Aerosport S-21 Carbon fiber instrument panel install instructions

Components

Legend:
- 🟢 Used to hold insert panels #6-32
- 🟠 Used to hold carbon panel to sub panel #6-32
- 🔵 Used to mount sub panel to Rans panel frame
- 🟣 Used to mount radio stack angle brackets

10x Ø0.1285
19x Ø0.1495

32x Ø0.1875
all .1875" holes
require 6-32 PEM nuts
inserted from same side

11.022

38.131
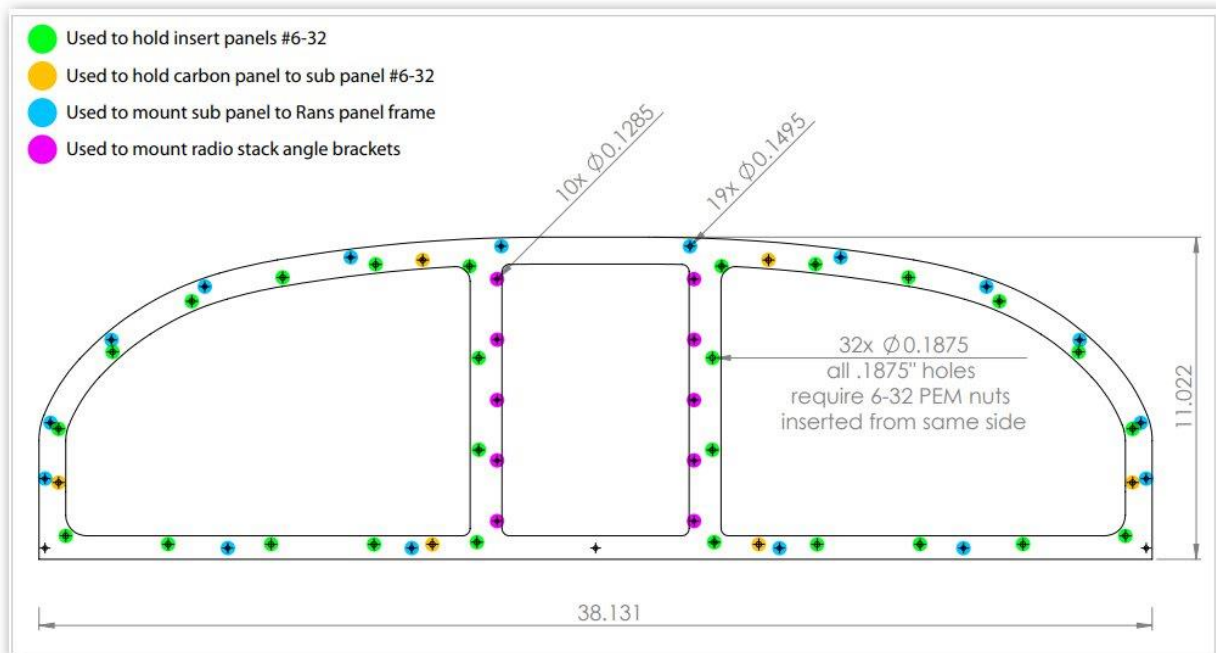
STEP1:

Take the provided Aerosport Products subpanel and cleco it to the Rans Part# KPIP0140 Instrument panel frame. Make sure the PEM nut screw bosses are facing up. If you have already installed the nut plates on the Rans panel frame enlarge holes as needed to the Aerosport panel so it will accept the 8-32 screws and can be screwed to the Rans panel frame. We recommend using 6-32 nut plates here if you have them available. We also recommend using countersunk rivets to install the nut plates if possible.

Step2:

Take a #40 drill bit in and carefully start to transfer drill into the Rans Part# KPIP0140. Just drill enough to mark the holes and leave a slight center hole to drill in the next step. Be careful not to damage the threads in the PEM nuts. Do this on all holes that have the PEM nuts.

