

# Gretz Aero

## Installation Instructions for Pitot Tube Mounting Bracket Kit

Suitable for mounting on all Van's aircraft models, most metal skinned winged aircraft and composite aircraft

### Kit contents:

- Installation instructions--(5 pages)
- Mounting bracket--(streamline tube with welded plate)
- Backing plate--(with joggle and 4 dimpled holes)
- Washer plate--(with 4 holes)
- Bag of parts containing
  - 4 ea - 90 degree nutplates
  - 4 ea - #8 stainless countersunk screws
  - 8 ea - countersunk 3 - 3.5 rivets--(for attaching nut plates)

This kit is not to be installed on a "Certified" aircraft. Install only on "Experimental" aircraft.

This list of instructions is for mounting the kit on a wing that has had the skins drilled to the spar and ribs, but not yet riveted on. This is written for how I installed my bracket. There are other ways, and locations in the wing that could be a better location for your pitot tube. Be mindful of the wing tie down, and don't put your pitot tube too close. One must also plan on removing the pitot tube, checking line tightness, and electrical connector after the wing is sealed up. Plan on later service of everything you install.

Start by holding the backing plate to the bottom rear of the main wing spar on the left wing with the skin removed. The location of the suggested mounting point is just outboard of the inspection access cover plate on the bottom side of the wing. The next bay outboard would be even better, but this will require plastic tubing from the instruments to the pitot tube, or at least a small section of plastic tube in the bay where the pitot is installed. Plan on providing a small service loop of the plastic tubing to allow for removal of the pitot tube from the bracket without access from the inside of the wing. This is if you move the mounting location to the next bay outboard. Figures 1, 2, 3, 4, and 5 will give clues as to the correct location. Although the location is not critical, it is suggested that the rib just to the outboard of the selected installation bay be utilized to add strength to the installation. Note that the joggled end of the backing plate is placed inside the spar flange, as shown in figure 2. Notice in figure 1 and 2 that a strip of angle aluminum, .032 x 3/4" (not supplied in kit) must be installed so the bottom side of the backing plate is flush with the rib bottom flange. This will allow the skin to lay flat over the rib flange, and the angle support with the backing plate in place. Rivet the angle to the rib. Now mark the backing plate for the placement of rivet holes holding the backing plate to the skin. Suggested pattern for these holes are shown in Drawing #1. Again, insert the backing plate in place, joggled end inside of the spar flange, and the plate over the angle now riveted to the rib, as shown in figure 3. Drill #40 holes through the backing plate into the angle and cleco. Drill #40 holes through the skin rivet holes already in place in the spar flange, into the joggled leading edge of the backing plate and cleco. Drill #40 holes in the marked pattern of holes through the backing plate. Position, install and cleco the bottom skin to the wing. From inside the wing, drill the backing bracket #8 screw holes through the backing plate and through the skin, then cleco the backing plate to skin. Drill the mounting bracket #8 screw holes through the skin with a #19 drill using the backing plate as a guide. Dimple the #19 skin holes with a #8 screw dimple die. Mark the streamline cutout of the backing plate to the skin. Remove the skin from the wing and carefully cut out this streamline hole in the skin. Keep testing the hole with the streamline tube of the mounting bracket for a good fit. Now de-burr all the holes in the angle, the backing plate, rib, and skin. Dimple the holes in the angle, backing plate, and skin. Replace the backing plate to its position and rivet the plate to the angle using a couple of flush rivets to hold in place while skinning. You may now continue with the skinning of the bottom of the wing.

At this point, you may want to prime the mounting bracket if it is the non-chromed kind. If it is the chromed bracket, prime the base of the mounting bracket to provide protection to the aluminum and chromed steel connection. This may be done by carefully masking off the chrome tube from the base of the mounting bracket, and painting only the base plate. The primer will scrape off of the chrome easily, so be careful to protect it from abrasion until final installation. Now rivet on the nut plates to the base of the mounting bracket with the provided rivets.

The chrome and non-chrome brackets are pre-drilled for mounting the pitot tubes. The brackets for the AN5814 pitot tube have holes for #10-32 screws. The brackets for the PH502-12CR and AN5812 pitot tube have holes for #6-40 screws. There may be a need to enlarge one or more holes in the bracket to better match the holes in the pitot tube you have. If you must, do enlarge

the holes **very carefully** so as to not crack the chrome plate.

