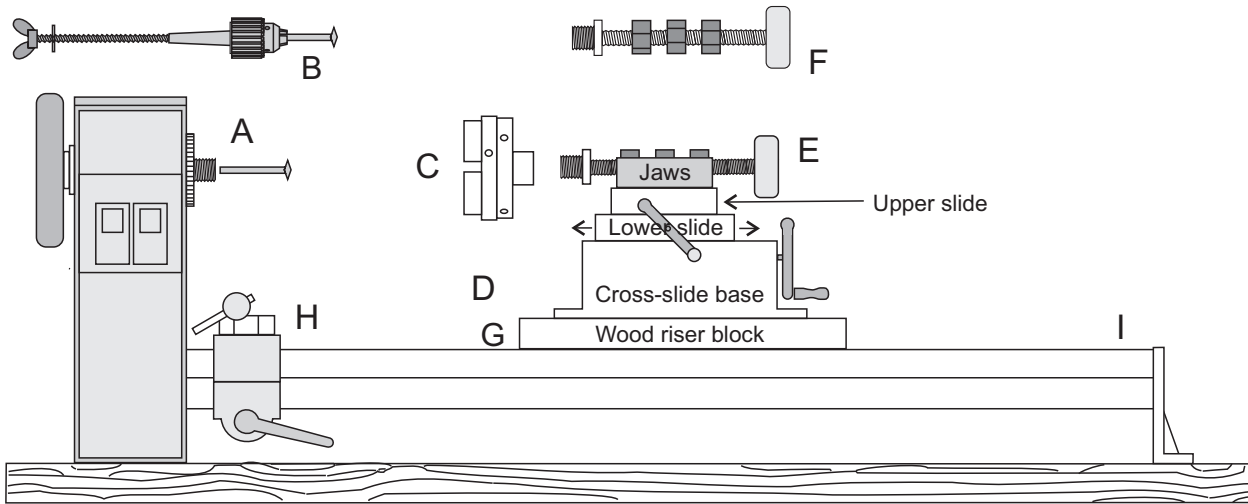


## THREADING JIG

The threading jig uses the lathe to spin a cutter while the operator rotates the shaft of the jig and thus passes the wood being threaded against the spinning cutter.



A The cutter may be any of a variety of shapes and sizes with one, two, four or more cutting points. It should be rotated at 3000 rpm or faster. Ideally it will cut a 60° groove in the wood.

B If the cutter is to be held in a Jacobs chuck then that chuck should be secured into the headstock with a tieback.

C The work to be threaded remains in the chuck that it was turned on and this chuck is attached to the threaded shaft (E or F) of the Threading Jig.

D The cross slide allows for movement of the entire wood-holding equipment in relation to the cutter. The lower slide moves in line with the bed of the lathe. The upper slide moves at right angles to the bed of the lathe. It is particularly useful when the cut depth needs to be adjusted by small across-the-bed amounts.

E Rotation of the threaded shaft in the jig moves the wood being threaded against the spinning cutter. The threaded shaft causes this movement to be both rotational and along the direction of the lathe bed. The thread pitch of this shaft causes the thread being cut in the wood to be the same as the thread of the shaft.

F For a different thread pitch make a different threaded shaft.

E and F Note the short thread on the headstock end of the threaded rod. This is the correct thread for your chuck. Immediately behind this thread is a flat face for the chuck to tighten up to. It is very important that this face is perfectly flat and exactly at right angles to the centre line of the main threaded shaft.

Note that each shaft has three nuts. If there is any slack (wobble) after the shaft is gripped in the cross-slide jaws, ease the jaws and put a packer between the centre nut and jaw face. Increase or decrease the thickness of this packer until the slack is removed but the shaft still rotates freely.

