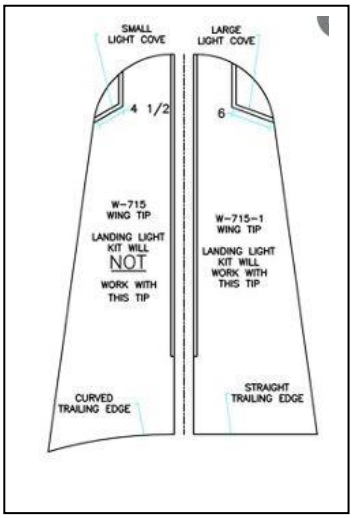
RV BITS LIGHT SET INSTALLATION

W715-1 Wingtip



This document will take you through the steps to install the RV Bits Version 2 light set into new blank wingtips and also how to retrofit it on wingtips with other lights installed. This is for the RV7 and 8 fitted with the W-751-1 wingtip. It is also for the RV10 and RV14. Note that the RH installation on an RV7A is mostly shown.
For RETROFITS, it may not be necessary to remove your wingtips.

In your kit you will receive the list of parts listed below. Some parts have been pre-assembled and fitted to the Inboard Mounting Bracket:

LINE	PART NUMBER	SIZE	QUANTITY
1	RVBITS LIGHT MODULE V2 LEFT		1
2	RVBITS LIGHT MODULE V2 RIGHT		1
3	INBOARD BRACKET	60 X 140 mm	2
4	OUTBOARD BRACKET - blank		2
5	K1000-08 PLATE NUTS	8/32”	8
6	AN507C832R8 COUNTERSUNK SCREW NOTE: TO USE ON PLATE NUTS	8/32 X 1/2”	4
7	AN5158R16 PANHEAD SCREW NOTE: TO MOUNT PIVOT POINT BUSH	8/32 x 1”	2
8	AN970-3 WASHER NOTE: FOR USE WITH PIVOT POINT BUSH	3/16 X 0.875”	2
9	AN960-08 WASHER	#8 X 0.375”	4
10	AN365-08 NYLOCK NUT	#8	4
11	3D PRINTED PIVOT BUSH	16 X 6 mm	2
12	AN507C832R10 COUNTERSUNK SCREW NOTE: TO FIT 3D PART UNDER ADJUSTMENT SLOT	8/32 X 5/8”	2
13	AN526C832R6 SS MACHINE SCREW NOTE: TO USE ON OUTBOARD END OF LIGHT	8/32 X 3/8”	2
14	AN526C832R12 SS MACHINE SCREW NOTE: TO USE ON FORWARD SLOT OF LIGHT	8/32 X 3/4”	2
15	3D PRINTED PSU HOLDERS		4

Important Notes.

1. This document shows the installation on the **RIGHT HAND** wingtip.
2. All the pictures and diagrams are shown with the wingtip leading edge to the right and the wingtip outboard edge to the left.

3. The RVBits light modules will fit into the 715-1 wingtips used on the RV7 and RV8. It will also fit into the RV10 and RV14 wingtip with slight variations in the installation. It is explained in this document.

Step 1

For a RETROFIT: Remove old lights. Figure 1 shows an example of how material has been trimmed away on the two faces of an RV7A **RIGHT HAND** wingtip. Note that this was trimmed away like this for a previous installation of a different setup. The leading edge of the wingtip is on the right-hand side of the picture and the outboard edge of the wingtip is on the left-hand side of the picture.

