16-1375 Use on all Twin Cams engines 2003 to present.

JIMS special precision insert has been designed to easily and accurately convert the weak left case crankshaft straight roller bearing (H.D. No. 24604-00D) to the more robust Timken bearing (H.D. No. 9028.)
JIMS bearing insert has been manufactured from chrome moly steel and is several times stronger than the cast aluminum case material that the standard left case bearing rides in.
The insert is machined to less then .0002 TIR (Total Indicator Reading).
JIMS controls the TIR tolerance to ensure a quality bearing insert to handle the high torque power you designed into your engine. With this precision tool and reading and following these instructions, you can be confident of performing a superior bearing conversion installation.

Caution: Before installing any new part or parts, you and only you are responsible to make sure all components are within serviceable wear limits, left case bearing bore, all bearings, right engine case, cam support, oil pump and also the flywheel assembly is trued to H/D specifications.

Note: Please read all instructions completely and thoroughly before performing any work.

ALWAYS WEAR SAFETY GLASSES OR OTHER FACE AND EYE PROTECTION SUCH AS FULL FACE SHIELD, OVER YOUR EYES AND FACE. JIMS is not responsible for damage, injury or your work!

Note: You will need to aquire a sprocket shaft spacer for your application when this conversion is completed. See page 12, Paragraph N.

Attention: This tool is a precision tool (instrument). Tools needed to perform this service

1. 2- ton press, must be square to within .010", ram to table
2. Inch lb torque wrench
3. Foot lb torque wrench
4. No. 2 Phillips drive socket for in-lb torque wrench, to torque 6- No. 2025 flat head locking screws.
5. 5/32" Allen drive socket or in-lb torque wrench, to torque 4- No.1234 SHCS to hold base plate.
6. 5/16" Allen drive socket for ft-lb torque wrench for 1- No.1128 SHCS
7. 5/64" hex key Allen wrench, for 1- No. 1267 stop collar
8. 1/16" hex key Allen wrench, for 1- No. 1264, & 1-No. 1292 stop collar
9. 3/8 drive hand drill
10. Small tap handle for use on No. 2288 8-32 tap
11. Press fit lubricant, good quality like Sunnen B-200 L

Look over the parts list and all parts of this tool. Review each part as you go thru the instructions

No.	Qty	Description	
1	1	Timken bearing insert (Kit)	
2	1	Press plate	
3	1	Bottom locator plate	
4	1	Big Twin press installer plug	
5	2	Drill bit	
6	1	Drill stop collar	
7	1	Drill bit	
8	1	Drill stop collar (use on #1713)	
9	2	Drill bit	
10	1	Drill stop collar (use on #1714)	
11	4	Screw, 10-24 x 1-1/2 SHCS	
12	1	Roll tap	
13	1	Base installer	
14	1	Protective case	
15	1	Tap guide	
16	6	Screws, flat phillips	
17	1	#620 Loctite	
18	1	Screw, 3/8-16 x 2-1/2 SHCS	
19	1	Tap Magic	
20	1	Conversion tool instructions	
21	1	Bearing install tool instructions	

Note: Loctite No. 620 (supplied in kit) has 30 minutes of set up "air time". This is the amount of time you have (After applying Loctite) to install the insert into the case, with a full cure time of 24 hours.

Caution: Do not apply lube to the 6 insert retaining screws. The No. 1286-1362, Loctite 620 will be applied to these screws and threaded hole at the time of installation.

Fig. 1

Fig. 2

Fig. 3

1. With your left case washed with JIMS cleaner No.1102, 184 solvent, or equivalent, you are then prepared for reassembly. **See Fig. 1.**

2. You should have all parts removed from the bearing bore. Wash I.D. and O.D. of bearing insert No. 959-1, using the 184 solvent. **See Fig. 2.**

Note: SEE NOTE ON PAGE 4 BEFORE PERFORMING NEXT STEP.

Apply the supplied Loctite No.1286-1362 to the smallest portion of case bearing bore I.D. . **See Fig. 3.**

Then ***apply Loctite using a Q-tip to apply to the smallest portion on the O.D.*** surface of bearing insert No.959-1.

Next, you will need to ***apply sparingly*** a good quality non-dripping press fit lube.

I

Note: Q-tip makes a good applicator. You need only apply a thin film to 100% of both case and insert surfaces. Use Loctite sparingly on each of the 6 insert retaining screws. They will need to have one drop on the threads of the screw and threads in case you will be tapping. Also about a 1/2 drop to screws bottom side of head.

