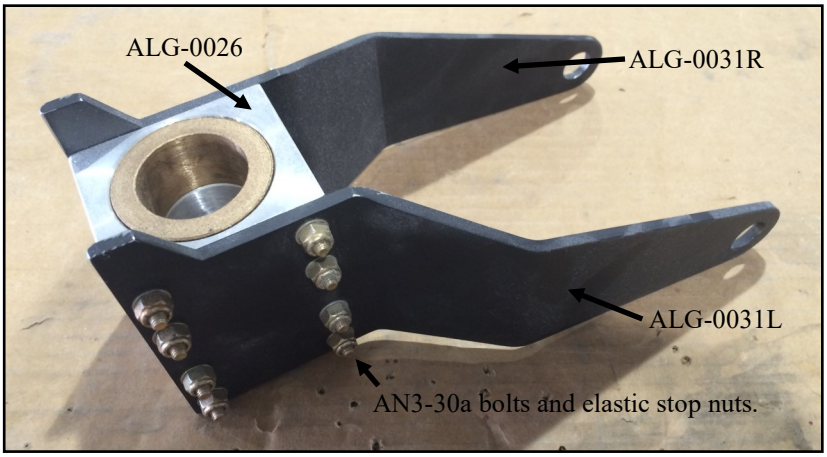
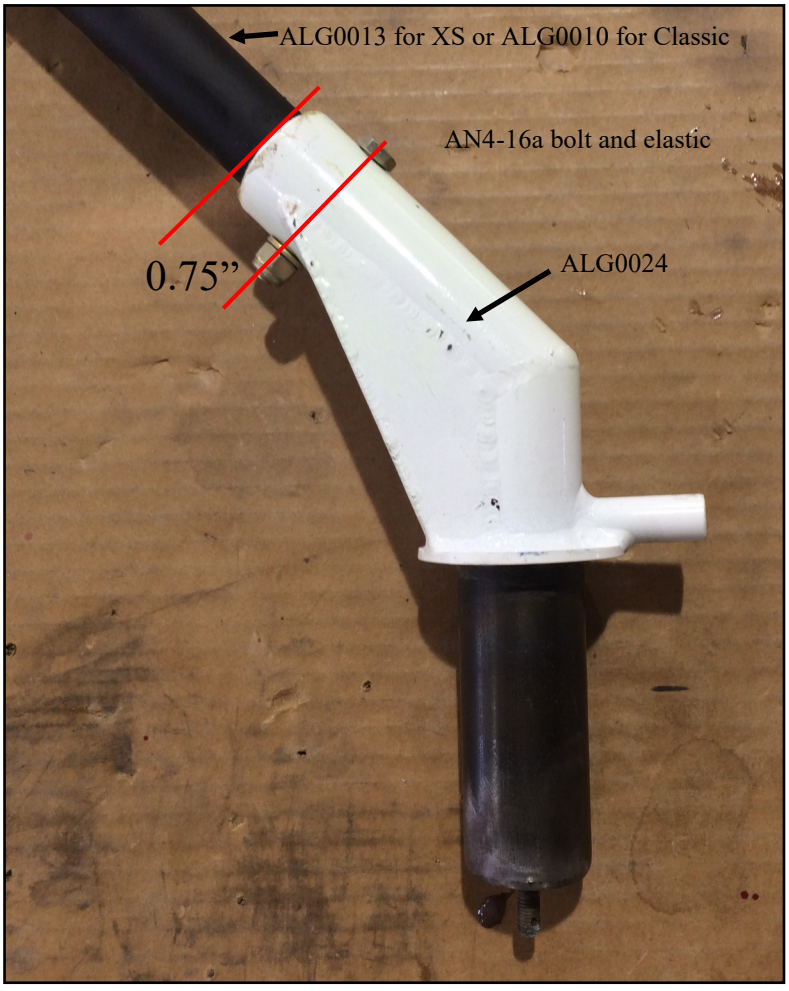
38. Nose Gear Assembly

