



INSTRUCTION SHEET FOR TOOLS No. 1177, No. 1400, No. 1408, No. 1409, No. 1430, No. 1431, No. 1432, & No. 1433



**No. 1177 EARLY T/C
1999-2006 EXCEPT DYNA**



No. 1408 ALL T/C 99-13



No. 1409 EVO 84-99



**No. 1400 JIMS
120" TO 131" CASE**

TWIN CAM OR EVO ENGINE CASE BORING TOOL INCLUDING UPGRADE KITS

This instruction sheet includes all necessary information to safely perform cylinder spigot case boring. This will allow the installation of big bore cylinders for the following engine cases:

EVO big twins cases, 1984 thru 1999 and all Twin Cams "Alpha" & "Beta" 1999 to present. This includes most aftermarket cases having stock H/D cylinder stud hole bolt pattern for both EVO and T/C. See below for more fitment information.

JIMS has provided you with the opportunity to save time and money by providing the following upgrade kits:

If you already have tool No. 1177 or tool No. 1408, and would like to bore an 1984-1999 EVO case you will need to obtain JIMS tool No. 1432. See pages 11 & 12 for the parts list.

If you already have tool No. 1177 and would like to bore an 2006 to present Dyna and 2007 to present FLH or Softail models, you need to obtain JIMS tool No. 1430. See pages 11 & 12 for the parts list.

If you already have tool No. 1409 EVO case boring tool and would like to bore 1999 to present Twin Cam engine cases, you will need to obtain JIMS tool No. 1431. See pages 11 & 12 for the parts list.

If you have a JIMS No. 1177 or No. 1408 case bore tool and want bore a 120" JIMS motor case to fit 131" cylinders, use JIMS No. 1433 131" adapter head kit. You also have the option to order a JIMS No. 1400 which is a complete 120" to 131" race case boring tool.



NOTE: PLEASE READ ALL INSTRUCTIONS COMPLETELY AND THOROUGHLY BEFORE PERFORMING ANY WORK. IF YOU DO NOT KNOW WHAT YOU ARE DOING, DO NOT DO IT!

No information in this instruction sheet pertaining to motorcycle repair is represented as foolproof or even altogether safe. Even something safe, done incorrectly or incompletely can and will backfire. You and only you are responsible for the safety of your repair work and for your understanding and application with the use of repair equipment, components, methods and concepts. Each and every step that this tool is designed to do must be carefully and systematically performed safely by you. All information listed in this instruction sheet has been tested, re-tested and used daily in JIMS® Research and Development Department.

JIMS® IS NOT RESPONSIBLE FOR THE QUALITY AND SAFETY OF YOUR WORK.

Note: If this tool is being assembled to bore 1984-1999 EVO cases, information will be covered under step 14, in this instruction sheet. The JIMS® Twin Cam Case Boring Tool takes all the guess work out of boring engine cases to accept JIMS 4" bore Twin Cam cylinders, 100" big bore kit, and 113" / 116" flywheel stroker kits including Screamin' Eagle big bore 4.060" cylinders. Will also work on cylinders up to 4.125" with stock cylinder stud pattern. JIMS® EVO Case Boring Tool will bore EVO engine cases to accept up to 3-13/16" bore cylinders.

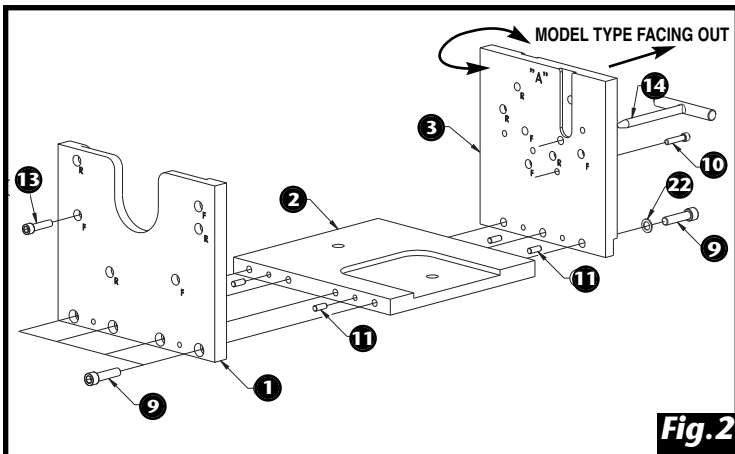
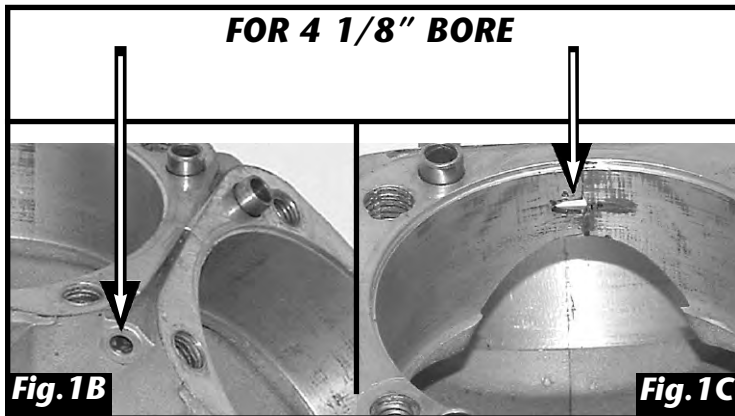
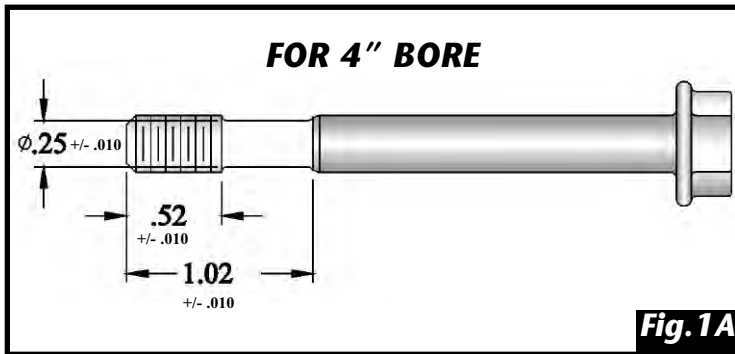
Tools required for boring:
1/8", 3/16", 1/4", & 5/16" Allen wrenches, 7/16" Wrench, Dial Calipers, Torque wrench, 1/2" socket, cutting fluid, Drill press or milling machine.

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



INSTRUCTION SHEET FOR TOOLS #1177, #1408, #1409, #1430, #1431 & #1432

Follow instructions in H-D® Service Manual for engine removal for your year and model. With engine removed from frame and safely mounted in JIMS engine stands (refer to JIMS catalog for stands), follow the engine disassembly instructions in the service manual, including removing and installing cylinder studs. Mask off all bearings and oil holes to prevent chips from contaminating those areas. Check and clean both engine case-mounting surfaces. Bolt cases together with H-D hardware using sequence and torque specs stated in H-D service manual, except top center case bolt between cylinders. Install this bolt last and torque to 50-90 in-lbs. maximum (Read Step 1).



INSTRUCTIONS

- 1A. **4" BORE INFORMATION BEFORE STARTING:**
Prior to boring your case, you must modify your top center case bolt that is located between the spigot holes as shown in FIG. 3 (see arrow). You need to modify the 5/16" case bolt as shown in Fig. 1A for 4" bore. **NOTE: Failure to do so will result in damage to the cutting tool.**
- 1B. **4-1/8" BORE INFORMATION BEFORE STARTING:**
Prior to boring your case you must decide by picking option 1, 2 or 3 listed below, on how to obtain the proper clearance for your top center case bolt as shown in Fig. 3. (See arrow). **NOTE: Failure to do so will result in damage to the cutting tool.**
 - (1B) **Option 1.** You may use the stock case bolt and modify the bolt diameter similar to the bolt shown in Fig. 1A. **NOTE: Failure to do so will result in damage to the cutting tool.**
 - (1B) **Option 2.** You may use a 5/16" x 5" long stud or allen bolt with nuts and washers. You may drill a 5/16" hole through the right case with normal bolt clearance. You should spot face the right side case hole as shown in Fig. 1B to maintain flatness. You will need to provide more clearance for the 5/16" allen bolt or stud similar to 4" bore as shown in Fig. 1A. **NOTE: Failure to do so will result in damage to the cutting tool.**
 - (1B) **Option 3.** You may use a 1/4" x 5" long stud or an allen bolt, both with nuts and washers. Drill 1/4" hole with normal clearance through the right side of the case. You should spot face the hole as shown in Fig. 1B to maintain flatness. You will then need to check your allen or stud bolt for the proper clearance and it may need to be modified to be similar to the bolt as shown in Fig. 1A. **NOTE: Failure to do so will result in damage to the cutting tool.**

NOTE: SEE BELOW FOR DIFFERENT YEAR AND MODEL APPLICATIONS.

