

CiES Fuel Sender & Aerospace Logic Digital Fuel Gauge Installation

Beechcraft Bonanza N18467



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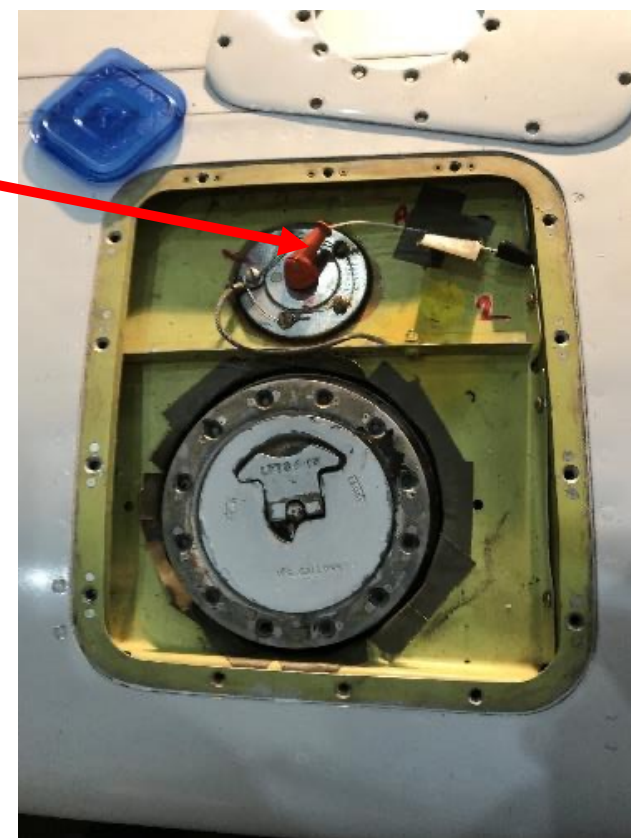
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Pilot Side Inboard and Outboard Existing Beechcraft Fuel Senders



Existing Beechcraft fuel sender wire to fuel PCB module.

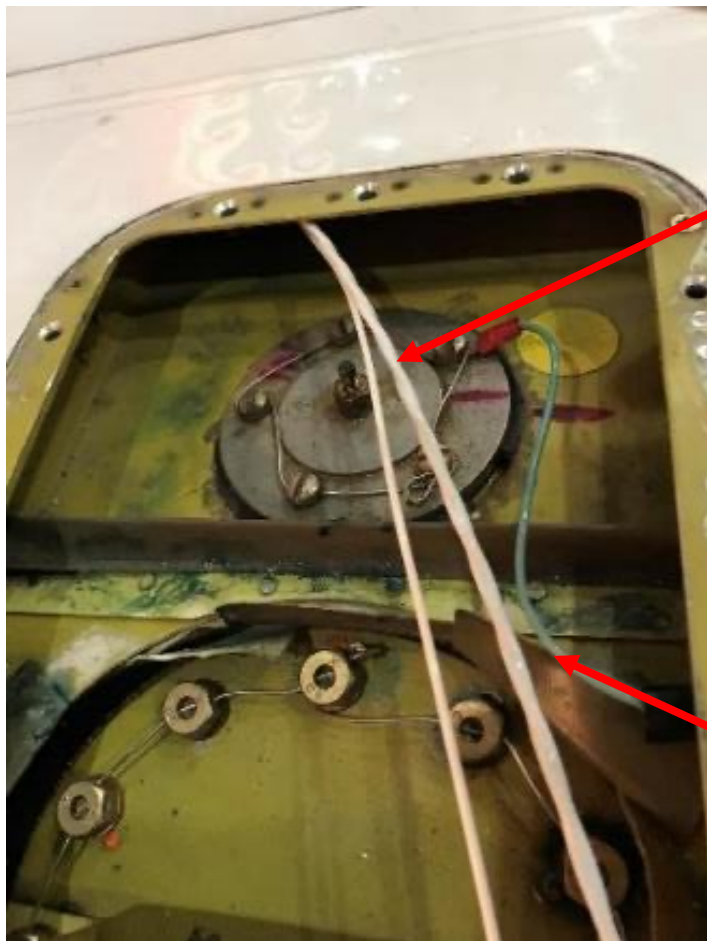




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Running Cables to CiES Senders Through Wheel Well



Two conductor cable and single conductor wire. (Note: We were not sure if three conductor shielded would fit, so shielded two conductor was used.) The single conductor is the Beechcraft factory sending unit wire, which was repurposed as a ground wire.

