





OBSELETE PERFORMANCE ASSEMBLY SOLUTIONS

Work Instruction
Page 1 of 8

Operation Number: 20 Description: Short Block Assembly	Prepared By: Quality Approved by: Manufacturing
Revision Date: 02/11/03 Revision Level: 07	Issue Date: 12/05/02 Issued by: Quality
Document Number: PAS-WI-IMC-111902-4	Document Tier: 3
Title: Short Block Assembly	

SHORT BLOCK ASSEMBLY

1. Select a crank assembly from the cart.
2.  Fill out appropriate portions of the Assembly Traveler.
3. Place crankshaft assembly into Fixture #1 with the sprocket side up. Place each of the case halves next to their appropriate fixtures.
4. Using the rollover stamp, stamp the Engine Serial Number on the case serial pad located next to the Indian Logo. **DO NOT double-stamp serial pad. If you do so, red tag the case for rework.**
5. Install shim  according to information written on the crank assembly, measured at the Flywheel Assembly Operation. If the flywheel shows “.010”, use a .010 shim, etc. (.005, .010, .015, .020, .025)
6. Place the Sprocket Shaft Bearing (PN01-010) on the Sprocket Shaft with the taper up.

DO NOT MIX BEARING COMPONENTS!

7. Install the Oil Slot Ring (PIA Bearing Kit PN01-010) into the left case half making certain that the oiling slot is aligned with the oil hole in the case.



OBSOLETE PERFORMANCE ASSEMBLY SOLUTIONS

Work Instruction
Page 2 of 8

Oil Hole

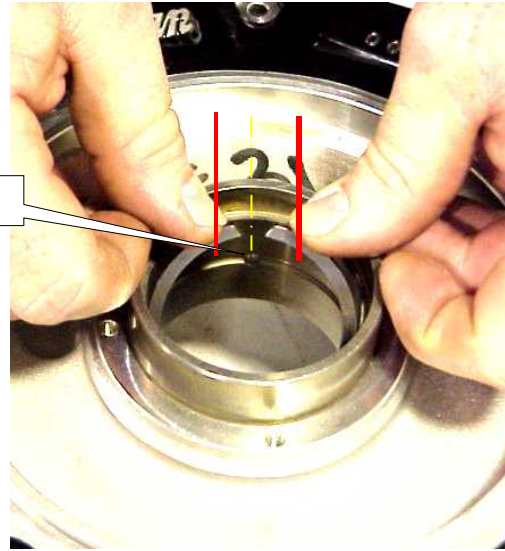


FIGURE 1.1 shows alignment of Oil Hole and Spacer Slots.

IMPORTANT: THE SLOT IN THE RETAINER *MUST* LINE UP WITH THE OIL FLOW HOLE! FAILURE TO ALIGN PROPERLY WILL ADVERSELY AFFECT ENGINE PERFORMANCE.

8. Press in inner race (PIA Bearing Kit PN01-010) using Jims Tool #2246-1. Do not exceed 1500 psi.
9. Press in the outer race using Jims Tool #2246-1. (PIA Bearing Kit PN01-010) Do not exceed 1500 psi.
10. Using the special Jim's Tool # 39361-69, press the sprocket shaft bearing down onto the sprocket shaft. Torque to 50-55 ft lbs with tool # I-04.
11. Check to ensure proper seating of the race.
12. Install spacer.
13. Lubricate the bearing with assembly lube.
14. Set the left case half on top the crankshaft (pinion shaft down) and separate the rods making certain that the male rod is on the right hand side of the case.



OBSOLETE PERFORMANCE ASSEMBLY SOLUTIONS

Work Instruction
Page 3 of 8

Check to make certain that the male rod is on the right hand side of the assembly.



FIGURE 1.2 shows the connecting rods, male to the right and in their respective cylinder paths.

Both the Sprocket Shaft and the Pinion Shaft have bearing assemblies.



FIGURE 1.3 shows bearing race.

- a) Lubricate the bearing and shaft.
15. Using the *Jim's* installation tool # 39361-69, press the outer bearing onto the sprocket shaft.