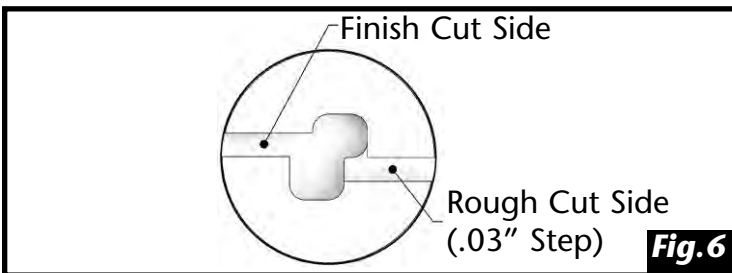
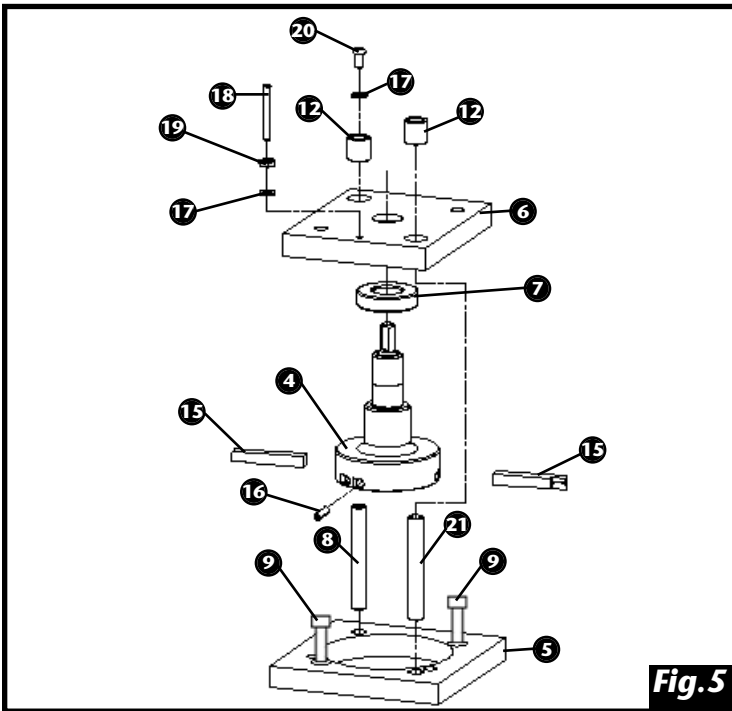
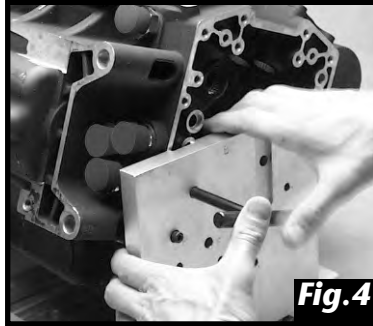
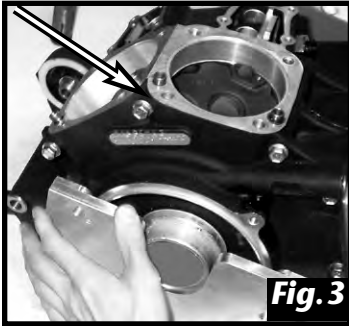
- (1A) If this tool is being assembled to bore a 2006 to present Dyna and 2007 FLH or Softails models, you need to obtain JIMS tool No. 1408. You can use any of JIMS other bore tools with the correct upgrade kit. See applications. The left side plate No. 1408-1 (primary side) Will need to be assembled to base plate No. 1177-2 with the supplied hardware, 2-2133, allen bolts. See parts list on page 12 for reference.
- (1B) If this tool is being used for 1999 to present FLHT or Softail models, please follow this instruction sheet as indicated.
- 2. Assemble engine cradle (No. 1 plate Primary side, No. 2 bottom plate & No. 3 cam cover side) with all nine 3/8" allen bolts, as shown in Fig. 2. Torque all 3/8" allen bolts to 10 ft. lbs. Make sure all mating surfaces are clean. Position plate (No.3) with the appropriate lettering "A" for Alpha, "B" for Beta, facing outboard.

NOTE: Lube all hardware with 20w50 H-D® oil.

NOTE: No.1 primary side plate, will be the side plate to swap out for the different year and models for Twin Cam case boring.

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INSTRUCTION SHEET FOR TOOLS #1177, #1408, #1409, #1430, #1431 & #1432



3. Place the engine case in the cradle and rotate the case so either the front or rear cylinder deck is horizontal and facing up. **Fig. 3.**

Install (2) lubed 1/4-20 SHCS (No. 10) into the holes marked with "F" or "R", (front or rear cylinder bores), depending on the spigot bore you are modifying, into and thru No. 3 plate as shown in **Fig. 2.** Do not tighten. Install (3) lubed 5/16" allens (No. 13) into and thru plate (No. 1) holes marked with letter of the spigot bore you are modifying. Do not tighten.

4. Install (No. 14) "T" Pin with a small amount of lube on its shaft into and thru hole in plate (No. 3), as shown in **Fig. 2 & Fig. 4,** marked "F" for front or "R" for rear depending on which spigot bore you are modifying. This will align the spigot bore perpendicularly to the machine spindle. You may need to rotate the case slightly to get the "T" Pin to locate properly in the hole. Using a 3/16" Allen wrench, torque the 1/4-20" SHCS (No. 10) to 90-120 in-lbs. and all 5/16" bolts (No. 9) to 13-15 ft-lbs using an allen wrench.

5. **INSTALLING CUTTERS:**
 Note: Boring Head set-up shown is for reference only. Your set-up will vary depending on cylinder bore and cylinder manufacturer. Instruction sheet is written for boring clearance for 4" bore cylinders. Again, if your cylinders are from a different manufacturer or you are machining for other than a 4" bore, you will need to calculate your cutter dimensions (see Twin Cam set-up sheet on page 9).

NOTE: JIMS® recommends removing no more that .125" (on the diameter) of material at a time. Case machining may require more than one pass and more than one set-up of the cutters to obtain your desired bore. Failure to follow this could result in a rough finish, and /or damage to the bore and cutters.

Once you have determined the cutter dimensions, install the cutters in the boring head as shown in **Fig. 5., Fig. 6, & Fig. 7.** Using a 1/8" Allen wrench, adjust the adjustment screws (No. 1689) to set the cutters dimensions from your calculations (**Fig. 7.**) Use a caliper for accurate measurements. Ensure that the cutters are held snug against the adjusting screws as the lock down screws are tightened. Torque the lock down screws (In order shown, **Fig. 7**) to 90 in./lbs, to secure the cutters in place.

WARNING: If cutters are set beyond O4.40, the cutters may come in contact with the I.D. of the locating plate (1177-5 [No.5]), voiding the warranty of 1177-5.

6. Using a 1/8" Allen wrench and a 7/16" wrench, set the boring depth to 1.355 +.03/-.00 for a 100" Kit or 1.680 +.03/-.00 for 113" & 116" Kits by adjusting the stop depth adjustment screw (No. 18) on the boring assembly top plate as shown in **Fig. 5 & Fig. 8,** measured from the finish tool cutter to the bottom of the locating plate (No. 5).

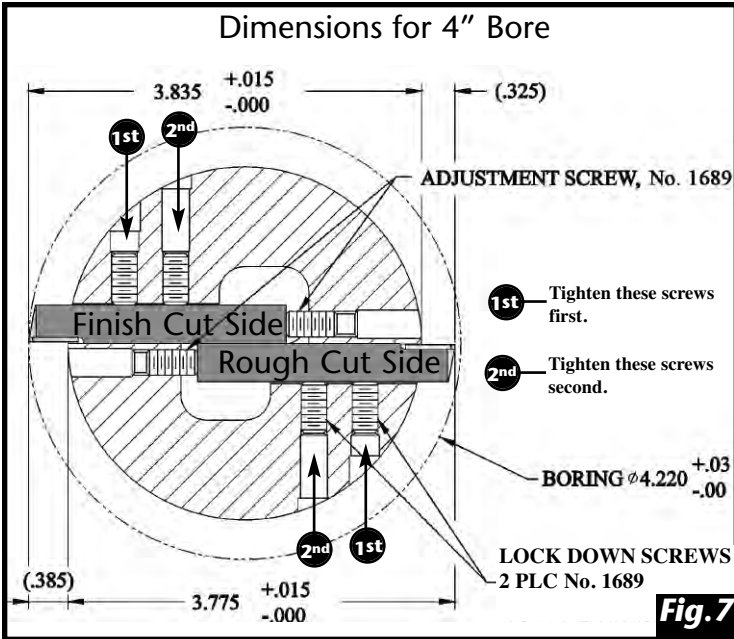
Spigot Depth Note: If using other than JIMS® 4" cylinders add .03"-.06" to the length of your cylinder spigot. This will be the depth you need to bore your cases to. (Example: If your spigot is 1.600" add .03"-.06" and your bore depth will be 1.630" +.03/-.00). See **Fig. 8**

Alignment Pin Note: On the bottom of the support plate (No. 5) there are machined reliefs to clear the opposite cylinder's alignment pin (**Fig. 8**). In some motor cases the alignment pins are installed higher or lower, so you will need to check to make sure that they do not interfere with the mounting of the support plate (No. 5) to the case. To check the alignment pin clearance, place the boring head assembly on case with a 1-1/2" to 2" wood block between boring assembly plates to prevent the top plate from dropping, and or resulting in the cutter contacting your case (See **Fig. 9**). Without tightening the two screws (No.

