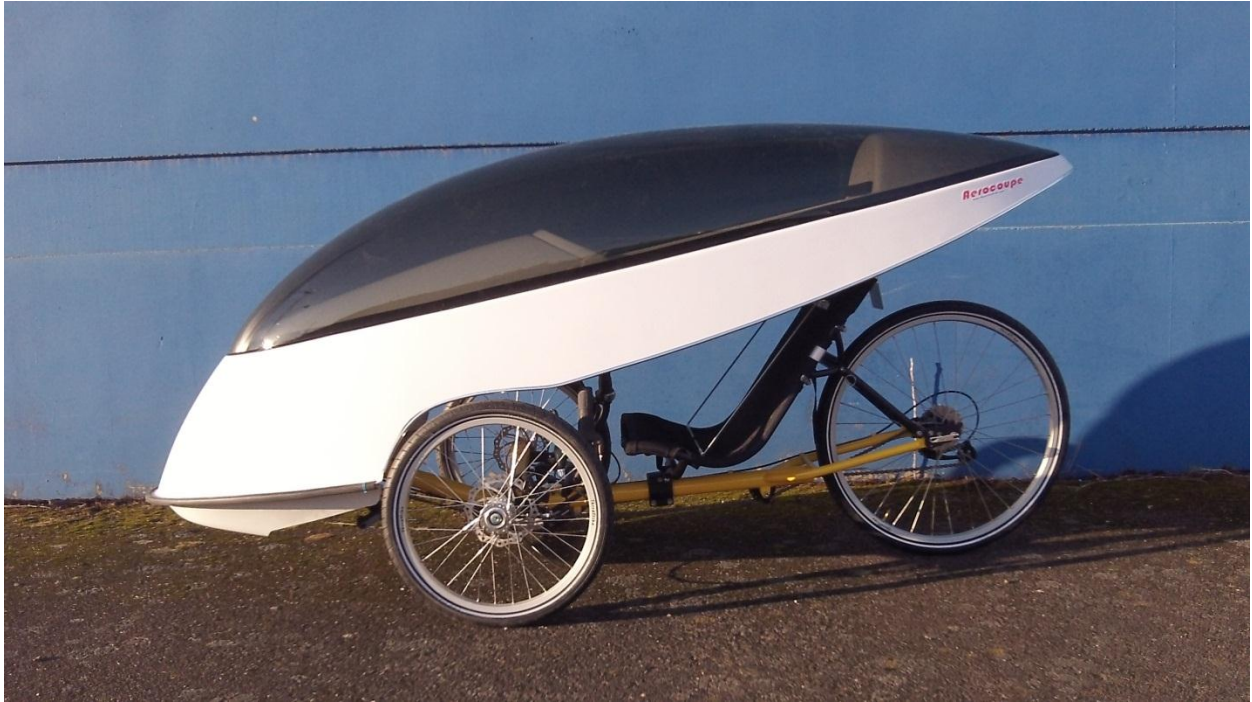


# The BSD Aerocoupe Speeder Fairing



The **Blue Sky Design Aerocoupe Speeder Fairing** is designed to be an affordable accessory for “Cyclecar” (Tadpole) three wheeled recumbent human powered vehicles (HPV). It can substantially improve aerodynamic efficiency, weather protection and visibility in traffic. This Fairing can be removed with one bolt.

These are generic parts and can be adapted or modified to fit a wide variety of HP vehicles; however we cannot guarantee they will fit or be suitable for all applications. These instructions should be used as guidelines in adapting these parts to your particular machine. We have used a Terra Trike as a sample application. If your HPV is similar dimensionally, it should fit with little difficulty.

## General Suggestions:

1. Adjust your HPV for your personal leg and pedal boom length. The fairing can be positioned to fit your personal ergonomic preferences. Set the trike up for the rider.
2. We recommend you lower the seat back to its lowest position. This will give you the most clearance inside the canopy and reduce the amount of rake the fairing will sit with as well as allow for the Fairing to be tilted up higher for entry and exit.
3. Use care when handling the canopy. It can break and be scratched. Plastic cleaners and polish, Lemon Pledge furniture wax and Armor All type products all will help protect the Fairing and canopy.
4. The Fairing can be painted or decal appliques used to enhance your speeder and enhance visibility. Reflective products are recommended.

