



Instruction Manual for

Bore-Up Kit (174.5cc) for HONDA's CRF150F

Item No. : 0 1 - 0 5 - 0 1 0 1
Applicable Model : Honda CRF 150F (Up to '05 models)

- Thank you for purchasing one of TAKEGAWA's products. Please strictly follow the following instructions in installing and using the products.
- Before fitting the products, please be sure to check the contents of the kit. Should you have any questions about the products, please kindly contact your dealer.

Features

- This is a bore-up kit of a cylinder and a piston utilizing a normal cylinder head.
- A bore diameter has been enlarged from 63.5 mm to 67.0 mm, and displacement from 156.8 cc to 174.5 cc.
- As this kit goes well with a MUKUNI VM26 carburetor kit and our TAKEGAWA's cam shaft, it can be expected that this kit will work to further power up your motorcycle.

Please read the following before starting the installation

! Caution on the fuel !

This product is so designed to achieve a higher compression ratio than stock engines. As for the fuel, high-octane gasoline should always be used. In case regular gasoline is used, abnormal combustion will take place, and the engine cannot achieve its original performance. Moreover, the piston likely will be damaged, leading to a serious failure of a motorcycle. Before installing this kit, make sure that no regular gasoline remains in the fuel tank. In case regular gasoline remains in the fuel tank, do replace it with high-octane gasoline.

! Safety information on spark plugs !

Be sure to replace a spark plug with a hot-type spark plug DPR9EA-9(NGK) or the one with a higher thermal value. Determine the heat value of a spark plug depending on how much it is burnt.

- We do not take any responsibility for any accident or damage whatsoever arising from the use of the products not in conformity with the instructions in the manual.
- We shall be held free from any responsibility or compensation whatsoever for any glitch in the parts other than ours if the glitch takes place after the installation and use of the products.
- You are kindly requested not to contact us about the combination of our products with other manufacturers'.
- This kit is designed for exclusive use in the above-mentioned applicable model name. This kit cannot be mounted on other types of motorcycles.
- Installation of this kit requires engine removal. Please strictly follow HONDA's genuine service manual for your vehicle to do the work correctly.
- Prepare right tools to do the work, strictly following the installation procedures with great caution. Besides, this instruction manual, as well as HONDA's genuine service manual, is prepared for those persons who have basic skills and knowledge. Therefore, we recommend those who are technically inexperienced or do not have sufficient tools to ask a technically-reliable specialist shop for the work.
- Never fail to do the shake-down.
- The installation of this product increases the heat release value of the engine, set off by the increase in power, which is unsuitable for long hours of high-load driving.
- Some of bolts, nuts, dowel pins and packings will be reused. But always replace the severely worn or damaged parts with new ones.



Caution

The following show the envisioned possibility of injuries to human bodies or property damages as a result of disregarding the following cautions.

- Work only when the engine and the muffler are cool. (Otherwise, you will burn yourself.)
- Prepare right tools for the work. (Otherwise, parts will be damaged or you will suffer injuries.)
- Always use a torque wrench to screw bolts and nuts to the specified torque. (Improper torque could cause these parts to get damaged or fall off.)
- As some products and frames have sharp-pointed or protruding portions, please work with your hands protected. (Otherwise, you will suffer injuries.)
- Before riding, always check every section for slack in parts like screws. If you find slack ones, screw them securely up to the specified torque. (Or improper torque may cause parts to come off.)
- Check gaskets and packings carefully for wear or damage. Always replace the worn or damaged parts with new ones.



Warning

The following show the envisioned possibility of human death or serious injuries to human bodies as a result of disregarding the following cautions.