Existing plastic tube to pass wire from inboard to outboard senders

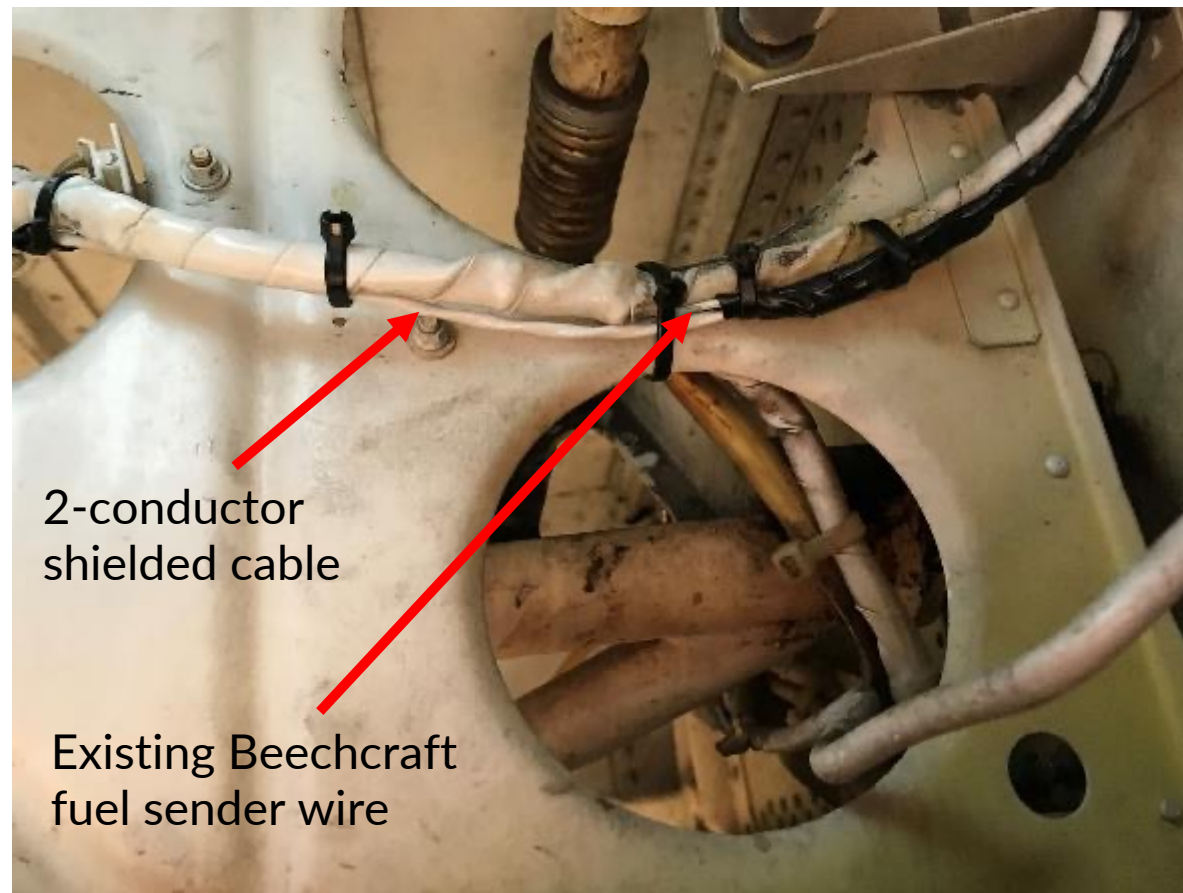
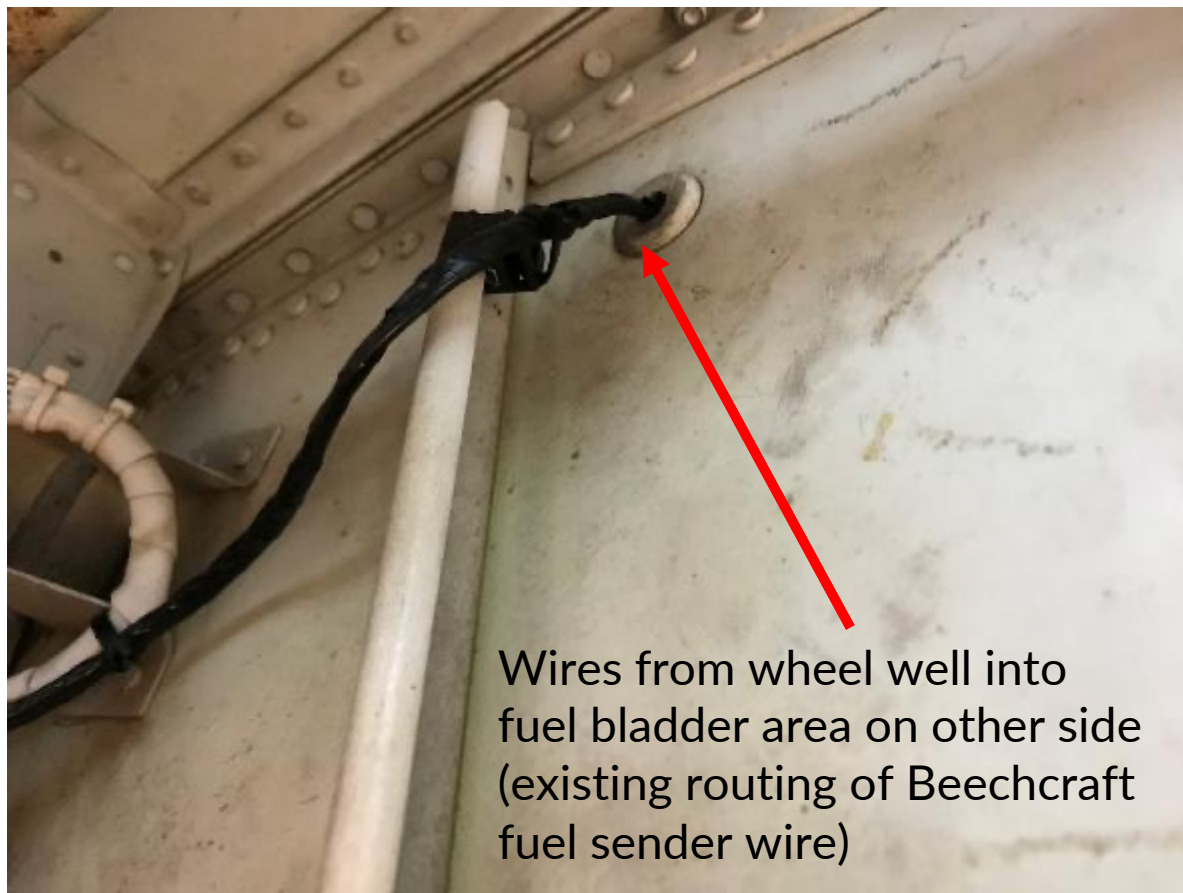




