



**INSTRUCTIONS FOR THE  
SHIMANO HOLLOWTECH II®  
OUTBOARD BEARING SYSTEM**



**RECOMMENDED TOOLS AND SUPPLIES**

- Enduro® Outboard Bearing Replacement Kit
- Bottom Bracket Bearing Puller/Press Tool
- 8mm Allen wrench
- 5mm Allen wrench
- Outboard bearing cup tool (Park BBT-9 or similar)
- Shimano TL-FC16 Crank Arm Cap Tool  
(cap tool included as part of the Park BBT-9)
- Rubber-faced mallet
- “Pocket” screw driver (very small, flat blade)
- High-grade bicycle grease
- Anti-seize compound
- Torque wrench



**NOTE: REMOVE YOUR BICYCLE CHAIN BEFORE BEGINNING**



1) Loosen the left-side crank arm bolts using the 5mm Allen wrench. Loosen them in an alternating pattern.

2) Remove the crank arm “cap” using the appropriate Shimano or Park tool.



3) Pull the left crank arm off.



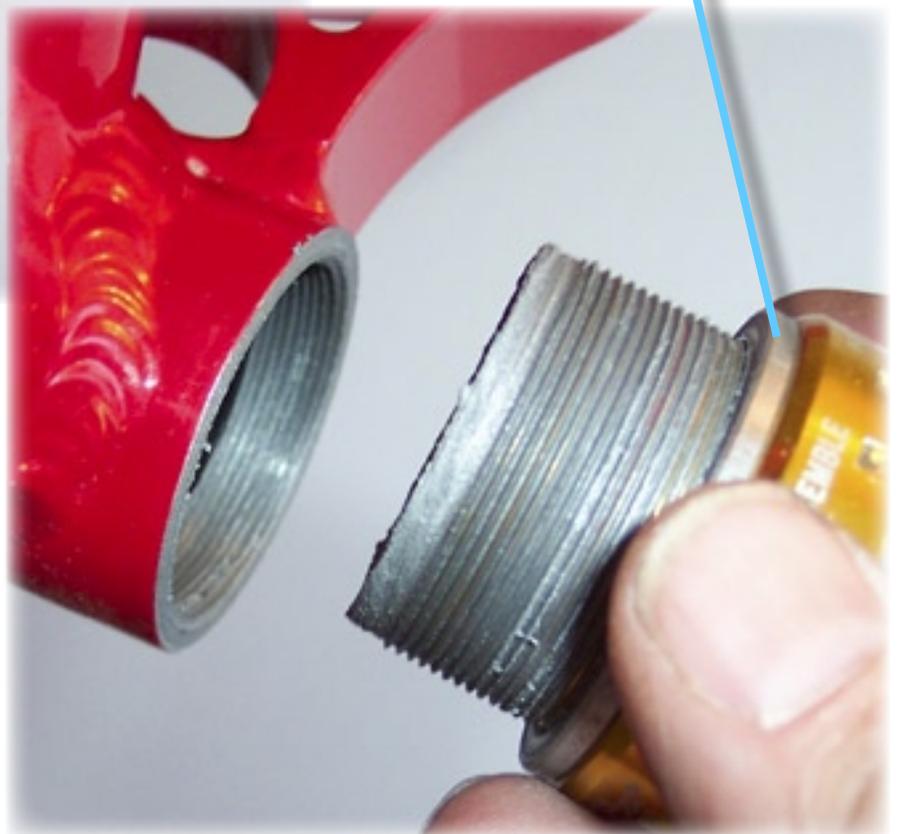
4) Remove the right crank unit. If resists being pulled out by hand, a gentle whack with a rubber-faced mallet will get it moving.

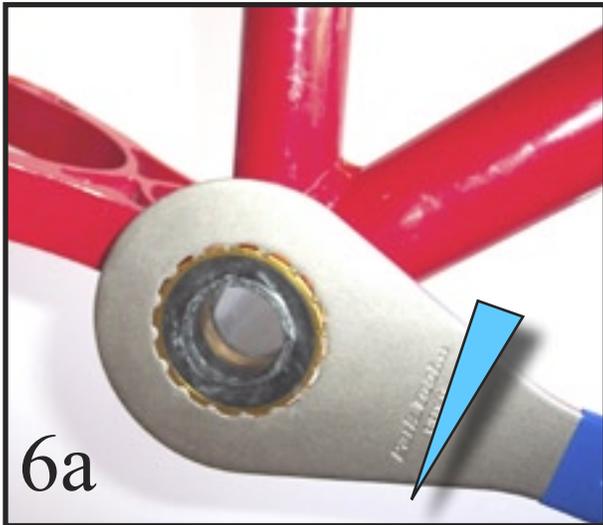




5) Remove the left, or non-drive side bearing cup.

