

**TB Parts 132cc Big Bore for Honda CRF110**

# **Install Guide**

**by Jordan Baldrige**

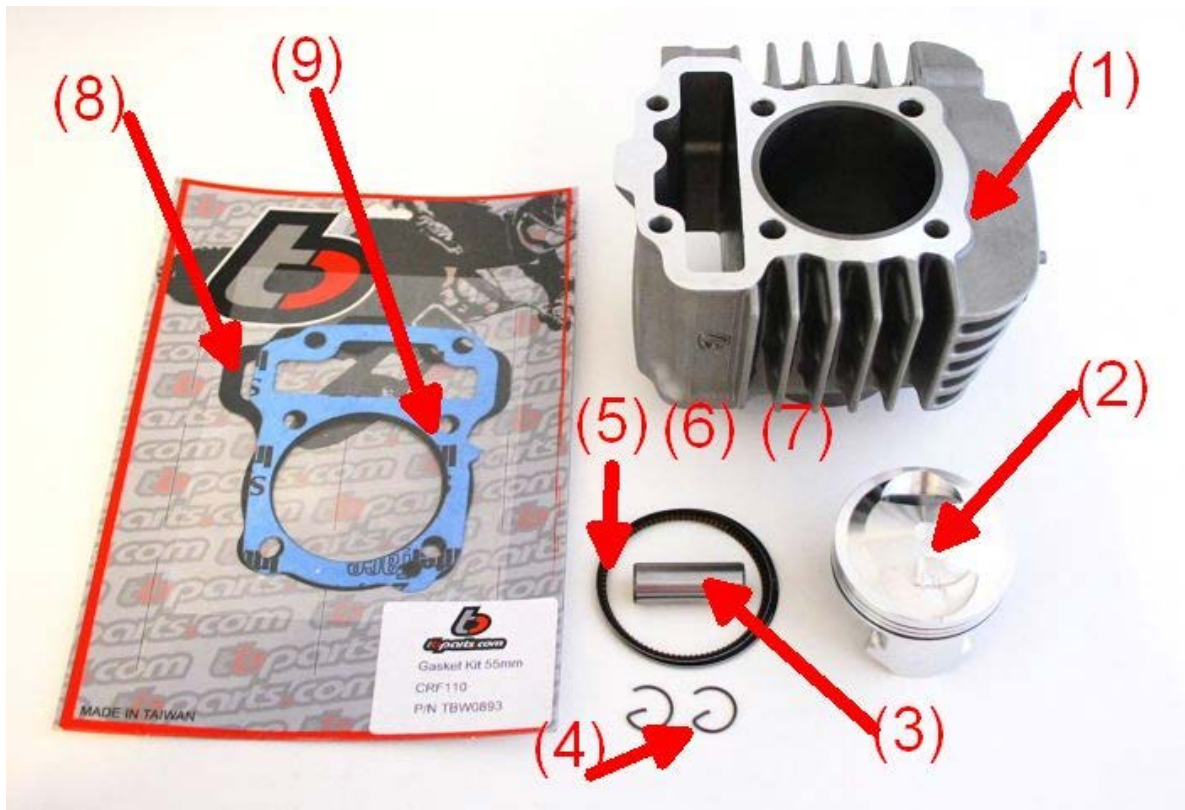


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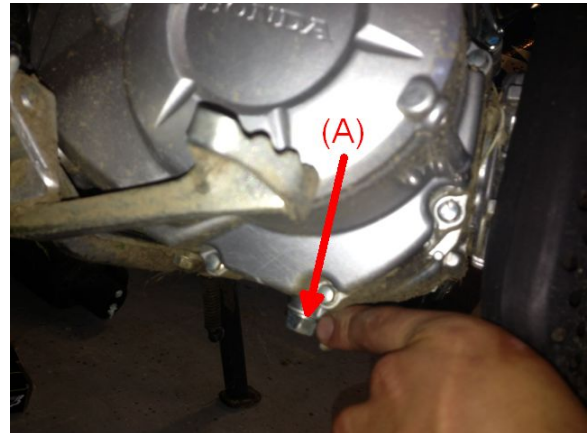
# Bill of Materials

**NOTICE:** When referring to the instructions for callout references, the numeric (1) refers to the item in the bill of materials. The letters (A) refers to the component on the motorcycle, NOT a component in the bill of materials.



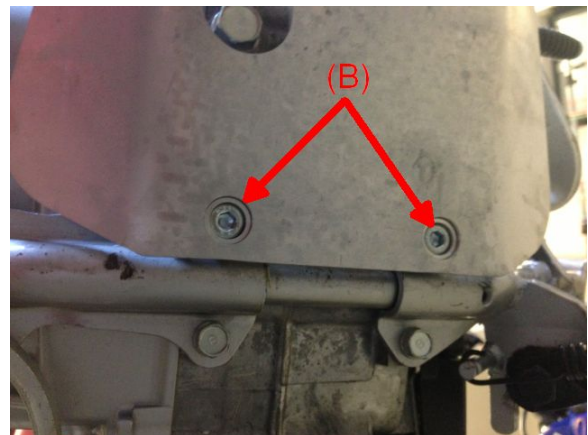
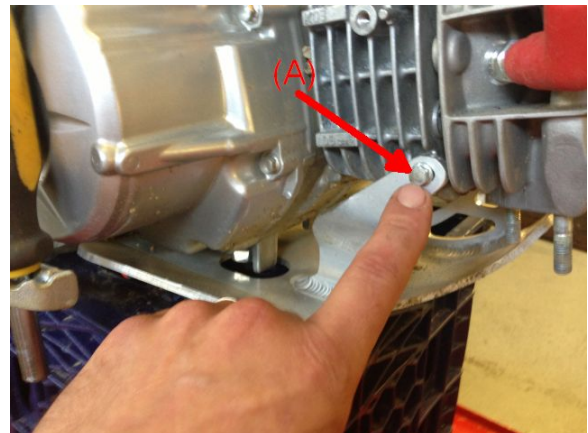
| Item | Description      | Quantity |
|------|------------------|----------|
| 1    | 55mm Cylinder    | 1        |
| 2    | 55mm piston      | 1        |
| 3    | Wrist pin        | 1        |
| 4    | C-clip           | 2        |
| 5    | Oil ring         | 3 piece  |
| 6    | Oil wiper ring   | 1        |
| 7    | Compression ring | 1        |
| 8    | Base gasket      | 1        |
| 9    | Head gasket      | 1        |

**1)** First, drain existing oil from motor by removing drain bolt (A).



**2)** Replace drain bolt (A) and tighten to 18 ft-lbs.

**3)** If your bike is equipped with a skid plate, remove both 8mm head bolts (A) and both 6mm under mount fasteners.



**4)** Remove plastic rivet shown.



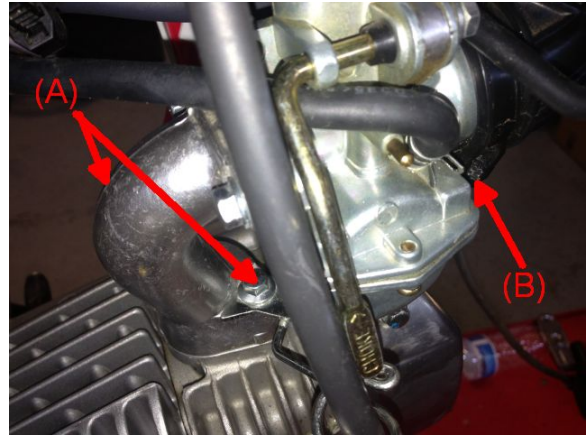
**5)** Remove both exhaust pipe 12mm nuts shown.



