Setting and machining

ANGLE PLATES

By GEOMETER

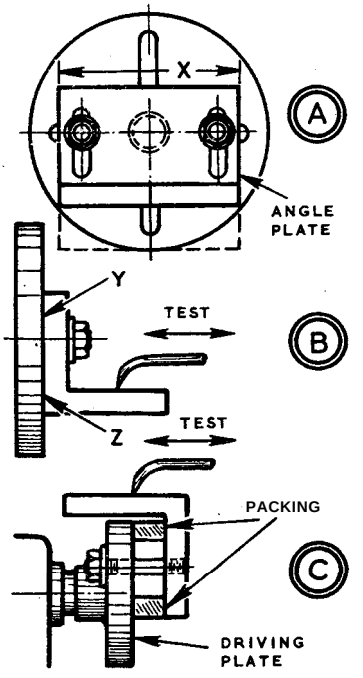
BOLTED to the faceplate of a lathe, an angle plate provides a platform on which flat-based components can be clamped. In practice, convenience in setting up (or even the ability to set up certain parts) depends on the size and type of the angle plate; while the alignment of faces and bores, which are subsequently machined, depends in turn on the accuracy of-the angle plate. dhen set up, its face should be at right-angles to the face of the faceplate.

When components are relatively small for the lathe. there is no problem in actually mounting the angle plate. It is bolted with its flange towards the edge of the faceplate. But when components are relatively large, tnere is the problem of setting the platform far enoug h from the snindle axis. The corn&s of the flange may overlap the edge of the faceplate and prevent rotation ; or at smaller off-sets, it may be impossible to fit two bolts for a secure hold-one, of course, being inadequate.

This problem is encountered on straight-bed toolroom lathes, and on modellers lathes, even gap-bed ones, which are often employed for relatively outsize work. With all, the solution is the same-an angle plate bolted, as at *A*, with the flange towards the centre of the faceplate.Two bolts are easily fitted, there is the maximum length of platform X, which can be a convenience for clamping components, and a smaller balance weight (not shown) can be used.

When the accessories do not include an angle plate of this type, its making can be thoroughly worthwhile--even if it is not required immediately, for the outsize job will come along sooner or later. In addition, such an angle plate offers similar advantages for setting up work on the vertical slide for milling operations.

For a casting in cast-iron, the pattern can be two pieces of flat hardwood screwed together, the screw holes plugged with putty or plastic wood . The thickness of the wood should allow for a machining cut of abou 3/64 in. on each face, and



possible slight warping. By showing up the pattern to the faceplate and vertical slide. the most suitable over-all dimensions can be obtained.

Machining of the casting is really a job for a planer or shaping machine, but it can be done on the lathe, with care. In fact, if the plate is machined on a planer or shaping machine, and is not quite accurate, it can be corrected on the lathe. This applies to most angle plates. A test of accuracy, as at *B*, is made with a surface gauge. Alternatively, a pointer can be used on the slide. If you have an indicator you should, of course, use it instead. Any error is corrected by packing with shimstock or foil at Y or Z; but to save this on every occasion the plate can be set up, as at C, and faced true.

The same set-up is used for an unmachined but reasonably accurate casting. First, it is smoothed by filing. Then holes are drilled and tapped for attaching it to a driving plate or chuck backplate . Packing blocks set the plate from the headstock, and shim-stock corrects twists and brings the top face true. After facing. the plate is set up again for the other face.

For machining an inside face, the angle plate can be set up on the vertical slide, to use a fly-cutter or large end-mill from the chuck. In this set-up, the problem of overhang from the chuck and chatter of the cutter can be overcome by running the cutter spindle in a steady, as at D and *E*.

The spindle can be in mild steel, and the'bearing in brass, bronze or duralumin, clamped on tubular pillars mounted on a plate bolted to the lathe bed. Shimstock washers correct small errors of height .The angle plate is mounted by drilling and countersinking a bar to tak e nutted countersunk screws and pushing in a T-slot of the vertical slide *F*. By turning the lock-nuts, the plate can then be tightened to the slide. ❑