

XR/CRF50

82cc BIG BORE KIT

82cc PERFORMANCE CYLINDER HEAD KIT



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XRICRF50 82cc BIG BORE KIT

Tools Required:

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

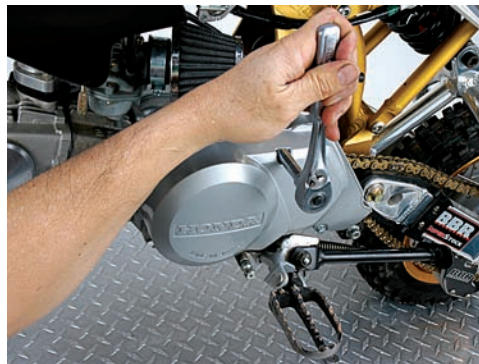


Disclaimer: This big bore kit requires professional installation. It is up to you to determine if you have the skills necessary to install this kit. If you are not confident in your abilities, please contact a professional mechanic. This kit installs exactly like the OEM Honda components with the exceptions 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.

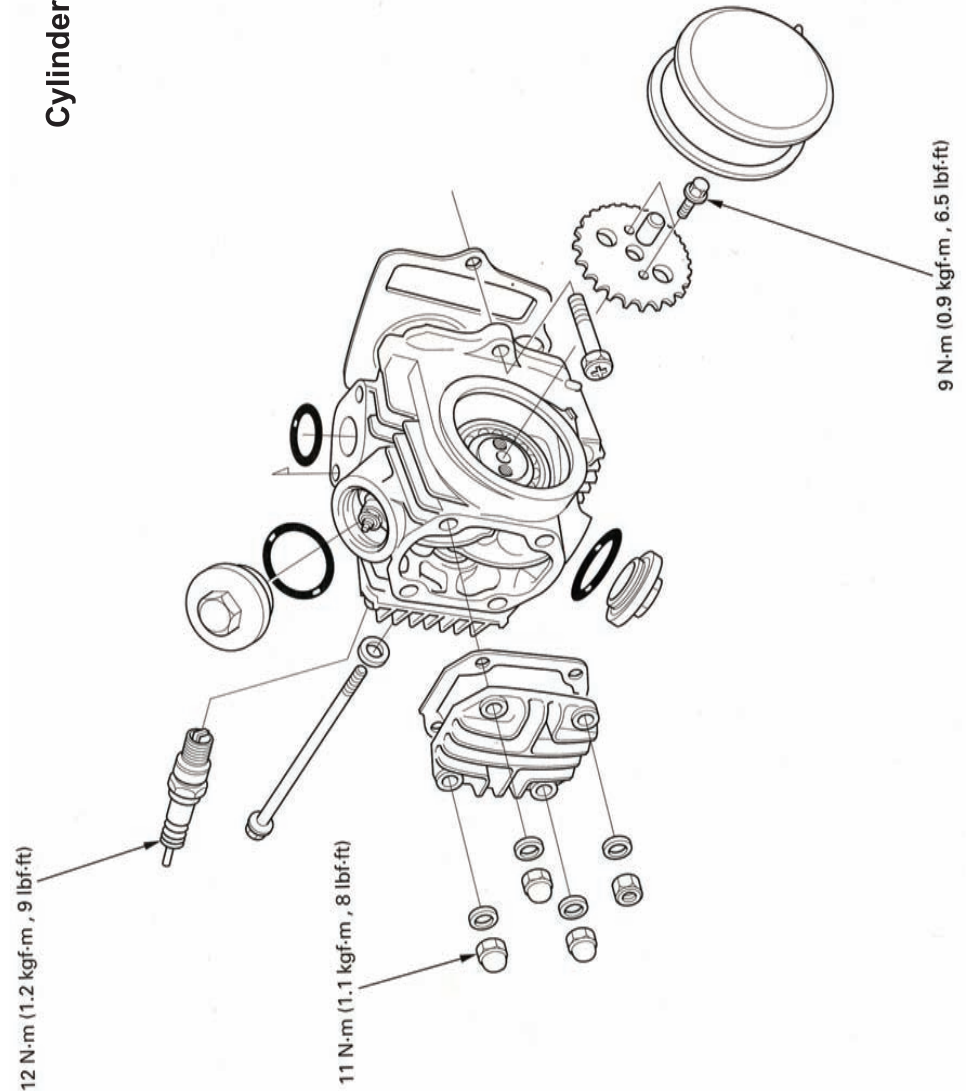
1. Installation of the engine kit can be done with the motor in the chassis or removed. If you choose to remove it, remove the two large motor mount bolts, throttle cable, air filter assembly, carb, drive chain, skid plate, and exhaust system.



