

Trig ADS-B Installation In a Schleicher ASW-27B



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Presented at the Chicagoland Glider Council - December 19, 2022

<http://www.chicagolandglidercouncil.com/presentations>

Updated: January 3, 2023

PLEASE NOTE

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Thank you, John

ADS-B

Automatic Dependent Surveillance Broadcast

What is ADS-B?

ADS-B is a surveillance technology ... in which an aircraft determines its position via satellite navigation or other sensors and periodically broadcasts it, enabling it to be tracked.

The information can be received by air traffic control ground stations as a replacement for secondary surveillance radar, as no interrogation signal is needed from the ground.

It can also be received by other aircraft to provide situational awareness and allow self-separation. ADS-B is "automatic" in that it requires no pilot or external input. It is "dependent" in that it depends on data from the aircraft's navigation system.

ADS-B, which consists of two different services, "ADS-B Out" and "ADS-B In", could replace radar as the primary surveillance method for controlling aircraft worldwide.

ADS-B

Automatic Dependent Surveillance Broadcast

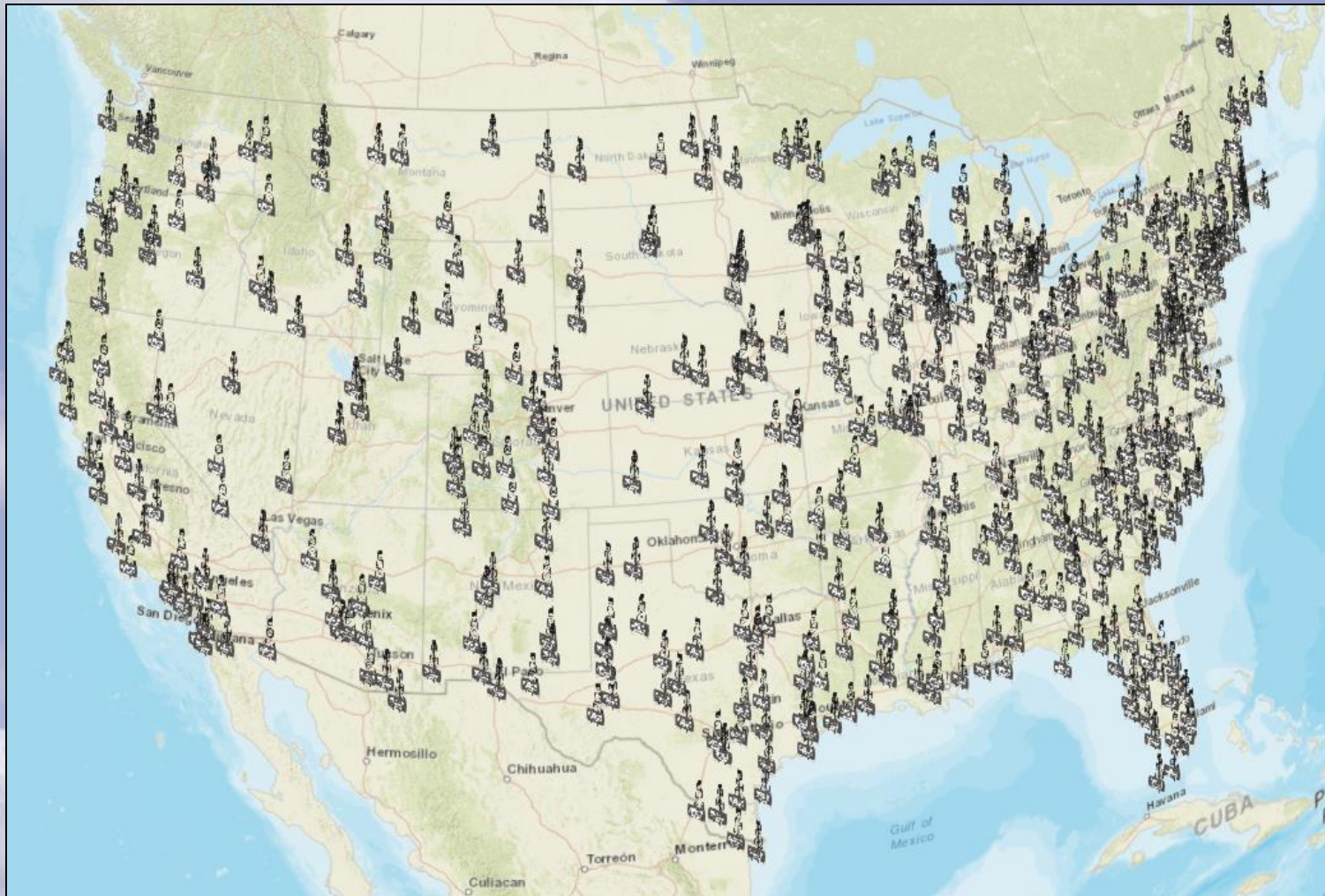


Source:

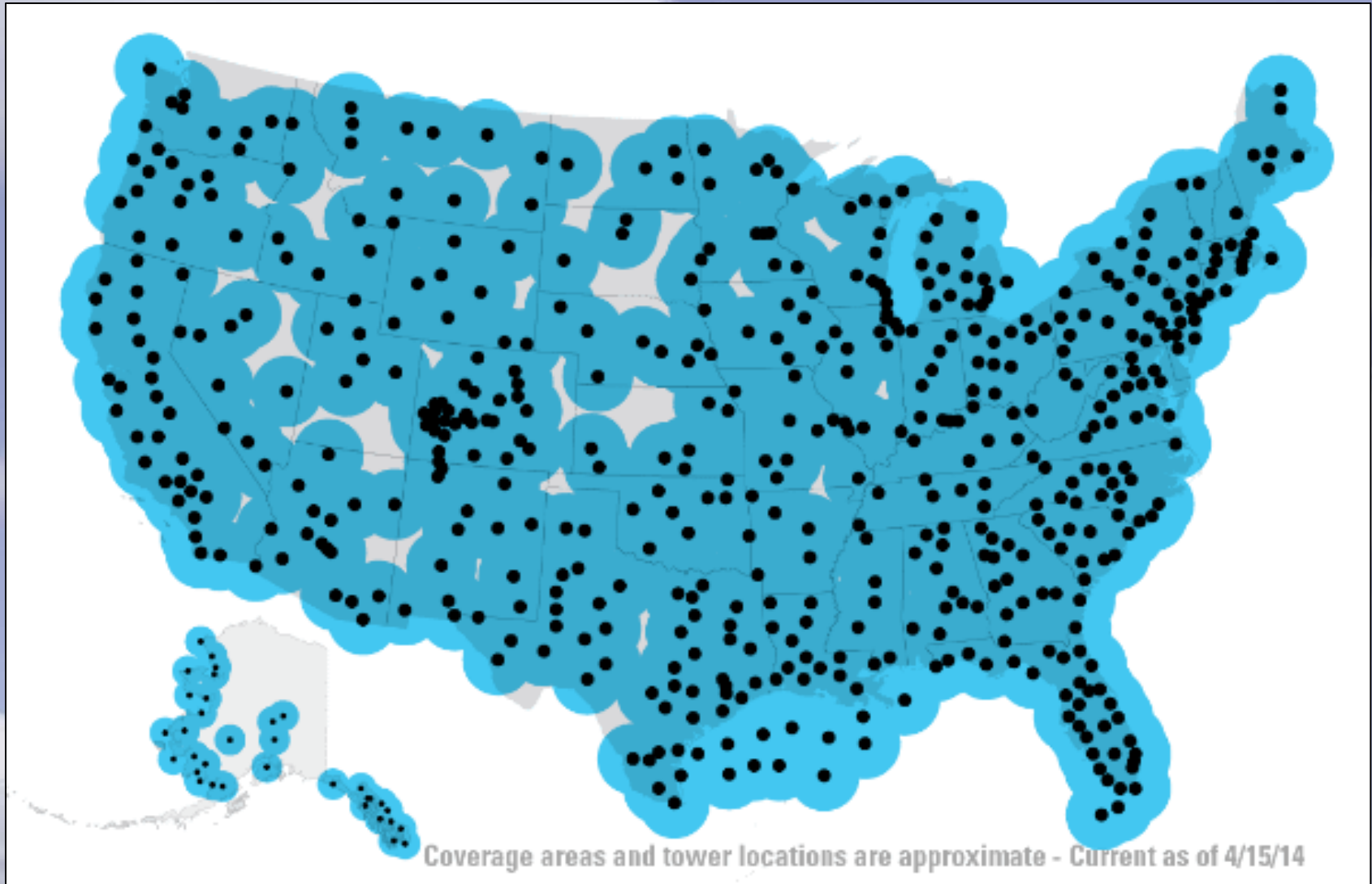
https://www.faa.gov/about/office_org/headquarters_offices/ang/offices/tc/library/storyboard/detailedwebpages/adsb.html

