



INSTRUCTION SHEET FOR TOOL No.1169

Compression Release Valve Installation Tool

USE ON ALL TWIN CAM 88™ ALPHA AND BETA ENGINES



Use this tool for machining all Twin Cam heads 1999 & later, for preparing heads to install JIMS compression release valves (JIMS® No.727K). Install on the front or rear head, with or without the valves installed. Simply drill, spot face, tap & install compression release valves.

Tools Required: Hand drill with 1/2" chuck, tap handle or wrench, calipers, Allen wrenches, motor oil for lubricating threads/bushings, and safety glasses.

1. Setup

- Install Drill/Tap Fixture (No.1) onto head as shown in Fig.1.
 - Align the fixtures locating pins with the 3/8" tooling holes in head.
 - Secure the fixture with the (2) 5/16-18 SHCS (No.2) and washers (No.9) in holes marked "F" or "R" depending on which head you are modifying and torque to 80 in./lbs.
 - Note: Due to slight manufacturing difference, some cylinder heads may require that you lightly tap the fixture plate (No.1) into the guide holes with a rubber mallet. Never use excessive force.
- Install Drill Bushing
 - Insert the drill bushing (No.3) into the appropriate bore laser marked "FRONT" and "REAR", depending on which head you are modifying.
 - Tighten set screw to 50 in./lbs. of torque to secure bushing in place.
 - Install Collar Stop
 - Place Collar Stop (No.4) on 1/2" diameter shank of Step Drill (No.5). Measure 3.900" from beginning of 3/4" diameter step on the drill bit (Fig.2).
 - Lock down collar by tightening set screw.



Fig.1



Fig.2

2. Pre-Drill Setup

- Chuck Step Drill (No.5) into drill motor. ***Put safety glasses on**
- Without drill running, slip drill into drill bushing in fixture.
- Apply supplied cutting fluid sparingly (No.10) to the tip of the drill.
- With the tip of drill about 1/4" away from the cylinder head surface, start the drill motor (Fig.3) and begin to feed the drill slowly, especially when drill point first makes contact with head.

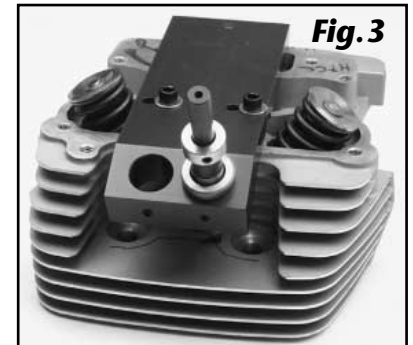


Fig.3

3. Testing Drilled Hole Size

- Drill JUST DEEP ENOUGH to achieve full diameter of the drill tip (about .125"-.25" deep).
- Stop the drill motor and remove the drill from the bushing.
- Measure the hole diameter to be within .351" and .360" for proper percentage of thread (after tap is performed).

4. Drill and Spot-Face (Note: reapply cutting fluid to both drill and hole.)

- With steady and even pressure, drill into the head until the collar-stop reaches the drill fixture bushing, applying cutting fluid sparingly during drilling procedure. Note: The 3.900" dimension is just a starting place and may vary due to cylinder head casting tolerances. Do not exceed 4.03" in depth.
- Drill until you achieve full spot-face clean-up (approx. .75 Dia.).



Fig.4

CAUTION: WEAR SAFETY GLASSES. EXCESSIVE FORCE MAY DAMAGE PARTS! ,SEE JIMS® CATALOG FOR OVER 200 OTHER TOP QUALITY PROFESSIONAL TOOLS. THE LAST TOOLS YOU WILL EVER NEED TO BUY.

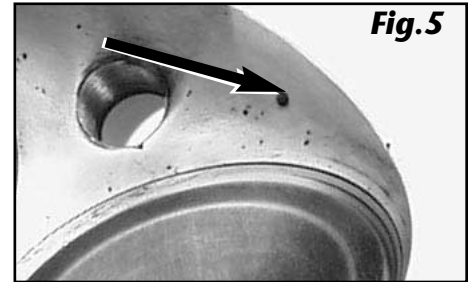
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5. Tap Hole

- a. Install tap (No.6) into Tap Holder (No.7).
 1. Tighten set screw to secure tap with 50 in./lbs. torque, making sure set screw is locating on square.
 2. Install Tap Holder into tap handle (tap handle not included). Insert tap holder into bushing in drill/tap fixture, see Fig.4.
- b. Apply tapping fluid to tap and hole to be threaded.
- c. Start the tap by applying slight downward pressure in a clockwise direction.
- d. Continue turning the tap clockwise, applying cutting fluid sparingly as tap is cutting, until the tap has bottomed out in the hole as evident by increased resistance.
DO NOT FORCE TAP!
- e. Back the tap out (counter clockwise) 3-4 turns and blow out the debris using an air gun.
- f. Reapply cutting fluid sparingly and turn the tap back in (clockwise) until the tap bottoms out (min. 13 threads). Again, do not force the tap.
- g. Reverse direction and remove tap.
- h. Remove the fixture from the cylinder head.



6. Drill Combustion Chamber Release Hole

- a. Install the 1/16" drill bit (No.8) into drill motor.
- b. Apply a small amount of cutting fluid into the bottom of the tapped hole.
- c. Using the existing drill point at the bottom of the first drilled hole as a pilot, slowly drill a 1/16" hole through the wall into the combustion chamber (Fig.5). Be careful not to break the 1/16" drill bit off in the head.
- d. Clean out any loose debris.

7. Repeat steps 1-7 for opposite head.

Note: Some combustion chamber profiles will reduce the wall thickness between the chamber and the compression release hole. There should be no less than .200-.250 of wall thickness. To measure the wall thickness, insert the step drill into hole and turn then head over. With cylinder head turned over so combustion chamber is facing up, insert shank of 1/16" drill bit into the hole. Make a mark with a felt pen and measure from end of shank to pen mark. This will give you an approximate wall thickness.

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