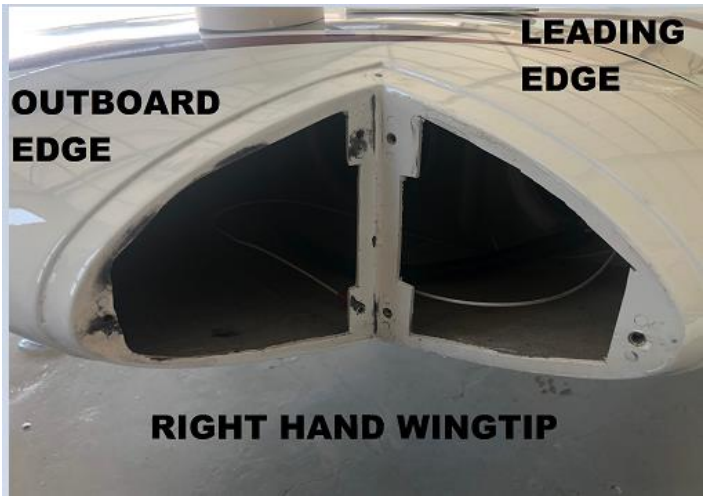


FIGURE 1

In this case the builder has fabricated base plates and nut plates to install the old lights. This photo was taken after the old lights and base plates had been removed. It will be different for other installations.

It is <u>not</u> necessary to cut out the Leading Edge panel as shown in Figure 1 if yours is solid or has smaller openings for existing nav/strobe lights. The base plate you fabricate covers these up. See Figures 1A and Figure 2 in Step 2.

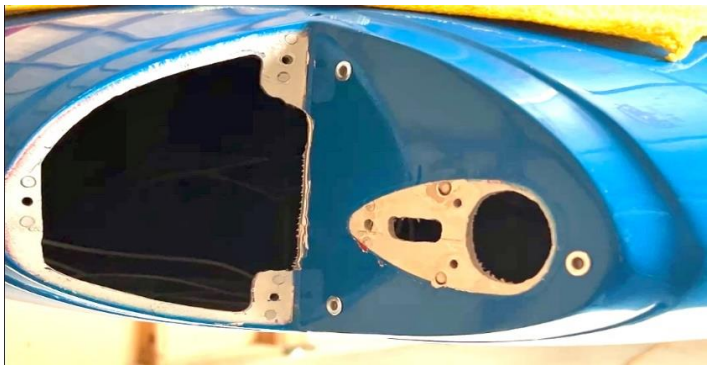


FIGURE 1A

Step 2

For a RETROFIT: If needed make two blanking plates, A and B from 040 Alclad or similar material to cover the openings where the old navigation and strobe lights and landing lights have been. Figure 2 below shows the blanking plates fitted. Another option is to make one plate combining A and B and to then bend it to fit the recess profile.

For NEW WINGTIPS:
If needed Fabricate blanking plate A as shown in Figure 2.
Alternately, trim away the fiber glass as shown in Figure 3A.
Note that templates are available on the website.

FIGURE 2

Step 3

For RETROFIT and NEW WINGTIPS: Remove the landing light blanking plate A and trim away as shown below. Note that this is for an RV7 and your measurements might differ. Start slightly smaller with the cut out and trim bigger. There needs to be some room on the top and bottom of the cutout to allow for tilting of the module when adjusting aim. Wait until **Step 9** to make final fitting adjustments. Note: This blanking plate can also be manufactured from carbon fiber sheeting or similar. 0.5mm carbon fiber sheeting is strong enough but 1mm will provide better rigidity and may eliminate the need for a forward attach point on the blanking plate. On RV10/14 wingtips, there may not be sufficient room for this forward point. **Note**: The thicker your blanking plate B is, the farther outboard your light module will be, affecting the lateral cutout on blanking plate A. For RV10/14 installs, this is critical as space is tight. Blanking plate A thickness is not as critical; a thicker (1mm) material would work here.

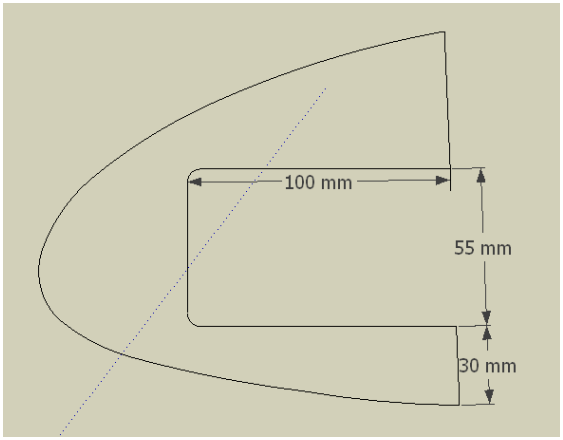


FIGURE 3A


FIGURE 3B

With reference to Figure 3A, note this is a typical RV7/8 example and that on an RV10/14, shown in Figure 3B, the clearance will be much less due to the recess being smaller. The distances shown might vary. **BEFORE YOU CUT**--TEST FIT using the light module and adjust accordingly.