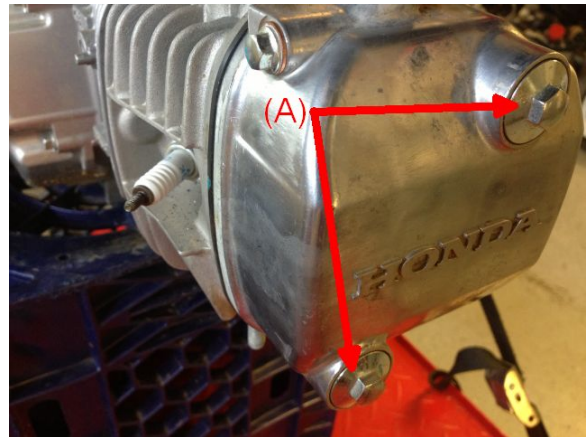
**6)** Remove the shown bolt at back of exhaust holding on silencer.



**7)** Loosen Philip head screw (B) and remove Intake bolts (A).



**8)** Remove both 10mm valve cover bolts (A).



**9)** Remove the valve cover.

NOTE: You may want to have a container to catch a small amount of oil that may drain out with removal of valve cover.

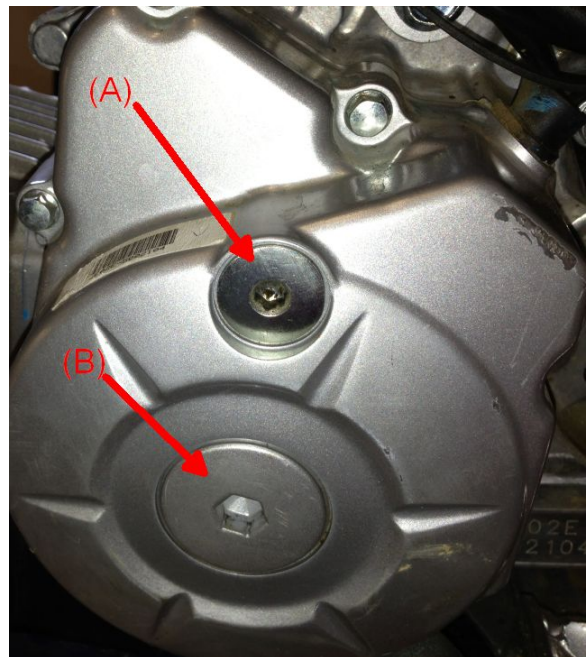


**10)** Carefully remove the valve cover gasket (A). Be careful not to lose the dowel pin shown. It can easily fall out and fall out of site.



**11)** Next remove site window cover (A) and access cover (B) on left side of motor.

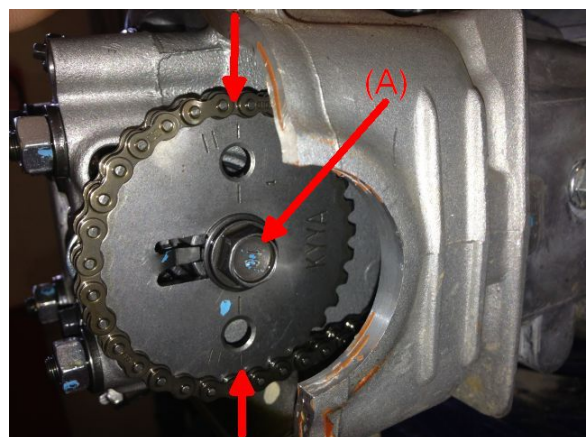
**12)** With access cover (B) removed, use a 14mm socket and short extension to rotate crankshaft until the letter "T" appears in site window (A).



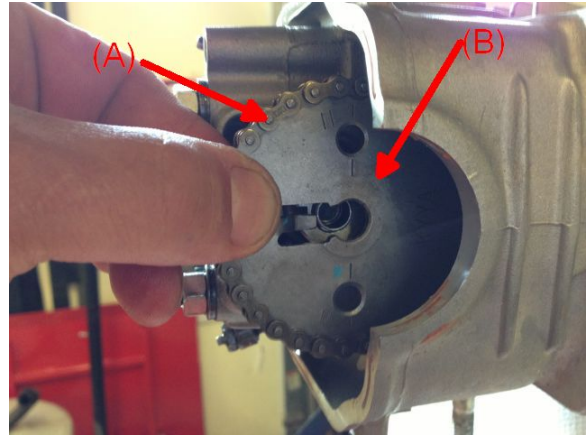
**13)** Verify that the motor is in Top Dead Center (TDC) by "T" in site window and cam gear at top of motor are in the position shown.

**14)** Remove 12mm bolt (A) by using a box end wrench and quickly "break it loose" to minimize any rotation of the crank.

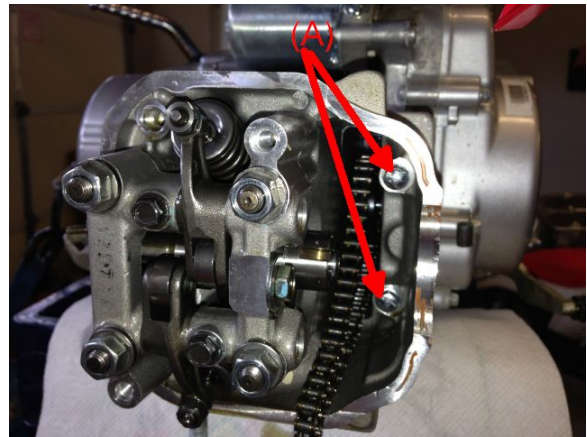
**NOTE:** Return crank position to (TDC) if movement occurs during bolt removal.



15) Remove cam sprocket (B) from shoulder on cam. This will give the needed slack to remove cam chain (A) from sprocket (B) and remove.

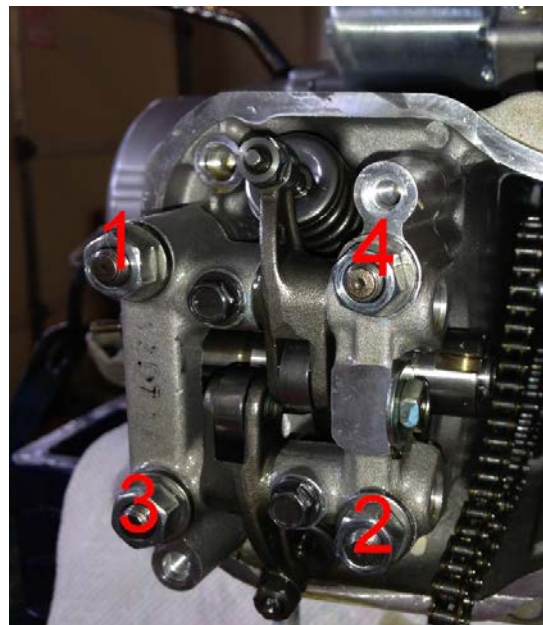
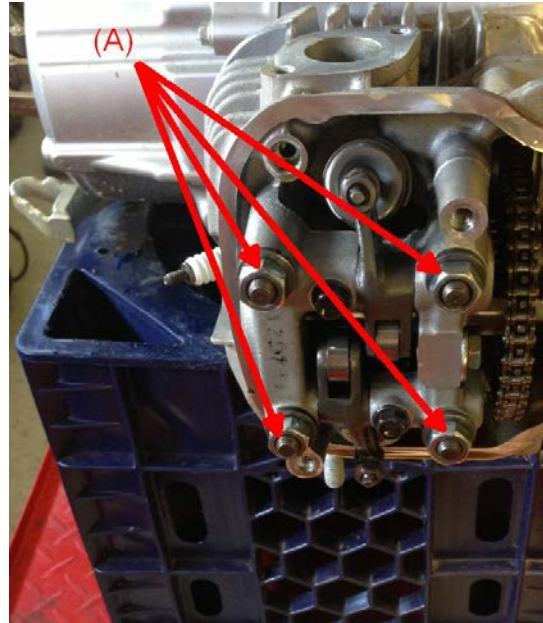


16) Now remove both 8mm head bolts (A).



