

# AP Design Dragster

**User Guide**



**PITSCO**  
EDUCATION

59895 V0513

## **Safety**

- Make sure that coping saws and wood shavers are used appropriately.
- When using tools or sandpaper, students should wear safety glasses.
- All sanding and painting should be done in an area with proper ventilation.
- When racing dragsters, wear safety goggles and stand at least three feet from the track. Also, do not stand at the end of the track.
- When launching, use all the safety guidelines provided in the *AP Dragster Launcher's User Guide*.

## Materials Included

- Balsa wood body blank
- 4 axle bushings
- 4 wheels
- 2 Delrin axles
- Craft stick
- Launch tube
- Tube cap
- Straw
- Self-adhesive glue lines
- Sandpaper

## Items Required (not included)

- Pencil or pen
- Paper or grid paper
- Scissors
- Transparent tape
- White glue such as HD Bond II
- Small shaping items such as a coping saw, wood shaver, sanding stick, or sandpaper
- Wood filler (optional)
- Finish such as spray paint (optional)
- AP Dragster Launcher (for launch)
- Air pump (for launch)

## Design Suggestions

Some things to think about while making your dragster:

- Making the shape of your dragster sleek and aerodynamic will help it travel faster.
- Having a nice, smooth finish will also help it travel faster. This is because there is less surface friction.
- The lighter you can make your dragster, the faster it will travel. You can make it lighter by carving away as much of the body blank as possible without making the frame too weak.
- Bent axles will cause the wheels to wobble. This will slow down the dragster. So take care to not bend the axles when putting on the wheels.
- Be sure to leave enough of the tube groove to keep the launch tube in place.

## Drawing a Dragster Design

A well-designed dragster begins with a design drawing. To design your dragster, follow the steps below.

- 1) On paper or grid paper, trace the top or bottom (the narrowest sides of the blank) and the side of the body blank on the paper (Figure 1). Mark the places where the axle holes are located on the blank. Then, mark where the launch tube groove runs under the blank.

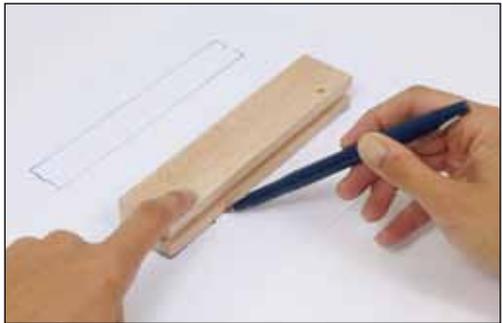


Figure 1

- 2) Inside this outline, draw the car design you have in mind (Figure 2). First draw a top view (as if you were looking down at the top of the dragster) and then a side view of the long side of the dragster. Keep in mind that the center of your wheels needs to line up with the axle hole marks. Make sure not to cut off axle holes and to leave a small flat spot under each axle.



Figure 2

## Shaping the Body Blank

This step is very important for making a dragster that will race well. Carve and shape your dragster so it is as even as possible on both sides. Then, sand it as smooth as possible.

- 1) Make a copy of your drawing. Cut out the top view and side view of the copy.
- 2) Make several tape loops with the sticky side out. Use these to attach the side view to your body blank.
- 3) Trace around the cutout (Figure 3 on the next page). Remove the side view cutout to the other side of the blank. It should mirror the side you have already traced. Trace around the other side. Remove the cutout.

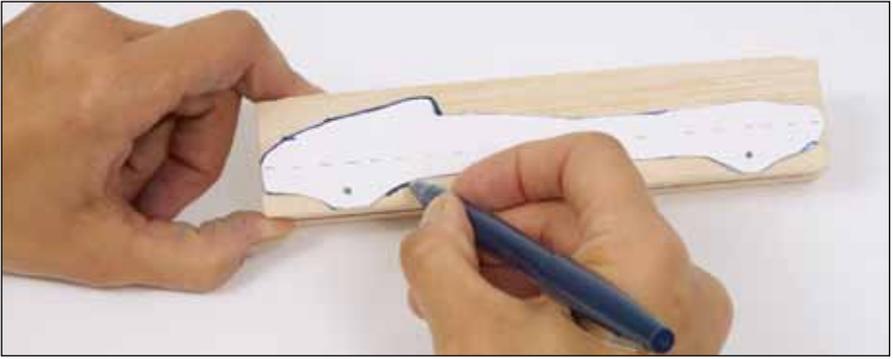


Figure 3

- 4) Find the coping saw, wood shaver, sanding stick, or sandpaper. Using one or more of these, remove the wood outside of the lines of the side view (Figure 4).



Figure 4

- 5) Now, tape the top view on top of your dragster. Trace around it and remove the cutout. Remove the wood outside of the lines. You should now have a rough form of your dragster.

- 6) Using the piece of sandpaper, smooth out the edges (Figure 5).



Figure 5

- 7) You can apply a finish, if you want. To do this, apply a thin coat of spray paint and let it dry. Then apply one or two more coats until the dragster has a nice, even coat of paint. Be sure to let each coat dry before adding another coat. **Tip:** To get a really smooth finish, start by applying wood filler to the dragster. After it dries, sand it with fine sandpaper. Then, paint as instructed.

## Adding the String Guides & Launch Tubes

Air pressure within the launch tubes makes the vehicle move while the string guides hold the dragster on the track.

- 1) Put the tube cap on one end of the clear tube (to ensure doesn't come off during launches, spread a dab of white glue around the inside of the cap before placing it on the tube). Place the launch tube in the launch tube groove under the dragster blank so the tube cap is extending out of the dragster front. Mark on the tube where the dragster blank ends.
- 2) Get two glue lines. Pull the paper backing off one side of each glue line. Firmly press the glue lines onto the launch tube within the area you marked in Step 1. Remove the plastic backing from the glue lines.
- 3) Glue side down, center the launch tube over the groove as shown below (Figure 6). Gently press it down into the groove.



Figure 6

- 4) Find the craft stick and cut off two pieces that are the width of the body blank under the axle holes.

- Using the white glue, glue these to the bottom of your dragster so they are under the axle holes. These pieces will cover a small part of the launch tube groove (Figure 7). Let them dry.



Figure 7

- Cut two pieces of straw about a 1/2-inch long. Take a glue line and cut it in half. Turn over your body blank.
- Pull the paper backing off one side of each glue line half. Place one on the craft stick piece. On top of each glue line half, press a piece of straw. Be sure that the straw pieces are in line with the chassis as shown below.

## Putting on the Wheels

The wheels and axles are what make your dragster roll. Be careful not to bend the axles or your dragster might not roll very fast.

- Find the four axle bushings. Push the narrow end of a bushing into one of the axle holes on your body blank (Figure 8).



Figure 8

2) Repeat this with the other three bushings and holes on the body blank.

3) Insert an axle into the hole in the center of a wheel (Figure 9). Push the other end of the axle through the axle bushings on the front of your dragster.



Figure 9

4) Carefully, press another wheel onto the other end of the axle. If needed, turn the dragster sideways and press down on the wheels against your worktable or desk (Figure 10).



Figure 10

5) Repeat Steps 3 and 4 with the last axle and wheels on the back of the dragster.

Your dragster is now finished. Using the AP Dragster Launcher, you can launch your dragster using the power of air.

**Caution:** When launching, use all the safety guidelines provided in the *AP Dragster Launcher's User Guide*.

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