Step3:

Remove the Aerosport sub panel from the Rans panel and then drill all the way thru the Rans panel on the center marked holes. Use a #40 drill or #30.
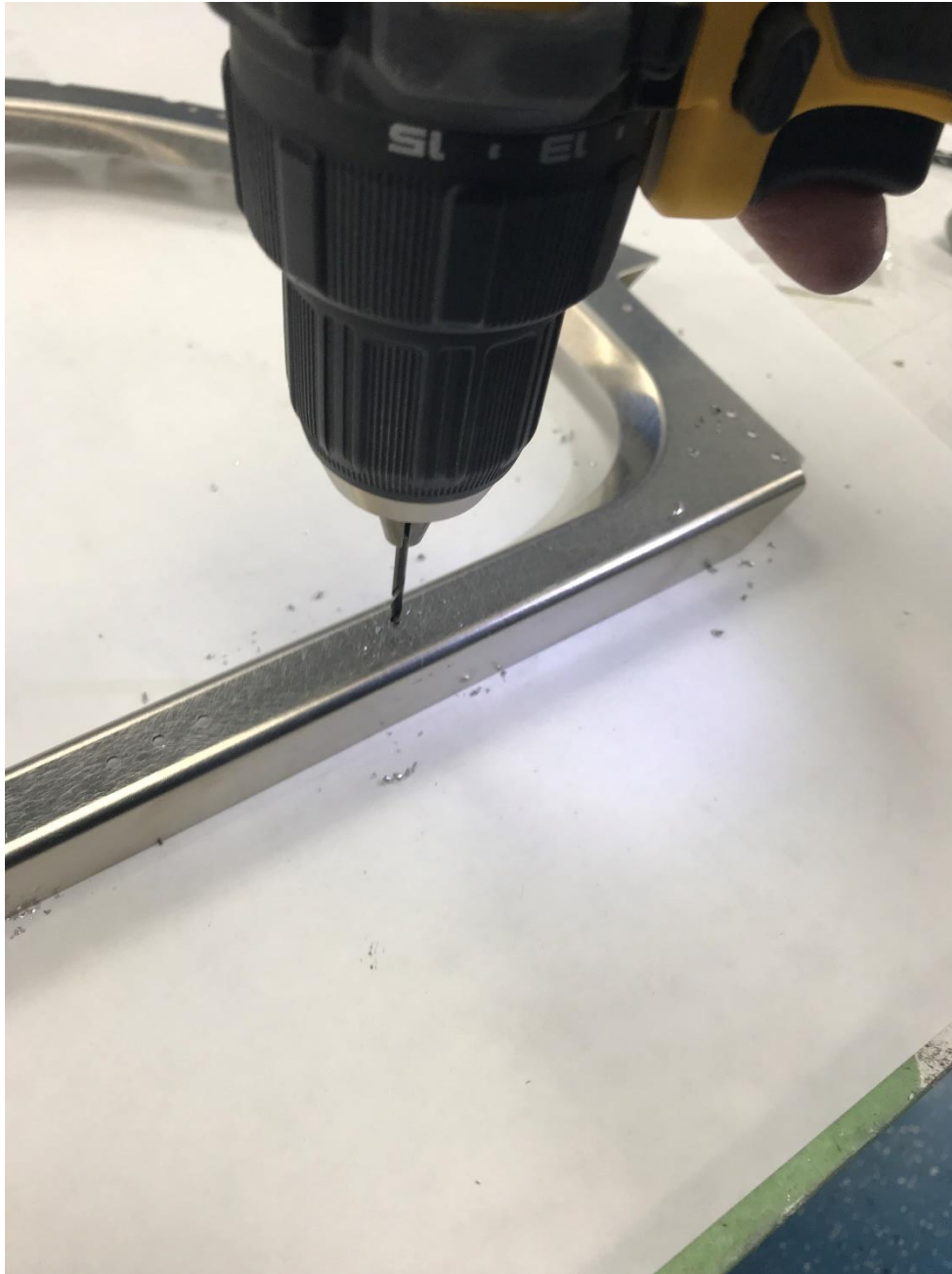
Step4:

Next use a Uni-bit step drill and drill out each hole to at least .3150. You want enough clearance so the PEM nuts will go thru the holes and the Aerosport sub panel will lay flat on the Rans panel. Take your time. You can also use standard drill but enlarge the hole gradually.