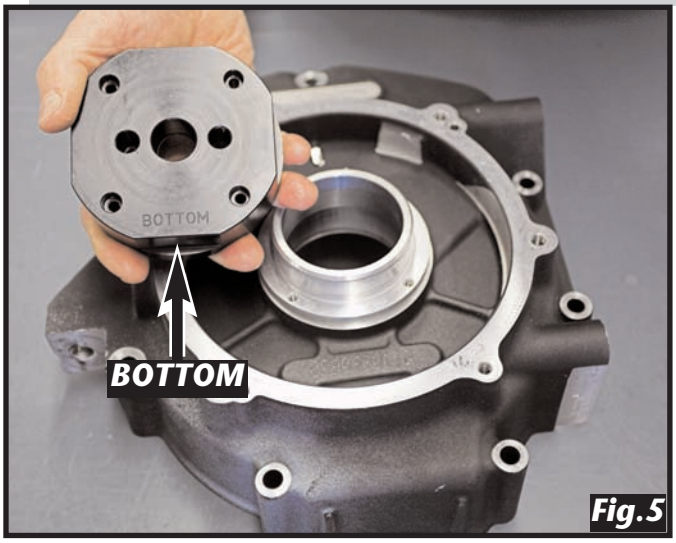


Fig.5

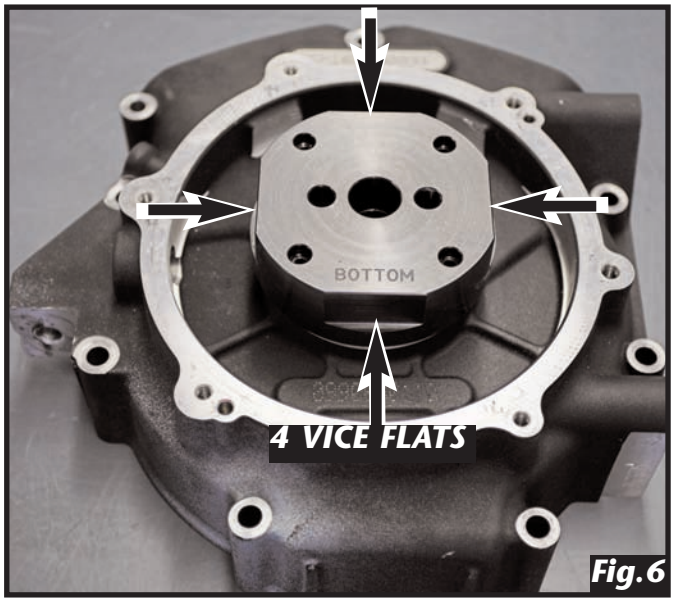


Fig.6

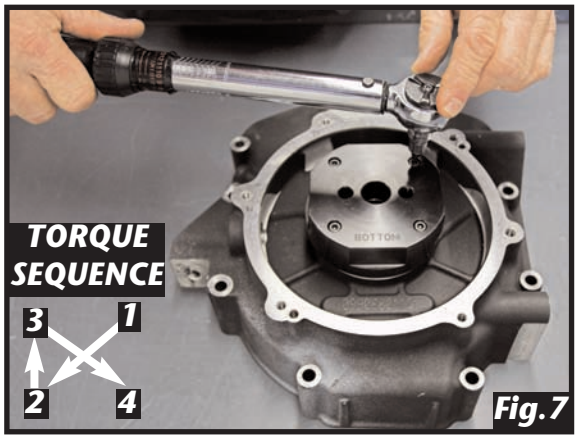


Fig.7

Installing Insert into the Left Case

A. Look over locator plate No. 959-3 it has the word "BOTTOM" engraved as shown.
See Fig. 5.

This will put it at the six o-clock position of locator plate. It also has 4 - .090" Dia. thru holes used to mount to case using the stator mounting holes of left case. In the center is the 1/2" thru hole to guide the press plug No. 2246-4 into.

Looking at it from the side that will be mounted to the case, on the right side is a hole with 3/8" threaded hole for screw No. 1128 to install into. The other 3/8" thru hole will guide the 3/8" pin from the press plate No. 959-2.

With inside (flywheel side) of left case laying on a clean flat non- marring surface and cylinder bores pointing forward splitting the "twelve o-clock" position, place the bottom locator plate No. 959-3 centered over the bearing bore and resting flat on the stator's mounting surface. The word "**BOTTOM**" engraved on the bottom end of tool, should be read when in the "six o-clock" position. Take note that this tool plate also has 4 vice flats. These may be used to hold in a vice.

See Fig. 6.

B. Apply a small amount of lube to the threads of all 4 screws No. 1234. Thread in all 4 screws by hand letting tool float in.

Apply 40 in-lbs of torque in a crisscross pattern until fully seated.

See Fig. 7.

Fig.7

C. Look over press plate No. 959-2 it has the word "**BOTTOM**" engraved on lower end face.

See Fig. 8.

This is what we will call the bottom of tool plate. This needs be at the "six o-clock" position of press plate. It also has a 1/8" dowel pin protruding from the bottom side of press plate at the "twelve o-clock" position. In the center is a 1/2" hole for guiding the press plug No. 2246-4. It also has a 3/8" dowel pin installed for guiding into the bottom plate No. 959-3. The other 3/8" thru hole will be used after installing the bearing insert 959-1.