**17)** Next remove all four 14mm head nuts (A) in the order shown in second image of this step.

**NOTE:** Turn nuts (A) ½ turn at a time in shown order until they are loose.

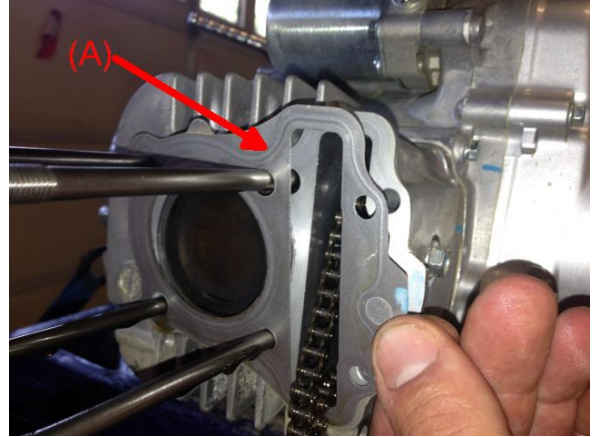


**18)** Remove cylinder head.

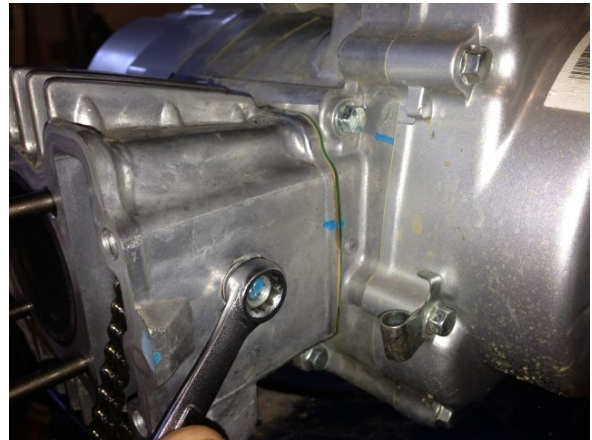




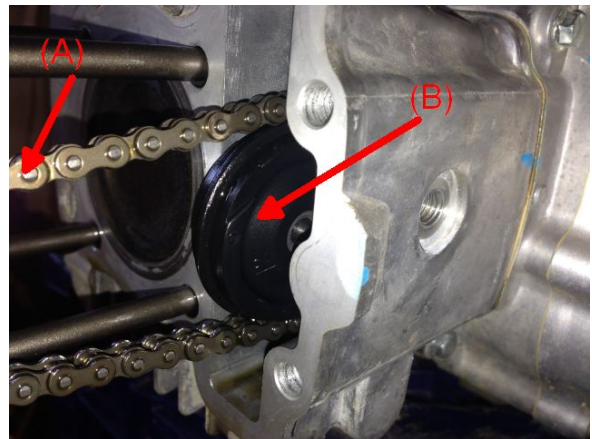
**19)** Remove the head gasket (A) shown.



**20)** Loosen 10mm bolt on left side of the cylinder as shown.



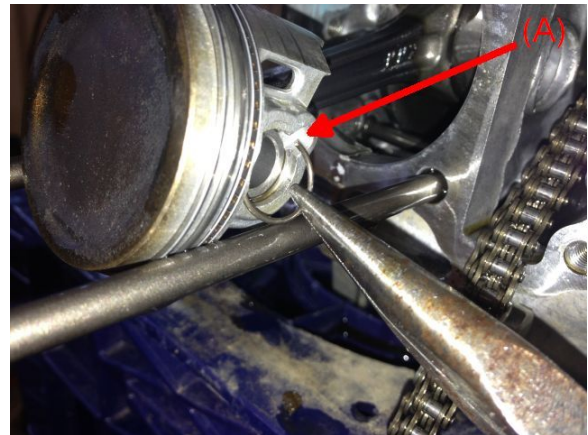
**21)** Use one hand to pull cam chain (A) tight, will let the cam chain guide roller (B) roll right out.



**22)** Carefully remove both dowle pins (A) from the existing cyinder.

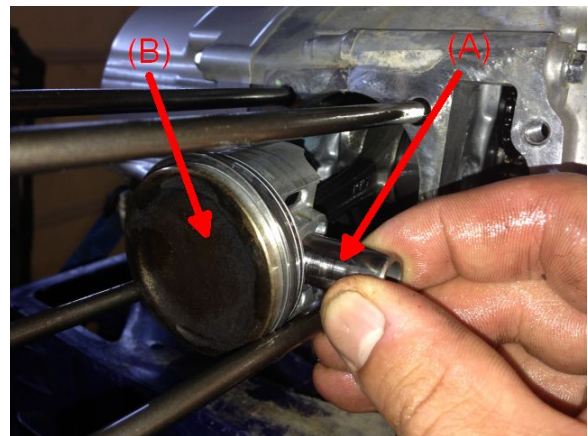


**23)** Use a needle nose pliers to remove wrist pin C-clip (A) as shown.



**24)** From the oposite side that the wrist pin C-clip was removed, push wrist pin (A) out of piston (B).

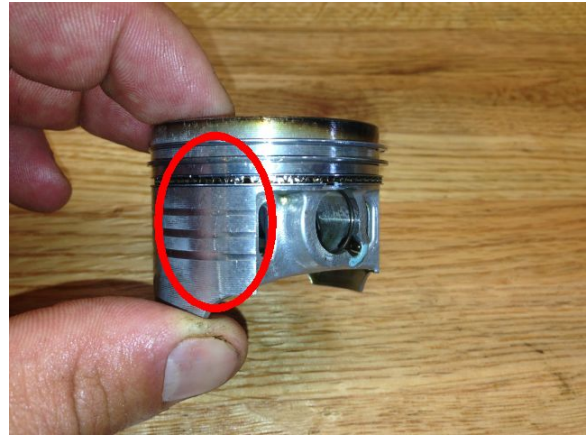
**NOTE:** It may be nessasary to use a blunt object to push wrist pin (A) out. It is NOT recommended to pound it out with a hammer.



**25)** Remove piston (B).

**NOTE:** Inspect original parts for premature damage! Installing new parts into an existing problem will cause your new parts to NOT perform as intended!

**26)** Examine your existing piston for excess damage. Ensure that the cut grooves on piston skirt are uniform and smooth.

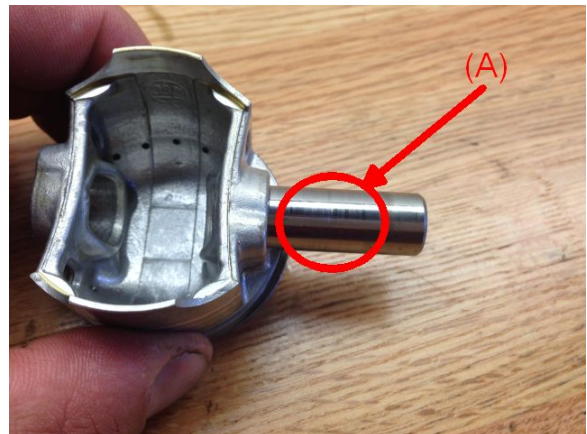


**27)** Inspect the intake valve relief (A) and exhaust valve relief (B) for any piston to valve contact. (This will be evident by shiny piston exposed, as the carbon build up would have been pushed away)

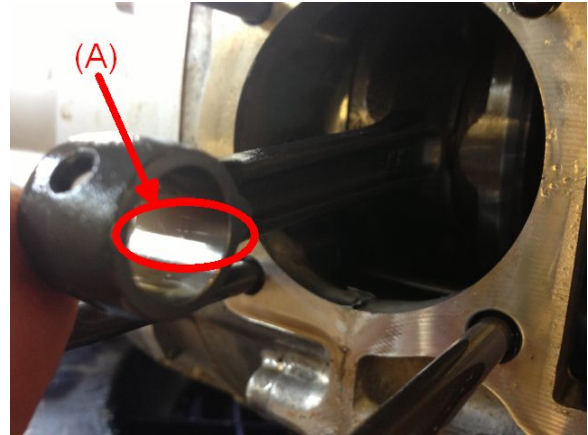


**28)** Inspect the dome (C) of your piston for inconsistencies in surface contour, color and texture. Any abnormalities should indicate improper burning and needs to be corrected BEFORE you install your new TBolt big bore kit.

