WORKSHOP HINTS and TIPS

Miscellaneous TESTS and SETTINGS

By GEOMETER

USE of a lathe on varied work calls for many tests and settings, including checks of the machine itself as well as of tools and components. The total of such verifications and adjustments-major and minor-is certainly very large, perhaps infinite, for no other machine so well meets the requirements of professional and amateur workers. In fact, almost everyone employs a dodge, knows of one, or-come to that-can evolve one to aid an operation or overcome a difficulty.

As a lathe comprises major alignment in its construction, it is suitable for checking squareness of faces on components or tools. By mounting these on the faceplate, and employing an indicator, a high standard of precision is possible. An example is testing the accuracy of a square, as at ***A***.

First, the top slide can be set parallel to the lathe axis, using a mandrel in the chuck, or turning a piece of rod for checking. It is assumed that the faceplate is flat-not concave or convex: otherwise, a piece of true bar would need to be clamped to it and packed out with paper or shimstock at one end for setting up the square.

if there is slight wobble on the faceplate, the point of maximum run-out should be at right-angles to the blade of the square-which will ensure that the square is trulv mounted to the faceplate. By running the indicator along the blade, any error will then be revealed. If one is present, adjust the top slide to give a uniform reading on the indicator, turn the lathe, and reset the indicator. The reading will then show the error as doubled.

Almost any component with two faces at right-angles can be checked for truth in this way. In particular, it is advisable to verify an angle plate which is to be used on the faceplate for mounting work, as any error of alignment will be reproduced in it. Paper or shimstock may be used to bring the face of the angle plate true to the faceplate.

When a component or gauge contains an angle of a few degrees (from parallel or square), a check of the angle can be made by moving the top slide 1 in. by the micrometer collar. The difference in reading on the indicator is then the " taper per inch " of the angle, which can be taken from tables.

When an angle plate contains an error and is to be used on a surface plate, it can be packed as on a faceplate, though for this purpose adjustable feet are advisable, B. Just behind the vertical face, there can be clamped a flat bar with a screw each end. A clamp with a third screw gives three-point support. Should testing of components require the angle plate to be tilted through a few degrees, it is easily done with the screws.

A parallel setting for a top slide can be obtained with a mandrel, C. Because of possible error on the chuck jaws, maximum wobble on the mandrel should be in the plane of the two shouldered, equal-length plungers. This is arranged after an indicator check. Then each of the plungers is adjusted by its screws to give uniform readings on the indicator. When the lathe is rotated, the plungers describe a true cylinder, and the slide can be quickly set parallel by the indicator. With spacing Y 1 in. or 2 in., taper per inch is obtained for tapers.

Difficulty in setting a top slide from outside to inside tapers can often be overcome by using a mandrel with plungers, ***D.*** The slide is moved to set them to turning tool or indicator; then, with the lathe turned 180 deg., the angle for setting the boring tool is obtained.

For a " taper per inch " setting, a mandrel can be made as at ***E,*** with Z 1 in. or 2 in. The screws are set to micrometer over the mandrel-and care should be exercised in chucking this.

An adjustable centre, ***F,*** provides for testing or producing tapers, and is made with a hard centre in a flat bar which is bolted to another attached to a shank to fit in the tailstock barrel.