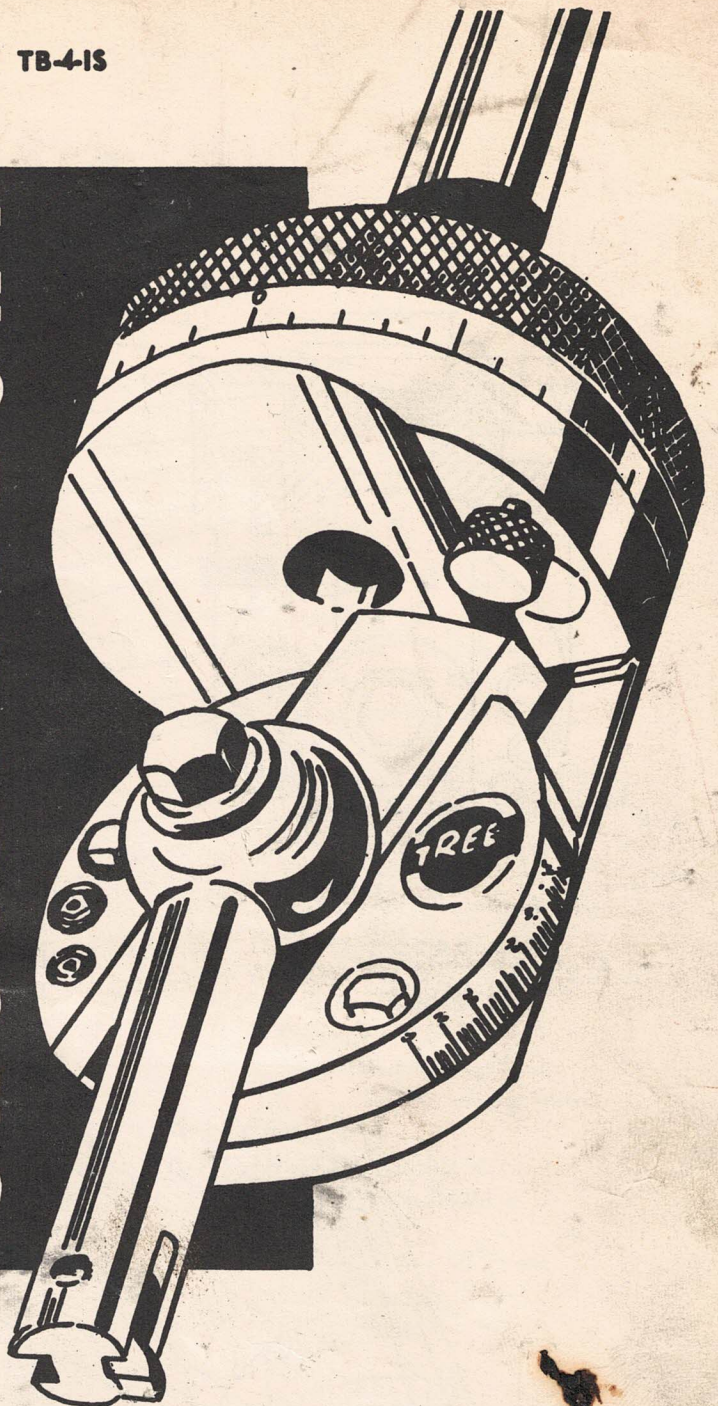


**PARTS LIST**  
**INSTRUCTIONS**



*The*  
**TREE**

**taper boring tool  
standard model**

*1-414  
General Office  