Step 4

For RETROFIT and NEW WINGTIPS:
For the RV7/8: Mark a line 40mm from the aft end of the Inboard Mounting Bracket and the position it as shown below in Figure 4. The blue line is 40 mm from the AFT end.

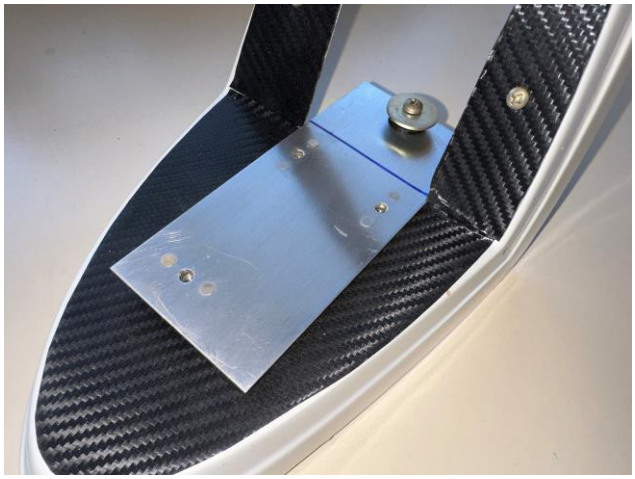


FIGURE 4

For the RV10/14: Mark a line 50mm from the aft end of the Inboard Mounting Bracket and the position it as shown in Figure 4. TEST FIT using the light module attached to the Inboard Mounting Bracket to check fit into cutout on Outboard edge. There should be a slight reveal on the light module housing forward of your blanking plate. Your measurement may vary slightly.

Step 5

For RETROFIT and NEW WINGTIPS:
Install the 3D printed parts on the Inboard Mounting Bracket with supplied hardware described in Lines 7-11 of the parts list, as shown in Figure 5.
The Allen key is 2.5 mm. The red arrows in Figure 5A and 5B point to the bushing location on the Inboard Mounting Bracket and the proper stacking for the bushing.

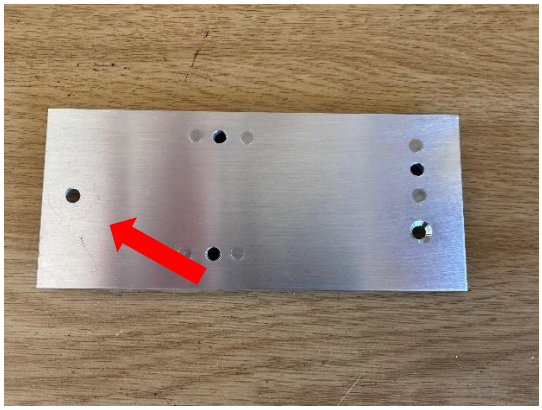


FIGURE 5A

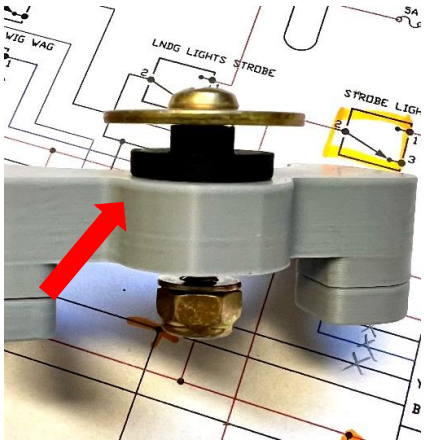


FIGURE 5B

Step 6

Attach PSU using Allen screws (2.5mm) as in FIGURE 6, and connect wiring to aircraft. PSU wiring connections to the light module are in **Step 8.**