**29)** Inspect the existing wrist pin (A) for rough surface or discoloration. Abnormal wear on the wrist pin may indicate low oil levels or long durations between oil changes.



**30)** Inspect the connecting rod journal (A) for rough surface or discoloration. Abnormal wear may indicate low oil levels or long durations between oil changes.

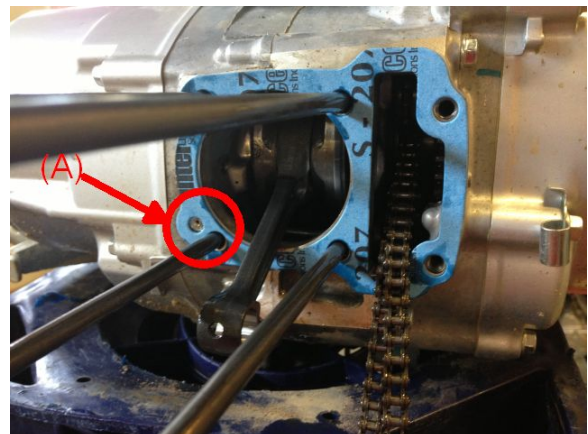


**31)** Open up the package that contains the head gasket (8) and base gasket (9). CAREFULLY use a razor blade to open plastic covering. Be sure to not run blade across gasket surface!



**32)** Place base gasket on engine cases as shown. To confirm it is installed properly by verifying that the oil passage (A) is in the correct spot as shown.

**NOTE:** General rule of thumb, most gaskets, bearings and seals are oriented so any markings, letters or print are position outward/up.



**33)** Hold piston (2) firmly in one hand and place the oil ring (5) on the lowest and widest groove on the piston. Notice in image, start with one ring end in the groove, and carefully work the rest of the ring into piston.

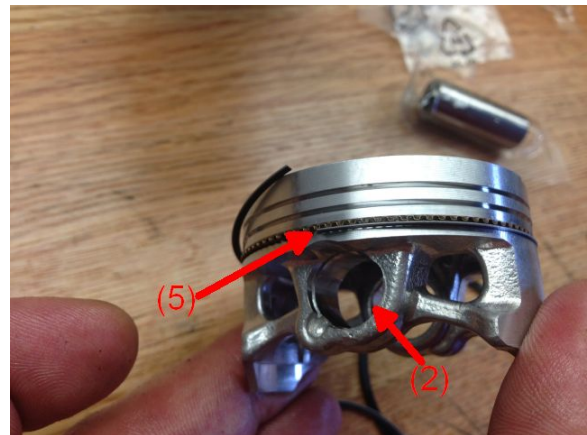
**NOTE:** Oil ring is a three piece part. Main oil ring is in the center of the piston groove while the retaining rings go above and below, but still within the same piston groove.

**NOTE:** Take notice to the orientation of where the oil-ring ends are located on the piston. Each ring end gap should be 180° off from ring below/above it.



**34)** Next install the oil-ring retaining rings (5) on the lower portion of the oil ring installed in the previous step.

**NOTE:** Take notice to the orientation of where the oil-ring retainer ends are located on the piston.



**35)** This image shows the lower oil retaining ring properly installed onto the oil ring.



36) Install the third and final ring to the oil ring assembly (5) to the upper portion of the oil ring. Again, start with one end in the groove, and work it around the piston (2) as shown.

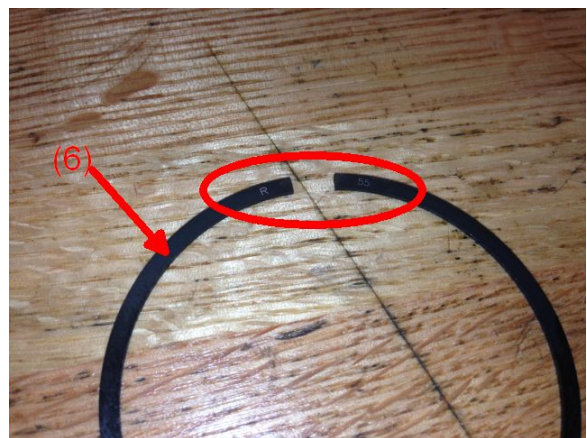


37) This image shows all three pieces of the oil ring (5) properly installed onto the piston (2).

**NOTE:** Take notice to the orientation of where the oil-ring retainer ends gaps are located on the piston.



38) Now identify the wiper ring (6). Take notice that on one side the ring ends have markings. Like it was mentioned above, markings go outward/up.

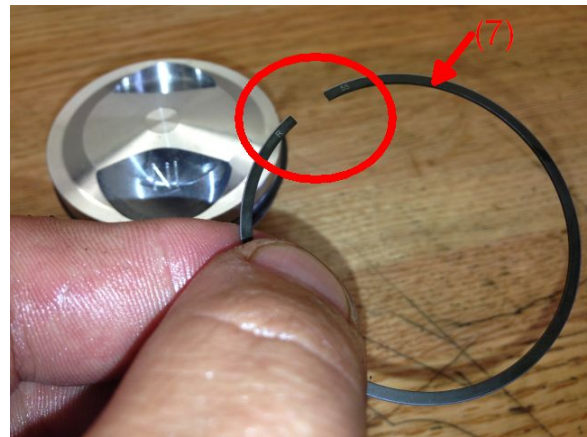


39) Hold piston (2) firmly in one hand and place the wiper ring (6) ring end in the middle groove on the piston, then carefully work the rest of the ring into piston.

**NOTE:** Take notice to the orientation of where the wiper ring end gaps are located on the piston.



40) Next install the top compression ring (7) in the same manner as the other rings. Confirm that the markings are oriented upwards.

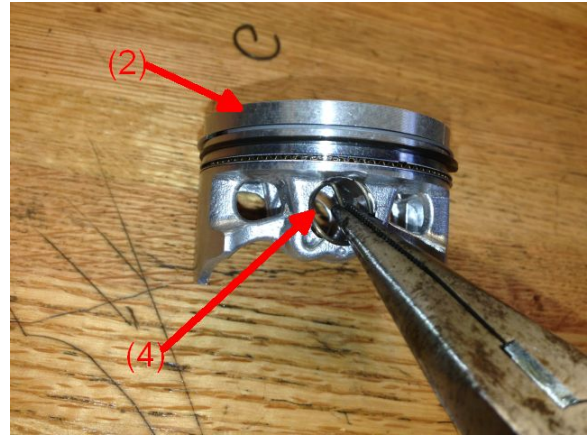


41) Image shows piston (2) with all rings correctly installed and ring end gaps in the proper location.

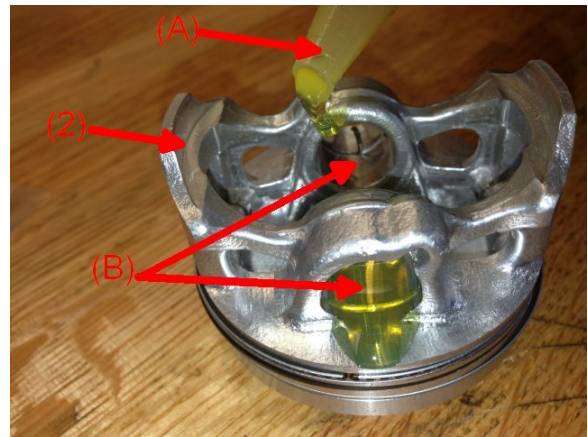


42) Now install one C-clip (4) on the right side of the piston (2) as shown.

