



Instruction Manual for CRF150F Hyper S-Stage Kit

Item No. : 0 1 - 0 5 - 0 1 0 2

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 combined kit of a bore-up and carburetor kits.
- A bore diameter has been enlarged from 63.5 mm to 67.0 mm, and displacement from 156.8 cc to 174.5 cc.

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.
- Carburetor setting needs to be changed according to the natural phenomena like the weather, temperatures, altitude and barometric pressure, and vehicle model type and individual carburetor difference. Arrange the setting to match the engine and conditions.



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.

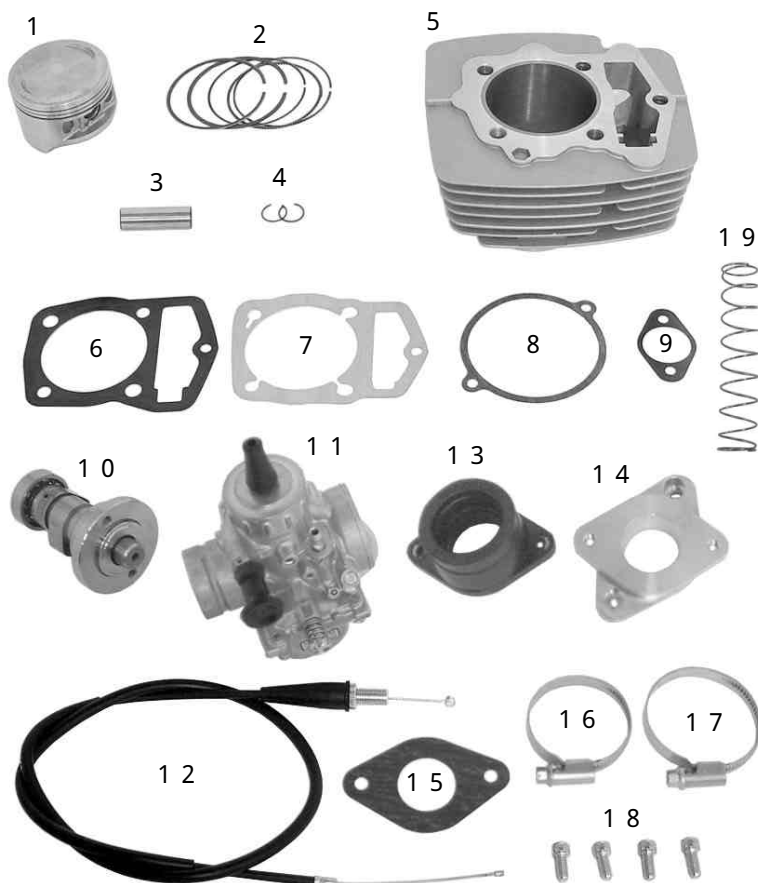
- Always start the engine in a well-ventilated place, and do not start it in an airtight place. (Otherwise, you will suffer from carbon monoxide poisoning.)
- When you notice something abnormal with your motorcycle while riding down a road, immediately stop riding and park your motorcycle in a safe place. (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.)
- Keep plastic bags for packing products out of children's reach, or discard them. (If children get them on, there will be a danger of their suffocating.)
- As gasoline is highly flammable, never place it close to fire. Make sure that nothing flammable is near the gasoline. Since vaporized accumulation of gasoline is at high risk of explosion, work in a well-ventilated place. (It may cause a fire.)

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 ϕ 67	1
2	Piston ring set	1
3	Piston pin ϕ 15x48	1
4	Piston pin circlips ϕ 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
10	Camshaft	1
11	Carburetor MIKUNI VM26	1
12	Throttle cable 849 mm	1
13	Carburetor insulator	1
14	Intake manifold	1
15	Intake manifold gasket	1
16	Clamp band 30-45 mm	1
17	Clamp band 32-50 mm	1
18	Socket cap screws 6x15	4
19	Throttle valve spring	1

Factory preset mode of the carburetor

Main jet	# 190
Pilot jet	# 22.5
Jet needle	5E75
Clip position	3rd from top
Throttle valve cut-away	# 1.5
Air screw opening	1-1/4 counterclockwise turns

~ 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.