ADS-B Network Towers

623 ADS-B Network Towers in the Lower 48 States



ADS-B Coverage Map



N227BB



Original Panel and Transponder



Original Transponder and Altitude “Digitizer”

Becker ATC 4401



ACK A-30 Encoder

Equipment to be Installed

Trig TT22 Transponder and TC20 Control Head



Trig TN72 GPS Receiver



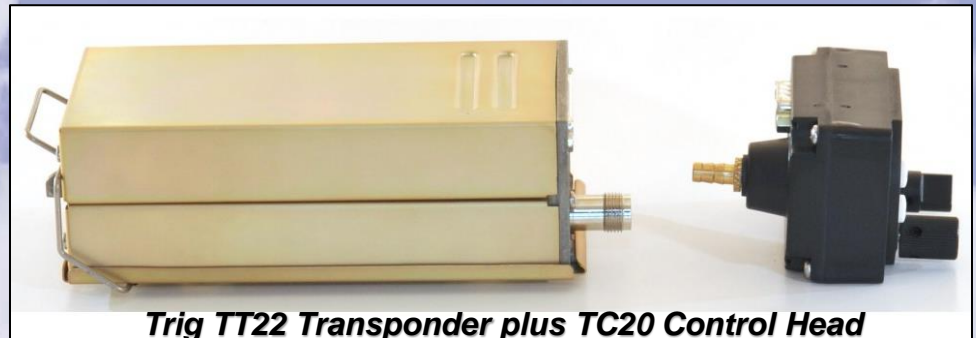
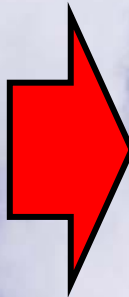
Trig TA50 GPS Antenna



Equipment to be Installed

Problem #1

The Becker was a single unit while the Trig is in two separate pieces



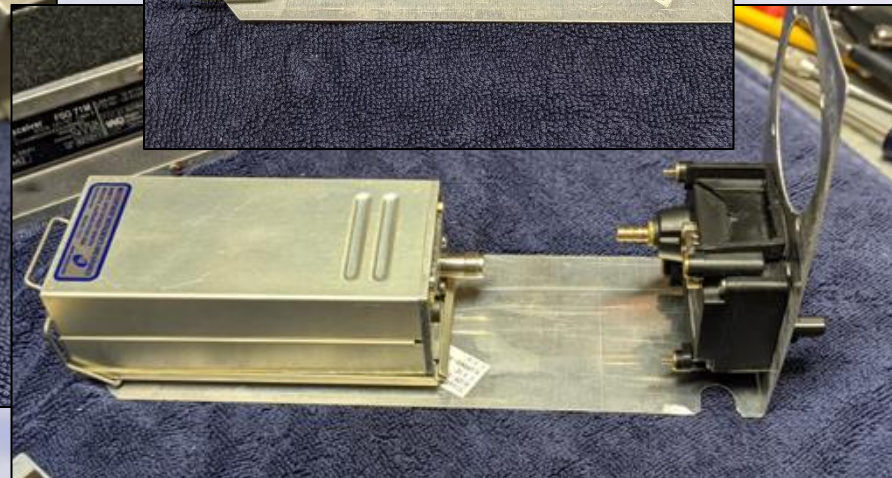
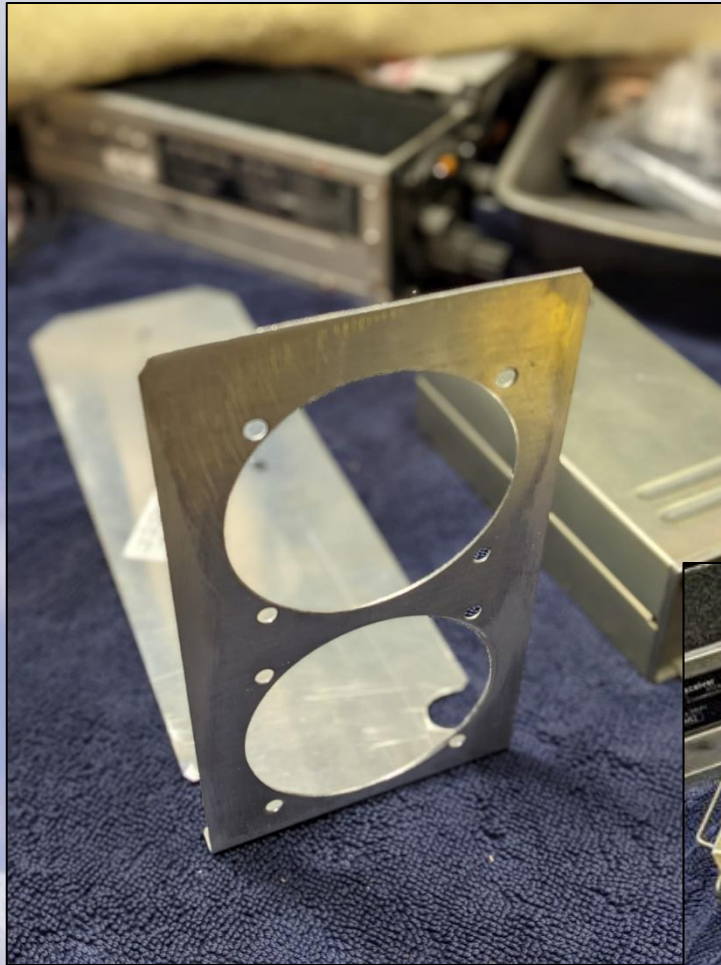
Trig TT22 Transponder plus TC20 Control Head