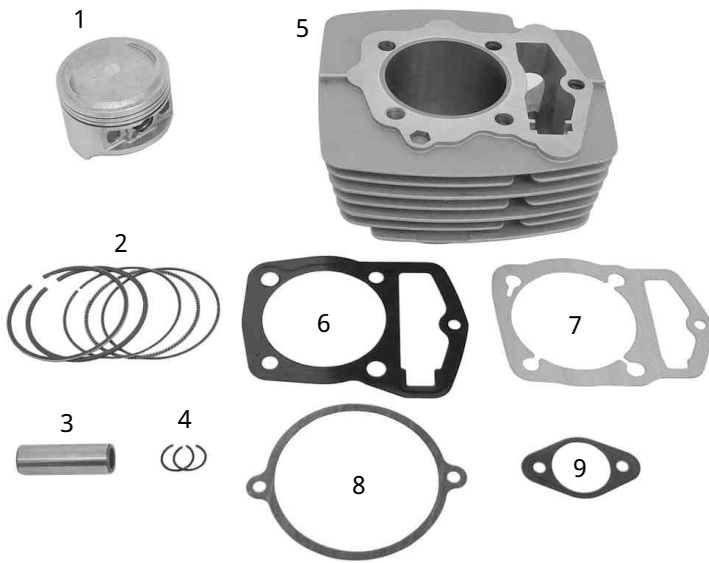
- Always start the engine in a well-ventilated place, and do not start it in an airtight place. (Otherwise, you will suffer from carbon monoxide poisoning.)
- When you notice something abnormal with your motorcycle while riding down a road, immediately stop riding and park your motorcycle in a safe place. (Otherwise, the abnormality could lead to an accident.)
- Before doing the work, place the motorcycle on level ground to stabilize the position of your motorcycle for safety's sake. (Otherwise, your motorcycle could overturn and injure you while you are working.)
- Check or perform maintenance of parts correctly according to the procedures in the instruction manual or a service manual. (Improper checking or maintenance could lead to an accident.)
- If you find damaged parts when checking and performing maintenance of your motorcycle, do not use these parts any longer, and replace them with new ones. The continued use of these damaged parts could lead to an accident.)

Please be informed that, because of improvement in performance, design changes, and cost increase, the product specifications and prices are subject to change without prior notice.

We shall be held harmless against any claim whatsoever arising out of use of the products in racing and the like.

This manual should be retained for future reference.

~ Kit Contents ~



No.	Part Name	Qty
1	Piston 67	1
2	Piston ring set	1
3	Piston pin 15x48	1
4	Piston pin circlips 15	2
5	Cylinder	1
6	Cylinder head gasket	1
7	Cylinder gasket	1
8	Cam sprocket cover gasket	1
9	Tensioner lifter gasket	1

~ Installation Procedures ~

As the engine needs to be removed during the work, secure the vehicle on a stand on level safe ground. Do the following work only when the engine and the muffler are cool.

Removal of Engine and Other Parts

Referring to Honda's service manual, remove or disconnect the following parts.

- Seat / left and right side cover
- Fuel tank / fuel hose
- Wires to the engine
- Spark plug cap
- Clutch cable
- Crankcase breather tube
- Drive sprocket
- Exhaust pipe
- Manifold / Carburetor

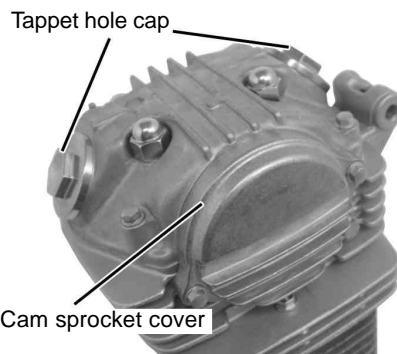
Unscrew bolts / nuts which are mounting the engine, and then demount the engine from the frame. Be careful not to scratch the frame, etc.

Removal of Spark Plug

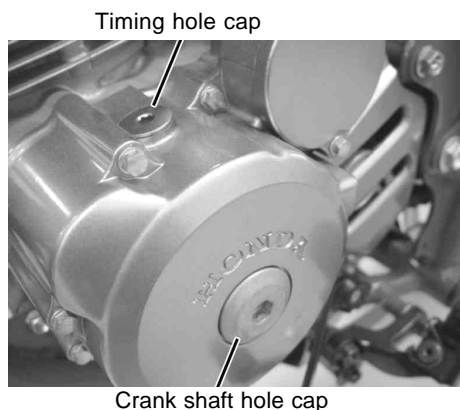
Remove a spark plug.