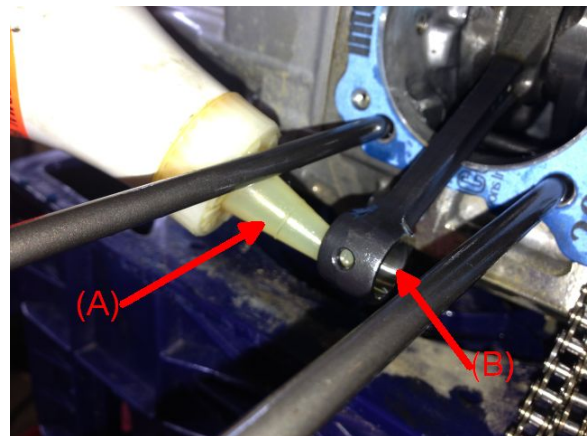
**NOTE:** C-clip opening should be facing piston dome.



43) Before installing the piston (2) apply ample amounts of assembly lube (A) to wrist pin journal (B).

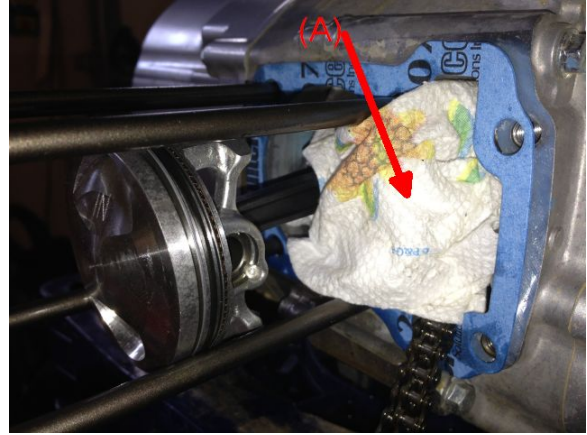


44) Now use plentiful amount of assembly lube (A) on the connecting rod (B) as shown.

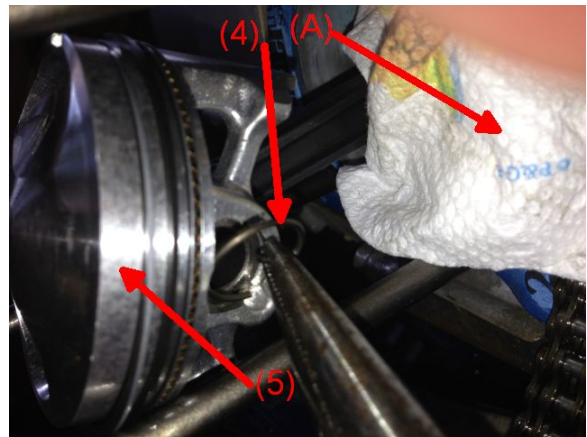




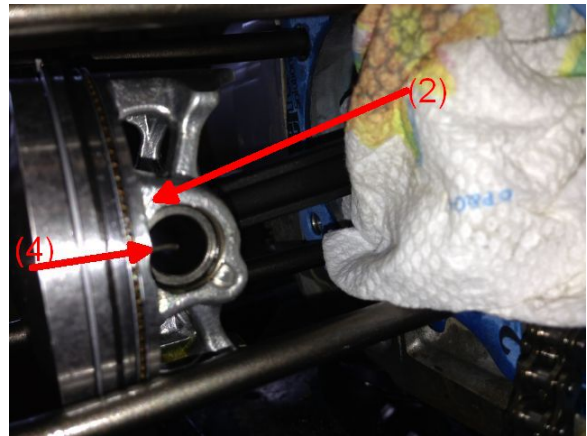
45) First, take a dry clean towel (A) and stuff it around the crankshaft and connecting rod. This is to prevent any parts or debris from falling into crankshaft cavity during assembly.



46) Using needle nose pliers install C-clip (4) into the left hand side of piston (2) as shown.



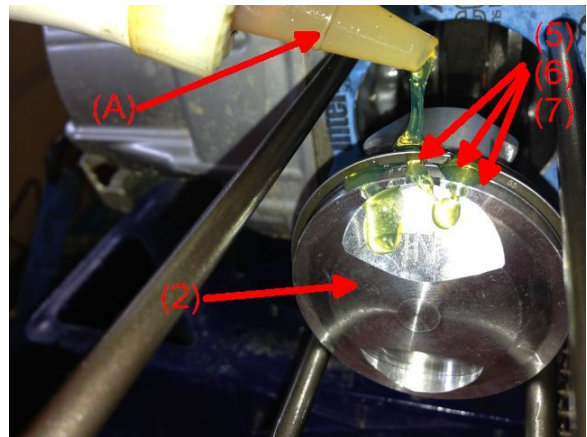
47) Be sure that the C-clip opening is facing the piston dome, as shown.



48) Remove towel (A).

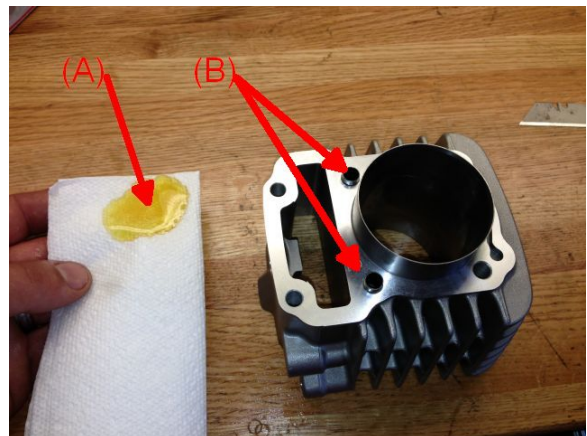


49) Again, using quality assembly lube (A) use generous amounts to coat all around piston (2) and rings (5) (6) and (7).

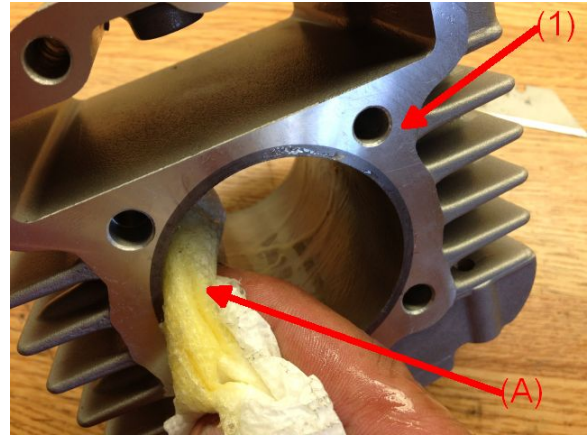


50) Install the removed dowel pins from step number 22) earlier in this instruction, at location (B) on new cylinder (1).

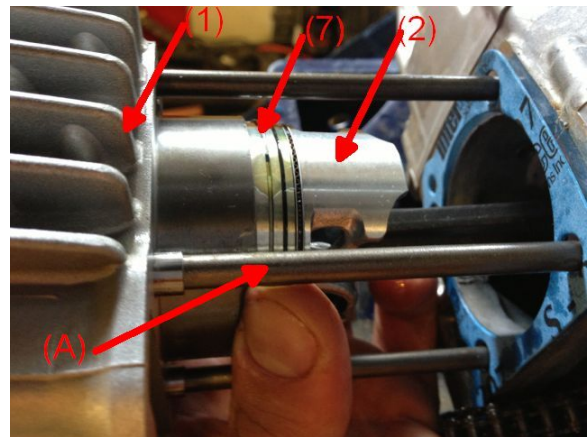
51) Using a new dry clean towel, put abundant amount of assembly lube in upper corner as indicated by image.



51) Coat the entire bore of the cylinder (1) with assembly lube (A) as shown.



