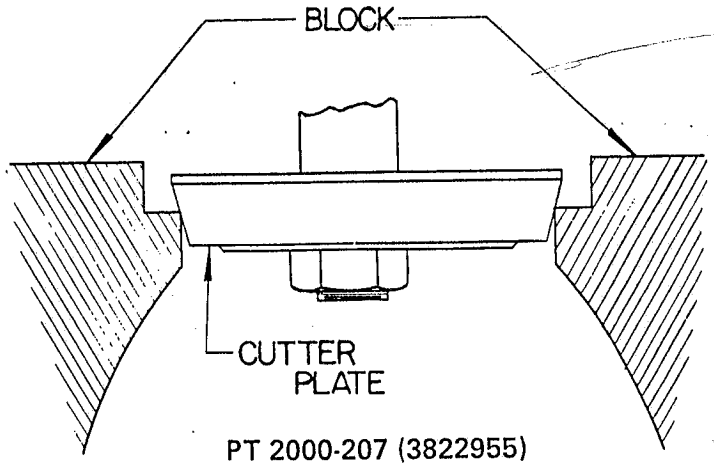
# KENT-MOORE

## Heavy Duty Division

# PT 2000-207 INSTRUCTIONS (3822955)




PT 2000-207 (3822955)
LPF CUTTER PLATE

NOTE: LPF MACHINING REQUIRES THE USE OF(2)
PT 2000-109 CUTTER BITS AND PT 2000-199 SPACER BLOCK.

## Application:

The PT 2000-207 LPF Cutter Plate is used with our Porta-Matic Boring Tool to machine Cummins 855 Cylinder Block Counterbores to accept Lower Press Fit (LPF) Liners, Oversize Flange Liners and Repair Bushings.

## Introduction:

The PT 2000-180 Cutter Plate was specifically designed to machine the counterbore area for Lower Press Fit Liners. This cutter plate replaces all previous Porta-Matic cutter plates for the Cummins 855 NH/NT Engine.

The PT 2000-207 features a special diameter and taper design that permits the counterbore and Lower Press Fit area to be machined according to approved Cummins Engine Company specifications. This plate also allows you to center in a .040" Oversize Bore and machine for installation of repair bushings.

You can use this cutter plate for installation of repair bushings. Simply follow the instructions included with your Porta-Matic. However, this instruction sheet will deal mainly with the .040" Oversize Liner Repair procedure.

## Preparation:

1) The block deck surface and boring tool base plate must be clean and burr free.
2) Plug off push tube opening, oil galley's and lower liner packing areas to seal out contaminating particles using our PT 2000-101 Chip Catchers and PT 2902 Engine Saver Block Plug Kit.

## Setting the cutters

1) Two PT 2000-109 Cutters are required. To reduce the chance of error, we recommend you mark the cutters #1 and #2.
2) The cutters should be set to the following dimensions as outlined in your Porta-Matic instruction sheet.
3) The PT 2000-199 Depth Spacer is a dual dimensional spacer block.

6.588"

| | AREA TO BE MACHINED | SET CUTTER TO: | DEPTH OF CUT |
|---|---|---|---|
| 1st Cutter | Upper Counterbore | 6.608" ± .002" Dia. | .375 |
| 2nd Cutter | Lower Press Fit Area | 6.334" ± .001" Dia. | .930 |

NOTE: IT IS A GOOD MACHINING PRACTICE TO MAINTAIN SHARPENED CUTTER BITS. A SHARP CUTTER BIT INSURES A HIGH QUALITY, ACCURATELY MACHINED BORE.