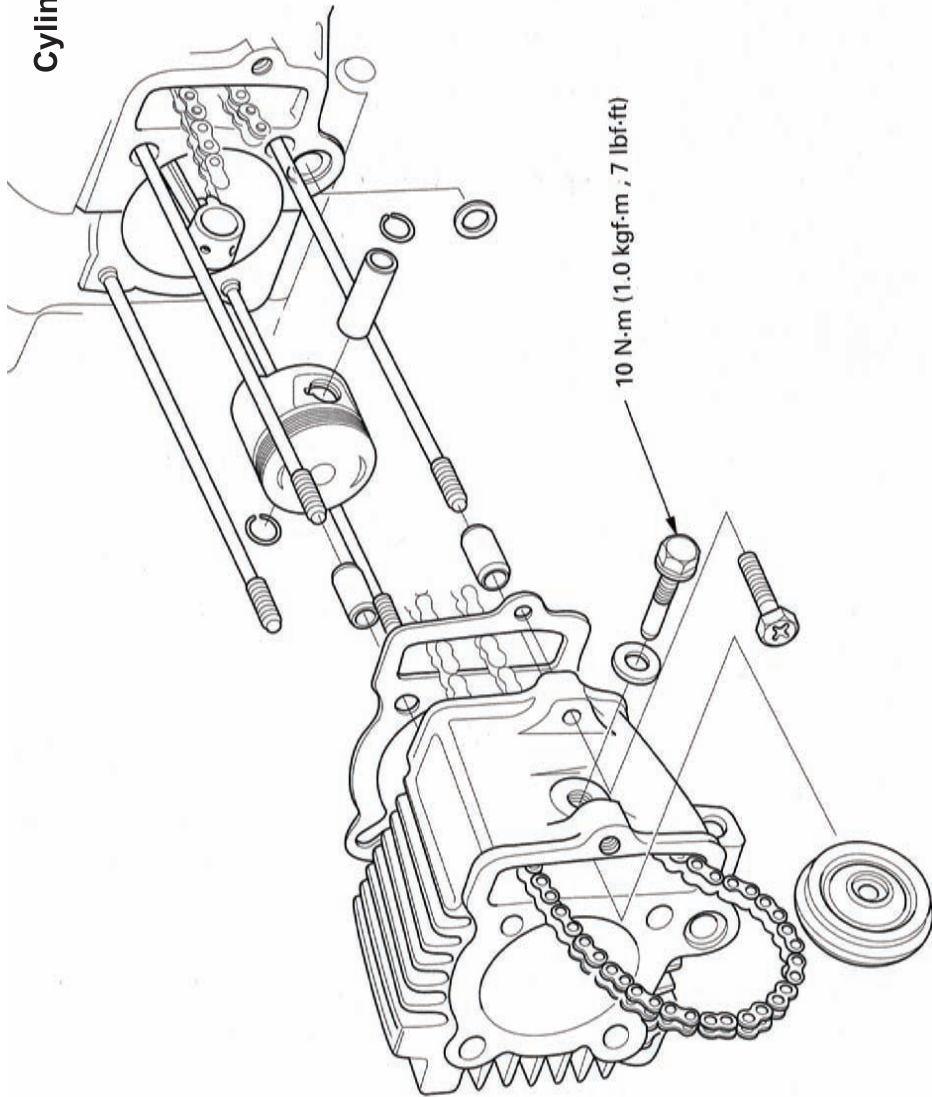
2. Remove the left side cover (flywheel cover) by removing the (3) 6mm bolts (8mm heads).



