Education

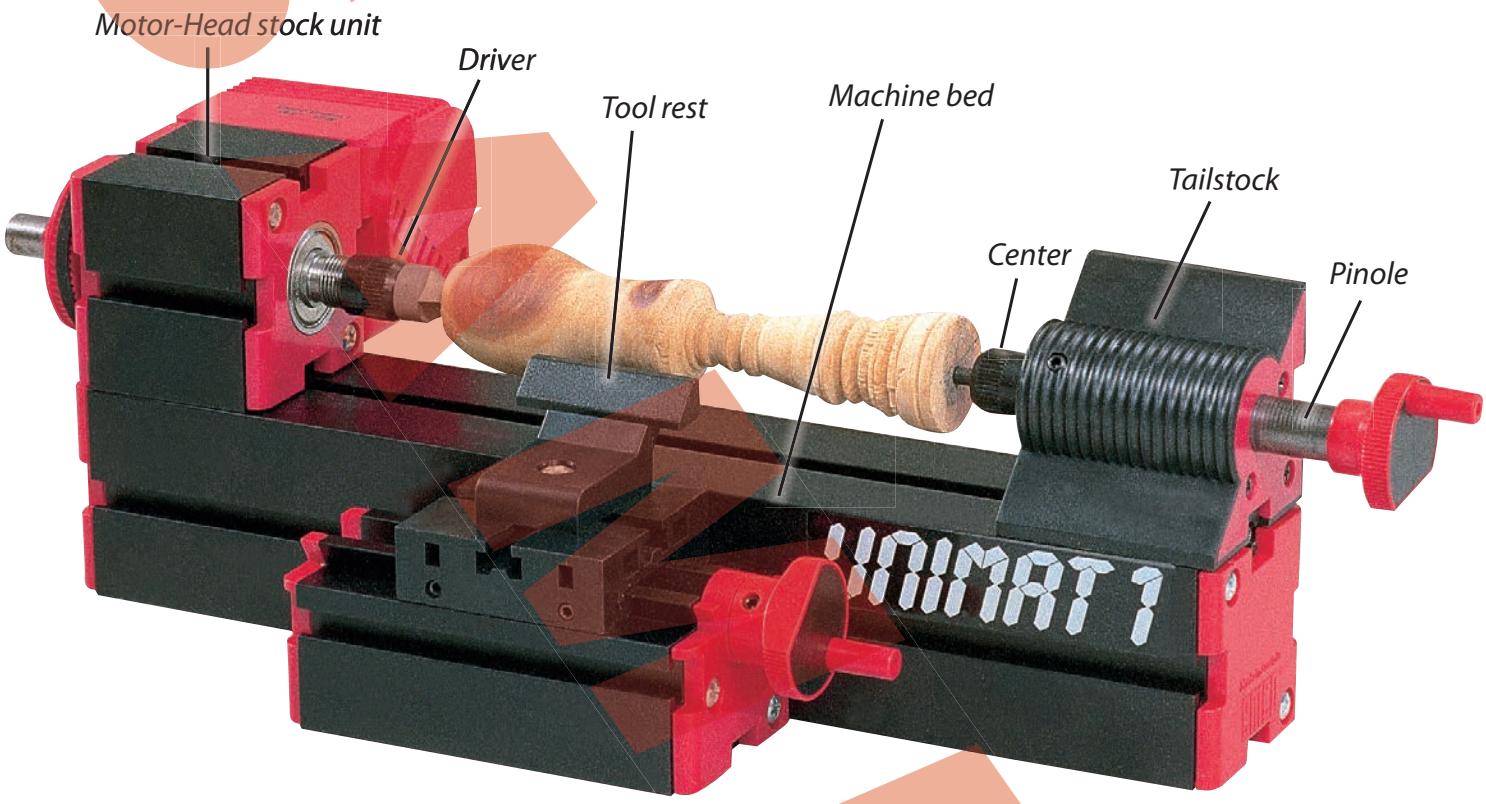
SAMPLE

[ELEMENTARY]

QUALITY PRODUCT MADE IN AUSTRIA

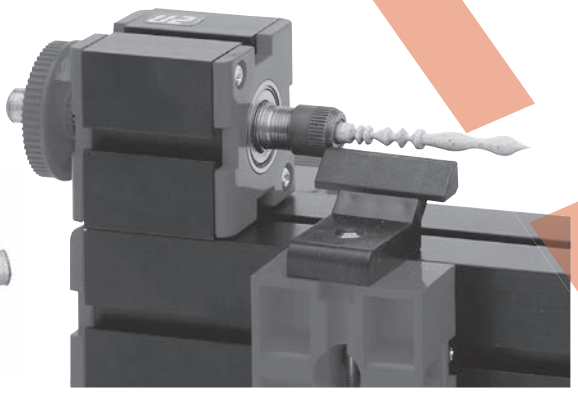
might cause a sudden crack. For sanding and finishing higher revolutions are suitable.

