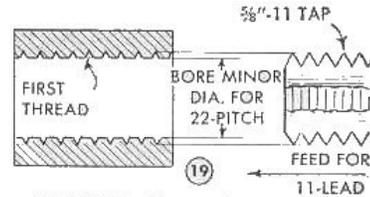
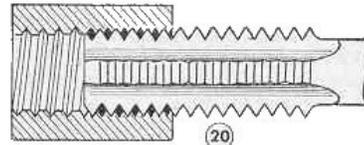


REGULAR TAPPING TECHNIQUE CAN BE USED FOR SMALL HOLES. USE A TAP OF THE LEAD YOU WANT. SPLIT THE THREAD BY USING THREAD DIAL



FIRST STAGE OF 11-LEAD 22-PITCH DOUBLE THREAD



SECOND STAGE—THREAD DIAL IS ENGAGED TO SPLIT AN 11-LEAD THREAD. RESULT IS DOUBLE THREAD OF 22-PITCH

carriage travel. Now, consider the previous example of a 6-lead thread. In 1 in. of carriage travel, the tool will engage at the first and the sixth threads. At  $\frac{1}{2}$  in. of carriage travel, the tool will "hit" the third thread, but if you engage at  $\frac{1}{4}$  in. of carriage travel, the tool will hit at  $1\frac{1}{2}$  threads and will split the thread. Engagement at  $\frac{1}{8}$  in. of carriage travel will again split it producing a quad thread. This is as far as this particular lead can be split, but other leads, C and D positions, Table 2, can be split into 8 starts. Triple threads cannot be cut because the number of striking points (32) cannot be divided by 3.

**Example of threading:** Figs. 8 through 14 show both external and internal thread cutting for the work detailed in Fig. 7. The external thread usually is cut first because this commonly carries the major diameter. In boring for the internal thread, use Table 3 to find minor diameter and then add to this about one fourth of the double depth of thread. Always allow this clearance as a full thread cannot be cut. In boring the hole oversize, you are not presetting a loose thread because the fit of any thread comes from the angular contact, not the crests.

**How to use taps:** The use of taps for cutting single threads is an old lathe trick, and it can be used just as well for multiple threads. What happens here is that you have a multiple-point threading tool which will cut two, three or more threads in one operation. The example, Fig. 15, shows an 18-pitch tap being used. If you want to cut



IN THIS SETUP, THREAD DIAL IS USED AS FOR SINGLE THREAD. THE THREAD IS SPLIT BY MOVING THE COMPOUND BACK  $\frac{1}{2}$  OR  $\frac{1}{3}$  OF THE LEAD DISTANCE FOR DOUBLE OR TRIPLE THREAD RESPECTIVELY

a double thread, the gear box or train is set for 9 threads, not 18. Engagement of the thread dial is normal for a 9-thread and the tap catches both threads of the double thread in one operation. Successive in-feeds are made at the compound until the thread is complete, Fig. 16. With the same tap, a triple thread would be cut with the gear train set for 6-lead; a quad thread would be cut with gear train set for  $4\frac{1}{2}$ -lead. In all cases, the pitch is the same as the tap, which in this case is 18-pitch.

If a tap is used to cut an internal thread, it will be necessary to grind away the heel of the cutting teeth, as shown in Fig. 17, in order to get needed clearance. Taps are not good for heavy cutting—use a light feed