Turn off the fuel cock, and prepare an oil-receiving tray. Open the drain cock on the carburetor to drain gasoline in the float chamber.

• 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

Take apart the throttle housing, and disconnect the throttle pipe from the throttle housing to detach throttle cables.

Loosen a carburetor top and pull out a throttle valve, and detach normal throttle cables from the body. At this point, remember how the stock throttle cables are routed.

Unfasten bolts which are fixing an intake manifold to the cylinder head. And loosen a clamp which is connecting a carburetor and air cleaner, and detach the intake manifold / carburetor.

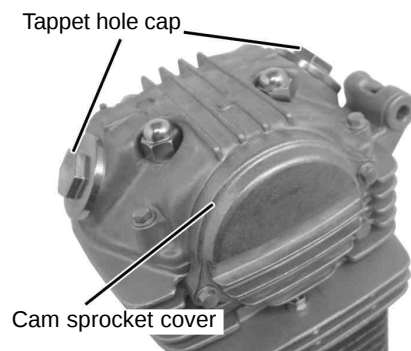
Unscrew bolts / nuts which are mounting the engine, and then demount the engine from the frame. Be careful not to scratch the frame, etc.

• Removal of Spark Plug

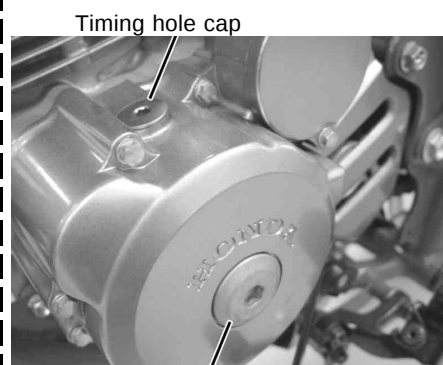
Remove a spark plug.

• Removal of Cam Sprocket

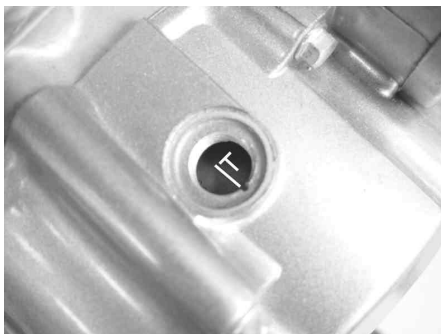
Remove tappet hole caps / O-rings and cam sprocket cover / O-ring on both intake and exhaust sides. Completely wipe off gaskets with a scraper and the like, if any remains on the cylinder head or cam sprocket cover.



Remove a timing hole cap and crank shaft hole cap.



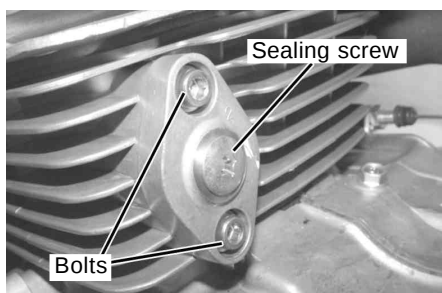
Rotate the flywheel counterclockwise to be at TDC (Top Dead Center) on the compression stroke. This means that a "T" mark on the flywheel is aligned with an alignment mark on the crankcase cover and that a rocker arm is loose or shaky.)



Holding the flywheel, loosen a cam sprocket bolt.

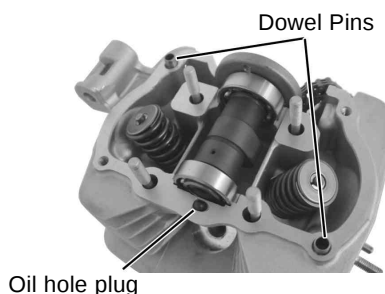
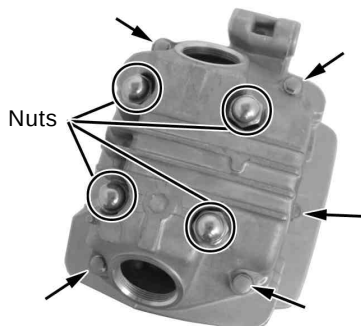
Remove the cam sprocket bolt, detach the cam sprocket from the cam shaft, and detach the cam sprocket from the cam chain.

