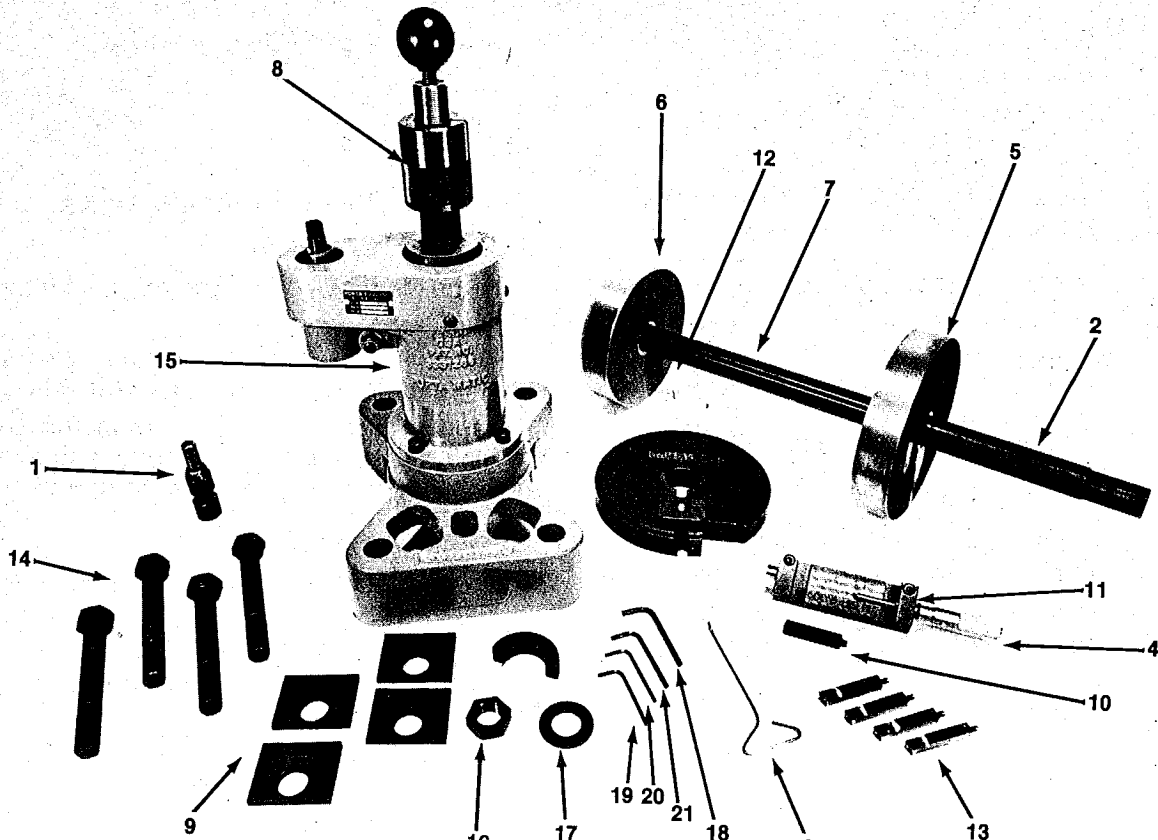


Instructions for use of PT-2100

PORTA-MATIC TOOL

READ CAREFULLY BEFORE USING



DET #	PART #	PART DESCRIPTION	AMT	DET #	PART #	PART DESCRIPTION	AMT
1	PT-1000-020	Universal Drive	1	16	PT-11012	Jam Nut	2
2	PT-2000-019	Driver Handle	1	17	PT-12008	Washer	1
3	PT-2000-028	Cutter Key	1	18	PT-16005	Hex Key (5/32)	1
4	PT-2100-008	Micrometer	1	19	PT-16008	Hex Key (1/8)	1
5**	PT-2100-026	Driver Plate 6 1/4	1	20	PT-16009	Hex Key (3/16)	1
6**	PT-2100-032	Guide Plate 6 1/4	1	21	PT-16057	Hex Key (3/32)	1
7**	PT-2100-038	Driver Shaft	1				
8	PT-2100-046	Depth Set Collar	1	KITS ALSO AVAILABLE FOR:			
*	PT-2100-050	Steel Box	1	PT-2100-107	5 3/4 Engine		
9	PT-2100-062	Offset Washer	4	PT-2100-108	5.4 Engine		
10**	PT-2100-079	Cutter Set Gauge 6 1/4	1	PT-2100-109	5 1/8 Engine		
11	PT-2100-085	Mic Block Assy	1	PT-2100-110	4 3/4 Engine		
12**	PT-2100-090	Cutter Plate 6 1/4	1	PT-2100-111	4.5 Engine		
13**	PT-2100-091	Cutter 2 1/2	4	PT-2100-018	Cat 6.25 Bore Engine		
14	PT-2100-106	Hex Hd Bolt	4				
15	PT-2100-112	Basic Machine	1				