Install the mounting bracket by sliding the washer plate over the streamline tube, then pass this assembly through the access plate hole, and insert the streamline tube through the installed backing plate and skin. See drawing #1. Install the 4 ea #8 screws through the #8 dimpled skin, the backing plate, the washer plate, and then into the mounting bracket nut plates.

Run the pitot tube pressure line (and static line if you are installing a pitot tube with a static source). Some pitot tubes may require you to make short extensions of aluminum tube to reach Through the mounting bracket to the connection of the pitot tube. If you choose to use plastic plumbing, make sure you use a 6-8 inch piece of aluminum tube to attach to the pitot tube before the transition to the plastic line. This is to make sure the heat developed at the pitot tube will be radiated off before the connection to the plastic line. The plastic may melt. Make the extensions, and attach them to the pitot tube before inserting the pitot tube into the bracket. Once in place, attach the lines to the extensions. If using plastic tube, allow for a service loop of the plastic tube and heater wires to allow for easy inspection later. The PH502-12CR and AN5814 pitot tubes come with a grey electrical connector that must be pulled off (snap off/on) of the pitot tube to install the wires. Pull the grey connector straight away from the upper end of the pitot tube to remove.

Insert the tube(s) along with the wires, through the installed mounting bracket and make your connections to the pitot tube outside of the wing. Then shove the tubes and wires which are now attached to the pitot tube up into the mounting bracket until the pitot tube is in its proper place in the bracket. Attach the pitot tube to the bracket with the screws provided with the pitot tube.

For adjustment of the precise angle of the pitot tube into the oncoming airflow, place washers between the bracket base and the washer plate to achieve the proper angle.

While installing the 4 screws through the mounting bracket into the pitot tube on final installation be careful to not over tighten the screws to the point of causing the chrome plate to crack off.

#### OTHER METAL SKINNED AIRCRAFT

If mounting on other than Van's aircraft models with metal skinned wings, all of the above instructions will most likely work. The joggle joint of the backing plate may not fit the spar of the wing as it does in Van's aircraft. To make the backing plate fit, you may need to bend the joggle to fit over the spar flange of your spar. If it does not, cut off the joggle joint and mount flat to the inside of your wing skin in your desired location. Some other reinforcement may be necessary. Use small pieces of angle to make the reinforcement and stiffen up the backing plate. You may also choose to mount the bracket on a removable access plate.

#### COMPOSITE AIRCRAFT

If mounting on a composite wing, glass the backing plate to the inside of the wing skin along the edges of the backing plate and cut a hole corresponding to the streamlined hole in the backing plate and drill and countersink the four mounting screw holes also corresponding to the four holes in the backing plate. You can then drop the mounting bracket through the backing plate and wing skin just as in a metal wing. Use the washer plate to transition to a flat surface to allow for any alignment of the pitot as mentioned before in these instructions. Secure the parts in place with the four counter sunk screws provided. You may also mount the backing plate to the inside of a removable access plate.

Be proud of, and enjoy your pitot tube installation. Please tell others about this kit. Check out the other products provided by Gretz Aero on our webpage. Note the address below.

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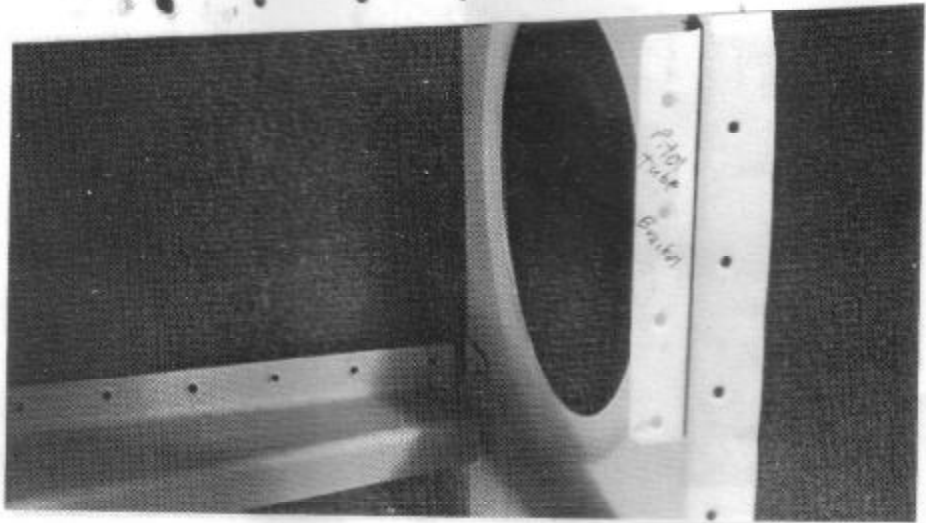