Look over insert No. 959-1 from the top end. It has 6 holes for mounting to the case and one 1/8" hole for alignment to top plate.

See Fig. 9.

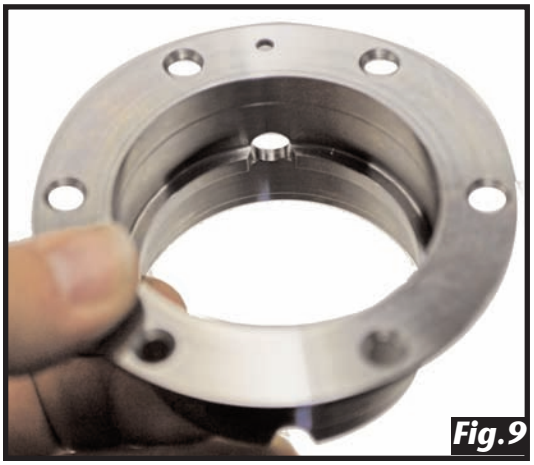


Fig.9

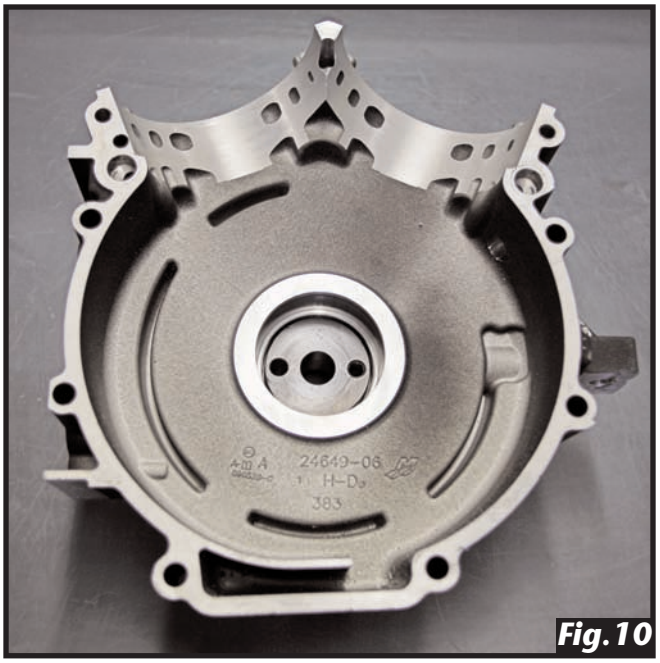


Fig.10

Flip over left the case letting it rest on installed locator plate, with cylinder bores pointing forward, splitting the "twelve-o-clock" position, and with Loctite previously applied to left case bearing bore.

See Fig. 10.

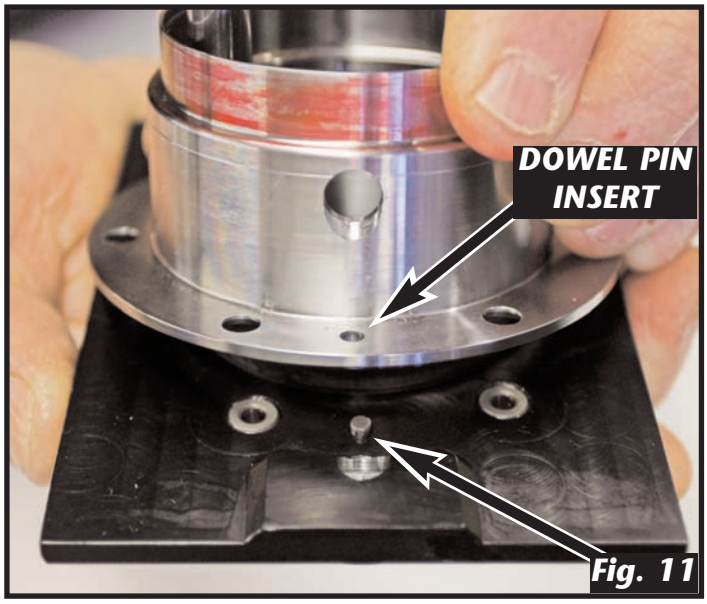


Fig. 11

D. Place insert No. 959-1 up to the under side of press plate No. 959-2 at the same time aligning the press plates 1/8" dowel pin into the 1/8" hole on the insert face.

See Fig. 11.

