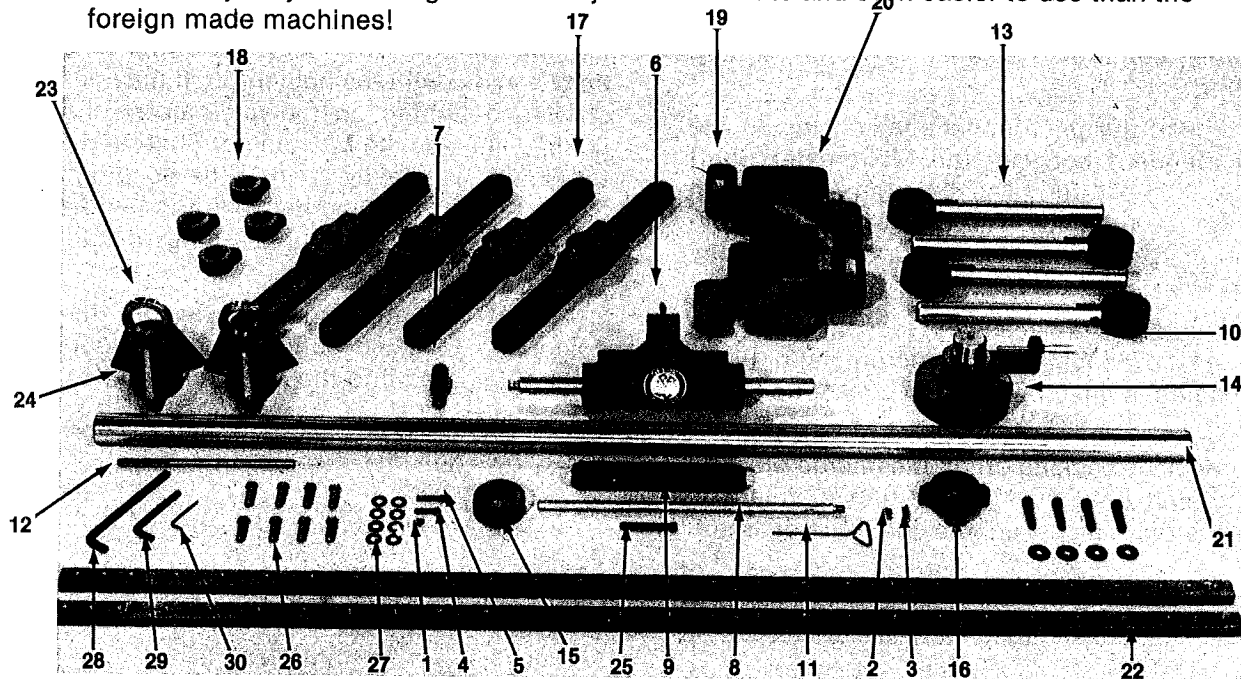


Instructions for use of PT-1500

INDUSTRIAL LINE BORING TOOL

READ CAREFULLY BEFORE USING

Due to many, many requests we have modified our popular heavy duty line boring tool, which has been in use for many years by the Cummins and Caterpillar organizations throughout the world, so that it will fit nearly all "Industrial" engines. A truly American-made heavy duty line boring tool that is just as accurate and even easier to use than the foreign made machines!



DET #	PART #	PART DESCRIPTION	AMT	DET #	PART #	PART DESCRIPTION	AMT
1	PT-1000-001	Cutter (5/8")	2	17	PT-1000-056	Line Bore Bridge	4
2	PT-1000-002	Cutter (7/8")	2	18	PT-1000-058	Upright Brg Stop	4
3	PT-1000-003	Cutter (1 1/4")	2	19	PT-1400-011	Bridge Exten. (LH)	2
4	PT-1000-004	Cutter (1 1/2")	2	20	PT-1400-012	Bridge Exten. (RH)	2
5	PT-1000-005	Cutter (2")	2	21	PT-1400-015	Line Bore Bar	1
6	PT-1000-016	Feed Unit	1	*	PT-1500-002	Setting Std.	1
7	PT-1000-020	Univ. Drive	1	22	PT-1500-003	Parallel Bars	2
*	PT-1000-023	Drive Adapter	1	23	PT-1500-007	Stop Collar	2
8	PT-1000-024	Torsion Bar	1	24	PT-1500-008	Centering Cone	2
9	PT-1000-025	Torsion Bar Brkt	1	*	PT-1500-009	Steel Box	1
10	PT-1000-032	Micrometer	1	*	PT-1500-013	Final Cent. Ind.	1
11	PT-1000-036	Cutter Key	1	25	PT-10012	Sq. Hd. Set Bolt	1
12	PT-1000-037	5/37 Kn Hld Wr.	1	26	PT-10015	Hex Head Bolts	8
*	PT-1000-038	3/16 Kn Hld Wr.	1	27	PT-12001	Washers	8
13	PT-1000-048	Upright Brg Assy	4	28	PT-16006	Hex Key (3/8")	1
14	PT-1000-050	Mic. Base Assy	1	29	PT-16007	Hex Key (5/16")	1
15	PT-1000-054	Sm. Cutter Holder	1	30	PT-16008	Hex Key (1/8")	1
16	PT-1000-055	Lg. Cutter Holder	1				