figure  
1

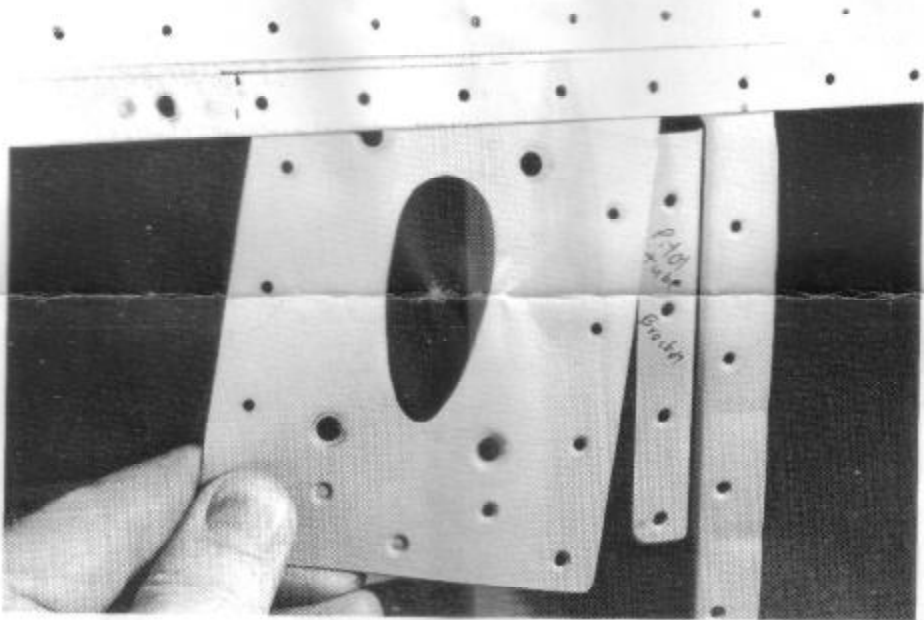


figure  
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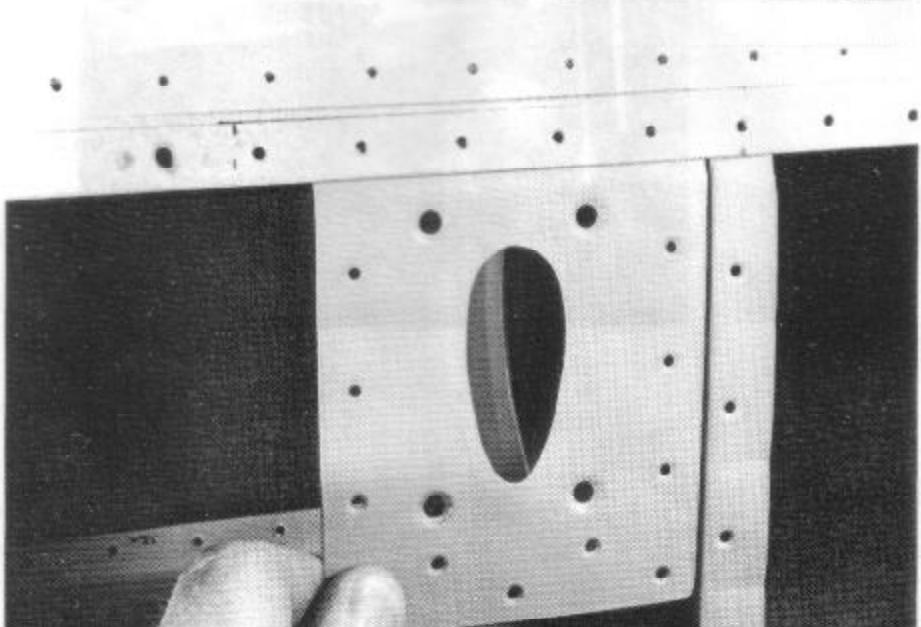