The major parts of a woodlathe



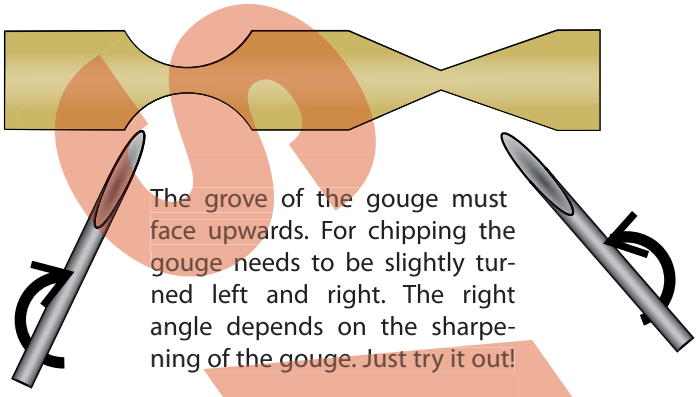
Methods of woodturning

1. MINIATURE TURNING: workpieces with a diameter up to 6 mm should be chucked by means of collets.

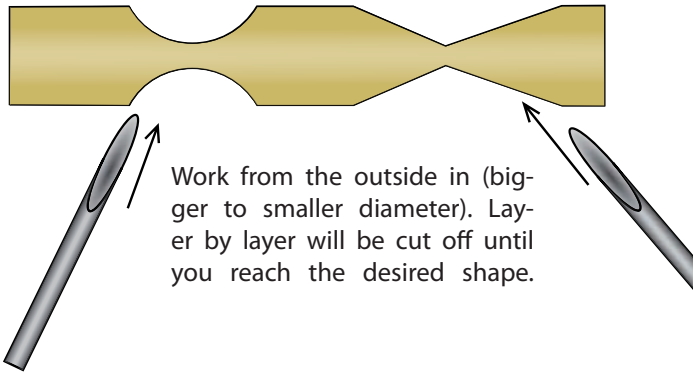


Working with the Unimat Woodturning Machine

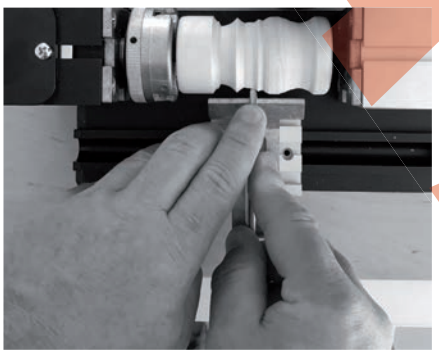
Set-up, Materials, Maintenance

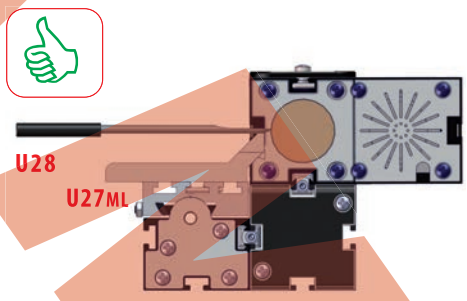


The grove of the gouge must face upwards. For chipping the gouge needs to be slightly turned left and right. The right angle depends on the sharpening of the gouge. Just try it out!

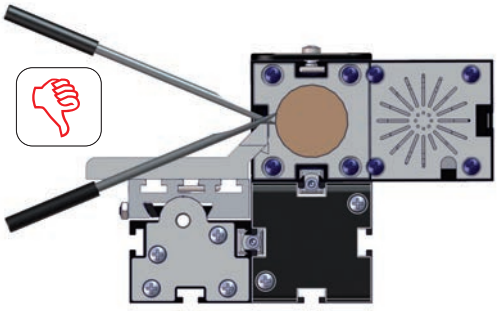


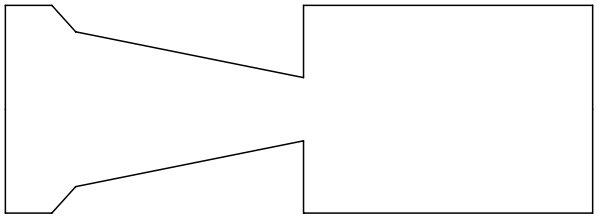
Work from the outside in (bigger to smaller diameter). Layer by layer will be cut off until you reach the desired shape.



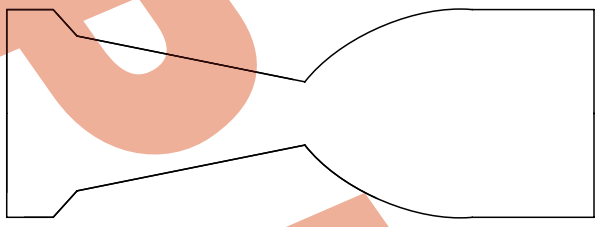


symbol photos

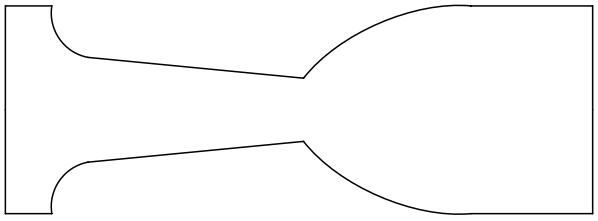




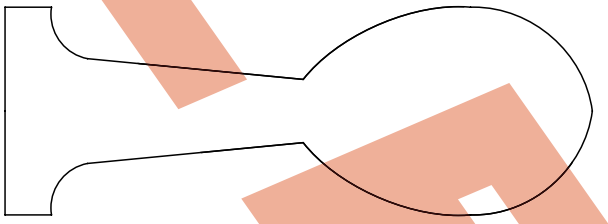
1. process the trunk



2. the lower roundings of the top of the tree



3. the roundings of the base



4. the rounding for the top of the tree

To get a smooth surface use sanding paper, if necessary.

