

CRF/XR50

106cc Stroker Crank Kit

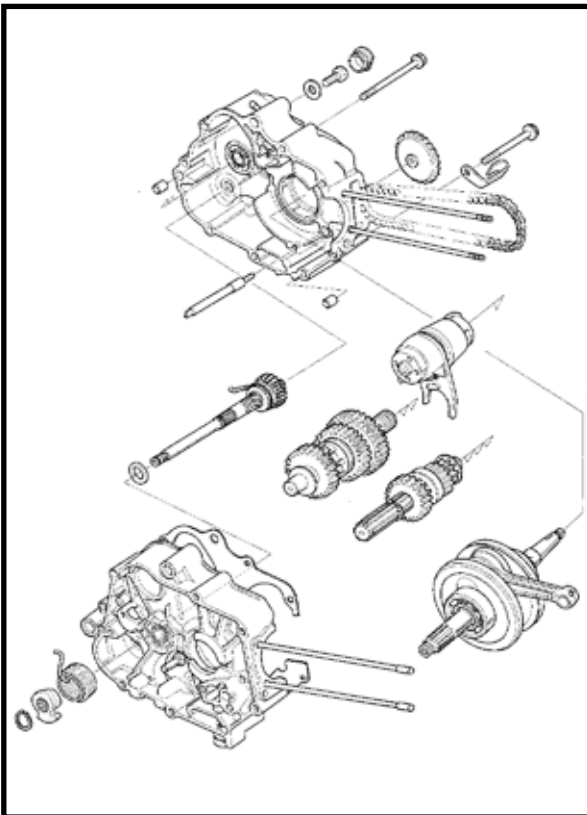


Thanks for purchasing this exciting new product from BBR Motorsports! Extensive R&D has gone into this product and we are certain that you will be just as excited about it as we are. If you have any questions please give us a call. Thanks!

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Installation Instructions:

Tools Required:

- Honda Service Manual
- 8mm socket, wrench, or T-handle wrench
- 9mm wrench
- 10mm socket, wrench, or T-handle wrench
- Torque wrench
- Special clutch removal wrench (see text)
- Feeler gauges (to adjust the valves)

Disclaimer: *This big bore kit requires professional installation. It is up to you to determine if you have the skills necessary to install this kit. If you are not confident in your abilities, please contact a professional mechanic. This kit installs exactly like the OEM Honda components with the exceptions noted here. You should refer to the OEM Honda Service Manual for any questions regarding disassembly or reassembly of your motorcycle engine. Because BBR Motorsports, Inc. cannot control the assembly of this engine kit, no guarantees are made as to performance, reliability, or usability. It is entirely up to the individual doing the installation to determine the fitness of this product and its usability. All liabilities are the responsibility of this individual (both consequential and incidental). We recommend using high quality motorcycle oil and changing it often.*

1. Removal of cylinder head and cylinder can be done with the motor in the chassis or removed. Remove throttle cable, air filter assembly, carb, drive chain, skidplate, exhaust system, and shift lever.



2. Remove the left side cover (flywheel cover) by removing the (3) 6mm bolts (8mm heads).



Remove countershaft sprocket.

3. Remove the left side timing chain/camshaft cover by removing the 6mm bolt (10mm head) on the right side of the engine. This bolt extends through the camshaft and secures the camshaft cover.



4. Remove the (3) 6mm bolts (10mm heads) that hold the timing chain roller (shown) and the cylinder head to the cylinder and the cylinder to the engine cases.



5. Remove the (4) 10mm nuts from the top of the cylinder head cover and remove the cover.



6. Remove the camshaft sprocket from inside the left of the cylinder head by removing its (2) 6mm bolts (8mm heads).



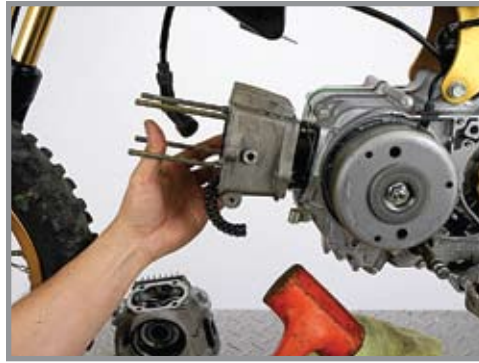
7. Remove the cylinder head, gasket, and 2 dowels. Some force may be required to release the head gasket. A rubber hammer may be useful. Be careful not to damage the cylinder or cylinder head. DO NOT use a screwdriver to pry the components apart or damage will occur.