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Routing of Sender Wires





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Routing of Fuel Sender Wires into Cabin





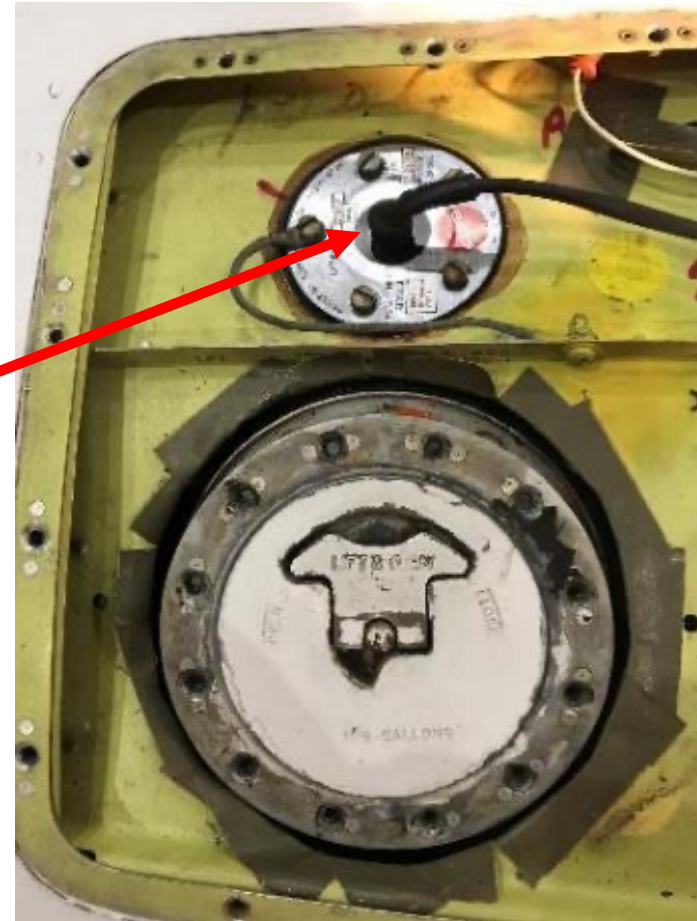
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Replacing Beechcraft Sender with CiES Sender