Removal of Cam Sprocket

Remove tappet hole caps / O-rings and cam sprocket cover / O-ring on both intake and exhaust sides. Completely wipe off gaskets with a scraper and the like, if any remains on the cylinder head or cam sprocket cover.



Remove a timing hole cap and crank shaft hole cap.



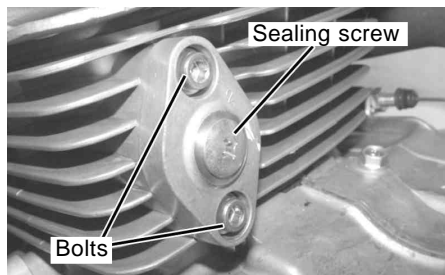
Rotate the flywheel counterclockwise to be at TDC (Top Dead Center) on the compression stroke. This means that a "T" mark on the flywheel is aligned with an alignment mark on the crankcase cover and that a rocker arm is loose or shaky.)



Holding the flywheel, loosen a cam sprocket bolt.

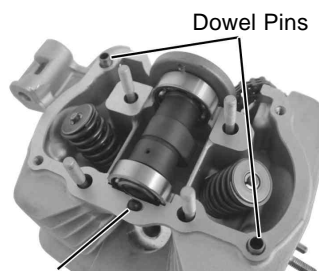
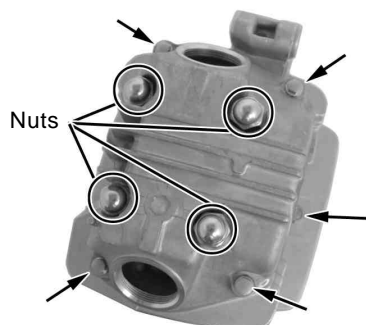
Remove the cam sprocket bolt, detach the cam sprocket from the cam shaft, and detach the cam sprocket from the cam chain.

Remove a sealing screw / O-ring, and lock the lifter on the cam chain tensioner. (The lifter will lock if you turn the stopper all the way clockwise.) Unscrew bolts and washers to remove the cam chain tensioner from the cylinder.



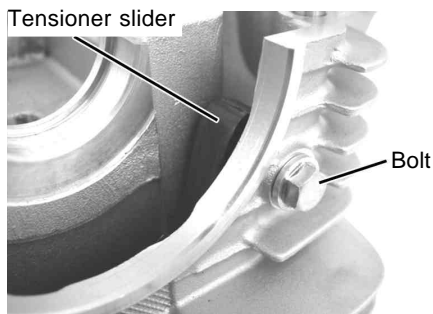
Removal of Cylinder Head, Cylinder and Piston.

Loosen the nuts / washers and bolts on the cylinder head diagonally in a few steps, and remove a cylinder head cover. Take off and check two dowel pins, an oil hole plug and camshaft for abnormality. If nothing wrong is found, reuse them.



Oil hole plug

Unscrew bolts / washers, and detach a cam chain tensioner slider from the cylinder head.



Remove a cylinder head, and take off and check two dowel pins and a cam chain guide for abnormality. If nothing wrong is found, reuse them.

Remove the cylinder, and take off and check two dowel pins for abnormality. If nothing wrong is found, reuse them.

Detach a piston pin circlip and pull out the piston pin to demount the piston.

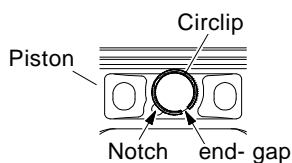
Plug the opening on the crankcase with a waste cloth not to get a circlip in it.

Wipe off gaskets on the surface of the crankcase to mate with a cylinder with a scraper if any.

Installation of Piston

Attach a piston pin circlip to one of the two pin holes on the piston of the kit.

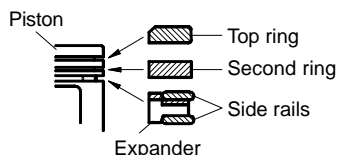
Arrange the position of the end-gap of the piston pin circlip not to be on the notch of the piston pin hole.