8. Remove the cam-chain roller from inside the cylinder by removing the 6mm bolt (10mm head). Needle nose pliers may be helpful to remove the roller from inside the cylinder.



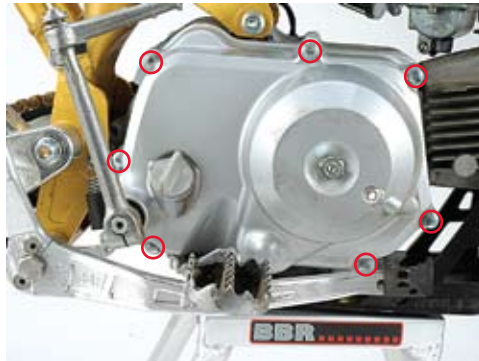
9. Remove the cylinder from the engine cases. The base gasket may also be difficult to release. Again, a rubber hammer can be used with care.



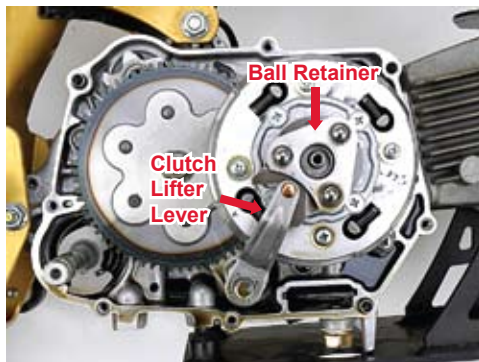
10. Remove one of the small piston clips from inside the piston (use a small screwdriver or needle-nose pliers). Push out the piston pin, and remove the piston from the rod. Use care not to drop the clip into the engine cases. Place a rag in the engine openings to prevent this.



11. Remove kickstarter lever, brake pedal, and footpeg mount. Remove clutch cover (right crankcase cover) by removing the (8) 6mm bolts (8mm head).



12. Remove the ball retainer and spring. Remove the clutch lifter lever.



13. Remove "oil-through-tube" (this is the name of the part) and spring. Remove the clutch lifter cam plate.



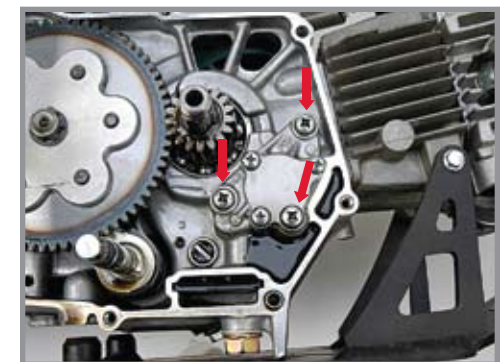
14. Remove the (4) Phillips head screws and then remove the clutch outer cover.



15. Straighten the tab of the clutch lock nut lock washer. Remove the clutch lock nut with the appropriate special clutch tool. It is available from Honda as part #07716-0020100.



16. Remove the oil pump by removing the (3) Phillips head screws.



17. Remove ignition stator base (2 phillips head screws).



18. Remove camchain tensioner and cam chain.



19. Remove the snap ring retaining the driven gear and remove gear.



20. Remove primary gear, bushing and spacer. These parts will need to be installed on your new crank.



21. Remove the shift drum stopper arm and camplate (1 bolt each)



22. Remove the snap ring from the kickstarter shaft, disconnect the return spring, and slide off the retainer.



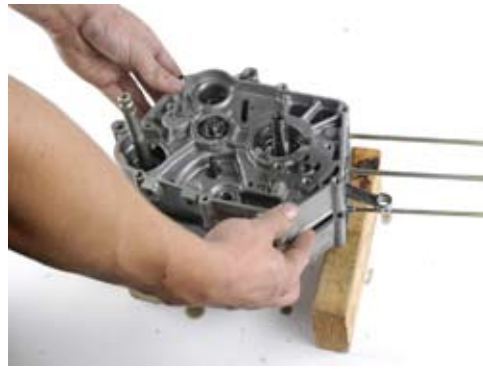
23. Remove the shift shaft.