Section objective: Nose gear component assembly, installation to engine mount.
Required parts: ALG-0033 Lower fork washer, 0031R right fork, 0031L left fork, 0026 aluminum lower block with bushing, 0024 Lower Socket, 0013 Spring steel leg if XS, 0010 Spring aluminum leg if Classic.
Required hardware: 1.375" OD 2.75" ID Bellville spring washer, 8 of AN3-30A, 8 of AN365-1032 elastic stop nut, 1 AN4-16A, 1 AN4-20A, 2 AN365-428 elastic stop nuts, 1 AN363-428 castle nut, 1 cotter key, 5/8" axle bolt
Required tools: SAE hand tools, fish scale.
Required conditions: N/A
Required skills or training: Basic shop skills and tool use.

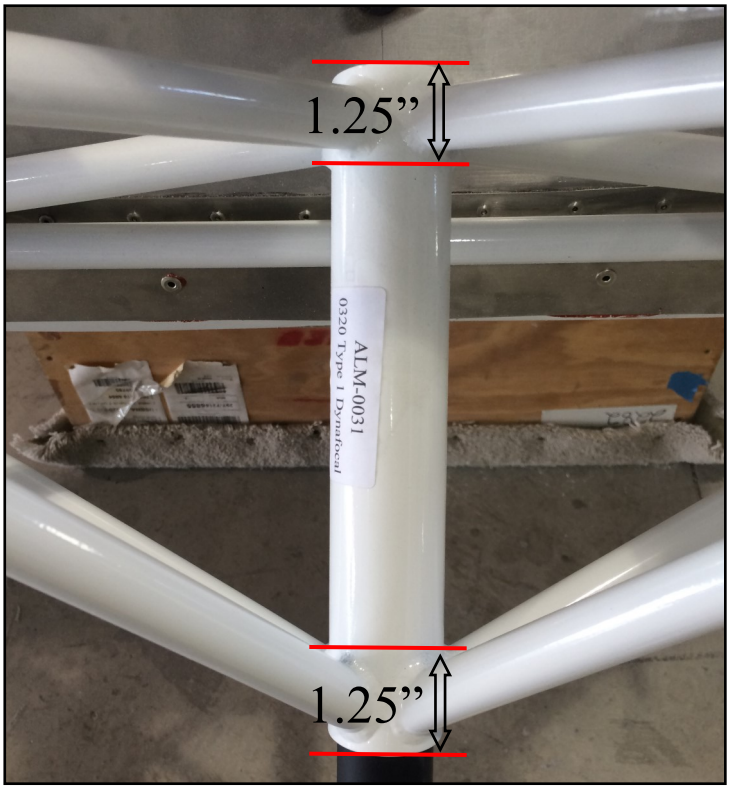
1. Build the lower for assembly using the parts shown in the picture. The block ALG0026 has no top or bottom. The forks however are a left and a right. When assembled the trailing end should be wider the front as shown. Also the two tabs sticking up are the stops.
2. It may be required to drill out the 8 holes with a #10 drill bit and the single hole at the trailing end to 5/8" for the axle.
3. Use AN3-30a bolts and elastic stop nuts.