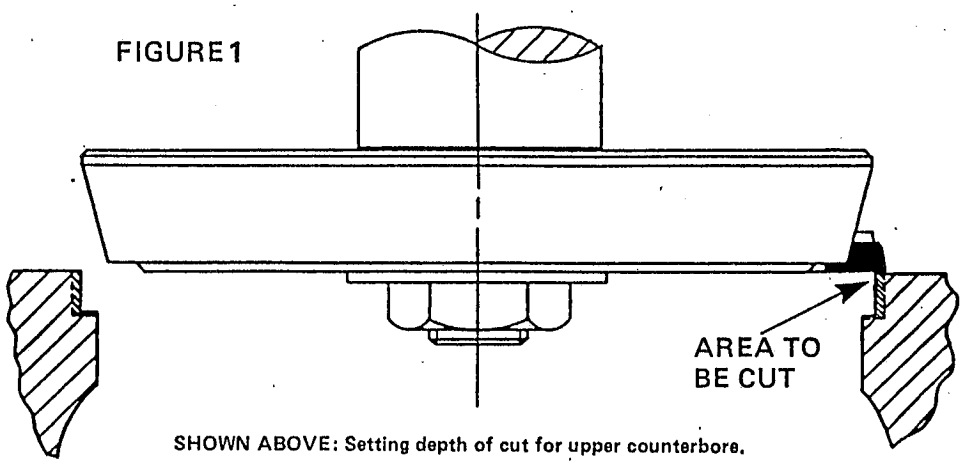
## STEP-BY-STEP INSTRUCTIONS FOR PT 2000-207 LPF CUTTER PLATE

1) Assemble PT 2000-207 Cutter Plate to the Porta-Matic mainshaft.
2) Mount Porta-Matic over cylinder to be bored. Open feed valve to lower cutter plate into cylinder bore. Push down firmly while rotating mainshaft to insure proper alignment of Porta-Matic.
3) With cutter plate centered in the cylinder bore, align base plate with four cylinder head bolt holes in block deck while maintaining as much base plate to block deck contact as possible.
4) Cross torque all four head bolts gradually to 50 ft./lbs. Rotate mainshaft to insure that the cutter plate is centered and moves freely. If binding occurs, loosen head bolts and repeat centering and torque sequences.
5) Pull up on mainshaft to retract the cutter plate to highest position, close feed valve to lock in position.

## Cutting upper counterbore

6) Insert first cutter, (PT 2000-109) into cutter slot of cutter plate. Hold cutter bit in all the way against the main shaft of the boring tool and tighten the cutter plate set screw to secure the cutter.
7) Gently lower the cutter and allow to rest onto the engine block deck surface. Set the depth of cut using the PT 2000-199 .375" side of the Depth Set Block. Tighten socket set screw to hold depth collar in place. (See figure 1)

FIGURE 1



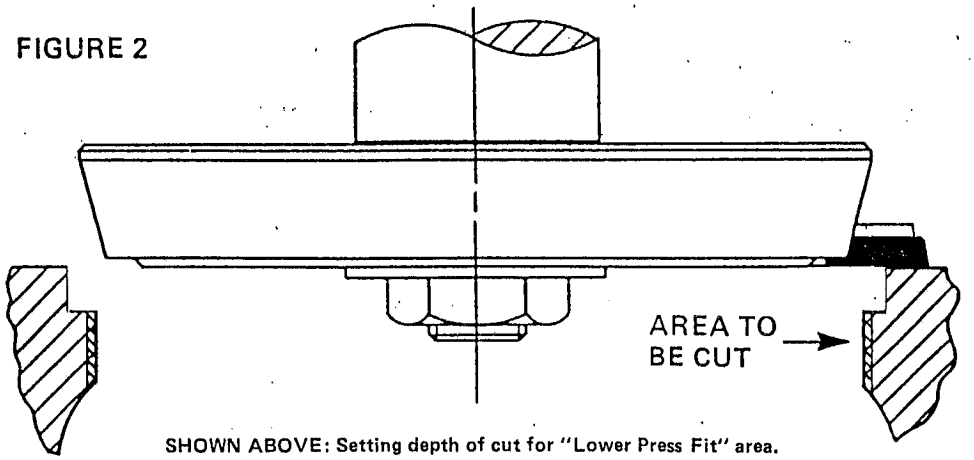

SHOWN ABOVE: Setting depth of cut for upper counterbore.

8) Retract cutter plate to the "up" position and lock machine.
9) Attach PT 7145 Right Angle Drill and proceed to bore hole until Porta-Matic freewheels.
10) Open feed valve and retract cutter plate upward. Remove cutter bit and set it aside.

## Cutting lower press fit area

11) Insert second cutter (6.334" Dia.) in cutter slot of cutter plate. Leave cutter sticking out of cutter plate about 1/2". (See figure 2)

FIGURE 2




SHOWN ABOVE: Setting depth of cut for "Lower Press Fit" area.

