Figure 5



Fuel pump

Figure 6

Step 2: Webasto heater install

- a) Place the hole template supplied with the kit in enclosure to mark places for five holes .
- b) Once holes are drilled place heater in enclosure and mount with 3 of the 4 bolts to keep heater in place. (figure 7)
- c) Run exhaust tube up through hole and attach to the heater with the supplied clamp.
- d) Mount the muffler to the underside of enclosure using 4th bolt used to hold down heater tray.
- e) Attach free end of exhaust tube to the muffler and clamp.
- f) Connect power/ switch harness to connector on heater and run power wires along wall to the battery (DO NOT connect to power source at this time.) (figure 8)
- g) Plug relay housings into relays on heat exchanger (no particular order necessary).
- h) Route the fuel line, thermostat harness, fuel pump harness, and switch harness through hole shown in figure 9. Allow the harness' and fuel line to hang in the cargo bay. These will be taken care of later.

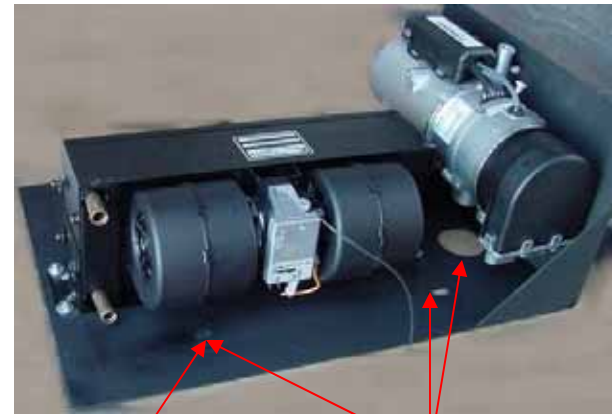


Figure 7

Leave this bolt off until
Muffler is mounted

3 of 5 holes to be drilled



Figure 8

Plug power/switch harness here



Figure 9

Run the fuel line, and harness'
Through this hole

Step 3: Fuel System

- a) Using 90 degree fuel connector supplied attach to heater and clamp, on other end clamp fuel line that is run through cargo wall. (figure 10)
- b) With the fuel line and wire harness in cargo body route both through center channel in the front bulk head (figure 11). When fuel line appear out of the body pull toward the passenger side of the truck where the old fuel pump was mounted.
- c) Mount the fuel pump enclosure on the passenger side of the cargo body, using the self-tapping screws and washers in the parts bag. (Fig 12)
- d) Cut a short piece of fuel line from the main to connect the fuel standpipe to the pump.
- e) Trim main fuel line to desired length to be connect the other end of the fuel pump to the heater.
- f) Cut fuel pump harness to length, strip wires and attach terminals and connectors. Be sure run the fuel pump harness through the bottom hole in the fuel pump enclosure before attaching the connector. Blue wire connects to pin 1.



Fuel hook up on heater

Figure 10



Figure 11

Channel to run fuel line, fuel pump harness, and switch harness through



Figure 12

Step 4: Coolant Reservoir and Thermostats

- a) Mount coolant recovery bottle to wall of cargo body using screws provided.
- b) Attach ¼” coolant hoses to the coolant bottle. Connect one of the two coolant lines that are in the front of the heat exchanger to the bottom of the coolant bottle. The other two ¼” hoses will be connected to the two top ports on the coolant bottle.
- c) At this point only connect one of the hoses. The other line will aid in bleeding the coolant system. This will be explained in more detail later.
- d) With the thermostat wire harness already in the cargo body run the harness along the center channel.
- e) Mount the thermostat about an inch away from the rear wall on the center channel. Pre-drill two holes using the thermostat bracket as a template. Attach the bracket using two self-tapping screws (Figure 15)
- f) Zip tie thermostat wire harness along the full length to light harness that runs in the same channel.



Figure 13

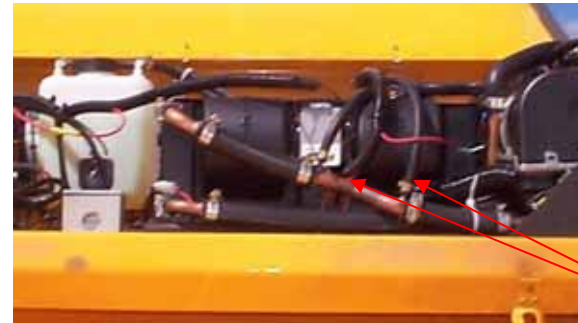


Figure 14

Use one of these
Two hoses



Figure 15

- g) Connect female terminals to thermostat. There is no specific order the wires have to be attached.

