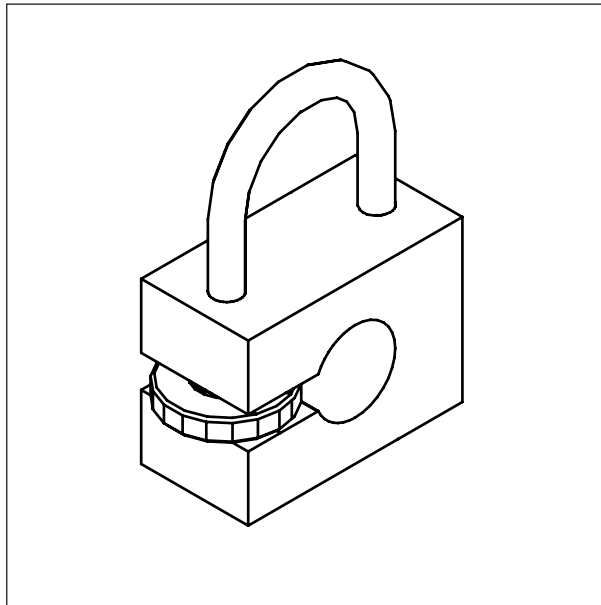


OPITEC

1 1 2 . 0 6 4 ***Key Hanger***



Please Note

The OPITEC range of projects is not intended as play toys for young children. They are teaching aids for young people learning the skills of Craft, Design and Technology. These projects should only be undertaken and tested with the guidance of a fully qualified adult.

The finished projects are not suitable to give to children under 3 years old. Some parts can be swallowed. Danger of suffocation!

1. Product Information

Article:___Metal construction project

Use : In Design Technology Key stage 3

2. Construction:

2.1 Material:___Steel (Iron)

Working : Sawing, filing, bending and thread making

Joining : Screw threads

Finish : Oil

2.3 Aluminium: (Non ferrous light metal)
light, anti-magnetic

Working: Sawing, filing, drilling and counter drilling

Joining : Screw thread

Finish : Oil

3. Tools

Filing: Choose the correct grade file for the work in hand
Make small slots with a needle file

Note! Files only cut on the forward stroke

Sawing: Hacksaw for straight cuts

Note! The saw blade should be inserted with the teeth facing forward
Remember the blade will only cut on the forward stroke




Drilling: Use a pillar drill

Note! The safety rules when drilling, wear safety glasses
tie all long hair back, remove jewellery, wear an apron
Hold work to be drilled in a machine vice
Set the drill to the correct cutting speed

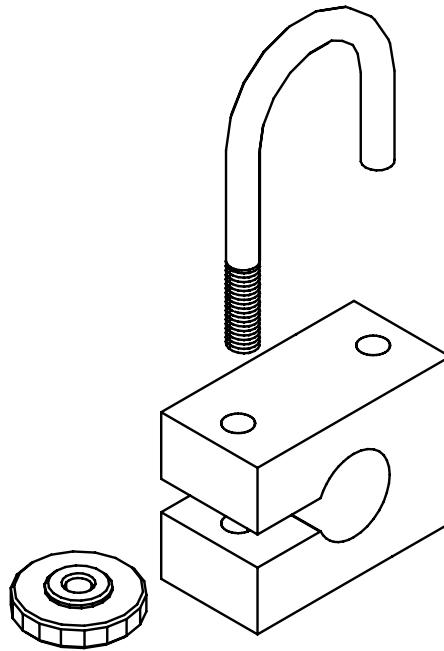
Thread making : Use an M4 Tap

Note! it is easier with a thread cutting paste

4. Parts list

Part	Quantity	Size in mm	Diagram / Part no
Round nut	1	16mm dia; M4	
Aluminium block	1	20 x 30 x 40	
Metal rod	1	4mm dia x 150	