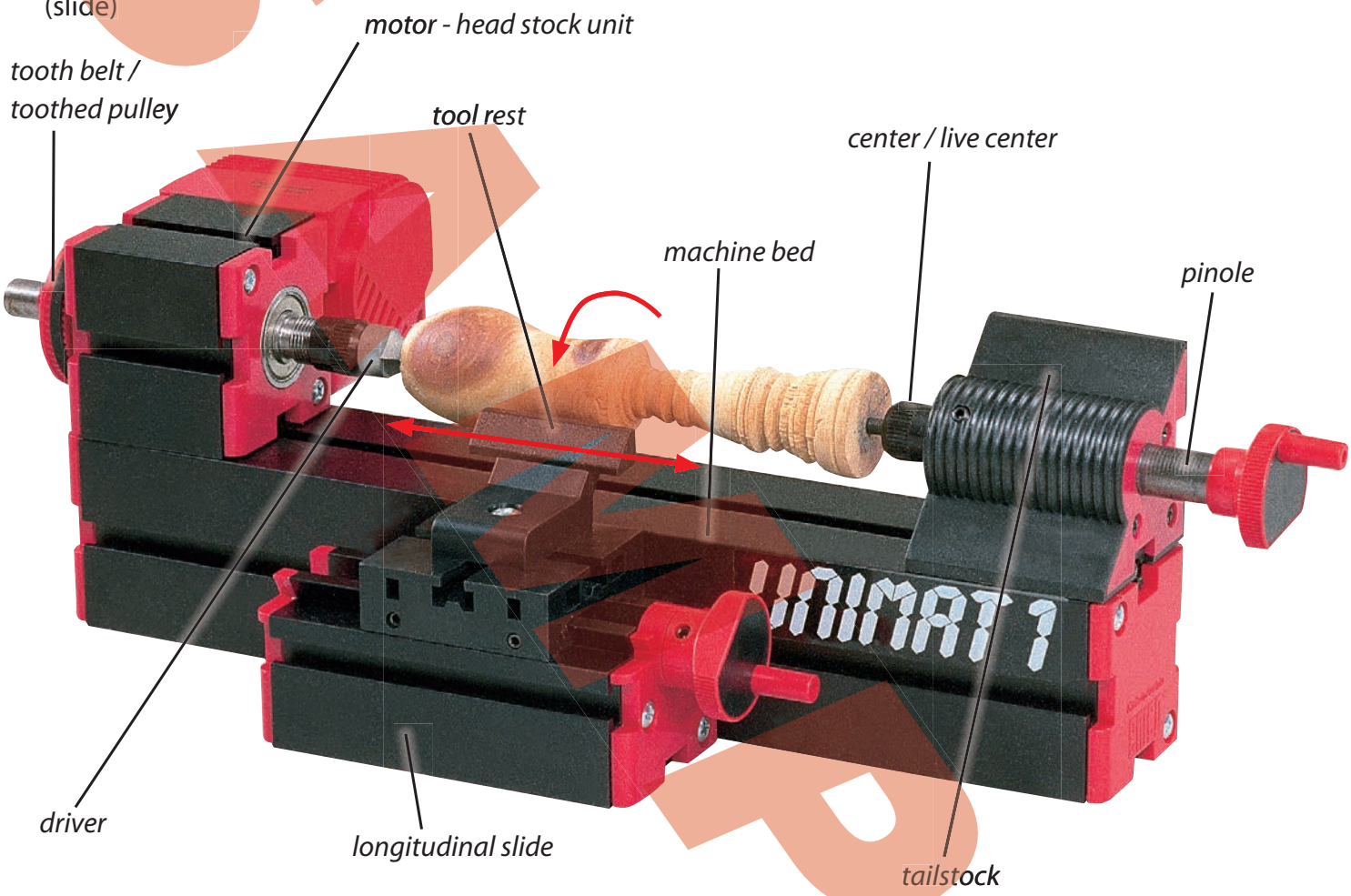
Theory exercises - solution

Questions on Woodturning

The major parts of a woodlathe

1) Name the components

2) Mark the direction of the part rotation and the travel of the tool (slide)



Material science

Complete the table:

type	property	application
Spruce	soft, little resin, clearly visible annual circles	A cheap and frequently used wood (from paper to construction wood), very difficult for woodturning.
Birch	relatively soft, fine structure	For woodturning as well as for use as plywwod plate for jig-saw works.
Lime tree	very soft and durable, easy to colour	Ideal wood for woodturning and carving, very easy to process.
Beech	hard, durable, fine, beautiful surface	A much preferred type of wood for childrens toys, jig-saw works, or as solid wood for the woodturning lathe.
Maple	light-yellow/white color, fine structure, hard, not weather resistent	furniture, music instruments, toys, turned items

