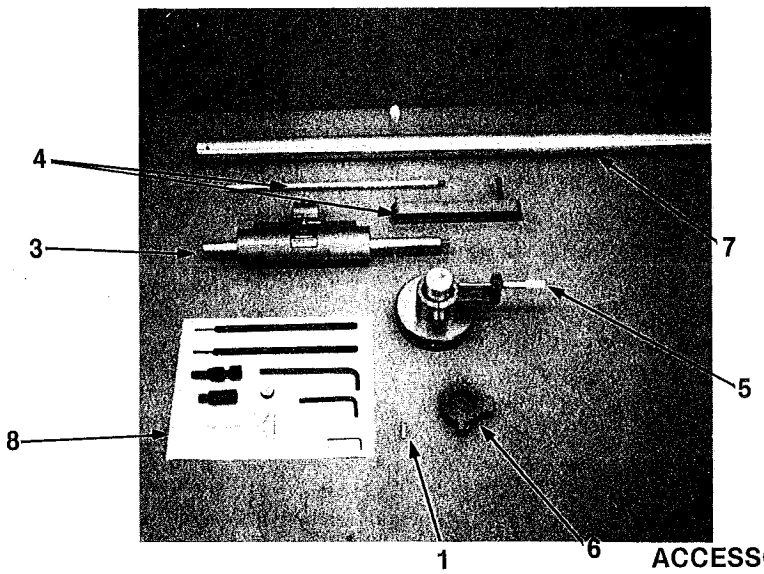
Instructions for use of
PT-1200

UNIVERSAL LINE BORING TOOL

READ CAREFULLY BEFORE USING

The PT-1200 UNIVERSAL LINE BORING TOOL is actually a combination main bearing alignment checking bar and boring tool designed for use in the repair of diesel engine blocks; and if used in conjunction with the Main Bearing Saddle Repair Kits — a tool for salvaging diesel engine blocks. The PT-1200 is designed especially for use on truck engine blocks. Centering and test ring groups for working on the truck engines are available, but not included with this tool.



DET #	PART #	PART DESCRIPTION
1	PT-1000-003	Cutter (1¼")
*2	PT-1000-014	Steel Box
3	PT-1000-016	Feed Unit
4	PT-1000-049	Torsion Bar/Bracket Group
5	PT-1000-050	Micrometer Base Assy
6	PT-1000-055	Large Cutter Holder Assy
7	PT-1000-057	Linebore Bar Assy
8	PT-1000-120	Service Package

*NOT SHOWN

AVAILABLE ACCESSORIES ADDED TO "PT-1200"

PT-1000-008	Ring Group (4.2520) DD 110
PT-1000-009	X-Small Cutter Holder
PT-1000-048	Upright Bearing Assy
PT-1000-056	Line Bore Bridge
PT-1000-058	Upright Bearing Stop
PT-1000-060	Ring Group (4.7500) (CUM 5-1/8 NH, 5½ NH)

ACCESSORIES (Cont)

PT-1000-061	Ring Group (3.8125) DD 6'71
PT-1000-062	Ring Group (4.8125) DD 8V'71/92
PT-1000-064	Ring Group (4.0620) Cum 903
PT-1000-065	Ring Group (5.8460) Cum K6
PT-1000-066	Ring Group (3.5020) (Cum 4-5/8 V6/8 Val-Vale)
PT-1000-067	Ring Group (3.2525) DD 4'53
PT-1000-068	Ring Group (3.7525) DD 6V'53
PT-1000-069	Ring Group (4.2515) MACK 673/675
PT-1000-076	Ring Group (4.3170) MACK 864
PT-1000-086	Ring Group (3.6885) IHC DT-466
PT-1400-034	Ring Group (3.7070) (CAT 4.50 V8 1673 1100/1300)
PT-1400-035	Ring Group (3.8155) (CAT 4.75 4 & 6 1674)
PT-1400-036	Ring Group (5.1338) (CAT 5.40 V8-90° 1693)
PT-1400-037	Ring Group (5.6340) (CAT 5.40 V8, V12, V16-60 3406)