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1686), place paper between the neighboring cylinder's alignment pin and the support plate. Once you have torqued the screws make sure that the paper moves freely between the alignment pin and the support plate. If the alignment pin is too high (the paper will not move) the pin can be installed deeper or removed. If the pin is damaged during removal it will need to be replaced. **Failure to check the alignment pin clearance may result in the final pigot bore being out of center.**



7. Mount the boring assembly onto case over the cylinder bore facing up. With (2) lubed 3/8" bolts (No. 9) and using cylinder alignment pins (HD® No. 16595-99A) to locate assembly, make sure the boring assembly is sitting flush on (cylinder deck) the engine case. Using a 5/16" allen wrench, torque the mounting bolts to 18-20 ft-lbs., in a criss cross pattern.

8. Place the case boring fixture onto a drill press or milling machine table. Center shaft of boring head (No. 4) in chuck or collet.

Note: If using a chuck, be sure the chuck jaws locate on the flats of the boring head shaft. Tighten the chuck (or collet depending on machine being used), and remove the wood block. Clamp the base (No. 2) to the drill press table using the provided holes if possible. If unable to use provided holes be sure to clamp the fixture using C-Clamps or comparable clamps. Before running machine, lube the two guide dowels with a light oil (5w/30w or 3-in-1 oil) and run the quill up and down to make sure the boring assembly is not binding.

Caution: When checking to make sure the tool action is correct, be aware not to strike the cutters against the crankcase while the machine is not running. Damage may result to the tool and the crankcase.

Note: If the base plate assembly is not sitting flat to the press table, adjust the table (or head) flat before clamping down the tool assembly.

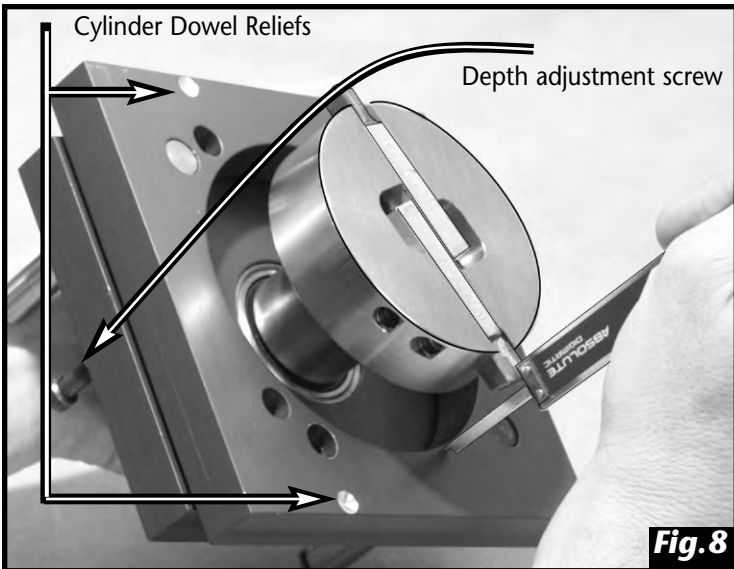
9. Set the machine's speed to approximately 600-800 RPM's. Before running the machine, make sure the quill is at the top of its travel. Start the machine to make sure head or table are not vibrating. If no vibrations, the RPM's can be increased. If vibrations occur, RPM's will need to be reduced. JIMS® has found that 600-800 RPM is best when using a drill press, although results may vary.

Caution: Always wear safety glasses!

Make sure your eye and/or face protection is on. Double check to make sure you followed the procedures correctly and your work is properly clamped to the table. Start boring with a slow, even pressure while applying cutting fluid (*slower feed rate will yield a cleaner finish*) until the boring assembly stop bottoms out. Shut down the machine and wait until it comes to a complete stop. Slowly retract the boring assembly until the cutters clear the case. Hold the quill up and replace the wood block. Remove the boring assembly from the case.

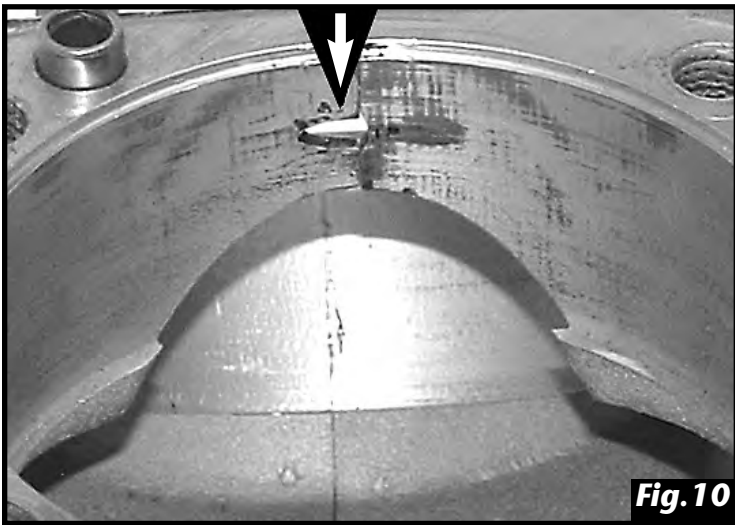
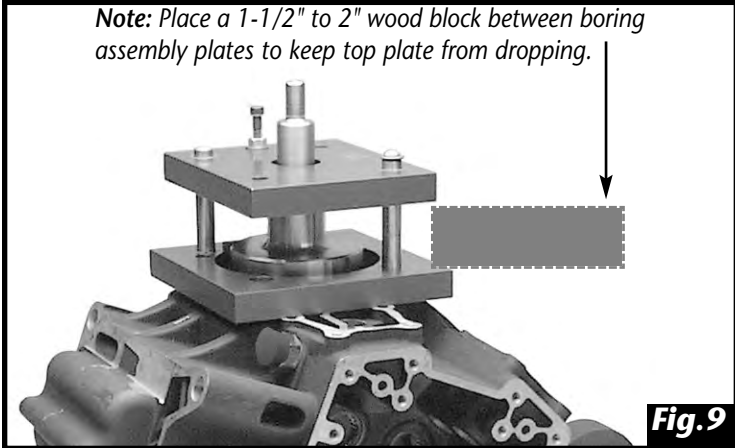
CAUTION: It is recommended that you use a well maintained and dependable machine for this type of work. If you use a drill press or milling machine that is not up to normal standards, you take the chance of damage to your work and/or injury to yourself. This is why we recommend you use a safe and well maintained drill press or milling machine. Make sure your machine is in good working order before starting any project.

ALWAYS WEAR SAFETY GLASSES OR OTHER FACE AND EYE PROTECTION SUCH AS FULL FACE SHIELD.



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10. Remove (2) 1/4-20" allen bolts (No. 10), (3) 5/16" allen bolts (No. 13), and "T" Pin (No. 14). Rotate case so opposite spigot bore is straight up and repeat steps 3-11.

11. Wash cases as needed to remove all chips.

CAUTION: Be sure to remove any case material from the top center case bolt holes of both left and right cases that are not attached well enough to stay in place during motor operation. See Fig. 10 and Fig. 1C (Fig. 1C on page 2.)

NOTE: This is mostly a judgment call as to how much material will be removed.

DO NOT REMOVE ANY MORE MATERIAL THAN NEEDED FOR A SAFE RUNNING ENGINE.

NOTE: When re-assembling cases, tighten case bolts to factory specs except top center case bolt between cylinders. Tighten this bolt last after you have cylinders and heads installed and torqued to H-D® specs. Apply Hylomar, or equivalent, sealer to shoulder of top center case bolt and torque to 50-90 in-lbs. maximum on 1/4" or 5/16" center bolt stud.

CAUTION: BEFORE RE-ASSEMBLY OF YOUR ENGINE MAKE SURE THE INSIDE OF THE CASE, SPIGOT BORE AND ALL INTERIOR AND EXTERIOR POCKETS AND HOLES ARE FREE FROM ANY CONTAMINANTS AND DE-BURRED. STOP, DOUBLE CHECK AND THEN TRIPLE CHECK. YOU DO NOT WANT ANY CONTAMINANTS LEFT INSIDE. DOING SO CAN AND WILL CAUSE PRE-MATURE WEAR AND DAMAGE.

