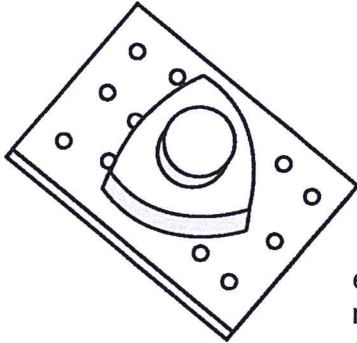


Vacuum Forming

Most thermoplastics are suitable for vacuum forming. This process is useful for making shaped packaging trays, such as those that hold a layer of chocolates in a box. Other items made by this process are face masks, the shelving on the inside of refrigerator doors and plastic baths.

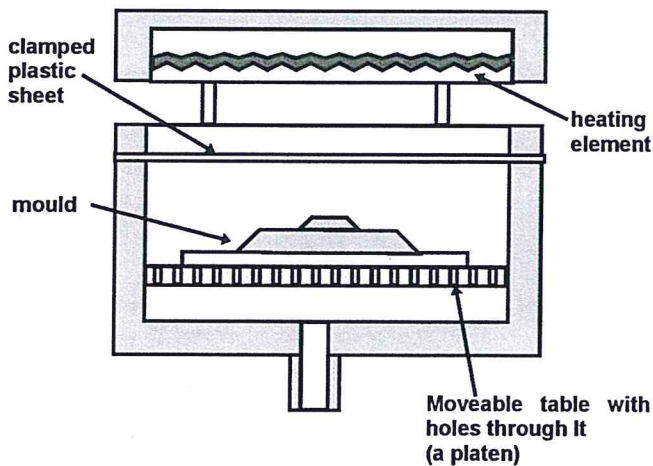


The mould can be made from MDF and is attached to a baseboard made from drilled hardboard or thin plywood.

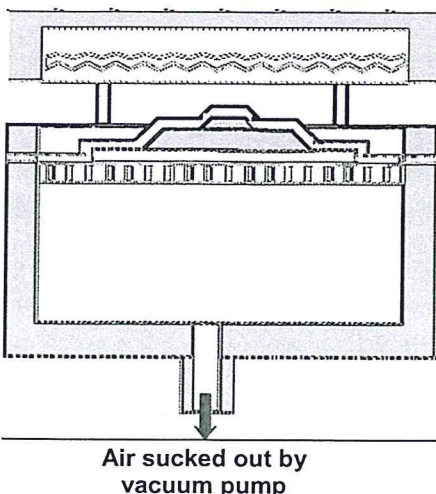
The sides should be tapered (draft), to make it easier for the plastic and mould to separate at the end.



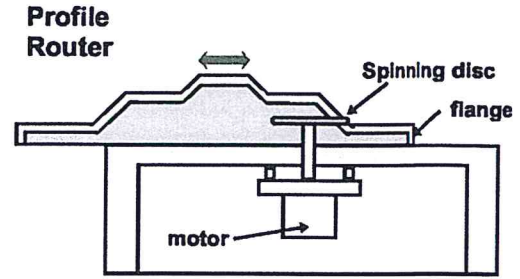
Vacuum forming machine



The table with the mould is raised into the plastic and the vacuum pump is switched on. The plastic sheet is then sucked tightly over the mould. The mould can be removed from the plastic moulding when the plastic has cooled.



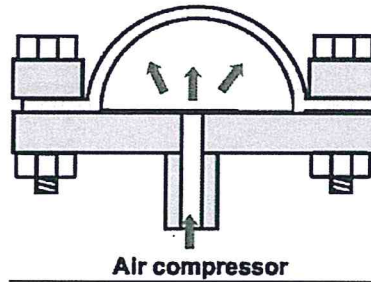
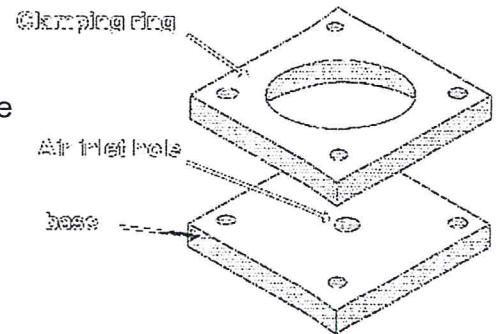
The waste can be trimmed from the base of the moulding by using a **profile router**. This machine uses a spinning abrasive disc, that can be set at different heights, to cut away the waste flange.



Blow Moulding

Blow moulding is a process that can produce hemispherical shapes (half a sphere).

The blow moulding clamp can be made from plywood or MDF.



The heated, soft plastic sheet is blown up like a balloon. The air used to blow the hemisphere also cools the plastic so it quickly becomes rigid.

KEY WORDS Plastic memory: Plug & Yoke: Vacuum forming: draft flange

1. Explain the term 'plastic memory'.
2. Illustrate how a straight line, 90° bend, can be made in a 3mm thick sheet of PVC.
3. How can a relief pattern be made in a square of acrylic? Use annotated diagrams.
4. A small tray is required to hold salt & pepper shakers. How would you make the tray in rigid polystyrene?
5. Why are vacuum forming moulds made with drafted edges?
6. Illustrate the vacuum forming process.
7. How can the flange be cut away from a moulding?
8. What are the three ways in which a hemispherical shape can be produced from a plastic sheet?
9. Explain, with diagrams, how compressed air can be used to create a half balloon shape in sheet plastic.