figure  
3

Mounting Plate of Mounting Bracket

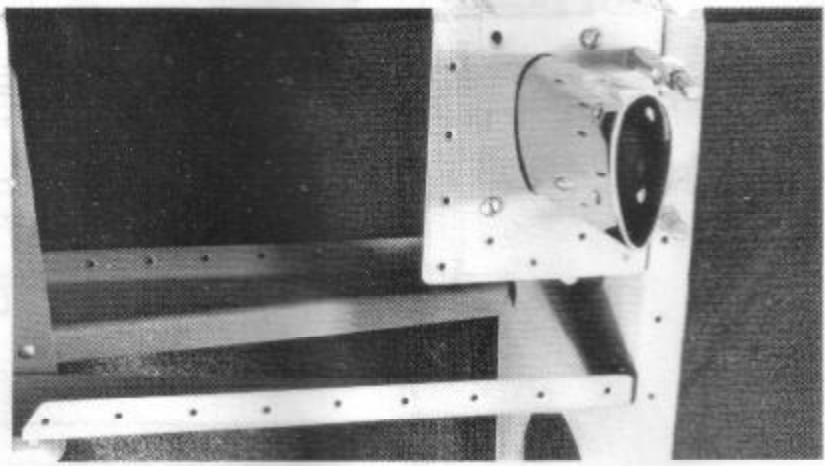


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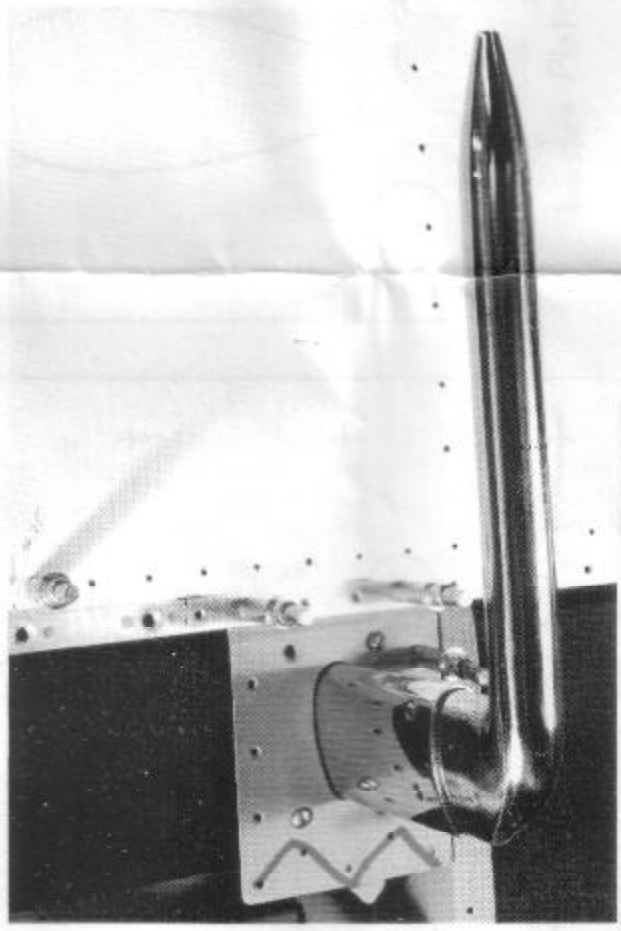
