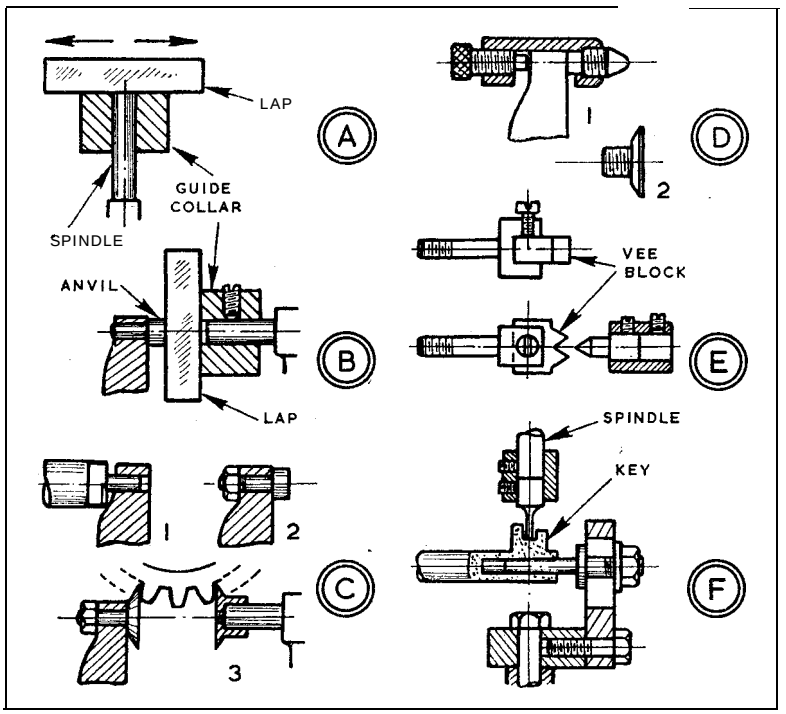
Micrometer anvils

By GEOMETER

FOR its ability to measure correctly, a micrometer depends as much upon the precision of its gauging faces (that of the spindle moved by the screw, and that of the anvil mounted on the frame) as upon the accuracy of the thread on the screw. Consequently, every care should be taken to avoid damage and wear to these faces.



They should not be applied to running work, nor to dirty or abrasive surfaces-apart from the incorrect measurement which would result; and before the micrometer is finally closed to put away, a piece of clean notepaper should be lightly gripped between spindle and anvil, and drawn out from between them, thus taking any tine particles of dirt or abrasive with it.

Despite such care, micrometers that are in frequent use often reveal signs of wear or damage to the gauging faces-and there are also unforeseeable mishaps which occur from time to time. Normal slight wear on the faces can be corrected through adjustment which aligns the 0 on the revolving thimble to the base line on the barrel

If considerable adjustment is required, the result is not entirely satisfactory. If adjustment is made through a sleeve on the barrel, the base line is obviously rotated from its normal position; while if adjustment is made between thimble and spindle, the thimble end is brought noticeably out of alignment with the 0.025 in. lines. It may then be difficult at wide openings to see which 0.025 in. line gives the essential dimension.

In correcting major inaccuracies, the first step should be to true the spindle end, as at A, with the spindle removed from the barrel and pushed through a well-fitting guide collar. A hand lap in cast iron or brass can be used with abrasive paste-medium for cutting, fine for finishing. In making, the guide collar would be bored and faced at a single setting in the lathe, or fitted on a mandrel between centres for facing, to ensure the face is square with the bore. If much lapping is necessary, the collar should occasionally be retrued.

The old anvil can be removed holding the micrometer frame carefully between packed vice jaws and using a pin punch If the anvil is in bad condition, a new one can be turned in cast steel, hardened and tempered and pressed in. It should be of such a length that, by lapping about 0.002 in. from the end, the thimble will be brought back to its normal position. For the lapping, as at B, the guide collar is held to the spindle by a screw, and the lap must be parallel. If the anvil is in reasonable condition, it can be refitted with a thin shim at the shoulder, then lapped like a new one.

Interchangeable anvils

Unless a micrometer frame has been retrued after bending (following which the lapped anvil should not be moved), an anvil can be fitted with a nut at the end, and removed for other anvils to be fitted-as with large-frame micrometers favoured by the motor trade. The frame may have to be faced at the end with a pin-drill, as af Cl, for the fitting (2). A special anvil can then be used with a corresponding fitting on the spindle to compare numbers of gear teeth (3).

To employ other anvils with the original in position, a fitting as at D can be used. It is a threaded sleeve, slotted to pass over anvil and frame. The special anvil is screwed in to abut to the original, and a screw at the end of the fitting tightens it. A ball end is at (l), a pad anvil at (2).

Special anvils widen the range of work with large-frame, removable-anvil micrometers. For thread comparison, a V-block anvil, as at ***E***, can be used with a point attached to the micrometer spindle. The V-block can be planed with a thread chaser, or produced in other ways, placed in a forked holder, aligned by the spindle, and held by a screw.

Adaptation to a key-measuring micrometer is possible, as at ***F.*** Two accurate blocks form a right angle, one bolted to the micrometer frame, the other slotted for a mandrel on which the key is placed.