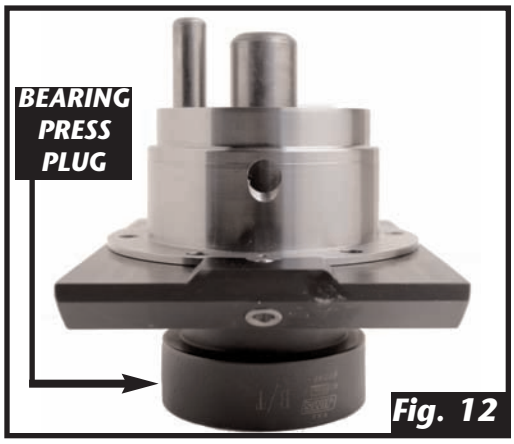


Fig. 12

Place bearing press plug No.2246-4, thru the center hole in press plate No. 959-2, and thru the center of insert.

See Fig. 12.

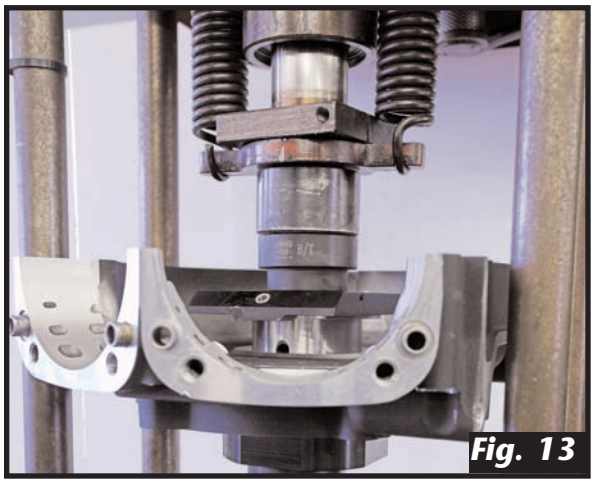


Fig. 13

E. Place engine case in a press as shown in **Fig. 13.**

Next holding all 3 parts together in **Fig. 12**, place this assembly over the bearing bore of left case, with the insert No. 959-1, aligned and centered with the case bore. Now both the 1/2" and 3/8" dowel pins should be aligned and thru the locator plate No. 959-3. Align the above assembly under your press.

See Fig. 13.

CAUTION: WEAR YOUR SAFETY GLASSES OVER YOUR EYES.

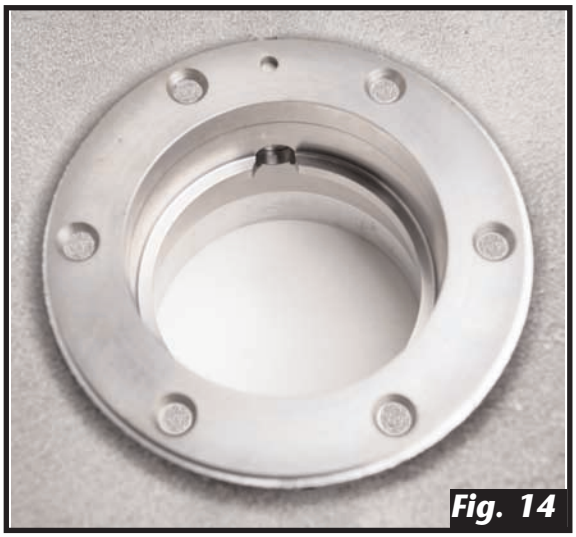


Fig. 14

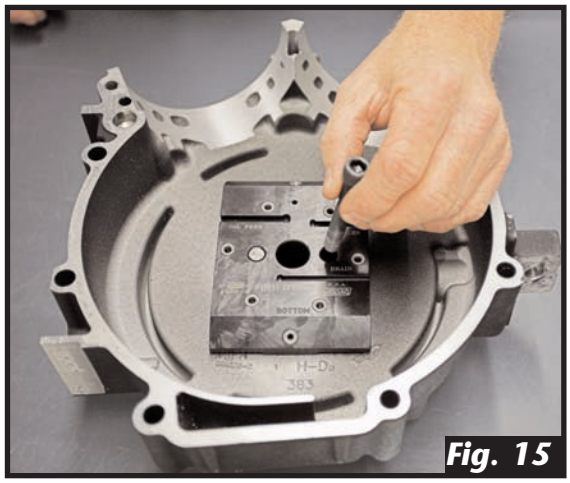
Make sure bearing insert is starting square to it's bore. Press from the top of the press plug tool No. 2246-4 until it has reached 2000 to 4000 PSI and the insert's flange has stopped on the case.

See Fig. 13.