24. Loosen and remove the crankcase bolts (7).



25. Place the engine left side down on supports (old 2 X 4's work well). Separate the right and left crankcase halves. May help to tap transmission shaft and crankshaft with rubber hammer.



26. Remove the crank.



27. Clean the crankcase mating surfaces before assembling.



28. Install BBR crank into left crankcase.



29. The oil passage for the new high flow oil pump needs to be drilled to a larger hole size. Begin by removing the lower left stud. You can use two of the cylinder nuts (locked against each other) to unthread the stud from the cases. With the stud removed, use the supplied 2mm drill bit to drill out the oil passage. Be very careful to protect the internal areas of the engine from stray metal chips when drilling. Be certain to clean up all metal chips before reassembly. Reinstall the head stud removed above. Install the centercase gasket and install the right crankcase half over the crankcase.



30. Install the 7 bolts that hold the crankcase halves together. Tighten in a crisscross pattern.



31. Install the kickstart shaft with spring into the right side of the motor.



32. Install the bolt and washer on the shift drum. Install drive gear. Install primary gear, bushing and spacer removed from OEM crank.



33. Install cam chain and ignition stator base.

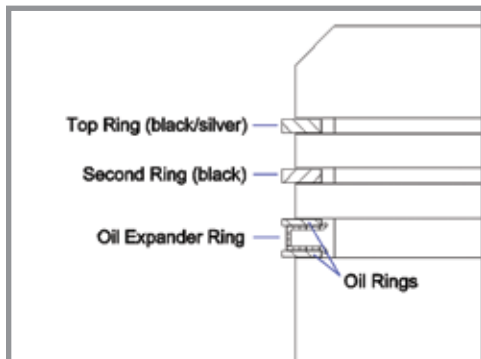
Note:

At this time you may chose to install motor into the chassis or install after cylinder and cylinder head assembly is installed.



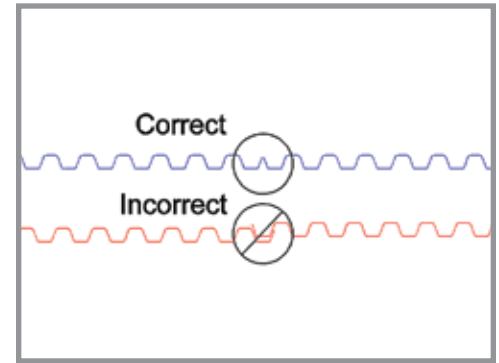
34. Piston Ring Installation: Using your fingers and a minimal amount of force, pry each ring over the piston and slide it into the groove. Apply a thin coat of motor oil onto each ring before installing.

- Install the oil expander ring (the wavy ring) onto the bottom groove. See bottom drawing.
- Install the two thin rings: one below the oil expander ring and one above, in the same groove.
- Install the black ring onto the center groove making sure any letters face up.
- Install the black and silver ring onto the top groove making sure any letters face up. (cont.)



34.(cont.)

· Rotate all gaps in rings approximately 90 degrees from each other so they do not line up. Also make sure that the oil expander ring does not overlap itself.



35. Install a piston clip into the piston. Use your fingers to compress the rings while sliding the piston into the cylinder. Turn the piston so that the "IN" is facing the carb/intake side of the cylinder. Let the piston protrude enough to insert the piston pin.



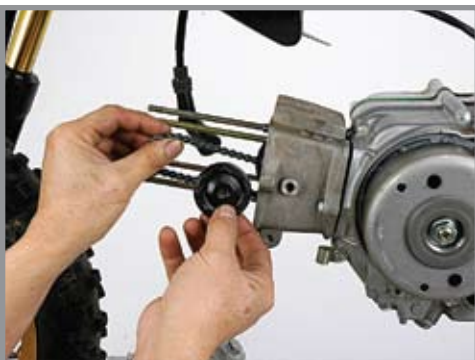
36. Make certain that the crank is at top dead center (at the top of its stroke or TDC). This is indicated by the "T" on the flywheel lining up with the notch in the case. Turn the flywheel to position the crank at TDC if necessary.