*NOT SHOWN



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TOOL DIVISION

P.O. BOX 647 ■ 827 JEFFERSON AVE.
CLOVIS, CALIFORNIA 93613
Telephone: 209/299-4351



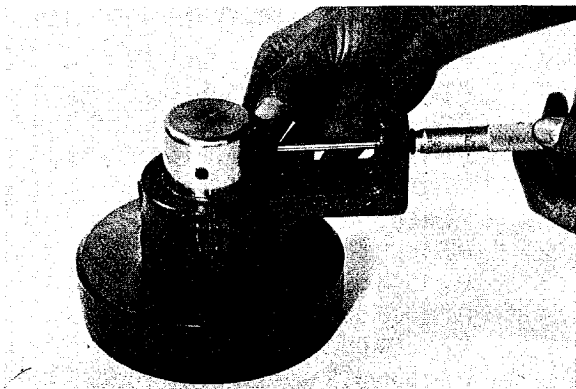
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PREPARATION OF THE ENGINE BLOCK

1. The cylinder block should be cleaned, and the block and the PT-1500 Line Boring Tool allowed to stabilize to room temperature.
2. Remove all burrs and irregularities from the engine oil pan ledge and each side of the main bearing bores.
3. Torque all main bearing capscrews to required specifications; see Engine Shop Manuals.
4. Check each bore diameter with a dial bore gauge. A damaged cap can be replaced with a semi-finished cap; see Engine Shop Manual.
5. Plug all oil passages with thick grease to prevent metal chips from entering the oil passages.

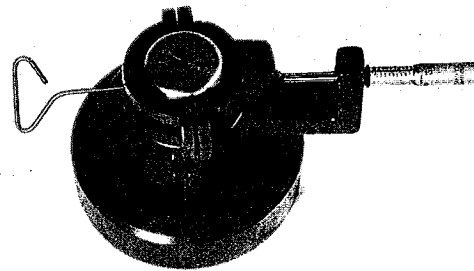
CHECKING THE MICROMETER SETTING

1. The Micrometer Base Assembly is preset at the factory; but should be checked before setting the cutter.
2. To check the micrometer reading install the setting standard between the Micrometer Shaft and the Micrometer. The Micrometer reading should be 3.000 inches. Take three readings from different places on the Micrometer Shaft and compare readings.
3. If adjustment is necessary, loosen the socket head cap screw and move the micrometer until the 3.000 reading is lined up. Tighten socket head cap screw.
4. Recheck by backing off on the micrometer and again turning it against the setting standard in three different places on the Micrometer Shaft.



SETTING THE CUTTER TO BORE SIZE

1. Install the appropriate cutter holder over the micrometer shaft and align the cutter hole in the cutter holder with the hole through the micrometer shaft and tighten on the micrometer shaft. The scribed lines on the Micrometer Shaft and the Cutter Holder will easily identify the positions of the holes. Keep even gaps between the two halves of the cutter holder when tightening on the Micrometer Shaft.
2. Insert the appropriate cutter in the cutter holder. Be sure the cutter is short enough so it does not extend into the bore of the cutter holder.



3. Adjust the micrometer to specifications, see Engine Shop Manuals. Use 0.025" maximum rough cuts on the diameter, and no larger than 0.010" finish cuts. Using the cutter key push the cutter against the micrometer spindle and tighten the set screws to lock the cutter in position. (NOTE: When adjusting cutter be careful to just contact the cutter to prevent damage to the carbide tip).
4. Back-off micrometer and recheck the cutter setting. Do not tighten or sweep the micrometer spindle against cutter point or the carbide may be chipped.



MOUNTING TO THE ENGINE BLOCK

1. Lightly coat the entire length of the boring bar and the bores of the upright bearings with oil. Slide the boring bar through the saddle bores of the engine block while positioning the upright bearing assemblies.

2. To insert the upright bearings, slip over boring bar in proper location in the engine block and adjust the socket head cap screw in the upright bearing to where the boring bar just turns freely.