637-7693*

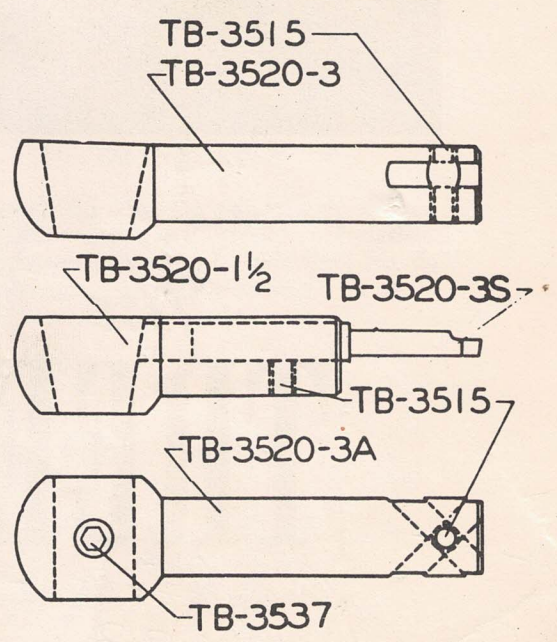
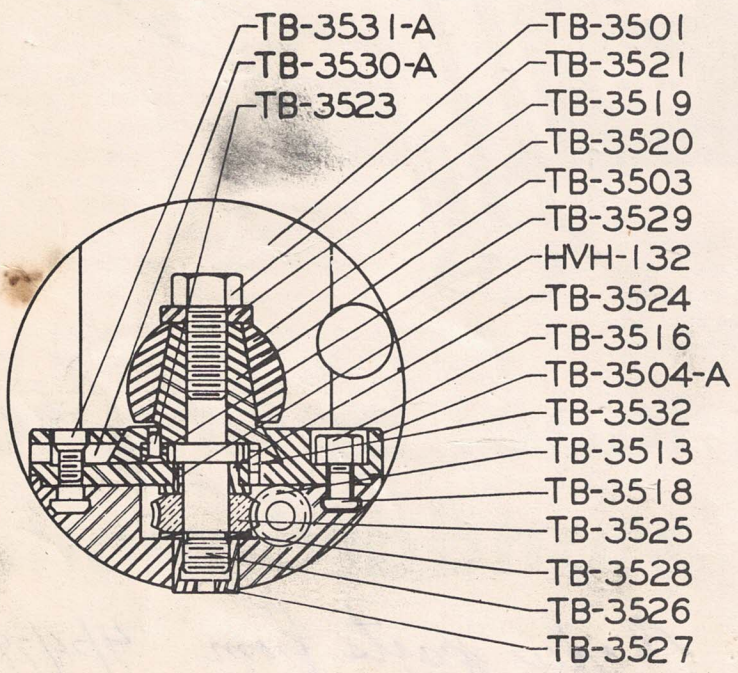
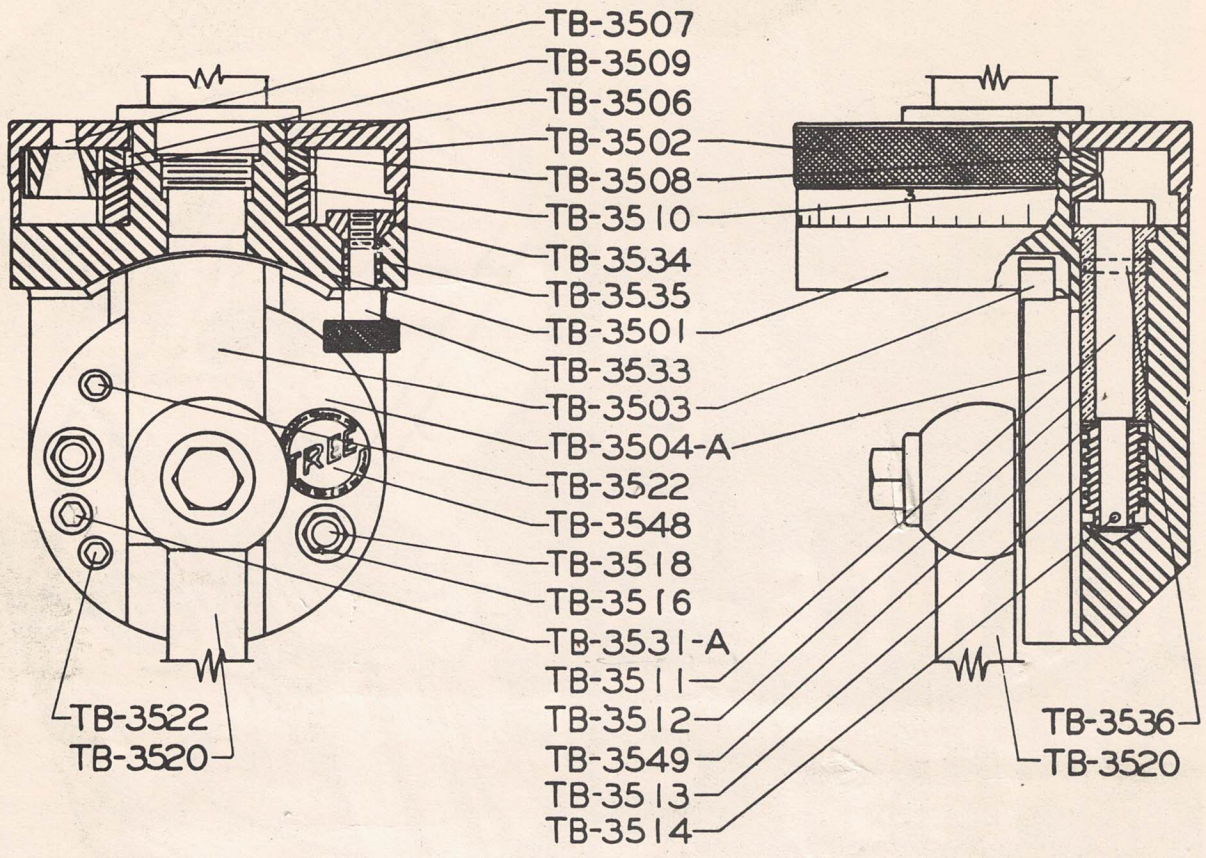
*Order parts from 4/20/79*

