

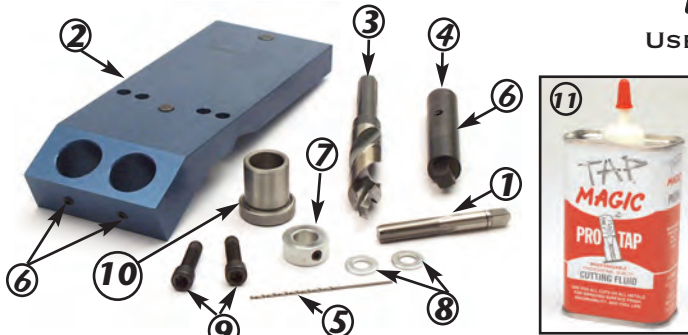
INSTRUCTION SHEET FOR TOOL No.1 169

Compression Release Valve Installation Tool

USE ON ALL TWIN CAM 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

- a. Install Drill/Tap Fixture No. 1169-2 onto head as shown.
 1. Align the fixtures locating pins with the 3/8" tooling holes in head.
 2. Secure the fixture with the (2) 5/16-18 SHCS No. 2016 and washers No. 2014 in holes marked "F" or "R" depending on which head you are modifying and torque to 80 in./lbs.
 3. Note: Due to slight manufacturing difference, some cylinder heads may require that you lightly tap the fixture plate No. 1169-2 into the guide holes with a rubber mallet. Never use excessive force.

PARTS AVAILABLE SEPARATELY

NO.	QTY.	DESCRIPTION	PART NO.
1	1	THREAD TAP TOOL	1169-1
2	1	DRILL/TAP FIXTURE	1169-2
3	1	STEPPED DRILL	1169-3
4	1	TAP EXTENSION	1169-4
5	1	DRILL BIT	2224
6	3	SET SCREW	2221
7	1	STOP COLLAR	2227
8	2	FLAT WASHER	2014
9	2	MOUNTING SCREW	2016
10	1	DRILL BUSHING	2219
11	1	TAP MAGIC	1698

- b. Install Drill Bushing
 1. Insert the drill bushing No. 2219 into the appropriate bore laser marked "FRONT" or "REAR", depending on which head you are modifying.
 2. Tighten set screw to 50 in./lbs. of torque to secure bushing in place.
 3. Install Collar Stop
 4. Place Collar Stop No. 2227 on 1/2" diameter shank of Step Drill No. 1169-3. Measure 3.900" from beginning of 3/4" diameter step on the drill bit.
 5. Lock down collar by tightening set screw.

2. Pre-Drill Setup

- a. Chuck Step Drill No. 1169-3 into drill motor. **Put safety glasses on.*
- b. Without drill running, slip drill into drill bushing in fixture.
- c. Apply supplied cutting fluid sparingly No. 1698 to the tip of the drill.
- d. 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.

3. Testing Drilled Hole Size

- a. Drill JUST DEEP ENOUGH to achieve full diameter of the drill tip (about .125"-.25" deep).
- b. Stop the drill motor and remove the drill from the bushing.
- c. 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.)

