

Installing the Espar S2-DL2 diesel furnace in a 2020 Sprinter 2500

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We bought our Espar S2 DL2 diesel heater in September 2021. The Amazon seller asserted that it was the “latest model” (which appeared to be correct). Apparently, the newer models are easier to install.

We installed our furnace underneath the passenger seat. It works great, and we are very pleased with it.

When installing under the passenger seat, note that one needs to take special care to avoid problems with the airbag system. As I understand it, the passenger seat has sensors that detect an occupant in the passenger seat; if the wiring to these sensors is disturbed then the airbag system becomes “unhappy” and requires a dealership to reset the system. Obviously, you want to avoid this. Some people recommend disconnecting the battery (and other measures?) to avoid this issue; we elected to simply **leave the wiring attached to the passenger seat, and set the seat next to the pedestal while we completed the furnace installation**. You have to be careful to not pull on the wiring, but we found it pretty easy to manage (in particular, there was sufficient slack in the wiring). This seemed simpler than disconnecting the battery and/or taking other measures.

The rest of this document is mostly things that I would find handy to know up-front if I were installing again.

Things you will need

You will be drilling a bunch of holes in metal. Make sure you have a good set of drill bits and hole saws that work on metal (we used the Milwaukee “bi-metal” type drill bits). Sizes needed:

1”

5/16”

¼”

big one for the vent (pretty sure we used a 2.5”)

Approximately 5 feet of “heater hose” with an inside diameter of 5/8”. This is used to house and protect the plastic fuel line and fuel pump wiring.

Placing the furnace

We mounted our heater flush on the floor – that is, the base of the heater does not cross any of the undulations of the floor. This creates a nice seal on the floor using just the rubber gasket that came with the heater; we did not use the mounting plate, nor did we apply other gasket sealant or glue or whatever. The furnace mounted very cleanly and securely; we figured additional sealant was not needed, and would just make a mess if/when we ever needed to remove the furnace (e.g., for repairs).

Mounting the muffler

After confirming with Espar tech support, we elected to mount the muffler “upside-down” – that is, with the mounting hole closer to the pavement. I use the phrase “upside-down” as it seems that everyone else mounts muffler with the bracket on top. Mounting with the bracket *underneath* the muffler keeps the bulk of the muffler up and away, so you don’t see it (or accidentally touch it or damage it).

If I were installing the furnace again, I would probably not use the smallish exhaust pipe provided in the kit, and instead would use a larger diameter exhaust pipe. A larger diameter exhaust pipe would allow the exhaust pipe to be *longer*, which means that the exhaust end could be located a couple of feet farther back (and thus farther from the door). A larger diameter exhaust pipe might require a larger muffler (or at least one with larger in/out ports).

As noted elsewhere, be sure and have a steady downward slant to the exhaust line. This is critical so that the moisture generated by combustion can drain and drop onto the ground. If the exhaust line can't drain, perhaps due to a "dip" in the exhaust line, water will accumulate in the low spot (the dip) and freeze.



Muffler mounted underneath the sliding door. Note how the muffler does not protrude under the chassis, and is thus protected (somewhat) from damage and from curious fingers. I think it looks better, too.



Side view of bracket for muffler.



Note the steady downward slope of exhaust line. This shows the section before the muffler.

Routing the fuel pump line and fuel pump wiring

The kit comes with zip ties to secure the fuel pump line and fuel pump wiring underneath the vehicle. I didn't like the idea of these lines being exposed to the elements (or rocks, or whatever). So instead of using the zip-ties, we ran the fuel line and wiring through a piece of **rubber heater hose** (available at an auto parts store). This hose provides physical protection, keeps things nice and tidy, and being *heater* hose it protects the two lines from heat (such as the exhaust system of the van).

We used hose that was 5/8" inside diameter; big enough but not so big that it was bulky. A 5 foot section was just the right length. It costs us less than \$2/foot, and is quite sturdy. I think this is a very good technique for running the fuel line and wiring; would definitely do again.



Photo showing exhaust line leading towards rear, with fuel line and fuel pump wire headed towards front. Routing the lines this way prevents them from ever touching the (potentially hot) exhaust pipe.

The smooth grey plastic piece is the underside of the "jack box" -- the storage box that holds the tire jack. The jack box is behind a plastic cover underneath the passenger pedestal, accessible from the passenger doorway.