## **Fitting the Speeder fairing to your HPV.**

**Tools needed :** 7/16 wrenches, electric drill, ¼, 3/16, 1/8 drill bits, pop rivet gun, PVC glue, Dremel Tool for trimming parts if needed, hammer, vise, clamps, screwdriver, electric or manual saw, measuring tape.

Test fit the fairing parts on your trike. Note any adjustments or trimming that might be needed for steering and pedals etc. You may need to change the dimensions of some of the parts and hardware to adapt to your HPV. We use off the shelf parts for this mounting to make it simple and adaptable. We have included a few fittings that may be useful. Specific fit kits may be available from mfg. or aftermarket resellers.

## **Making the Front Pivot Mount.**

### **Parts needed:**

- One 1-1/4" PVC "T" fitting
- One 1/4" x 6" length of schedule 40 PVC pipe
- One 1-1/4" PVC end cap
- One 3" hinge
- Two 1/4x3" bolts
- Seven ¼" nylock nuts One ¼" wingnut or knob
- Two 5/16x2" hose clamps (McMaster Carr # 5388K32)
- Two 1/4x1/2" bolts
- Four 1/4x3/4" bolts
- Four 1/4x1" washers
- Thirteen small nut and collar fasteners
- One 60" length of Trimlock

### **Step One**

Cut the PVC "T" in half so it will fit against the bottom bracket tube. Cut off each ends to fit the width of the bottom bracket tube. Mount the PVC to the bottom bracket with 5/16" wide the hose clamps. (you may need to adjust the angle as you fit the fairing later)





## **Step Two**

Slide in the 1-1/4" PVC tube and determine the length needed to clear the pedals when they are rotated forward. Cut off the tube ( approx. six inches or so). Cut a shallow slot in the PVC end cap deep enough to insert the 3" hinge. Insert the hinge and then a drill 1/4" hole through the hinge and end cap and also through the tube and "T". Inset the 3x1/4" bolts through the end cap and hinge and tighten with a nylock nut to pinch the hinge and hold it in position. Glue the End Cap to the tube only.

NOTE: Do NOT glue the tube to the "T" . Insert a second 3x1/4 bolt through the tube to fasten the "T" . Use a wingnut or threaded knob so you can remove the Fairing from the HPV for storage or transport.