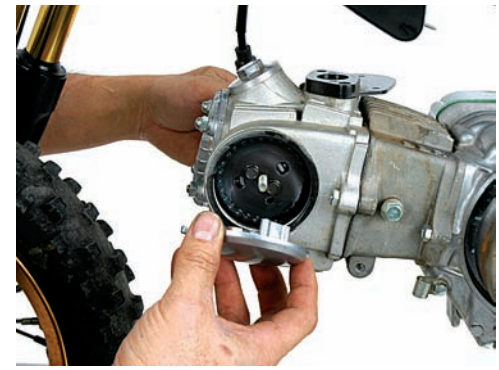
Cylinder Head / Valves



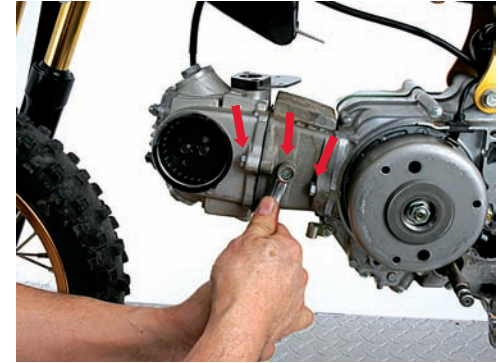
Cylinder / Piston



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.



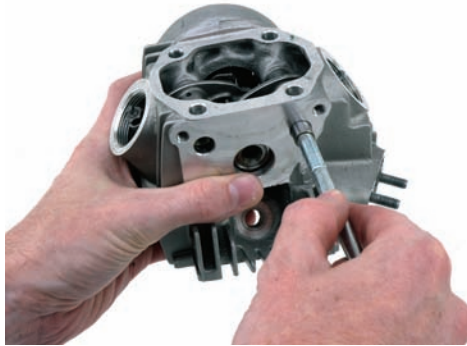
6. Remove the camshaft sprocket from inside the left of the cylinder head by removing its (2) 6mm bolts (8mm heads).



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. Temporarily install an 8mm bolt into the rocker arm shaft, and remove the rocker arm shafts.



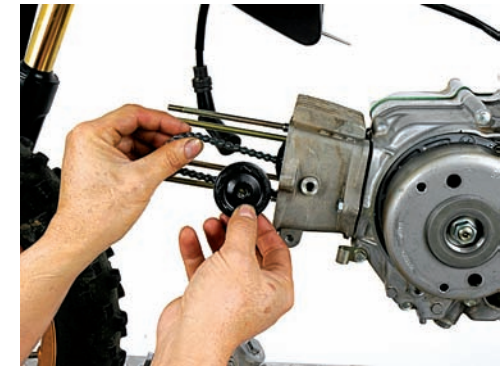
9. Remove rocker arms by sliding them out through the top of the head.



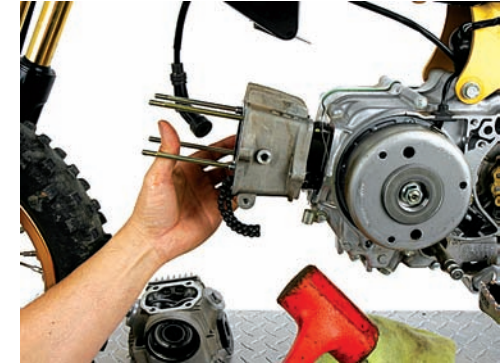
10. Remove the stock cam and replace with the included BBR cam, cam lobes down. Reverse steps 9 and 8 to re-assemble head.



