

### **Instructions for the CRUSHGRIND mechanism.**

When making this pepper mill please remember that, unlike the traditional mills, this does not have a screw top adjustment. The adjustment is at the base, which leaves you, the **Turner**, with the freedom to create an artistically shaped top, free of the need for a metal knob and free of the need to be quite so exact with the internal dimensions which might, otherwise, leave too much of the drive shaft visible.

For best effect, you should use two contrasting coloured woods, such as a base of walnut and a top of ash or similarly light coloured wood.

Because the **body of the mechanism** is bigger than the more traditional mechanisms, such as those by Cole & Mason, it is necessary to start with a round turned piece of around 3" for the base and for the top.

The main body of the **Crushgrind** mechanism is 38mm (1 1/2") in diameter with a shoulder round the base which adds a further 4mm bringing the diameter to 42mm at the widest point and, for an easy fit, an internal diameter at this point of 44mm. Remember, this is the "resting place" for the shoulder and stops the body from being pushed too far into the body.

This **body** also has two sprung sections within it, which will be more apparent upon examination and it is recommended, although not essential, to cut a shallow counterbore internally for the sprung section to snap into.



The same applies to the **top** and, here, the counterbore is more important because the finished top needs to be removed in order to refill the mill with pepper corns or salt (remember, this can be used for salt as well as pepper). Without the counterbore, the **drive mechanism** can be pulled out of the top when the top is being removed. The ideal tool for this is the internal grooving tool used when creating internal threads.

It should also be noted that, due to the strength of these sprung sections, it makes sense to make up a wooden jig to enable you to push the main body mechanism into the wooden mill body.

**All dimensions are as set out overleaf.**

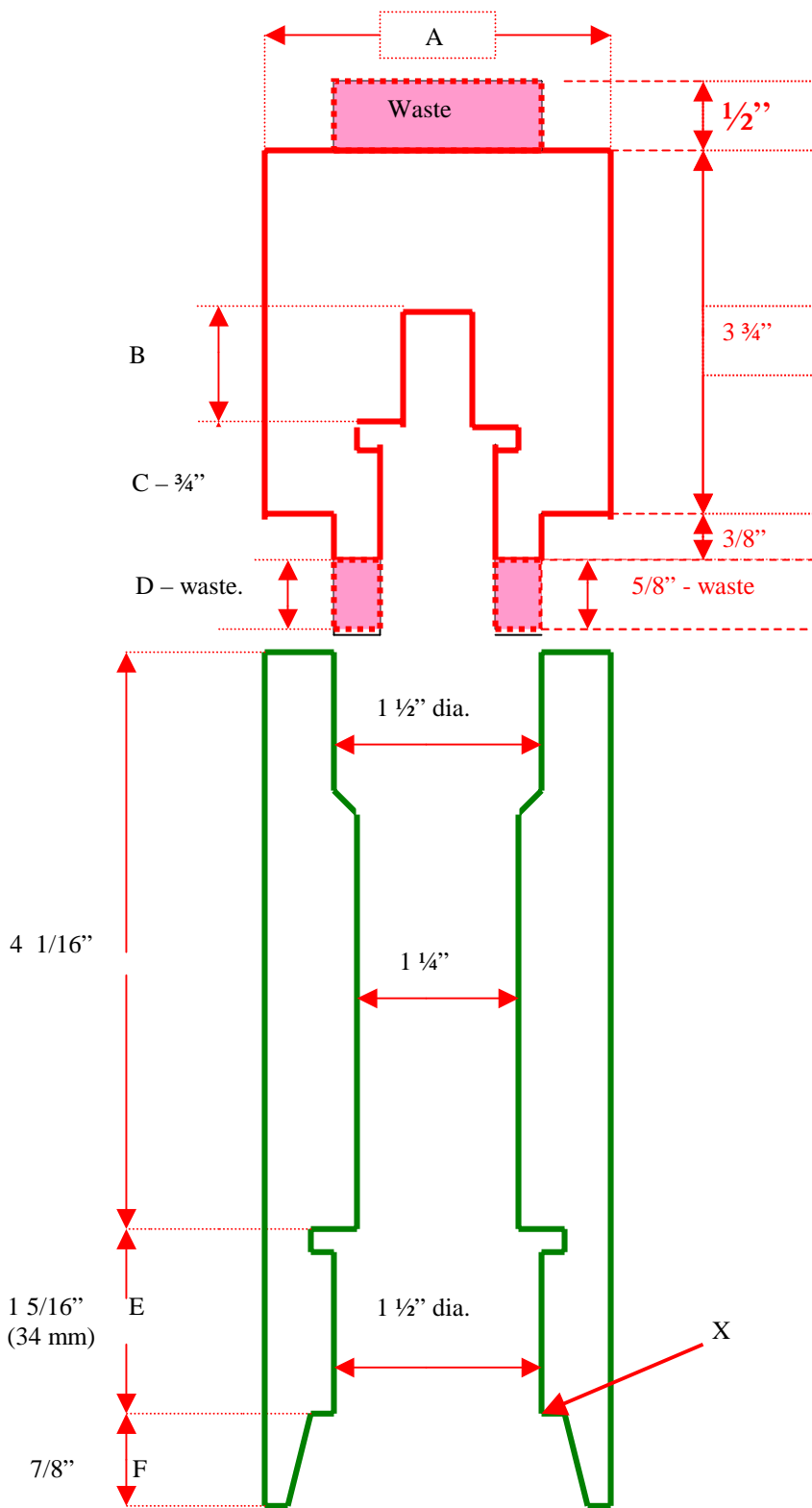
The two tenons on the top, marked waste, are for holding in a small compression chuck to enable the final shaping of the top to take place and the main body is bored out so the basic dimensions of top and bottom can be carried out with the two parts held together before the top is finally shaped. Until the tenons have been removed, you can hold the two parts together with the aid of the tailstock.