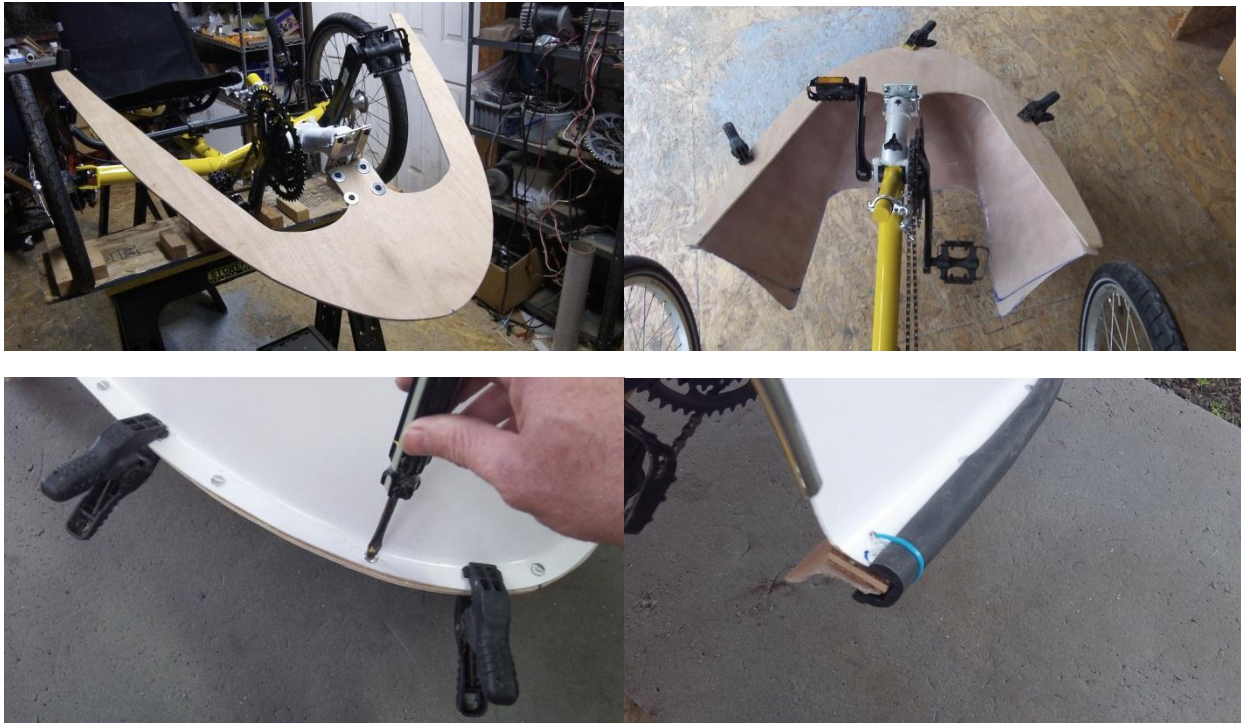
### **Step Three**

Bolt the two 3" angles to the hinge, with the hinge end facing up using two 1/4x1/2" bolts and nylock nuts. Then bolt the fairing support plate to the top of the hinge with four 1/4x3/4" bolts and nylock nuts. (Your Fairing Plate will differ in appearance)



### **Step Four**

With clamps, pinch the Lower Fairing "Chin" and main Fairing to the Support Plate. Adjust the parts until they are in alignment with each other and in line with the trike frame. Measure and drill thirteen holes equally spaced through all three parts. Attach the fairing parts together with the small nuts and collars. Cover the seam with the 60" length of 1/2" Trimlock by pushing it over the flange. A small zip tie can prevent the Trim lock from coming off at the ends.



## **Step Five**

### **Assembling the rear Fairing Support**

#### **Parts needed**

One 1x36x1/8" aluminum flat stock

Two 1/2" metal pipe brackets

Two 1/4x3/4" bolts

Two 1/4 nylock nuts

Four 2" hose clamps

One 12" length of 1/2" foam hose insulation

Two small neoprene adhesive backed pads.

Using a larger round object like a bucket, carefully bend the aluminum into a hoop. You want it to fit inside the headrest portion of the fairing as a support for the fairing. Next carefully slide the hoop down between the seat tubes inside the seat. Check fit the height of the fairing supported by the hoop so that headrest is an inch or so above your head when seated in the HPV. (it is best to position the seat as low as possible). Then clamp the hoop to the seat tubes with the four hose clamps. Mark the hoop so you can adjust it later if needed. Sleeve the top of the hoop with the 12" section of pipe insulation tube.

By looking up into the fairing from the rear, position the pipe clamps against the hoop where they can support the top sides of the fairing. Mark this position and then drill and bolt the clamps to the hoop with the 1/4x3/4" bolts and nylock nuts. Then stick the two neoprene pads to the bottom of the fairing where the pipe clamp supports would touch the fairing.