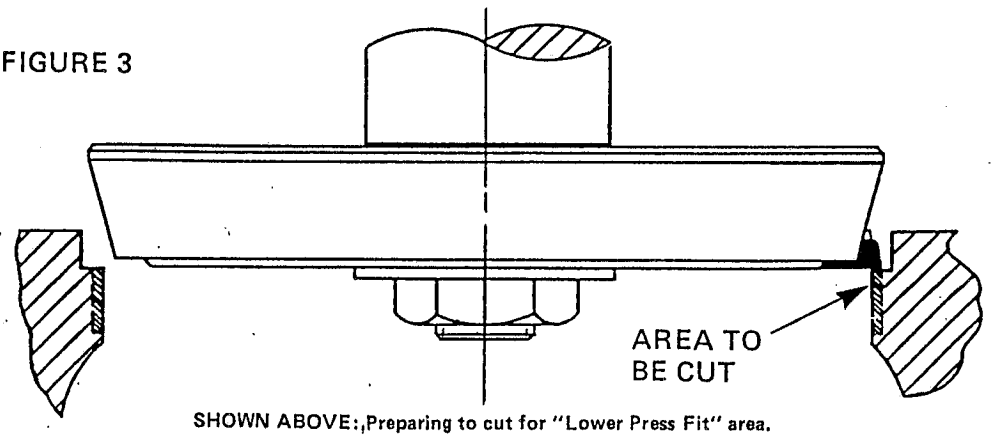
12) Gently lower the cutter to rest on the block deck surface. Loosen depth collar and set the depth of cut using the .930" side of the PT 2000-199 Depth Spacer Block. Tighten socket set screw to hold depth collar in place.

13) Retract cutter plate and lock in the "up" position.

VERY IMPORTANT : PUSH CUTTER BIT COMPLETELY INTO CUTTER SLOT. HOLD CUTTER AGAINST MAINSHAFT AND TIGHTEN CUTTER PLATE SET SCREW TO SECURE CUTTER IN PLACE.

14) Lower cutter plate to a position just above the counterbore ledge and close feed valve. (See figure 2). Attach PT 7145 Right Angle Drill and proceed to bore hole until Porta-Matic freewheels.(See figure 3)

FIGURE 3




SHOWN ABOVE: Preparing to cut for "Lower Press Fit" area.

15) Open feed valve to retract cutter plate to the "up" position. Remove cutter bit.

16) Repeat steps 6 to 15 for each of the next five bores.

17) Finish cut the counterbore ledge depth to .389"± .001" using our PT 2250-A or PT 2205 Counterbore Tools and the appropriate cutter plates.Follow normal ledge cutting procedures to achieve finished counterbore depth.

## LPF salvage bushing machining

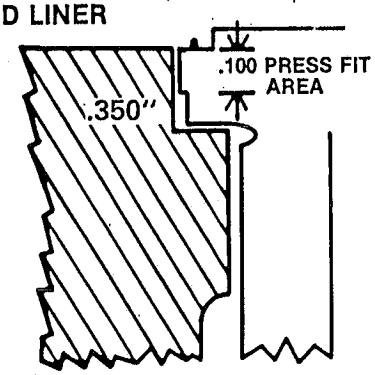
The PT 2000-207 Cutter Plate can be used to machine the block for Lower Press Fit Salvage Repair Bushings. Follow the normal procedures as outlined in your Porta-Matic Instruction Sheet for machining and installation of repair bushings.

NOTE: It has been determined through testing, that when you take two cuts to machine for a bushing, your bore will be much more accurate and have a higher quality surface finish. Kent-Moore Heavy Duty Division and the Cummins Engine Company recommend two cuts to achieve your final bore diameter. Your final cut should not exceed .040".