3. Now insert one of the line bore bridges over the upright bearing bar and secure loosely to the oil pan rails or parallel bars. The parallel bars are used on blocks where the oil pan rails are not long enough to support the bridges, or where the oil pan rails are not perfectly straight. Also, the bridge extensions may now be put loosely on the bridges if the distance between the oil pan rails is too large for the bridges.

4. Insert one centering cone over the boring bar, pushing the centering cone into the saddle until snug. Slide a stop collar behind the centering cone and tighten socket head cap screw to hold in place. Now insert the other centering cone over the other end of the boring bar, pushing it into the saddle bore until it is also snug. Slide a stop collar behind the centering cone and lock in place.

5. Making sure the Upright Bar is perpendicular to the bridge, tighten the bridge to the oil pan rails; also tighten the bridge extensions if being used. Now tighten the socket head cap screw locking the Upright Assembly to the bridge. Finally tighten the socket head cap screw locking the bearing in position to the Upright Bar.

6. Check the boring bar to see that it rotates freely. If adjustment is necessary because of a frozen boring bar, loosen cap screws on the oil pan rails and the Bridge Extensions to make adjustments. Oil Upright Bearing Assemblies.

7. At this time, if the centerline of the crankshaft is to be raised, insert feeler stock under the Upright Bearing Stops and lock in this position on the Upright Bearing Bar.

8. Remove the centering cones and install the "Final Centering Indicator Unit" on one end of the boring bar. Rotate up to the parting line of the block on one side.

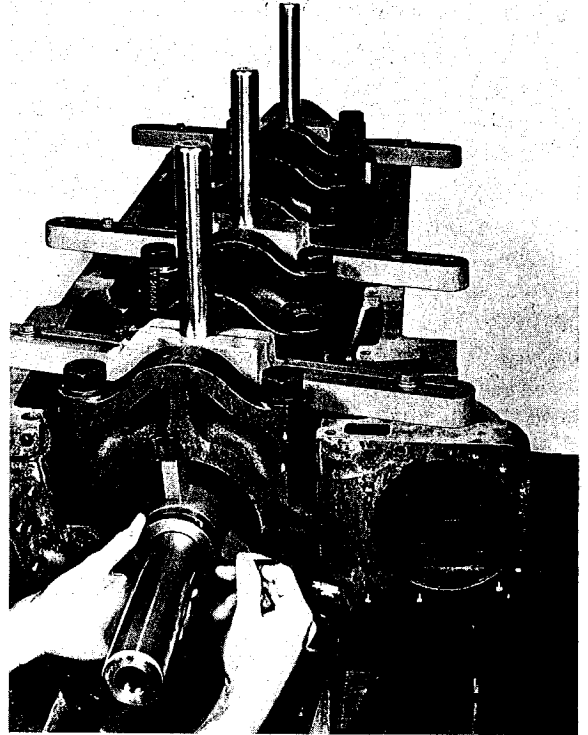
9. Set the dial indicator to "0" and sweep block bore to parting line on opposite side and adjust dial. For example: If dial reads plus 0.004, set back to plus 0.002 and now you should have on one side plus 0.002 and the other side minus 0.002.

Now tap the closest bridge to the indicator unit on the plus side to get a "0" reading. At this time, you will notice approximately a 0.001 to 0.002 plus reading on the bottom of the saddle, which is desirable so that the block saddles will clean-up during the line boring operation.

Repeat above procedure on the other end of the engine block. If a large correction is necessary on this end it will be necessary to repeat this procedure again on the other end of the engine block.

10. Bolt the torsion bracket loosely to the cylinder block, opposite the end from which the boring bar will be driven.

11. Install the feed unit onto the boring bar and lock in position. Slide the feed unit onto the torsion bar and tighten bolt holding torsion bracket hand tight. The boring bar must slide in and out easily after these tightening operations.