Outboard fuel sender replaced with CiES sender

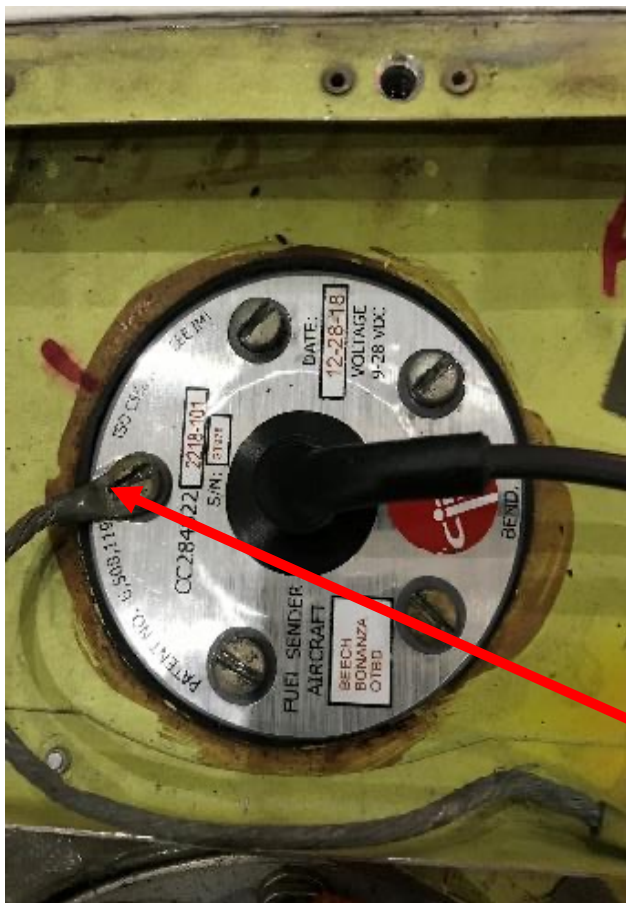




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Wiring Outboard CiES Fuel Sender

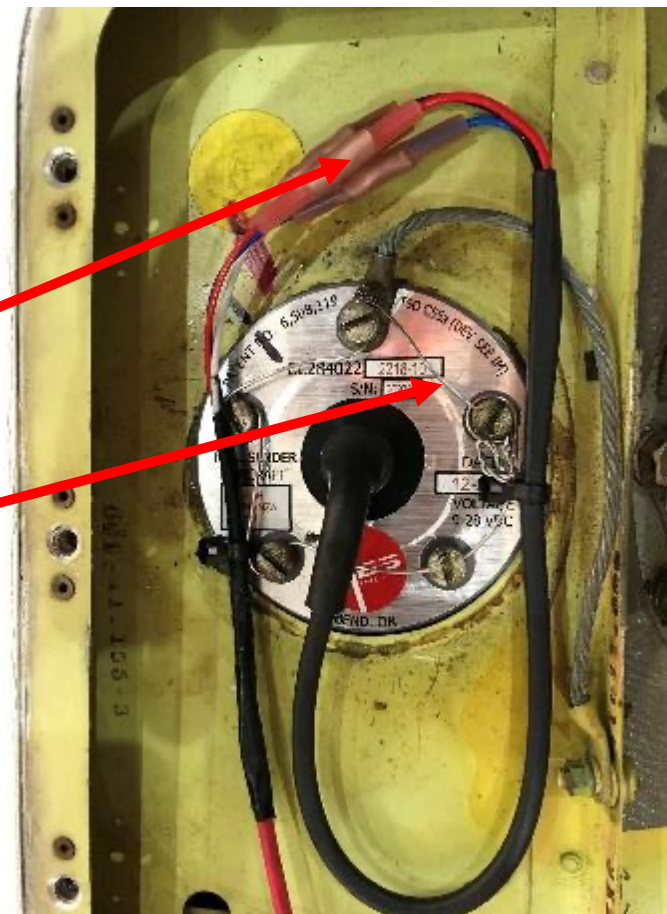


Note: Service loop in wiring to allow fuel sender to be removed, if necessary

Heatshrink
Waterproof
Connectors

Safety Wire

Note: Ground wire was from existing Beechcraft sender, it is not required for the CiES sender. It was terminated to the CiES so it was not hanging loose.