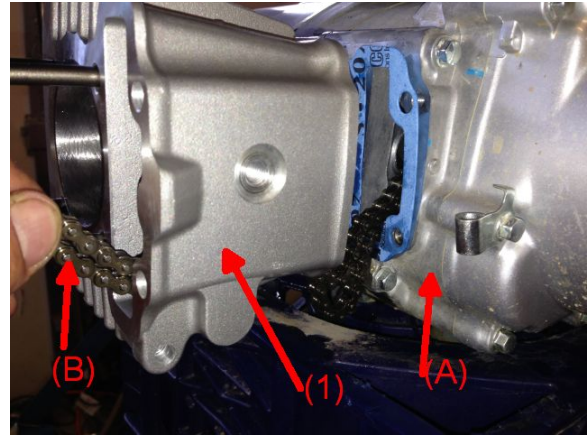
52) Slide your new TB cylinder (1) onto studs (A). You will need to compress the piston rings (7) with your fingers as you push the cylinder (1) over the piston (2).



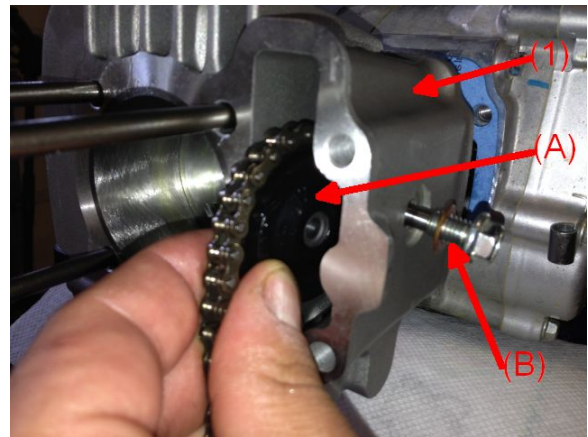
53) It takes very little pressure to push the cylinder over the piston and compressed rings. If it is difficult, recheck that the rings are completely compressed and try again.



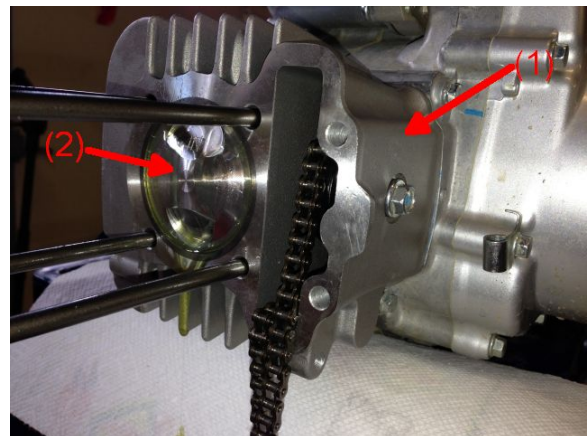
54) Before cylinder (1) can be fitted into place, fish the cam chain (B) through cylinder (1) as shown.



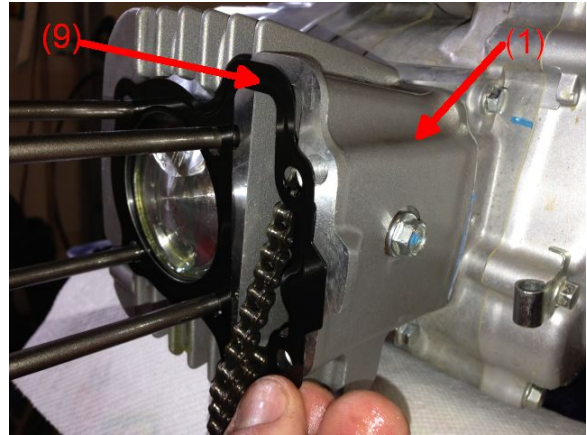
55) Now slide the cam chain roller guide (A) into cylinder (1). Secure it with the specific hardware and copper washer (B).



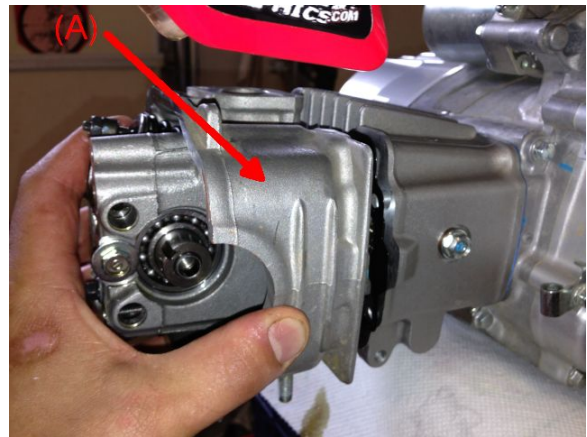
56) Bottom cylinder (1) down onto cases. Double check that the piston (2) is installed with "IN" at the top.



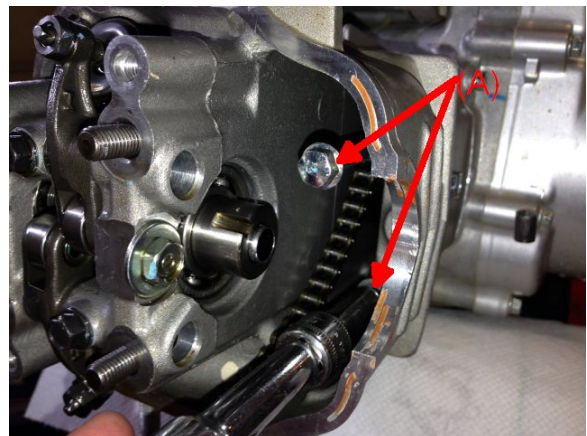
57) Place the new head gasket (9) in the correct position on cylinder (1).



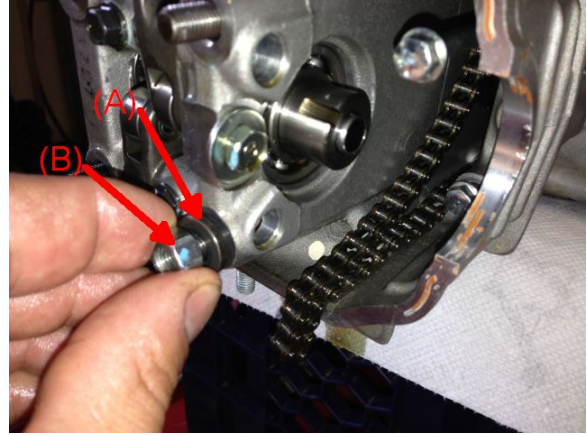
58) Slide cylinder head (A) back onto studs and be sure to keep the cam chain free from obstructing a flush even union between the head and cylinder.



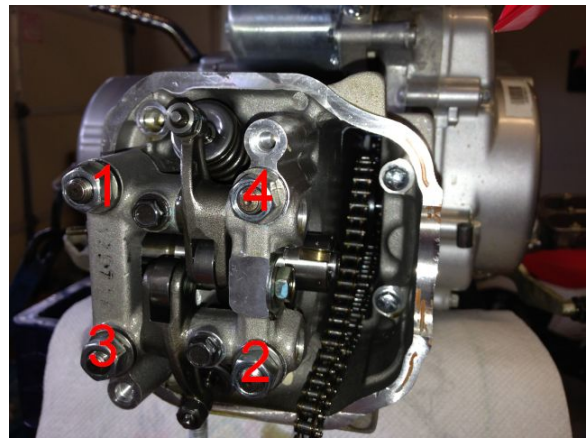
59) Install both cylinder head bolts (A) finger tight.



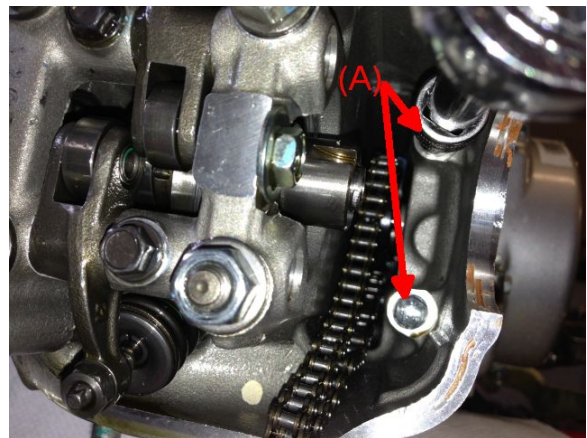
60) Install all four head nuts (B) and washers (A) onto the studs as shown.