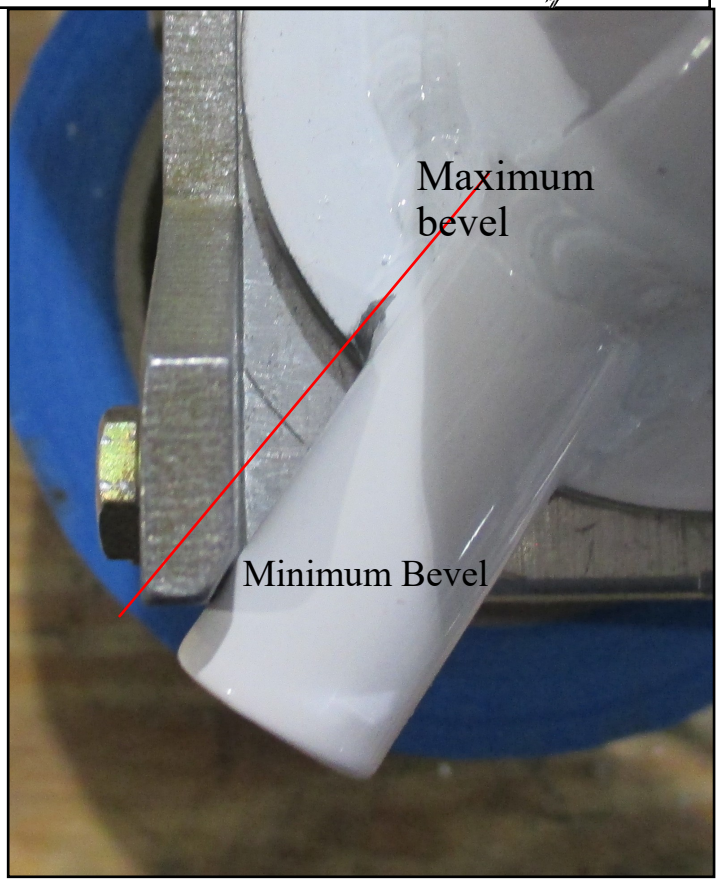


4. Locate ALG-0024 and the nose gear leg. The leg will either be ALG0013 or ALG0010 depending on your kit, but assembly is the same.
5. Make a mark 0.75" down from the top of the socket on the center line of the part when looking at it from the front. If the mark is too low, 1" would do it, you will end up drilling the mounting hole thru the rear gusset. Take care in the placement of the hole.
6. The final hole size here is 0.25", we suggest starting with a 0.125" bit and working up. Use some drill lube to help cool the bit and clear the chips.
7. Insert a AN4-16A bolt and secure with a AN365-428 elastic stop nut.