OBSOLETE PERFORMANCE ASSEMBLY SOLUTIONS

Work Instruction
Page 4 of 8



FIGURE 1.4

16. Using Tool #I-04, torque the bearing to 50-55 ft lbs.

*The seals are
pressed in
using special
tools as
shown at
right.*



FIGURE 1.5 shows seals being set with special Jim's Tool

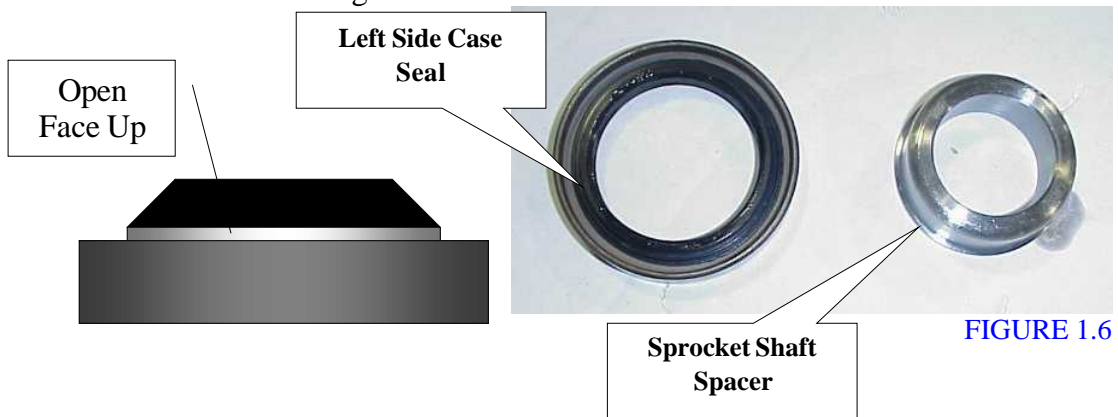
17. Check wiper clearance, .007 min using a feeler gage, Tool#I-023.



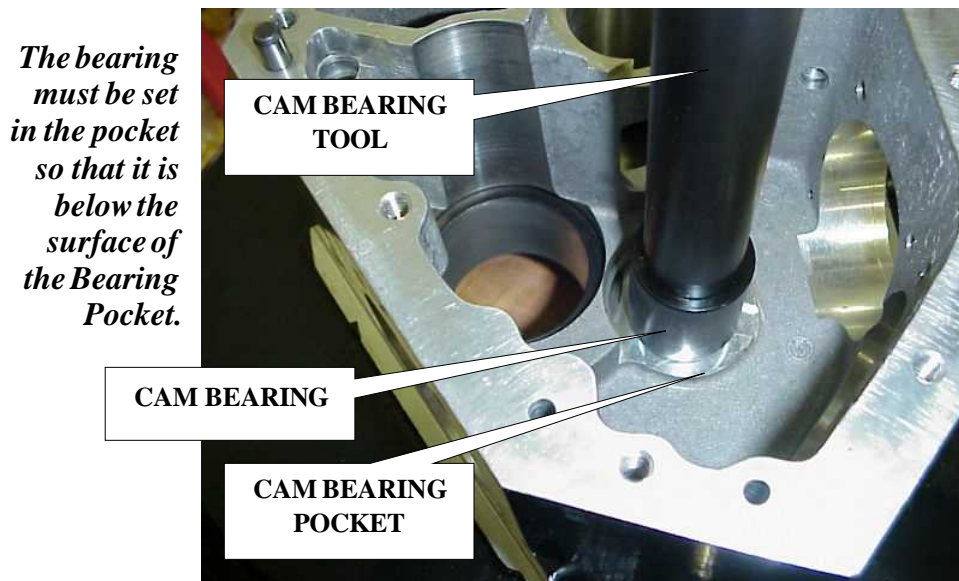
OBSOLETE PERFORMANCE ASSEMBLY SOLUTIONS

Work Instruction
Page 5 of 8

18. Check the rotation of the flywheel to ensure there is enough clearance and are no binding issues.
19. Lubricate the seal with assembly lube and install on Spacer as shown in figure 1.6. (PN01-250). (Open face of the case seal facing up.)
20. Install seal/spacer (PN01-011) with the sharp edge down, using Jim's tool #39361-69. Hand tighten.



21. Move assembly to Fixture #2.
22. Install the Cam Bearing (PN01-106) with tool # 33416-80-1. Make sure the cam bearing is bottomed out and that it is below the surface of the Cam Bearing Pocket.