5. Exploded drawing



6. Making

6.1 Making the lock

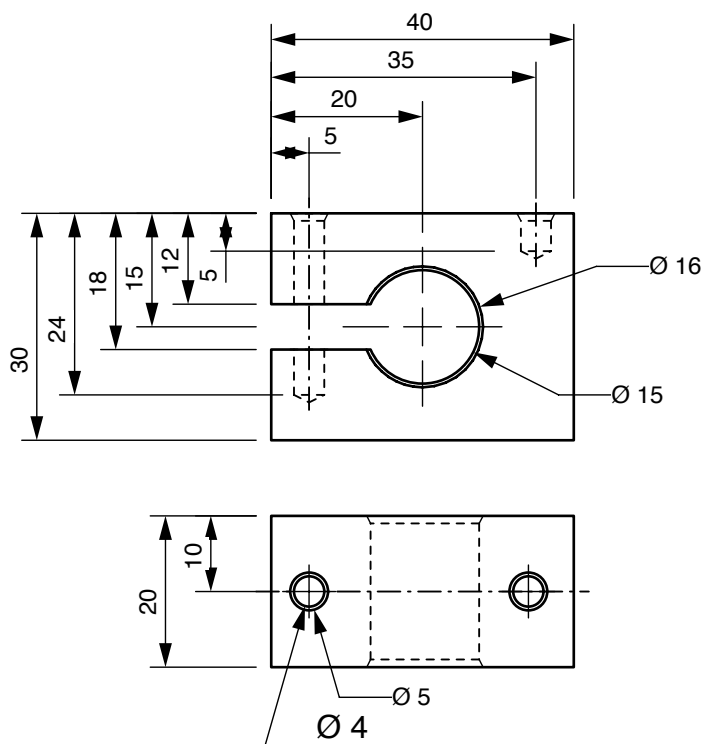
6.2 Making the arm

6.3 Assembling the parts

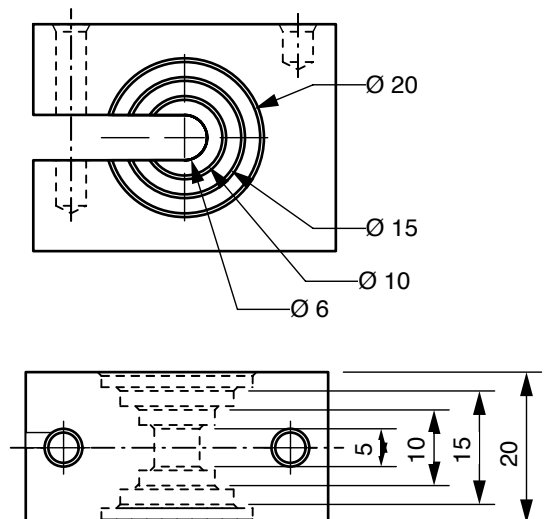
6.1 Making the lock

6.1.1 Mark out the aluminium block as shown in the diagram and drill the holes.

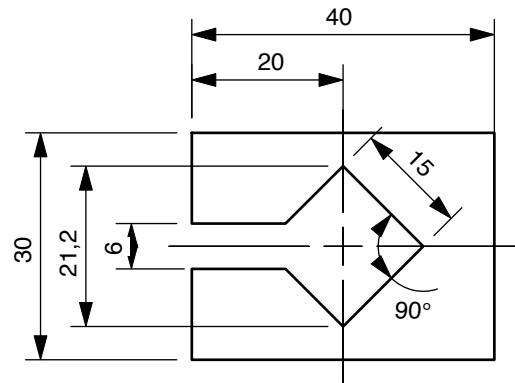
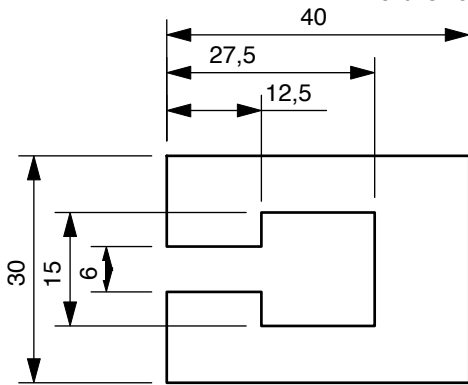
Note: The drawing shown is only a guide
 The opening in the middle can be to your own design
 The further drawings are only a guide and can be changed to your own design as soon as the principle has been grasped



Possible design drilling in stages



Further design drawings

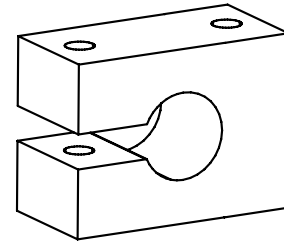


6.1.2 Using a Hacksaw, cut out the slot until the drill hole is reached

6.1.3 Countersink the drill holes

6.1.4 All the faces should be finished by filing them flat

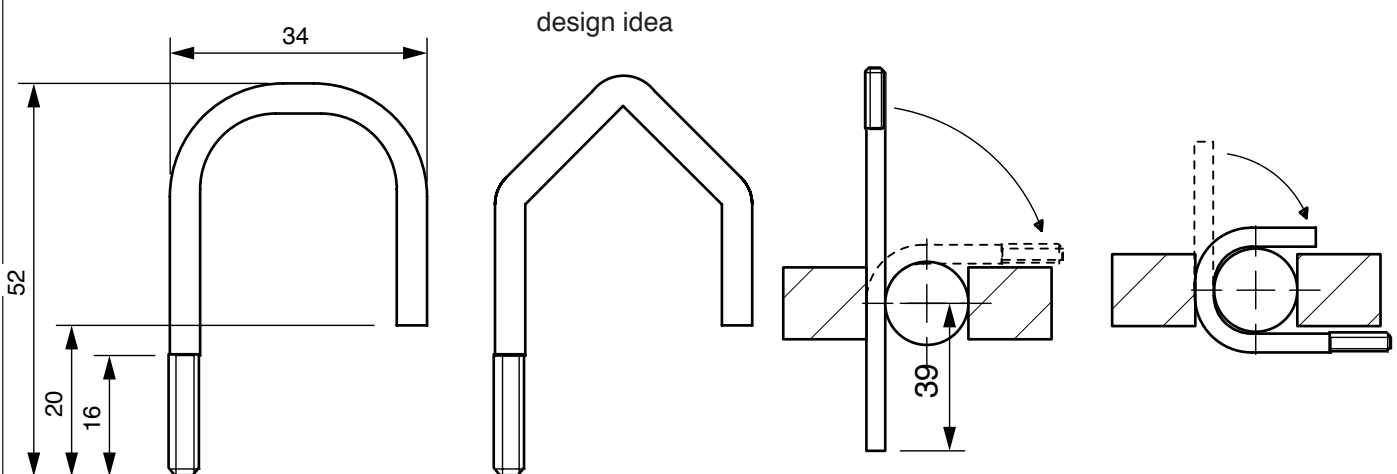
6.1.5 Finally lightly round off all the sharp edges



