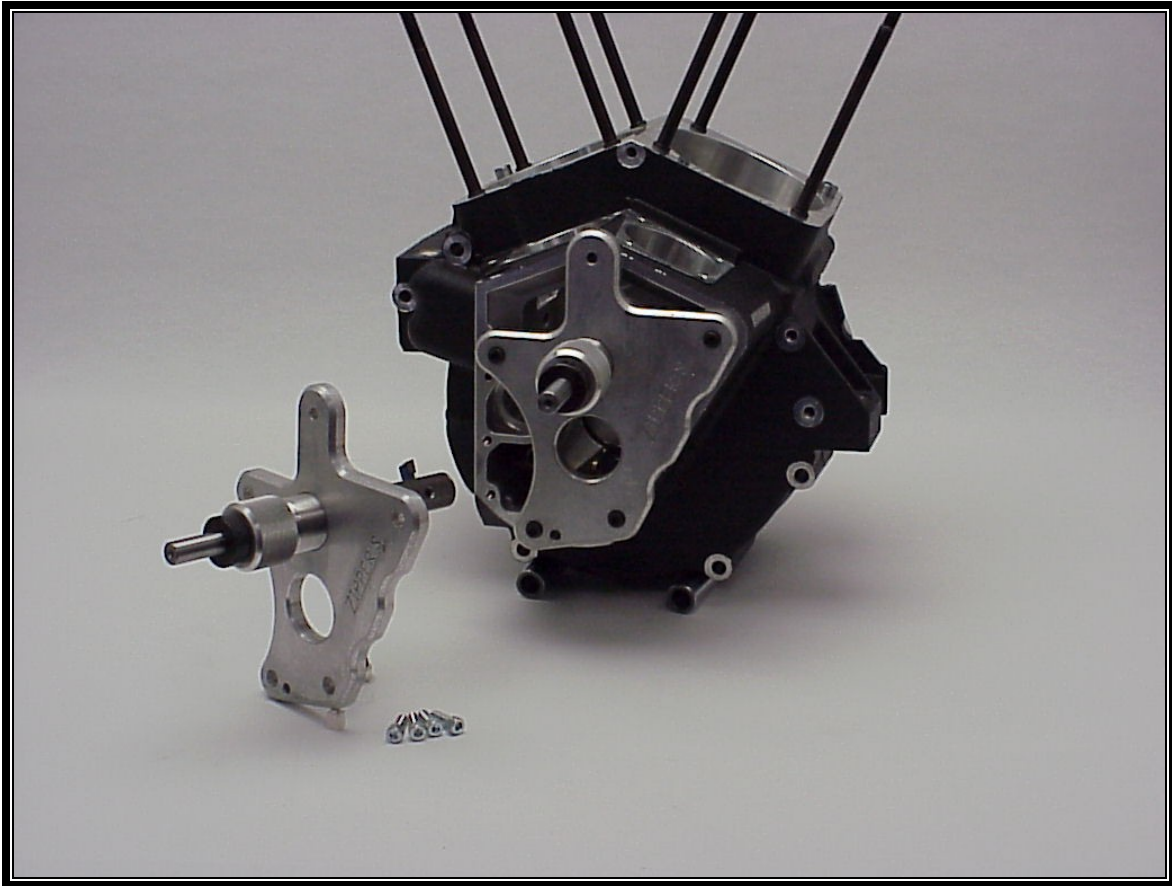


## ZIPPER'S BIG TWIN CAM RELIEF TOOL



This cam relief tool provides clearance for the cam's rear intake lobe by removing material from the engine case, a necessity when installing almost any aftermarket cam. Up until now, mechanics have generally used die-grinders to clearance the case. This method works, but is very messy, sometimes sloppy looking and time consuming. Use the cam relief tool to provide an easy and professional way to machine the engine case, even with the engine installed in the frame. It may also be used when assembling an engine from scratch, thereby eliminating the need to set-up the case half on a milling machine. The cam relief tool makes quick work of metal removal, and leaves a very professional looking, machined finish.

**Thank you for purchasing a Zipper's Performance Product.**

**PLEASE READ AND UNDERSTAND THESE INSTRUCTIONS  
THOROUGHLY BEFORE USING YOUR TOOL!**

1. Before starting, if engine is assembled, use contact cleaner to remove all oily residue in the gearcase, thoroughly tape all exposed areas and holes to keep

any chips that are produced during machining from entering the engine. Don't neglect the cross-drilled oil holes on the lifter block mating surfaces!

2. Determine the diameter of the area you need to relieve. This is relative to the type of cam you will be installing. Example: An EV3 cam requires less metal removal than a Pro-Stock cam.
3. Using an 1/8" hex key wrench, loosen the set-screw holding the tool bit, adjust the tool bit to set the diameter, then securely retighten the set-screw holding the tool bit.
4. Install fixture over dowel pins protruding from engine case, making certain the depth adjustment cylinder is turned out enough so the tool bit does not contact the engine case. The inner cam bearing will support the spindle. Secure with four 1/4-20 cap screws.
5. Attach a 1/2" drill motor to the end of the spindle.
6. With the drill motor turning the spindle slowly (200 rpm is good), gradually feed the depth adjustment in to start removing material from the engine case until a relief is visible. Then remove the tool, and using your cam, check for desired depth of cut. Don't forget to slide the shim and lock plate onto your cam before checking the depth. This will prevent machining more from the case than is necessary. Repeat process if more material needs to be removed.
7. When machining is complete, thoroughly clean out any chips and carefully remove the tape, taking extra care to not allow metal chips to enter the engine. Use compressed air to make certain the threaded holes that hold down the lifter blocks are clean. Zipper's strongly recommends installing a new cam bearing anytime a cam is changed. This should be done AFTER the machining is complete! Should you desire, Zipper's recommends the cam bearing removal and installation tools made by JIMS Machining.

#### **---NOTES---**

Since only one portion of the engine case gets cut away, your cut will be an "interrupted cut". Don't let this bother you, just keep a smooth, steady feed rate. For really big lift cams, you will need to cut into the case insert (steel) and the pinion bearing race (really hard steel). Slowing the feed rate way down may tend to "work harden" the material, so again, keep a steady feed. In some cases, multiple cuts may work best. Take your time using the tool until you are comfortable with it. It may also be necessary to stop halfway through to re-sharpen the tool bit if you're cutting into the bearing race. Use a "green" wheel (for carbide) on your bench grinder to re-sharpen. If you're going to do a lot of relief work for big cams where you'll be cutting into the bearing race, replacement tool bits are available from Zipper's, part # 713-903.