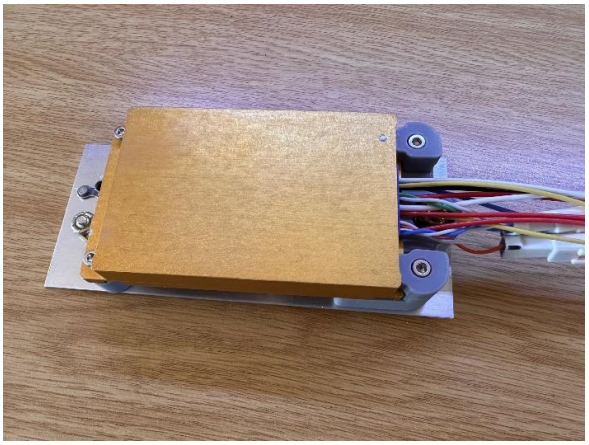


FIGURE 6

Step 7

For RETROFIT and NEW WINGTIPS:

Attach the Inboard Mounting Bracket to the inside face of fiber glass through blanking plate B (already installed from Step 2), using only the two AN507C832R8 countersink screws.
Shown in Figure 7 is the position of the Inboard Mounting Bracket with reference to the blanking plate marked B. The gap shown between the blanking plate and the two black measurement indices allows for the thickness of the fiber glass.

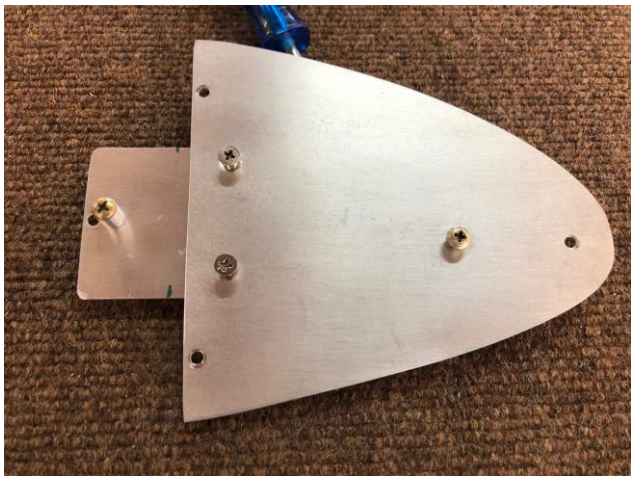


FIGURE 7

Alternately, attach the Inboard Mounting Bracket to the inside fiber glass face of the wingtip.
Note that the old version of the pivot point bushing is shown in Figure 7.

If not done already from previous **Step 4**, mark the position of the adjustment screw (red arrow) and drill a hole in your fiber glass panel for attaching later when installing the light module.

Figure 8 shows what the Inboard Mounting Bracket looks like from inside for reference. The PSU has not been installed in this picture.

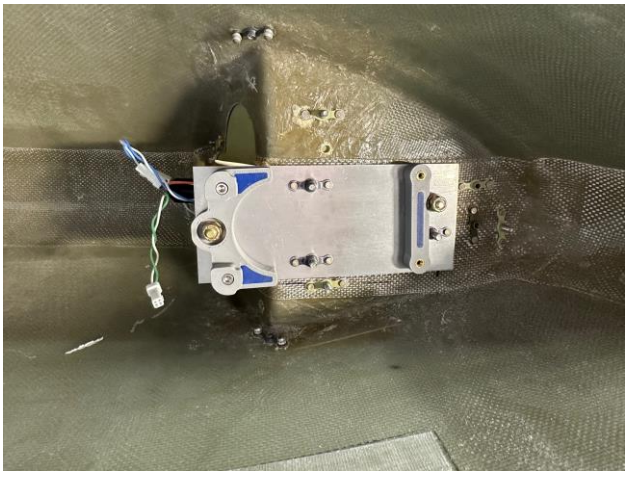


FIGURE 8

Step 8

For RETROFIT and NEW WINGTIPS: Connect the three light module connectors to the PSU then install the light module by sliding it over the pivot point and by using the MS35206-247 PANHEAD PHILIPS screw and fiber washer where the adjustment slot is, to fix it in place.