Step5:

Once you have drilled all the holes out to the clear the PEM nuts, cleco the Aerosport sub panel back to the Rans panel, this time with the PEM nuts towards the Rans panel. Check to make sure that it lays flush on the Rans panel frame. If not adjust the holes as needed. Go a little at a time.

Step6:

Next take the supplied angle aluminum and clamp them to the underside of the Aerosport subpanel as shown in the picture. Make sure that they are centered and flush against the flat edge of the subpanel. Clamp both sides and check the distance between the inside of the angles. It should be 6.25". This is for the Radio, GPS, audio panel trays to mount to. The Center Radio stack. Once happy that they are centered and flush against the subpanel transfer drill the 3 holes on each side. Cleco as you go along to keep them in place. Once satisfied these may be rivet in place. NOTE: these angle brackets are needed for the use of a radio stack tray items. GPS items like Garmin GPS175 Com radio's ECT. If you are not going to have any 6.25" wide radio stack style equipment these are not needed.
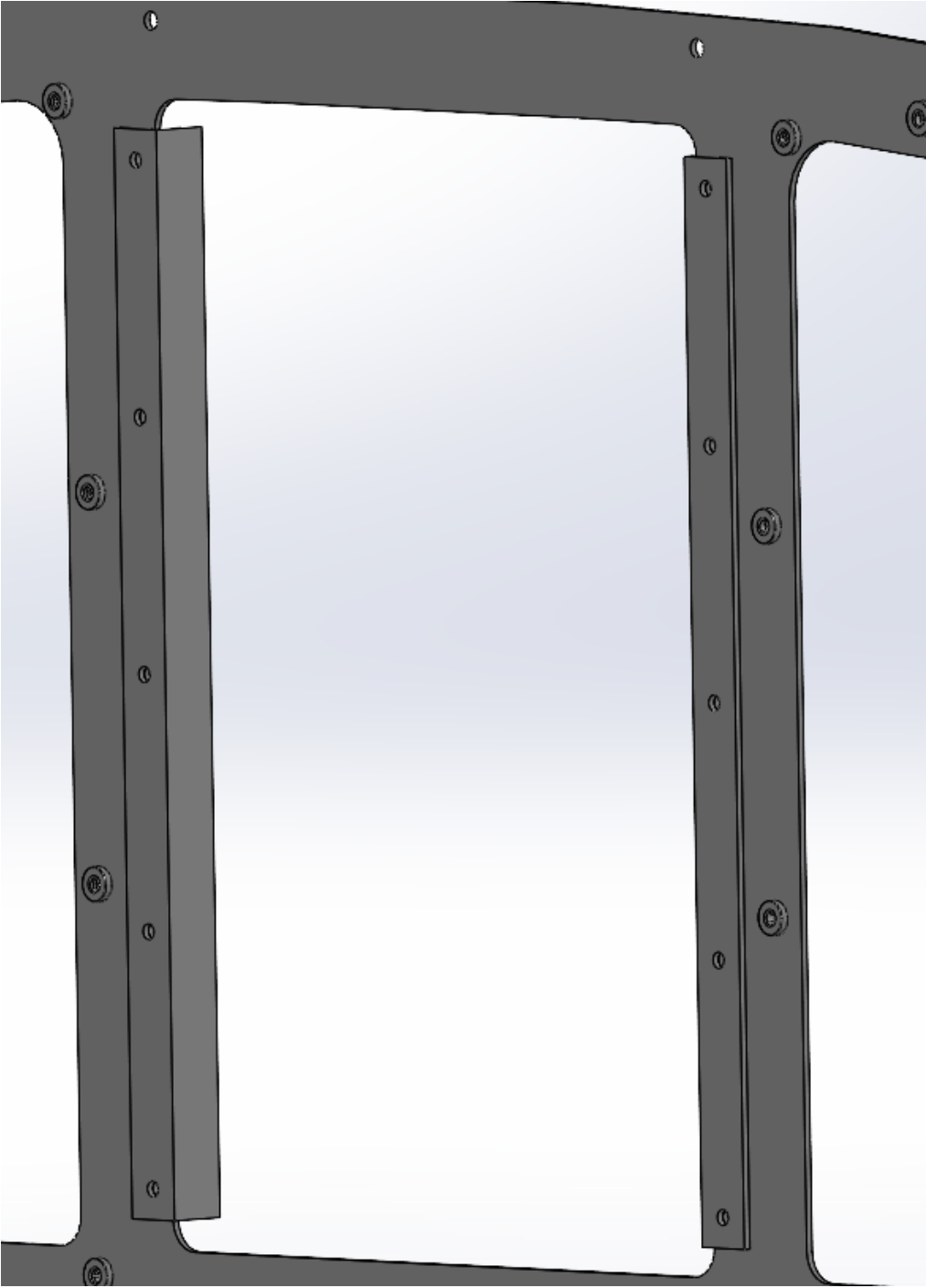
See notched areas as needed to clear nutplates for center insert panel. You can also use Click-on nut plate fastners. These are glued on.