How to mount the Trig's two separate pieces to the bottom of the crowded instrument panel?



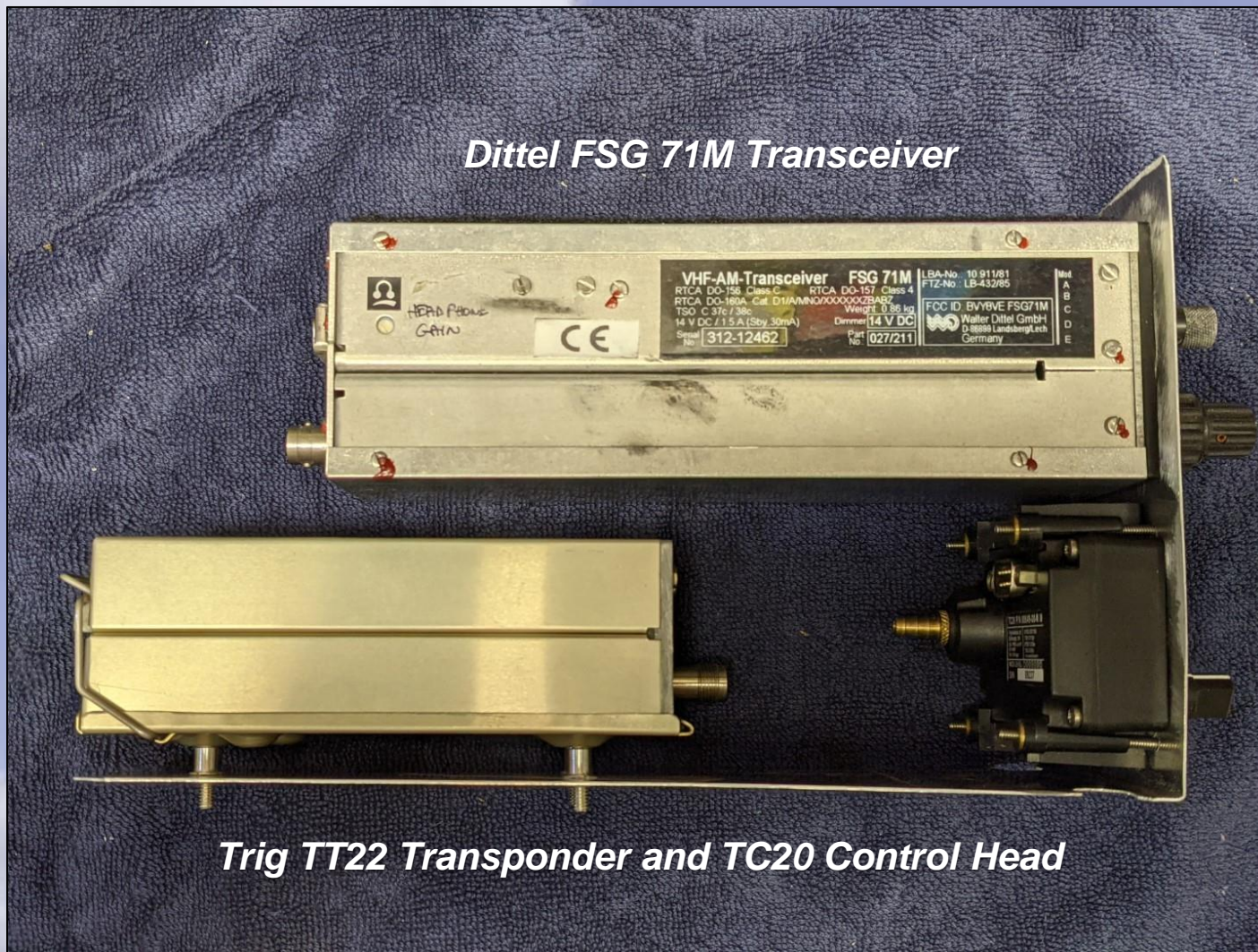
Trig ADS-B Equipment Installation

Building a support tray



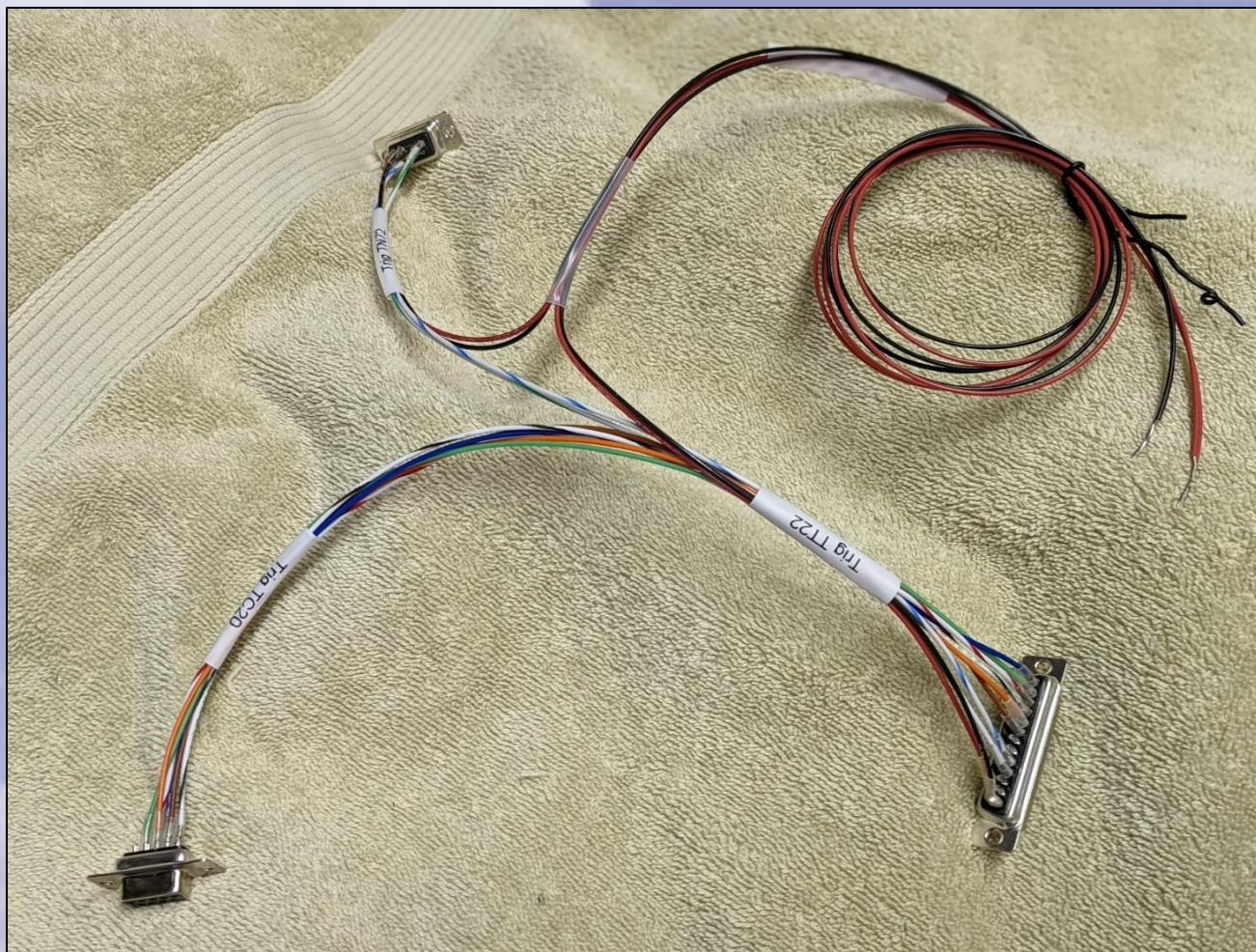