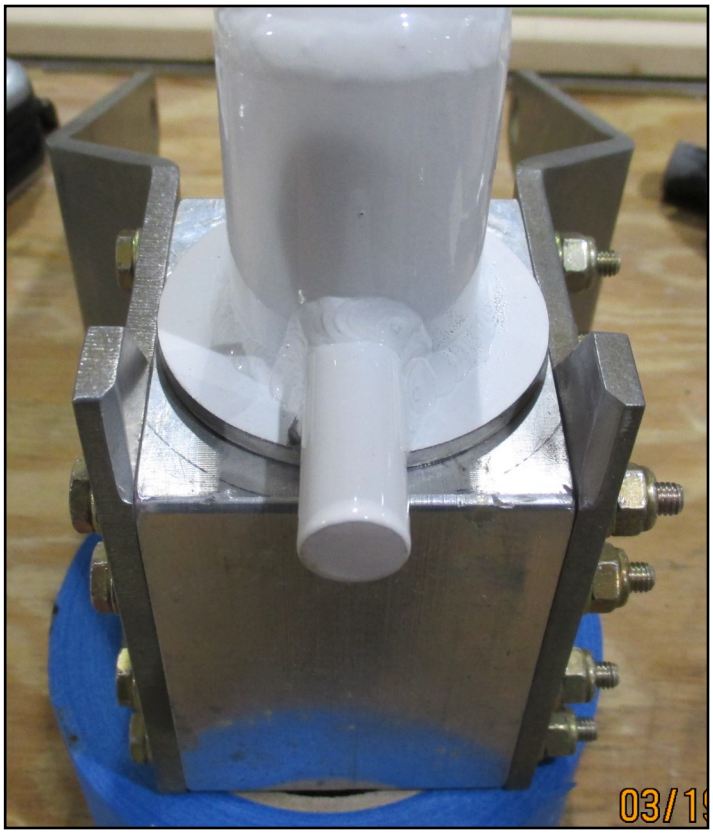


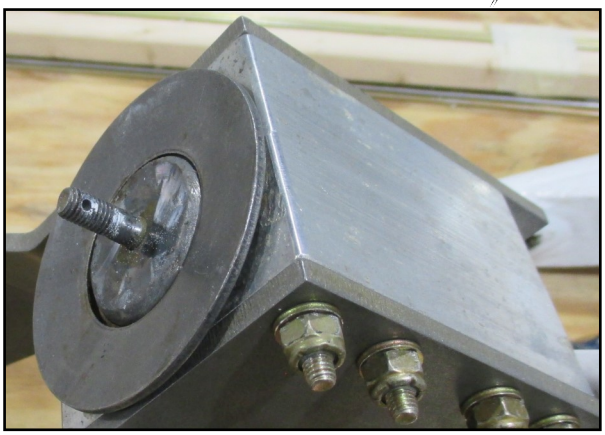
8. The engine mount does not need to be installed to the fuselage. This can be done on the work bench as well. We opt to build it on the fuselage.
9. Slide the nose leg assembly into the engine mount
10. Using 2 squares, 1 on each side of the lower socket, rotate the leg until the lower socket is perpendicular to the shop floor. The back side of the lower socket has a gusset box with flat side, which provides a good place to set the square against.
11. The 2 bolts which hold the leg into the mount with be fore and aft or inline with the direction of flight.
12. From the top of the gear leg receptacle measure down 1.25” on center and make a mark with a punch.
13. Measure up from the bottom of the receptacle 1.25” on center and make a mark with a punch.
14. The mount and leg will be match drilled.
15. The final hole size in each location with be 0.25”. Start with a 0.125” bit and work your way up. Use plenty of drill lube.
16. Once the holes are drilled. Remove the leg, and deburr the holes.
17. If you are ready to install the leg for the final time. Secure with AN4-20A bolts and AN363-428 metal stop nuts.
18. The picture below shows the bolt installation on a finished aircraft.

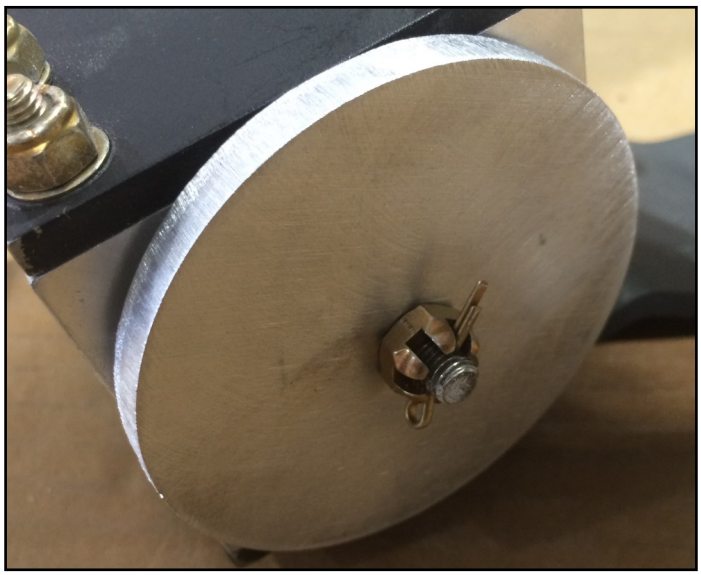




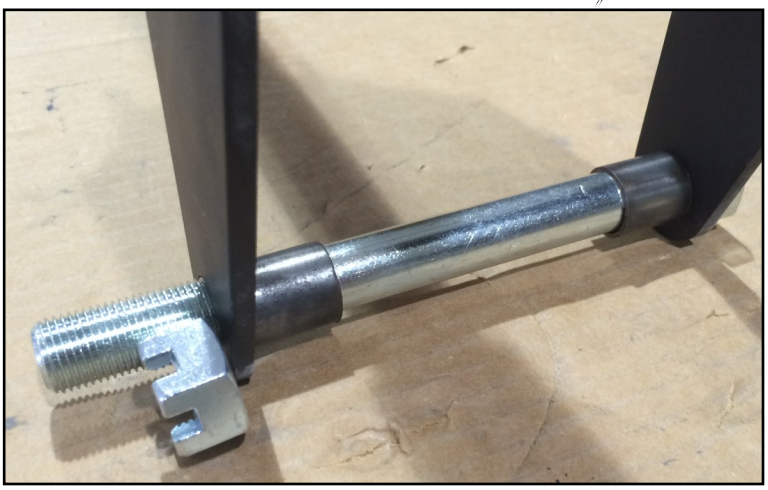
19. Before installing the lower fork assembly, the inside of the steering stops should be beveled. This keeps the stop post from contacting a sharp edge.
20. The stop can be beveled more then in the picture to gain slightly more turning radius. However not any further then shown by the red line in the picture.
21. Slide the lower fork assembly on to the lower socket for the final time.