OBSOLETE PERFORMANCE ASSEMBLY SOLUTIONS

Work Instruction
Page 6 of 8

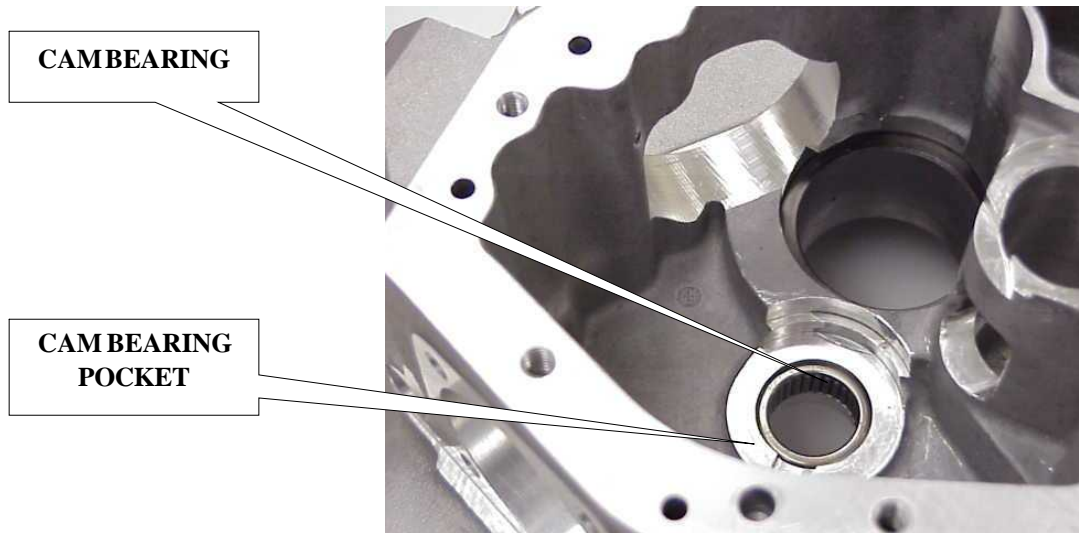


FIGURE 1.8

23. Using assembly lube, lubricate the Pinion Shaft(PN01-063)
24. Install Pinion Shaft Bearing (PN01-014).
25. Install C-Ring Clip (PIA PN01-014) with the beveled edge facing out.
26. Check sealing or mating surfaces of the case halves for oil, dirt, chips, debris scratches and nicks. Clean with alcohol and a clean rag.
27. Apply a thin bead of sealant, “Loctite 515 Gasket Eliminator” around the perimeter of the case using the applicator.

Apply a small, thin bead of “Loctite 515 Gasket Eliminator” around the entire perimeter of one half of the engine crank case. Only a small amount is needed to seal this union. The torque of the bolts will spread the sealant. Wipe off any excess after the bolts have been set and torque has been applied.