Attach piston rings of the kit to the piston.

Fix both the top and second rings with "RN"-stamped sides facing upwards.

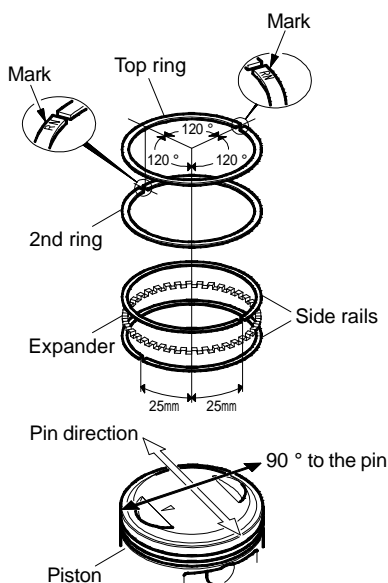
Be careful not to scratch the piston or damage piston rings.



Pay attention to cross section as well.

Apply engine oil to the piston pin of the kit, the pin hole on the piston, and the small end of the connecting rod. Then, attach the piston to the connecting rod with a " " mark on the top surface of the piston pointing to the exhaust side, and attach a piston pin circlip of the kit.

Apply engine oil to the piston rings and check that each ring rotates smoothly. Do not align the piston ring end gap with the piston pin or 90 degrees to the piston pin. Space the ring end gaps 120 degrees apart. (See the figure below.)



Installation of Cylinder

Remove the plugged waste cloth.

Look into a cam chain hole and check that the cam chain has not come off the sprocket on the crank shaft.

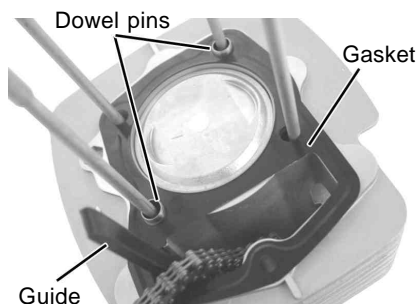
Degrease the mating surfaces of the crankcase and cylinder with thinner and the like, and attach a dowel pin and cylinder gasket of the kit.

First clean the inside of the cylinder by degreasing it with thinner, and apply engine oil and spread the oil evenly with your fingers.

Fit the cylinder into the piston little by little with fingers, being careful not to move the piston ring end gaps out of place. And place the cylinder in the crankcase.

After the cylinder has been placed inside the piston, pass the cam chain through the cylinder.

Degrease the upper part of the cylinder, and fix the cam chain guide, two dowel pins, and a cylinder head gasket of the kit. Fit the cam chain guide right into the grooves in the cylinder and the crankcase.

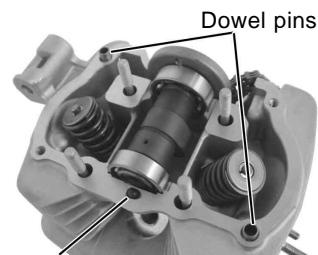


Installation of Cylinder Head

Degrease the mating surface of the cylinder with thinner. Pass the cam chain through the cylinder head, and then fix the cylinder head.

Fix the cam chain tensioner slider to the cylinder head with bolts / washers.

Attach the cam shaft , two dowel pins and an oil hole plug, apply liquid gasket to the clamp face for a cylinder head cover, and install it with a cam top of cam shaft pointing towards the combustion chamber.



Liquid gasket application

Loosely tighten 4 washers / nuts and 5 bolts.
Tighten up nuts first diagonally in a few steps.

Specified torque:

for cylinder head nut:

27 N · m (2.8 kgf · m)

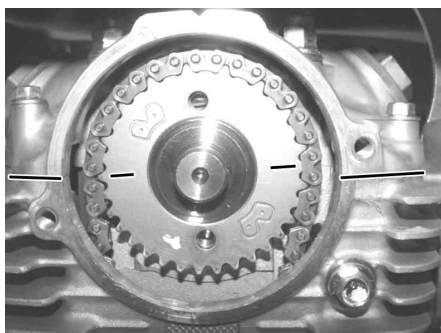
for cylinder head bolt:

12 N · m (1.2 kgf · m)

Installation of Cam Sprocket

Check that a "T" mark on the flywheel is aligned with an alignment mark on the crankcase cover.
Fix the cam sprocket to the cam chain, aligning an "I" mark on the cam sprocket with the cylinder head mating surface, and insert the cam sprocket into the cam shaft. Holding the flywheel, attach two bolts.

