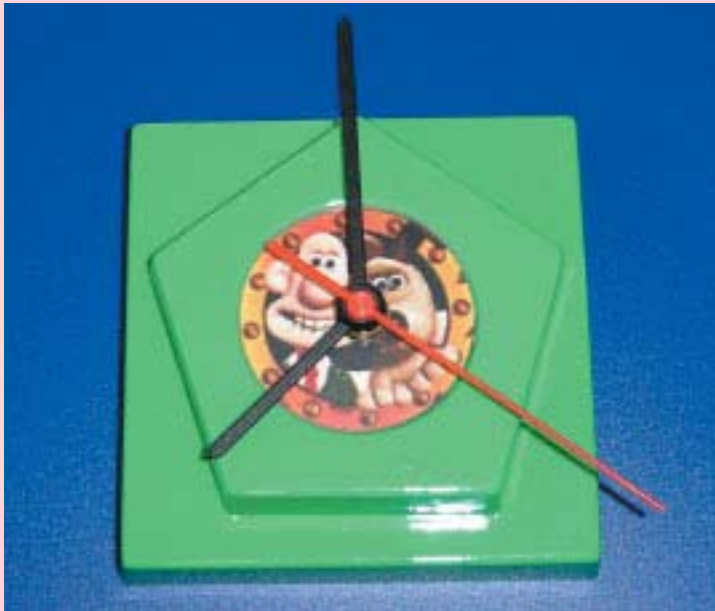


CLOCK PROJECT



Target Age Group

Key Stage 3

Skills Learned

CAD, CAM, Design, Marking Out, Cutting, Vacuum Forming, Finishing, and Assembly

Outline of Project

In this project, the students design and make a working clock. The basic structure is pre-prepared to ensure reliable results.

Teacher Preparation

To ensure that this project is completed successfully, the teacher must manufacture the basic vacuum forming mould beforehand. It is recommended that the mould be made from MDF, to the drawing shown in Diagram 1.

Notes on the production of the vacuum forming mould:

The thickness of the baseboard should be around 8mm. However, there is quite a tolerance on this and materials of 3-10mm can be used successfully.

The baseboard in the diagram is suitable for our 1210 Vacuum Forming

machine. The baseboard dimensions will need to be amended as required for different makes and models of machine.

The baseboard is drilled with a single, 6mm diameter evacuation hole. The mould itself is mounted on double sided sticky pads. This gap allows air to travel under the mould, giving even evacuation.

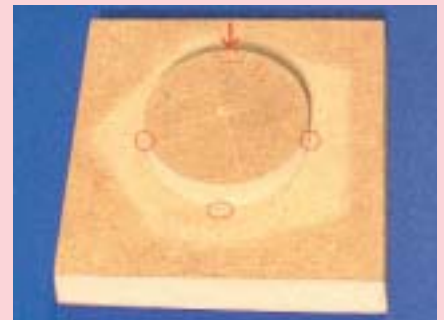
The mould is made in two pieces, which are secured together with two No 8 x 35mm screws.



Two further screws secure the assembled mould to the baseboard.



The 1mm diameter holes allow air to be evacuated from the top face of the completed mould.



Materials to be provided to the Students

1 piece of 18mm MDF, cut to the dimensions in Diagram 2.

1 piece of 1.5mm HIPS (High Impact Polystyrene) per student

1 piece of acrylic 3mm thick, 65mm square.

Clock Movement (we used one from Rapid Electronics, Order Code 85-1410).

Equipment Requirements

Vacuum Forming Machine

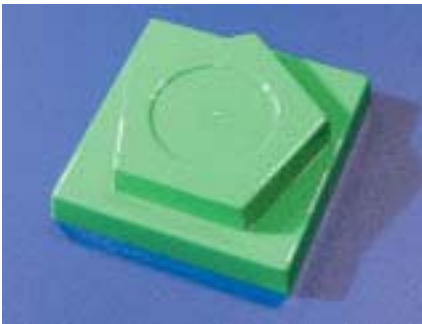
Bandsaw, Router etc.

CLOCK PROJECT

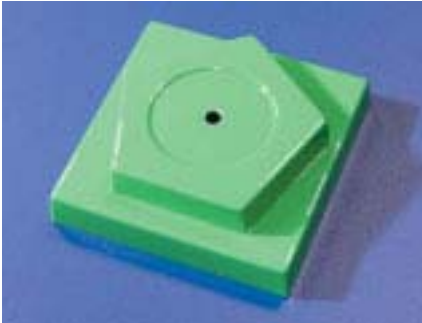
STEP 4

TRIM AND FINISH THE CLOCK BASE

Using a C R Clarke Profile Cutter, or similar tool, trim the base of the forming to leave a smooth edge.