Step 5: On/Off switch Installation

- a) With on/off switch harness in the cargo body run the wires down the center channel (figure 11) following the fuel line. Route the harness towards the drivers side of the truck under the cab all the way to the engine compartment.
- b) Drill a hole in the firewall large enough for the harness to feed through so the loom will not be cut.
- c) With the harness inside of the cab drill a 1/2" hole in an empty part of the dash for the on/off switch.
- d) Crimp the four insulated female terminals onto the wires of the switch harness.
- e) Attach the red, black, green and white wires to the back of the switch as shown in Figure 18.
- f) Mount On/Off switch to hole drilled in dash. (figure 17)



Fill to this level

Figure 16



Figure 17

On / Off
Switch

Step 6: Finishing the Installation

- a) Fill coolant bottle about $\frac{3}{4}$ full with a 50/50 mixture of engine coolant and water. (figure 16)
- b) After filling the coolant bottle use the piece of duct saved during heater removal and hook up between the heat exchanger and duct on cargo body. (figure 19)
- c) Connect ground wire with female terminal to ground on blower motor (Figure 20). Connect one of the two yellow wires with female terminals to MAX position on blower motor, the second yellow wire is for an AUX blower if equipped.
- d) Remove fuse in power harness if installed.
- e) Attach both power and ground wires to the corresponding posts on the battery.
- f) Connect ground wire from wire harness to ground connector on the heat exchanger. (figure 20)
- g) Hook up new auto reset breaker provided with kit. This should go in the same location as old breaker. Once power wires are hooked up use electrical tape to wrap breaker so it won't short out if it touches metal.

Pin position on rear of On/Off switch

Figure 18

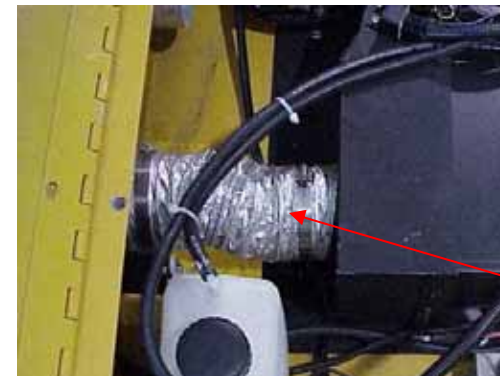
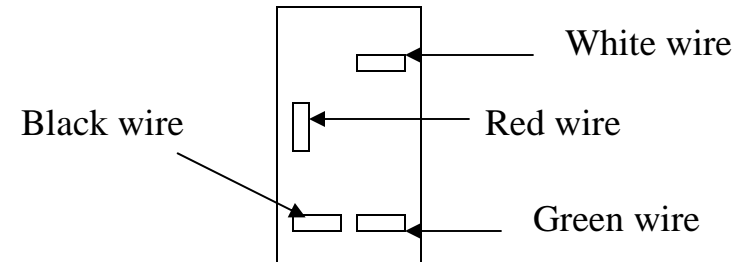


Figure 19

Duct work reinstalled

Step 7: Bleeding coolant system / priming fuel system

- a) With all power wires connected and coolant in recovery bottle turn on/off switch to the ON position.
- b) Install the fuse and the heater should begin to operate. The heater will attempt to ignite three times. Before the third time pull the fuse to stop process.
- c) The heater will not ignite until fuel reaches the heater. This may take a couple of times to get fuel from tank to heater. Repeat step “b” until you can see fuel in line by the heater.
- d) While priming the fuel system the coolant pump will be operating and the coolant level in the bottle in the bottle will go down . You will be able to verify that all air bubbles are out of system when coolant comes out of the ¼” coolant hose that was left un-connected earlier.. Once coolant comes out of hose attach it to open port on coolant bottle and proceed to next step.