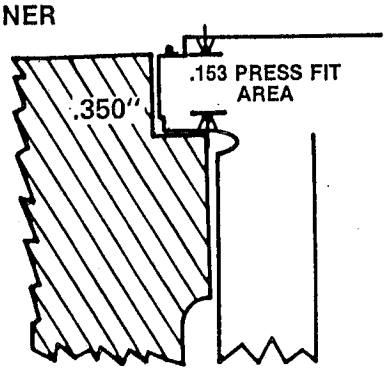
# COUNTERBORE REPAIRS CUMMINS 855 NH/NT

## "UPPER PRESS FIT" OLD STYLE

STANDARD LINER




PREMIUM LINER




Counterbore I.D. = 6.562" / 6.564

Liner Flange O.D. = 6.566 / 6.564

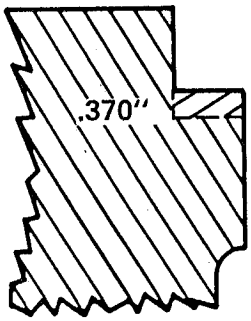
Counterbore Depth = .350 / .352

Counterbore Press Fit = .002" / .004

Below Flange = .004" / .013 Clearar

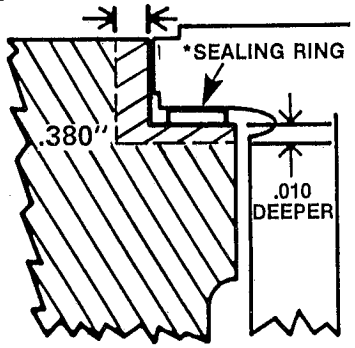
## PREVIOUS REPAIR PROCEDURES

#1



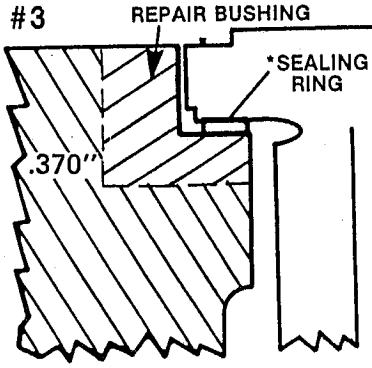

Cut for Shims (1986 Sealing Ring is Required by the N.O.W. Program.)

#2 +.010" (.020" DIA.)




(1982) Machine Block for .020" O.S. Flange Liner

#3 REPAIR BUSHING

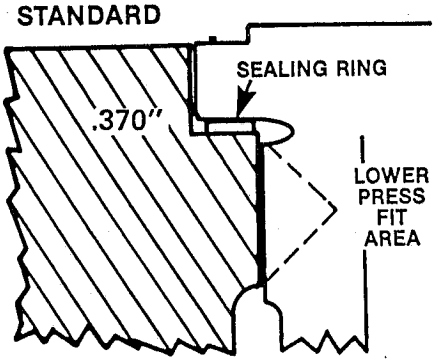



Repair Bushings
PT-8000's Plus Seven O.S.'s
Boring Dimensions: Standard
Diameter: 6.750", Depth .600"

*1986 .020" Seal Ring Requir
Per N.O.W. Program!

## NEW (LPF) LOWER PRESS FIT LINERS

STANDARD




Counterbore I.D. = 6.564 / 6.570

Liner Flange O.D. = 6.566 / 6.564

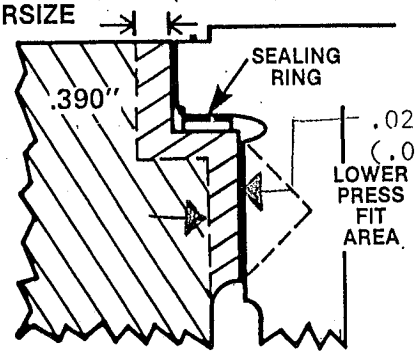
Fit: .002" Press to .006" Clearance

Below Counterbore I.D. = 6.293 / 6.295

Below Flange O.D. = 6.298 / 6.296

Fit: .001" to .005" Press

.040" OVERSIZE .010 (.020 Dia.) +.020" (.040" Dia.)




Counterbore I.D. = 6.584 / 6.590 / 6.586 / 6.584

Liner Flange O.D. = 6.606 / 6.610 / 6.606 / 6.604

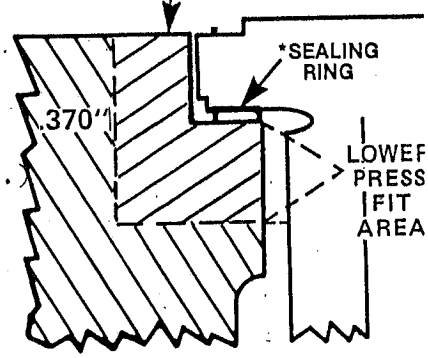
Fit: .002" Press to .006" Clearance

Below Counterbore I.D. = 6.333 / 6.335

Below Flange O.D. = 6.338 / 6.336

Fit: .001" to .005" Press

LPF REPAIR BUSHING




Bushing Dia: 6.750
Bushing Depth: .750

PT 8040 Standard LPF Bushi
Oversize Bushings Available.

Counterbore Depth: .370"

**KENT-MOORE**

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