It is very important that the internal dimension for the hole in the top is as shown in the instructions, including the additional 3/8" diameter extension so that the drive shaft will not foul the inside. Look carefully at the parts so that you clearly understand what is required.

All that is now needed is for you to create your shape **before** fitting the mechanisms.

If you look at my web-site you will see a couple of examples of mills made with this mechanism.

Brian Fitzsimmons – Constable Woodcrafts



A – Suggested overall width – 3”-3.25”

B – This distance is not critical, but must be wide enough to take the spring top of the drive plug and deep enough for the excess length of the drive shaft.

C – This is 3/4” deep, to accommodate the drive plug, so that the flange sits on the outside and the 3 spring clips fit into the groove. This will prevent the plug from being withdrawn when the top is removed to fill with pepper or salt.

D – I suggest 5/8” in case you wish to hold this in a set of gripper jaws in order to make a fancy/off-set top. After shaping, you can remove the waste and then push-fit the drive plug.

E – This space is for the main body of the CRUSHGRIND mechanism, which is encased within a nylon body and with two spring clips, which fit into the groove.

F – The depth should be 7/8” so as to allow the adjustment mechanism to be accessible, without touching and work-surface upon which the finished mill might stand.

I tend to taper the inside of the base for ease of fitting and, DO NOT forget to create a rim, at point X for the body to set against.

The overall length of the mill depends on what you want to do but the dimensions for the base section should be followed for a standard sized mechanism, which is 7 1/2” long. For the longer model you should increase the dimension from 4 1/16” accordingly.

The two areas marked waste are for holding in your chuck and match my chuck dimensions only.

#### TOOLS USED:-

For drilling out the body, I suggest using good quality *saw tooth bits*, 1 1/2” & 1 1/4” diameter. For the top, use *saw tooth bit*, 7/8” diameter and the continuation hole 5/16” or 1/2” diameter.

For shaping, use the gouges which best suit your chosen design.

This diagram is not to scale and is for guidance only.

The mechanism should be studied closely before drilling or cutting the wood and the instructions above will then become clearer.

It also helps to make up some wooden templates with which to push the parts into the body & top using the tailstock. This will then avoid the risk of damage to the mechanism.