- [ ] 22. Locate the large steel Bellville washer, also known as a spring washer or cupped washer. The ID will be 1.375” and the OD 2.75”.
- [ ] 23. The Bellville washer goes on the post after the fork assembly, in other words its on the bottom.
- [ ] 24. The washer is curved, the peak of the curve should go up. This give minimal contact area to the fork and maximum to the retaining washer.
- [ ] 25. Install the fork washer ALG-0033.
- [ ] 26. Use a AN310-4 Castle nut and cotter key to retain the washer. Do not bend the cotter key yet. The proper tension on the fork must be adjusted next.



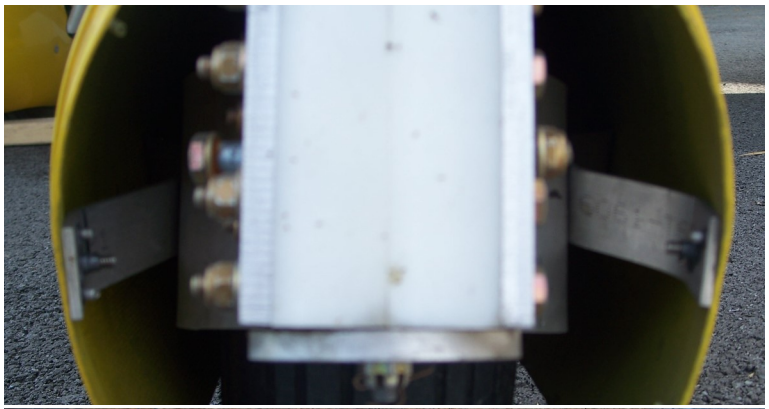
27. The axle provided in the kit is simply a 5/8” by 6.5” bolt.
28. Because the wheel is narrower then the fork and a smooth axle is used, a pair of spacers will need to be made to keep the wheel centered. A short piece of 5/8” steel tube is provided to fabricate the spacer.
29. The spacer size should be about 0.75” and 2 are required. Double check this by subtracting the wheel width from the axle opening and dividing by 2. yours may be slightly different.
30. With the axle still in place, run the castle nut down until it touches the fork. Because this is a bolt, a 1/8” hole will need to be drilled for a cotter key.
31. Pick any one of the slots in the castle and mark the axle bolt.
32. Remove the axle and drill thru the bolt with a 0.125” or #30 drill bit.
33. There will be a good amount of bolt remaining outside of the nut, we cut this off, although it is not needed.
34. Assemble the axle, wheel, spacers, and secure with the castle nut and provided 1/8” cotter key.

35. The lower fork washer nut and cotter key have not been finalized because the fork break out force needs to be set.
36. Using a fish scale or similar, attach a wire to the axle, the axle cotter key works well.
37. You should be able to pull and get to 10lbs before the fork moves.
38. Adjust the castle nut on the bottom to increase or decrease pressure to the washer. Higher then 10lbs is better then be lower, lower and the nose wheel can shimmy hard.
39. When happy bend the cotter key over. Your done.

Nose Wheel Pant installation

Required items: Nose Pant, Aluminum stock 1" by 0.125" by 16" long, #8 screws, #8 nut plates, 1/32" rivets, Drill bits; 3/32, 1/8, 5/32. 1/8" clecos, sanding block, cut off wheels.