* NOT SHOWN

**NOT INCLUDED IN PT-2100 KIT



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The "PT-2100" PORTA-MATIC can be used to salvage a cylinder block which has a damaged or cracked counterbore ledge. The original block liner counterbore ledge is machined out and a repair bushing which forms a new counterbore is installed. The bores can be enlarged and a new bushing installed in about five minutes per bore. This time does not include checking and finish machining the counterbore ledge. Finish cutting the counterbore ledge after rebushing takes about three to five minutes a bore, with the "PT-2400" or "PT-2450" Counterboring Tool.

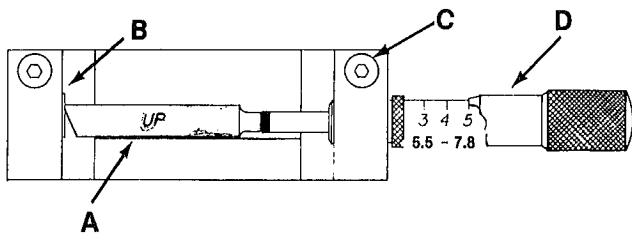
The counterbore repair bushings, Part Numbers.

PT-8200	(6,8,12,16 CYL 6.25 BORE)
PT-8205	(90° V8 CYL. 5.40 BORE)
PT-8210	(4,6 CYL 4.50 BORE)
PT-8215	(4,6 CYL 4.50 BORE)
PT-8220	(4,6 CYL 4.75 BORE)
PT-8225	(6 CYL 5.12 BORE)
PT-8230	(4,6 CYL 5.40 BORE)
PT-8235	(4,6,8,V12 CYL 5.75 BORE)
PT-8240	(6,8,12 CYL 5.40 BORE)
PT-8245	(6 CYL 4.75 BORE)

AVAILABLE FROM KENT-MOORE TOOL DIV.,
PORTA-TOOL PRODUCTS.

CHECKING THE MICROMETER BLOCK

1. Using a CUTTER SET GAUGE (A) to check the micrometer reading, place the cutter set gauge with side stamped "UP" on top between the cutter stop (B) and the micrometer spindle. Turning the thimble move the spindle snugly against the cutter set gauge. Micrometer reading should be 7.8000. See Dwg. #1.
2. If adjustment is necessary loosen socket head set screw (C) and set micrometer (D) at 7.8000.
3. Slide micrometer snugly against cutter set gauge and tighten socket head set screw (C).
4. As a further check, back off thimble on micrometer and recheck reading.



Dwg. 1 Adjusting Micrometer

ADJUSTING THE MICROMETER

The micrometer is preset at the factory. However, due to handling during shipping, it may be out of specifications. To check, set your cutter to 7.8000 inches bore size & bore a scrap block. Check the size of the bored hole. If it is not correct, loosen the socket head screw to move micrometer to exact size of bored hole & adjust as required. For setting new oversize cutter setting gages, follow procedure described above. When the bore is correct, grind or lap the round end of the cutter set gage to read 7.8000 inches on the micrometer.

