

COWL ASSEMBLY and INSTALLATION

1. The cowl details can be found on plan sheet 1.

2. Locate the following parts -

#1, faceplate rivet pattern – 1 piece

#29, rivet pattern – 1 piece

#153, #55 drill bit – 1 piece

#109, brass pins – 150 pieces

#703, aluminum cowling – 2 pieces

3. Using scissors cut in-between the rivet pattern #29 creating four pieces. Notice the rivet locations on the side view. Keeping the rivet pattern straight, peel the backing off one of the rivet pattern #29 and start at the bottom of the cowl working your way around the cowling. Notice that the rivets are located in **front** of the cable groove. Complete this step by adding the rivet patterns #29 on the cowling sides. Reference photo below –



You can do two things to help eliminate drill wobble. Keep the drill bit short, about 1/4" protruding out of the drill chuck and slowing the drill speed down. This will help keep the drill bit in position on the curved cowling.

4. Using the drill bit #153, drill all brass pin locations on the cowl. **Take your time.** The brass pins #109 are very visible.

5. The faceplate pattern, #1 has only three rivet locations. This initially gets the faceplate attached to the cowling. You then drill the remaining pin locations

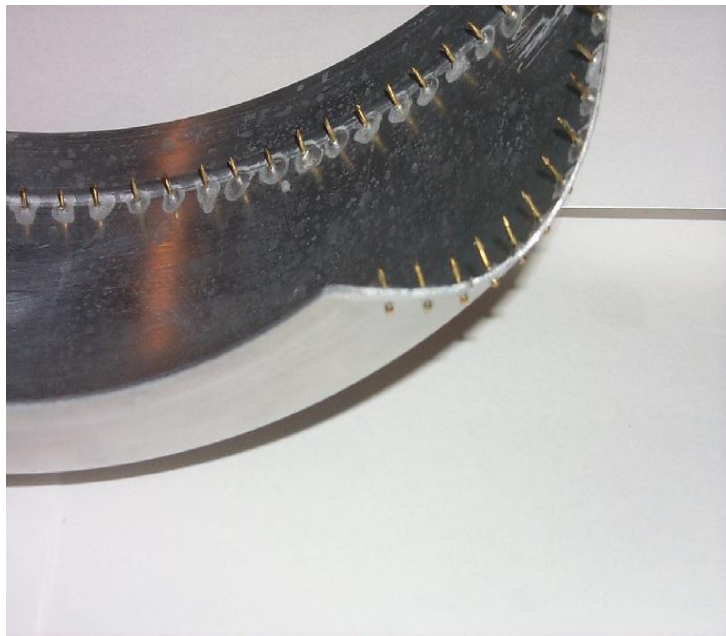
from the front side of the cowling. At this time cutout and locate the faceplate pattern **#1** onto the faceplate. Using tape or some photo spray mount hold the faceplate pattern **#1** in position. Using the drill bit **#153**, drill the three pin locations. Remove the faceplate pattern **#1** from the aluminum faceplate **#703**.

The cowling faceplate will require some slight bending/forming near the bottom ends.

6. Trial fit the faceplate **#703** in position on the cowling. The faceplate **#703** should be square on the bottom of the cowling. Using the three drill holes in the faceplate **#703** as alignment holes, drill three holes in the cowling using the drill bit **#153**. See photo below –



7. Insert the brass pins **#109** into the holes on the cowling and faceplate **#703**. Bend the brass pins **#109** inward away from the cowling groove using pliers or a small hammer. Apply a small amount of 5 or 15-minute epoxy to the bent pins. Ensure that the brass pins **#109** are secure. See photo below –



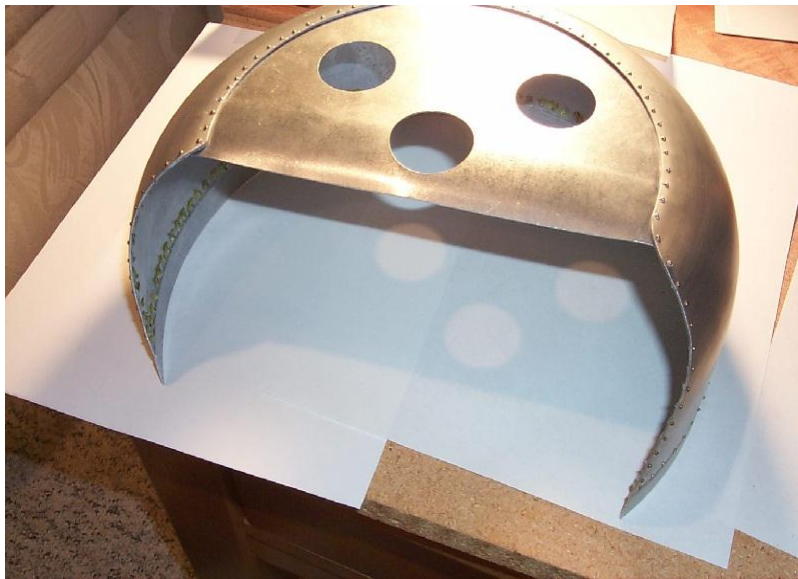
8. The cowling faceplate needs to be finished. Using the faceplate pattern **#1** pencil mark every line indicating the brass pin location working towards the faceplate bottom. Repeat this for the other side of the cowling faceplate **#703**.
9. Using the drill bit **#153**, drill all brass pin locations on the faceplate. The brass pins **#109** should be pretty close to the edge. **Take your time**. The brass pins **#109** are very visible. See photo below –