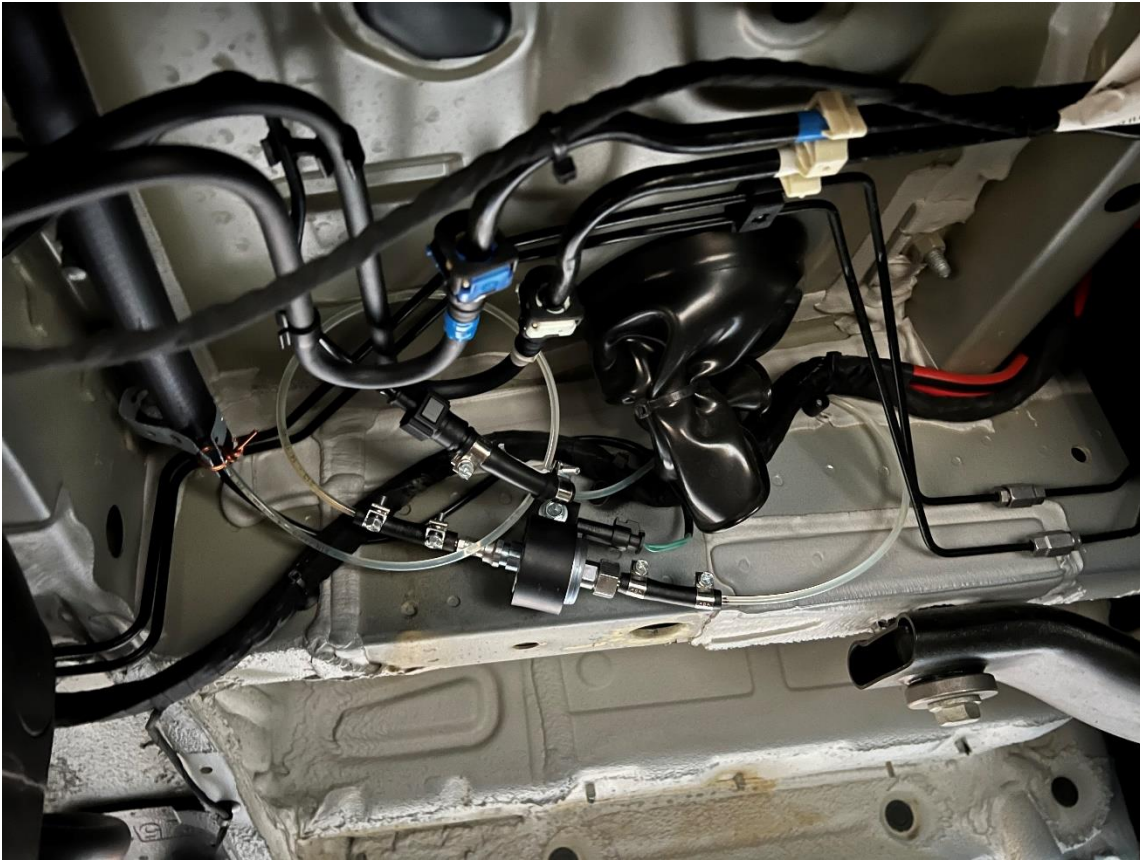
Photo showing rubber heat pipe secured to underside of plastic jack box, then routed forward and then crossing frame piece and turning 180 degrees to head back towards rear.



Photo showing the interior of the jack box. The shiny bolt head towards the left is for the clamp seen in the other photo on this page; we located the clamp so that the bolt goes through the metal plate in the jack box (and not just through the plastic, which we worried would not be sturdy).



The heater hose (containing the fuel line and the fuel pump wiring) is secured over the driveshaft, and ends roughly 6 to 9 inches from the fuel pump. Notice the slope of the fuel pump (per the instructions). The plastic fuel line, and the fuel pump wiring, are comfortably looped in a way that won't bind, rub, or otherwise have problems.



Closer view of the fuel pump, with the fuel line and the wiring for the fuel pump.

Wiring Details

The wiring instructions for the EasyStart Pro thermostat were needlessly complicated IMO. The instructions address all sorts of more complicated installations (multiple thermostats controlling multiple furnaces, etc.). Our instructions were a hard-to-read gray scale nth generation photocopy. We tried to look online, but the Espar manufacturer's website was down due to a cyberattack.

For what I consider a standard installation (no second thermostat, no additional temperature sensor), here is my version of the instructions (and these were verified by the tech support):

1. At the EasyStart Pro thermostat, connect the long black cable to the EasyStart Pro using the small black square connector.
2. Remove the "terminating resistor plug" (TRP) from the S2 DL2 wiring harness; this is the gray Deutsch female connector with the terminating resistor.
3. Insert the TRP into the male Deutsch connector at the EasyStart Pro.

Connections at the EasyStart Pro are now complete.

4. Make up a new female Deutsch connector using the 4 wires in the long black cable coming from the EasyStart Pro.
5. Insert this new female connector into the male Deutsch connector on the wiring harness.

Connections (for the EasyStart Pro) at the S2 DL2 are now complete.

But before you start fooling with the special connectors, consider this suggestion: **don't bother with making up the connectors – use wire nuts instead.** They ship the furnace with bare ends on the wires so that you can fish the wires through holes (connectors on the ends would make them too bulky). That's why the connectors aren't attached. But you aren't *required* to use the connectors. Keep reading.

I connected the fuel pump wiring to the furnace with 2 wire nuts. Yes, this required me to cut off the connector on the wiring harness. No big deal.

I connected the thermostat wiring to the furnace with 4 wire nuts. Yes, this required me to cut off the Deutsch connector on the wiring harness. No big deal.

Why not use utilize the empty connectors supplied with the kit? I see no advantage. It is tedious work unless you have the proper specialized tool, and I see no tangible benefit over wire nuts. Yes, they will disconnect easily in the future – but the only reason I might ever disconnect them is to remove the furnace for service. And if I'm removing the furnace, then the 6 wire nuts is the least of my worries, as I will have to remove the fuel line, the intake pipe, the exhaust pipe, etc.). If you have a good connector-making tool, then go ahead and make up the new connectors. But I didn't bother with it.