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.

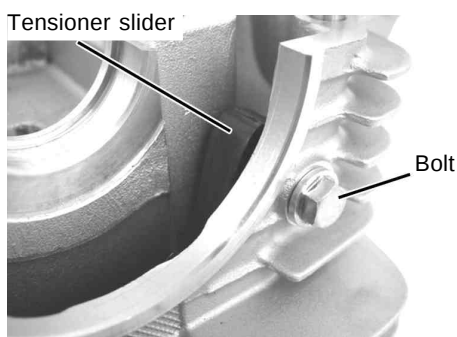


● Removal of Cylinder Head, Cylinder and Piston.

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.



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.

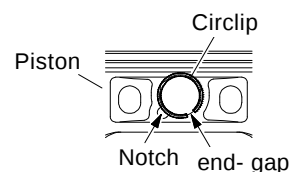
Plug the opening on the crankcase with a waste cloth not to get a circlip in it.

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.

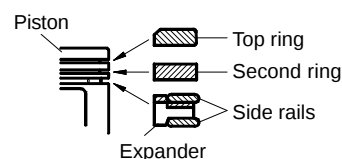
Arrange the position of the end-gap of the piston pin circlip not to be on the notch of the piston pin hole.



Attach piston rings of the kit to the piston.

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

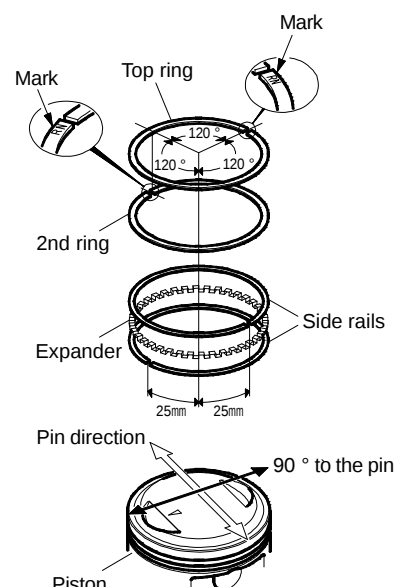
Be careful not to scratch the piston or damage piston rings.



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 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.

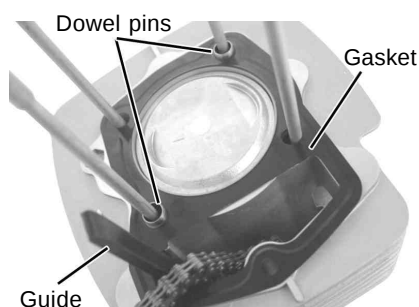
Degrease the mating surfaces of the crankcase and cylinder with thinner and the like, and attach a dowel pin and cylinder gasket of the kit.

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.

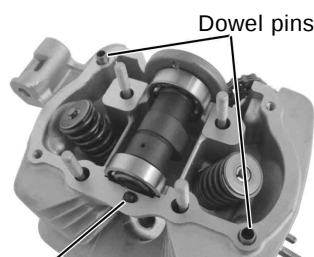
Degrease the upper part of the cylinder, and fix the cam chain guide, two dowel pins, and a cylinder head gasket of the kit. Fit the cam chain guide right into the grooves in the cylinder and the crankcase.



● 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 of the kit, 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:

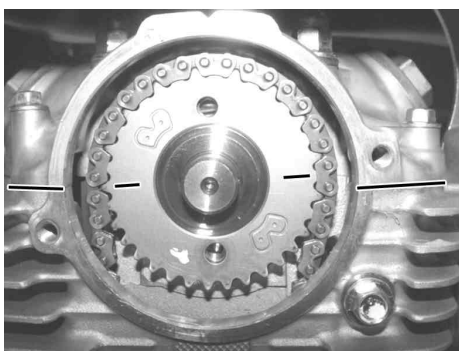
12 N · m (1.2 kgf · m)

● 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.