Drill through the centre of the forming (using the detent as a guide) using an 8mm diameter drill.



STEP 5

DESIGN THE FASCIA

Make a design 61mm in diameter. This can be a photograph, drawing or other pattern. Print the pattern onto paper and cut into a disc 61mm in diameter. Cut a hole 8mm in diameter in the centre of the disc.



STEP 6

CUT THE ACRYLIC DISC

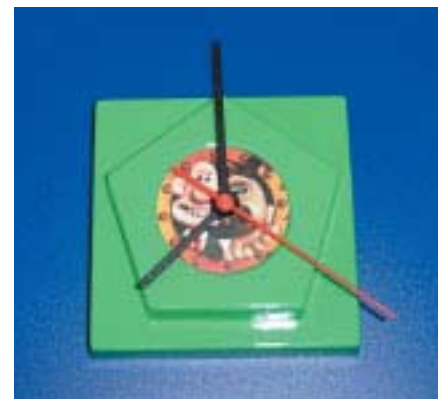
Mark out and cut the acrylic into a 61mm diameter circle. Drill an 8.0mm diameter hole in the centre of the disc. As an alternative, should your workshop be equipped with a laser cutter, this can be used for this operation.



STEP 7

FIT THE MOVEMENT

Fit the movement into the clock base from behind. Place the fascia onto the top face of the Clock Base, followed by the Acrylic Disc. Secure with the washer and nut and fit the clock hands.



With thanks to Mr Barritt at Hawarden High School, Hawarden, Flintshire, for the submission of this project.