JIMS® IS NOT RESPONSIBLE FOR YOUR WORK! SO PLEASE USE YOUR BEST JUDGEMENT AND ALWAYS DOUBLE AND EVEN TRIPLE CHECK YOUR WORK. DOING SO WILL HELP ENSURE A POSITIVE EXPERIENCE AND OUTCOME.

12. EVO case boring with tool No. 1409 or No. 1432.

Note: If you already have this tool and will be upgrading it with one of the kits shown at the beginning of this sheet, please follow this instruction sheet to set it up for other case boring.

The JIMS® EVO Case Boring Tool takes all the guess work out of boring EVO engine cases to accept up to 3-13/16" bore cylinders. This tool is designed to be used in a heavy-duty 15" drill press, or milling machine.

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

13. Prior to boring your cases, you will need to determine the Rockwell hardness of your case hardware. If your hardware is under 30 RC, you may bore your cases with your case bolts installed. If your hardware is harder than 30 RC, you will need to clearancé the top center and top rear case bolts, (See Fig. 14). Damage may occur to the tool cutters if the above instructions are not followed. JIMS® is not liable for damaged tool cutters.

When you bore your cases for larger bore sizes, you may break out the tappet machining oil hole, (See Fig 11). You may need to re-plug and seal as required if disturbed.

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SEE JIMS® CATALOG FOR HUNDREDS OF TOP QUALITY PROFESSIONAL TOOLS.
THE LAST TOOLS YOU WILL EVER NEED TO BUY.**

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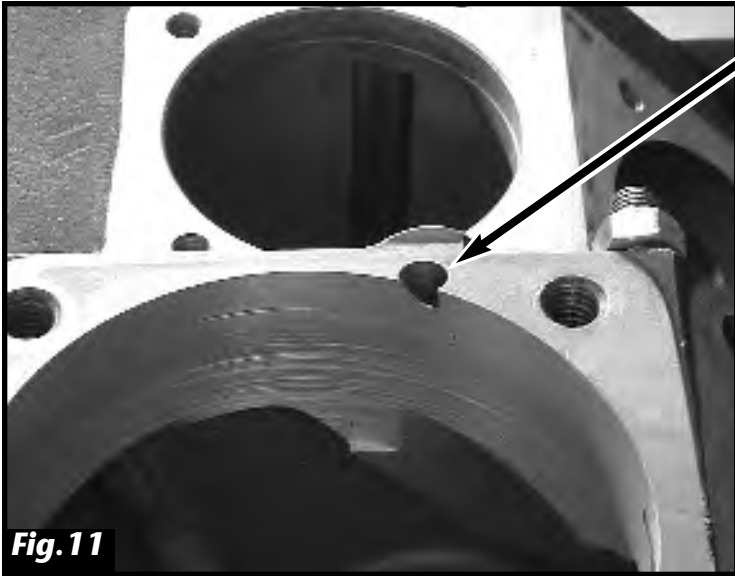


Fig. 11

14. Assemble engine cradle (No. 1 plate primary side, No. 2 bottom plate & No. 3 cam cover side) with 4 No. 9, 3/8" x 1" allen bolts as shown in Fig. 12. Torque all 3/8" allen bolts to 10 ft. lbs. and 3 No. 22, 3/8"x1-1/4" allen bolts, with No. 21 washers. Make sure all mating surfaces are clean.

NOTE: Lube all hardware with 20w50 H-D® oil.

15. Place the engine case in the cradle and rotate the case so either the front or rear cylinder deck is horizontal and facing up. Fig. 13.

16. Install (2) lubed 1/4" allen bolts (No. 10) into the appropriate holes, depending on the spigot bore you are modifying, in the alignment plate (No. 3) as shown in Fig. 12. Do not tighten. Install (3) lubed 5/16" allen bolts (No. 13) into the mounting plate (No. 1) holes marked with letter of the spigot bore you are modifying. Using a 1/4" allen wrench snug all three 5/16" allen bolts, then torque to 13-15 ft. lbs. Once you have tightened the 5/16" allen bolts, torque the 1/4" allen bolts to 90-120 in lbs. using a 3/16" allen wrench.

17. Installing cutters:

NOTE: Boring head set-up shown is for reference only. Your set-up will vary depending on cylinder bore diameter and cylinder manufacturer. Instruction sheet is written for boring 3-5/8" bore cylinders. Again, if your cylinders are made from a different manufacturer or you are machining for other than a 3-5/8" bore, you will need to calculate your cutter dimensions (see EVO set-up sheet, page 10).

NOTE: JIMS® recommends removing no more than .125" (on the diameter) of material at a time. Case machining may require more than one pass and set-up of cutters to obtain the desired bore.

Once you have determined the cutter dimensions, install the cutters in the boring head as shown in FIG. 15, FIG. 16 & FIG. 17. Using a 1/8" Allen wrench, adjust the adjustment screws (No.1689) to set the cutter dimensions from your calculations. See FIG. 17. Use a caliper for accurate measurements. Ensure that the cutters are held snug against the adjusting screws as the lock down screws are tightened. Torque the lock down screws (in order shown, FIG. 17) to 90 in./lbs. to secure the cutters in place.

WARNING: If cutters are set beyond O4.09, the cutters may come in contact with the I.D. of the locating plate (1409-2), voiding the warranty of the 1409-2 Evo Case Boring Tool.

18. Setting Spigot depth: Measure the length of your cylinders' spigot and add .03"-.06". This will be the depth you need to bore your cases to. (Example: If your spigot is 1.600", add .03"-.06" and your bore depth will be 1.630" + .03"/-.00". Using a 1/8" Allen wrench and a 7/16" wrench, set the boring depth to the dimension as calculated above, as shown in Fig. 18. Be sure to measure from the finish tool cutter to the bottom of the locating plate (Fig. 16, No. 5).

19. Place a 1-1/2"-2" wood block between the boring assembly plates. Mount the boring assembly onto the engine case with (2) lubed 3/8" allen bolts (Fig. 16, No. 9). Make sure the boring assembly is sitting flush on the engine case. Using a 5/16" Allen wrench, torque the mounting bolts to 18-20 ft./lbs.

20. Place the case boring fixture onto a drill press or milling machine table. Center the shaft of boring head (Fig. 16, No. 4) in chuck or collet.

NOTE: If using a chuck, be sure that the chuck jaws locate on the flats of the boring head shaft.

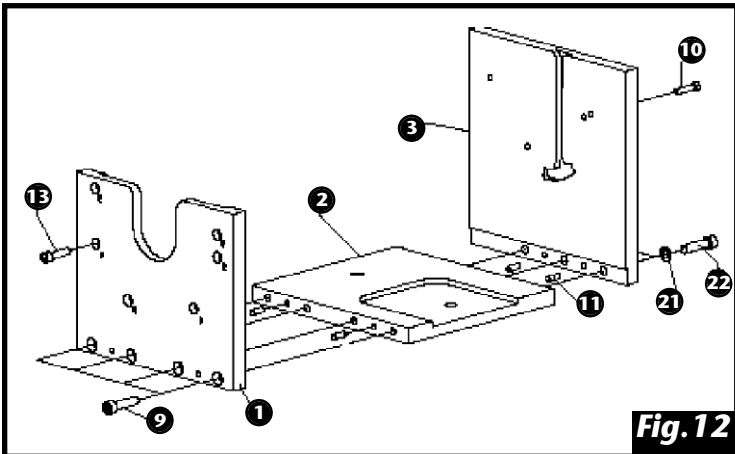


Fig. 12

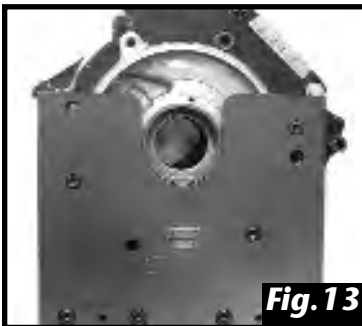


Fig. 13

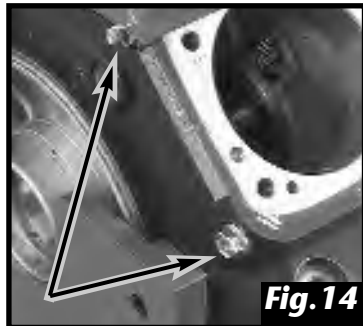


Fig. 14

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

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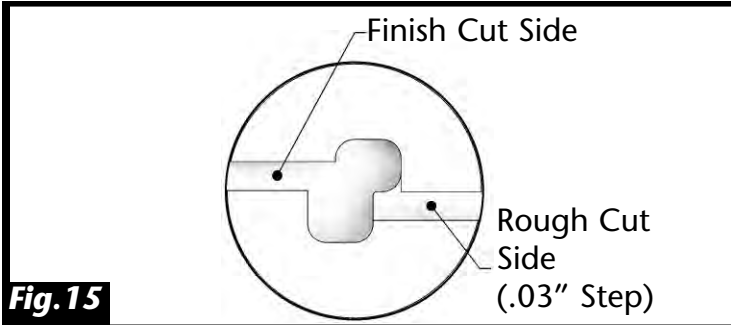


Fig. 15

Tighten the chuck or collet (depending on the machine being used) and remove the wood block used to separate the boring assembly. Clamp the base (Fig.12, No. 2) to the drill press table using the provided holes if possible. If you are unable to use the provided holes, be sure to clamp the fixture using C-Clamps or comparable clamps. Before running the machine, lube the two guide dowels with a light oil and run the quill up and down to make sure the boring assembly is not binding.