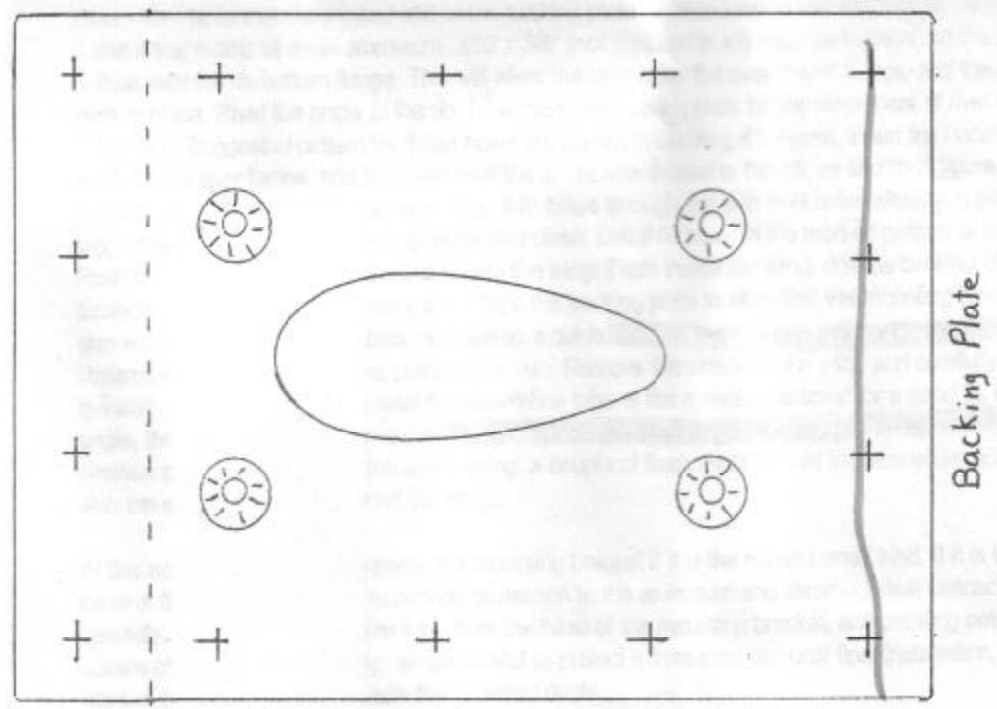
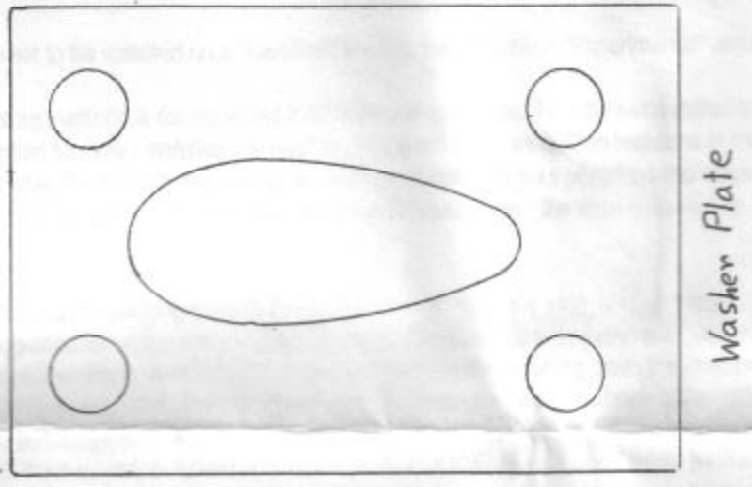
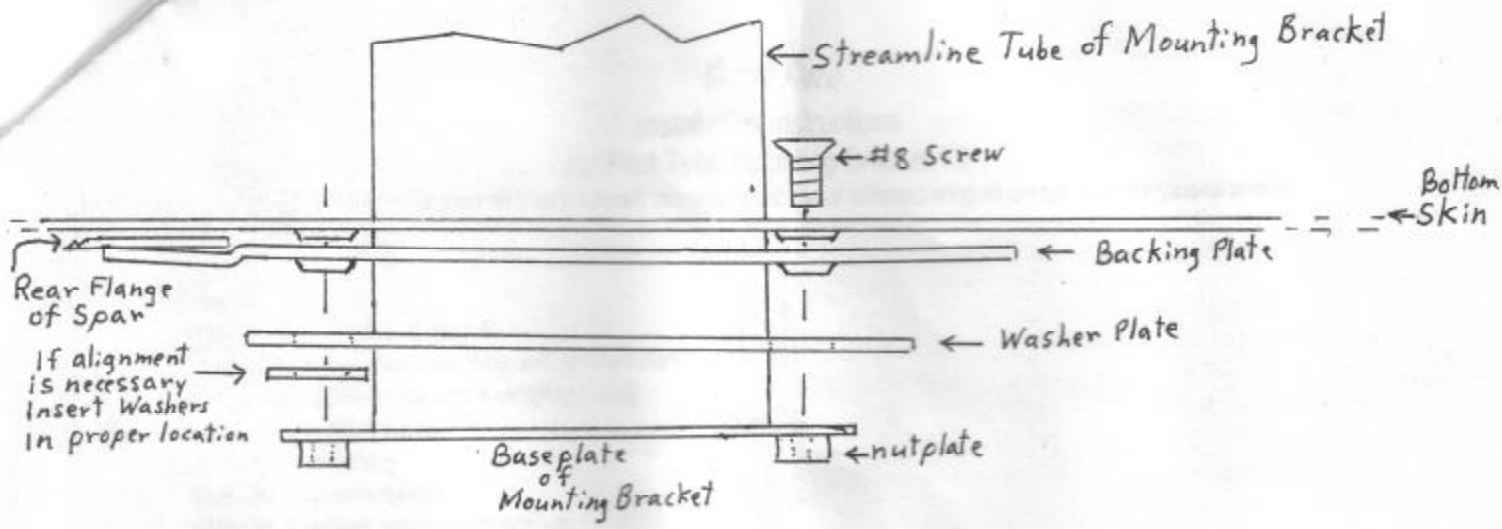


figure  
5

Drawing #1



Drawing #1