Making a small toy car – the steps from the August 2013 meeting

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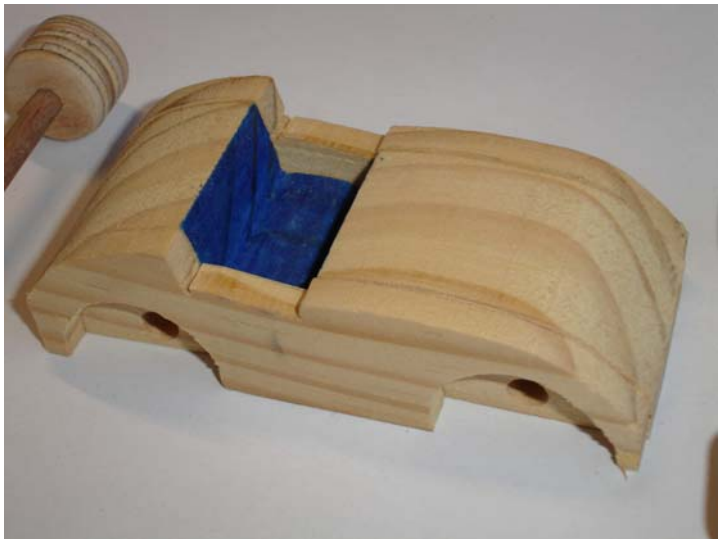
1. Make the wheels and axles. For the wheels, I cut them from ply wood, using a hole-saw on the drill press. The wheels shown were cut from 19mm shutter ply, using a hole-saw with an outside diameter of 28 mm, yielding wheels with a diameter of about 24 mm. The centre drill on the hole-saws I use is ¼" (6.35mm), which suits the 6mm dowel I use for the axles. The hardwood dowel I used for the axles is not very precise – the diameter can be up 6.8mm, so the fit in the ¼" holes in the wheels will vary – use sandpaper on the ends to reduce to a tight fit as required. To finish the wheels, I mount them on screw chuck on the lathe, add some details with a gouge and smooth them with sandpaper. The wheels can be stained and varnished as required.

2. Sketch out the overall shape on a rectangular block of wood – the starting piece of wood for this model was 110 mm long x 48mm wide x 36 mm high of SA Pine. (A piece of 4 ½ x 1 ½" = 114 x 38mm S5 grade pine can be used to make a lot of cars.) The limitation in this case was that the width had to fit the maximum size that the scroll saw can handle.

   Obviously the sizes will vary according to your design and the size of the wheels. The locations of the wheels are the first points to be determined. Then sketch out the design around the wheels. Also sketch out the interior in relation to the wheels to ensure it will fit. This is where you can exercise your creativity and design skills. None of the dimensions are critical – use your judgement to select proportions that are pleasing to the eye. If the first one is ugly, try something else for the next one.



   Bear in mind that the end user is a toddler or small child, so make all the parts robust.

3. Drill out the axle holes on a drill press to ensure that they are square to the sides. For 6mm dowel, I use a 7mm hole to allow for the inaccuracies in the dowels.

4. Place the wheels in line with the holes using dowels and mark out the wheel wells, allowing one or two mm extra for clearance.

5. Cut out the outside shape. This is probably best done on bandsaw with a narrow blade, but can be done using a scroll saw or by hand with a fret saw.

6. Mark out the slices to be cut off the sides. Slice them off using a narrow saw blade. A table saw can be used, but you need to allow for the wide kerf of the blade and you must use some sort of cross-cut sled and/or a hold-down for safety, because of the small sizes of the parts.

7. Cut out the wheel wells in the sides by holding them together – a scroll saw is probably the best for this.

8. Mark out the interior and cut it out. The first picture shows the parts laid out after cutting.

9. Study the interior and finish off all the parts that will not be accessible with the sides glued back on, using files and sandpaper. The seat was stained blue using a Wooddoc Gel Stain.

10. Glue the sides back on to the interior, being careful to line up the parts, to reduce the amount of hand work required later. To avoid glue on the parts that will be exposed, it may be helpful to mark out the gluing area with a pencil. The second picture shows the sides glued in place.

11. Finish off the outside, cleaning up saw marks and trimming the details by eye. Knock off all the sharp edges with fine sandpaper, to prevent injuries to little fingers. The last picture shows the body prior to gluing, held together with an elastic band, and wheels also dry fitted. The outside is still rough.

12. Stain and finish the body as required.

13. Fit the wheels and axles. The axles were a tight fit into the wheels, so just a drop of white cold glue was used to glue the wheels onto the axles.

14. Add any extras to suit, such as headlights, a grill, etc – this is up to your imagination.