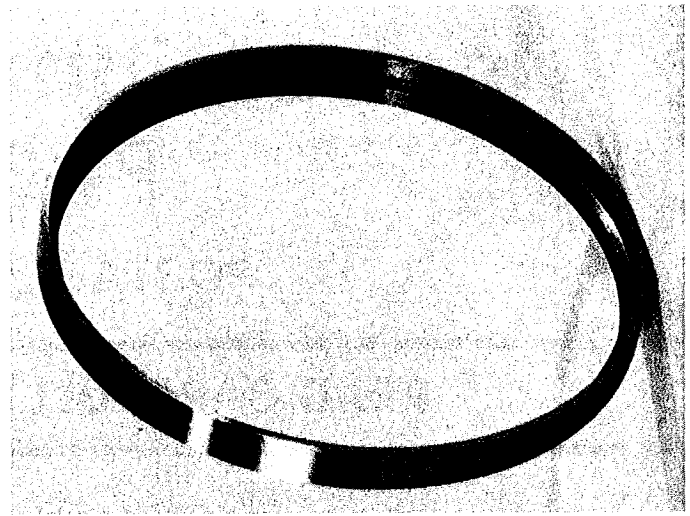


Fig. 1 Repair Bushing

OPERATING INSTRUCTIONS

PREPARING THE BLOCK

1. Steam clean the block and remove all top deck dowels.
2. Remove all burrs and high spots from top deck with a large mill file. Finish dress with a flat stone.
3. Remove all dents or burrs from the counterbore inside diameter to be cleaned with an emery cloth. This area is used to locate the tool.

ASSEMBLING THE TOOL

1. Select the correct cutter plate to be used.
2. Install proper cutter plate on the main shaft with the cutter plate slot installed on the bottom. Make sure the pilot diameters on both the shaft and cutter plates are clean before assembly. Install washer and nut & torque to 50 lb. ft.

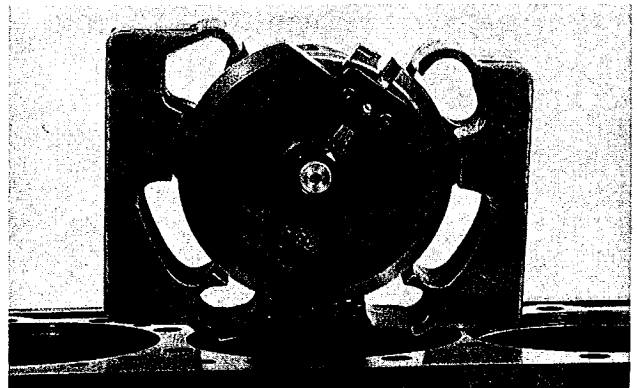


Fig. 1 Attaching Cutter Plate



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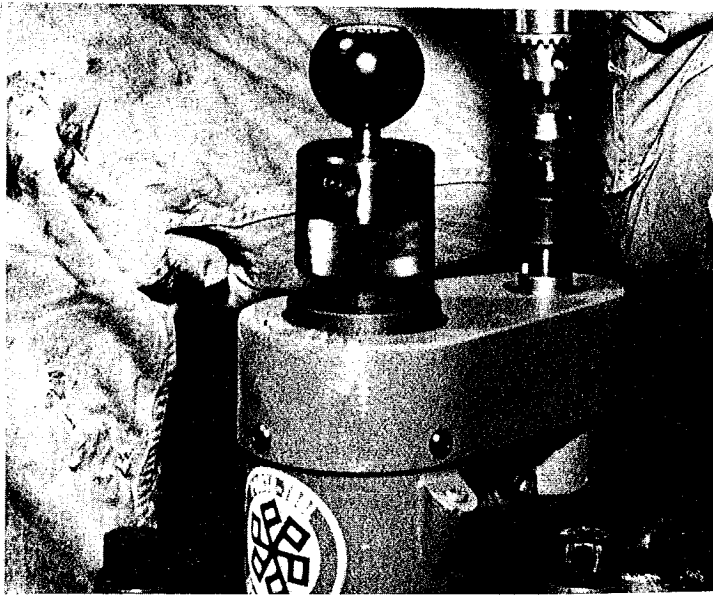


Fig. 2

3. Install Porta-Matic tool on the block and release the needle valve by rotating the knob (1) counterclockwise to lower the cutter plate down into the liner pilot bore, back the depth set collar (2) off until it is flush with the top of the spline shaft see Fig. 2. **NOTE:** Check oil level before boring. Remove oil fill plug (3) and check oil level in the hydraulic feed unit. Fill to top with S.A.E. 10, 20, or 30 weight oil. Install the pipe plug and cycle the bar up and down a few times. Recheck oil level. Fill again if necessary. Repeat the procedure as necessary until the whole chamber is filled with oil and free of air. If oil level is low chatter may occur as the tool feeds downward.