Wood Turning Project Penmaker

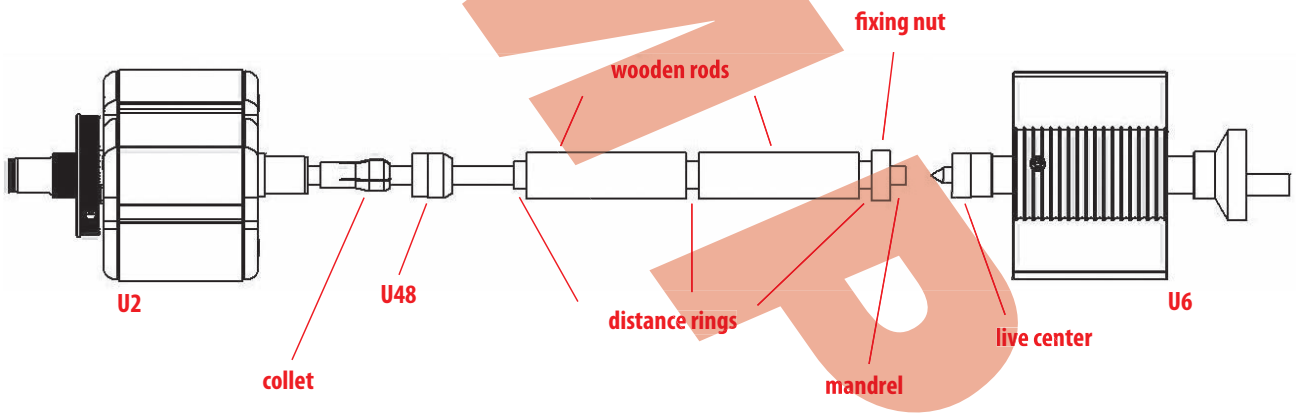
1.1.5.3

Making a wooden pen

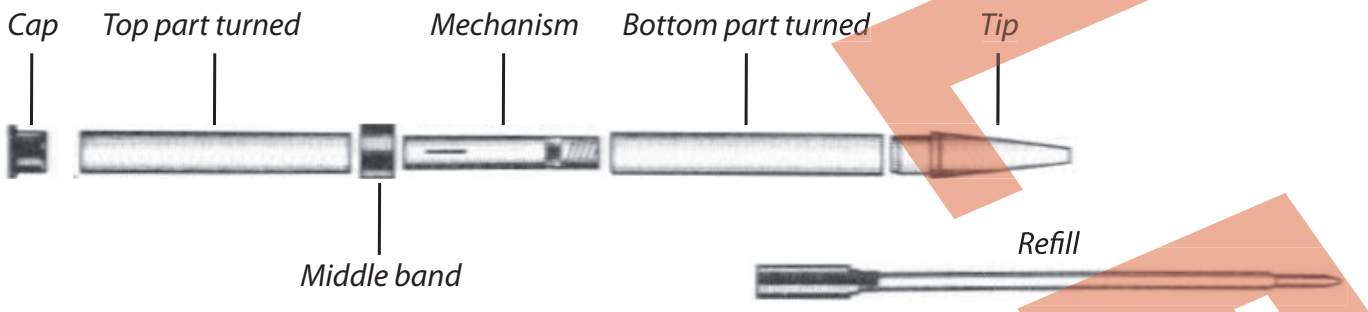
Instructions for the Wooden Pen material package

Material	• 1 material package for wooden pen per student • 1 piece of sanding paper per student
Equipment	• Unimat1 Basic wood lathe mounted with live center, slide and mandrel for clamping the wooden rods • Rubber hammer
Processes for students	• Wood turning • Sanding • Coloring • Unmounting the two workpieces
Processes for instructor	• Clamping the two workpieces • Assistance with unmounting the workpieces • Assembling the components of the pen
Project duration	• appr. 30 – 70 minutes (incl. wood finishing, painting, …)

Mounting instructions



Assembly instructions

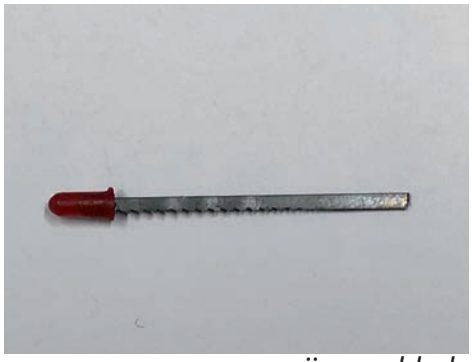


1. Put together tip, bottom part turned and mechanism. (use rubber hammer)
2. Screw refill inside the mechanism and put middle band on mechanism.
3. Put together cap and top part turned. Set the pen together. (use rubber hammer)