Make a note of the spacers for re-assembly.



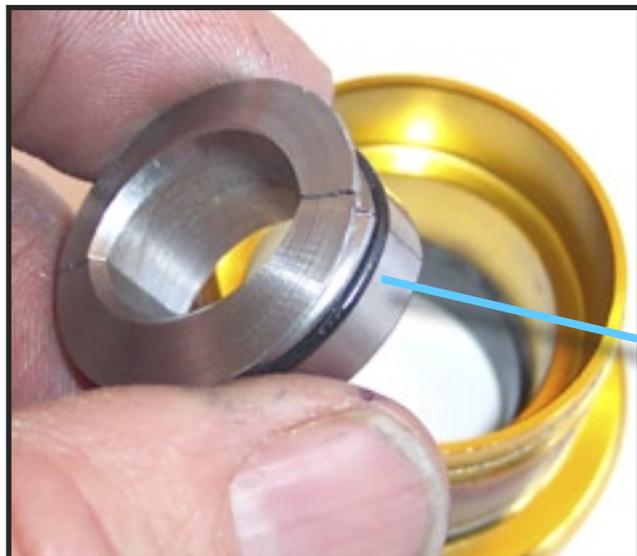


6) Remove the DRIVE (right) side cup.

a) Turn the bottom bracket cup wrench *clockwise*.



b) Set the inner sleeve and the spacers aside (take note of the spacers for proper re-assembly).



7) Set one of the bearing cups down on a flat surface and insert the Collet from the Bearing Puller/Press Tool.

“COLLET”

Insert the collet narrow-end-first. The rubber ring holding the collet halves together is not necessary. Particularly when removing bearings from the Race Face cups, it will be easier to expand the collet with the rubber ring removed.



“COLLET  
EXPANDER”

8) Start the collet expander into the collet.



9) Apply pressure to the Collet Expander until it “seats” between the collet halves.

If you encounter difficulty in getting the expander to seat between the collet halves, lift the cup off of the flat surface and push on the expander until it fully seats as shown.





10) Set the bearing cup (with collet and expander) into the Cup Holder.



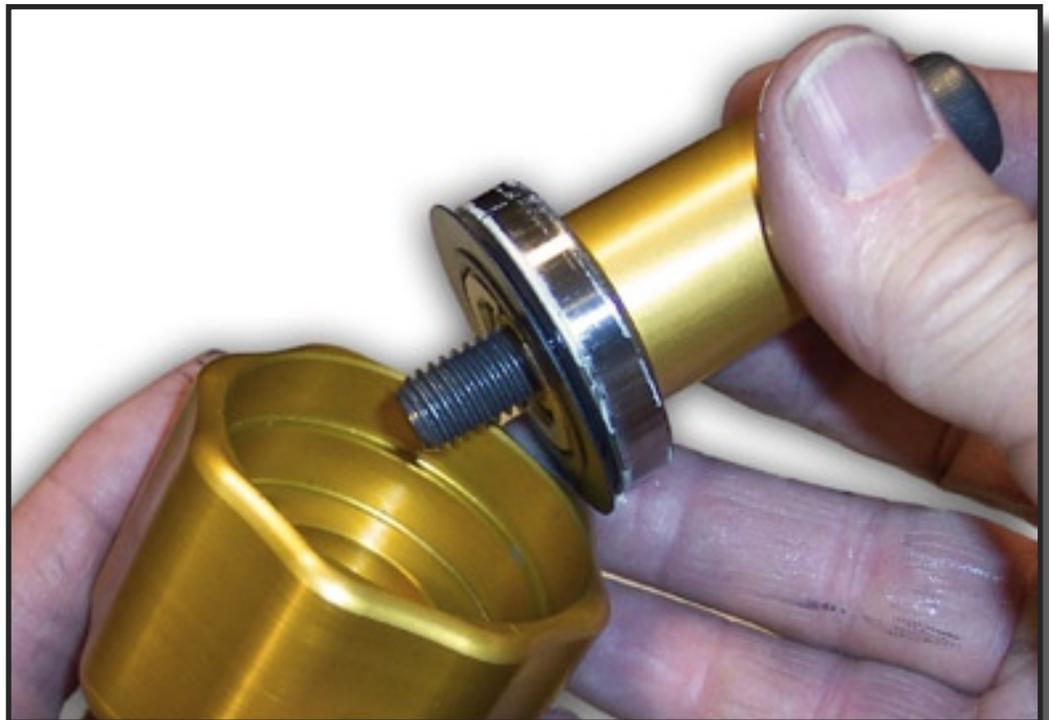
11) Press out the bearing and plastic cap by inserting the Bolt and using an 8mm Allen wrench to turn it clockwise until you hear and feel the bearing “drop out” of the cup.



