

CHUCK MOUNTINGS-I

DIAGRAM A shows how a chuck can be mounted on a slotted cross-slide to hold work for drilling, tooling and grinding from the lathe spindle. In the illustration, a piece of steel is set up for grinding its edge square.

I know that you can hold material on the topline, on the vertical slide, or in a machine vice on the vertical slide. With the chuck mounted in the clamp, which I have drawn at **B**, you can use it for other work. And so you have more power to your elbow-if your main interest is lathe work.

The basic setting is the chuck at centre height. You are not limited to it. By arranging the clamp, the chuck can be below centre; and with

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packing between the clamp and the cross-slide, it can be above. Its jaws, too, give height adjustment.

If the edge of the chuck overlaps the cross-slide, its use at centre height is limited to a face-to-face setting with the lathe spindle. But by packing under the clamp you can set the chuck at right-angles to the lathe axis. For other settings, you can twist the chuck in the clamp, so that jaws and work are at angles. With a normal vertical and horizontal setting, a shallow key, as shown, is needed for the bottom jaw.

Diagram **B** shows you what the clamp is like in end-view. You can use material to hand for it. I suggest duralumin bar or aluminium-alloy castings. If you decide for the castings, you may be able to make your own from old car pistons. Alternatively, you can get some made from wood patterns. You need two: one for the cap, the other for the base. Two long bolts hold both these parts to the cross-slide, with nuts *WX* to the cap and nuts *YZ* to the base.

To mount the chuck securely in the clamp, you need a smooth, parallel boss to the backplate. If the finish is not up to this standard, you should remachine the boss, either with the backplate on the spindle, or with it face-to-face with

a faceplate-having taken off the chuck. For a longer hold by the clamp, the heads of the setscrews can be reduced, or countersunk screws can be fitted. Another idea is to use a backplate with a longer boss, which for this purpose need not be threaded.

With the clamp and ordinary bolts, the chuck can be used on the table of a drilling machine, jaws upwards, resembling the way that I suggested in a recent article. It serves as a machine vice-as at **C**-for odd-shaped material, and castings too big to hold in a normal machine vice.

With the chuck and clamp mounted on the cross-slide, they form a specialised steady for operations in addition to those of which I wrote on November 15. For one class of work, they form a fixed steady, which is different from a fixed steady on the lathe bed. It is fixed in the sense that it does not rotate. For another class of work, the chuck and clamp form a rotating steady.

Examples of the first set-up are shown at **D** and **E**. You can hold multi-angular bar through the chuck for centring its end, **D**. Alternatively, after setting the chuck at right-angles, **E**, you can hold a round shaft which is too big to go through the chuck. You support the free end of the bar or shaft to keep it level-and take off the tailstock if it is in the way.

Both set-ups have their merits; and together they provide an effective alternative to the common method which employs a vertical slide and machine vice. Using one or the other, you can hold rough bars for centring, and shafts that have flats or keyways for which the ordinary fixed steady is useless.

In addition, you have the set-up at **F** for the unusual centring job. The other end of the work is in a chuck on the spindle. The cap of the clamp is loosened, for the chuck to revolve its boss well oiled. Then you run the tailstock barrel right through with the centre.

This set-up always reminds me of the enormous Noble and Lund lathes with a chuck at each end that are used for machining forged steel boiler drums. □