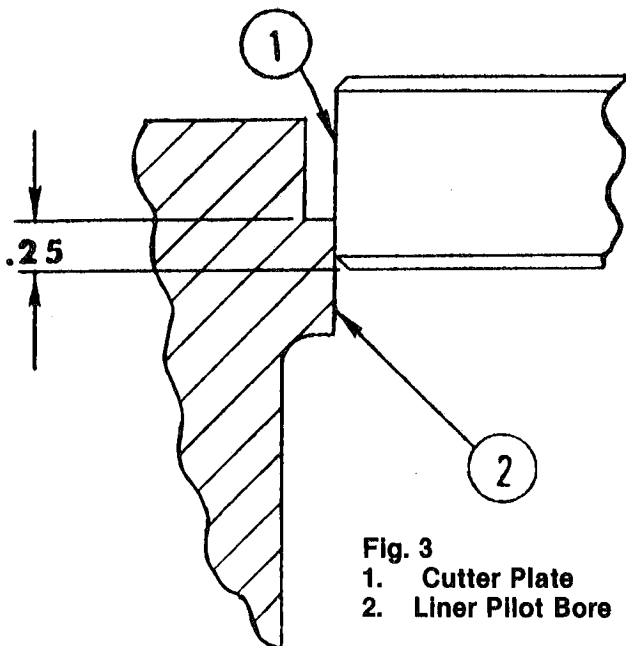


Fig. 3
1. Cutter Plate
2. Liner Pilot Bore

4. Lower the locating diameter on the cutter plate down into the liner pilot bore adjust the depth set collar until the pilot bore is engaged with liner bore approximately .25" as shown in Fig. 3. Install hold down bolts snug enough to move the plate if necessary. While rotating the bar, tighten the retaining bolts to 50 lb. ft. on "V" engine blocks where the block faces are slanted, push up to neutralize the effect of gravity as the hold down bolts are tightened. The bar should rotate freely after the hold down bolts are torqued.

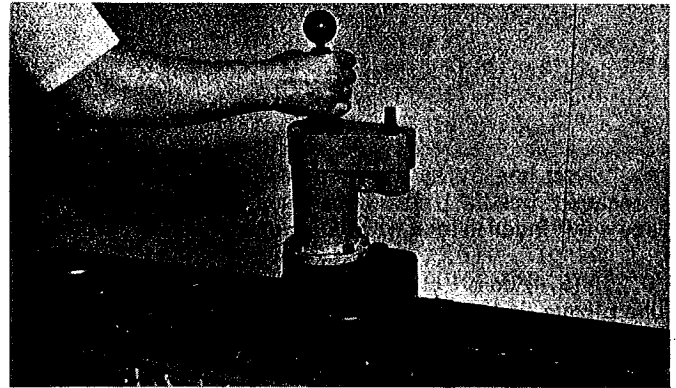


Fig. 4

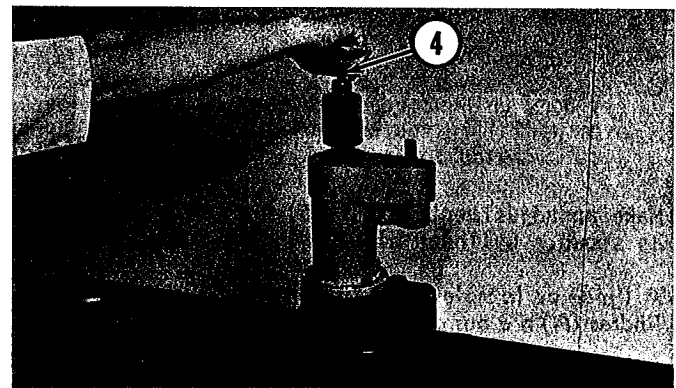


Fig. 5

5. Lift the cutter plate up out of the liner pilot bore, as shown in Fig. 4. Close the needle valve by rotating the feed control knob clockwise as shown in Fig. 5. Thoroughly clean the cutter plate slot before inserting the cutter.

