Preparing for screwcutting

By GEOMETER

UNLESS an external thread stands proud of any adjacent features, as on a worm, or an internal one is open each end, as on a nut, some preparation is usually necessary or advisable before screwcutting begins, or sometimes before producing the thread by dies or taps. This is so where an external thread ends at a shoulder, or an internal one at the bottom of a blank hole.

In such an event, too, the mating part may have to run right up to the shoulder, or almost to the bottom of the hole-which necessarily involves precise clear threads as far as possible, and then clearance so that the threads are free for the components to engage in the manner intended. Without such precision,. some unnecessary length would mevitablv be incorporated on components,- to clear the tailing out of threads at the ends-hardly to be regarded as neat compact design.

The means of providing clearances at the ends of threads, external and internal, are grooves as at ***A, usually*** produced with a round-nosed tool to the depth of the threads, and generally about a pitch wide for V-threads, and somewhat more than half-pitch for square and other threads.

In screwcutting, the tool can be run along until it is just clear in the groove; then the leadscrew nut can be disengaged, the feed retracted, and the saddle returned for the next cut-all quite deliberately. The alternative, in the absence of a groove, is usually to withdraw the tool quickly towards the end of the thread, perhaps simultaneously disengaging the leadscrew nut-success in which obviously requires unusual skill or luck.

If threads are to be produced by dies and taps, grooves can still help considerably. On a second application of the die, running its square back end up first, the end thread or threads will clear in the groove; and the same happens with a plug tap, when the size of the hole is such that it has been possible to use a boring tool in it.

In preparing an external blank, it is turned to nominal size, and the groove machined and the shoulder cleaned up at the same time, if desired. Preparing for screwcutting a hole, it should first be bored to nominal size, less twice the depth of the thread (using a simple turned-up gauge for checking); then the round-nosed tool is entered, touched to the bore with correction of the cross feed micrometer collar, taken to the end touching with the lathe stopped and then brought out to thread depth with the lathe running at moderate speed.

For square threads, a groove can be provided as at ***Bl,*** though it is sometimes undesirable from the local weakening occasioned. An alternative is a hole or slot produced by milling, or by drilling two holes close together, as at B2; and although overcoming the strength problem, care is required to stop the lathe, or retract the tool fairly precisely. Another method leaving a neat run-out end to the thread, as at B3, without the risk involved with tricky tool retraction, is to machine a slot with a keyseat cutter of suitable width and radius, as at C, X-X; then the tool can run clear with time for easy withdrawal. If a V-edged cutter is used, the method is also applicable for neatly-finished V-threads.

Work too long for the lathe can sometimes be set up as at ***D,*** and a start made in cutting where the thread normally ends. Either a turned groove or a keyseat cutter slot can be used to enter the tool, the short milled or drilled groove, B2, not being practicable.

Screwcut work to be reset for correction, in the absence of reference diameters, may present a problem in truing-which can, however, be overcome as at ***E.*** The mounting plate on the sliderest is moved with the V-plunger in the thread, the leadscrew nut engaged and pulling the lathe round by hand, when run-out on the effective diameter can be seen and corrected. ❑