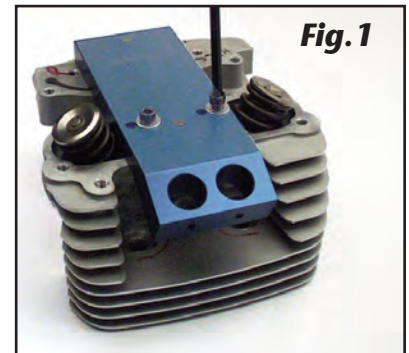


Fig. 1



Fig. 2

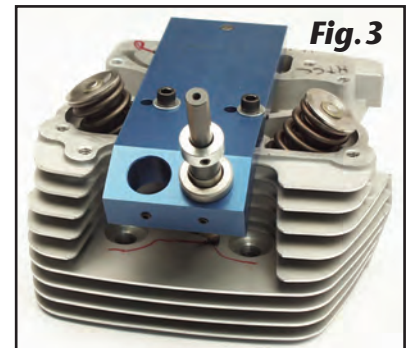


Fig. 3

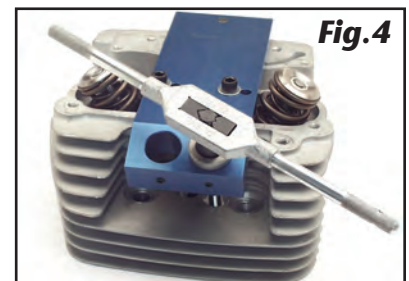


Fig. 4

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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- 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.).

5. Tap Hole

- Install tap No. 1169-1 into Tap Holder No. 1169-4.
 - Tighten set screw to secure tap with 50 in./lbs. torque, making sure set screw is locating on square.
 - Install Tap Holder into tap handle (tap handle not included). Insert tap holder into bushing in drill/tap fixture, see Fig.4.
- Apply tapping fluid to tap and hole to be threaded.
- Start the tap by applying slight downward pressure in a clockwise direction.
- 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!**
- Back the tap out (counter clockwise) 3-4 turns and blow out the debris using an air gun.
- 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.
- Reverse direction and remove tap.
- Remove the fixture from the cylinder head.

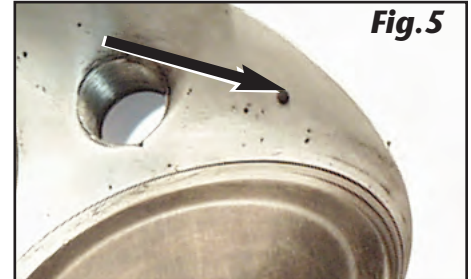


Fig.5

6. Dill Combustion Chamber Release Hole

- Install the 1/16" drill bit No. 2224 into drill motor.
- Apply a small amount of cutting fluid into the bottom of the tapped hole.
- 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.
- 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.

Note: To measure the wall thickness of the combustion chamber, insert the shank end of the 1/16 drill into the chamber side of the compression release hole while holding the two-step drill in the other end. Use a marker pen to mark the 1/16 drill's depth. The wall thickness should be between .200-.250.

WARRANTY

All JIMS® parts are guaranteed to the original purchaser to be free of manufacturing defects in material and workmanship for a period of six (6) months from the date of purchase. Merchandise that fails to conform to these conditions will be repaired or replaced at JIMS® option if the parts are returned to us by the purchaser within the six (6) months warranty period or within ten (10) days thereafter.

In the event warranty service is required, the original purchaser must call or write JIMS® immediately with the problem. Some problems can be rectified by a telephone call and need no further course of action. A part suspected of being defective must not be replaced by a dealer without prior authorization by JIMS®. If it is deemed necessary for JIMS® to make an evaluation to determine whether the part is defective, it must be packaged properly to prevent further damage and be returned prepaid to JIMS® with a copy of the original invoice of purchase and a detailed letter outlining the nature of the problem, how the part was used and the circumstances at the time of failure. If after an evaluation has been made by JIMS® and the part was found to be defective, repair, replacement or credit will be granted.

ADDITIONAL WARRANTY PROVISIONS

- JIMS® shall have no obligation in the event a JIMS® part is modified by person or organization.
- JIMS® shall have no obligation if a JIMS® part becomes defective in whole or in part as a result of improper installation, improper maintenance, improper use, abnormal operation, or any other misuse or mistreatment of the part.
- JIMS® shall not be liable for any consequential or incidental damages resulting in the failure of a JIMS® part, the breach of any warranties, the failure to deliver, delay in delivery, delivery in nonconforming condition, or for any other breach of contract or duty between JIMS® and a customer.
- JIMS® parts are designed exclusively for use in Harley-Davidson® motorcycles. JIMS® shall have no warranty or liability obligation if JIMS® part is used in any other application.
- Any JIMS® parts or tools that are returned and replaced become the property of JIMS® and will not be returned under any circumstance.

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