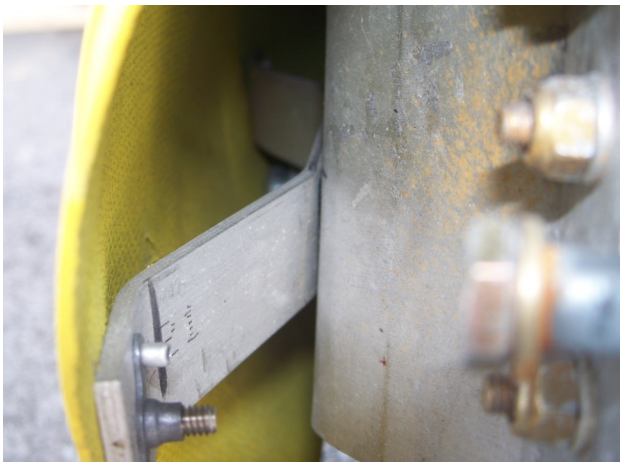
1. Fit the front half to the rear half of the pant, some block sanding of the front half will be necessary to get the seam looking good.
2. Determine the center of the top of the pant at the seam, mark this spot.
3. Measure from this spot down along the seam 3" and in from the seam 1/2", mark this spot.
4. Drill a pilot hole of 1/8" and install a Cleco.
5. Measure up from the bottom opening of the back half 1" , than measure in 1/2" from the seam.
6. Drill a pilot hole of 1/8" and install a Cleco.
7. Complete this for the other side of the pant.
8. Trim the rear half so that the pant will slide forward and the seam is even with the front of the weldment, and in front of the tire.
9. The pant should be high enough that it fits over the forks in the front, make sure that it is level. The pant is far enough forward when no trimming is necessary to the front half for the tire.
10. Measure the inside distance between the fork and the inside of the wheel pant.



11. This measurement will give the amount of bend needed in the front bracket.
12. Fabricate from the aluminum stock two 8" long parts.
13. Measure and mark: 1" in from each end; 3" in from each end, you should have 4 marks.
14. Evenly bend the part to make a bracket as in the picture, do not bend on a sharp object. If using a vise put a small piece of wood in it to soften the bend.
15. With the bracket formed drill two 3/16" holes in the flat that will mount to the fork, these holes are to be 3/8" from the bend and centered in

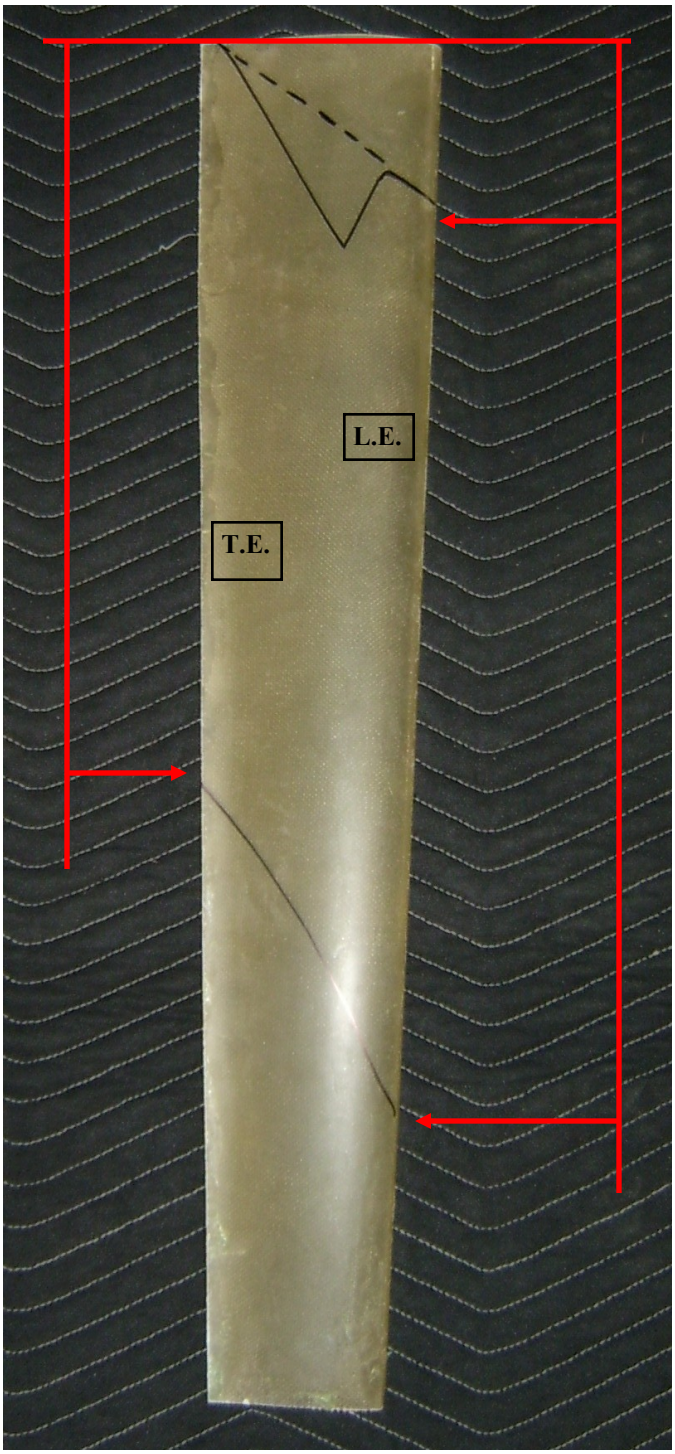
the part.