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**TREE TOOL AND DIE WORKS**  
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*53403*







# PARTS LIST

PART NO.	REQD.	NAME
TB-3501	1	Taper Boring Head Body
TB-3502	1	Fine Adjustment & Feed Collar
TB-3503	1	Tool Slide
TB-3504A	1	Swivel Base
TB-3506	1	Pinion - 16 Teeth
TB-3507	1	Pinion Stud
TB-3508	1	Spur Gear - 43 Teeth
TB-3509	1	Spur Gear Key
TB-3510	1	Spur Gear - 44 Teeth
TB-3511	1	Pinion Shaft - 16 Teeth
TB-3512	1	Pinion Shaft Bushing
TB-3513	1	Worm
TB-3514	1	Worm Drive Pin
TB-3515	3	Tool Bit Retainer Screw
TB-3516	2	Nut for T-Slot Bolt
TB-3518	2	T-Slot Bolt
TB-3519	1	Boring Bar Retaining Washer
TB-3520	1	Boring Bar
TB-3520-1½	1	Boring Bar with 3/8" Hole in End
TB-3520-3	1	3" Boring Bar
TB-3520-3A	1	Extension Bar
TB-3520-3S	1	Small Hole Boring Tool
TB-3521	1	Boring Bar Retaining Screw
TB-3522	2	Gib Screw
TB-3523	3	Rack Retaining Screw
TB-3524	1	Rack Pinion Bushing
TB-3525	1	Worm Gear
TB-3526	1	Rack Pinion - 12 Teeth
TB-3527	1	Feed Lock Nut
TB-3528	1	Feed Clutch Washer
TB-3529	1	Rack
TB-3530A	1	Tool Slide Lock
TB-3531A	1	Tool Slide Lock Screw
TB-3532	1	Tool Slide Stop Pin
TB-3533	1	Fine Adjustment Collar Lock Screw
TB-3534	1	Collar Lock
TB-3535	1	Collar Lock Spring
TB-3536	1	Pinion Shaft Bushing Retaining Pin
TB-3537	1	Retaining Screw
TB-3548	1	Name Plate
TB-3549	1	Washer for Pinion Shaft
HVH-132	1	Collet Key



# Instructions For Operating

The TREE Taper Boring Tool when received includes the following equipment:

- 1 -  $\frac{3}{8}$ " dia. boring bar for  $\frac{1}{4}$ " square tool bits.
- 1 -  $\frac{3}{4}$ " dia. boring bar with  $\frac{3}{8}$ " dia. hole in the end.
- 1 -  $\frac{3}{8}$ " dia. H. S. boring tool to fit above bar.
- 1 -  $\frac{3}{4}$ " extension bar for outside turning.
- 1 -  $\frac{3}{8}$ " Hex Socket Wrench.
- 1 - Allen Wrench.
- 1 -  $\frac{9}{16}$ " Open End Wrench.

