

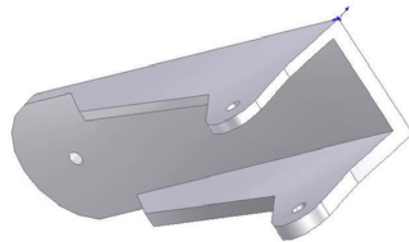
Motor Cycle Project

Design and make a project of simple construction, suitable for a Leaving Certificate Technology class.

Introduction:

This project was designed in 1mm sheet Aluminium. It could just as well be made from Mild Steel, Brass, Copper or Acrylic. It consists of three main parts:

Main body.



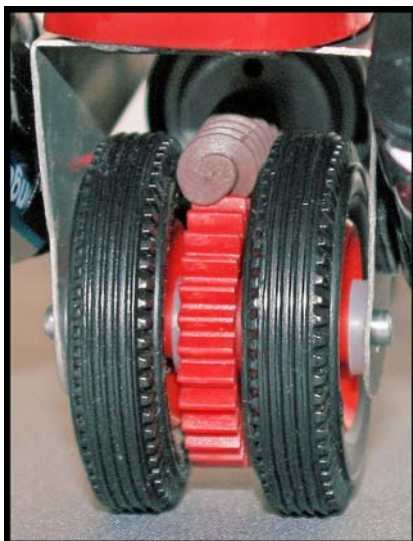
Front Forks.



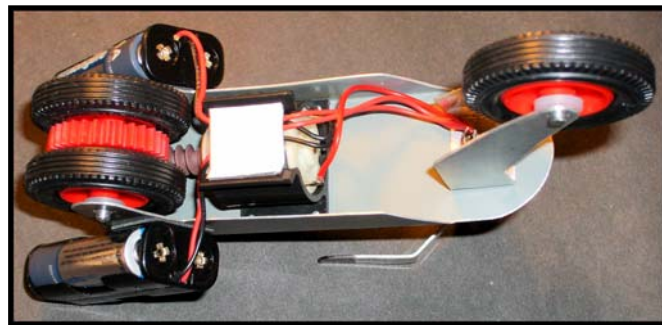
Handle Bars.



It uses a unique double back wheel design for stability and a switch that keeps the assembly together without the need for screws.



All dimensions on the project are interdependent; if the thickness of the Aluminium is altered then the switch would have to be altered as the neck of the switch will be too short to assemble the three main parts. Likewise if the size of the gear wheel or the worm gear are altered then the position of the axle hole would also have to be altered to correspond. All the other components used are attached with double sided adhesive pads. The motor and holder fit neatly to the underside of the main body and the two battery holders attach to the sides to replicate the exhausts for design purposes.

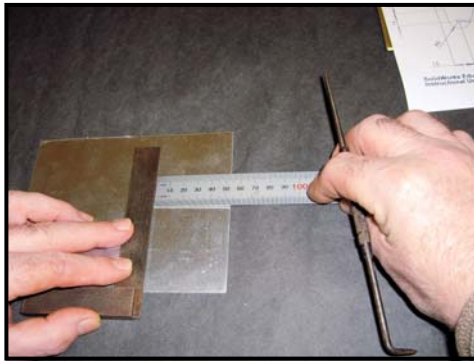


The Main Body:

When you get the blank piece of Aluminium the first thing you need to do is check for a straight true edge. The edge of the Rule or the back of the Try Square may be used for this purpose. Having satisfied yourself that you have one true edge, you now take the Try Square and proceed to mark out, cut and file a further edge at right angles to the first edge. This gives two good edges from which to mark out the Body profile according to the given dimensions.

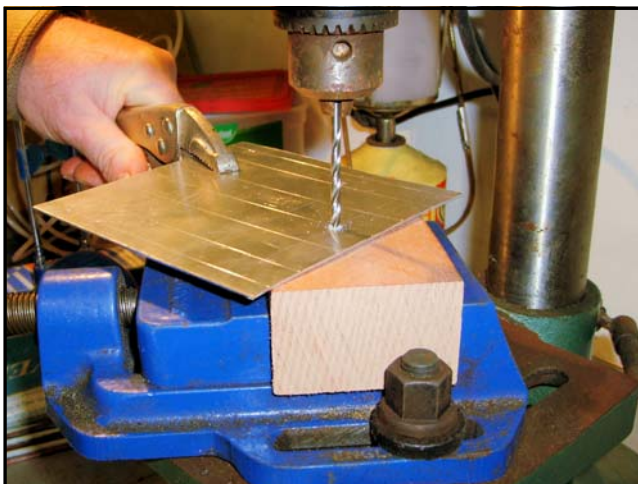


A scriber would be normally be used to mark out but if you don't want to mark the surface a standard pencil will do. Having marked out the profile from the given dimensions, the next step is to centre punch the position of the three 4mm holes for drilling.