Step7:

Next you will need to counter sink all holes that attach the Aeroport sub panel to the Rans panel frame. This would be 100 degree counter sink. And then use all flat head screws with a 100 degree head. Use either the 6-32 flat head screws or the 8-32. Once again we recommend that you use flush/countersunk rivets to Install the nut plates for these screws.

Step 8:

In this step you need to prepare and attach the Throttle and Mixtures cable doubler Part#KPIP0151 to the Aerosport supplied sub panel. Normally this will attach to the Part# KPIP0140 but with the Aerosport Carbon panel it will install to the Aerosport subpanel. Aft side of subpanel (facing the pilot). We recommend installing with 6-32 nut plates to the Rans Part#KPIP0151 (forward side) 3 Nut plates will be needed here. Also, counter sink Part#KPIP0151 for the 3 6-32 100 degree flat head screws.

SEE BELOW
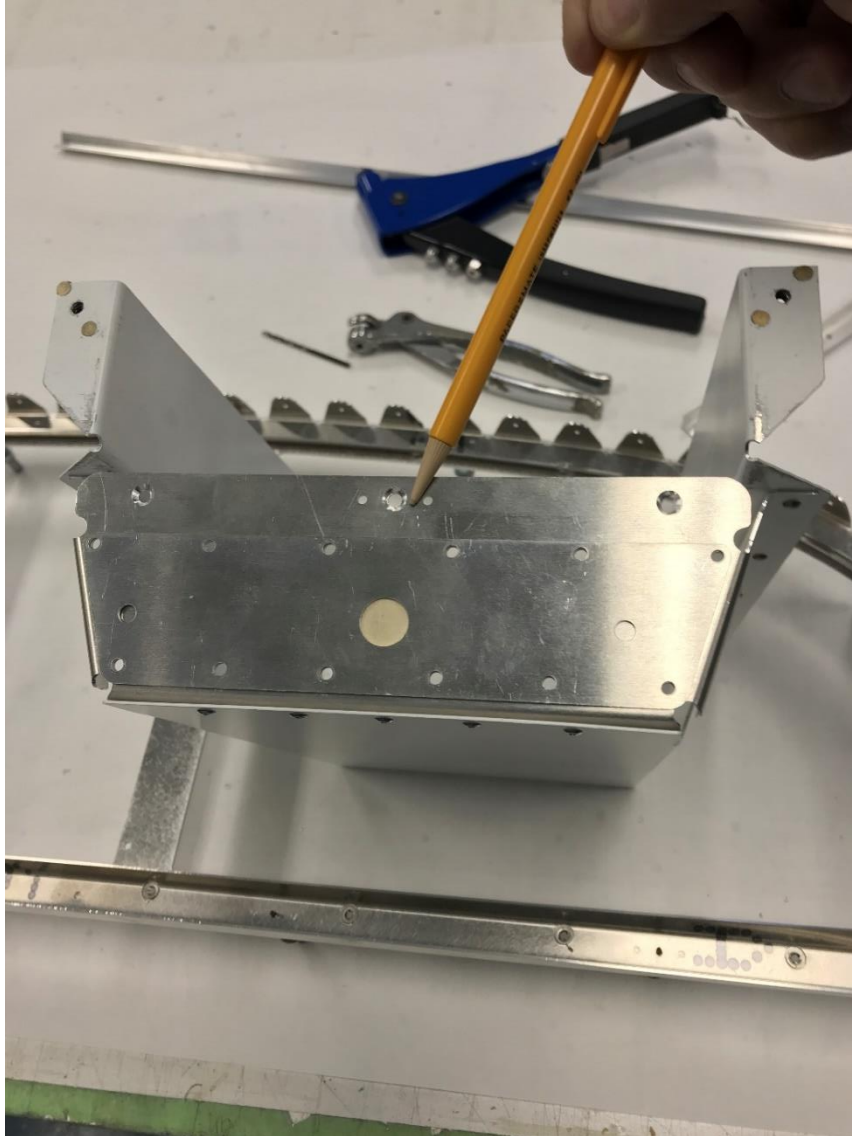
You will also need to rivet Part# KPIP0150 to Part#KPIP0151. NOTE: This part goes on the opposite side of part Part#KPIP0151. This needs to be flush riveted. See picture below. You can either use rivets as shown or counter sink pull rivets.
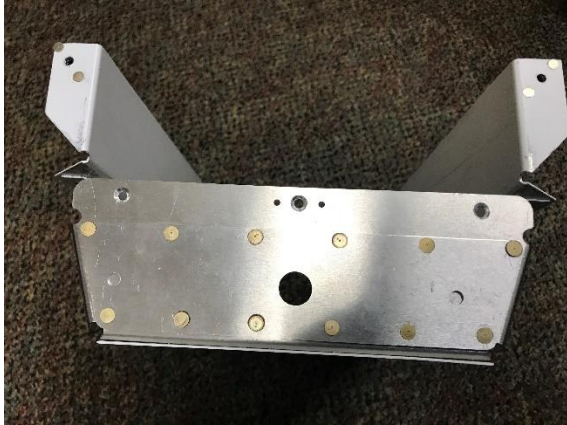
Step 9:

Next you will need to mount the Carbon fiber Panel to the Aerosport subpanel. First you will need to cut out the Carbon fiber panel to the ½" trim line on all three insert panel locations. You will need to use a Dremel Drill or equivalent with a cut off wheel. Make sure you use goggles and dust mask when cutting. Also recommended is to run a vacuum right next to the cutting wheel. Once cut out like the photo you will need to aligning the carbon panel to the Aerosport subpanel and clamp. When happy with the alignment you will need to drill six .150 #25 drill bit holes in the spots in the photo. These six holes are here to keep the Carbon panel attached to the sub panel. These only need to be 6-32 100 degree Flat head screws with lock nuts You will need to countersink these holes with a 100 degree counter sink into the carbon panel.

Note: The carbon panel should never stick out past the aluminum sub-panel on the top edge and sides. It should be flush or just under. Align Top edge and left and right insert panel cut out areas

Step 10:

Once this is completed you will need to transfer the aluminum insert panel perimeter holes to the Carbon fiber panel. This can be done by back drilling with a #40 drill thru the back side of the PEM nuts as was done in Step#2. This time you will want to drill all the way thru the carbon fiber. Take your time drilling these holes. Keep the carbon panel and the subpanel clamped tight. Once #40 holes are drilled thru the carbon panel enlarge to .150-.165 diameter hole. Once done reassemble Carbon panel to sub panel and attach with the three flat head 6-32 screws. On earlier subpanels you will have to relief the Rans part# KPIP0140 as in step#4 and then check fit all other 6-32 screws into all PEM nuts and the one single nut plate installed earlier. NOTE Always just snug the 6-32 screws into the PEM nuts. They do not have to be super tight, just snug. Next you can check the alignment with all the insert panels if you have them cut out. You might have to adjust the carbon fiber holes a little to allow the 6/32 screws to go thru the insert panels and into the Subpanel PEM nuts.

If you have your insert panels cut already you could drill the insert perimeter holes by dropping the insert panel in the carbon panel and get centered hold tight drill one hole with a #30 bit and then check for alignment again to make sure it is still centered in location and then drill another hole opposite side of the insert, Cleco, than complete drilling all holes. You will still need to drill the holes for the 6 places where the subpanel is screwed to the carbon panel. These would be the amber/yellow marked holes.