### **Step Six**

#### **Making a rear Splash Guard**

##### **Parts needed**

One 6x12" piece of plastic

Two pop rivets or small nuts and bolts

Attach the 6" x 12" plastic to the rear of the head rest on the fairing. A reflector or light can be attached to it as well. (the Splash Guard will hold the Fairing support Rod in place when raised)





## **Step Seven**

### **Making a Fairing Support Rod**



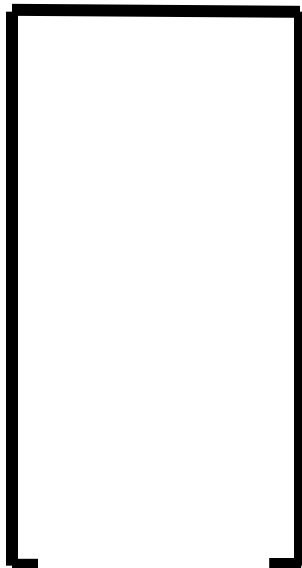
### **Parts Needed**

One 6ft x 3/16" steel rod

Two 1" pieces of 3/16 tubing

Two 1" pieces of Velcro hook & loop

Carefully measure from the middle of the rod (@36") out 7 1/2" on each side. (15 1/2" total) Using a vise and hammer, bend the rod 90 degrees in the same direction to form a rectangle. Then bend both ends in 90 degrees, the same way, one inch on each side.



Measure and drill 3/16" holes in each side of the Fairing Support just below the fairing head rest. Insert the ends of the Support Rods and retain them by pushing the pieces of 3/16" tubing over the ends.

Lift the Fairing and the Support Rod should fit between the Fairing and the Splash Guard.

In front, the Support Rod should sit on the cowl of the Fairing. You can retain it there with the Velcro wrapped around the rod and stuck to the cowl.



### **Step Eight**

#### **Making a Cowl Support (optional)**

A Cowl Support will stiffen the fairing and reduce shaking.

#### **Parts needed**

One 6 ft. length of 1" x 1/16" aluminum flat stock

Three pop rivets

Carefully arch the aluminum stock up into the Fairing behind the cowl and clamp both ends of the strap to the sides of the fairing. Mark and cut off the excess aluminum and re-clamp in place. Drill through the aluminum and Fairing and pop rivet in place on both sides. Then drill through the aluminum and Fairing in the center of the cowl and pop rivet in place. Gently bend in the Fairing so the aluminum conforms to the natural shape of the Fairing.





### **Step Nine**

#### **Paint the Cowl.**

Painting the Cowl will reduce glare from the white Fairing onto the canopy and improve visibility. Choose a dark, flat color.

#### **Parts needed**

Flat dark color spray paint

Mask off the cowl with masking tape and newspaper to protect the Fairing from overspray. Be sure the cowl is clean and dry. Apply the paint in light coats, using long, overlapping, back and forth sweeping motion. Wait until completely dry before removing the masking tape and paper.

### **Step Ten**

#### **Attaching the Canopy**

#### **Parts needed**

12 feet of Velcro hook and loop

Support the canopy upside down on a soft supportive surface. Carefully apply the tooth side of the Velcro to the inside edge of the canopy along both sides. Then apply the loop (fuzzy) side of the Velcro into the indent along the Fairing. You want the Canopy top sit on top of the Velcro and against the Velcro on the inside. Then carefully position the Canopy onto the Fairing. You can gently peel the canopy off the Fairing to make adjustments until it is seated evenly on the Fairing. (You can use a butter knife to gently separate the Velcro)



## **Step Eleven**

### **Trimming out the Fairing.**

Automotive door edge trim is available in rolls from Napa Auto Part stores and is a nice edge protector and finishing touch for the Speeder.

### **Parts needed**

Roll of Door Edge Trim (Napa ProtektoTrim 3/8" #730-4233)

Apply the edge trim by bending it back while pushing it onto the edge of the Fairing. Be sure there are no burrs or roughness to the edge.



### **Accessories**

You probably will want to add graphics to your Speeder. We recommend that you add rear view mirrors, horn and reflectors as well as blinking lights. You will attract attention which is a safety feature as well. Panniers and other cargo holders add to the utility. You may want fenders and gloves for rainy weather. You should experience a significant improvement in speed as well as comfort from cold and rain.

### **Good luck and good riding**



Blue Sky Design

[www.BlueSkyDSN.com](http://www.BlueSkyDSN.com)

[BlueSkyDSN@aol.com](mailto:BlueSkyDSN@aol.com)