6. The counterboring operation to accept the repair bushing should be completed in (2) cuts. A cutter set gage is provided for setting the cutter for the finish size on all bore sizes. The micrometer should be used for setting size on the rough cut. Table 6 is a chart which gives various sizes and tolerance ranges to use in setting up the Porta-Matic tool and inspecting the cut counterbore.



7. To set the finish size on cutter, place the appropriate cutter set gauge in the micrometer block assembly. The micrometer should read the same as the size stamped on the side of the cutter set gauge. Make sure that the side stamped "UP" is on the top. Remove the cutter set gauge and set the specified cutter to the exact same size as the cutter set gauge demonstrated in Figures 7 & 8.

CAUTION: Erroneous readings will be obtained if the cutter set gauge is not set in the micrometer block with the side stamped "UP" on top.

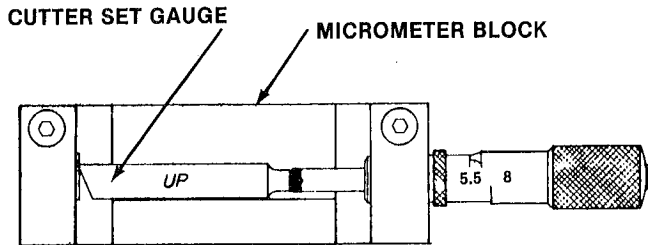


Fig. 7

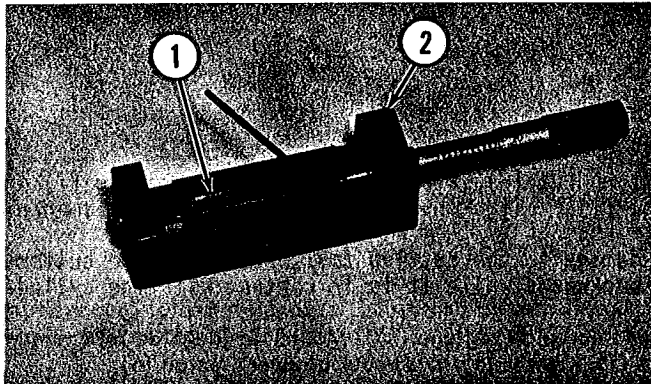


Fig. 8

1. Cutter
2. Micrometer Block

8. Clean cutter plate slot (A Figure 9) before installing the cutter. (#1 Figure 10) into slot (A). Pull cutter (1) out approximately .12" over the top face of the cylinder block, while setting for depth of cut is made. Tighten screw (3). Carefully loosen knob (4) to lower the boring bar until cutter (1) is against the top face of the cutter block.

9. Loosen screw (#5 Figure 12) until the depth set collar (#6) is free. Install depth set gauge (7) and make adjustment to nut (6) until it is against gauge (7). Tighten screw (5) to hold nut (6) in place.

CAUTION: To prevent damage to cutter, never hit the cutter or let it fall. Never turn the cutter backwards while it is in contact with the cylinder block.

10. Turn knob (4) counterclockwise and lift the cutter so it is above the top face of the cylinder block. Turn knob (4) clockwise to hold the cutter plate in position. Loosen screw (3) and push the cutter into cutter plate slot as far as it will go, then tighten screw (3). Loosen knob (4) and lower cutter (1) until it is .06" above the top face of the cylinder block (Fig. 13). Tighten knob (4).