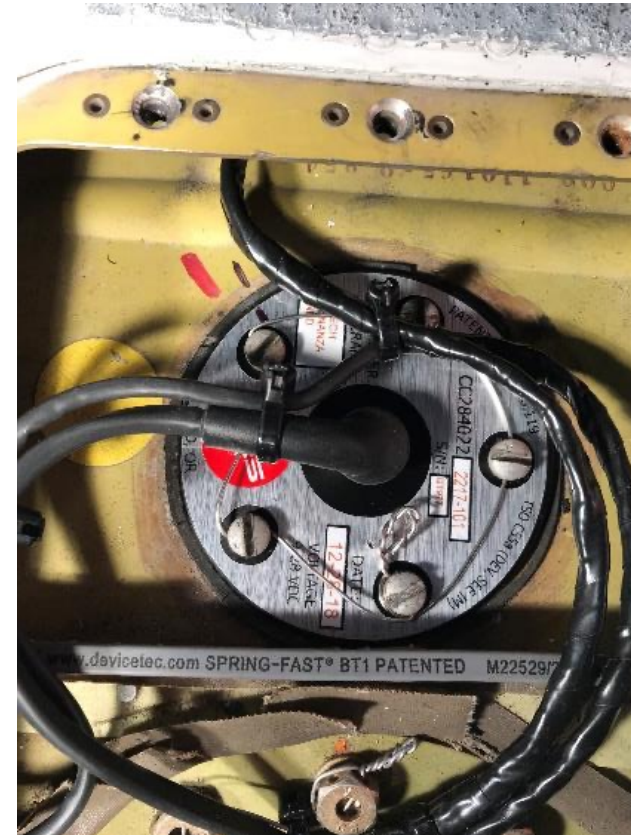


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Wiring Inboard CiES Sender

Note: Service loop in wiring to allow fuel sender to be removed, if necessary





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Plane Levelled on Jacks in Cruise Flight Attitude for Fuel Gauge Calibration

Tail stand on cinder blocks to achieve correct cruise flight attitude



Plane on jacks & front tire deflated to achieve proper cruise angle





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Aerospace Logic Fuel Gauge Installed

Calibrated per Aerospace Logic install manual



Removed Old
Beechcraft Fuel
Gauges

New Aerospace
Logic Fuel Gauge





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Installation Notes:

- Fuel bladders were drained to facilitate installation of new fuel sender wires. If the fuel bladder is full, it effectively “pinches” the existing fuel sender wire against the wall of the fuel bladder cavity. The bladders must be drained completely for calibration purposes, so might as well do it in advance.
- Three conductors are necessary for the senders: Signal, 12-Volt Power, and Ground.
- There are questions if an airframe ground near the CiES sender(s) can be used, or if the ground needs to be run all the way back to the panel to join the same ground as the Aerospace Logic Fuel Gauge. In this installation, the Beechcraft existing sending unit wire was repurposed as a ground wire. See text in the photo from YouTube : “During install make sure the CiES sender shares the same ground as the digital fuel gauge to have the best possible accuracy.”



This video is available at:

<https://ciescorp.net/documentation/videos/>



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Installation Notes (continued):

- To fish the 2-conductor cable into the bladder area the existing Beechcraft sending unit wire was cut off in the wheel wheel area and short piece of 22 AWG single conductor wire, along with the 2-conductor shielded cable was soldered to the cutoff existing sending unit wire. This soldered joint was covered with heat shrink so no rough/sharp edges were pulled across the bladder. Once the heat shrink was on, wire pulling lubricant was liberally applied to the new cable/wire and grommet. One person pulled from the sending unit area, while another pushed the wire/cable until there was enough slack in the fuel sending unit area. The 22 AWG single conductor wire was then spliced to the cut off Beechcraft existing sending unit wire, while the 2-conductor shielded cable was fished all the way back to the instrument panel.
- Three conductors were fished between the inboard sender area and the outboard sender area through an existing plastic conduit.
- There was concern if the 2-conductor cable would be difficult to fish into the fuel bladder area, and the plan was to use the existing Beechcraft sending unit wire as a “pull wire” only, and to use the airframe as the ground path. There was plenty of room, and if doing this again a 22 AWG/3-conductor shielded cable would be used from the inboard senders to the instrument panel. Shielded cable is NOT necessary, but it does provide some light “armoring” in the wheel area. Eighty feet of cable (forty feet each side) is plenty for both sides to reach from the outboard sender all the way to the instrument panel with slack loops in each sender area.