Trig ADS-B Equipment Installation

Support tray side view



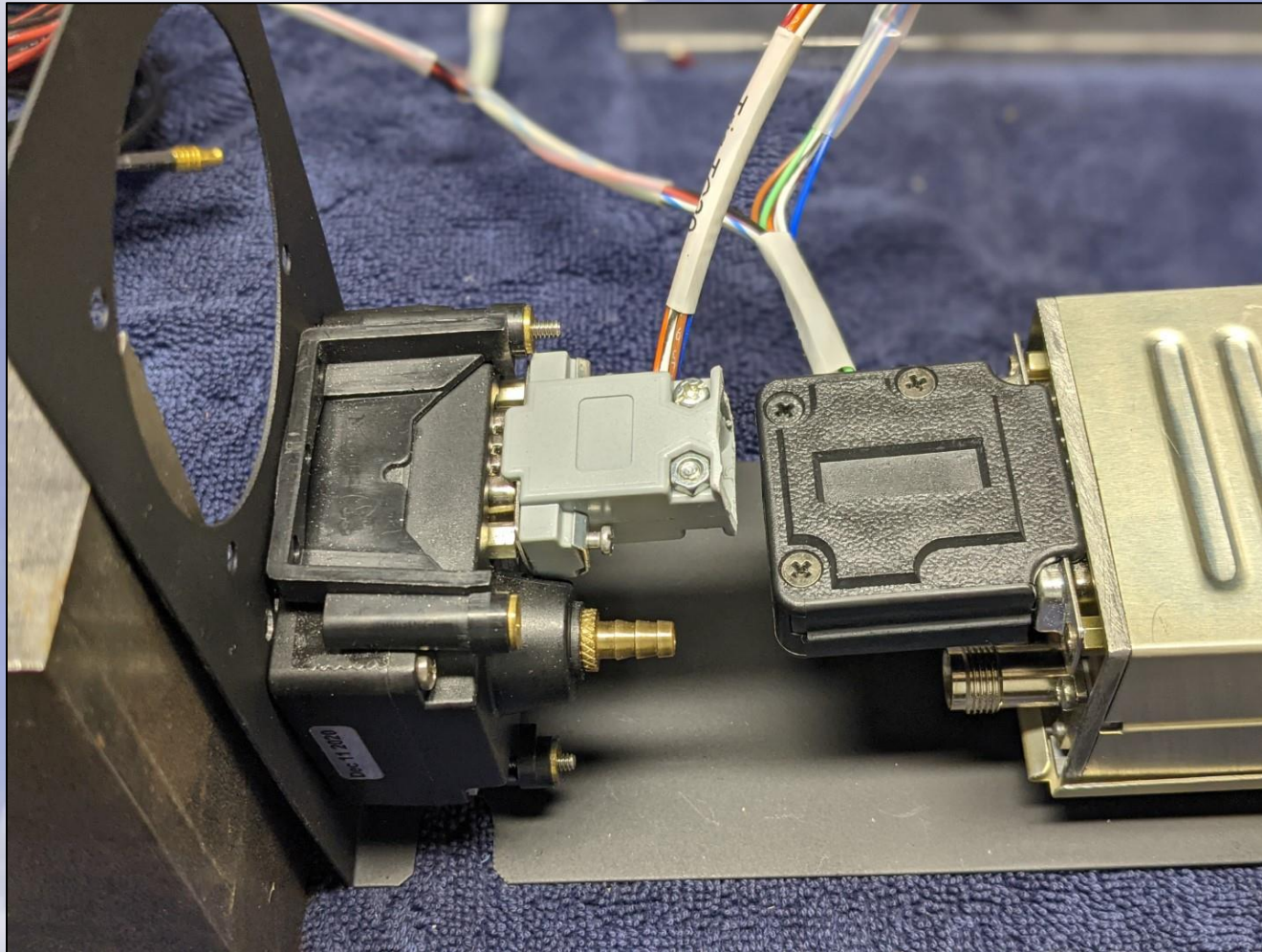
Trig ADS-B Equipment Installation

Custom Cable Harness



Trig ADS-B Equipment Installation

Custom Cable Harness



Trig ADS-B Equipment Installation