Figure 20

Ground wire hook up

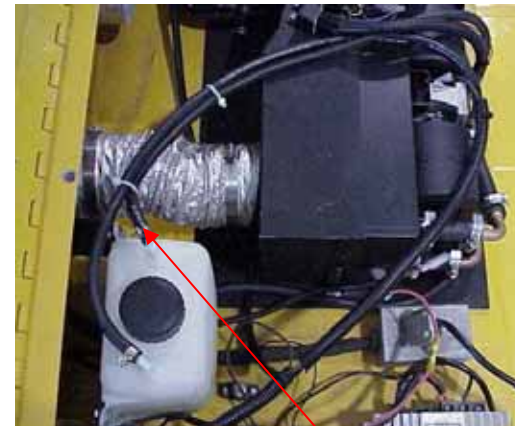


Figure 22

This line is used for bleeding and coolant
Will come out of hose when system is bleed

- e) If the heater ignites with air pockets in the coolant circuit the heater will shut itself down. There is an overheat protection on the heater which can be manually reset. If this happens continue the air purge process. (figure 24)
- f) Once system is purged of air, refill coolant bottle to $\frac{3}{4}$ full and place cap on bottle.
- g) With fuel and coolant system primed the heater will ignite and run properly.
- h) The thermostat setting will prevent the heater from operating if the temperature is 55 degrees or higher. If this happens the thermostat can be jumped using a piece of wire between the terminals. This wire must be removed and the thermostat plugged in for system to operate properly after the installation is complete.
- i) Heater installation is complete and the heater should be running properly. Switch heater off reconnect thermostats (if not already done) and close the heater enclosure.

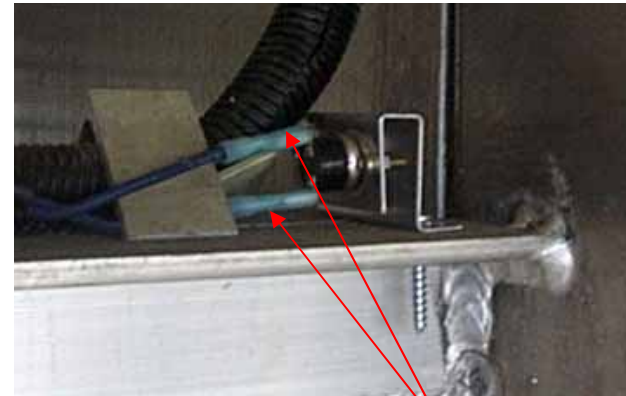


Figure 23

Jumper wire can be placed between these terminals



Figure 24

Manual reset

Heater Operation

Note: If the temperature in the cargo area is above 55° F when the heater switch is turned on, the heater will not run.

- a) Switch On/Off switch to “On” position.
- b) Blower motors will come on and at the same time heater will go through start up process.
- c) Heater will regulate itself through the thermostat that is in the back of the cargo area. Once heater is running no other switching will need to be done for the heater to operate properly.
- d) If heater faults out for any reason the On/Off switch will flash and the heater will shut down. Refer to flash codes on next page to solve problem.
- e) To read the fault codes refer to Figure 25.

- f) After heater has been run flip switch to OFF position. The blower motors will shut down and the heater will go through a cool down period (roughly 3 minutes).

- g) Once heater has shut down the make sure there are no leaks in the coolant circuit and heater install and operational check is complete.

During the flash code event you will see the following:

Five quick flashes followed by a slower sequence of flashes, the slower sequence of flashes is the actual fault code. The first five quick flashes are only an indication that a fault code has been registered and will be displayed. Count only the slower sequence of flashes to obtain the current fault code.

NOTE
 After any correction of a defect a functional test has to be per-

For example (flashes = □):
 Fault code 7X (F 07): □□□□□ ... □ ... □ ... □ ... □ ... □ ... □ ... □

The flash code sequence will be repeated until the Thermo 90 S completes the after run (cool down) period after which, the fault code will be stored in memory.

Figure 25

Fault Codes on the Display of the Combination or Standard Digital Timer

NOTE:

If the heater is activated by the switch, the types of malfunctions are indicated by coded flashing signals via the operation indicator light during the after-run period of the heater. The coded flashing signals correspond to the numbers in the table below

F 01	No start-up (after 2 start-up attempts)
F 02	Flame extinguished (at least > 5)
F 03	Undervoltage or overvoltage
F 04	Premature flame detection
F 05	Flame detector interruption or flame detector short-circuit
F 06	Temperature sensor interruption or temperature sensor short-circuit
F 07	Metering pump interruption or metering pump short-circuit
F 08	Fan motor interruption or fan motor short-circuit or incorrect fan motor speed
F 09	Pencil-type glow plug interruption or pencil-type glow plug short-circuit
F 10	Overheating
F 11	Circulating pump interruption or circulation pump short circuit

Subject to change

Wire Schematic