Caution: *The only time you should stop the pressing operation is if the insert did not start in the bore straight.*

Caution:

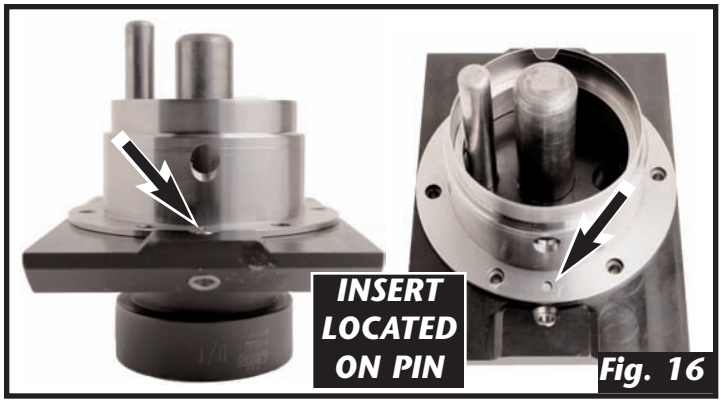
If for any reason you need to remove the insert because its not installing straight, you will need to support the case around insert on the inside of left case. It needs to be deep enough to receive the length of insert and JIMS tool press plug No. 2246-4. The insert is 1.500" long. You also need JIMS press plug No. 2246-4, supplied in this kit to press the insert out. Heat case and insert to 200 deg. Then press insert out of case. This would be the only time this insert is to be removed.



Drilling Holes

A. Remove tool press plug No.2246-4, from center hole of press plate, with lube applied to the threads of screw No. 1128 install screw thru top plate and thread it into bottom locator plate. Torque to 25 ft-lbs with your 5/16"Allen wrench.

See Fig. 15.



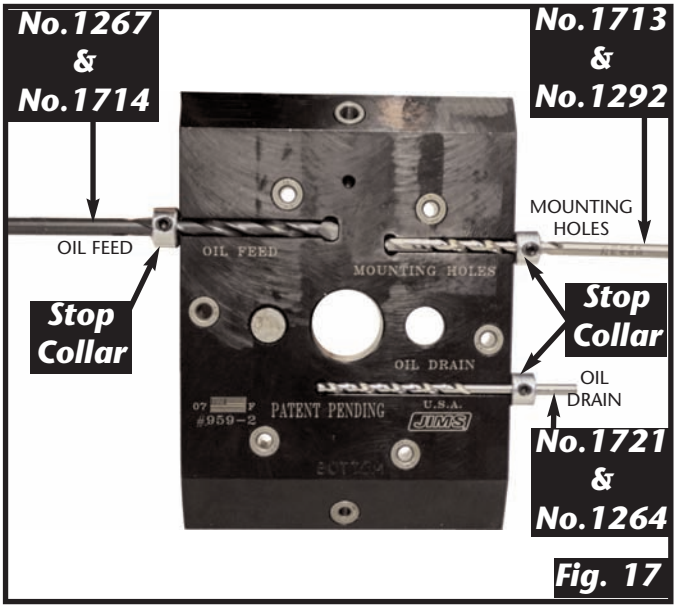
Make sure that 1/8" dowel pin in top plate is still located thru the inserts 1/8" hole after insert is pressed into case.

See Fig. 16.

Note: *In the following step all drill stop collars will need to be locked to each drill bit at the correct location.*

B. No. 1714 stop collar has been placed over drill bit No. 1267. It needs to locked at the correct location on the drill bit, as will the remaining two drill bits, and drill stop collars.

See Fig. 17.



C. *Place the above assembly in the milled groove above the word "OIL FEED" on the face of press plate No. 959-2, hold the drill bit in the groove so it fills it completely, with the tip of drill bit held firmly to end of groove. Slide stop collar No.1267 up to the side of tool plate.*

With stop collar still on drill tighten set screw with your 1/16" Allen. Torque to 10 in-lbs.
Repeat the above for the other two drill bits, (drill bit No. 1721 and stop collar No. 1264. Use the milled groove above the word " OIL DRAIN" lock stop collar per above, holding drill bit No. 1721 and stop collar No. 1264. Use the milled groove above the word "MOUNTING HOLES" for No. 1292 stop collar to No. 1713 drill bit per above.

Drilling techniques (use for all drilling steps)