*Equipment Tray and Trig Equipment
Held in place by Transponder and Transceiver (not shown)*



Trig ADS-B Equipment Installation

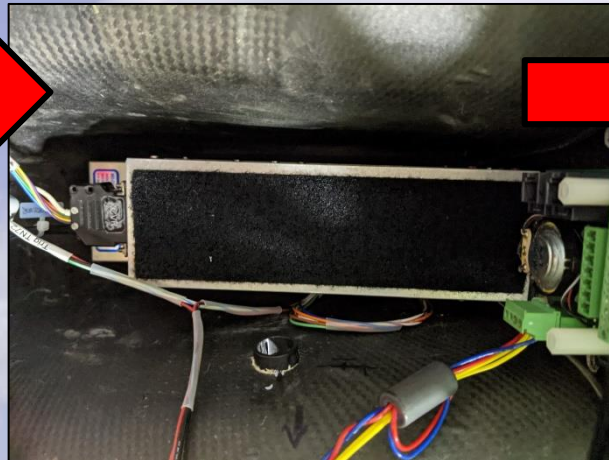
Problem #2

Where/How to mount the Trig GPS Receiver?

Trig TN72 GPS Receiver



This mat of Velcro on the top of the transponder was used to hold the old ACK Altitude Encoder used by the removed Becker transponder

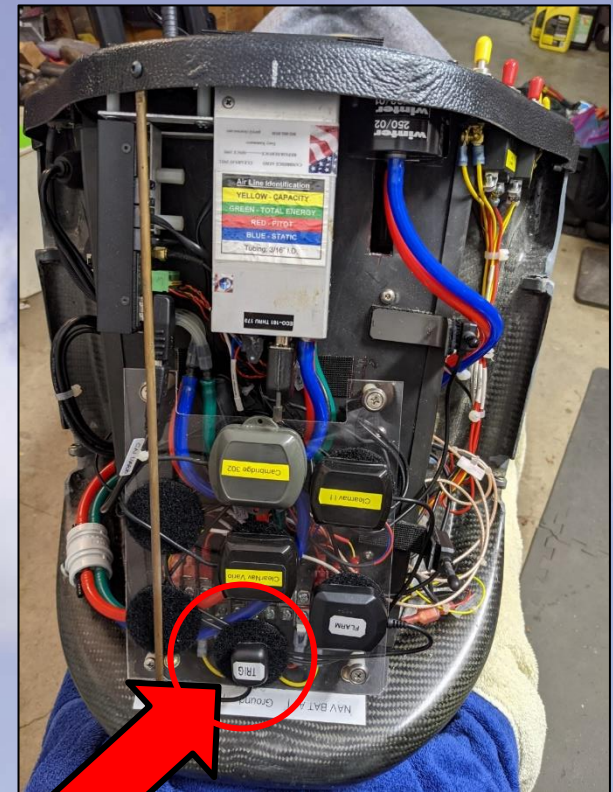
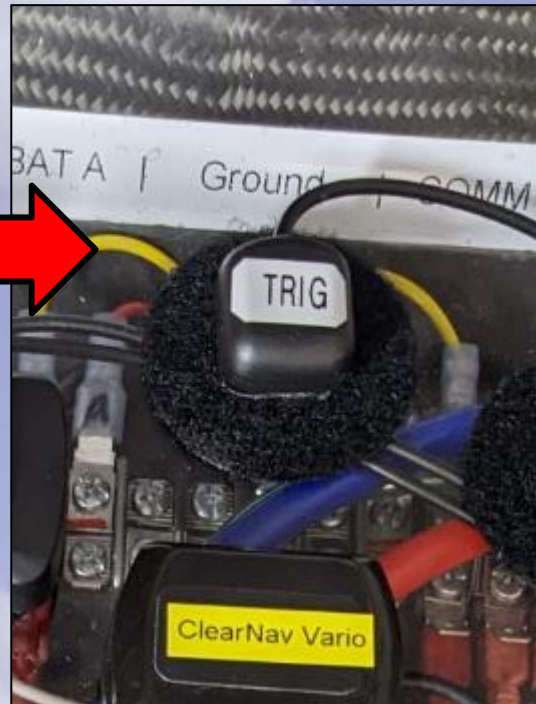