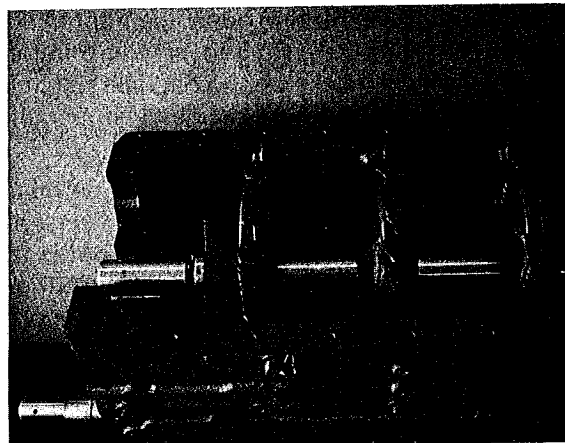
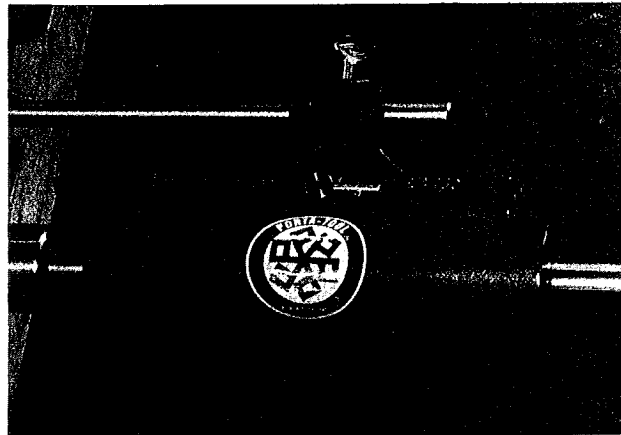
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CUTTING THE MAIN BEARING JOURNALS

1. Turn the feed unit valve to the "OPEN" position and pull the complete feed unit away from the block. Tighten the thumb screw in the feed unit to secure it on the torsion bar. Install the Square Head Set Bolt in the second threaded hole of the torsion bar bracket and tighten snugly against the cylinder block to stabilize the torsion bar assembly. Turn the valve on the feed unit to the "CLOSED" position.
2. Install the drive adapter in the other end of the boring bar with the ½ inch end out and lock in position with the socket set screw. Lock the universal drive in with a ½ inch heavy duty right hand rotation hand drill chuck. (450-500 rpm).
3. Wipe the boring bar and the cutter holder clean and place the cutter holder on the boring bar next to the journal to be cut. (NOTE: Direction of feed travel). To assemble the small cutter holder, place the lower half of the cutter holder over the socket head cap screw, then slide sideways into the slot and tighten socket head cap screws. To assemble the large cutter holder, slip the halves together and tighten socket head cap screws. Compare the cutter tip with the bore while turning the boring bar by hand to insure the cutter setting is correct. (CAUTION: Always double check cutter specifications before boring.)
4. Oil the Upright Bearing Assemblies and make sure that the boring bar is well-lubricated during all boring operations. Do not use lubricant on the cutter.
5. If you are using the Upright Bearing Stops on the Upright Bearing Bars remove the feeler stock and lower all Upright Bearing Assemblies.
6. Attach drill and Universal Drive on the Drive Adapter and bore the bearing journal, again making sure that all parts are well-lubricated. CAUTION: Do not push on the drill, allow the feed unit to regulate the amount of cut.
7. Check the size of the bore with a dial gauge.
8. To cut the next journal; remove the cutter holder from the boring bar. Turn the feed valve to the "OPEN" position and push in on the feed shaft until it stops. Turn the feed valve to the "CLOSED" position and repeat Steps #3, 4, 5, 6 and 7.
9. After the boring operation is complete, clean the engine block thoroughly.



NOTE: For Warranty or Repairs, send to:
KENT-MOORE TOOL DIVISION
PORTA-TOOL PRODUCTS
827 Jefferson Ave.
Clovis, California 93612

CARE AND MAINTENANCE OF YOUR NEW TOOL

1. The line bore feed unit must always be completely filled with oil to prevent chatter or erratic feed. To fill reservoir, place feed unit in a level position and pull the feed shaft all-the-way back. Remove the furthest pipe plug and fill with clean 30W Non-detergent oil, replace pipe plug. Push the feed shaft all-the-way in and remove nearest pipe plug, fill with oil and replace pipe plug. Continue repeating procedure until all air bubbles in the oil disappear.
2. Keep the cutters honed to keep the tool from chattering. To help keep the cutter in excellent condition use our "PT-7180" PORTA-BIT SHARPENER. Designed especially to hone the cutters back to their, original angles.
3. The "PT-1500" Line Boring Tool requires cleaning and lubrication to obtain precision performance. Wipe all parts clean after use and coat with a thin layer of lightweight oil to prevent rust or corrosion during storage. Do not drop or damage any part of the tool as this may cause difficulty in obtaining true finish bores.
4. Remove snap ring and bracket from the Micrometer Base Assembly. Clean preservative from all parts and oil lightly with clean oil. Install bracket and snap ring. Adjust socket head cap screw until the bracket becomes tight on the micrometer shaft, then loosen the screw until the bracket moves with a slight drag.