CAT	Caterpillar
Cum	Cummins
DD	Diesel Allison
IHC	International Harvesters
MACK	Mack Truck

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PORTA-TOOL
PRODUCTS

PREPARATION OF ENGINE BLOCK

1. Remove all burrs and irregularities from the engine oil pan ledge and from each side of the main bearing journals.
2. The cylinder block should be cleaned: Allow the Line Boring Tool to stabilize to room temperature.
3. Check each bore diameter with a dial bore gauge. Damaged caps can easily be replaced with semi-finished caps; SEE ENGINE SHOP MANUALS.
4. Plug all oil hole passages with thick grease to prevent metal chips from entering passages.

CHECKING ALIGNMENT OF THE MAIN BEARING BORES

A unique feature of the "PT-1200" LINE BORING TOOL is its ability to quickly check the alignment of the main bearing journals before the actual line boring operation. If a journal is out of alignment, line boring is necessary to correct the alignment in relationship to the other bearing journals.

1. After following the instructions for "PREPARATION OF THE ENGINE BLOCK" install a centering ring in each end journal of the block. **(See Fig 2)**
   (Note: It may be necessary to lightly tap the top of the centering ring with a plastic mallet to seat it properly. Install all main bearing caps and torque to required specifications, SEE ENGINE SHOP MANUALS.

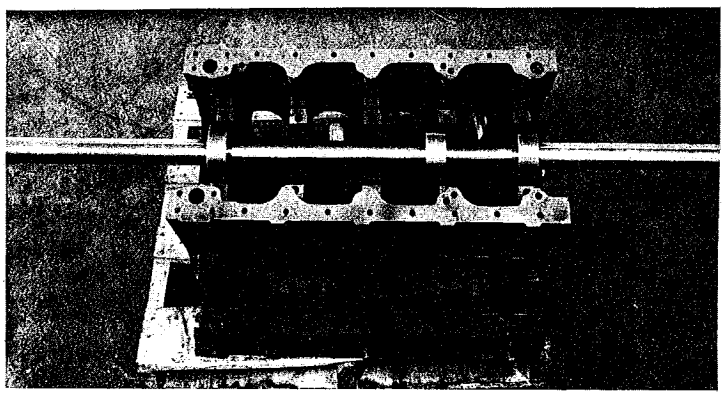

Fig 2 Installation of the Centering Rings

2. Apply a coat of oil in the centering ring bores, on both diameters of the test ring, and on the entire length of the line boring bar for lubrication.
3. Rotating the boring bar slowly, slide the bar through one centering ring and slip on the test ring. Pass the boring bar through the remaining bearing journals and the other centering ring.
4. Now rotating the test ring back and forth, use light finger pressure against the test ring on both sides of the bar and push the test ring through each bore. **(See Fig 3)**

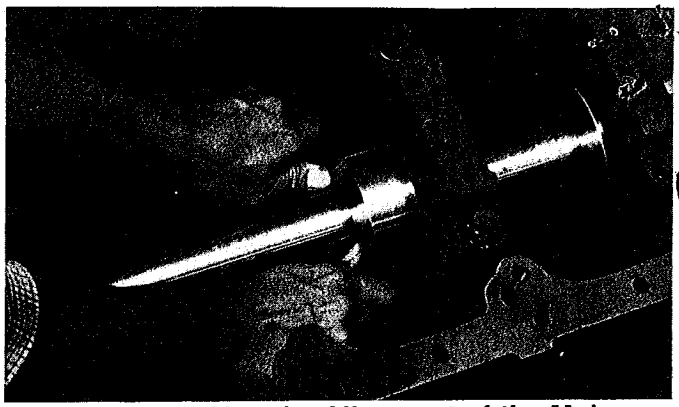

Fig 3 Checking the Alignment of the Main Bearing Journals

5. If the test ring will not pass through a bearing journal, check for burrs around the journal. But if the test ring refuses to pass through a majority of the journals move the centering rings to different journals and repeat procedure.
6. If the test ring still refuses to pass through a bearing journal or an audible click is heard when the ring exits a journal; the journal is out-of-alignment. Be sure to mark the journals to be salvaged.