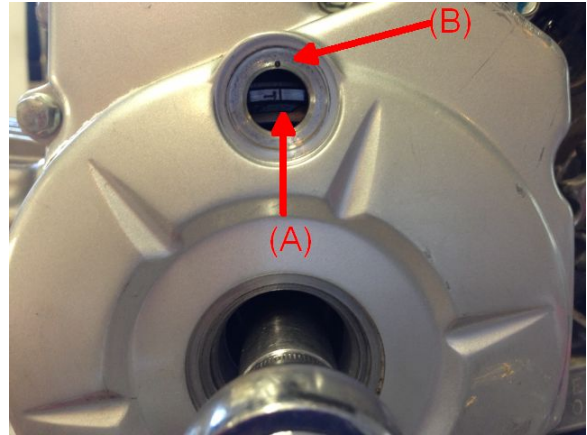
61) Torque head nuts down to 10 ft-lbs in a crisscross pattern as shown.



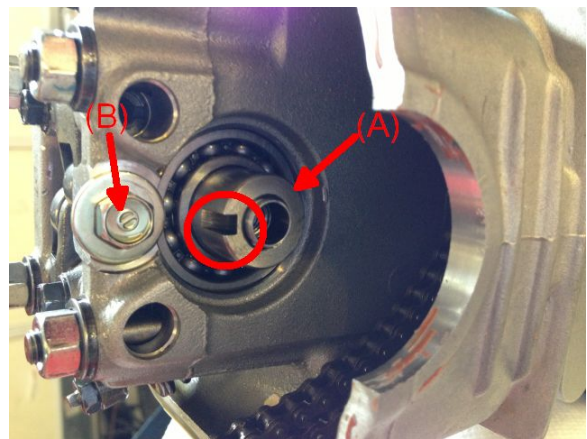
62) Go back and tighten the head bolts (A) to 10 ft-lbs.



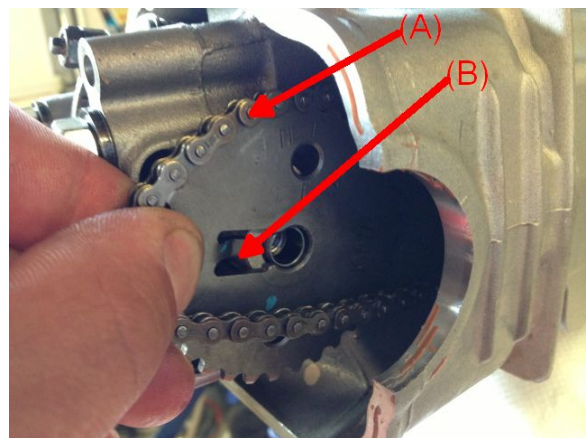
63) If needed rotate crankshaft so piston is at TDC indicated by the "T" (A) lining up with hash mark (B)



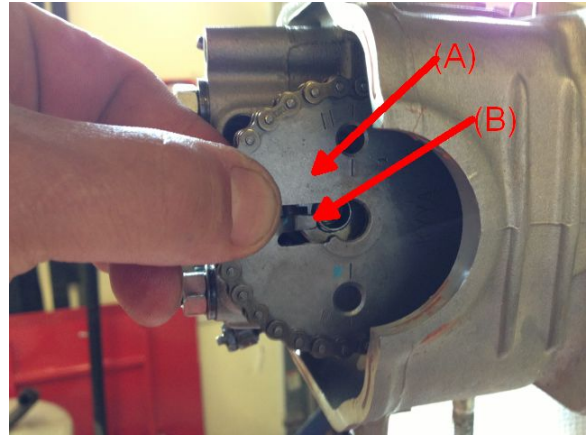
64) Position cam so sprocket alignment notch (A) is pointing towards retaining bolt (B) as shown.



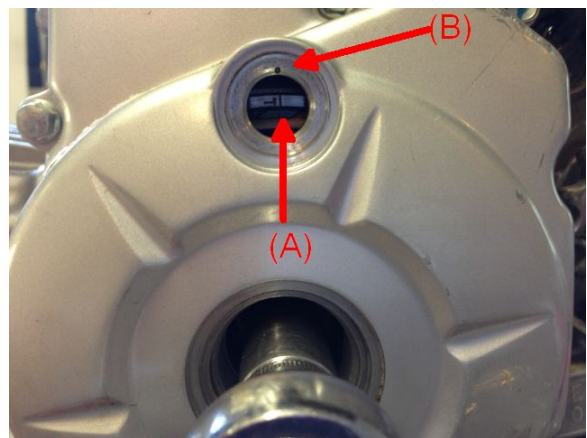
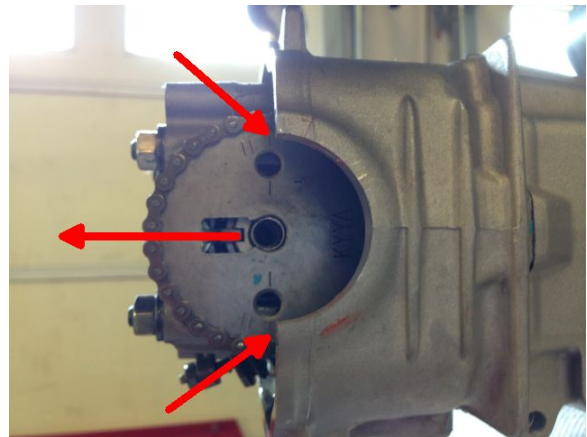
65) Work cam chain (A) around cam sprocket (B). Try to get the locating finger on the sprocket lined up best as possible to the alignment notch in the cam.



66) Pinch the cam sprocket (A) with two fingers and pull it forward and slip it onto the cam shaft. Keep in mind the locating finger (B) must fit into the alignment notch.

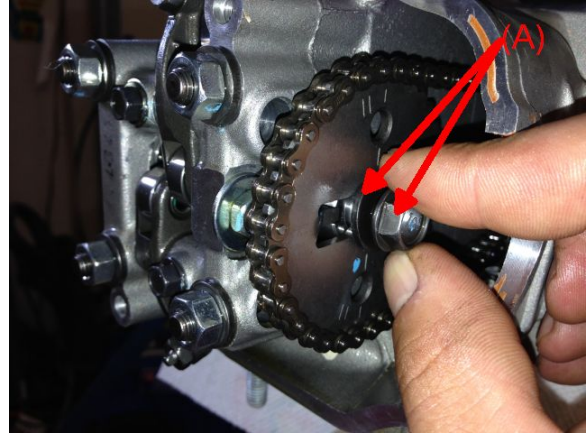


67) The motor is properly timed when "T" (A) is lined up with hash mark (B) on the crank, and the cam sprocket hash marks are even with the valve cover gasket surface as shown with arrows.

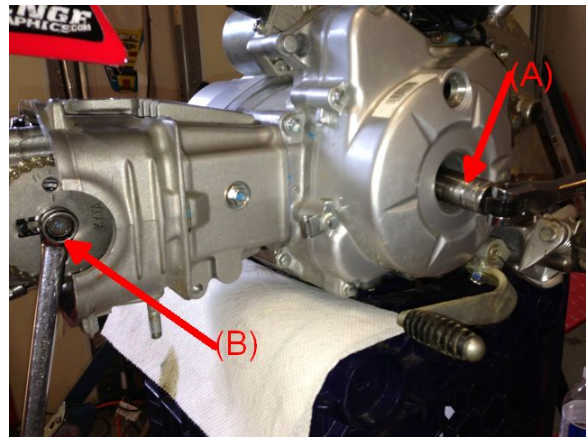




68) Insert cam sprocket bolt and washer (A).