CAUTION: DO NOT STRIKE CUTTERS AGAINST CRANKCASE. When checking to make sure the tool action is correct, be aware not to strike the cutters against the crankcase while the machine is not running. Damage may result to the tool and crankcase.

NOTE: If the cradle assembly is not sitting flat to the machine table, adjust the table (or head) flat before clamping down the assembly.

21. Set the machines speed to approximately 600-800 RPM's. Before running the machine, make sure that the quill is at the top of it's travel. Start the machine to make sure that the head and/or table are not vibrating. If no vibrations occur, the RPM's may be increased. If vibrations occur, the RPM's will need to be reduced. JIMS® has found that 600-800 RPM's is best when using a drill press, although results can vary from your set-up and machine. Not all drill presses and milling machines are made the same.

CAUTION: It is recommended that you use a well maintained and dependable machine for this type of work. If you use a drill press or milling machine that is not up to standards, you risk the chance of damage to your work and injury to yourself. This is why we recommend you use a safe and well maintained drill press or milling machine. Make sure your machine is in good working order before starting any project.

ALWAYS WEAR SAFETY GLASSES OR OTHER FACE AND EYE PROTECTION SUCH AS FULL FACE SHIELD.

JIM® is not responsible for damage, injury or your work!

22. Make sure your eye and/or face protection is on. Double check to make sure you followed the procedures correctly and your work is properly clamped to the table. Start boring with slow, even pressure while applying cutting fluid (slower feed rate will yield a cleaner finish) until the boring assembly stop bottoms out. Shut down the machine and wait until it comes to a complete stop. Slowly retract the boring assembly until the cutters clear the case. Hold the quill up and replace the wood block. Remove the boring assembly from the case.

CAUTION: DO NOT PUSH IN OR LIFT OUT CUTTER TOO FAST OR ABRUPTLY WHILE BORING, DOING SO COULD RESULT IN DAMAGE TO YOUR WORK OR INJURY TO YOURSELF!

CAUTION: BEFORE RE-ASSEMBLY OF YOUR ENGINE MAKE SURE THE INSIDE OF THE CASE, SPIGOT BORE AND ALL INTERIOR AND EXTERIOR POCKETS AND HOLES ARE FREE OF ANY CONTAMINANTS AND DE-BURRED. STOP, DOUBLE CHECK AND THEN TRIPLE CHECK. YOU DO NOT WANT ANY CONTAMINANT'S LEFT INSIDE. DOING SO CAN AND WILL CAUSE PRE-MATURE WEAR AND DAMAGE.

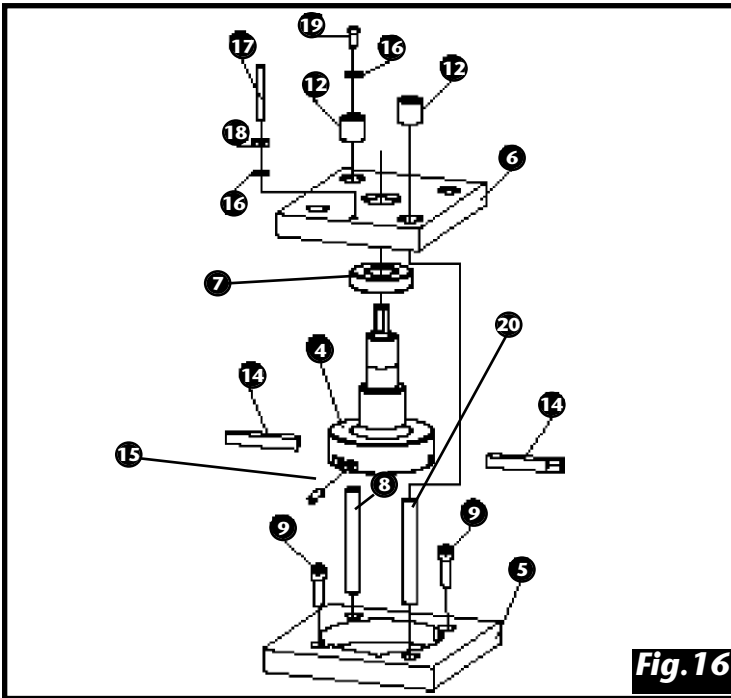
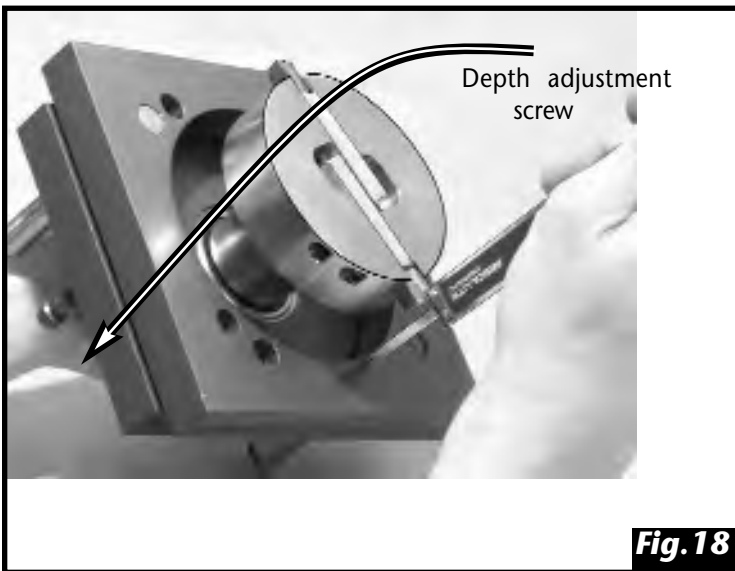
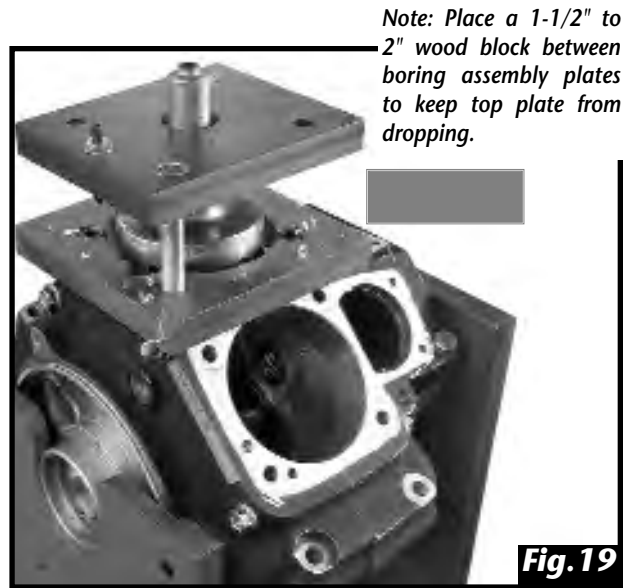
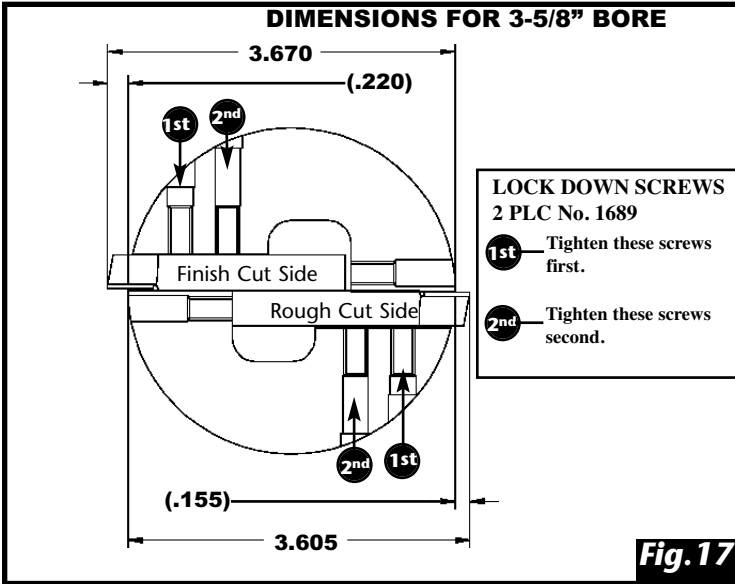