CAUTION! DO NOT test the strobes until you have disconnected the strobe power pack (if installed). Failure to do so will damage your modules.

CAUTION! When needed to unplug the connectors, use a small screwdriver to push in under the locking clip. Do not pull on the wires. Finally connect as needed following the supplied wiring diagram.

Step 9

For RETROFIT and NEW WINGTIPS: Install the finished (cut out) blanking plate A. Trim the opening as needed for a proper fit around the module.

Step 10

OPTIONAL

This step is optional if the owner feels that the the two point attachment is not strong enough. This is not necessary on the RV10.

For RETROFIT and NEW WINGTIPS:
For the RV7/8:
Install one plate nut on the Outboard Bracket. Bend the Outboard Bracket to 110 degrees as shown in Figure 8 and install it. Note that this is merely a guideline of what your Outboard Bracket can look like.

FIGURE 8

Step 11

OPTIONAL

For RETROFIT and NEW WINGTIPS: Measure the hole to drill as shown in Figure 9, matching it to the pre-drilled hole in the light module.

The red dot shows the approximate position Of the hole to be drilled.

Remove the Outboard Bracket and drill the hole.

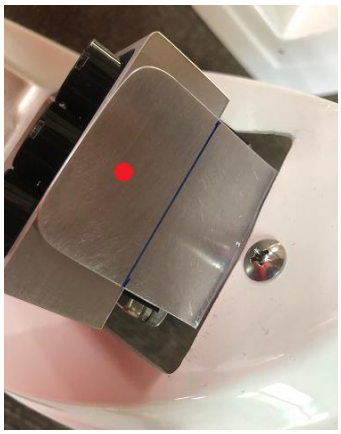


FIGURE 9

Step 12

For RETROFIT and NEW WINGTIPS: Install the optional Outboard Bracket using the MS35206-247 PANHEAD PHILIPS screw and attach the Outboard Bracket to the light module using the supplied MS35206-247 PANHEAD PHILIPS screw. Then adjust the module as needed and install the lens cover supplied by Vans. The final installation should look like this. Left hand wingtip of an RV10 shown in Figure 10.

FIGURE 10

Step 13

It may be necessary to aim your landing lights for an optimum illumination field. Loosen the adjustment screw and tilt the module as needed, then re-tighten the screw. Here is a link for suggestions on how best to aim your lights. See “JHartline” reply.
https://vansairforce.net/threads/aiming-landing-taxi-lights-in-a-taildragger.201301/

MAY THERE BE LOTS OF LIGHT

WIRING TIPS:

- WHELEN STROBE POWER PACK: You MUST disconnect or bypass the power pack before turning on the strobe function of the new lights.
    - You need the power coming to your pack to connect to your wing module's Strobe Group wiring.
    - Using your existing 3-conductor shielded wire from your original strobe install makes getting power to your new module PSU Strobe Group wiring easy by using the central location of your power pack to make your power and sync connections.
    - A bus-type connector module with 2 in/6 out can make this easy.
- PSU Strobe Group wiring: Combine the Red and White wires from the Strobe Group and connect to your ship's strobe power wire. The PSU Strobe Group yellow wire is for syncing the wingtips, if desired. Choose one of the other 2 remaining conductors in the ship's strobe wiring harness to act as the sync line to the other wingtip. You can connect the two wing modules sync wire at the power pack location.
    - The Left PSU is "Sync OUT" and the Right PSU is "Sync IN"
- Only 1 ground is necessary for each light module. Using multiple grounds could possibly cause radio interference.
- Landing lights: The programming in the PSU allows many connection options depending on your setup and how you want the lights to function. Contact me (Jan) with your questions, if needed, for assistance.