

Line Bending Project: A Display Stand

Objectives

Students will develop their D&T capability by designing and making an original product of good quality that satisfies the requirements of the design brief.

By the end of the assignment, students will know that:

- Shapes can be formed by bending
- Thermoplastics soften and may be bent when heated
- Thermoplastics remain bent / deformed after cooling
- A strip heater / line bender is used to heat thermoplastic sheet materials along a straight line
- Jigs may be used to aid bending thermoplastics
- Jigs may be used to hold heated thermoplastics after line bending
- Hot parts of strip heaters and heated plastics will burn skin so:
 - risk assessments of the hazards should be carried out
 - safe working practices should be adopted.

Success criteria

Each student:

- Has designed and made an original product that satisfies the given design brief and specification
- Has used tools safely and has strived to achieve quality in marking out, cutting, shaping, finishing and joining their chosen materials
- Knows that thermoplastics can be softened by heating
- Knows that line benders are used to heat (relatively) narrow areas of thermoplastic sheet materials
- Knows that thermoplastics soften and can be bent when heated and become rigid again when cooled.
- Knows that jigs may be used to:
 - aid bending thermoplastics
 - hold heated thermoplastics after line bending until the plastic is cool
- Has assessed the risks associated with working with strip heaters and hot thermoplastics and has worked safely throughout the assignment
- Shows evidence of having evaluated his/her work.

Situation

A shop owner selling novelty products wants to promote a series of desk top items.

One of the products is a nostalgic magnetic calendar.

It consists of a painted steel front with a card back that also forms the stand.

Magnetic rings may be moved around the painted steel front to indicate the correct month and day of the month.

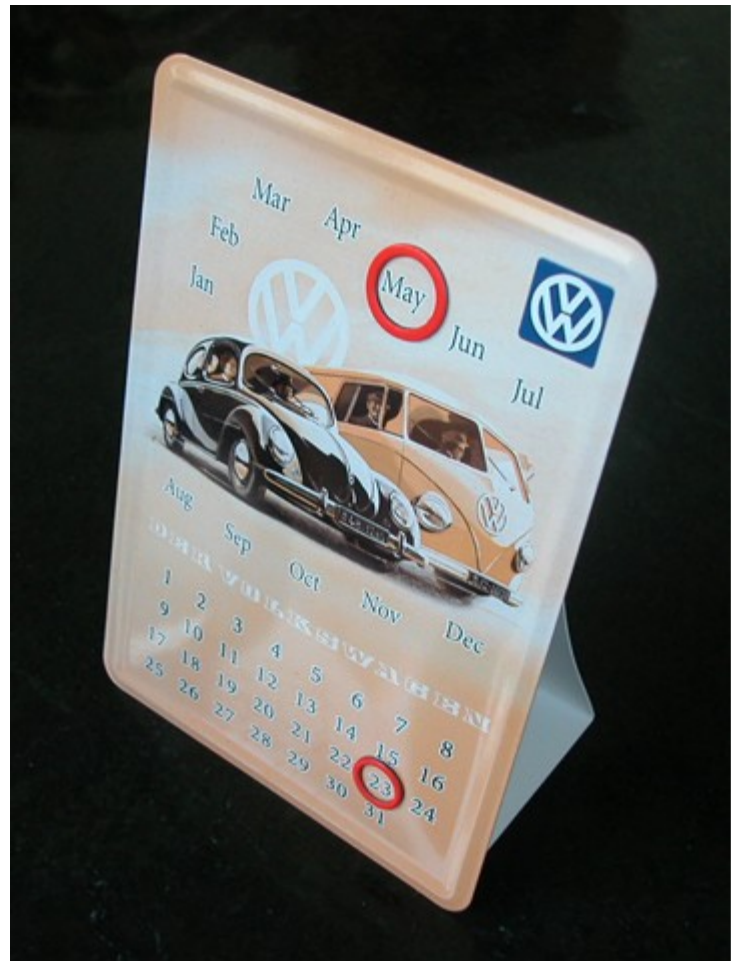
The size of the front is 145 x 103
The base is 103mm x 60

(Measurements are in millimetres)

Design brief

Design a display stand for novelty desk top products.

The largest product measures
145 x 105 x 60



Specification

The display stand must:

- Be made from plastic sheet materials that have been formed by line bending
- Support one novelty product
- Allow the product to be seen clearly
- Attract attention
- Display the price of the product
- Be stable
- Be stylish and demonstrate quality in design and manufacture.

The display stand must not:

- Fall apart in use
- Fall over
- Be dangerous to use
- Have unsightly joints.

What you must do

- Analyse the design brief and specification and pick out the essential requirements.
- Analyse ways that thermoplastic sheet materials may be used to make the display stand.
- Research ways that a stand could:
 - attract attention
 - be made stable
- Use notes and sketches to illustrate designs for a display stand that meet the requirements of the design brief and specification.
- Develop your best idea into a final design. Your design should have sufficient detail so that it can be clearly understood and made by someone other than yourself.
- Prepare a cutting list of the materials that are required to make your product.
- Prepare a Risk Assessment of the hazards involved with making and using your product.
- Make a jig that will enable the plastic sheet to be bent accurately and to be held until cool.
- Make your design.
- Evaluate the final product, e.g.:
 - how good the design looks
 - how well the design works
 - discover what others think about your product
- Work safely and complete the assignment on time.