Fig. 16

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

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

**INSTRUCTION SHEET FOR TOOLS #1177, #1408, #1409,
#1430, #1431 & #1432**



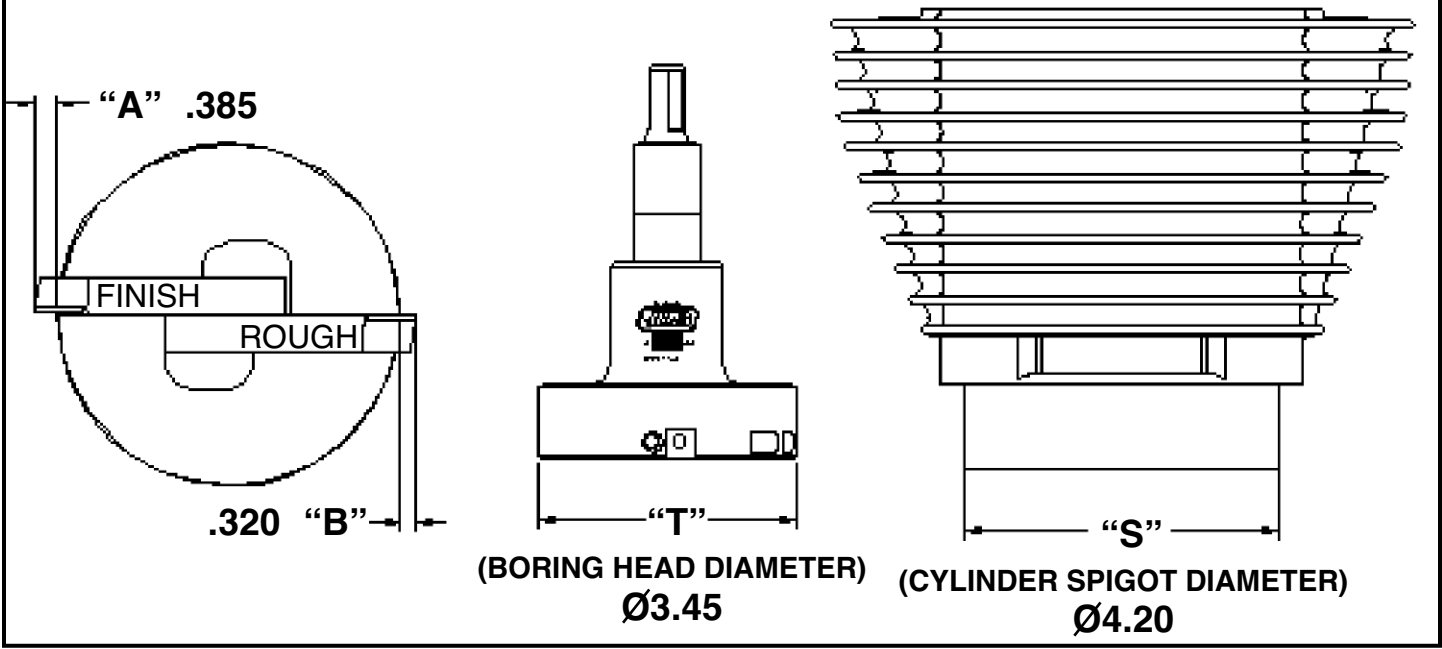
**CAUTION: WEAR SAFETY GLASSES. EXCESSIVE FORCE MAY DAMAGE PARTS!
SEE JIMS® CATALOG FOR HUNDREDS OF TOP QUALITY PROFESSIONAL TOOLS.
THE LAST TOOLS YOU WILL EVER NEED TO BUY.**

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TWIN CAM

SET-UP SHEET FOR 4" BORE



Step 1: Measure your cylinder spigot diameter. (S) and add .02".

Step 2: Measure the boring head diameter (T) as shown above. Subtract boring head diameter from answer obtained in step 1, this is your overall clearance (D).

Step 3: Divide your overall clearance by 2. This is your "A" dimension.

Step 4: Subtract .065" from your "A" dimension. This is you "B" dimension.

D = OVERALL CLEARANCE
S = CYLINDER SPIGOT DIAMETER
T = BORING HEAD DIAMETER
C = CASE BORING DIAMETER

FORMULA

Step 1: $S + .02" = C$
Step 2: $C - T = D$
Step 3: $D / 2 = "A"$
Step 4: $"A" - .065" = "B"$

EXAMPLE

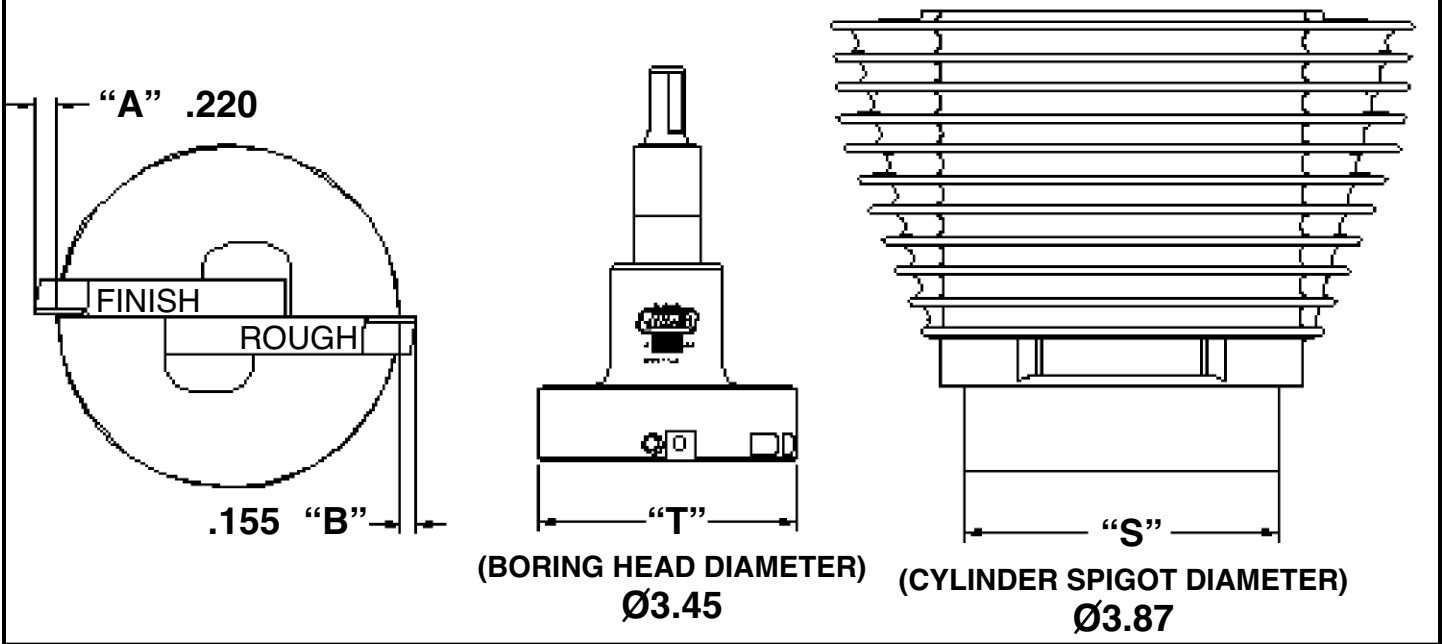
$4.20" + .02" = 4.22"$
 $4.22" - 3.45" = .77"$
 $.77" / 2 = .385"$
 $.385" - .065" = .32"$

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



EVO

**SET-UP SHEET
FOR 3-5/8" BORE**



Step 1: Measure your cylinder spigot diameter. (S) and add .02".

Step 2: Measure the boring head diameter (T) as shown above. Subtract boring head diameter from answer obtained in step 1, this is your overall clearance (D).

Step 3: Divide your overall clearance by 2. This is your "A" dimension.

Step 4: Subtract .065" from your "A" dimension. This is you "B" dimension.