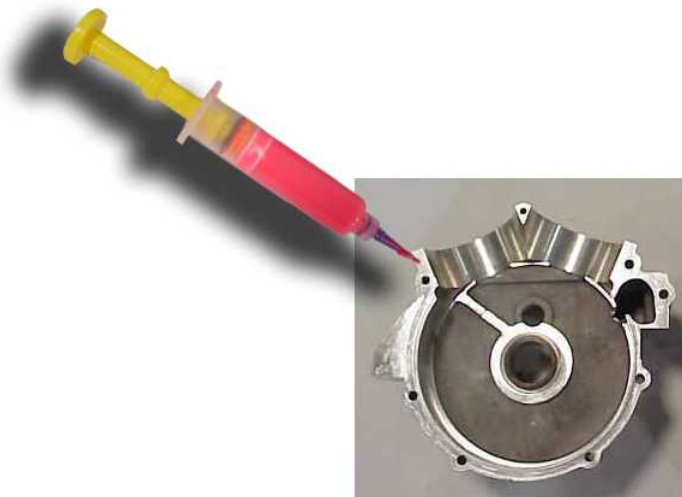


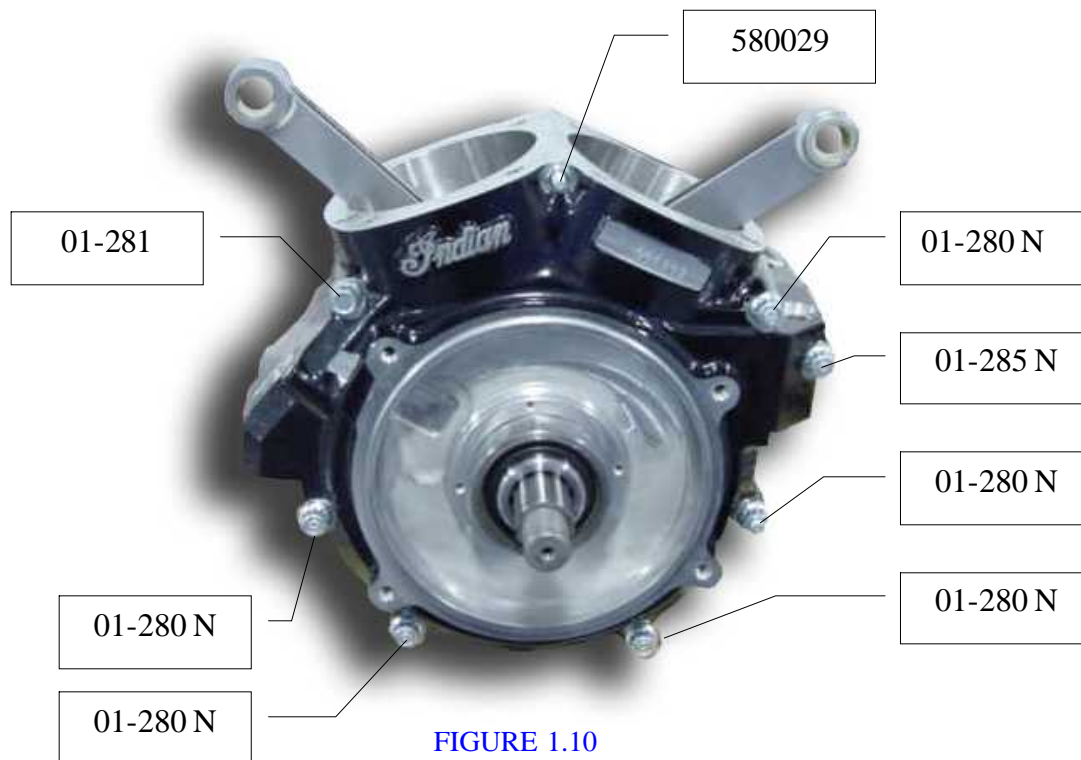
FIGURE 1.9




OBSOLETE PERFORMANCE ASSEMBLY SOLUTIONS

Work Instruction
Page 7 of 8

28. Set the two case halves together, making certain that the rods will be in separate cylinders.
29. Apply a small amount of blue thread lock to the following fasteners;
 - 01-282 (1)
 - 01-285 (1)
 - 01-281 (1)
 - 01-280 (5)
 - 580029 (1)
30. Insert the eight Case bolts into the case as follows;



31. Thread nuts (PN01-283) onto the six case bolts. (designated in callout box with the letter "N")
32. Thread one nut (PN01-282) onto fastener PN580029.
33. Torque fasteners to 18 foot pounds in the following order: 



OBSOLETE PERFORMANCE ASSEMBLY SOLUTIONS

Work Instruction
Page 8 of 8

The exception to this is fastener PN580029, which is torqued at 8-12 ft.-lbs.

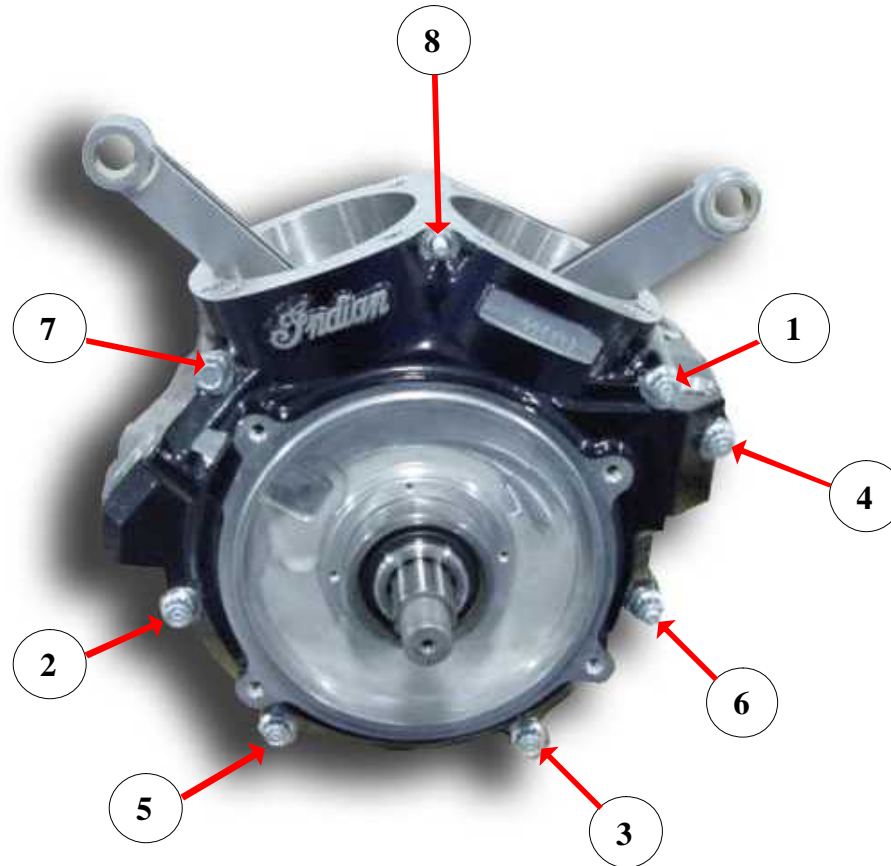


FIGURE 1.11

34. Using the “Click” wrench, make certain that all fasteners have had 18 foot pounds of torque applied to them. See that #8 has had 8-12 ft.-lbs.
35. With a clean, lint free wipe, remove the excess sealant from the case joint.
36. Check for binding by turning the crank several times.
37. Fill out all appropriate fields of the Assembly Traveler and place the complete short block assembly on the rack.