6.2 Making the arm

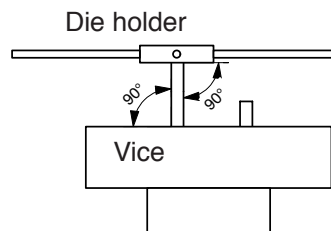
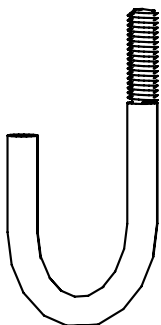
6.2.1 Bend the metal rod as shown

Note: The design shown is only an idea
When bending, it is necessary to be as accurate as possible so that the arm will fit in the lock.



6.2.2 After bending, check that the arm will fit into the block, when satisfied, make the M 4 thread.

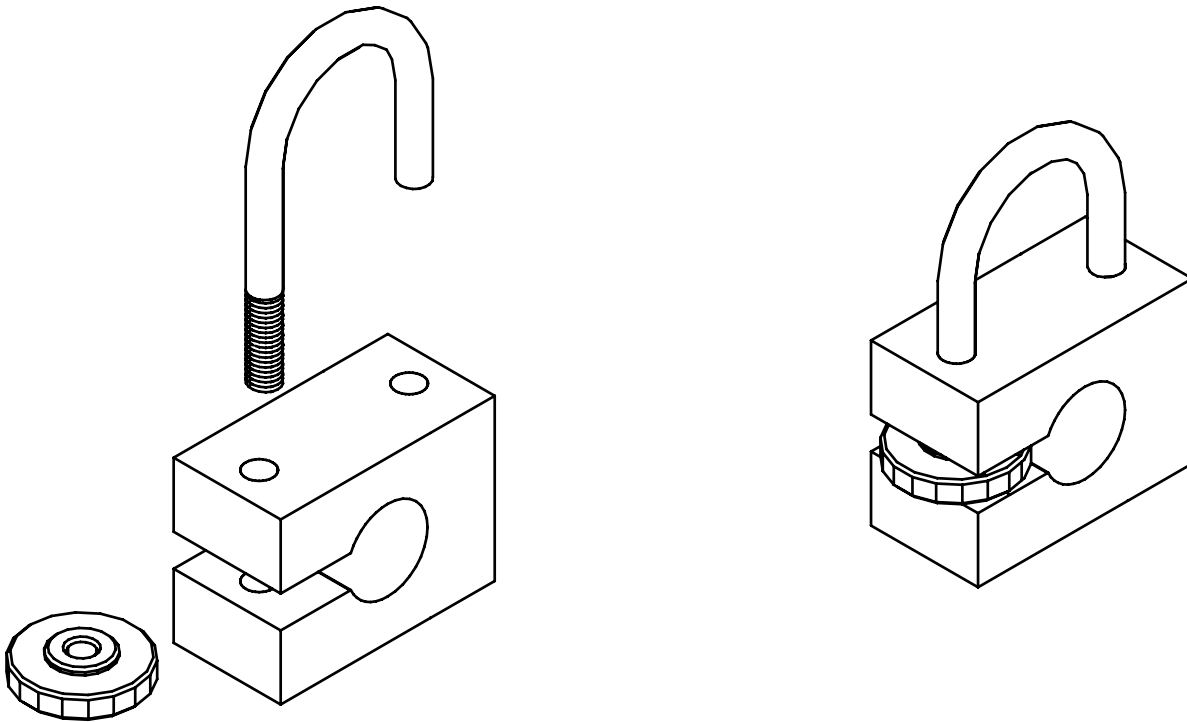
Note: Hold the arm in a vice (use soft jaws). Run a file around the end of the rod the to make it smaller so that the Die will have a good start. Hold the Die and holder at right angles to the work and start to make the thread. Two, three turns forward and one back will ensure a clean thread. Also a smear of cutting paste will help. Make sure the Die holder is at right angles to the work at all times!



6.2.3 Remove any burr from the finished thread and then wind on the round nut to test the fit

6.3 Assembling the parts

Insert the round nut into the slot. Introduce the curved arm into the hole in the block and at the same time wind the round nut on to the thread. Make sure the other end of the arm locates as it lowers into the block and is below the level of the top. Now it will function as a key hanger.



Tip: You can stamp your initials or name on the surface of the block