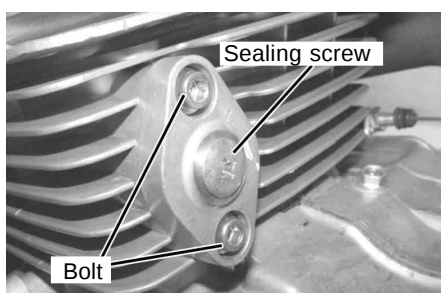
Specified torque:

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.

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

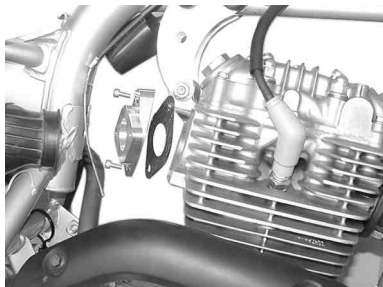
● Installation of Carburetor

Connect the throttle cables of the kit to the throttle housing / throttle pipe, and fix them to a handle. Route the throttle cables just like the stock throttle cables are routed.

Fix the intake manifold of the kit and intake manifold gasket with two socket cap screws attached to a cylinder head. Beware of the directional properties of the intake manifold and gasket.

Specified torque:

10 N · m (1.0 kgf · m)



Fix the insulator of the kit with two socket cap screws attached to the intake manifold.

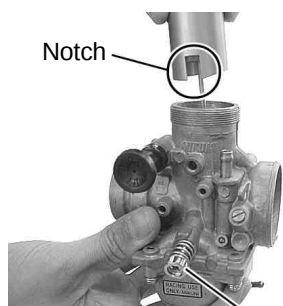
Specified torque:

10 N · m (1.0 kgf · m)

Detach a top cover from the carburetor of the kit, and take out a spring, needle clip retainer, and throttle valve.

Fix the top cover to the throttle cables. With the spring pressed, attach the throttle valve to the inner cables, and then the needle clip retainer. Be sure to change the spring to the supplied throttle spring.

Aligning the notch in the throttle valve with a throttle stop screw, fit the throttle valve into the carburetor.



Throttle stop screw

First, fix the air-cleaner box portion of the carburetor, and fasten it with a hose clamp (32-50 mm).

Generally, it is hard to fit the throttle valve into the carburetor. In case you cannot easily fit it, fit it using a flat tip screwdriver.

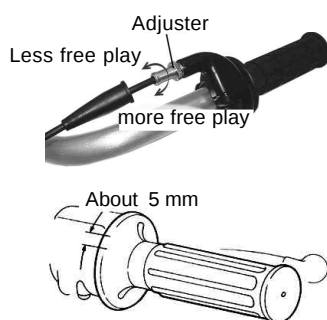
And, fasten the clamp in the position as close to the carburetor as possible.

Then, fit the carburetor into an insulator, and fasten it with a hose clamp (30-45 mm).



Adjust the free play at the throttle grip to be about 5 mm by turning the adjuster of the throttle cable.

After the adjustment, cover the adjuster with a rubber adjuster cover.



Snap the throttle several times to see that the throttle moves smoothly without sticking and that the valve is fully open.

Also check that the throttle has free play even when the steering handle is turned all the way to the right and left.

Remove a restrictor at the top of an air-cleaner box. If it is left attached, the big carburetor does not display its ability to the full.



● **Installation of Exhaust Pipe**

Referring to Honda's genuine service manual, fix an exhaust pipe.

● **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.

Pull the choke lever to start the engine with utmost care in a well-ventilated safe place. Gradually push the lever back and warm-up the engine till it starts running smoothly, and then push back the choke lever to the end. Keep the vehicle running idle for a few minutes till the engine oil circulates evenly all around the engine. Adjust revolutions with the throttle stop screw in case the engine does not run idle or runs idle at high revolutions.

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.

Do the settings, in a safe place with caution, to meet your requirements.

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.

SPECIAL PARTS TAKEGAWA

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Warning

Please be informed as follows with regard to the supplied MIKUNI VM26 Carburetor: A standard on-road throttle valve spring is incorporated into this VM26 carburetor at the factory.

In connecting the throttle wires, please be sure to replace the spring with the supplied off-road heavy-duty throttle valve spring.

This hard throttle valve spring serves to ease the malfunction triggered by the throttle closure caused by the mud and sand adhering to the throttle, throttle wires, throttle valve and other hardware.