16. Clamp the bracket to the fork, it must be level and not contact the axle.
17. Mark the mount hole positions.
18. Drill with a #21 bit and tap to 10-32, when doing this put something between the fork and tire to avoid puncturing it.
19. Repeat for the other side.
20. Install the brackets to the fork with either #10 screws and loctite 242 or AN3-3 bolts and loctite 242.
21. Slide the wheel pant on and position it where you trimmed it to sit.
22. At this time it may be necessary to adjust the brackets to better fit the shape of the pant.
23. Remove the wheel pant
24. Straighten the nose wheel. Measure up from the floor where the mounting areas are on the brackets, both sides.
25. Position the pant on once again, and transfer those measurements to the outside of the wheel pant.
26. Find the center of the mounting area, Drill an 1/8” pilot hole thru the pant and bracket, hold in place with clecos.
27. Temporarily install the front half of the pant with clecos, make sure that it clears the tire and leg, trim if needed.
28. Move the wheel assembly form lock to lock and trim the hole in the top of the pant if needed.
29. Disassemble all clecos.
30. Install #8 nut plates in all mounting holes. Use 3/32 counter sunk rivets.



Nose Leg Fairing

Required Items: Leg Fairing, 18” aluminum hinge, 3/32” rivet, clecos, 3/32 drill bit, rivet puller, snips, sanding tools, 1/2 hole saw.



- [ ] 1. Measure down the leading edge from the top 4.5” to the first mark.
- [ ] 2. From this point draw a line to the trailing edge upper corner.
- [ ] 3. Next measure down 27 1/8” down on the leading edge .
- [ ] 4. Than measure down 19 5/8” down from the top on the trailing edge.
- [ ] 5. Connect the 2 lowest marks, your line will appear straight but after some trimming on the plane will appear curved.
- [ ] 6. Note that the top as a jog in it. After fitting to the aircraft the faring will look like this.
- [ ] 7. These are the first rough cuts make the same measurements to the other side of the fairing keeping in mind which is edge is which.
- [ ] 8. The nose wheel pant should be installed and unpainted at this point to

help with fitting correctly and to avoid scratches if it were painted.

9. Trim the upper half to fit around the motor mount supports as shown.
10. Take care to trim a little at a time, growing fiberglass can be done although difficult.
11. If there is enough clearance to get the lower portion on with out trouble, mark

where the bolt is on the faring and drill out to 7/16” to allow the bolt to protrude both sides.

12. With the faring now in place use a marker to follow the curve of the pant and mark you cut on the fairing, The minumum clearance must allow the pant to move freely with out contact.
13. Install the piano hinge 7/8” inset in the fairing with the hinge facing outward.
14. Secure with 3/32 rivets every 4th leaf,

and in the last leaf of each end.

15. Turn over and repeat for the other side, the pin must be installed to insure that the leafs stay aligned.
16. Trim the pin so it will fit flush with the top of the fairing and that about 1.5-2” is out the bottom.
17. Create a loop in the last few inches of pin.
18. This can be tucked up in the fairing after installation and provide a loop to pull on to take the faring off.