

Forest River R-Pod 179

Progressive Industries EMS-HW30C

Installation



What follows is a long, detailed description of installing a Progressive Industries EMS-HW30C 30 amp surge protector in our 2015 R-Pod 179. It's aimed at owners with no experience in electrical wiring and installs. For those of you with some do-it-yourself projects under your belt, it's going to be overkill. But you probably don't need to be reading this to begin with. :) You can just scroll down and look at the pictures to understand what's going on.

If you're a complete neophyte considering installing one of these units, fear not! It really is a simple procedure. I'm going to explain the location and method of where/how I chose to install the unit. You may decide on a different location and/or method. Don't be intimidated by the length of this write-up, I'm just being very detailed.

First, the usual disclaimer: Electricity is magic. It's invisible and it can kill you. So PLEASE, go slow and be safe.

My significant other and I hate cutting and drilling or making permanent modifications to our camper. That's why we use lots of Command Strips and other non-destructive fasteners. When we eventually sell this Pod, the next prospective buyer might not like all our modifications as much as we do, so we'd like to be able to return it to as stock a condition as possible. Also, the HW30C is not a cheap piece of kit, and the next owner can buy their own if that's what they want. So with that in mind, this installation will be removable, and leave little evidence behind. No major holes will be drilled (just one small one), no wood cut, and none of the original wiring in the trailer will be cut.

The Plan

I'll outline the plan so you have an idea of where this is going. The unit will be installed behind the electrical panel, out of sight. The remote display will be mounted on the rail (the horizontal piece) between the electrical panel and the lower pantry cabinet. I wish it were wireless! Alas, we're going to have to drill a small hole for the wire to pass through. But we can drill that hole in such a way as to be invisible when viewed from above. The original 'input' electrical wire that feeds into the panel will be disconnected and moved so that it feeds into the HW30C. A new piece of wire will be run from the output side of the HW30C and into the panel where we disconnected the original wire.

Supplies

We'll need an extra piece of wire since we won't be cutting any that came with the Pod, so you'll need to obtain a short piece of **10/2 orange Romex**. Three feet is a good length. It should be less than a buck a foot at your local home improvement store, so not a bank-breaker. This piece will run *from* the HW30C to the electrical box in your trailer, and we can wire this one up in advance to the surge protector. It's much easier to do this at your kitchen table rather than on your belly in your trailer! The only other tools you'll need are **phillips and straight-slot screwdrivers, needle-nosed pliers, a wire stripper** (or make due with a knife if you're careful), and a couple **small wood screws**. Oh, and an **electric drill**, with a variety of **drill bits**.

Read the instructions that came with the surge protector. With the unit sitting opened up in front of you it'll be easier to understand them. Specifically, there's a jumper that controls the time delay when the unit shuts down and restarts. This is dependant on your A/C unit. Read the manual that came with yours to decide the amount of delay you need.

Prepare the HW30C

Take your HW30C, unscrew and remove the lid. Remove all the goodies that are loose inside. There is one bubble-wrapped piece that is attached by a couple of wires. Don't rip that one out! Just take the bubble-wrap off of it. Position it in front of you so the circuit board with the big blue thingies is away from you. The wires will enter/exit out the left and right sides, and the grounding strap (the bare metal strip on the side of the box) will be towards you. There are a couple of green-tinted screws and nuts that came in one of the goodie bags. Go ahead and insert them into the grounding strap through the two empty holes, but don't tighten the nuts all the way down. The screws should enter from the outside, the nuts will be on the inside of the box.

Now take the short piece of wire that you bought, and per the instructions, strip about 3 inches of the outer shielding off one end, and about a half inch off the black and white wires that will then be exposed. You don't need to be super-exact. You just want to make sure there's enough bare wire to clamp into the terminal blocks - without a lot of extra - and enough orange shielding to insert past the wire clamps on the outside of the box. This will make more sense in a few minutes.

Unscrew the straight-slot screws on the terminal blocks marked T1 and T2 on the right side of the center square part. You only need to unscrew them far enough to insert the wires underneath them. Insert the stripped end of your orange wire into the box from the right side. The bare copper wire will get wrapped around that screw you just installed on the left side of the grounding block, so go ahead and bend it upwards so it's out of the way for now. Inside the box is a black plastic gizmo with a hole through the middle and a couple of wires attached. It will have an arrow printed on one side of it. Route your black wire through this gizmo, with the arrow side facing the center of the box. It just hangs loosely over the wire. Position the black and white wires so they insert into the terminal blocks T1 and T2. The black wire will go into the block closest to you (T1), and the white into the other (T2). They're pretty stiff wires, so it may take a little work to get them in there. Once they are, firmly tighten down the straight-slot screws on top. Make sure they're secure. Now, using a pair of needle-nose pliers, bend the end of the bare copper wire into a semicircle. Wrap this around the green grounding screw on the left side of the grounding block, and tighten that down. Again, it may take a little bit of muscle to get that wire bent and positioned around the screw.

When you're done, none of the wires should be sticking up out of the box, and no bare wires should be touching each other or anything else they're not supposed to. The orange shielding should extend just inside the box - you shouldn't be able to see any of the black/white/copper wires from the outside. Lastly, tighten down the clamp on the right side of the box that keeps the orange wire from pulling out.

The final product should look something like this:



Prepare the Trailer

Now for the fun part!