Saw blades

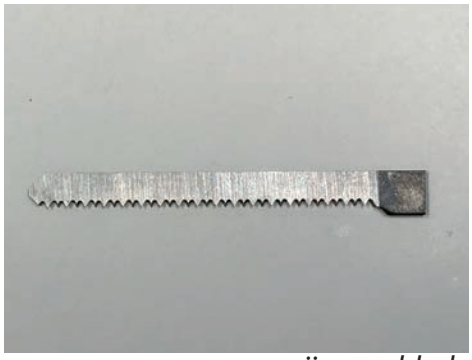
There are hundreds or even thousands of different saw blades on the market. Each one is used for different

- material (wood, stone, metal, etc)
- purpose (fine cuts, curved cuts, straight cuts, routing, etc)
- saw machines (jig saw, circular saw, band saw, etc)

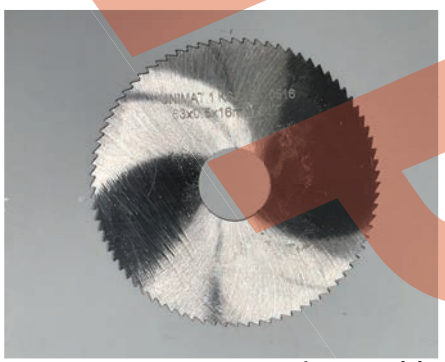


jig saw blade
(Unimat 1)

jig saw blade
(Unimat Education)



jig saw blade
(Unimat PL)



circular saw blade
(straight toothing)

circular saw blade
(tooth offset)

An important factor is „Tpl" (teeth per inch) which measures the „fineness" of a saw blade.

Other features are

- tooth offset saw blades
- blades with hardened tips out of carbide or diamond

circular saw blade
(carbide tipped)