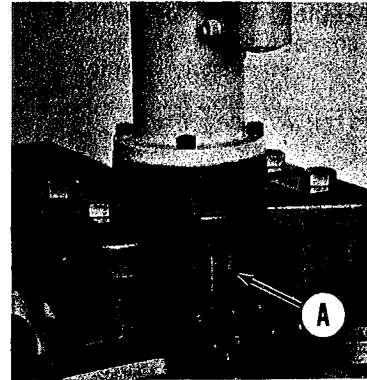


Fig. 9

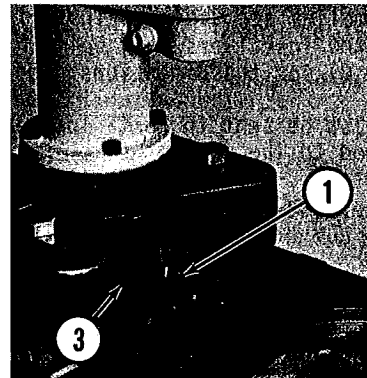


Fig. 10

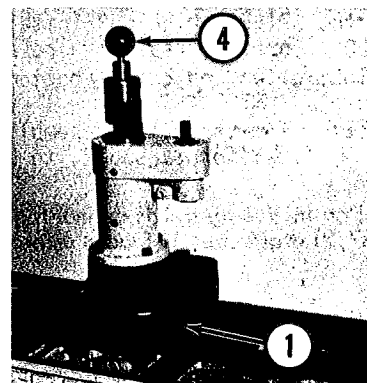


Fig. 11



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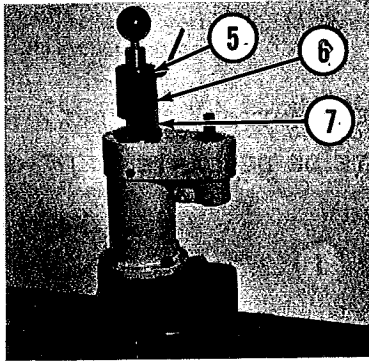


Fig. 12

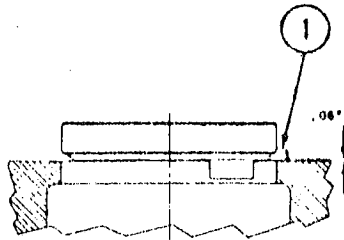


Fig. 13

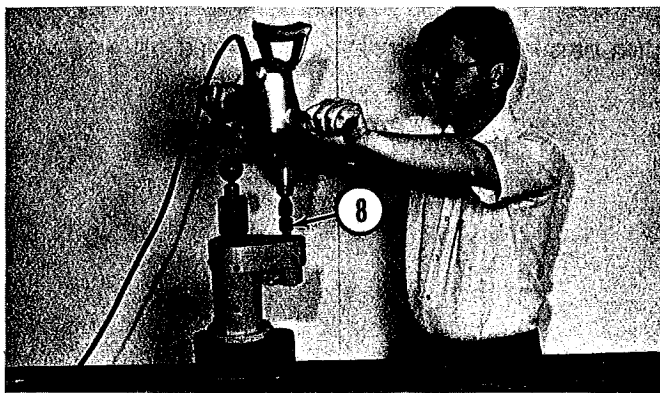


Fig. 14

11. Use a heavy duty industrial drill and adapter to operate the Porta-Matic Tool (Fig. 14). Remove the depth set gauge and start the rough cut.