10. Insert the brass pins **#109** into the holes on the faceplate **#703**. Bend the brass pins **#109** inward using pliers or a small hammer. Apply a small amount of 5 or 15-minute epoxy to the bent pins. Ensure that the brass pins **#109** are secure. See photo below –



11. Use cutting pliers trim the excess ends of the brass pins **#109**.
12. The cowl should be sanded with #220, #400 sand paper, primed and painted. Note that several parts will be added to the cowl later, during the fitting to the fuselage assembly. The remaining parts to attach to the cowl are the cowling post plates, fasteners and manufacturing plate. The unpainted cowl should look like the photo below –



The cowl is attached to the fuselage like the real aircraft. This was accomplished by strapping a cable around the cowl and tightening it down. The two posts found on top of the cowl prevented the cowl from rotating. The cable fasteners kept the cable in place.

13. Test fit the cowl **#703** around the cable groove support **#48,49**. The groove in the cowl should be centered on the groove support **#48,49**. Also, note that the center hole of the cowl faceplate might need to be enlarged; this depends on your engine selection, for the ZDZ 80 twin the center hole size is just fine.

14. Locate the following parts –

#122, brass screws – 4 pieces

#323, fitting – 2 pieces

#324, threaded coupler – 3 pieces

#704, cable 32” – 1 piece

15. Using the four screws #122 install the two fittings #323 in position. Use the two outer holes in fitting #323 inserting the screws #122 straight. Position the cowl #703 onto the groove support #48,49; the fitting #323 should stick out pass the cowl #703 slightly. Remove the cowl #703. Reference plan sheet 1 as needed. See photo below –

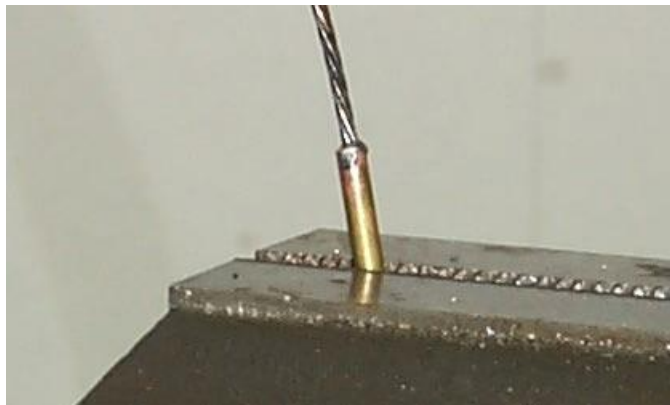


The threaded couplers are too long, they need to be shortened by a 1/4” and re-drilled using a 1/16” drill; and then the cowling cable will be soldered into the coupler. After installation the coupler thread will also be shortened.

16. Carefully place one of the threaded couplers #324 into a vice. Using a 1/16” drill bit; carefully drill the hole in the threaded coupler #324 deeper. **DO NOT** drill to deep or you will weaken the threaded coupler #324. After drilling the coupler #324 cut off a 1/4” from the top. Repeat for the other coupler #324. If needed use the spare threaded coupler #324. See photo below –



17. Insert one end of the cable **#704** into the coupler **#324**; ensure the cable **#704** can go into the coupler **#324** a 1/4 to 3/8 inches. Remove the cable **#704**; using a soldering iron insert some solder into the coupler **#324**; then insert the cable **#704**. Ensure the cable **#704** is properly secure. The remaining coupler **#324** will be added after the straps **#312** are installed; this will ensure the proper cable **#704** length. See photo below –



18. Locate the following parts –

#311, cowl post fitting – 2 pieces

#312, cable straps – 4 pieces

#321, nail – 2 pieces

19. Position the cowl **#703** in place; ensure the faceplate is level and the cowl **#703** is not tilted or slanted. Using a pencil, mark the four locations of the cable straps **#312** and the two cowl post fittings **#311**. Reference the plans and existing cowl brass pins **#109** for proper locations. Place one of the cable straps **#312** in position. Mark the position of the two holes in the cable strap **#312**. Repeat this process for the remaining three cable straps **#312**. Place one of the cowling post fitting **#311**. Mark the position of the four corner holes found in the cowling post fitting **#311**. Repeat this process for the remaining cowling post **#311**. Remove the cowl **#703**.