CHECKING THE MICROMETER SETTING

1. The Micrometer Base Assembly is preset at the factory; but should always be checked before setting a cutter in the cutter holer.
2. To check the micrometer reading, insert the ground surfaces of the round setting standard between the ground shaft and the micrometer spindle. The micrometer reading should be 3.000 inches. Compare readings from three different places around the chromed shaft. **(See Fig 4)**

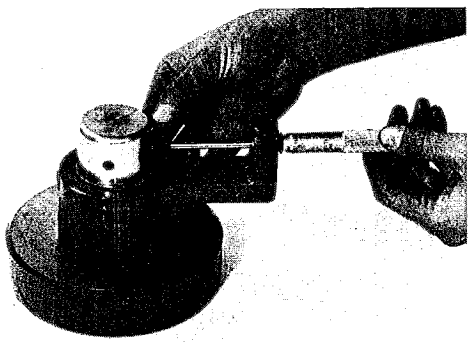

Fig 4 Checking Micrometer Reading

3. If adjustment of the micrometer is necessary, loosen the screw holding the micrometer in place and position micrometer (by sliding micrometer in or out of holder) until a 3.000 inch reading is obtained. Tighten screw.
4. Recheck the micrometer reading by backing off the micrometer and again turning the spindle against the setting standard. Again be sure to compare the micrometer readings in three different places around the chromed shaft.

SETTING CUTTER TO REQUIRED BORE SIZE

1. On the Micrometer Assembly, install the cutter holder onto the ground chromed shaft aligning the hole for the cutter with the corresponding hole in the chromed shaft (scribed lines on the shaft and cutter holder will easily identify hole locations). Be sure to keep the gap at both ends of the cutter holder identical when tightening the cutter holder onto the shaft. **(See Fig 5)**

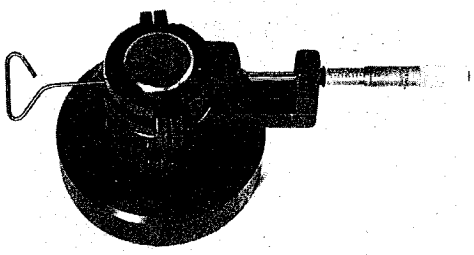

Fig 5 Cutter Holder on Micrometer Assy.

2. Insert cutter into cutter holder. Now, using the cutter key, push cutter lightly against the micrometer spindle and tighten the screws to lock cutter in position. Adjust micrometer to the required specifications, see ENGINE SHOP MANUALS. (IMPORTANT!! When positioning cutter be careful to just touch the micrometer spindle or the carbide tip may be damaged!!!)

3. Recheck the cutter setting by backing off micrometer spindle and gently contacting the carbide tip. (IMPORTANT!!! Carbide tip may chip if the micrometer spindle is swept across it.)

MOUNTING FEED UNIT TO THE ENGINE BLOCK

1. After following the procedures for "PREPARATION OF ENGINE BLOCK", insert the centering rings placing one in an adjacent bearing journal to the journal to be bored and the other in the end journal next to where the feed unit will be mounted. **(See Fig 6)**