Step 11:

Next you will need to assemble the subpanel to the Rans Panel support Part# KPIP0140 with either the 6-32 screws or the 8-32 these are the Blue set of screws. Once that is done screw the carbon panel to the Aerosport subpanel using the flat head #6-32 screws qty6. These are the Amber/yellow screw locations. Last you will need to check fit your insert panels to the assembly. These are the green screws. 6-32. Some of these might need to be countersunk and flat head screws if they lie underneath the EFIS screens bezel.
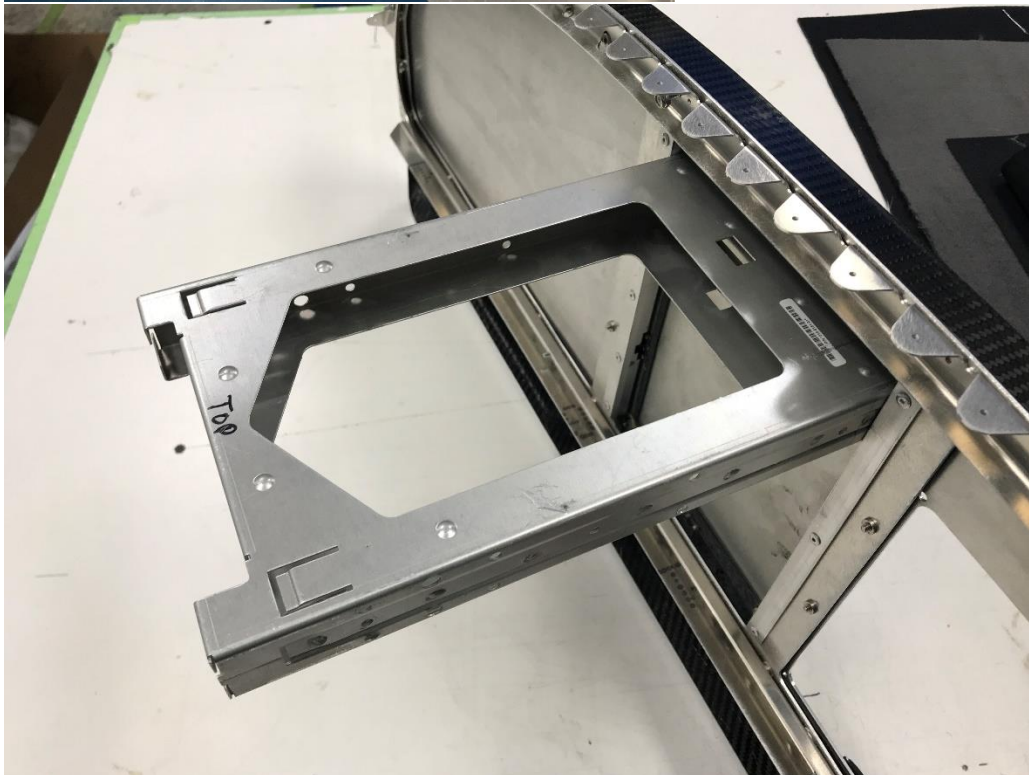
Step 12:

Installing in the aircraft

Install into aircraft once you have the Rans Part# Part# KPIP0140 either all clecoed in place or riveted. From here you will follow the Rans instructions for the fire extinguisher mount and sections should be about the same. You might need to make a few adjustments with that assemble. We recommend using one or two screw to hold the brackets to the aluminum sub panel instead of rivets as The plans show. This will help if you ever want to remove the entire panel later on for maintenance or avionics work. SEE PHOTO Below

Below are some pictures that might help with the installations.

Step 13:

Once you have finished these steps you are ready to finish the assembly of your Carbon fiber panel from Aerosport. You now will cut your insert panels as needed for your Avionics you will be using. You will also need to have them painted or powder coated and any graphics needed. From all the prior steps everything should fit very nice and allow for a panel that will be easy to work on in the future.