12. Stop the cutter rotation immediately when the depth set collar (6) is against the washer (9). Loosen knob (4).

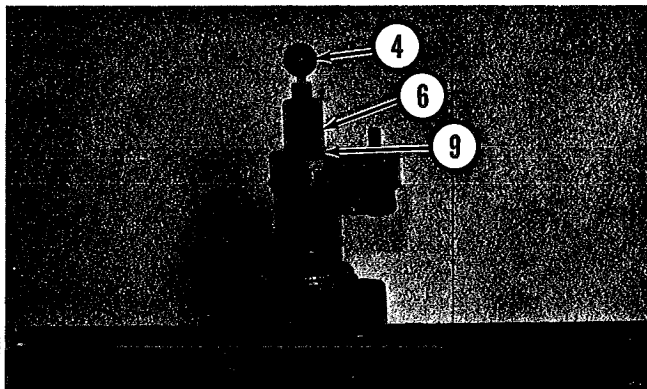


Fig. 15

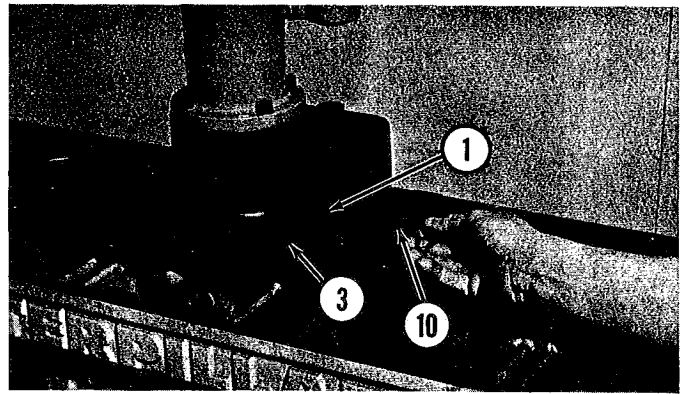


Fig. 16

13. Lift the cutter of the cylinder block and tighten knob (4) again. Loosen screw (3) and remove cutter (1) with hook (10) as shown in Figure 16. After removing the tool, clean the cutter plate slot thoroughly.

14. Reset the tool to finish size using the cutter set gauge as described on Step 7. Insert the cutter back in the cutter plate slot up against the pilot diameter and tighten the lock screw. Set the cutter about .06" above the block face and tighten the needle valve clockwise. Start the finish cut.

15. Make complete finish cut without stopping. Stop the cutter rotation immediately when depth set collar (6) is against washer (7) as shown in Figure 17.

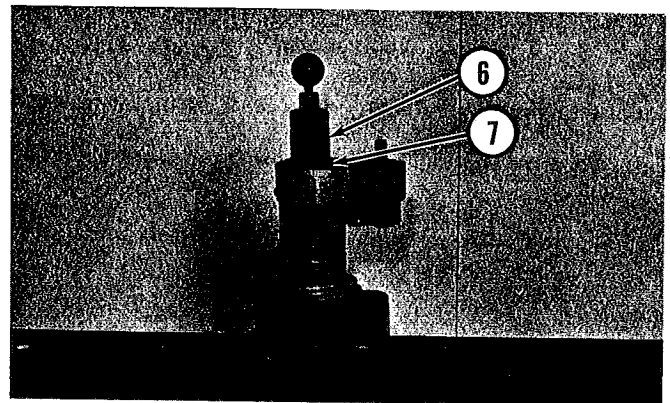


Fig. 17

16. Check the bottom of the counterbore to see if it is smooth. It may be necessary to turn the main shaft very slowly for several revolutions to get a smooth finish on the bottom of the counterbore.

NOTE: The depth of the counterbore may be checked with the PT-5020 Dial Depth Gauge, available from Kent-Moore Tool Division, Porta-Tool Products. Table 6 gives depth and tolerance on the different engine models. Remove bolts and lift the tool from the cylinder block. Use emery cloth to remove the sharp edges. Check the diameter and see table 6 for correct dimension.



Engine Model No.	Bore Size & No. of Cyl.	Block Counterbore Dimensions to Accept Repair Bushing				Repair Bushing Dimensions						
		Rough Bore ±.005	Finish Bore ±.003	Depth +.004 - .002	Part No.	Outside Dia. ±.0005	Inside Dia. ±.002	C'Bore Dia. ±.003	C'Bore Depth ±.003	Width ±.001	Cylinder Block Finished C'Bore Depth	
D353, D379, D378 D398, D399	6 1/4 Bore 6, 8, 12 & 16 cyl.	7.535	7.800	.753	PT-8200	7.8050	7.261	7.555	.487	.750	.499	
D339, D342	5 3/4 Bore 4 & 6	7.015	7.250	.690	PT-8235	7.2550	6.761	7.053	.481	.687	.493	
D364, D375 D386, D397	V8 & V12											
	5.4 90° V-8	6.525	6.785	.753	PT-8205	6.7900	6.261	6.541	.510	.750	.522	
1693 D343	5.4 Bore 4 & 6 cyl.	6.525	6.665	.753	PT-8230	6.6700	6.261	6.541	.510	.750	.522	
D337	5 1/8 Bore 6 cyl.	6.276	6.410	.690	PT-8225	6.4150	6.011	6.291	.510	.687	.522	
D330C, D333C 1673C	4 3/4 Bore 4 & 6 cyl.	5.660	5.800	.653	PT-8220	5.8050	5.468	5.680	.389	.650	.401	
D315 D318	4.5 Bore 4 & 6 cyl.	5.640	5.853	.528	PT-8210	5.8580	5.434	5.661	.388	.525	.401	
D330, D333 1670, 1673	4.5 Bore 4 & 6 cyl.	5.516	5.800	.653	PT-8215	5.8050	5.324	5.536	.388	.650	.401	