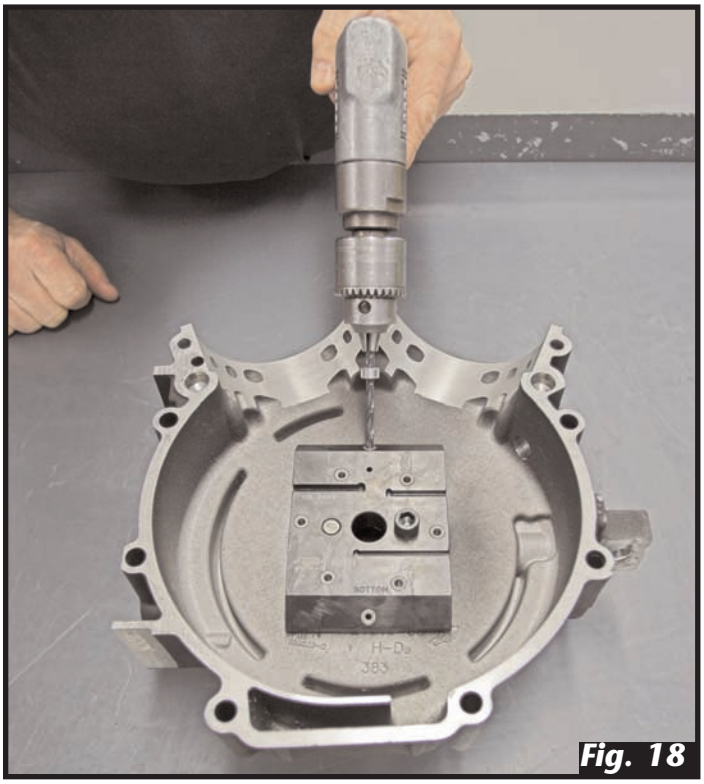


Fig. 18

1) Insert drill bit into your clean drill chuck and tighten. While spinning the chuck observe the drill bit. If run-out is observed your drill chuck may be damaged, JIMS strongly suggests a true running drill chuck (within .005").

2) Properly align the drill bit to the bushing. With the tip of the lubricated (cutting fluid No.1698) drill bit entered into the bushing, spin the drill sliding the drill down into the bushing. Maintain this angle while drilling into the case.

3) During the drilling process it is necessary to clear the drilling chips, to clear chips retract the spinning drill bit but not out of the drill bushing. An indicator to look for when clearing chips are dry chips, reapply a couple drops of cutting fluid.

4) The deeper the drill bit is into the case the more frequently you will need to clear the chips.

5) During the drilling process maintain the established drilling angle as mentioned above in paragraph "No. 2". Failure to follow the proper drilling angle will result in a broken drill bit.

6) If you break a drill bit while drilling the feed or drain holes you must remove the bolt and press plate. Carefully work the press plate off, FOLLOWING THE DRILL ANGLE. Remove any pieces of broken drill bit.

Drilling The Oil Feed Hole

D. With (3/16"Ø) drill bit No. 1714 with drill stop set from milled groove, chucked in your hand drill start (low speed) drilling. Allow the drill bit to go thru the top guide hole in press plate. Use TAP MAGIC No. 1698, as needed to keep the drill bit from clogging up. Drill down into case until stop collar stops at press plate.

See Fig. 18.

Note: Do not allow the stop collar to move up the drill by pushing too hard when drilling. "GO SLOW." Check that the drill has drilled into bearing bore.If needed remove the press plate to check. Reinstall per line "A" of drilling holes instructions.

Drilling The Oil Drain Hole

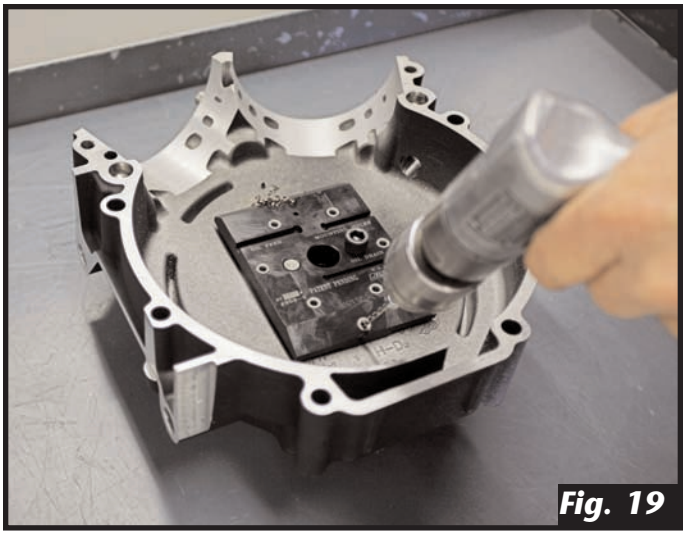


Fig. 19

E. With drill bit (1/8"Ø). No. 1721 with stop set from milled groove, chucked in your hand drill, start (low speed) drilling. Allow the drill to go thru the bottom guide hole in to the press plate. Use TAP MAGIC No. 1698, as needed to keep drill bit from clogging up. Drill down into case until stop collar stops at press plate.

Note: Do not allow the stop collar to move up the drill bit by pushing to hard when drilling. "GO SLOW". Check that the drill has drilled into bearing bore. If needed remove the press plate to check, then reinstall per line "A" of drilling holes instruction.

See Fig 19.