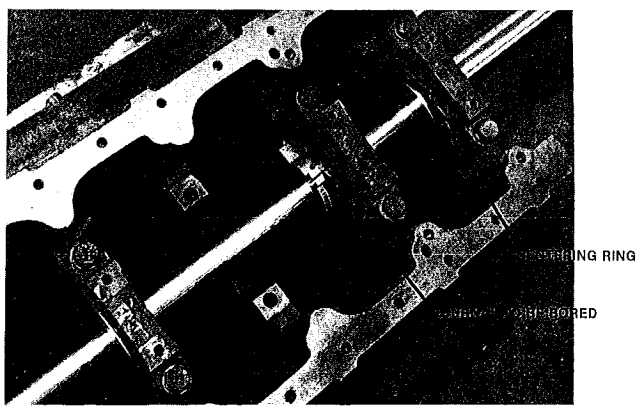

Fig 6 Placing the Centering Rings

2. Oil the centering ring bores and the entire length of the boring bar. While slowly rotating the boring bar, slide the bar through the centering ring bores and through the engine block. After the bar is slid through the bearing journals and centered in the engine block, bolt the torsion bar bracket (through the slotted hole) loosely onto the engine block opposite the end from which the boring bar will be driven with the hand drill. **(See Fig 7)**

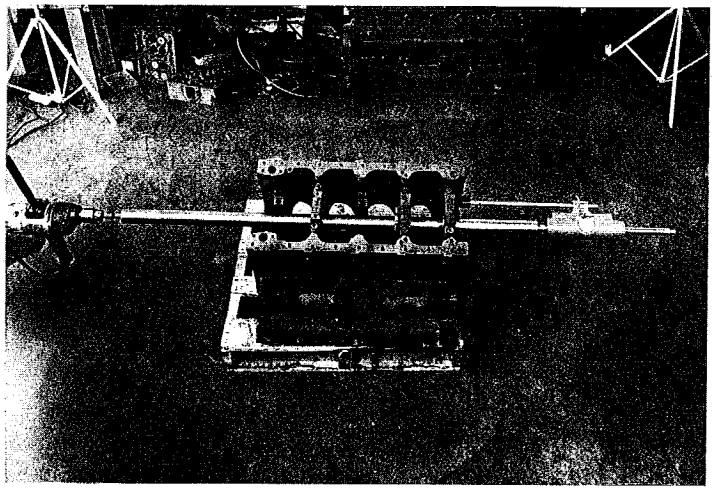

Fig 7 Torsion Bar/Bracket Mounted on Engine Block

3. Insert the torsion bar into the threaded hole at the end of the torsion bar bracket and thread the Square Head Set Bolt into the remaining hole.

4. Install the feed unit into the boring bar locking it in position by tightening the set screw at the end of the bar. Slide the feed unit onto the torsion bar and tighten the Square Head Set Bolt (hand tight). The boring bar must slide in and out of the block easily after these tightening operations. **(See Fig 8)**

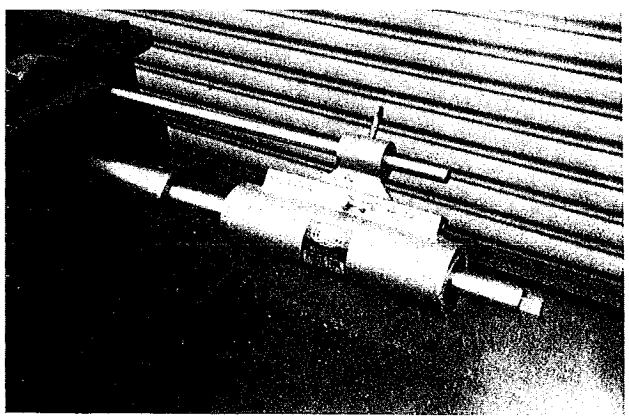

Fig 8 Feed Unit Installed on the Torsion Bar

CUTTING THE MAIN BEARING JOURNALS

1. After mounting the feed unit to the engine block and locking the feed shaft into the boring bar, turn the valve on the feed unit to the "OPEN" position and move the feed unit towards the block. Tighten the thumb screw on the feed unit to secure it to the torsion bar and tighten the Square Head Set Bolt in the torsion bracket to stabilize the feed unit. Now slide the boring bar through the block until the feed unit stops the movement of the bar and turn the valve on the feed unit to the "CLOSED" position. **(See Fig 9)**