20. Using drill bit **#153**, slowly drill the sixteen pencil mark locations made in the previous step. Take your time and don't let the drill bit **#153** wander. You might consider using a pin vise instead of a drill; at least to start the drill locations and you can finish those holes with the drill.

The cowl, straps and posts need to be painted before doing the following steps. The straps, posts, cable and manufacturing plate will be permanently added now. The cowl will be assembled with all the fittings then the cable will be added. Last step will be to add manufacturing plate.

21. Locate the following parts –

#113, hex nut – 2 pieces

#109, brass pins – 23 pieces

#316, manufacturing plate – 1 piece

#706, dry transfer – 1 piece

22. The nails **#321** will be used with the cowl posts **#311**. Using a pair of dykes, remove the head of the nails **#321**. Use a file to flatten the end you just removed the head from. Place nails **#321** aside for now.

23. Place one of the cowl post fittings **#311** in position. Insert four brass pins **#109** in the four corner holes in the cowl post fitting **#311**. Bend the brass pins **#109** inward away from the cowling groove using pliers or a small hammer. Apply a small amount of 5 or 15-minute epoxy to the bent pins **#109**. Ensure that the brass pins **#109** are secure. Trim as needed. Repeat for the other cowl post **#311**.

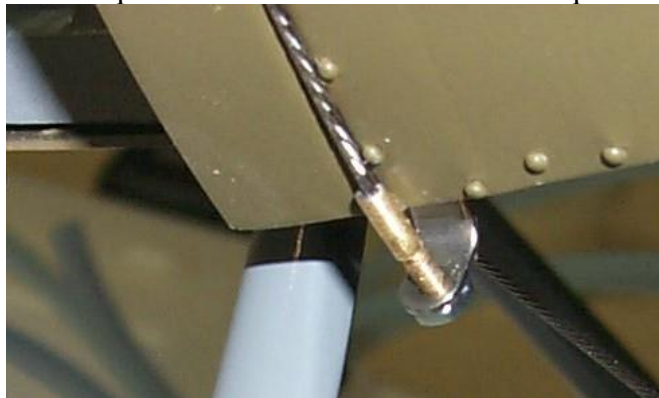
24. Position the cowl **#703** in place; ensure the cowl face is level and the cowl **#703** is not tilted or slanted. Using a 1/16" drill bit; drill the center hole in the cowl post **#311**. Insert a nail **#321** into the center cowl post **#311** hole; so it is about 1/8 inch above the cowl post **#311**. Repeat for other cowl post **#311**. See photo below –



25. Remove the cowl **#703**. Place one of the straps **#312** in position. Insert two brass pins **#109** into the straps **#312**. Glue and trim the brass pins **#109** in place. Repeat this step for the other straps **#312**. Insert the cable **#704** into position. Reposition the cowl **#703** onto the cable groove **#48,49**. The straps **#312** will hold the cable **#704** in place. See photo below –



26. Insert the soldered coupler **#324** into a fitting **#323**. Add a hex nut **#113** to the end of the coupler **#324**, keeping the coupler **#324** loosely in place. Position the other coupler **#324** into the other fitting **#323**. The cable **#704** should be cut with the understanding that the couplers **#324** will pull the cable **#704** tight. Carefully, measure and cut the cable **#704** now. Remove the cowl **#703** and solder the cable **#704** into the coupler **#324**. Now reposition the cowl **#703** and tightened the cable **#704**. Trim the threads on the coupler **#324** now, they should be about a $\frac{1}{4}$ inch past the hex nut **#113**. See photo below –



27. Make sure the steel plate **#313** is clean and flat. The manufacture plate **#313** is located on the starboard side (right) of the cowl **#703**. Notice the four corner holes for the brass pins **#109** on the manufacture plate **#313**. Locate the manufacturing plate **#313** on to the cowl. Mark the four corner holes. remove the manufacturing plate **#313**. Using drill bit **#153**; drill four holes in these marked locations.

28. Insert four brass pins **#109**, securing the manufacturing plate **#313** to the cowl **#703**. Glue and trim the brass pins **#109**. See photo below –



29. Test fit the cowl **#703** back onto the groove support **#48,49**. Ensure all fittings, straps are secure and that the cable **#704** tension is correct. If your engine is installed you can add the propeller to ensure proper clearance. This finishes the cowl assembly and installation. See the photo below –