12) Lift the cup off of the Collet Expander.



13) Unthread the Bolt from the Cup Holder and remove the old bearing and plastic cap.





14) Remove the sealing ring from the outer circumference of the bearing cup.

*The Shimano cups use a "V" ring. Most likely, it came out when the bearing was pressed out. If not, be sure and remove it, as it will interfere with the new sealing system.*

**"BEARING GUIDE"**

15) Place one of the bearings from the Enduro® Kit onto the 24mm side of the Bearing Guide.

*(The other side of the Guide is for installing OE bearings)*





16) Place the Bearing Guide into the Cup Holder.

17) Place the bearing cup on top of the new bearing.





18) Place the Support into the threaded end of the bearing cup.

19) Insert the Bolt and turn it clockwise with the 8mm Allen wrench until it “bottoms.”

Then, remove the bolt and take out the bearing cup.





20) Re-install the left (non-drive side) cup and spacer(s).



a) Apply anti-seize compound to the cup threads.



b) Replace original spacer(s).



c) Start the cup into the frame by hand. The left side threads in normally (clockwise).



d) Use a proper BB Cup Tool to tighten the cup firmly in place.



21a-c



21) Re-install the right, or drive side cup and spacer(s).

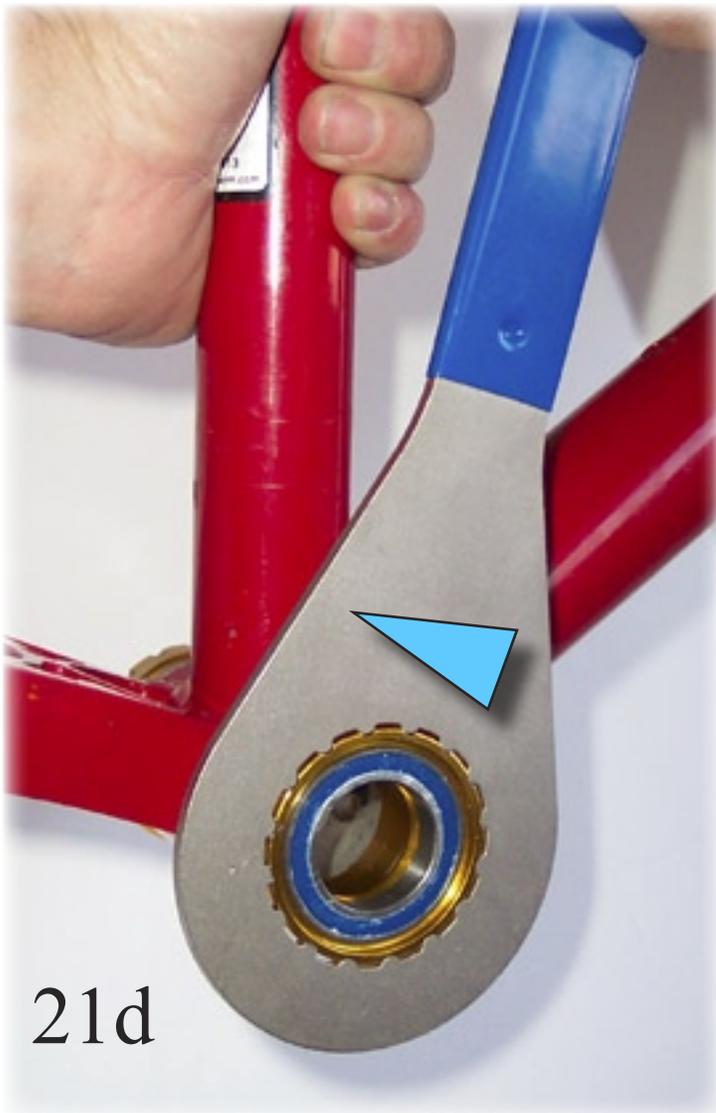
Remember:

a) Apply anti-seize to the cup threads.

