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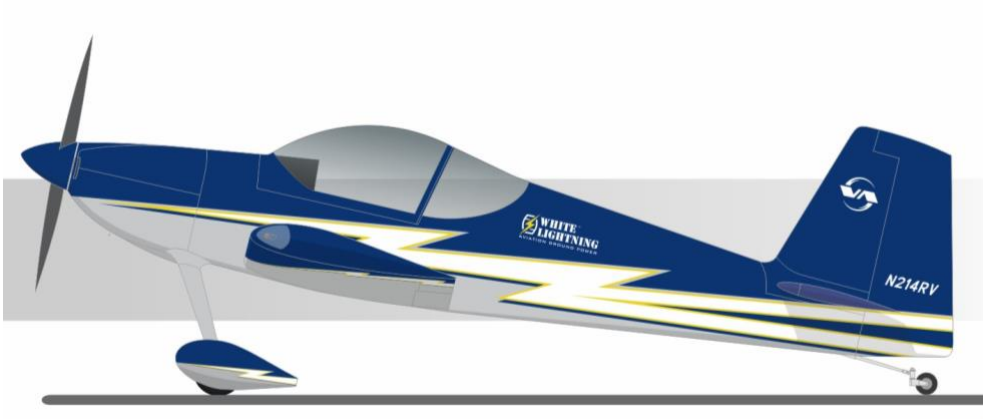
External Power Connector Kit for Experimental Aircraft (PN 670-530)
Installation Example: Van's Aircraft RV-14

Van's RV-14 is a popular Experimental/Amateur-Built (E/A-B) aircraft that is typical of many homebuilt aircraft. The RV-14 electrical system components, including the battery and master solenoid, are located on the engine firewall. So, this example should be instructive for installations on other similarly configured aircraft, such as the RV-6 and RV-7 models.

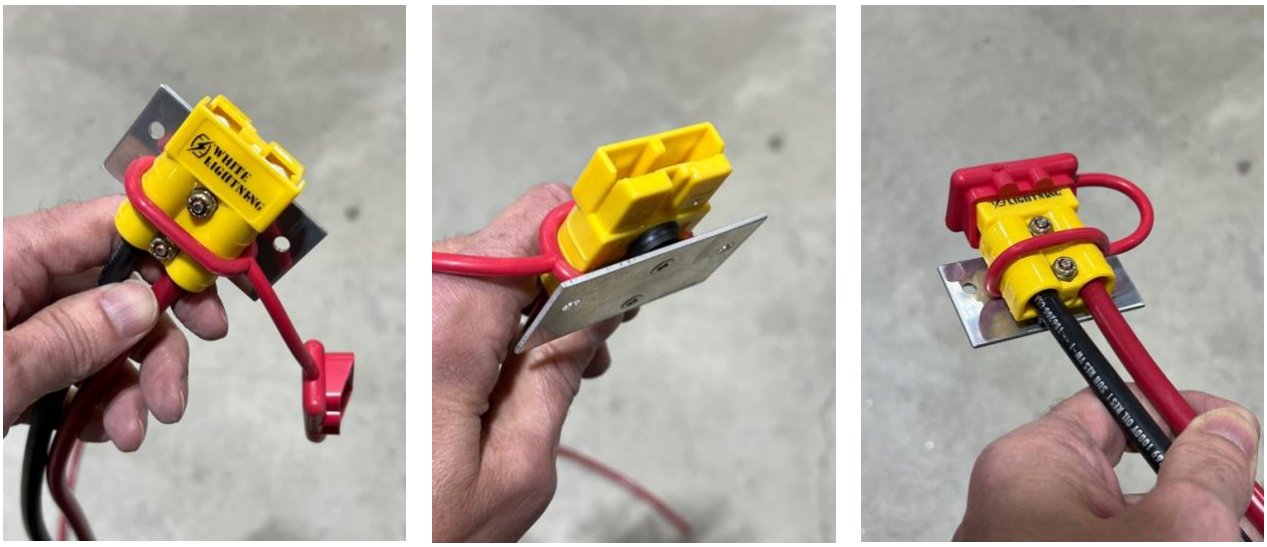


For E/A-B aircraft, there is the need to energize the airframe for lower amperage tasks such as maintenance, database updates, flight planning, powered preflight, and the like, but NOT for engine starting. For this purpose, our Model M1435-EXP Mini-GPU includes a kit of components for the aircraft builder to install a quick connect harness to the airframe. Installing this DC power connector kit provides a convenient way to use external ground power and avoid discharging the ship's battery. **The electrical connection is ALWAYS wired to the battery/master solenoid/contactor, NOT directly to the battery**. That connection can be made to either the input or output side of the contactor, depending on whether the builder intends a connection for a ground power unit (GPU) or a maintenance type battery charger. See our website or GPU owner's manual for wiring diagrams and a full discussion of these tradeoffs.

Select a location to install the external power plug with proximity to the battery solenoid, convenient access from outside the aircraft, and protection from engine heat. In this case, access through the upper cowling's oil filler door meets these criteria. Visible through the oil filler door are two tubular steel members of the engine mount that provide a stable surface to attach a mounting plate for the power plug.

View through top cowling oil filler door opening holding SB-50 power plug in place to install.

A small mounting plate of sheet aluminum can be fabricated to mount the power plug and MS21919 tube clamps. It will be necessary to use spacers to separate the plug from the mounting plate to make room for the elastomeric dust cover's lanyard.



Several views of assembled power plug, dust cover and mounting plate. Example shows 6 AWG wire for 50A maximum current.

Using standard aviation hardware, secure the mounting plate to the engine mount tubes and position for good access and angle though the oil filler door. Connect the negative lead to the airframe ground, shown at the lower left (green arrow).

The battery contactor for the RV-14 is located on the left (pilot) side of the firewall. The positive lead from the external power plug (red wire) runs across the firewall and is connected, in this case, to the input side of the battery contactor (red arrow) to allow maintenance battery charging, and external ground power when the ship's Battery Master switch is turned ON.

View of 2 solenoids on the left firewall - battery (silver) and starter (black). Red 6-gauge wire from external power plug is connected to the input of the battery solenoid and secured to engine breather tube to prevent vibration.

Estimated installation time for this procedure is 1-2 hours. When complete, verify continuity and proper polarity, then functionally test with external power source. Document installation in the airframe maintenance log and update builder's POH systems description. Placard the plug to identify its purpose and limitations.

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