However, please note that this does not go so far as to completely prevent the poor return of the throttle caused by dirt. Therefore, before riding, inspect various parts, and stop riding whenever you feel something abnormal when driving.

SPECIAL PARTS TAKEGAWA

How to Set the Carburetor

- When the carburetor does not match the engine and the engine fails, the engine failures are caused by either too dense or too lean air-fuel mixture.
- The engine failure symptoms for the engine are as follows:

When the air-fuel mixture is too dense:	When the air-fuel mixture is too lean:
• The explosion sound with a dull thud continues intermittently. • The engine malfunctions further if you use the choke. • The engine malfunctions when you warm it up. • The engine works well if the cleaner is detached. • The motorcycle belches dense (or, black) exhaust gas. • The plug smolders, getting blackened.	• The engine overheats somewhat. • The engine starts working well if you use the choke. • The engine does not accelerate well. (No smooth acceleration) • Revolutions change, generating weak power. • The plug burns white.

Set the carburetor only after warming up the engine, and then test-drive. And use a plug with the right heat value.

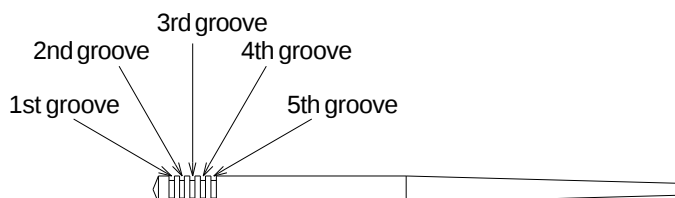
Do the setting in the following manner, studying at what throttle opening position the engine starts failing.

○ Jet needle (Throttle position at 1/4 - 3/4)

Whether or not the engine revolution is in proportion to the throttle operation

- When the acceleration is not smooth or even, make the air-fuel mixture dense.
- Make the air-fuel mixture lean when the engine revolution goes up heavily and belches black gas.

The mixture ratio at this throttle position can be adjusted by the location of E-ring in the grooves. The air-fuel mixture becomes dense as the location of the E-ring moves down from the 1st to the 5th groove.



○ Main jet (The throttle position at 3/4 - 4/4)

The air-fuel mixture ratio at this throttle position can be adjusted by changing the number of the main jet. The larger the main jet numbers, the denser the mixture ratio becomes.

In view of the engine and muffler specifications, select the most appropriate main jet to get the highest revolutions.

○ Pilot jet (First of all, please adjust the air screw.)

- In case you have given more than three turns to the air screw to tighten it, use a pilot jet with a small number.
- If you have tightened the air screw (clockwise) to the full, use a pilot jet with a larger number.

Check whether you have made a right choice of the pilot jet by seeing if the engine starts up revolving smoothly from the idling to running at slow speed.

- When the engine revolves up unevenly, the pilot jet number is too small. (At idle)
- When the motorcycle belches black exhaust gas and produces heavy exhaust sound, the pilot jet number is too big. (At idle)
- After replacing the pilot jet, you need to readjust the airscrew.

○ Air screw

The air screw adjusts the air mass flow at the time of engine's revolving at slow speed. (At idling)

- Give the air screw a right turn → The air-fuel mixture gets dense.
- Give the air screw a left turn → The air-fuel mixture gets lean.

Loosen the tightened air screw back to the 1.5-turn position. And then from this position, give to the airscrew a right or left turn of 1/4 to 1/2 till the engine revolves at the highest speed.

Loosen the idle stop screw till you get the steady idling revolutions. And once again adjust the position of the airscrew to get the highest revolutions.

● On how the barometric pressure, temperatures and humidity affect the setting:

- At highlands or at high altitudes, the barometric pressure and air density go down and the air gets into the carburetor in less amounts. This makes the air-fuel mixture dense which was adjusted at low altitudes.
- Under the weather conditions with very low temperatures, the air density increases, which makes the air-fuel mixture lean.
- Under the rainy and humid weather conditions, the air density decreases, which makes the air-fuel mixture dense.

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

This manual should be retained for future reference.

SPECIAL PARTS TAKEGAWA Co.,Ltd.

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