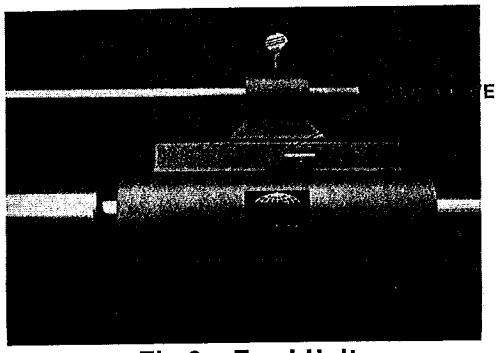

Fig 9 Feed Unit

2. Install the drive adapter with the ½" end out of the boring bar and lock in position with the set screw. Chuck the universal drive in with a ½" heavy-duty right hand rotation hand drill (450-500 RPM).
3. After following the instructions for "Setting the Cutter to Bore Size" wipe the boring bar and the cutter holder clean and position the cutter holder on the boring bar next to the journal to be cut (Note direction of travel). To assemble the cutter holder place the lower half of the cutter holder over the socket head cap screws, then slip the halves together and tighten screws. **(See Fig 10)**

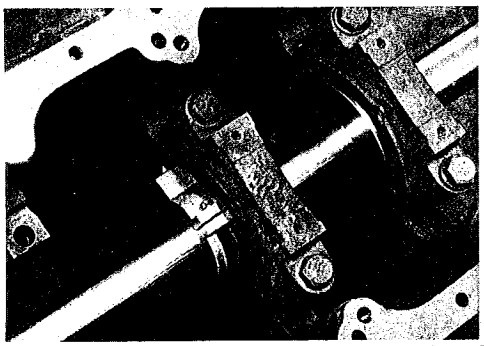

Fig 10 Cutter Holder Attached to Boring Bar

4. Always compare the tip of the cutter with the journal bore while turning the boring bar by hand to insure correct setting. CAUTION: Always double check cutter specifications before boring, make sure boring bar is well-lubricated during all boring operations, and do not use lubricant on the cutter!!!
5. Attach the hand drill and universal drive to the drive adapter and bore the bearing journal. CAUTION: Do not push the drill, allow the feed unit to regulate the feed of the cutter!!! After boring out the journal check the bore size with a dial gauge.
6. To cut the next journal, remove the cutter holder from the boring bar and turn the feed valve to the "OPEN" position. Push the boring bar back to its original position and turn the feed valve to the "CLOSED" position. Adjust the centering rings, if necessary, and follow STEPS #3, 4, & 5.
7. After the line boring operation is complete, clean the engine block thoroughly.

CARE AND MAINTENANCE OF YOUR NEW LINE BORING TOOL

1. The PT-1200 LINE BORING TOOL requires cleaning and lubrication to obtain precision performance. Wipe all parts clean after each use and coat with a thin film of lightweight oil to prevent rust and corrosion during storage. Do not drop or damage any part of the tool as this may cause difficulty in obtaining true finished bores.
2. Remove the snap ring and the micrometer holder from the Micrometer Base Assembly and clean the preservative from all parts; oil lightly with clean oil. Install the micrometer holder and snap ring. Adjust the socket head cap screw until the holder becomes tight on the chromed shaft, then loosen the screw until the holder moves with a slight drag.
3. Keep the cutter honed to prevent chattering during the boring operations!!! To help keep the cutter in excellent condition we recommend the PT-7180 PORTA-BIT SHARPENER designed especially to hone the cutter back to the original angles.
4. The line bore feed unit must always be completely filled with oil to prevent cutter chatter or erratic feed. To fill the unit with oil, place the feed unit in a level position and pull the shaft all the way back. Now remove the plug nearest the shortest exposed part of the feed shaft and fill with 30W Non-Detergent Oil, replace plug. Push the feed shaft to the opposite side and remove the remaining plug, fill with oil and replace plug. Continue repeating procedure until all air bubbles in the oil disappear.

For Warranty or Repairs send to:

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