Specified torque: 12 N · m (1.2 kgf · m)



Make sure that a cam chain tensioner's lifter is locked. Attach a gasket of the kit to the cam chain tensioner, and install it to the cylinder with two bolts / washers. Unlock the lifter by turning a cam chain tensioner's stopper counterclockwise.

Attach a cam chain tensioner's sealing screw / O-ring.

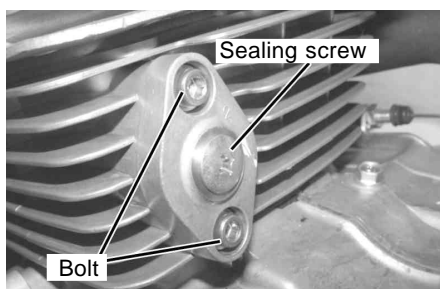
Specified torque:

for tensioner fixing bolt:

12 N · m (1.2 kgf · m)

for ceiling screw:

4 N · m (0.4 kgf · m)



Rotate the crank shaft clockwise, and align again the "T" mark on the flywheel with the alignment mark on the crankcase cover.

At this point, check that the "I" mark on the cam sprocket is still aligned with the mating surface of the cylinder head.

Attach a timing hole cap and a crank shaft hole cap.

Specified torque:

for timing hole cap:

10 N · m (1.0 kgf · m)

for crankshaft hole cap:

8 N · m (0.8 kgf · m)

Attach an O-ring and a gasket of the kit to the cam sprocket cover, and fix them to a cylinder head with two bolts.

Specified torque:

9 N · m (0.9 kgf · m)

Fix the tappet hole cap / O-ring on both intake and exhaust sides to the cylinder head.

Specified torque:

15 N · m (1.5 kgf · m)

Installation of Spark Plug

Prepare a spark plug and fix it.

Specified torque:

18 N · m (1.8 kgf · m)

Replace a spark plug with a hot-type spark plug DPR9EA-9(NGK) or the one with a higher thermal value.

Installation of Engine and Other Parts

With reference to HONDA's genuine service manual, place the engine in the frame with care not to scratch the frame or other parts.

Then temporarily tighten mounting bolts / nuts.

Insert a drive sprocket, already attached with a drive chain, into the counter shaft. If it is hard to do so, insert it while shaking the engine lightly.

With moderate slack on the drive chain, fully tighten the temporarily-tightened mounting bolts / nuts. And fix the drive sprocket.

Referring to Honda's genuine service manual, reinstall or connect the removed or disconnected parts.

- Exhaust pipe
- Manifold / Carburetor
- Wires to the engine
- Spark plug cap
- Clutch cables
- Crankcase breather tube
- Seat / left and right side covers
- Fuel tank / fuel hose

Starting of Engine

1 . About fuel

Always use high-octane gasoline.

Whenever regular gasoline is remaining in the fuel tank, always replace it with high-octane gasoline

2 . Checking of Every Section

Check every section for slack in screws, nuts, etc.

Make sure that engine oil is remaining in a specified amount.

Drive the engine in a well-ventilated safe place with great care. Leave the engine idling for a few minutes so engine oil gets circulated all around the engine.

Check that there is n

Check for any abnormality such as abnormal sounds from the engine, oil leak from gaskets, and exhaust-air leak from a joint on an exhaust pipe.

Stop the engine, and after the engine has become cool enough, check every section again for slack in screws, nuts, etc.

3 . About running-in

For the purpose of shakedown of the piston and cylinder, never fail to run in the vehicle for about 100 km at the reduced engine revolutions, avoiding the sudden acceleration.

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