37. Slide the cylinder onto the engine after placing the gasket, o-ring, and dowels onto engine cases. Once the piston has reached the connecting rod install the wrist pin through the piston and install the 2nd circlip to secure the piston pin.



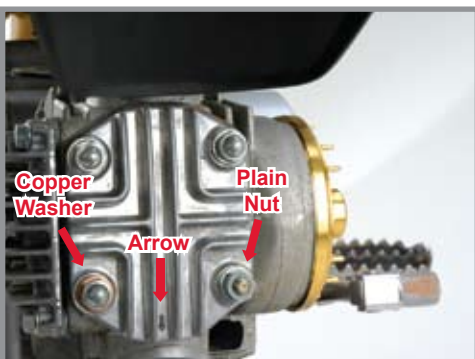
38. Feed the timing chain up through the cylinder and install the 6mm bolt (10mm head) to retain the cylinder to the engine cases. Slide the timing chain roller into the cylinder and install its bolt.



39. Slide the head gasket onto the head studs and install the o-ring. A small amount of grease on the o-ring can help hold it in place. Then slide the cylinder head onto the head studs. Feed the timing chain up through the cylinder head.



40. When installing the top cylinder head cover make sure the arrow on the cover is pointing down. Place the copper washer onto the bottom left bolt. Place the plain nut onto the bottom right bolt.



41. Check that the crank is still at TDC. Camshaft lobes should be pointing down. Insert the timing chain sprocket and align the "O" on the top of the sprocket with the notch in the cylinder head. It may be helpful to use a screwdriver to hold the sprocket from dropping into the engine.



42. Once the sprocket has been installed, double check that the flywheel is on the "T" mark and the notch on the cylinder head is pointing at the "O" on the sprocket. Torque bolts to 6.5 ft.lbs. Rotate the flywheel slowly by hand and check for any interference.



43. Install the cam cover.

IMPORTANT NOTE: If you do not correctly orient the timing sprocket, major engine damage will occur. If you are unsure about this procedure, seek advice from a qualified mechanic.



44. Install new oil pump onto the crankcase while aligning the pump shaft groove with the pump drive shaft. Install and tighten the (3) Phillips head screws that secure the oil pump.



45. Disassemble the clutch basket by pressing on the plates (on the back side) and releasing the large snap ring with a screw driver.



46. Remove the (4) Phillips head screws on the front of the clutch basket.



47. Pull the outside of the basket off exposing the clutch springs. Note that the (4) small buffer springs will fall out. Replace the clutch springs with the BBR HD clutch springs. Reassemble the clutch.



48. Once the clutch is assembled, you can insert the clutch buffer springs from the front side. Insert the back of the spring into the cast iron inner basket. Use a screwdriver to compress the spring and slip it into the out basket's tang.



49. Reinstall the clutch assembly onto the crankshaft. Install the 14mm tabbed lock washer, then the conical lock washer (with the words "OUT SIDE" facing out), and then the lock nut. Use the special clutch tool to torque the nut to 12-15ft. lbs.



50. Install the clutch lifter cam plate, the "oil-through-spring" and "oil-through-tube". Next install the spring, ball retainer, and the clutch lifter arm. Finally, reinstall the clutch cover (right side engine case), kick-starter and brake pedal.



51. Adjust the valves. Remove the Intake and Exhaust valve cover caps with a 17mm wrench.



52. Using a 9mm wrench, loosen the lock nut and rotate the adjuster until your feeler gauge measures as follows:

Intake: .002"
Exhaust: .003"

Lock adjusters and reassemble.



53. Install carb, manifold and air filter. Be sure to oil the air filter with a quality motorcycle air filter oil designed for a cotton element filter. Install throttle and route cable.

54. Fill with engine oil and check that everything is tight and in place. Typical warm up procedures, as described in your owners manual, should be followed to allow for proper break-in.