The drilling may be done on the Bench drill or with a portable drill. Particular care is needed in this operation. A piece of wood is required to support the Aluminium profile and it needs to be clamped to the profile before being drilled.

It may also be held with a Hand vice and drilled on the Bench drill or Pillar drill provided it has adequate support.



Now the profile has to be cut from the blank and filed to size. In light gauge aluminium a Tin Snips or Hand Shears would be used. Accuracy in cutting out at this stage reduces the amount of filing required. Really you should only have to remove the burrs after cutting.

The next operation is the Bending or Folding of the profile. Again accuracy is important, because if one side is slightly longer than the other the axle and therefore back wheels will be out of alignment. Methods of bending or folding will depend on the equipment available. The best option is a floor or Bench folding press as these produce the most accurate results, if this is not available there are a number of small vice folders available.



Failing that you may have a folding bars, and finally reasonable results are possible with blocks of hardwood cut to the required sizes.



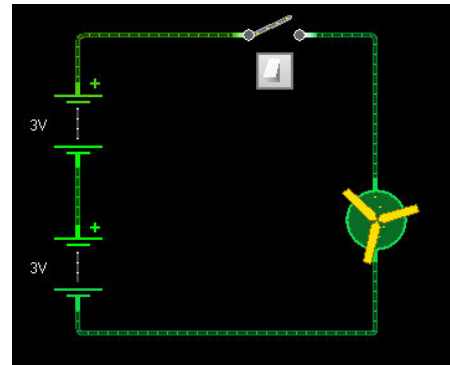
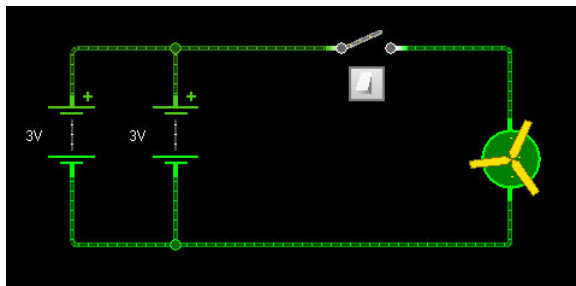
Hardwood blocks are also very useful as formers and while bending to protect the blank from hammer damage. Hit the hardwood block with the Hammer and not the Aluminium.



The remaining parts are produced in the same manner according to the dimensioned drawings. When the three profiles are completed they are assembled or joined together using the switch supplied. Again this removes the need for any screws in the project.

Next the worm gear is pushed on to the 2mm Motor shaft. The Motor is placed in its holder and it is then mounted to the underside of the main body as shown in the earlier diagrams. Assemble the rear wheels and the 38tooth gear wheel on the 4mm Axle shaft provided. Locate the Axle assembly in the 4mm holes in the Main body. Mount the front wheel in the Front forks in a similar manner. The battery holders are now attached to the side of the Main body with double sided sticky pads to resemble exhaust pipes.

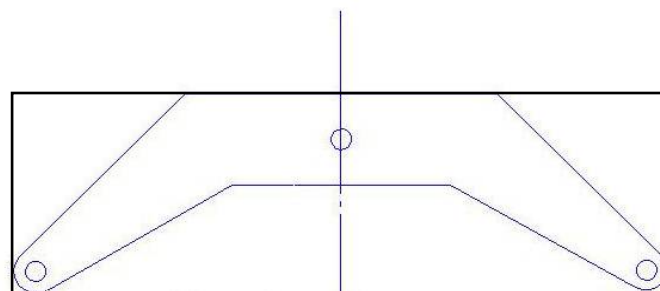
The project is now wired and soldered according to the given circuit diagram.



The battery may be connected in either series or parallel. In series you have 6 Volts and only 3 Volts in parallel but with a greater torque.

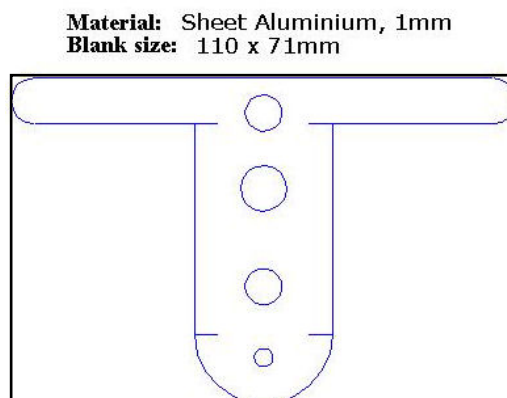
Finally the design is finished with the inclusion of a Petrol Tank and seat. These may be moulded and or vacuum formed to a design of your own choosing.