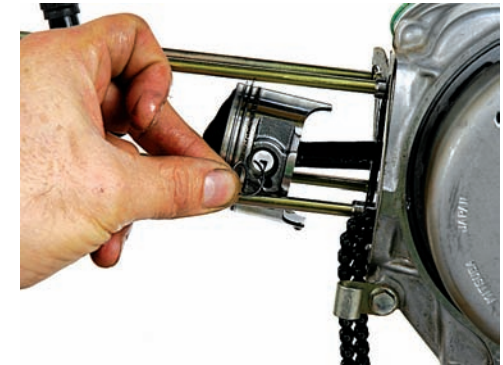
11. Remove the cam-chain roller from inside the cylinder by removing the 6mm bolt (10mm head). Needle nose pliers may be helpful to remove the roller from inside the cylinder.



12. 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.



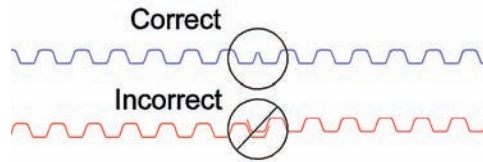
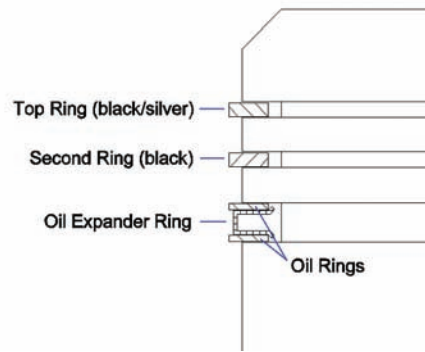
13. Remove one of the small piston clips from inside the piston (use a small screwdriver or needle-nose pliers). Push out the piston pin, and remove the piston from the rod. Use care not to drop the clip into the engine cases. Place a rag in the engine openings to prevent this.



14. 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. *Continued...*

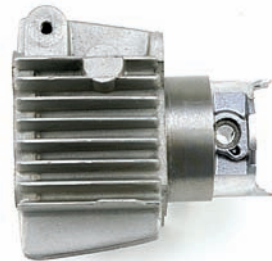


- Install the oil expander ring (the wavy ring) onto the bottom groove. See bottom drawing.
- Install the two thin rings: one below the oil expander ring and one above, in the same groove.
- Install the black ring onto the center groove making sure any letters face up.
- Install the black and silver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



Ring End Gap: .005" - .012"

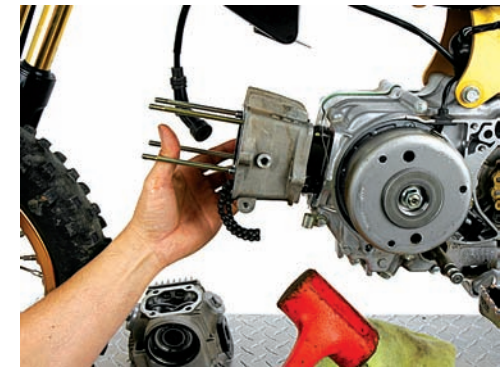
15. Install a piston clip into the piston. Use your fingers to compress the rings while sliding the piston into the cylinder. Turn the piston so that the "IN" is facing the carb/intake side of the cylinder. Let the piston protrude enough to insert the piston pin.



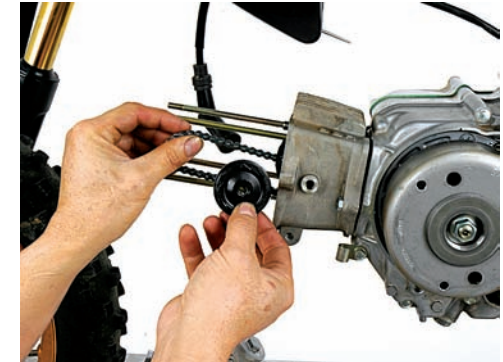
16. Make certain that the crank is at top dead center (at the top of its stroke or TDC). This is indicated by the "T" on the flywheel lining up with the notch in the case. Turn the flywheel to position the crank at TDC if necessary.



