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External Power Connector Kit for Experimental Aircraft (PN 670-530) Installation Example: Van's Aircraft RV-10

Van's RV-10 is a very popular Experimental/Amateur-Built (E/AB) aircraft with generous seating for 4 adults with an aft baggage compartment. The RV-10 primary electrical system components, such as the battery and master solenoid, are located behind the baggage compartment and the aft bulkhead closeout panel. So, this example may be instructive for other installations where the battery is in the empennage, such as the RV-8.

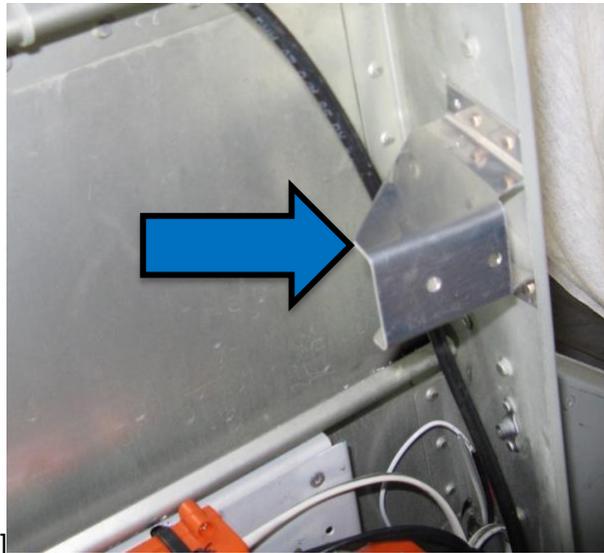


This installation example is courtesy of Van's Aircraft and was performed on their factory demonstrator, N410RV.

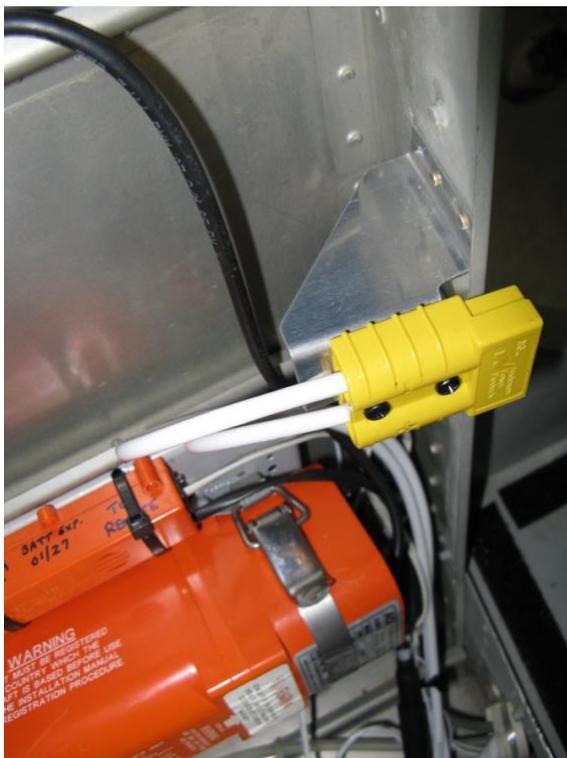
Experimental/Amateur-Built (E/A-B) aircraft powered by piston engines are typically not designed or assembled with a dedicated external power receptacle like those found on most certified aircraft. Those receptacles are used for high-amperage engine starting and typically bypass the ship's internal battery.

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.

Selecting a location to install the external power receptacle requires proximity to the battery solenoid and convenient access from outside the aircraft. In this case, the obvious access is through the baggage compartment door, through the aft bulkhead to reach the battery solenoid or contactor. The installation scheme is for the SB-50 plug to be mounted to a fabricated bracket (blue arrow) and fastened to the bulkhead, which positions the plug to be accessed by an opening in the closeout panel.