TABLE 6 — THE CYLINDER BLOCK FINISHED COUNTERBORE IS FINISHED WITH THE PT-2400 COUNTERBORING TOOL GROUP. SPECIAL INSTRUCTIONS FORM 000320 COVERS THE USAGE OF THE PT-2400 TOOL GROUP.



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INSTALLING THE REPAIR BUSHING

1. Clean the bore and repair bushing outside diameter thoroughly with PT-7270 PRIMER-T. (See Fig. 19).



Fig. 19 Cleaning Bore with Primer-T

2. Coat the outside diameter of the bushing lightly with PT-7260 LOCTITE COMPOUND and drive it into the bore with driver plate using a soft hammer until it bottoms. A solid sound can be heard when bushing bottoms. (See Fig. 20). Also see Fig. 21 which shows driver assembled.

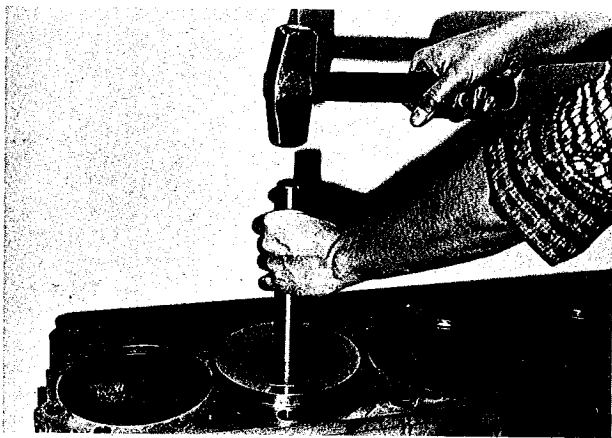


Fig. 20 Driving the bushing into the bore

3. The PT-5020 Dial Depth Gauge can be used to check the assembled height of the insert. It should be from flush to $-.007$ with the top of the block.

CAUTION: If the insert protrudes above the block face, it will interfere with the cylinder headgasket compression and it must be removed with one of the following methods:

1. Filing — Carefully file the insert flush with the block.
2. Reinstall the Porta-Matic Tool and reset depth to cut away protrusion.

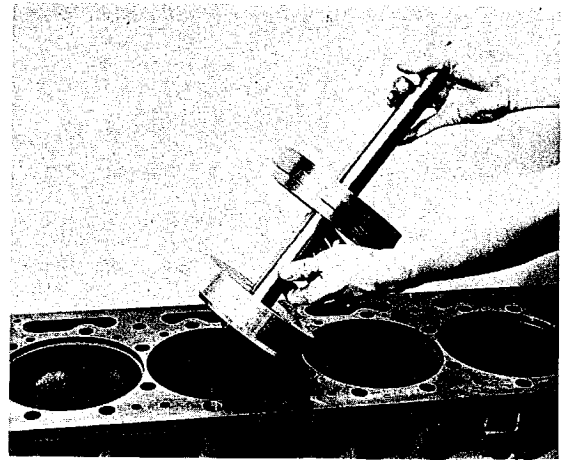


Fig. 21

CARE OF HYDRAULIC FEED HOUSING: A periodic check should be made to see if the main housing is completely full of 30W Non-detergent oil. If low on oil the tool will chatter. To check oil level turn the valve knob counterclockwise and press the tool down to it's lowest position then add oil if necessary.

PT-7270 PRIMER-T and PT-7260 LOCTITE COMPOUND
are available from:

KENT-MOORE TOOL DIVISION
PORTA-TOOL PRODUCTS
P.O. Box 647
Clovis, CA 93613 (209) 299-4351

**** NOTES ****