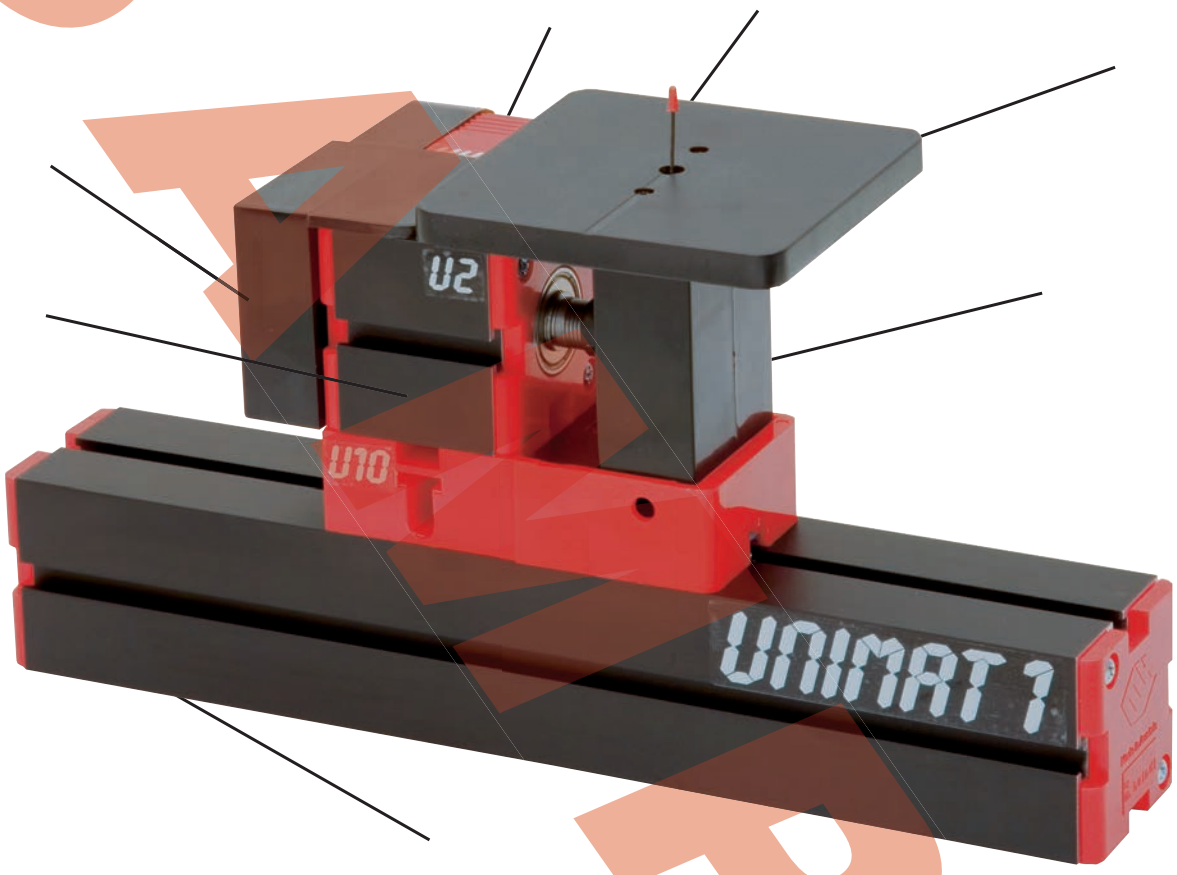
Theory exercises

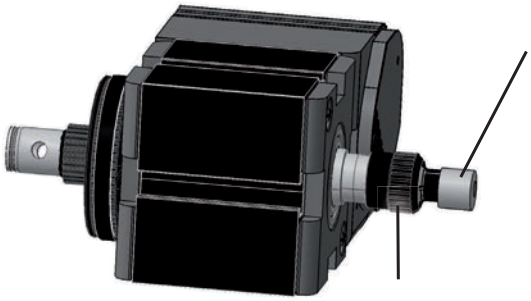
Questions on sawing

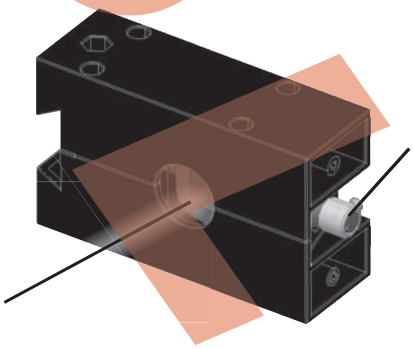
The major parts of a jig saw

1) Name the components

2) Describe the function of the eccentric



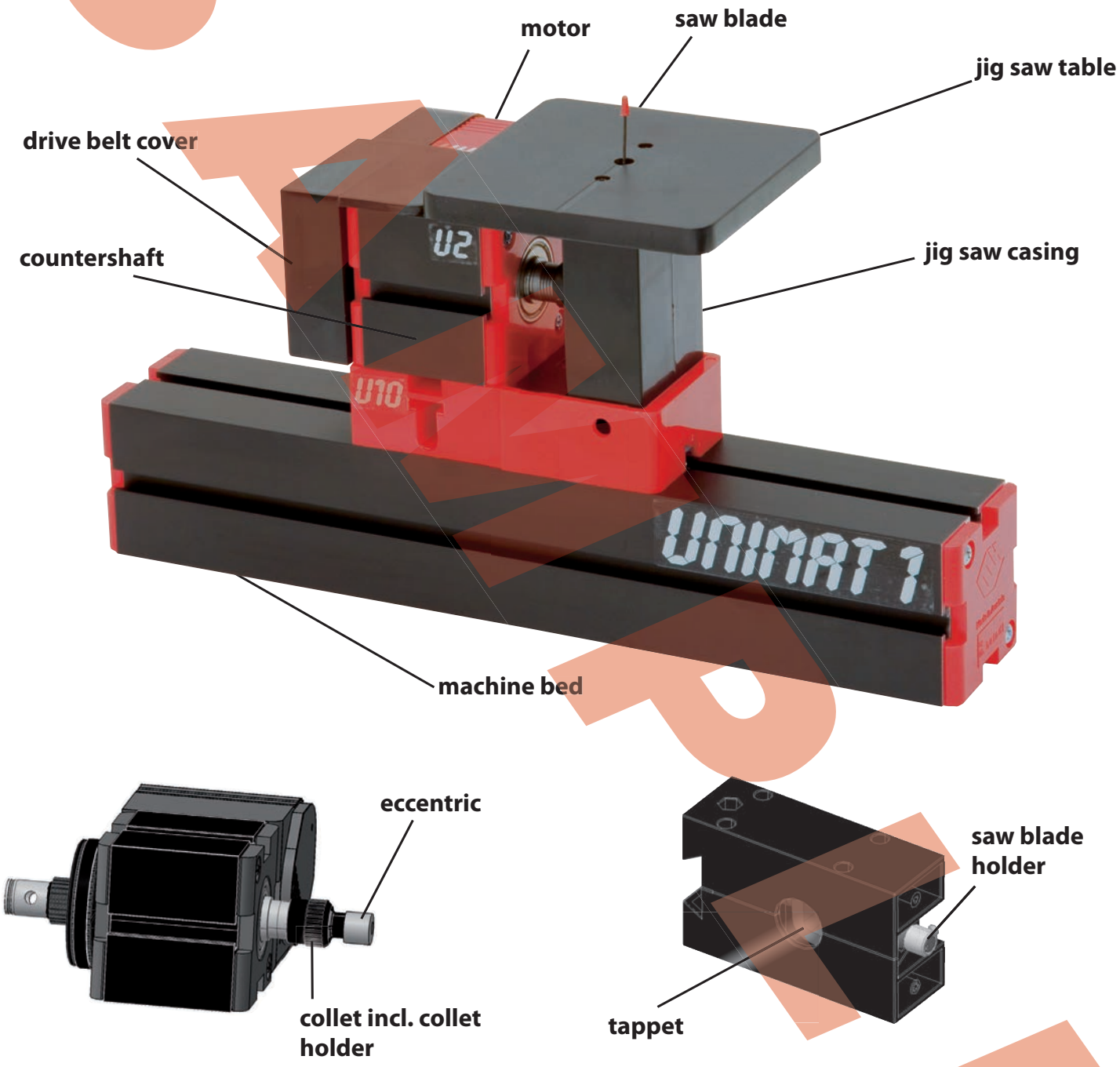