b) Replace the proper number of spacers.

c) *Install the inner sleeve!*

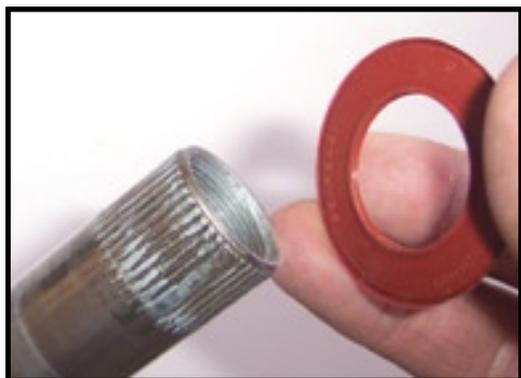
d) The drive side cup has reverse, or left-hand threads. Tighten by turning counter-clockwise.



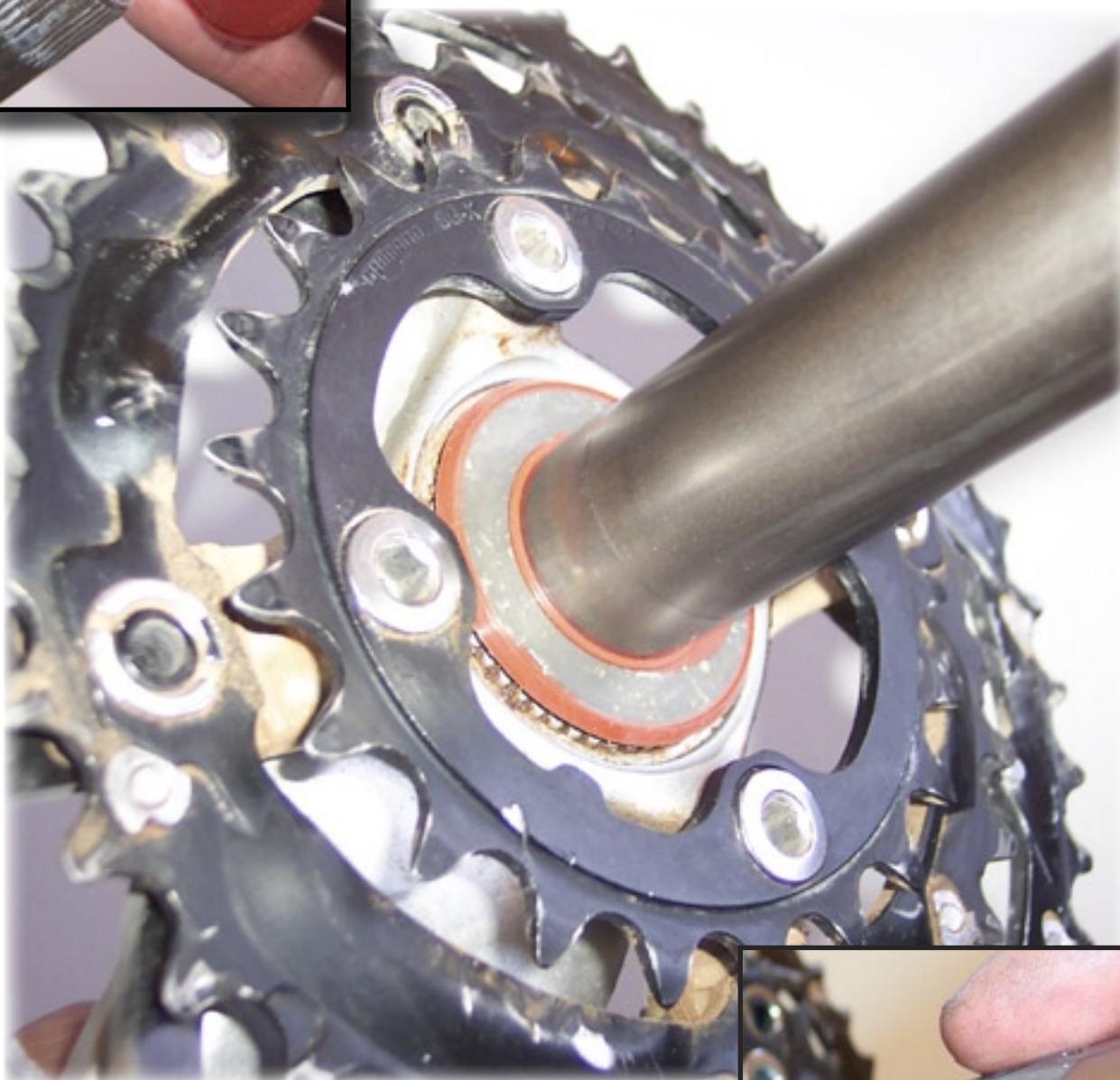
21d

22) Although the bearing is sealed, you may wish to apply a layer of Super-Web Grease® for extra protection.





23) Put one of the new seals onto the crank spindle. The reddish, silicone side of the seal will face away from the bearing.



24) Apply a thin coat of grease on the spindle.



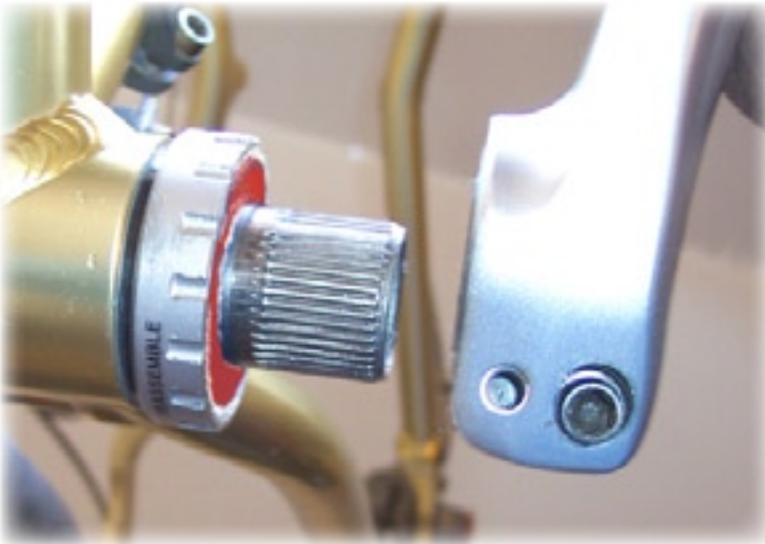


25) Insert the right crank assembly. If your bike's bottom bracket faces are parallel and the bearings are properly seated, the spindle should line up with the opposite bearing and come through with very little effort. If the spindle tightens up at the last few millimeters, you may lightly tap the drive side with the rubber-faced mallet.

You will notice that the Enduro® BB system does not use a plastic shim. The inner race of the Enduro® bearing has a smaller ID that directly contacts the spindle. This allows room for larger ball bearings, improving strength and stiffness.

26) Install the other seal onto the spindle. Remember that the reddish silicone surface faces away from the bearing.





27) Lubricate the axle splines and push the left crank arm onto the axle (the crank arm will only slide on if it is aligned correctly--notice the one wide groove).

28) Apply some anti-seize compound to the crank arm cap and thread it in by hand. Use the Shimano or Park tool to tighten the cap. Note that it requires very little torque to correctly tighten the assembly (recommended 4-6 INCH LBS).





29) Remove the crank arm Allen bolts and coat the threads with anti-seize compound. Using the 5mm Allen wrench, tighten the opposing bolts in an alternating pattern. Specified torque is 88-132 INCH LBS for each bolt.



30) Check that there is no side-to-side play (looseness) and that the crankset spins freely and smoothly. If so, put your chain back on and hit the dirt!



**Outboard Bottom Bracket  
Bearing Replacement Kit**  
*by Enduro Bearings*



**Outboard Bottom Bracket  
Bearing Puller/Press**  
*by Sonny's Bike Tools*

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