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Installation Notes (continued):

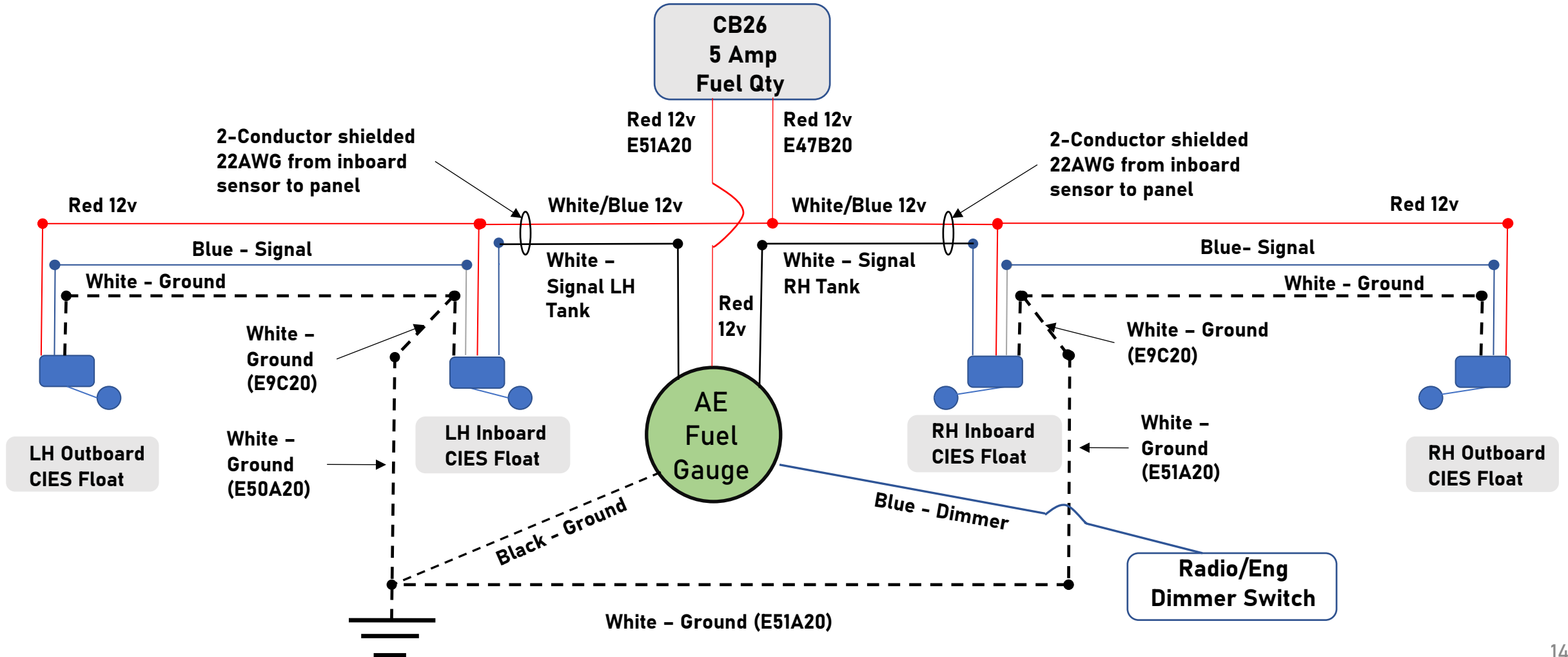
- The existing Beechcraft fuel PCB module and fuel gauges were removed from the panel.
- The “Fuel” breaker was identified, and the associated wire was used to power the CiES fuel senders and the Aerospace Logic Gauge. A separate breaker may be used, but in this installation using the existing “FUEL” breaker eliminated the need to relabel the panel.
- The existing Beechcraft fuel sender wires were cut and spliced to the existing fuel PCB board ground wires along with the Aerospace Logic Fuel gauge ground wire.
- The Aerospace Logic dimmer (blue) wire was spliced to one of the existing fuel quantity gauges light’s wire and is controlled by the “Radio/Eng” rheostat.



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CiES/Aerospace Logic Wiring





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Aerospace Logic Gauge in New Panel