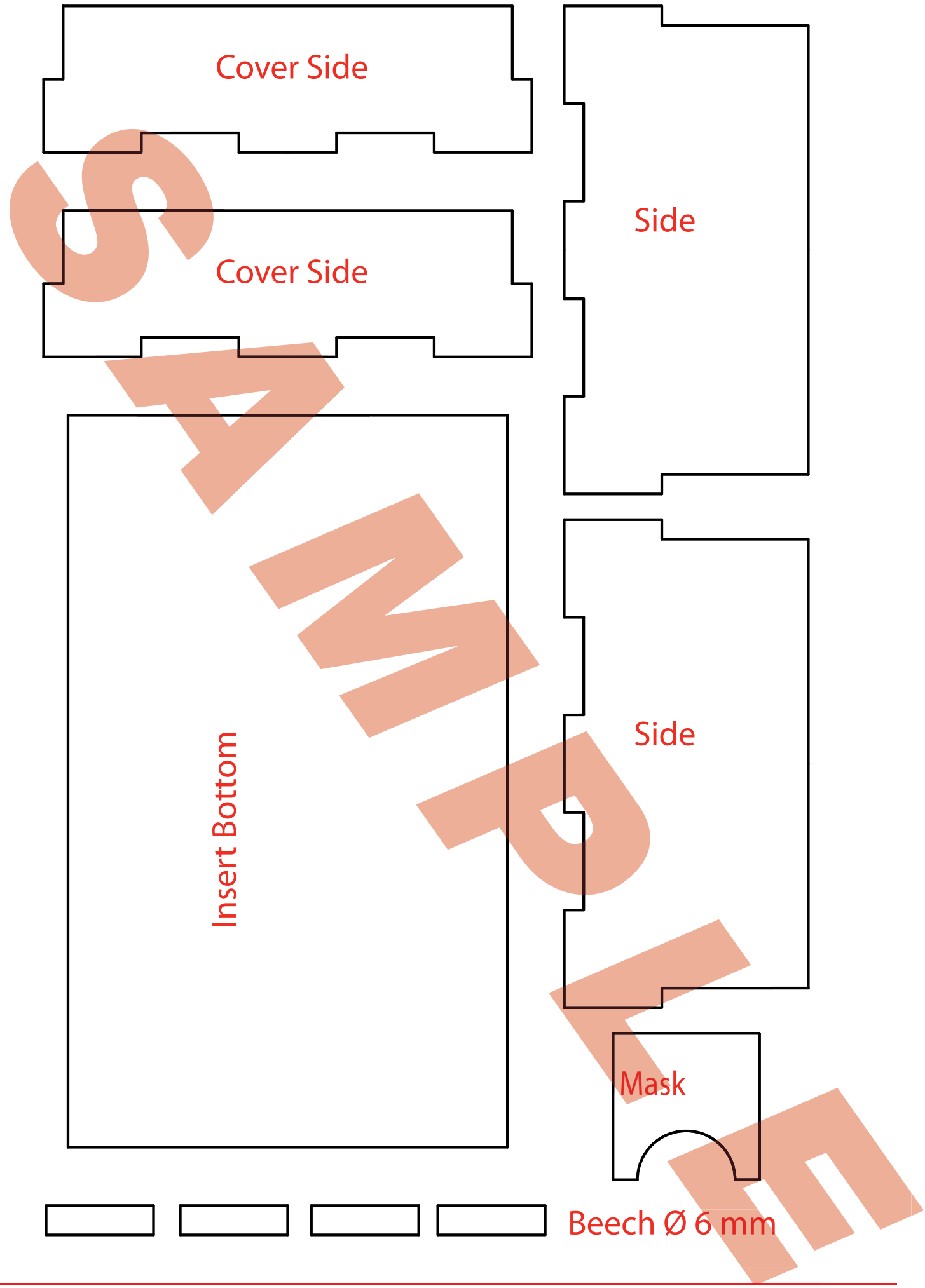
The major parts of a jig saw

1) Name the components

2) Describe the function of the eccentric



2) The eccentric piece converts the rotation of the main spindle into a linear up- and down movement of the tappet/saw blade.