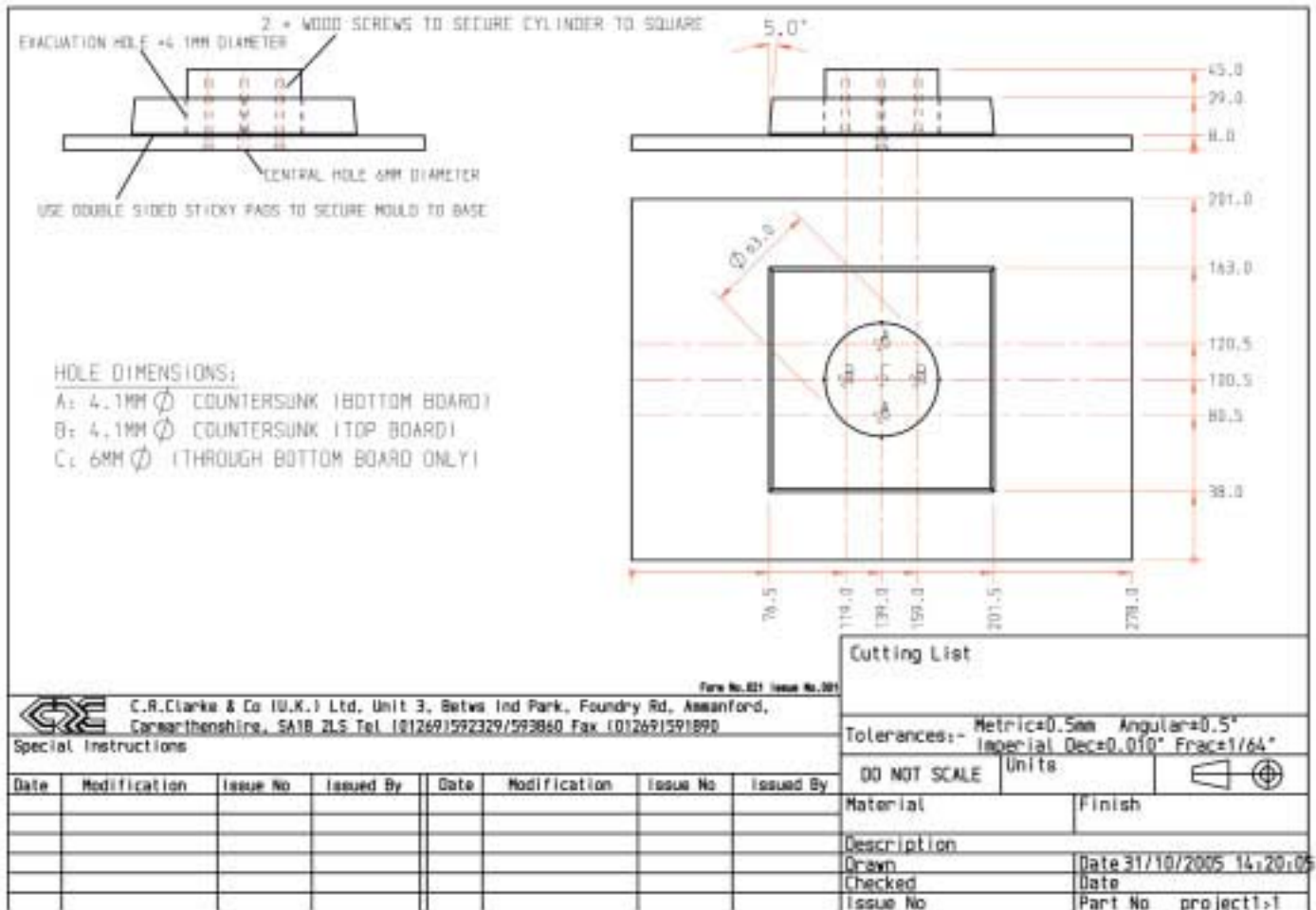


Diagram 1

CLOCK PROJECT

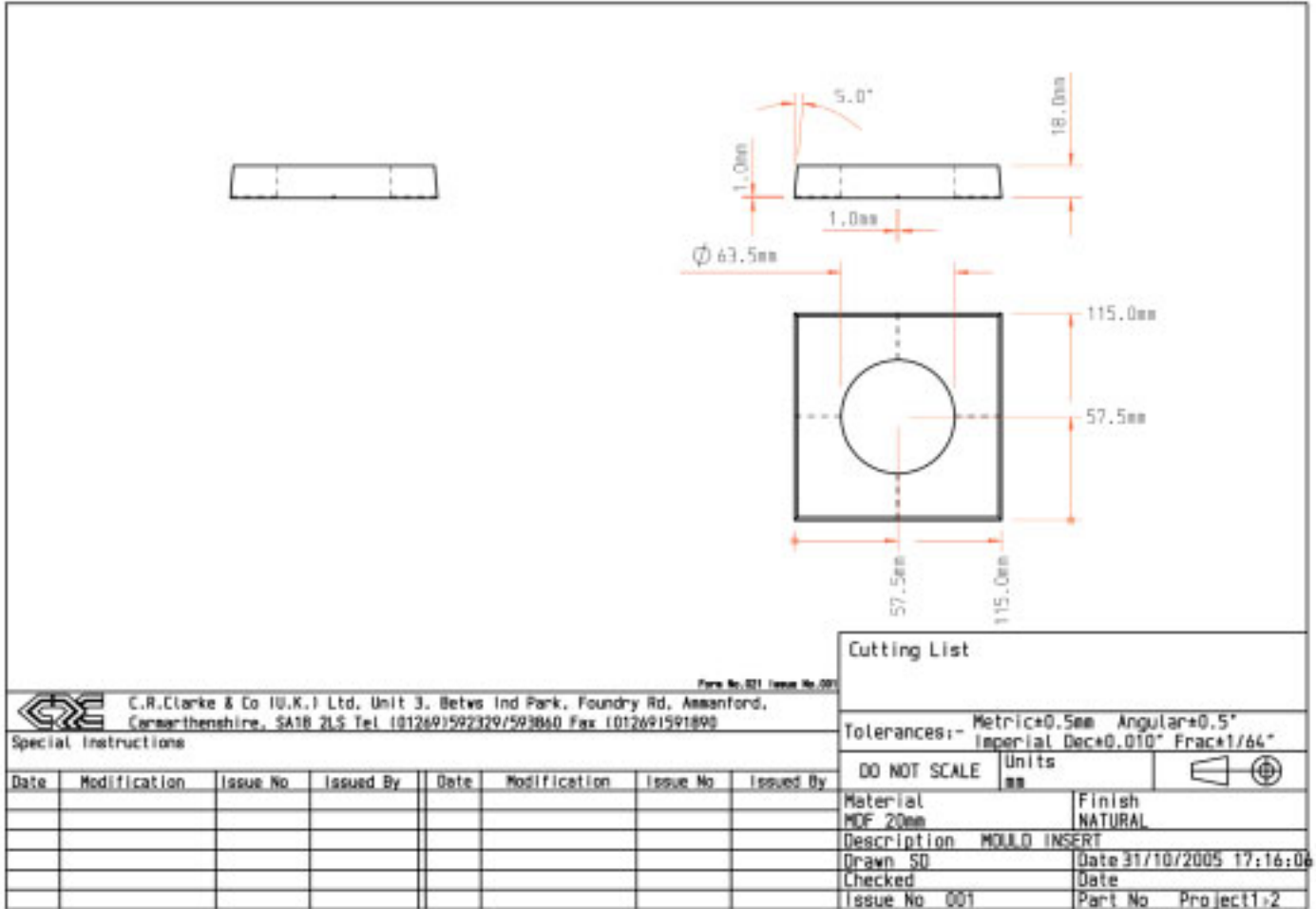


Diagram 2