The Boring Tool is ready for operation and the following instructions will explain the procedure for Taper Boring, Straight Boring, Facing, and Outside Turning. The part numbers refer to Figures 1 and 2 shown below:

## TAPER BORING

1. After placing the taper boring tool into the machine spindle, loosen the two  $\frac{3}{8}$ " hex nuts, No. 1, with the socket wrench provided and set the swivel base, No. 2, to the desired angle graduated on the swivel base. Then tighten the nuts.
2. Select the correct boring bar and tool bit and place the bar on the taper hub of the tool slide, No. 3. Swing this boring bar into approximate position and lock in place with the hexagon cap screw, No. 4.
3. The tool slide, No. 3, can then be moved rapidly to the desired position in the following manner. Insert the hex wrench into the clutch cap, No. 5, and loosen it. Then push the wrench further in until it enters the hex hole in the pinion shaft, No. 6. The slide can then be moved rapidly in either direction to be set for the cut or to be returned after the cut has been made. Withdrawing the wrench partially and locking the clutch cap will again ready the tool for power feeding.
4. To make the cut the tool can be set two ways. For roughing, move the spindle until the tool is close to the work. Then unlock the bar on its taper hub and swing it until the desired depth of cut is apparent. Lock the bar in place and start the spindle. Hold the knurled ring, No. 7, stationary and the tool slide will feed on the angle set at a rate of .005" per revolution. For finishing it is advisable to adjust the depth of cut by either lowering the spindle or raising the table and then feeding the slide in the aforementioned manner.

## STRAIGHT BORING

For Straight Boring the swivel base, No. 2, is set at  $90^\circ$ . The boring bar is placed in position as for taper boring. The tool can then be accurately set by turning the knurled ring, No. 7, which is graduated to .0001" and advances the tool .005" per revolution of the ring. After setting, the tool slide can be locked by tightening screw No. 8. The knurled adjusting ring, No. 7, is held in position by locking screw No. 9 when the tool is used for straight boring.

## FACING

For Facing, the swivel base, No. 2, is set at  $90^\circ$ . The bar is swung into position and locked. The depth of cut is obtained by lowering the machine spindle or raising the table. When the spindle is started and the knurled ring, No. 7, is held stationary, the tool will feed out and face with a feed of .005" per revolution. The tool can be rapidly returned to its starting position as described in the section under taper boring.

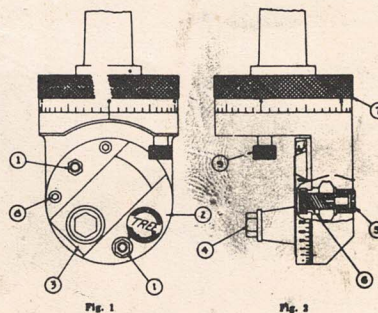
## OUTSIDE TURNING

For straight outside turning the tool can be operated as a straight boring tool with the boring bar extended at right angles to the axis of the tool and the extension bar slipped over this bar and held in place with the set screw provided. The tool is then fed down with the spindle of the machine.

For Outside Taper Turning, the swivel base, No. 2, is set to the desired angle, the bar and extension bar applied as above, and the knurled ring, No. 7, held stationary as the spindle of the machine revolves.

## OILING

This tool should be oiled in two places--(1) on top of the knurled ring, No. 7, in the hole marked OIL, and (2) by removing the Clutch Cap, No. 5, and oiling through the hole exposed. A good grade of light machine oil should be used.



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