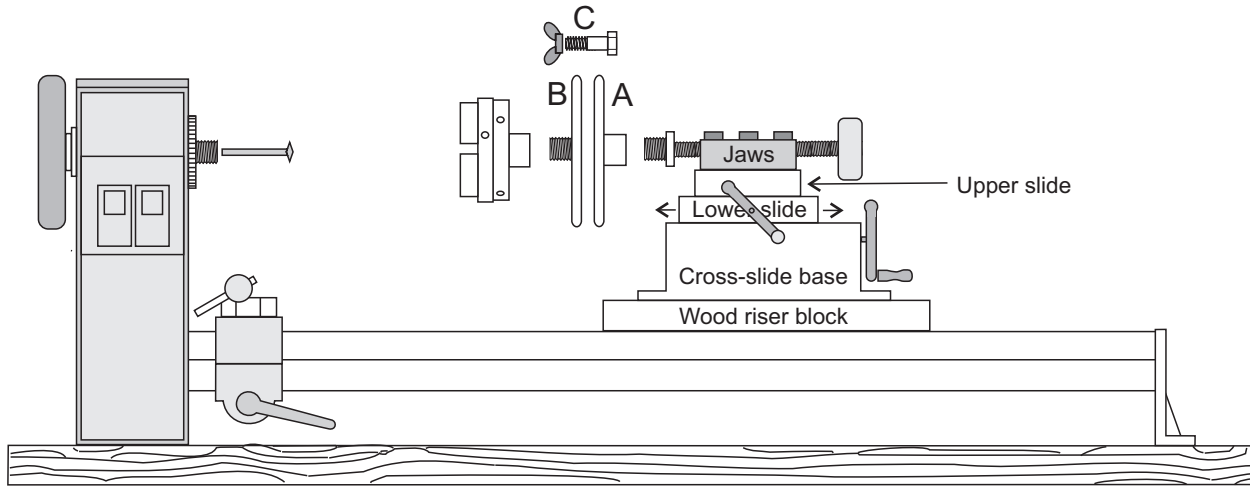
G For many lathes a riser block will be needed to bring the work (C and E) up to the height of the cutter (A). For most work a perfect alignment is not needed but to cut a small female thread good alignment is helpful.

H The toolrest is not needed and the toolrest holder is well out of the way.

I The tailstock is not needed and may be removed from the lathe.

## MULTI-START THREADS

You may have noticed that some products and jars of food have lids with multiple thread starts. This makes them quicker to remove and replace. A modification to the threading jig enables this to be done on wood.

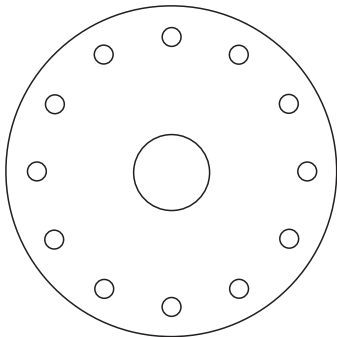


Two plates and four butterfly bolts are needed.

Plate A is a regular faceplate. Or better if it is made without holes at this stage.

Plate B is a plate with a threaded protrusion holding the same thread as the lathe spindle.

The chuck holding the work to be threaded fits onto this.



Plates A and B need 12 holes exactly equally spaced, and exactly the same on both plates, along a line towards their outer edge as shown below.

The four butterfly bolts must be the same diameter as the holes. It is probably necessary to get longer bolts and re-thread them so that there is smooth bolt shaft for almost the thickness of the two plates. The threaded portion of a bolt is usually thinner than the specified bolt thickness.

Now that this threading jig is fitted with the two plates there are options for cutting 4, 3 and two start threads of varying pitches. The following is an example of a reasonably coarse four start thread.

Use a 2 tpi shaft on the jig. If this were to cut a single thread then the groove of that thread would be 12.7 mm wide. For a four start thread each cut will be one quarter of that or 3.2 mm. Cut one thread this size. Do not move the left to right part of the cross slide. Rotate plate A in relation to plate B by three holes and bolt it all together again. Cut another thread 3.2 mm wide. Rotate the plates and cut again. Rotate the plates and cut a fourth time. If necessary, still without moving the left to right part of the cross slide, you can return to recut any of the threads.

Thread pitches for differing numbers of starts and threads per inch on the shaft of the threading jig are shown in the table to the right.

|       | Thread pitch in mm |         |         |         |
|-------|--------------------|---------|---------|---------|
|       | 1 start            | 2 start | 3 start | 4 start |
| 2 tpi | 12.7               | 6.3     | 4.2     | 3.2     |
| 3 tpi | 8.5                | 4.2     | 2.8     | 2.1     |
| 4 tpi | 6.35               | 3.2     | 2.1     | 1.6     |