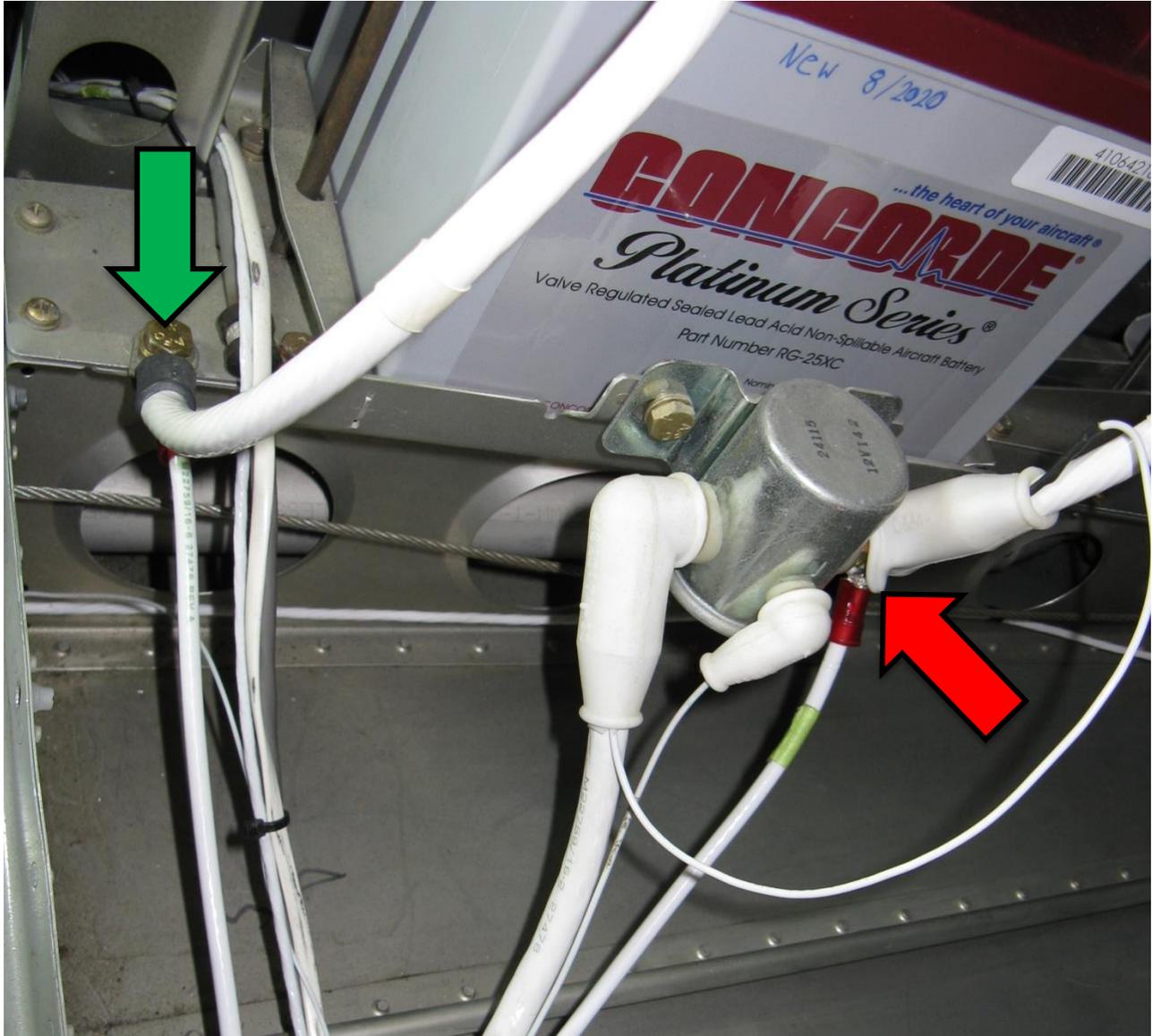
View looking forward at fabricated bracket fastened to bulkhead.



Views of the installed SB-50 plug positioned to access through the baggage closeout panel.

#8 wires for 40-amps maximum run from the external power connector to the area of the battery/master solenoid/contactor as shown below. #6 wire would allow up to 50A maximum, which is the limitation on this connector.

In this installation, the positive lead is connected to the input or battery side of the master solenoid (**red arrow**). The negative lead is attached under the the bolt used for the battery ground cable (**green arrow**).



An opening in the baggage closeout panel is cut to allow access to the external power plug. In this case, the elastomeric dust cover is not fastened to the plug itself but modified to allow it to be attached to the closeout panel instead.



Opening in baggage closeout panel. Finished installation showing connector exposed and covered. Beautifully done.

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.

**EXTERNAL AIRFRAME POWER
12-14VDC 40A MAX
NOT FOR ENGINE START**

Thanks to the staff at Van's Aircraft for providing photographs of their installation.

White Lightning™ brand of aviation ground power products are designed and manufactured in the USA by

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For more information visit our website: https://www.audioauthority.com/product_details/M1435-EXP

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