Trig ADS-B Equipment Installation

Problem #3

Where/How to mount the Trig TA50 GPS antenna?

Trig TA50 GPS Antenna



Mounted on a plexi tray holding my Antenna "Farm"

Trig ADS-B Equipment Installation

*Antenna “Farm” plastic platform
Mounted above an aluminum equipment tray*



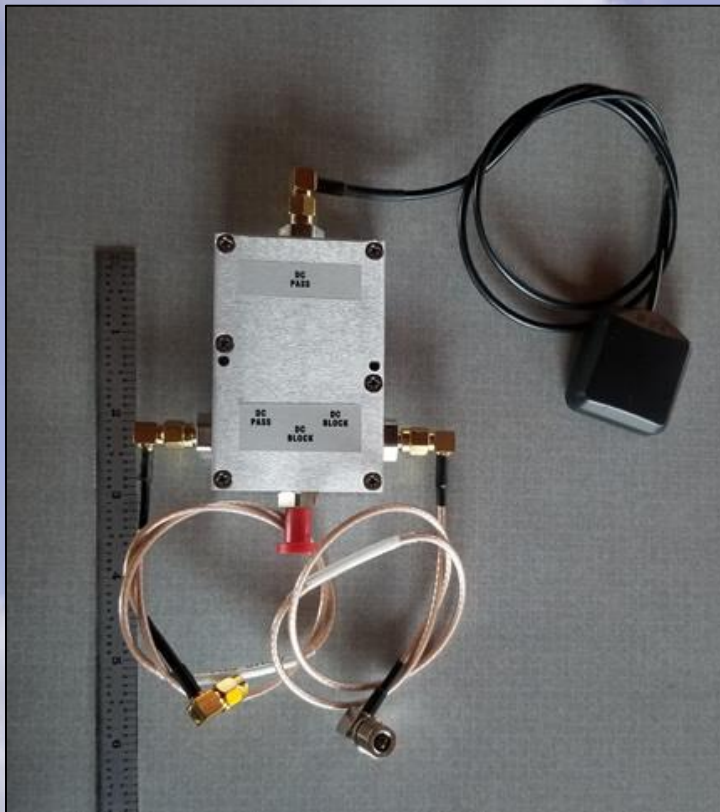
Mounted onto an aluminum equipment mounting platform

Trig ADS-B Equipment Installation

Problem #4

How to reduce the GPS antenna count?

I have not used this equipment



GPS Signal “Combiner”

Combines signal from a single GPS antenna to three (3) different devices.

Only one device provides the power to the combiner. All other device's power is blocked to the combiner

Source: <http://www.craggyaero.com/>

Transponder Antenna Location

Previous owner originally installed a rod type transponder antenna to the fuselage belly...



...then later moved to a center fed L2 transponder antenna mounted inside the vertical stab's empty battery box



Required running new coax to the trail



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- Transceiver Troubleshooting
- Oxygen Systems
- Working with Glider Air Lines
- Trailer Wiring & LED Lights
- Pilot Relief Systems
- Battery Testing
- Emergency Location Devices
- Spar Alignment Tool
- L'Hotellier Fittings
- Carbon Fiber Panels
- IGC Filename Decoding
- Blanik L-23 Strut Work
- Landout Survival Kit
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- Working with Glider Air Lines

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