D = OVERALL CLEARANCE
S = CYLINDER SPIGOT DIAMETER
T = BORING HEAD DIAMETER
C = CASE BORING DIAMETER

FORMULA

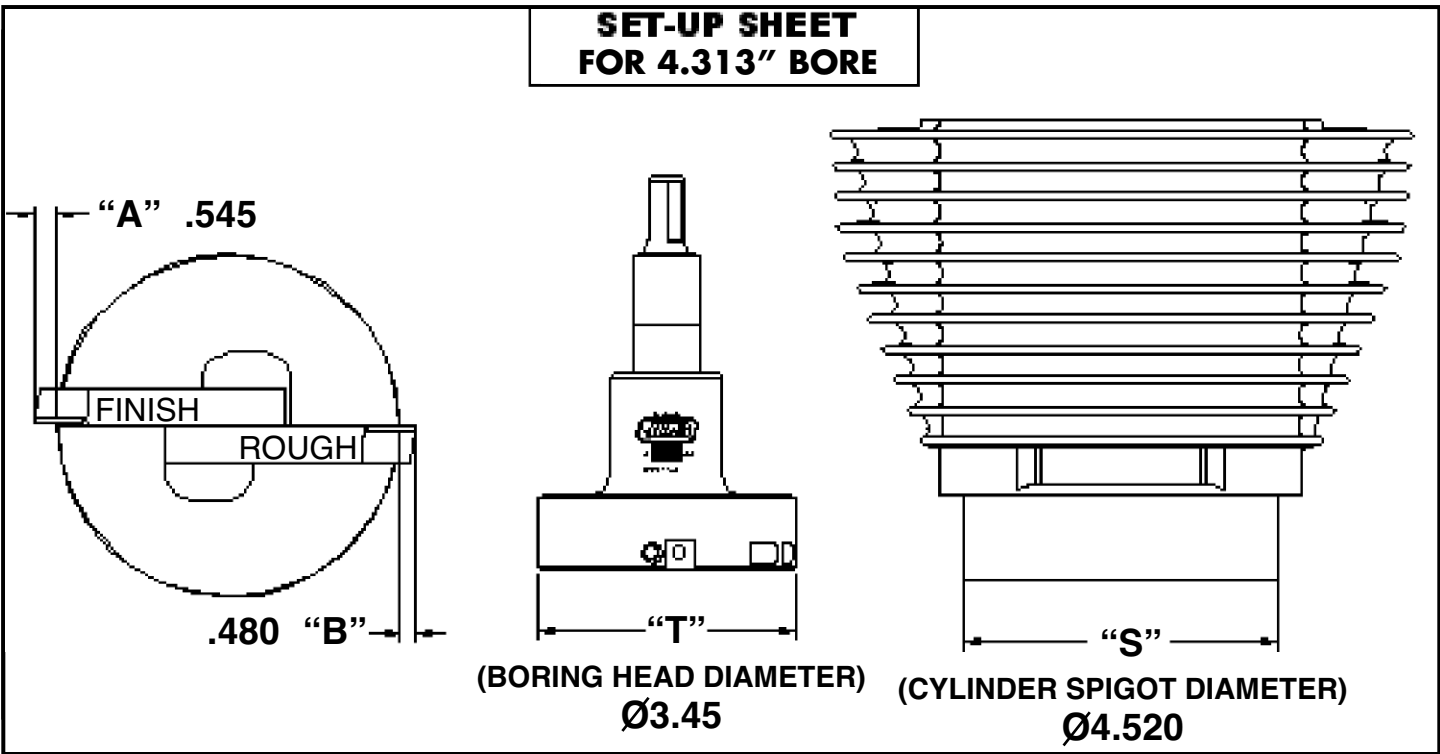
Step 1: S + .02" = C
Step 2: C - T = D
Step 3: D / 2 = "A"
Step 4: "A" - .065" = "B"

EXAMPLE

3.87" + .02" = 3.89"
3.89" - 3.45" = .44"
.44" / 2 = .22"
.22" - .065" = .155"

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

JIMS 120" TO 130" RACE CASE USE NO.1400 CASE BORE TOOL OR NO.1433 ADAPTER HEAD KIT



Step 1: Measure your cylinder spigot diameter. (S) and add .02".

Step 2: Measure the boring head diameter (T) as shown above. Subtract boring head diameter from answer obtained in step 1, this is your overall clearance (D).

Step 3: Divide your overall clearance by 2. This is your "A" dimension.

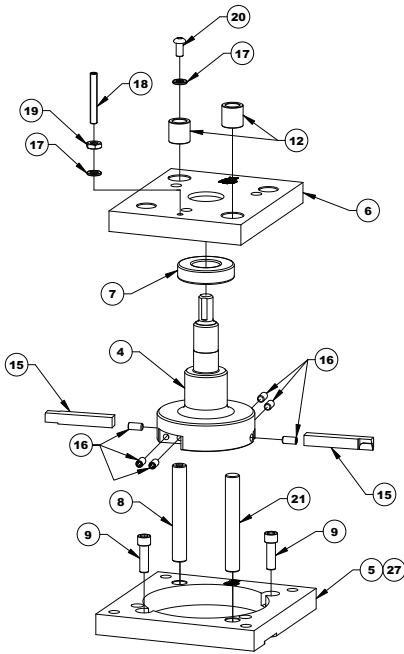
Step 4: Subtract .065" from your "A" dimension. This is you "B" dimension.

D = OVERALL CLEARANCE
S = CYLINDER SPIGOT DIAMETER
T = BORING HEAD DIAMETER
C = CASE BORING DIAMETER

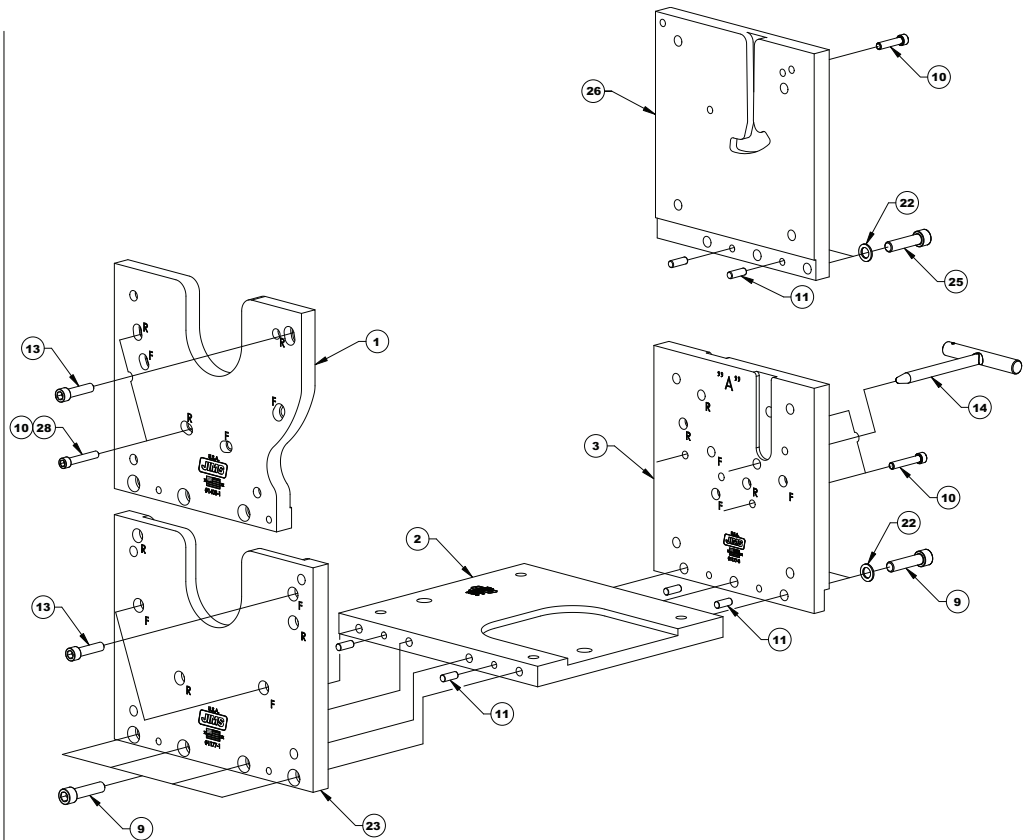
| FORMULA | EXAMPLE |
|----------------------------------|--------------------------------|
| Step 1: S + .02" = C | 4.520" + .02" = 4.540" |
| Step 2: C - T = D | 4.540" - 3.45" = 1.090" |
| Step 3: D / 2 = "A" | 1.090" / 2 = .545" |
| Step 4: "A" - .065" = "B" | .545" - .065" = .480" |

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

INSTRUCTION SHEET FOR TOOLS #1177, #1408, #1409, #1430, #1431 & #1432



BORING HEAD ASSEMBLY



CRADLE, ENGINE CASE

EXPLODED PARTS VIEW
SEE PARTS LISTS ON PAGE 12

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 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

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.