Front Forks:



Material: Sheet Aluminium, 1mm
Blank size: 126 x 39mm

Handle Bars:

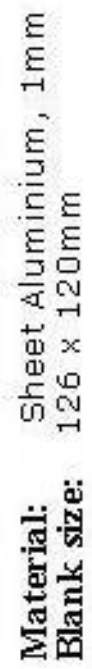


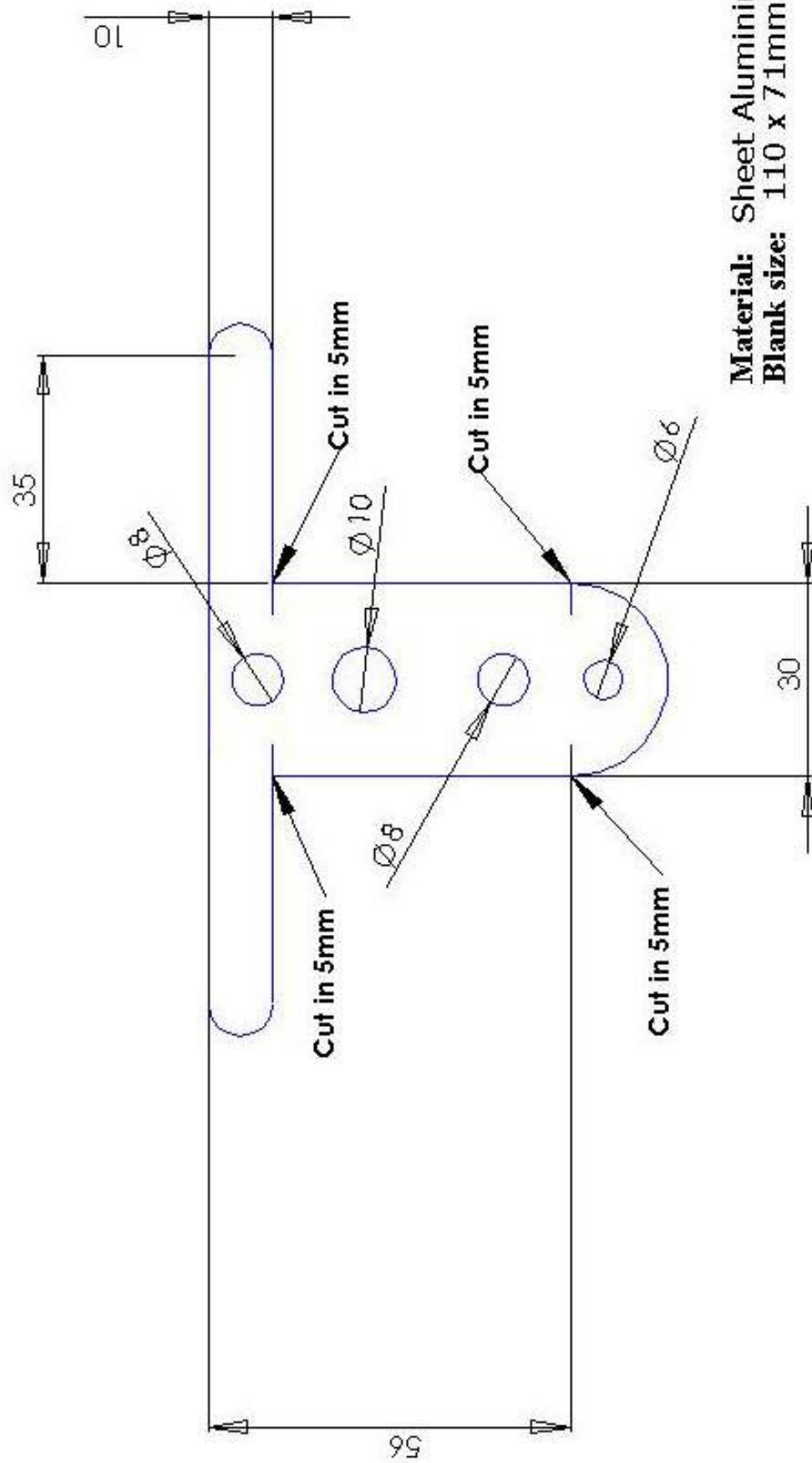
Material: Sheet Aluminium, 1mm
Blank size: 110 x 71mm

The approach and methods of manufacturing the Front Forks and the Handle Bars are exactly the same as for the main body described previously.

Completed Project







Material: Sheet Aluminium, 1mm
Blank size: 110 x 71mm