Drilling Mounting Screw Holes

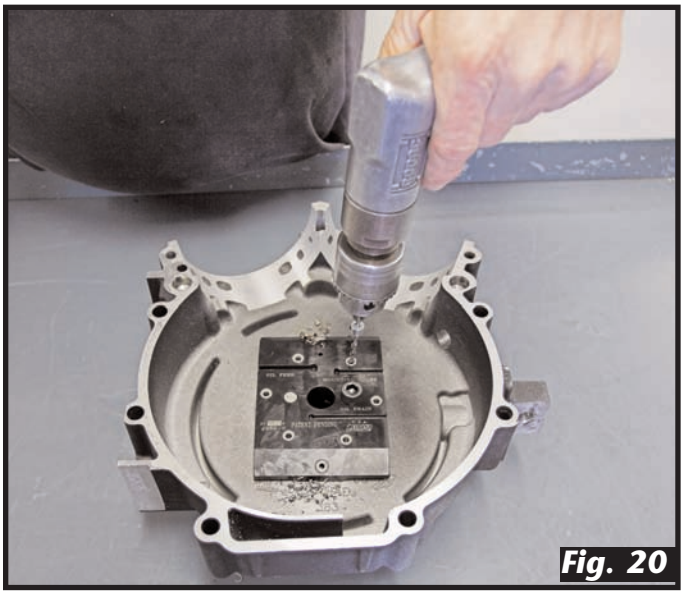


Fig. 20

F. With drill bit (.15 Ø") No. 1713, chucked in your hand drill, start (low speed) drilling thru the "two o-clock" guide hole in face of tool plate. Use TAP MAGIC No. 1698, as needed to keep drill bit from clogging up. Drill down into case until stop collar stops at press plate. Repeat for the other 5 guided drill bushing holes.
Note: Do not allow the stop collar to move up the drill by pushing to hard when drilling. "GO SLOW".

See Fig. 20.

Note: Remove press plate No. 959-2. Now is the time you can clamp the bottom locator plate No. 959-3 in your vice using protective vice jaws.

CAUTION: Wear safety glasses. Excessive force may damage parts!

Tapping The Lock Screw Holes

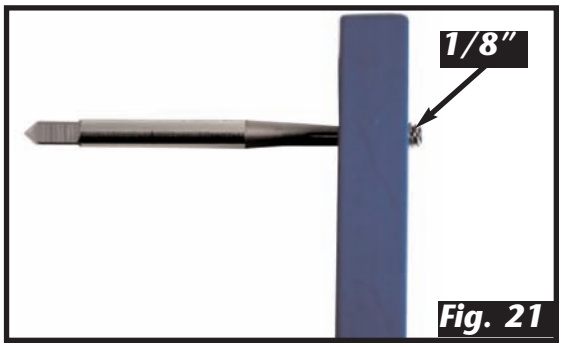


Fig. 21

Note: Remove all chips from the 6 holes before taping.

G. Install tap No. 2288 in your tap handle (not supplied). Hold tap guide No. 959-4 with the laser marked side up in hand. Insert tap through the hole of the guide plate, with tap protruding about 1/8” out of the other side of tap guide.

See Fig. 21

Center the protruding tap over one of the 6 holes you just drilled.

Note: Tap No. 2288 (Supplied) is a "ROLL TAP". The threads will be “formed” in the 6 newly drilled holes in the case. They will not be cut as a conventional tapped thread.

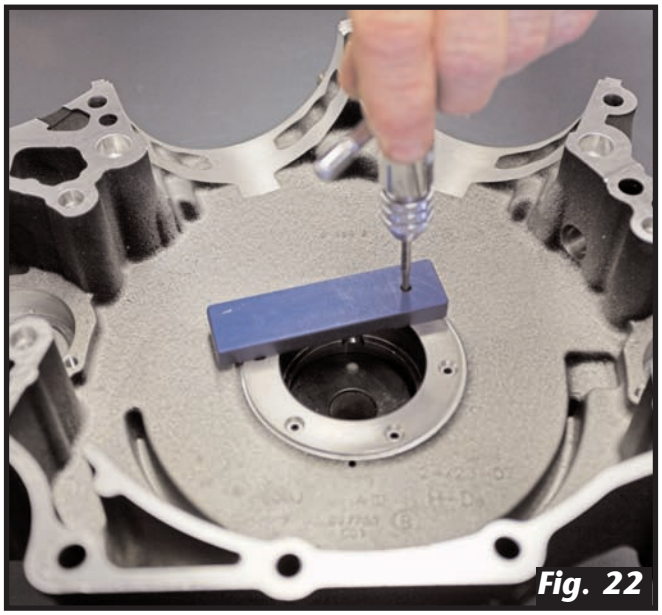


Fig. 22

H. Apply 3 to 4 drops of TAP MAGIC No. 1698 in the hole you will be taping. Center the protruding tap over the lubricated hole with the tap guide across centerline of journal. Apply pressure to the tap guide at centerline. With the tap and tapping fluid prepared as instructed and centered into a hole apply a constant light downward pressure to the tap handle (not supplied) as you turn the tap in a clockwise direction for 2 - 3 turns. Downward pressure is required to start the FORMED TAP. Continue to turn tap clockwise while relaxing the downward pressure for a total of 12 revolutions. Turn the tap handle counterclockwise to fully retract the tap. ***Don’t*** pull on the tap handle.