Cover Side
Cover Side
Side
Insert Bottom
Side
Mask
Beech Ø 6 mm

Theory exercises - solution

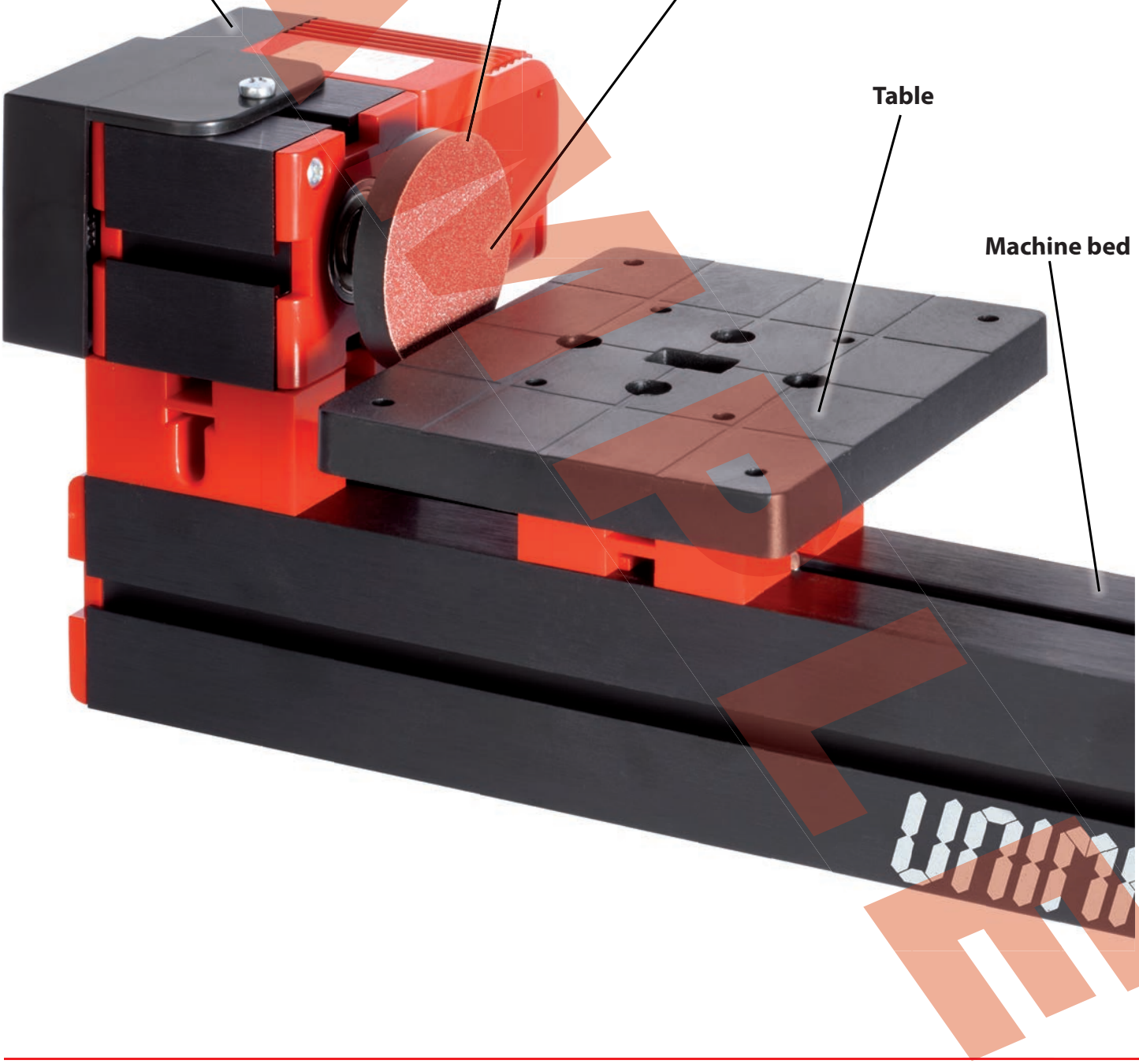
Questions on sander

The major parts of a sander

1) Name the components

2) How is the fineness of the sanding paper specified?
   Grain, (corns/square inch)

3) Is „800“ paper finer than a „80“ paper?
   Yes



General information on drilling machines

Stationary driven drilling machines:

Drill press (also known as a pedestal drill, pillar drill, or bench drill) is a fixed style of drill mounted on a stand, or screwed to the floor or a workbench. The movement of the chuck and spindle is guided by a lever working on a rack and pinion. The workpiece can be attached to the worktable by a vise or a clamp. Drill presses are often used for miscellaneous workshop tasks other than drilling holes. This includes sanding, honing and polishing.

Bench drill

For handheld drills in DIY small drill stands are available too but are usually very inaccurate.

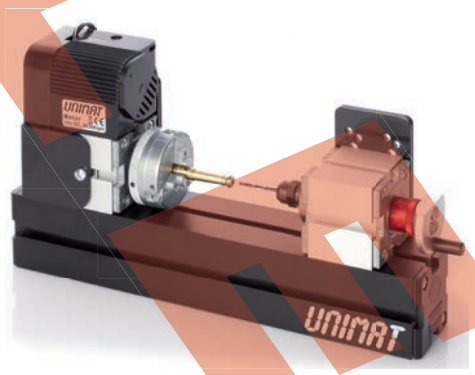
- Special applications
  - Geared head drill press
  - Radial arm drill press - several drill heads
  - Mill drill - combine a drill press (belt driven) with the X/Y coordinate abilities of the milling machine
  - Coordinate drill - high accuracy and stability in several axes
  - Long neck drill - for holes in tough to reach areas
  - Angle drill - if no space for the drill
  - Center drill

Box column drill

Drill bit fixation

The drill shank is the upper end of the drill bit and it is used to mount the drill bit into a drilling machine by means of collets, chucks or morse taper with an interlock system (Weldon shank etc). The shank can be cylindric, conical (morse taper) or squared.

Angle drill



Center drilling machine