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



INSTRUCTION SHEET FOR TOOLS #1177, #1408, #1409, #1430, #1431 & #1432

**PARTS LIST FOR NO.1408 CASE BORE TOOL.
USE ON ALL TWIN CAMS '99-TO PRESENT**

| NO. | QTY. | DESCRIPTION | PART NUMBER |
|-----|------|---------------------------------------|-------------|
| 1 | 1 | PLATE, PRIMARY SIDE, CASE BORING TOOL | 1408-1 |
| 2 | 1 | BASE PLATE | 1177-2 |
| 3 | 1 | ALIGNMENT PLATE | 1177-3 |
| 4 | 1 | BORING HEAD, BORING | 1177-4 |
| 5 | 1 | LOCATING PLATE, BORING | 1177-5 * |
| 6 | 1 | SUPPORT PLATE, BORING | 1177-6 |
| 7 | 1 | SHIELDED BEARING | 8149 |
| 8 | 1 | PULL OUT DOWEL, 1/2" x 3-1/2" | 1685 |
| 9 | 9 | SCREW, 3/8-16 x 1" SHCS | 1686 |
| 10 | 4 | SCREW, 1/4-20 x 1" SHCS | 2133 |
| 11 | 4 | DOWEL PIN, 1/4" x 3/4" | 8093 |
| 12 | 2 | BUSHING | 1681 |
| 13 | 3 | SCREW, 5/16-18 x 1" SHCS | 2405 |
| 14 | 1 | T-PIN, ø3/8" SHANK | 1687 |
| 15 | 2 | TOOL BIT | 1688 ** |
| 16 | 6 | SET SCREW, 1/4-28 x 1/2" | 1689 |
| 17 | 1 | WASHER, 1/4", SAE | 1683 |
| 18 | 1 | SET SCREW, 5/16-18 x 1-3/4" | 1200 |
| 19 | 1 | NUT, 5/16-18 | 1222 |
| 20 | 1 | SCREW, 1/4-20 x 1/2, BHCS | 8090 |
| 21 | 1 | DOWEL PIN, 1/2" x 3-1/2" | 1680 |
| 22 | 3 | AN WASHER, 3/8" | 1265 |
| 23 | 1 | MOUNTING PLATE, CASE BORING TOOL | 1177-1 |
| 29 | 1 | INSTRUCTION SHEET (NOT SHOWN) | 1177-IS |
| 30 | 1 | WASHER, 5/16" | 2014 |

**PARTS LIST FOR NO.1177 CASE BORING TOOL.
USED ON TWIN CAM, '99-TO PRESENT**

| NO. | QTY. | DESCRIPTION | PART NUMBER |
|-----|------|-------------------------------|-------------|
| 2 | 1 | BASE PLATE | 1177-2 |
| 3 | 1 | ALIGNMENT PLATE | 1177-3 |
| 4 | 1 | BORING HEAD, BORING | 1177-4 |
| 5 | 1 | LOCATING PLATE, BORING | 1177-5 * |
| 6 | 1 | SUPPORT PLATE, BORING | 1177-6 |
| 7 | 1 | SHIELDED BEARING | 8149 |
| 8 | 1 | PULL OUT DOWEL, 1/2" x 3-1/2" | 1685 |
| 9 | 9 | SCREW, 3/8-16 x 1" SHCS | 1686 |
| 10 | 2 | SCREW, 1/4-20 x 1" SHCS | 2133 |
| 11 | 4 | DOWEL PIN, 1/4" x 3/4" | 8093 |
| 12 | 2 | BUSHING | 1681 |
| 13 | 3 | SCREW, 5/16-18 x 1" SHCS | 2405 |
| 14 | 1 | T-PIN, ø3/8" SHANK | 1687 |
| 15 | 2 | TOOL BIT | 1688 ** |
| 16 | 6 | SET SCREW, 1/4-28 x 1/2" | 1689 |
| 17 | 1 | WASHER, 1/4", SAE | 1683 |
| 18 | 1 | SET SCREW, 5/16-18 x 1-3/4" | 1200 |
| 19 | 1 | NUT, 5/16-18 | 1222 |
| 20 | 1 | SCREW, 1/4-20 x 1/2, BHCS | 8090 |
| 21 | 1 | DOWEL PIN, 1/2" x 3-1/2" | 1680 |
| 22 | 3 | AN WASHER, 3/8" | 1265 |
| 23 | 1 | MOUNTING PLATE | 1177-1 |
| 29 | 1 | INSTRUCTION SHEET (NOT SHOWN) | 1177-IS |
| 30 | 1 | WASHER, 5/16" | 2014 |

**PARTS LIST FOR NO.1409 CASE BORE TOOL.
USED ON BIG TWIN EVO'S '84-'99**

| NO. | QTY. | DESCRIPTION | PART NUMBER |
|-----|------|-------------------------------|-------------|
| 2 | 1 | BASE PLATE | 1177-2 |
| 4 | 1 | BORING HEAD, BORING | 1177-4 |
| 6 | 1 | SUPPORT PLATE, BORING | 1177-6 |
| 7 | 1 | SHIELDED BEARING | 8149 |
| 8 | 1 | PULL OUT DOWEL, 1/2" x 3-1/2" | 1685 |
| 9 | 6 | SCREW, 3/8-16 x 1" SHCS | 1686 |
| 10 | 2 | SCREW, 1/4-20 x 1" SHCS | 2133 |
| 11 | 4 | DOWEL PIN, 1/4" x 3/4" | 8093 |
| 12 | 2 | BUSHING | 1681 |
| 13 | 3 | SCREW, 5/16-18 x 1" SHCS | 2405 |
| 15 | 2 | TOOL BIT | 1688 ** |
| 16 | 6 | SET SCREW, 1/4-28 x 1/2" | 1689 |
| 17 | 1 | WASHER, 1/4", SAE | 1683 |
| 18 | 1 | SET SCREW, 5/16-18 x 1-3/4" | 1200 |
| 19 | 1 | NUT, 5/16-18 | 1222 |
| 20 | 1 | SCREW, 1/4-20 x 1/2, BHCS | 8090 |
| 21 | 1 | DOWEL PIN, 1/2" x 3-1/2" | 1680 |
| 22 | 3 | AN WASHER, 3/8" | 1265 |
| 23 | 1 | MOUNTING PLATE | 1177-1 |
| 25 | 3 | SCREW, 3/8-16 x 1-1/4" SHCS | 1036 |
| 26 | 1 | ALIGNMENT PLATE | 1409-1 |
| 27 | 1 | LOCATING PLATE, BORING | 1409-2 * |
| 29 | 1 | INSTRUCTION SHEET (NOT SHOWN) | 1177-IS |
| 30 | 1 | WASHER, 5/16" | 2014 |

**PARTS LIST FOR NO.1430 CASE BORE TOOL UPGRADE KIT.
USED ON TWIN CAM DYNA '06 TO PRESENT, FXST OR FL'S '07 TO PRESENT**

| NO. | QTY. | DESCRIPTION | PART NUMBER |
|-----|------|---------------------------------------|-------------|
| 1 | 1 | PLATE, PRIMARY SIDE, CASE BORING TOOL | 1408-1 |
| 28 | 2 | SCREW, 1/4-20 x 1" SHCS | 2133 |
| 29 | 1 | INSTRUCTION SHEET (NOT SHOWN) | 1177-IS |

**PARTS LIST FOR NO.1431 CASE BORE TOOL UPGRADE KIT.
USED ON ALL TWIN CAMS '99 TO PRESENT**

| NO. | QTY. | DESCRIPTION | PART NUMBER |
|-----|------|---------------------------------------|-------------|
| 1 | 1 | PLATE, PRIMARY SIDE, CASE BORING TOOL | 1408-1 |
| 3 | 1 | ALIGNMENT PLATE, CASE BORING TOOL | 1177-3 |
| 5 | 1 | LOCATING PLATE, CASE BORING | 1177-5 * |
| 8 | 1 | PULL OUT DOWEL, 1/2" x 3-1/2" | 1685 |
| 9 | 3 | SCREW, 3/8-16 x 1" SHCS | 1686 |
| 10 | 2 | SCREW, 1/4-20 x 1" SHCS | 2133 |
| 14 | 1 | T-PIN, ø3/8" SHANK | 1687 |
| 21 | 1 | DOWEL PIN, 1/2" x 3-1/2" | 1680 |
| 29 | 1 | INSTRUCTION SHEET (NOT SHOWN) | 1177-IS |

**PARTS LIST FOR NO.1432 CASE BORE TOOL UPGRADE KIT.
USED ON ALL EVOS '84-'99**

| NO. | QTY. | DESCRIPTION | PART NUMBER |
|-----|------|-----------------------------------|-------------|
| 8 | 1 | PULL OUT DOWEL, 1/2" x 3-1/2" | 1685 |
| 21 | 1 | DOWEL PIN, 1/2" x 3-1/2" | 1680 |
| 25 | 3 | SCREW, 3/8-16 x 1-1/4" SHCS | 1036 |
| 26 | 1 | ALIGNMENT PLATE, CASE BORING TOOL | 1409-1 |
| 27 | 1 | LOCATING PLATE, CASE BORING | 1409-2 * |
| 29 | 1 | INSTRUCTION SHEET (NOT SHOWN) | 1177-IS |

*1409-2 AND 1177-5 NOT COVERED UNDER WARRANTY IF LOCATING PLATE DISPLAYS CUTTER MARKS FROM IMPROPER ADJUSTMENT.
**1688 NON-SERVICEABLE WEAR ITEM, NO WARRANTY.

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