Pulling could result in damaged threads.

Blow out the tapped hole and test fitment of screw No. 2025. Repeat process for the remaining 5 holes.

See Fig. 22.

Caution: Take your time. Taps will break if over stressed. Do not pull or push side ways. Do not rotate the tap into case more then the 12 revolutions. Do not tap without tap fluid. If the tap starts to get hard to turn before you have made 12 revolutions then retract the tap a couple of turns and add more “TAP MAGIC”. Slowly start tapping as above. JIMS is NOT responsible for any broken taps or drills.

Note: Remove TAP MAGIC from all 6 newly tapped holes using a cleaner similar to Solvent 184 and compressed air.


Fig. 23

I. Apply the supplied Loctite No. 1286-1362 to the threads and the under side of head of all 6 - No. 2025 screws. Also apply about one drop to all 6 tap holes.

See Fig. 23.

J. With your inch lb. torque wrench and your # 2 Phillips socket, torque each screw in a crisscross pattern to 25~30 in-lbs of torque.

See Fig.24.

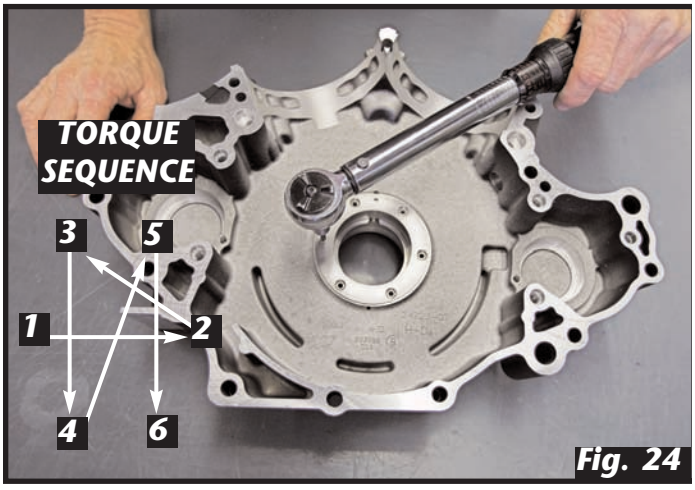


Fig. 24

K. Remove the bottom plate and clean off all pieces of the tool and store back in it's original container. Do a visual check of the oil feed hole and the oil drain hole. These must be open and washed out any chips or Loctite from case work.

L. Install new races using support guide JIMS base installer tool No. 2246-1 and JIMS press plug No.2246-4, all supplied with this tool No. 959. Follow the instruction sheet No. 2246-IS supplied. You will no longer need to use the center ring found in all new 9028 Timken bearing. JIMS has found the best bearing end play for big performance engines to be .001 to .005 end play. This is with all bearing parts installed in the case and on the sprocket shaft. To install bearings on the sprocket shaft and to install flywheels in cases use JIMS tool No. 97225-55 and JIMS tool No. 973 to cover the following years 2003 to present FXST, FLH and Dyna.

M. Set up the bearing H.D. No.9028 per 2002 FXST, DYNA or FLH, Twin-Cam service manual.

N. With your new Timken bearing installed you will need to change the sprocket shaft spacer. You will need to attain proper primary chain alignment between the clutch basket sprocket and motor sprocket. Also check spacing on the alternator rotor as needed. The following are some applications for the sprocket spacer needed for a stock clutch to motor sprocket.

For 2003 to 2007, FL's, and 2006 to present FXD's use H.D. No.24008-99A spacer.
For 2003 to 2006, FXST's use H.D. No.24039-01A spacer.
For 2003 to 2005 FXD's use H.D. No.24038-99A spacer.

O. Now is the time reorder a new Insert for next repair job JIMS No. 956 bearing insert kit.

CAUTION: WEAR SAFETY GLASSES. EXCESSIVE FORCE MAY DAMAGE PARTS!

A Division of Thiessen Products, INC

Instruction Sheet For No. 959 and No. 956

P. For a new replacement insert kit order JIMS No. 956, comes with 1-insert No. 959-1, 1-tube of Loctite No. 1286-1362, 6-screws No. 2025 and a new instruction sheet No. 959-IS.

No. 956 PARTS AVAILABLE SEPARATELY

No.	Qty	Description	Jims Part No.
1	1	Timken bearing insert	959-1
2	6	Screw, flat phillips	2025
3	1	#620 Loctite	1286-1362
4	1	Conversion tool instructions	959-IS
5	1	Bearing install tool instructions	2246-IS

Note: This insert kit can only be installed with JIMS No. 959 tool.

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 the parts are returned 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 defected 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

1. JIMS® shall have no obligation in the event a JIMS® part is modified by person or organization.
2. 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.
3. 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.
4. 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.
5. Any parts or tool replaced by JIMS® becomes the property of JIMS® and will not be returned under any circumstance.