17. 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.



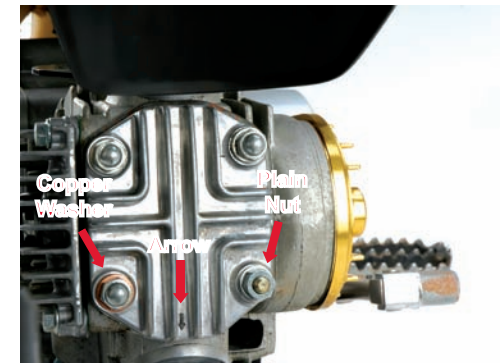
18. Feed the timing chain up through the cylinder and install the 6mm bolt (10mm head) to retain the cylinder to the engine cases. Slide the timing chain roller into the cylinder and install its bolt.



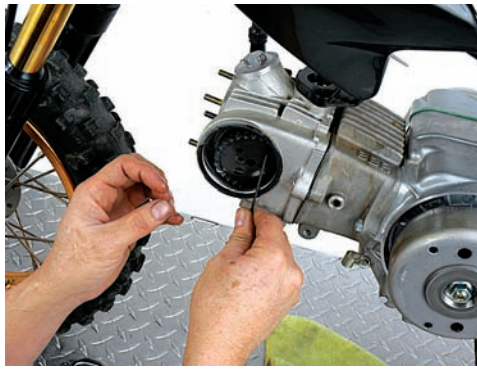
19. Slide the head gasket onto the head studs and install the o-ring. A small amount of grease on the o-ring can help hold it in place. Then slide the cylinder head onto the head studs. Feed the timing chain up through the cylinder head.



20. 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.



21. 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.



22. 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.

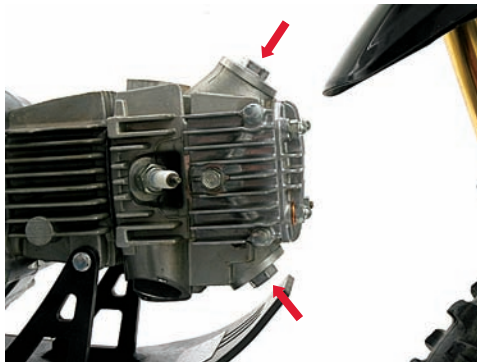


23. Install the cam cover.

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.



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



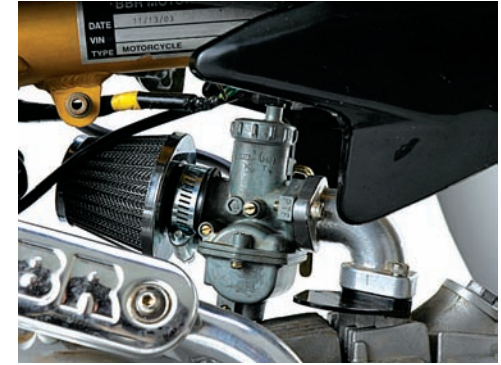
25. Set engine to Top Dead Center. Using a 9mm wrench, loosen the lock nut and rotate the adjuster until your feeler gauge measures as follows:

Intake: .002”
Exhaust: .003”

Lock adjusters and reassemble.



26. 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.



27. Install throttle and route cable.

Recommended Jetting:

Main - 85

Pilot - 35 (38 if hard to start, or sluggish off the bottom.)

Needle - Clip in middle position

These are recommended settings for 70 degrees. Jetting will vary according to location and climate.



Fill with engine oil and check that everything is tight and in place. Oil capacity is .6 US qt. for a refill. A complete engine rebuild requires .8 US qt. of oil. Typical warm up procedures, as described in your owners manual, should be followed to allow for proper break-in.