69) Hold crank still with 14mm socket and breaker bar (A) and tighten cam sprocket bolt (B) to 20 ft-lbs



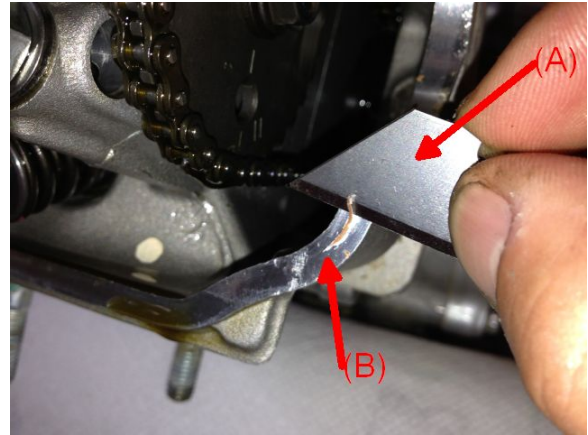
70) Remove spark plug with a 16mm deep socket as shown.

71) Use the kick starter with your hands to slowly turn the motor over several times. The motor should turn over with little resistance (It shouldn't need two hands)

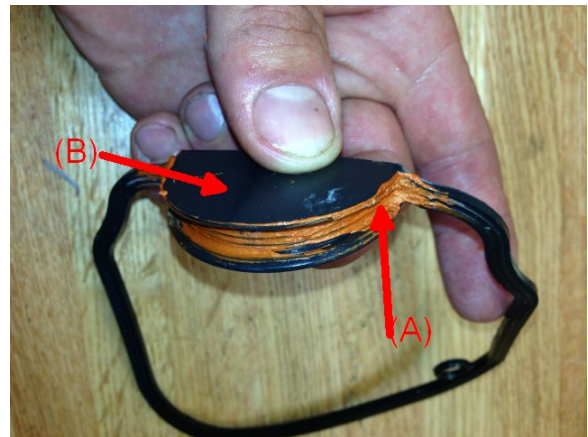
72) Install spark plug and torque to 12 ft-lbs.



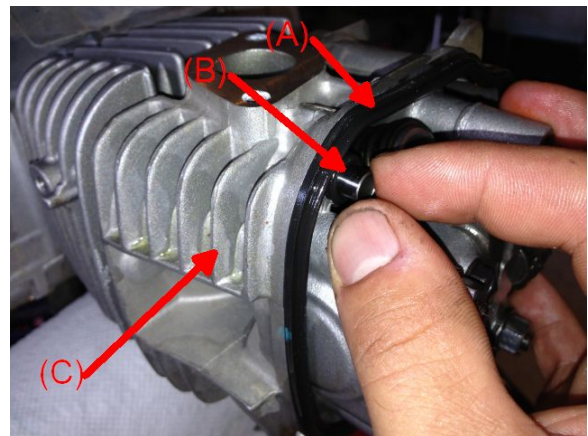
73) Use a fresh razor blade to carefully remove old liquid gasket material.



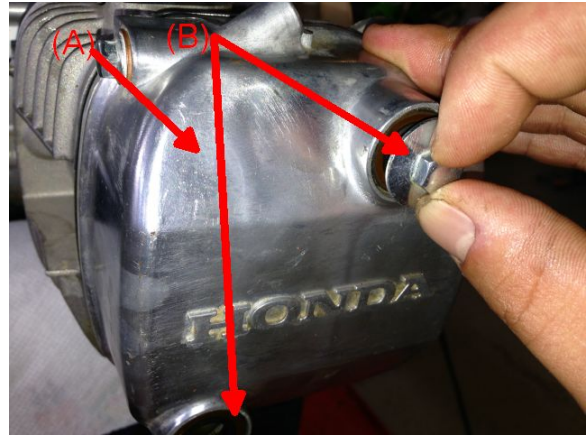
74) Put a small amount of high temp liquid gasket sealer (A) only at the location on the valve cover gasket (B) shown in image.



75) Install valve cover gasket (A) on head (C). Then insert dowel pin (B) in location shown.



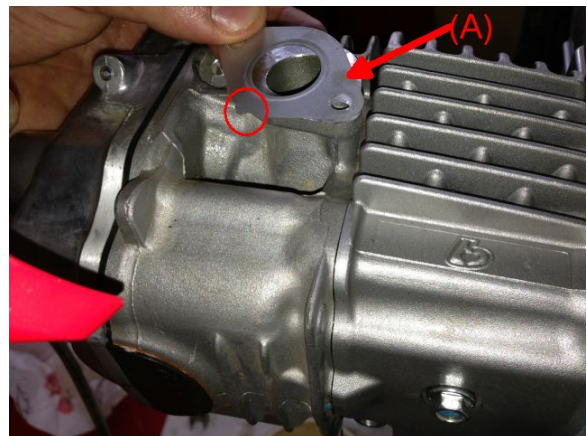
76) Install valve cover bolts (B) into valve cover (A) and tighten to 7 ft-lbs.



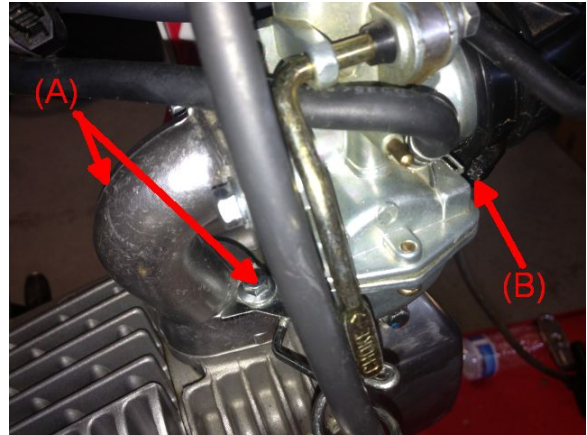
78) Wipe excess liquid gasket from left hand side as shown.



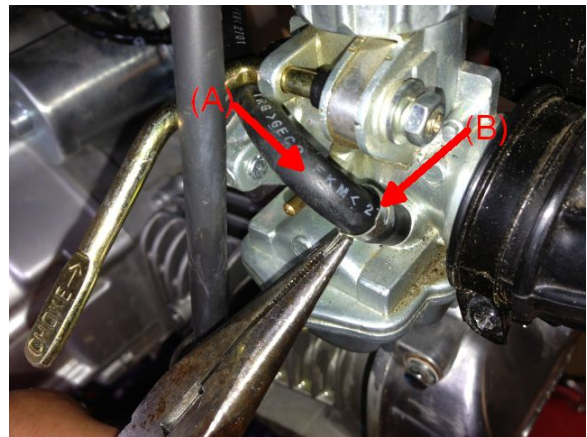
79) Next place intake gasket (A) with pointer facing forwards as shown in the image.



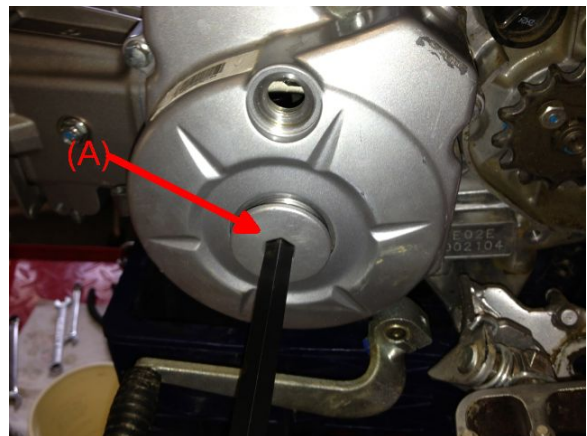
80) Mount intake and carburetor assembly with bolts (A) torque to 9 ft-lbs. Install air box boot onto carburetor and tighten hose clamp (B).



81) Connect fuel line (A) and fasten with spring clamp (B).



82) Install access cover (A).



83) Install site window cover (A).

84) Fill crankcase with one liter of fresh motor oil.