Before you start on this part, unplug your camper from shore power. Disconnect any generator, solar panel, or anything that delivers power to your trailer. Disconnect your 12 volt battery, or batteries, as well, just to be safe. Make sure your significant other, or kids, or anyone else doesn't come along and helpfully plug your camper back in while you're working on it. This could lead to a really bad hair day for you!

To remove the electrical panel, first open the cover by pressing on the center of it at the top. It hinges downward. You'll see two screws are now exposed. Remove them.



These just unscrew, they don't come out

The entire front cover can now be lifted upwards and placed aside. The electrical panel itself is secured in place by 8 screws. Remove these.



Carefully pull the entire panel forwards, out of the cabinet. It's attached by a lot of wiring (duh!) so it's not going to come out very far. But that's ok, you don't need it to.



Scary monsters!

Locate the orange wire coming into the panel at the upper left. Now locate it on the front side. This is where your shore power comes in. The ground (bare copper wire) connects to a grounding block along with a bunch of other bare copper wires. The white wire connects to a neutral block along with a bunch of others, and the black wire is inserted into the topmost 30 amp circuit breaker. We're going to remove this wire, and replace it with the one we just finished connecting to the HW30C. Unscrew and remove the ground, and white wires. Remove the 30 amp breaker (it's connected to the 20 amp under it) so that you can then remove the black wire from it. You must remove the silver retaining clip at the upper right of the breaker stack first. It's possible you may be able to swap wires in the breaker without removing it, but I found it much easier to do so. They're odd-looking screws, but a straight-slot works on them.



These take some muscle to unscrew

Once you've disconnected the three wires within the orange wire, pull it out the back of the panel. Now you need to take the wire that you previously connected to the HW30C and trim and strip it to match this one that you just pulled out.



They could be twins!

Take the orange wire coming from the HW30C that you just trimmed to match and route it in through the back of the panel where you removed the original wire. Connect the white wire to the block of white wires, the ground to the ground block, and the black wire to the 30 amp circuit breaker. You're replacing the original wires that you removed earlier. Reinsert and secure the circuit breaker, including the retaining clip. Make sure that the wires are inserted fully into the blocks and breaker. They're very inflexible and it can sometimes be difficult.

Now we're going to insert the wire that we pulled out of the panel into your HW30C, but first we need to clean it up a bit. We're going to prepare this wire just like we did with the first one from the kitchen table. Trim the 3 wires back so that there's only about 3 inches of them exposed past the end of the orange shielding. Strip about half an inch of shielding off the black and white wires. This is the same way we prepared that first orange wire we connected inside the HW30C. I'll bet you can guess what's next! Insert the freshly-prepared wire into the unit, clamping the black wire to the L1 terminal, and the white to the L2.

Prepare the ground wire as you did before and connect it to the remaining green screw on the grounding strap. There's no black donut thingy to deal with on this side. Finally, make sure everything looks good, there's enough orange shielding on the wire going into the box, and tighten down the clamp that keeps it from pulling out.



Black across from black, white across from white

We're done with the hard part! This is a good time to test that everything is working properly before we button it all up. Take a few minutes to give everything a good looking over. Make sure there are no loose wires, or crossed wires, or anything out of the ordinary. Double-check all your connections. Connect your remote display and place it near the door of your camper where you can see it while standing outside. Make sure the switch is in the down position.

Now go plug your trailer into shore power and see if it works! The unit takes 15 seconds after power is applied before sending power to the rest of the trailer. Don't go in the trailer while all that wiring is exposed! You just want to look at the remote display and hope to see "E0" along with the other information which will cycle on the display. If you are getting an error code, make a mental note of it, but don't do anything until you've unplugged from shore power.



Hot stuff! Don't touch!

Buttoning Up

If all went well, at this point you got an “E0” code and have unplugged the trailer. Time to start putting things back together.

Place the lid on the HW30C. The “input” label goes on the side with the original camper electrical wire that you connected last. Tighten the 6 screws that hold it in place. You don’t need to crank these down, just tighten them. There is a small shelf on the backside of the panel, and that’s the perfect place to mount the HW30C. Well, almost perfect. The shelf is a little shallow and the box is going to hang off the back a bit. You’ll only be able to use two of the screw holes to hold it down, but that’s ok. Use two short wood screws to do this. You may need to drill a couple of tiny pilot holes to get them started. Be careful that the screws aren’t too long and poke into the components on the inside of the panel!



Like it was meant to be there

Before shoving the electrical panel back in place, you need to drill a hole to run the data cable through. I drilled a hole just under the rail below the lower pantry cabinet, in an upward direction so it’s not visible when looking down from above. You’ll need a fairly large drill bit, but work your way up to that size by starting with smaller diameter bits. There’s no need to make the hole larger than it needs to be, so do a lot of trial and error trying to fit the connector through while you keep enlarging the hole.

Once you’ve got a large enough hole drilled, disconnect the remote display, feed the cable through the hole, then reconnect the display. The data cable is way longer than you need, so coil that up and secure it - zip ties are great for this.



Looks like an alien poking through

Now it's just a matter of carefully shoving the electrical panel back into the cabinet. Everything should fit just fine. Be careful not to pinch or kink any wires. Secure the panel with the 8 screws you removed earlier. Place the cover back on and secure it with the two screws. Mount your remote display and you're done!



Wow, that wasn't so hard!